



MILLING SYSTEMS

INCH AND METRIC TOOLS



2026/2027



EXPLORE HORN

Explore HORN

Outstanding results are always a combination of the optimum cutting process and the perfect tool. To achieve this, HORN combines advanced technology, performance and reliability. From single part to series production, for standard or special applications: Our tools offer you fast, economical, high quality solutions. To assist you when choosing cutting parameters, our tables in the respective catalogue provide proven empirical values. Take advantage of the expertise of our office staff and sales engineers.

Sustainability is a central part of our corporate philosophy. That is why we have always focused on quality assurance, environmental protection, energy efficiency and safety with regard to our products and our production. As an efficient and reliable tool partner, we make sure that you join us in an innovative and strong economic future.

Please visit our eShop, which is available around the clock.



Markus Horn
CEO
Paul Horn GmbH



Matthias Rommel
CEO
Paul Horn GmbH

HORN USA

In 1997, Horn USA was established in Franklin, Tennessee with a clear purpose: deliver world-class precision tooling with true local support for North American manufacturers.

Today, we manufacture in the United States, provide hands-on local engineering, and work side-by-side with customers from concept to finished part. Our team responds quickly, collaborates closely, and delivers solutions built for the demands of American shops.

Backed by the global strength of the HORN Group, we pair advanced R&D and cutting-edge technology with fast, US-based production, including programs like Greenline, where eligible US-made special inserts ship within five working days of design approval.



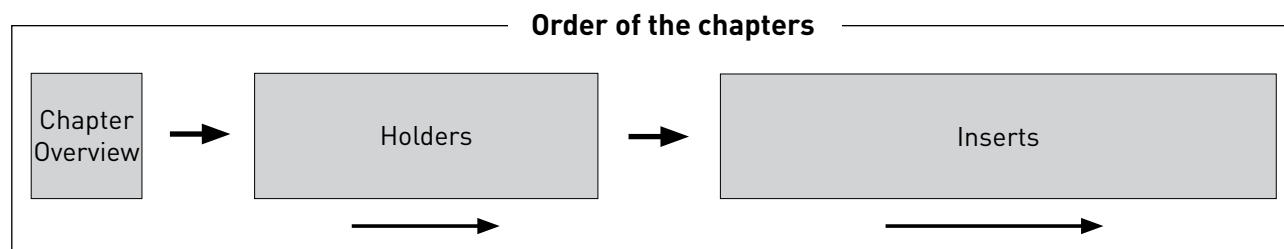
Chad King
CEO
Horn USA



Mike Csizmar
CSO
Horn USA

How to find products:

Products are shown in a specific order inside of each chapter.



How to choose tools:

- Delivery times
 - ▲ in stock
 - Δ 2 weeks
- Use for material groups
 - recommended
 - suitable
 - not recommended

How to match inserts and holders:

All Horn inserts and toolholders use a connection code system to indicate compatibility between inserts and holders. This code describes the type of insert seat/interface between the insert and holder. (HIS and HWS)
 The same connection code system is used for our modular holders, where the code identifies compatibility between the base holder and cassette. (HMS and HWS)

HIS = Horn Insert Side
HWS = Horn Interface Holder Side
HMS = Horn Interface Machine Side

HIS	↔	HWS
HMS	↔	HWS

Example insert:

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M304.ST08.01A	8	60	13	4.4	A	304044R
M304.ST08.01B	8	60	13	4.4	B	304044R

Example toolholder:

Part number	Ds	w	s	r	t _{max}	Z	HIS	EG55	IG35
304.0004.08	7.7	0.8	2.6	0.4	1.3	3	304044R	▲	▲
304.0006.12	7.7	1.2	2.9	0.6	1.3	3	304044R	Δ	Δ
304.0008.16	7.7	1.6	2.9	0.8	1.3	3	304044R	Δ	Δ

Correct Match

Tool Type
Milling shank

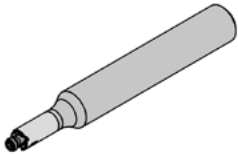
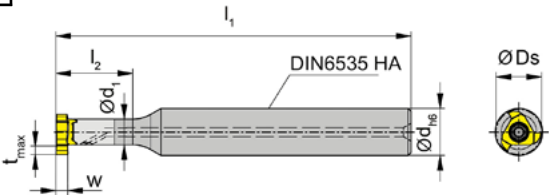
Tool Group
M304



Chapter
B



Tool Features/
Capabilities



Product Number/
SKU

Part number	d	L ₁	L ₂	d ₁	Form	HWS
M304.0008.01A	8	60	13	4.4	HA	304044R
M304.0008.02A	8	64	17	4.4	HA	304044R
M304.0008.03A	8	68	21	4.4	HA	304044R
M304.0008.01B	8	60	13	4.4	HB	304044R
M304.0008.02B	8	64	17	4.4	HB	304044R
M304.0008.03B	8	68	21	4.4	HB	304044R
M304.0008.01E	8	60	13	4.4	HE	304044R
M304.0008.02E	8	64	17	4.4	HE	304044R
M304.0008.03E	8	68	21	4.4	HE	304044R

Product Notes

w, Ds, tmax see inserts
Dimensions in mm

Insert-to-Holder
Compatibility Code

M306.0712.A

Product Number/SKU

Spare Parts and
Torque Values

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M304...	1.8.4T6EP	T6PL	0.9 Nm

Tool Type

Insert

Tool Group

304

ph HORN ph

Chapter

B

Tool Features/
Capabilities

Product Number/
SKU

Picture = right hand cutting version

Part number	Ds	Nw	w	s	t _{max}	Z	HIS	EG55	IG35
304.0080.20	7.7	0.8	0.87	2.6	1.3	3	304044R	▲	▲
304.0090.20	7.7	0.9	0.97	2.6	1.3	3	304044R	▲	▲
304.0110.20	7.7	1.1	1.21	2.9	1.3	3	304044R	▲	▲
304.0130.20	7.7	1.3	1.41	2.9	1.3	3	304044R	▲	▲

Widths for circlip grooves DIN 471/472

Dimensions in mm

Coating grades

▲ In stock Δ 2 weeks

	EG55	IG35
P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-

Grade

▲ in stock
Δ orderable, 2 week delivery

Product Notes

Insert-to-Holder
Compatibility Code

Cutting Material
Recommendations:

- recommended/best
- suitable
- not recommended

606.0510.02

AS45

Grade (Carbide Substrate + Coating)

Product Number/SKU

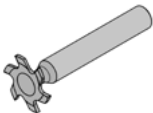
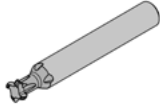
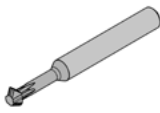


Chapter Index

A	System DC Solid Carbide Grooving and Chamfering
B	System M304/M306/M308/M311/M313/M328/M332/M335 Indexable Grooving, Chamfering, Thread Undercut, Parting Off, Facing, Boring System M620 Indexable Facing and High Feed
C	System M101 Indexable Grooving and Parting Off
D	System 380/381 Indexable Grooving and Circular Milling
E	System M275 Indexable Grooving and Circular Milling
F	System 382/383/M310/M475 Indexable Grooving and Parting Off
G	Thread Milling System DCG/M275/M304/M306/M308/M311/M313/M328/M332/380
H	Gear Machining System M313/M328/M335/M279/M274/WSR
I	T-Slot Milling System M311/M313/M328/M406/M409
J	High Feed Milling and 90° Indexable Milling System DAH and DA
K	Tangential Milling System M406/M409/M610
L	Polygon Milling System M275/381
M	Technical Information Torque Values, Technical Instructions, Cutting Data, Additional Equipment

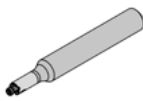
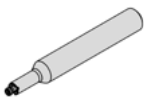
A**B****C****D****E****F****G****H****I****J****K****L****M**

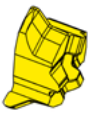
Chapter A Overview - System DC

ENDMILLS	Grooving			Chamfering
				
	Page 35 DCX Grooving, 90°	Page 36-37 DCN Grooving, Radius	Page 38 DCR Grooving, Full Rad	Page 39 DCF Chamfering

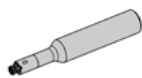
Cutting Data and Technical Instructions - Pages 40-42

Chapter B Overview - 304 Mini Milling

HOLDERS	Metric Shanks	
		
	Page 48 M304 Ø8mm Shank	Page 49 M304.ST (Steel) Ø8mm Shank

INSERTS	Metric Grooving Widths	Full Radius	Chamfering	Thread Undercut
				
	Page 50 304 0.25-2mm Width	Page 51 304 0.87-1.41mm Width	Page 52 304 0.8-1.6mm Width	Page 53 304 45° Chamfer
				Page 54 304 45°, 0.6mm Width

Cutting Data and Technical Instructions - Chapter M / Page 618



Page 58

MU306

Ø.500"-.625" Shank



Page 59

U306

.046"-.094" Width

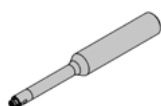


Page 60

U306

.031"-.047" Radius

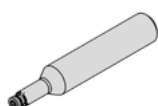
Metric Shanks



Page 61

M306

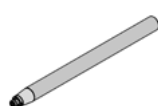
Ø12mm Shank



Page 62

M306.ST (Steel)

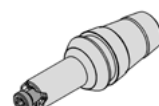
Ø10-12mm Shank



Page 63

M306

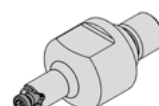
Ø7.5-10mm Shank



Page 64

M306.ER

ER11 Shank



Page 65

M306.M

M8 Screw-in

Specialty

Metric Circlip Grooving (3 Flute)



Page 66-68

306

DIN Circlip



Page 69

306

Circlip with Chamfer



Page 70

306

1.5-3mm Width



Page 71

306

1-3mm Width



Page 72

306

1.5-2.5mm Width

Metric Grooving Widths (3 Flute)

Metric Full Radius (3 Flute)



Page 73

306

0.5-1.5mm Radius



Page 74

306

45° Chamfer

Metric Circlip (6 Flute)



Page 75

606

DIN Circlip



Page 76

606

0.25-2.5mm Width

Chamfering (3 Flute)

Chamfering (6 Flute)



Page 77

606

15-45° Chamfer



Page 78

606

60° Chamfer

Facing (6 Flute)



Page 79

606

Facing



Page 80

606

Facing

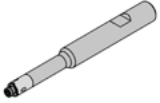
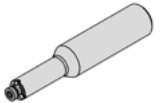
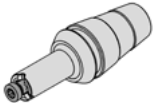
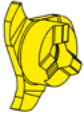
Thread Undercut (6 Flute)

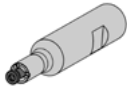
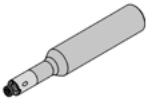
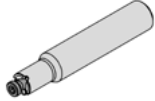
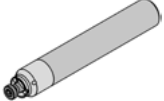
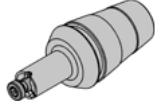
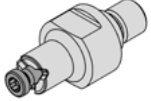


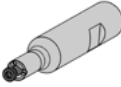
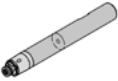
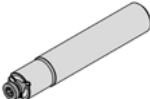
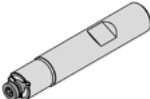
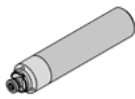
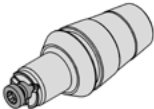
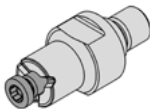
Page 81

606

45°, 1.2mm Width

HOLDERS INSERTS	Inch Shanks	Inch Grooving Widths (3 Flute)			
					
	Page 85 MU308 Ø.500"-.625" Shank	Page 86 U308 .046"-.125" Width	Page 87 U308 .031"-.047" Radius		
	Metric Shanks	Specialty			
					
	Page 88 M308 Ø12mm Shank	Page 89 M308.ST (Steel) Ø10-13mm Shank	Page 90 M308.ER ER11, ER16, ER20		
	Metric Circlip Grooving (3 Flute)	Metric Grooving Widths (3 Flute)	Metric Full Radius (3 Flute)		
					
	Page 91-92 308 DIN Circlip	Page 93 308 Circlip with Chamfer	Page 94 308 1.5-2.5mm Width	Page 95 308 .40 Aluminum Geo	Page 96 308 0.5-2mm Radius
	Metric Chamfer (3 Flute)	Metric Grooving Widths (6 Flute)	Metric Chamfer (6 Flute)	Thread Undercut (6 Flute)	
					
	Page 97 308 45° Chamfer	Page 98 608 0.25-2.5mm Width	Page 99 608 15-45° Chamfer	Page 100 608 45°, 1.8mm Width	

HOLDERS INSERTS	Inch Shanks			Inch Grooving Widths (3 Flute)	Inch Full Radius (3 Flute)
					
	Page 104 MU311 Ø.500"-.625" Shank	Page 105 MU311 Ø.500"-.625" Shank	Page 106 MU311 Ø.625" Shank	Page 107 U311 .046"-.125" Width	Page 108 U311 .031"-.062" Radius
	Metric Shanks			Specialty	
					
	Page 109 M311 Ø12-16mm Shank	Page 110 M311.ST (Steel) Ø10-16mm Shank	Page 111 M311 Ø12-16mm Shank	Page 112 M311.ER ER11, 16, 20, 25	Page 113 M311.M M8 Screw-in
	Metric Circlip Grooving (3 Flute)		Metric Grooving Widths (3 Flute)		Metric Full Radius (3 Flute)
					
	Page 114-115 311 DIN Circlip	Page 116 311 Circlip with Chamfer	Page 117 311 1-4mm Width	Page 118 311 .40 Aluminum Geo	Page 119 311 0.75-2mm Radius
	Metric Chamfer (3 Flute)	Metric Circlip Grooving (6 Flute)	Metric Grooving Widths (6 Flute)	Metric Facing (6 Flute)	Metric Chamfer (6 Flute)
					
	Page 120 311 45° Chamfer	Page 121 611 DIN Circlip	Page 122 611 0.5-4mm Width	Page 123 611 Facing	Page 124 611 15-45° Chamfer
	Thread Undercut (6 Flute)	Metric Grooving Widths (9 Flute)			
					
	Page 125 611 45°, 2.2mm Width	Page 126 911 1.5-3mm Width			

HOLDERS INSERTS	Inch Shanks		Inch Circlip Grooving (3 Flute)	Inch Grooving Widths (3 Flute)	Inch Full Radius (3 Flute)
					
	Page 130 MU313 Ø.500"-Ø.750" Shank	Page 131 MU313 Ø.625" Shank	Page 132 U313 .032"-.047" Circlip	Page 133 U313 .056"-.250" Width	Page 134 U313 .031"-.125" Radius
	Metric Shanks				
					
	Page 135 M313 Ø12-16mm Shank	Page 136 M313.ST (Steel) Ø10-16mm Shank	Page 137 M313.ST (Steel) Ø12-16mm Shank	Page 138 M313 Ø16-20mm Shank	
	Specialty		Metric Circlip Grooving (3 Flute)	Metric Grooving Widths (3 Flute)	
					
	Page 139-140 M313.ER ER16, 20, 25, 32	Page 141 M313.M M8 Screw-in	Page 142-145 313 DIN Circlip	Page 146 313 Circlip with Chamfer	Page 147-149 313 1-6mm Width
	Metric Full Radius (3 Flute)	Metric Chamfer (3 Flute)	Metric Circlip Grooving (6 Flute)		Metric Grooving Widths (6 Flute)
					
	Page 150 313 0.5-2.5mm Radius	Page 151 313 45° Chamfer	Page 152 613 DIN Circlip	Page 153 613 Circlip with Chamfer	Page 154 613 1.5-8mm Width
	Metric Facing (6 Flute)		Metric Chamfer and Edge Rounding (6 Flute)		
					
	Page 155 613 Facing	Page 156 613 Facing	Page 157 613 Edge Rounding	Page 158 613 15-45° Chamfer	Page 159 613 60° Chamfer
	Thread Undercut (6 Flute)	Metric Grooving Widths (7 Flute)	Metric Facing (7 Flute)	Metric Grooving Widths (9 Flute)	
					
	Page 160 613 45°, 3.8mm Width	Page 161 713 0.25-3mm Width	Page 162 713 Facing	Page 163 913 1.5-3mm Width	

Inch Shanks



Page 167
MU328
Ø.500"-.750" Shank



Page 168
SMU328 (Tungsten)
Ø.750" Shank



Page 169
MU328
Ø.750" Shank

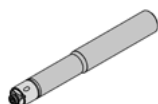


Page 170
U325
Multi-Function



Page 171
U328
.094"-.188" Width

Metric Shanks



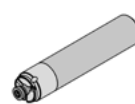
Page 172
M328
Ø16-20mm Shank



Page 173
M328
Ø9-12mm Shank

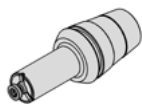


Page 174
M328.ST (Steel)
Ø12-20mm Shank

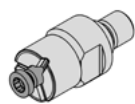


Page 175
M328
Ø16-20mm Shank

Specialty



Page 176-177
M328.ER
ER20, ER25, ER32



Page 178
M328.M
M8 Screw-in



Page 179
325
Multi-Function



Page 180
328
Circlip with Chamfer

Bore Milling & Grooving (3 Flute)

Metric Circlip (3 Flute)

Metric Grooving Widths (3 Flute)

Metric Full Radius (3 Flute)



Page 181
328
2-10mm Widths



Page 182
328
.40 Aluminum Geo



Page 183
328
0.82mm Width



Page 184
328
Deep Grooves



Page 185
328
1-2mm Radius

Metric Chamfer (3 Flute)

Metric Circlip Grooving (6 Flute)

Metric Grooving Widths (6 Flute)



Page 186
328
45° Chamfer



Page 187
628
DIN Circlip



Page 188
628
1-4mm Width



Page 189
628
3-4mm Width



Page 190
628
Deep Grooves

Metric Full Radius (6 Flute)

Metric Facing (6 Flute)

Metric Chamfer (6 Flute)

Metric Grooving Widths (9 Flute)



Page 191
628
1-2mm Radius



Page 192
628
Deep Grooves



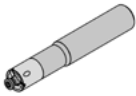
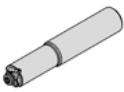
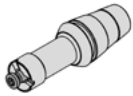
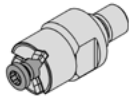
Page 193
628
Facing



Page 194-195
628
15-60° Chamfer



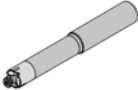
Page 196
928
1.5-3mm Width

HOLDERS INSERTS	Inch Shanks	Metric Shanks		Specialty	
					
	Page 200 MU332 Ø.625"-.750" Shank	Page 201-202 M332 Ø12-20mm Shank	Page 203 M332.ST (Steel) Ø10-16mm Shank	Page 204 M332.ER ER20	Page 205 M332.M M8 Screw-in
	Metric Grooving Widths (3 Flute)		Metric Full Radius (3 Flute)	Metric Chamfer (3 Flute)	
					
	Page 206 332 2-4mm Width	Page 207 332 1-3mm Width	Page 208 332 1-2mm Radius	Page 209 332 45° Chamfering	
	Metric Grooving Widths (6 Flute)		Metric Full Radius (6 Flute)	Metric Parting Off (6 Flute)	
					
	Page 210 632 2-4mm Width	Page 211-213 632/636 Deep Grooves	Page 214 632 1-2mm Radius	Page 215-216 632/636 Parting Off	
	Metric Grooving Widths (9 Flute)		Metric Full Radius (9 Flute)	Metric Parting Off (9 Flute)	
					
	Page 217 932 2-4mm Width	Page 218-219 939 Deep Grooves	Page 220 939 0.7-1.5mm Radius	Page 221 939 Parting Off	

Chapter B Overview - 335 Mini Milling

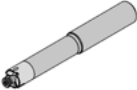
HOLDERS
INSERTS

Inch Shanks



Page 225
MU335
Ø.750" Shank

Metric Shanks



Page 226
M335
Ø20mm Shank

Metric Grooving
Widths (3 Flute)



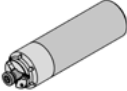
Page 227
335
2-6mm Widths

Cutting Data and Technical Instructions - Chapter M / Page 618

Chapter B Overview - 620 Mini Milling

HOLDERS
INSERTS

Metric Shanks



Page 231
M620
Ø21.7mm Shank

Facing



Page 232
620
Facing

High Feed

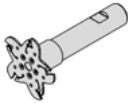
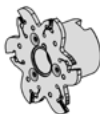


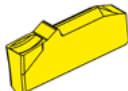
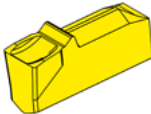
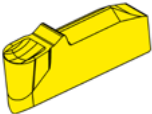
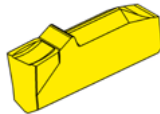
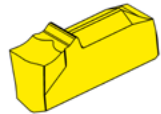
Page 233
620
Face, Ramp, Helical

Cutting Data and Technical Instructions - Chapter M / Page 618

16

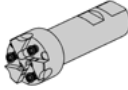
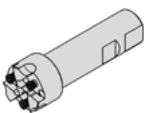
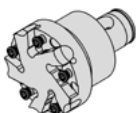
Chapter C Overview - System M101

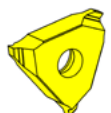
HOLDERS	Round Shank		Disc Milling Cutter		Arbor Mounted	
						
	Page 237		Page 238	Page 239	Page 240	Page 241
	1.2-2.3mm Width		1.2-2.5mm Width	2.8-4.6mm Width	1.2-2.3mm Width	2.8-4.6mm Width
	19.5mm t _{max}		20-33mm t _{max}	20-59mm t _{max}	20-34mm t _{max}	19-59mm t _{max}

INSERTS	Grooving, Parting Off		Full Radius		Parting Off	
						
	Page 242	Page 243	Page 244	Page 245	Page 246	
	Grooving, Parting Off	Grooving, Parting Off	Grooving, Parting Off	Parting Off	Parting Off	
	.3 Geometry	.E Geometry	.E Geometry	.3 Geometry	.FY Geometry	

Cutting Data and Technical Instructions - Chapter M / Page 618

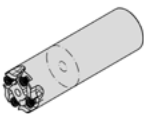
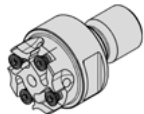
Chapter D Overview - System M380/381

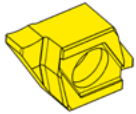
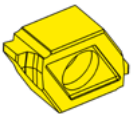
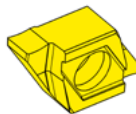
HOLDERS	Inch Shank			
				
	Page 251	Page 252	Page 253	Page 254
	Ø Ds 1.732"	Ø Ds 2.480"	Ø Ds 3.150"	Ø Ds 2.480-3.937"
	Milling Shank	Arbor Mounted	Arbor Mounted	Disk Cutter
	Metric Shank			
				
	Page 255	Page 256-257	Page 258-259	Page 260
	Ø Ds 44mm	Ø Ds 63mm	Ø Ds 80mm	Ø Ds 44-80mm
	Milling Shank	Arbor Mounted	Arbor Mounted	ABS/Komet

INSERTS	Grooving	
		
	Page 262	Page 263
	Grooving and DIN Circlip	Grooving and DIN Circlip w/ Chamfer

Cutting Data and Technical Instructions - Chapter M / Page 618

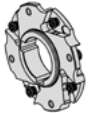
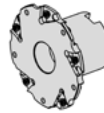
Chapter E Overview - System M275

HOLDERS	Metric Shank		
			
	Page 267 Ø Ds 31mm Milling Shank	Page 268 Ø Ds 38-78mm Arbor Mounted	Page 269 Ø Ds 31-36mm Screw-in Cutter

INSERTS	Grooving			Facing
				
	Page 270 Grooving and DIN Circlip	Page 271 Grooving and DIN Circlip, Chamfer	Page 272 .40 Geometry for Aluminum	Page 273 Facing

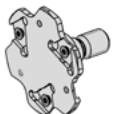
Cutting Data and Technical Instructions - Chapter M / Page 618

Chapter F Overview - System M382/383

HOLDERS, INSERTS	System 382/383 -Inch		System 382/383 - Metric	
				
	Page 278 Ø Ds 3.250" -7.875" Disc Cutter	Page 279 Ø Ds 4.000" Arbor Mounted	Page 280-283 Ø Ds 80-200mm Disc Cutter	Page 284-286 Ø Ds 100-200mm Arbor Mounted
	For 382/383 - Grooving			
				
	Page 287 Grooving	Page 288-290 Grooving Full Radius		

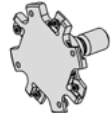
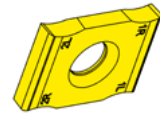
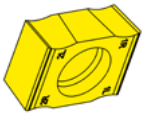
Cutting Data and Technical Instructions - Page 315

Chapter F Overview - System M310

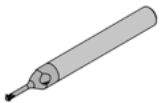
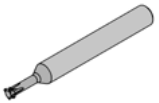
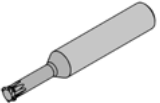
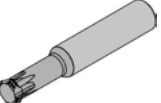
HOLDERS, INSERTS	System M310 -Inch		System M310 - Metric		
					
	Page 294 Ø Ds 4.000-6.250" Disc Cutter	Page 295 Ø Ds 3.250-6.250" Disc Cutter	Page 296 Ø Ds 80-200mm Disc Cutter	Page 297-298 ØDs 50-63mm Screw-in Cutter	Page 299-301 Ø Ds 80-200mm Arbor Mounted
	For M310 - Grooving				
					
	Page 302 Grooving	Page 303-304 Grooving Full Radius			

Cutting Data and Technical Instructions - Page 315

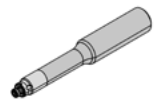
Chapter F Overview - System M475

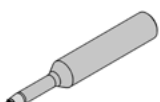
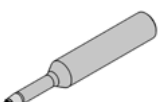
HOLDERS, INSERTS	System M475 - Metric			For M475 - Groove/Part Off	
					
	Page 308-309 Ø Ds 80-200mm Disc Cutter	Page 310 Ø Ds 40-63mm Screw-in Cutter	Page 311-312 Ø Ds 63-200mm Arbor Mounted	Page 313 Grooving and Part-Off	Page 314 Grooving and Part-Off

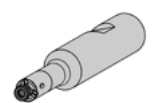
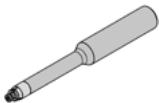
Cutting Data and Technical Instructions - Page 315

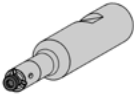
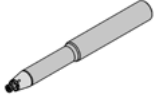
SOLID CARBIDE	DC - Solid Carbide Thread Milling				
					
	Page 326 60° Thread, Partial M1 - M2.5	Page 327 60° Thread, Partial M3 - M12	Page 328 60° Thread, Full M3 - M12	Page 329 UN Thread Partial Profile	Page 330 BSW 55° Thread Full Profile

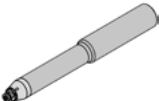
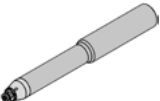
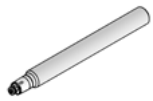
System DC Cutting Data - Page 331 --- Technical Instructions - Chapter M

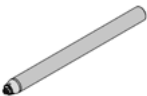
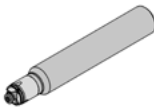
HOLDERS, INSERTS	M304 Metric Shank	For M304 (3 Flute)			
					
	Page 335 Round and Weldon Shank	Page 336 60° Thread Partial Profile	Page 337 60° Thread Full Profile	Page 338 BSW 55° Thread Full Profile	

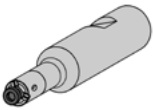
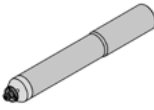
HOLDERS, INSERTS	MU306 Inch Shank	M306 Metric Shank	For M306/MU306 (3 Flute)		
					
	Page 340 Weldon Shank	Page 341 Round, Weldon, Whistle Shank	Page 342 60° Thread Partial Profile	Page 343 60° Thread Full Profile	Page 344 BSW 55° Thread Full Profile
	For M306/MU306 (6 Flute)				
					
	Page 345 60° Thread Partial Profile	Page 346 60° Thread Full Profile	Page 347 BSW 55° Thread Full Profile		

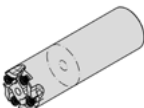
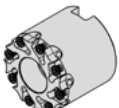
HOLDERS, INSERTS	MU308 Inch Shank	M308 Metric Shank	For M308/MU308 (3, 6 Flute)	For M308/MU308 (6 Flute)	
					
	Page 349 Weldon Shank	Page 350 Round, Weldon, Whistle Shank	Page 351-352 60° Thread Partial Profile	Page 353 BSW 55° Thread Full Profile	Page 354 Trapez. 30° Thread Partial Profile

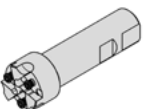
HOLDERS, INSERTS	MU311 Inch Shank	M311 Metric Shank	For M311/MU311 (3 Flute)		
					
	Page 356 Weldon Shank	Page 357 Round, Weldon, Whistle Shank	Page 358 60° Thread Partial Profile	Page 359 60° Thread Full Profile	Page 360 BSW 55° Thread Full Profile
	For M311/MU311 (6 Flute)				
					
	Page 361 60° Thread Partial Profile	Page 362 60° Thread Full Profile			

HOLDERS, INSERTS	MU313 Inch Shank	M313 Metric Shank			
					
	Page 364 Round and Weldon Shank	Page 365 Round, Weldon, Whistle Shank	Page 366 Round Shank Short Neck		
	For M313/MU313 (3 Flute)		For M313/MU313 (6 Flute)		
					
	Page 367 60° Thread Partial Profile	Page 368 60° Thread Full Profile	Page 369 BSW 55° Thread Full Profile	Page 370 60° Thread Partial Profile	Page 371 BSW 55° Thread Full Profile

HOLDERS, INSERTS	MU328 Inch Shank		M328 Metric Shank	
				
	Page 373 Weldon Shank	Page 374 Tungsten Shank Weldon, Whistle	Page 375 Round, Weldon, Whistle	Page 376 Tungsten Shank Weldon, Whistle
	For M328/MU328 (3 Flute)		For M328/MU328 (6 Flute)	
				
	Page 377 60° Thread Partial Profile	Page 378 BSW 55° Thread Full Profile	Page 379 60° Thread Partial Profile	Page 380 BSW 55° Thread Full Profile

HOLDERS, INSERTS	MU332 Inch Shank	M332 Metric Shank	For M332/ MU332 (6 Flutes)
			
	Page 382 Weldon Shank	Page 383 Round Shank	Page 384 60° Thread Partial Profile

HOLDERS, INSERTS	M275 - Metric Shank		For M275
			
	Page 386 Ds 31mm Round Shank	Page 387 Ds 38-78mm Arbor Mounted	Page 388 Partial Profile 60° Thread

HOLDERS, INSERTS	380 - Metric Shank		For 380
			
	Page 390 Ds 44mm Round, Weldon, Whistle	Page 391 Ds 63mm Arbor Mounted	Page 392 60° Thread Partial Profile

EXTERNAL TEETH

For System 313 (6 Flute)



Page 402
613

0.5-0.7mm Module



Page 403
613

0.8-0.9mm Module



Page 404
613

1-1.25mm Module



Page 405
613

1.5mm Module

System 328 (6 Flute)



Page 406
628

1.75-2mm Module

System 332 (6 Flute)



Page 407
632

2.25mm Module

System 335 (6 Flute)



Page 408
635

2.25-3mm Module

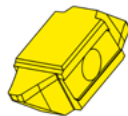
For holders, see Chapter B

System M279



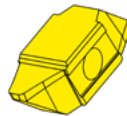
Page 409
M279

ØDs 100mm



Page 410
RS279

3.25-3.5mm Module



Page 411
RS279

3.75-4mm Module

SPLINES

System M274



Page 413
M274

ØDs 63mm



Page 414
RS274

Without Relief

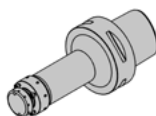


Page 415
RS274

With Relief

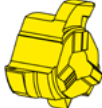
SKIVING

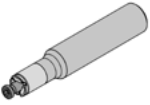
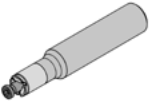
System MDR

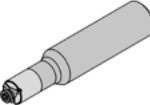
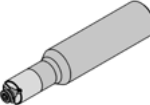


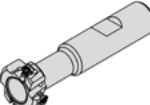
Page 421
MDR

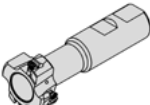
Adjustable Holder

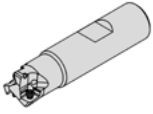
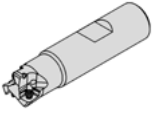
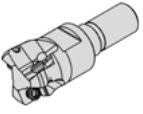
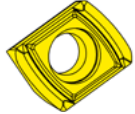
SYSTEM 311	Holders		Inserts	
				
	Page 436 MU311 Inch Shank	Page 437 M311 Metric Shank	Page 438 17 x 7.2 mm T-Slot Profile	Page 439 T-Slot Chamfering

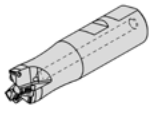
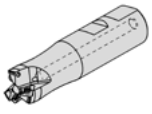
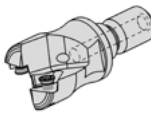
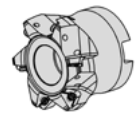
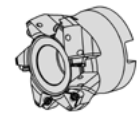
SYSTEM 313	Holders		Inserts	
				
	Page 441 MU313 Inch Shank	Page 442 M313 Metric Shank	Page 443 20 x 8.2 mm T-Slot Profile	

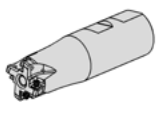
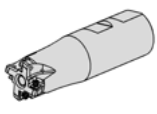
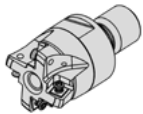
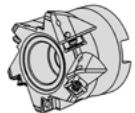
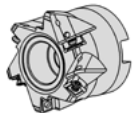
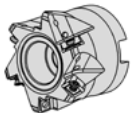
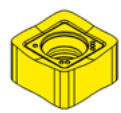
SYSTEM 328	Holders		Inserts	
				
	Page 445 MU328 Inch Shank	Page 446 M328 Metric Shank	Page 447 24 x 9.2 mm T-Slot Profile	

SYSTEM 406	Holders	Inserts		
				
	Page 449 25 x 11 mm Profile Metric Shank	Page 450 406 Multi-Purpose		

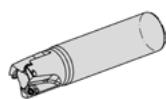
SYSTEM 409	Holders	Inserts		
				
	Page 451 32-50 x 14-22 mm Metric Shank	Page 452 409 Multi-Purpose		

HIGH FEED	Weldon		Screw-in	Inserts
				
	Page 464 DAHMU25 Ø.500" - 1"	Page 465 DAHM25 Ø12-25mm	Page 466 DAHM25 Ø12-25mm	Page 467 DAH25 Multi-Purpose

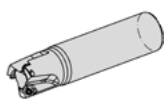
HIGH FEED	Weldon		Screw-in	Arbor	
					
	Page 469 DAHMU37 Ø1.000" - 1.500"	Page 470 DAHM37 Ø20-32mm	Page 471 DAHM37 Ø20-40mm	Page 472 DAHMU37 Ø1.500" - 3.000"	Page 473 DAHM37 Ø40-80mm
	Inserts				
					
	Page 474 DAH37 Neutral Geometry	Page 475 DAH37 Positive Geometry			

HIGH FEED	Weldon		Screw-in		
					
	Page 481 DAHMU82 Ø1.000" - 1.500"	Page 482 DAHM82 Ø20-40mm	Page 483 DAHM82 Ø20-40mm		
	Arbor			Inserts	
					
	Page 484 DAHMU82 Ø1.500" - 2.000"	Page 485 DAHM84 Ø2.000" - 5.000"	Page 486 DAHM82 / DAHM84 Ø40-125mm	Page 487 DAH82 / DAH84 Multi-Purpose	

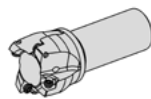
Round Shank and Weldon



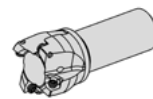
Page 492-493
DAMU31
Ø.409"-1.250"



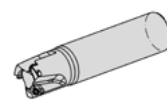
Page 494
DAMU32
Ø.689"



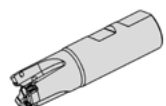
Page 495
DAMU32
Ø.750"-1.250"



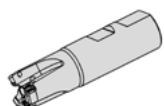
Page 496
DAM31 / DAM32
Ø20-32mm



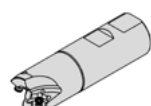
Page 497
DAM31 / DAM32
Ø16-32mm



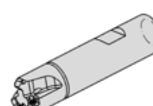
Page 498
DAMU62
Ø.750"-1.250"



Page 499
DAM62
Ø20-32mm

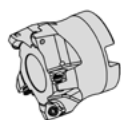


Page 500
DAM65
Ø32-40mm

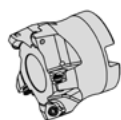


Page 501
DAM31
Chamfer Milling

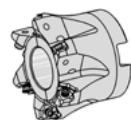
Arbor Mounted



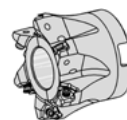
Page 502
DAMU32
Ø1.500"-2.500"



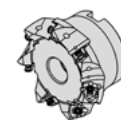
Page 503
DAM32
Ø40-63mm



Page 504
DAMU62
Ø1.500"-3.000"

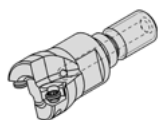


Page 505
DAM62
Ø40-80mm

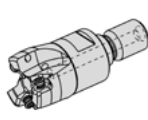


Page 506
DAM65
Ø50-100mm

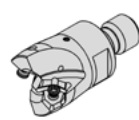
Screw-in



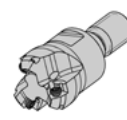
Page 507
DAM31 / DAM32
Ø16-32mm



Page 508
DAM62
Ø 25-32mm

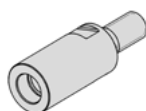


Page 509
DAM65
Ø 32-40mm

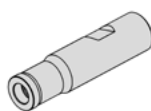


Page 510
DAM31
Chamfer Milling

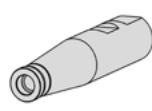
Screw-in Adaptors and Extensions



Page 511
MD
Screw-in Extension



Page 512
MD
Screw-in Adaptor

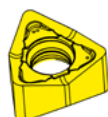


Page 513
MD
Screw-in Adaptor

Carbide Inserts

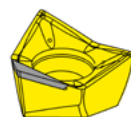


Page 514
DA31 / DA32
Multi-Purpose

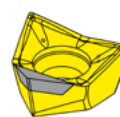


Page 515
DA62 / DA65
Multi-Purpose

Tipped Inserts



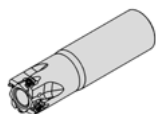
Page 516
DA32
CVD-D Tipped



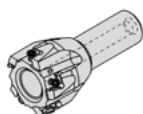
Page 517
DA32
PCD Tipped

HOLDERS

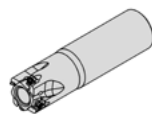
Round Shank



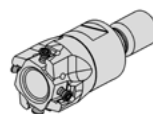
Page 541
M406 & M409
90° Tangential



Page 542
M406
90° Tangential

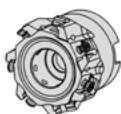


Page 543
M406 & M409
90° Tangential



Page 544
M406 & M409
90° Tangential

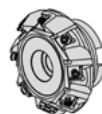
Arbor Mount



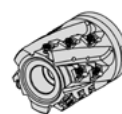
Page 545
M409
90° Tangential



Page 546
M409
45° Tangential



Page 547
M409
60° Tangential

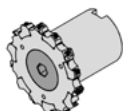


Page 548
M409
90° Tang. Shell

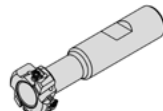
Arbor Mount



Page 549
M409
Disc Groove Mill



Page 550
M406 & M409
Arbor Groove Mill



Page 551
M406 & M409
T-Nut Mill

Weldon

INSERTS

Facing, Grooving, Side Milling



Page 552
406 & 409
Multi-Purpose



Page 553
409
Multi-Purpose



Page 554
406 & 409
Wiper Geometry

Fine Finishing

SYSTEM 610

Arbor Mount



Page 557
M610
90° Tangential



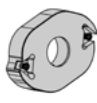
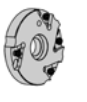
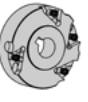
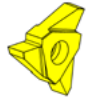
Page 558
M610
Disc Groove Mill



Page 559
610
Multi-Purpose

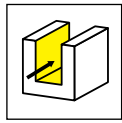
Facing, Grooving, Side Milling

SYSTEM M275	For Tornos Machines		Inserts
	 Page 587 Max DOC .118" (3mm)	 Page 588 Max DOC .118" (3mm)	 Page 589 .051" (1.3mm) Width

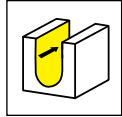
SYSTEM 381	Star Machines	Gildemeister Machines			
	 Page 592 Max DOC .177" (4.5mm)	 Page 593 Max DOC .196" (5mm)	 Page 594 Max DOC .196" (5mm)	 Page 595 Max DOC .196" (5mm)	
	Index Machines		Nakamura Machines	A.H. Schutte Machines	
	 Page 596 Max DOC .196" (5mm)	 Page 597 Max DOC .196" (5mm)	 Page 598 Max DOC .196" (5mm)	 Page 599 Max DOC .196" (5mm)	 Page 600 Max DOC .196" (5mm)
	Tornos Machines		Traub Machines		Inserts
	 Page 601 Max DOC .196" (5mm)	 Page 602 Max DOC .196" (5mm)	 Page 603 Max DOC .196" (5mm)	 Page 604 Max DOC .196" (5mm)	 Page 605-611 .157"-.275" (4-7mm) Widths

Cutting Data and Technical Instructions - Page 612

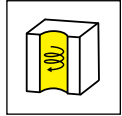
Milling Operations



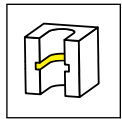
Groove milling



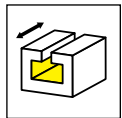
Full radius groove milling



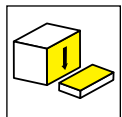
Circular milling



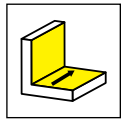
Internal groove milling



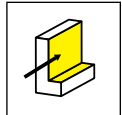
T-Slots DIN650



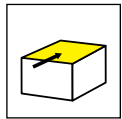
Parting Off



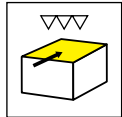
Corner milling



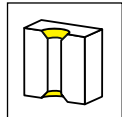
Trimming



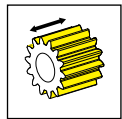
Face milling



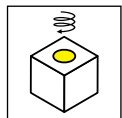
Finishing



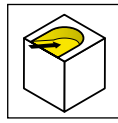
Chamfer milling



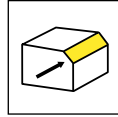
Gear milling



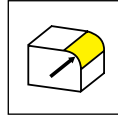
Helical interpolation



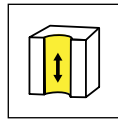
Ramping



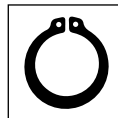
Chamfering



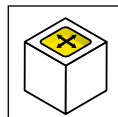
Radius milling



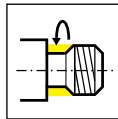
Bore milling



DIN Circlip groove

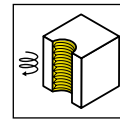


Pocketing



Thread undercut

Thread Milling Operations



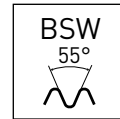
Internal thread milling



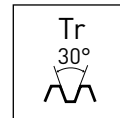
Partial profile thread



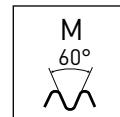
Full profile thread



Whitworth thread



Trapezoidal thread

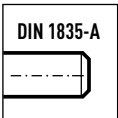
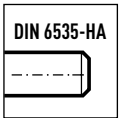
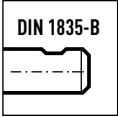


60° thread



Unified thread

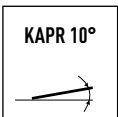
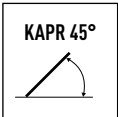
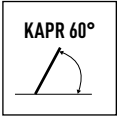
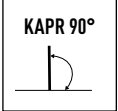
Shank Types

 DIN 1835-A	Steel shank DIN1835-A	 DIN 6535-HA	Carbide shank DIN1835-HA
 DIN 1835-B	Steel shank DIN1835-B	 DIN 6535-HB	Carbide shank DIN1835-HB
 DIN 1835-E	Steel shank DIN1835-E	 DIN 6535-HE	Carbide shank DIN1835-HE

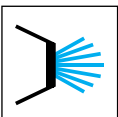
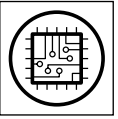
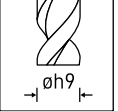
Geometries and Chipbreakers

 .40	Geometry .40 for Aluminum
 .3	.3 chipbreaker
 .E	.E chipbreaker
 .FY	.FY chipbreaker

Cutter Angle

 KAPR 10°	10° angle
 KAPR 45°	45° angle
 KAPR 60°	60° angle
 KAPR 90°	90° angle

Other

	Internal coolant
	Do not heat shrink
	Data connection DIN69973
	Tolerance class



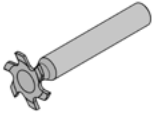
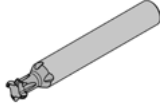
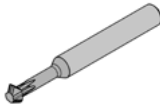


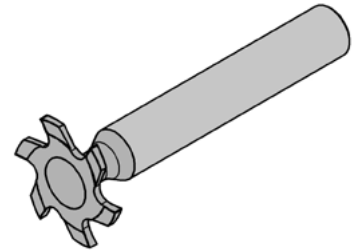
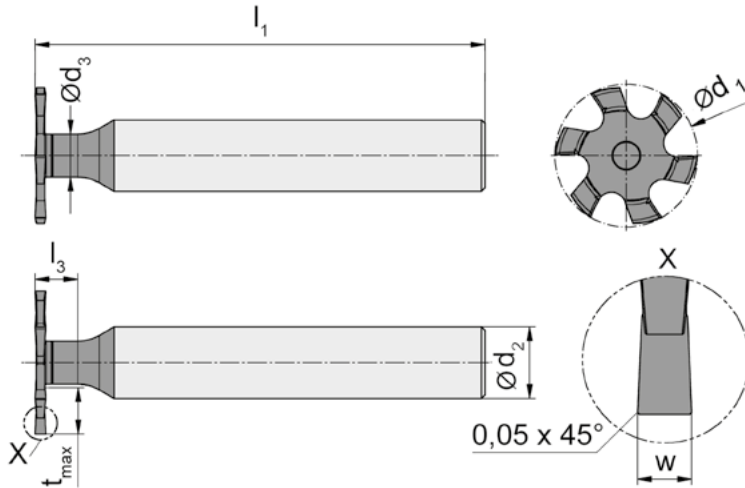
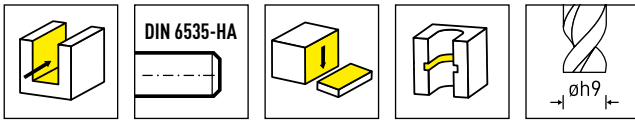
SYSTEM DC

SOLID CARBIDE GROOVING AND CHAMFERING

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6

ENDMILLS	Grooving			Chamfering
				
	Page 35	Page 36-37	Page 38	Page 39
	DCX	DCN	DCR	DCF
	Grooving, 90°	Grooving, Radius	Grooving, Full Rad	Chamfering
Cutting Data and Technical Instructions - Page 40				



Coating grades

▲ In stock

Δ 2 weeks

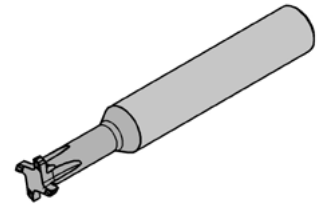
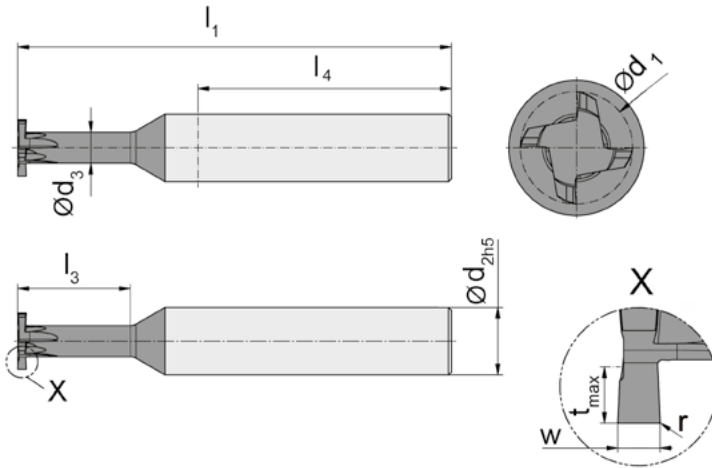
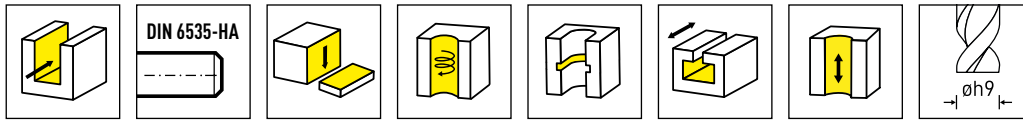
Part number	Z	w	t _{max}	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	RC45
DCX.6.20.050.2.05.10	6	0.53	7	20	10	5	64	6	40	▲
DCX.6.20.100.2.05.10	6	1.03	7	20	10	5	64	6	40	▲
DCX.6.20.150.2.05.10	6	1.53	7	20	10	5	64	6	40	▲
DCX.6.20.200.2.05.10	6	2.03	7	20	10	5	64	6	40	▲
DCX.6.20.250.2.05.10	6	2.53	7	20	10	5	64	6	40	▲
DCX.6.25.050.2.06.10	6	0.53	9	25	10	6	64	6	40	▲
DCX.6.25.100.2.06.10	6	1.03	9	25	10	6	64	6	40	▲
DCX.6.25.150.2.06.10	6	1.53	9	25	10	6	64	6	40	▲
DCX.6.25.200.2.06.10	6	2.03	9	25	10	6	64	6	40	▲
DCX.6.25.250.2.06.10	6	2.53	9	25	10	6	64	6	40	▲
DCX.6.30.050.4.07.12	6	0.53	11	30	12	7	80	9	45	▲
DCX.6.30.100.4.07.12	6	1.03	11	30	12	7	80	9	45	▲
DCX.6.30.150.4.07.12	6	1.53	11	30	12	7	80	9	45	▲
DCX.6.30.200.4.07.12	6	2.03	11	30	12	7	80	9	45	▲
DCX.6.30.250.4.07.12	6	2.53	11	30	12	7	80	9	45	▲
DCX.6.30.300.4.07.12	6	3.03	11	30	12	7	80	9	45	▲
DCX.6.35.050.4.08.12	6	0.53	13	35	12	8	80	11	45	▲
DCX.6.35.100.4.08.12	6	1.03	13	35	12	8	80	11	45	▲
DCX.6.35.150.4.08.12	6	1.53	13	35	12	8	80	11	45	▲
DCX.6.35.200.4.08.12	6	2.03	13	35	12	8	80	11	45	▲
DCX.6.35.250.4.08.12	6	2.53	13	35	12	8	80	11	45	▲
DCX.6.35.300.4.08.12	6	3.03	13	35	12	8	80	11	45	▲
DCX.8.40.050.4.09.12	8	0.53	15	40	12	9	80	11	45	▲
DCX.8.40.100.4.09.12	8	1.03	15	40	12	9	80	11	45	▲
DCX.8.40.150.4.09.12	8	1.53	15	40	12	9	80	11	45	▲
DCX.8.40.200.4.09.12	8	2.03	15	40	12	9	80	11	45	▲
DCX.8.40.250.4.09.12	8	2.53	15	40	12	9	80	11	45	▲
DCX.8.40.300.4.09.12	8	3.03	15	40	12	9	80	11	45	▲

Dimensions in mm

P	●
M	●
K	●
N	-
S	-
H	-

Groove Milling

DCN



Coating grades

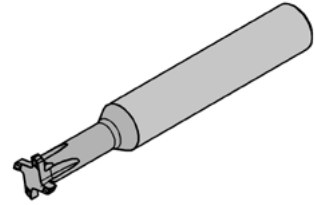
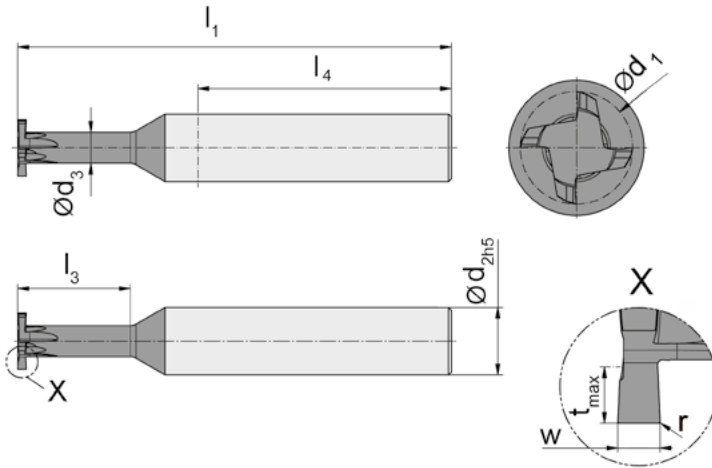
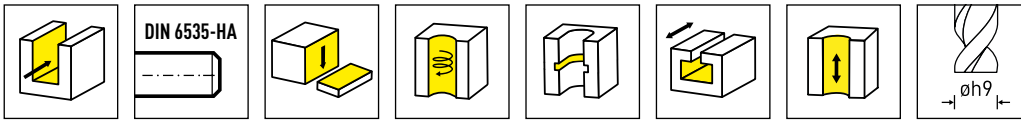
▲ In stock

Δ 2 weeks

Part number	Z	w	t _{max}	r	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	RC25	RC45
DCN.3.30.05.00.1.06	3	0.5	0.4	-	3	6	2	50	3	36	▲	
DCN.3.30.05.00.2.06	3	0.5	0.4	-	3	6	2	50	5	36	▲	
DCN.3.30.10.00.1.06	3	1	0.4	-	3	6	2	50	3	36	▲	
DCN.3.30.10.00.2.06	3	1	0.4	-	3	6	2	50	5	36	▲	
DCN.3.40.05.00.1.06	3	0.5	0.5	-	4	6	2.8	50	4	36	▲	
DCN.3.40.05.00.3.06	3	0.5	0.8	-	4	6	2.1	50	8	36	▲	
DCN.3.40.10.00.1.06	3	1	0.5	-	4	6	2.8	50	4	36	▲	
DCN.3.40.10.00.3.06	3	1	0.8	-	4	6	2.1	50	8	36	▲	
DCN.3.50.05.00.1.06	3	0.5	1	-	5	6	2.8	50	5	36		▲
DCN.3.50.05.00.3.06	3	0.5	1	-	5	6	2.8	54	10	36		▲
DCN.3.50.10.10.1.06	3	1	1	0.1	5	6	2.8	50	5	36		▲
DCN.3.50.10.10.3.06	3	1	1	0.1	5	6	2.8	54	10	36		▲
DCN.3.60.05.00.4.06	3	0.5	1.2	-	6	6	3.3	63	12	36		▲
DCN.3.60.10.00.1.06	3	1	1.2	-	6	6	3.3	50	4	36		▲
DCN.3.60.10.00.2.06	3	1	1.2	-	6	6	3.3	63	6	36		▲
DCN.3.60.10.00.4.06	3	1	1.2	-	6	6	3.3	63	12	36		▲
DCN.3.60.15.15.2.06	3	1.5	1.2	0.15	6	6	3.3	63	6	36		▲
DCN.3.60.15.15.4.06	3	1.5	1.2	0.15	6	6	3.3	63	12	36		▲
DCN.3.60.20.15.2.06	3	2	1.2	0.15	6	6	3.3	63	6	36		▲
DCN.3.60.20.15.4.06	3	2	1.2	0.15	6	6	3.3	63	12	36		▲
DCN.3.70.05.00.4.08	3	0.5	1.5	-	7	8	3.7	63	14	36		▲
DCN.3.70.10.00.4.08	3	1	1.5	-	7	8	3.7	63	14	36		▲
DCN.3.70.15.15.4.08	3	1.5	1.5	0.15	7	8	3.7	63	14	36		▲
DCN.3.70.20.15.4.08	3	2	1.5	0.15	7	8	3.7	63	14	36		▲
DCN.4.80.05.00.5.08	4	0.5	1.7	-	8	8	4.3	63	16	36		▲
DCN.4.80.10.00.3.08	4	1	1.7	-	8	8	4.3	63	8	36		▲
DCN.4.80.10.00.5.08	4	1	1.7	-	8	8	4.3	63	16	36		▲
DCN.4.80.15.15.3.08	4	1.5	1.7	0.15	8	8	4.3	63	8	36		▲
DCN.4.80.15.15.5.08	4	1.5	1.7	0.15	8	8	4.3	63	16	36		▲
DCN.4.80.20.15.3.08	4	2	1.7	0.15	8	8	4.3	63	8	36		▲
DCN.4.80.20.15.5.08	4	2	1.7	0.15	8	8	4.3	63	16	36		▲

Dimensions in mm

P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-



Coating grades

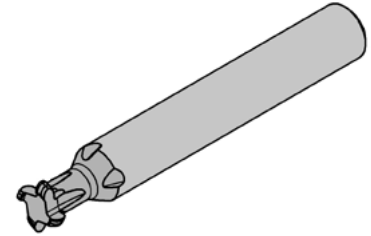
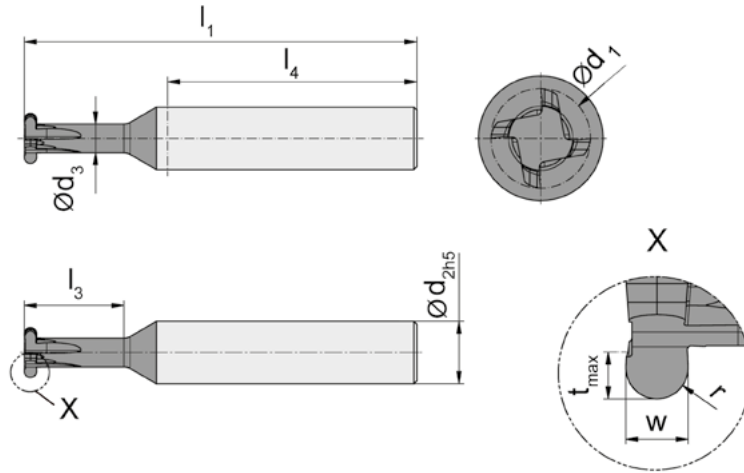
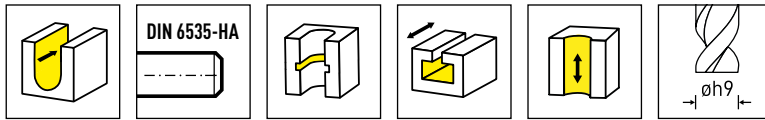
▲ In stock

Δ 2 weeks

Part number	Z	w	t _{max}	r	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	RC45
DCN.4.90.05.00.5.10	4	0.5	2	-	9	10	4.7	63	18	40	▲
DCN.4.90.10.00.5.10	4	1	2	-	9	10	4.7	63	18	40	▲
DCN.4.90.15.15.5.10	4	1.5	2	0.15	9	10	4.7	63	18	40	▲
DCN.4.90.20.15.5.10	4	2	2	0.15	9	10	4.7	63	18	40	▲
DCN.4.100.05.00.6.10	4	0.5	2.2	-	10	10	5.3	77	20	40	▲
DCN.4.100.10.00.6.10	4	1	2.2	-	10	10	5.3	77	20	40	▲
DCN.4.100.15.00.6.10	4	1.5	2.2	-	10	10	5.3	77	20	40	▲
DCN.4.100.20.15.6.10	4	2	2.2	0.15	10	10	5.3	77	20	40	▲
DCN.4.100.25.15.6.10	4	2.5	2.2	0.15	10	10	5.3	77	20	40	▲
DCN.4.100.30.15.6.10	4	3	2.2	0.15	10	10	5.3	77	20	40	▲
DCN.4.110.05.00.6.12	4	0.5	2.5	-	11	12	5.7	77	22	45	▲
DCN.4.110.10.00.6.12	4	1	2.5	-	11	12	5.7	77	22	45	▲
DCN.4.110.15.00.6.12	4	1.5	2.5	-	11	12	5.7	77	22	45	▲
DCN.4.110.20.15.6.12	4	2	2.5	0.15	11	12	5.7	77	22	45	▲
DCN.4.110.25.15.6.12	4	2.5	2.5	0.15	11	12	5.7	77	22	45	▲
DCN.4.110.30.15.6.12	4	3	2.5	0.15	11	12	5.7	77	22	45	▲
DCN.4.120.05.00.6.12	4	0.5	3	-	12	12	5.7	77	25	45	▲
DCN.4.120.10.00.6.12	4	1	3	-	12	12	5.7	77	25	45	▲
DCN.4.120.15.00.6.12	4	1.5	3	-	12	12	5.7	77	25	45	▲
DCN.4.120.20.15.6.12	4	2	3	0.15	12	12	5.7	77	25	45	▲
DCN.4.120.25.15.6.12	4	2.5	3	0.15	12	12	5.7	77	25	45	▲
DCN.4.120.30.15.6.12	4	3	3	0.15	12	12	5.7	77	25	45	▲

Dimensions in mm

P	●
M	●
K	●
N	-
S	-
H	-



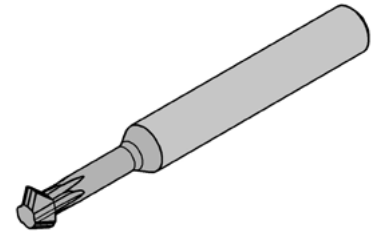
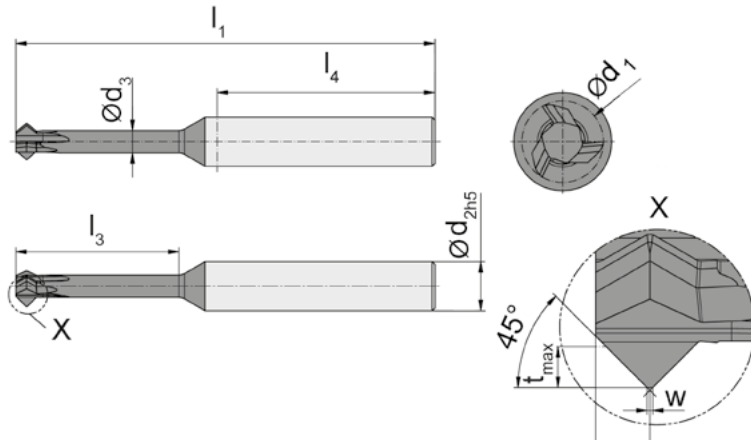
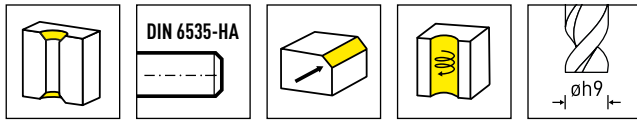
Coating grades

▲ In stock

△ 2 weeks

Part number	Z	w	t _{max}	r	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	RC25	RC45
DCR.3.40.10.05.1.06	3	1	0.5	0.5	4	6	2.75	50	4	36	▲	
DCR.3.50.10.05.2.06	3	1	0.75	0.5	5	6	3.2	50	6	36		▲
DCR.3.60.10.05.1.06	3	1	1	0.5	6	6	3.7	50	4	36		▲
DCR.3.60.10.05.2.06	3	1	1	0.5	6	6	3.7	63	6	36		▲
DCR.3.60.15.75.2.06	3	1.5	1	0.75	6	6	3.7	63	6	36		▲
DCR.3.70.10.05.2.08	3	1	1.25	0.5	7	8	4.2	63	10	36		▲
DCR.4.80.10.05.5.08	4	1	1.5	0.5	8	8	4.6	63	16	36		▲
DCR.4.80.15.75.3.08	4	1.5	1.5	0.75	8	8	4.6	63	8	36		▲
DCR.4.80.15.75.5.08	4	1.5	1.5	0.75	8	8	4.6	63	16	36		▲
DCR.4.80.20.10.3.08	4	2	1.5	1	8	8	4.6	63	8	36		▲
DCR.4.80.20.10.5.08	4	2	1.5	1	8	8	4.6	63	16	36		▲
DCR.4.100.10.05.6.10	4	1	2	0.5	10	10	5.5	77	20	40		▲
DCR.4.100.15.75.6.10	4	1.5	2	0.75	10	10	5.5	77	20	40		▲
DCR.4.100.20.10.6.10	4	2	2	1	10	10	5.5	77	20	40		▲
DCR.4.100.25.12.6.10	4	2.5	2	1.25	10	10	5.5	77	20	40		▲
DCR.4.100.30.15.6.10	4	3	2	1.5	10	10	5.5	77	20	40		▲
											P	●
											M	●
											K	●
											N	-
											S	-
											H	-

Dimensions in mm



Coating grades

▲ In stock

△ 2 weeks

Part number	Z	w	Chamfer	t _{max}	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	RC25	RC45
DCF.3.20.4545.1.04	3	0.2	45°	0.3	2	4	1.25	39	4	28	▲	
DCF.3.20.4545.3.04	3	0.2	45°	0.3	2	4	1.25	45	8	28	▲	
DCF.3.30.4545.2.04	3	0.2	45°	0.3	3	4	2.1	39	6	28	▲	
DCF.3.30.4545.4.04	3	0.2	45°	0.3	3	4	2.1	45	10	28	▲	
DCF.3.40.4545.3.06	3	0.2	45°	0.75	4	6	2.2	50	8	36	▲	
DCF.3.40.4545.6.06	3	0.2	45°	0.75	4	6	2.2	54	12	36	▲	
DCF.3.50.4545.3.06	3	0.2	45°	1	5	6	2.7	54	10	36		▲
DCF.3.50.4545.5.06	3	0.2	45°	1	5	6	2.7	63	15	36		▲
DCF.3.60.4545.5.06	3	0.2	45°	1.25	6	6	3.15	63	16	36		▲
DCF.3.60.4545.6.06	3	0.2	45°	1.25	6	6	3.15	63	20	36		▲
DCF.3.60.4545.8.06	3	0.2	45°	1.25	6	6	3.15	65	25	36		▲
DCF.3.75.4545.6.08	3	0.2	45°	1.5	7.5	8	4.1	63	20	36		▲
DCF.3.75.4545.8.08	3	0.2	45°	1.5	7.5	8	4.1	63	30	36		▲
DCF.4.75.4545.8.08	4	0.2	45°	1.5	7.5	8	4.1	77	30	36		▲
DCF.4.80.4545.8.08	4	0.2	45°	1.5	8	8	4.7	80	40	36		▲
DCF.4.90.4545.8.10	4	0.2	45°	1.75	9	10	5.2	90	40	40		▲
DCF.4.100.4545.8.10	4	0.2	45°	2	10	10	5.7	100	50	40		▲

Dimensions in mm

P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-

Material			Material group	Hardness Brinell (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	Cutting speed Vc (SFM) - Suggested range	
							Cutting speed Vc (m/min) - Suggested range	
							Grade RC25 RC45	fz
			Min-Max	Min-Max				
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015, CK15	590-820 180-250	.0003-.001 0.01-0.03
		~ 0.4% C annealed	P1.2	190	610	A515, 19Mn6	525-720 160-220	.0003-.001 0.01-0.03
		~ 0.4% C quenched	P1.3	210	640	1335, 36Mn5	460-655 140-200	.0003-.001 0.01-0.03
		~ 0.6% C annealed	P1.4	190	610	1055, C55	395-590 120-180	.0003-.001 0.01-0.03
		~ 0.6% C quenched	P1.5	300	1000	1060, CK60	295-490 90-150	.0003-.001 0.01-0.03
		Free cutting steel	P1.6	220	750	1213, 9SMn28	590-820 180-250	.0003-.001 0.01-0.03
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100, 100Cr6	460-655 140-200	.0003-.001 0.01-0.03
		quenched	P2.2	280	960	3415, 14NiCr10	295-490 90-150	.0003-.001 0.01-0.03
		quenched	P2.3	350	1250	4135, 34CrMo4	260-460 80-140	.0003-.001 0.01-0.03
		quenched	P2.4	430	1450	5155, 55Cr3	260-460 80-140	.0003-.001 0.01-0.03
	High alloyed steel (>5%)	annealed	P3.1	200	680	442, X10CrAl18	395-590 120-180	.0003-.001 0.01-0.03
		hardened	P3.2	350	1200	D3, X210Cr2	260-460 80-140	.0003-.001 0.01-0.03
	Cast steel	unalloyed	P4.1	180	590	A27, GE200	590-820 180-250	.0003-.001 0.01-0.03
		alloyed	P4.2	220	750	10295, GX40CrSi28	525-720 160-220	.0003-.001 0.01-0.03
	Sintered steel	soft	P5.1	220	570	P3082, Sint-D39	395-820 120-250	.0003-.001 0.01-0.03
M	Stainless steel	martensitic ferritic	M1.1	200	680	410, X16Cr13	295-490 90-150	.0003-.001 0.01-0.03
		austenitic	M1.2	300	1000	316Ti, X6CrNiMo- Ti17-12-2	260-460 80-140	.0003-.001 0.01-0.03
		austenitic ferritic	M1.3	230	780	316LN, X2CrNiMo- N17-13-3	195-395 60-120	.0003-.001 0.01-0.03

Material			Material group	Hardness Brinell (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	Cutting speed Vc (SFM) - Suggested range	
							Grade RC25 RC45	fz
							Min-Max	Min-Max
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B, GG-25	625-755 190-230	.0003-.001 0.01-0.03
		high tensile strength	K1.2	250	350	A48 Class 60, GG-40	625-755 190-230	.0003-.001 0.01-0.03
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40- 18, GGG-40	525-720 160-220	.0003-.001 0.01-0.03
		pearlitic	K2.1	260	700	A536 80-60- 03, GGG-60	525-720 160-220	.0003-.001 0.01-0.03
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018, GTW-45	525-720 160-220	.0003-.001 0.01-0.03
		pearlitic	K3.2	260	700	A47 Grade 55004, GTS-55-04	525-720 160-220	.0003-.001 0.01-0.03
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800			
		quenched	K4.2	350	1050			
		quenched	K4.3	450	1400			
N	Al-alloys	not heat treatable	N1.1	30		5005, AlMg1	Up to 3280 Up to 1000	.0007-.001 0.02-0.04
		heat treatable	N1.2	100	340	6082, AlMgSi1	655-1970 200-600	.0007-.001 0.02-0.04
	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441, AlMgSi6	655-1310 200-400	.0007-.001 0.02-0.04
		6-10% Si	N2.2	100	320	AA 356, AlSi7Mg		
		10-15 % Si	N2.3	130	450	AA 413, AlSi12		
	Copper-alloys	pure copper	N3.1	100	340	C11000, Cu	655-1310 200-400	.0007-.001 0.02-0.04
		brass	N3.2	90	310	C38500, CuZn40Pb	655-1310 200-400	.0007-.001 0.02-0.04
		lead-free brass	N3.3	110	430	C28000, CuZn40	655-1310 200-400	.0007-.001 0.02-0.04
		high strength	N3.4	300	1000	C67800, CuZn25Al5- Mn4Fe3	330-525 100-160	.0007-.001 0.02-0.04

Material			Material group	Hardness Brinell (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	Cutting speed Vc (SFM) - Suggested range	
							Cutting speed Vc (m/min) - Suggested range	
							Grade RC25 RC45	fz
							Min-Max	Min-Max
S	Heat resistant alloy	annealed	S1.1	200	670		195-395 60-120	.0007-.001 0.02-0.04
		hardened	S1.2	275	930		195-395 60-120	.0007-.001 0.02-0.04
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	100-295 30-90	.0007-.001 0.02-0.04
		hardened	S2.2	350	1200	Inconel 713	100-295 30-90	.0007-.001 0.02-0.04
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	260-395 80-120	.0007-.001 0.02-0.04
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	260-395 80-120	.0007-.001 0.02-0.04
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	260-395 80-120	.0007-.001 0.02-0.04

Format



MINI MILLING SYSTEMS

INDEXABLE INTERNAL AND EXTERNAL GROOVING, CHAMFERING, UNDERCUT, FACING

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6

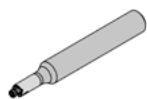


SYSTEM 304

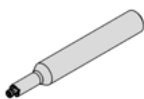
INDEXABLE GROOVING, CHAMFERING, THREAD UNDERCUT

HOLDERS

Metric Shanks



Page 48
M304
Ø8mm Shank



Page 49
M304.ST (Steel)
Ø8mm Shank

INSERTS

Metric Grooving Widths



Page 50
304
0.25-2mm Width



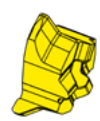
Page 51
304
0.87-1.41mm Width



Page 52
304
0.8-1.6mm Width



Page 53
304
45° Chamfer



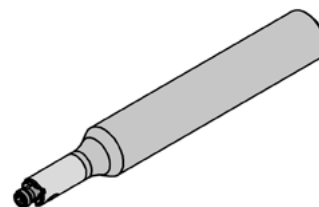
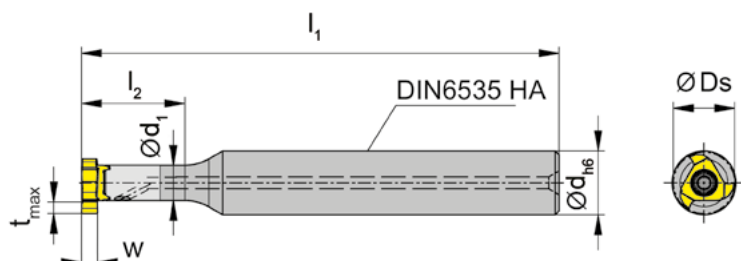
Page 54
304
45°, 0.6mm Width

Full Radius

Chamfering

Thread Undercut

Cutting Data and Technical Instructions - Chapter M / Page 618

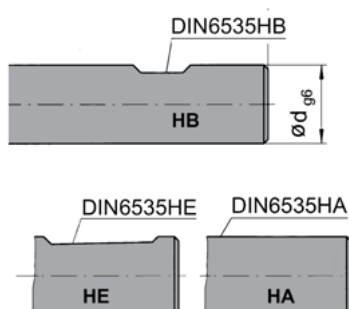


Part number	d	l ₁	l ₂	d ₁	Form	HWS
M304.0008.01A	8	60	13	4.4	HA	304044R
M304.0008.02A	8	64	17	4.4	HA	304044R
M304.0008.03A	8	68	21	4.4	HA	304044R
M304.0008.01B	8	60	13	4.4	HB	304044R
M304.0008.02B	8	64	17	4.4	HB	304044R
M304.0008.03B	8	68	21	4.4	HB	304044R
M304.0008.01E	8	60	13	4.4	HE	304044R
M304.0008.02E	8	64	17	4.4	HE	304044R
M304.0008.03E	8	68	21	4.4	HE	304044R

w, Ds, tmax see inserts

Dimensions in mm

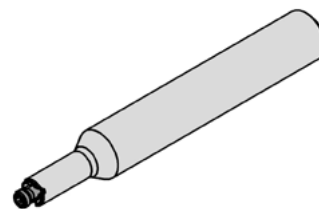
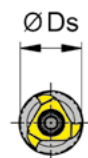
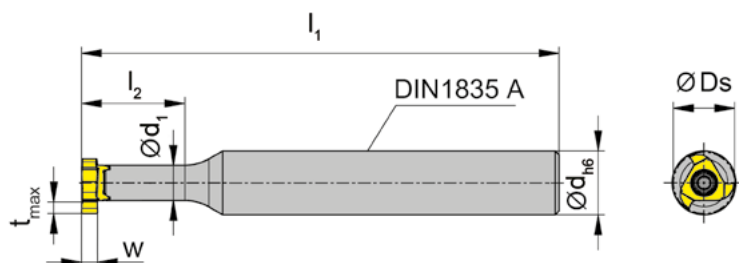
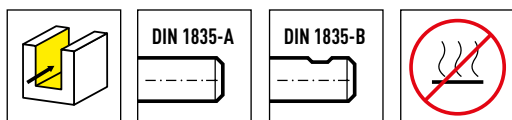
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M304...	1.8.4T6EP	T6PL	0.9 Nm

B



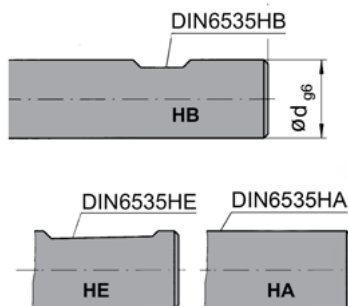
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M304.ST08.01A	8	60	13	4.4	A	304044R
M304.ST08.01B	8	60	13	4.4	B	304044R

Holders with ".ST" are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

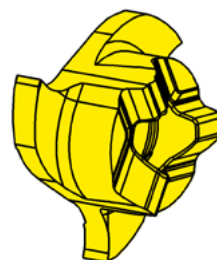
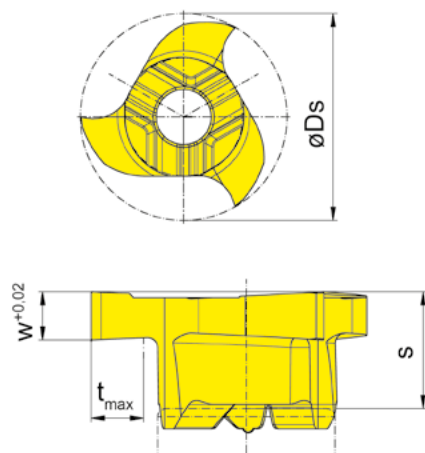
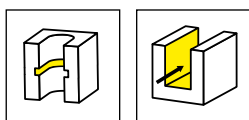
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M304...	1.8.4T6EP	T6PL	0.9 Nm



Coating grades

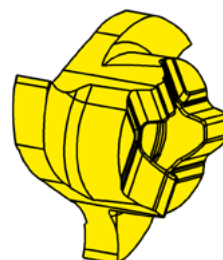
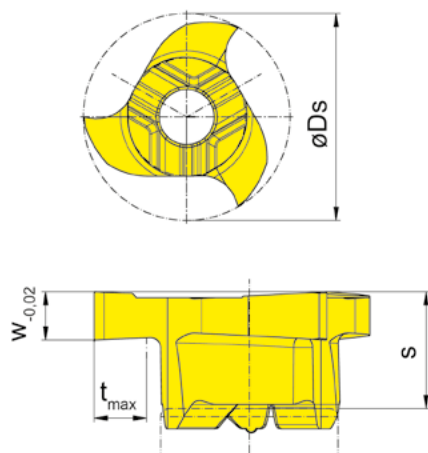
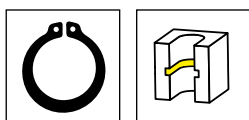
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	t _{max}	Z	HIS	EG35	EG55	IG35
304.0025.20	7.7	0.25	2.6	1.3	3	304044R	▲		
304.0030.20	7.7	0.3	2.6	1.3	3	304044R			
304.0040.20	7.7	0.4	2.6	1.3	3	304044R	▲		
304.0050.20	7.7	0.5	2.6	1.3	3	304044R		▲	▲
304.0060.20	7.7	0.6	2.6	1.3	3	304044R			
304.0070.20	7.7	0.7	2.6	1.3	3	304044R			▲
304.0100.20	7.7	1	2.6	1.3	3	304044R		▲	▲
304.0150.20	7.7	1.5	2.9	1.3	3	304044R		▲	▲
304.0200.20	7.7	2	2.9	1.3	3	304044R		Δ	▲
Dimensions in mm							P	•	•
							M	•	•
							K	•	•
							N	-	-
							S	-	-
							H	-	-

B



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

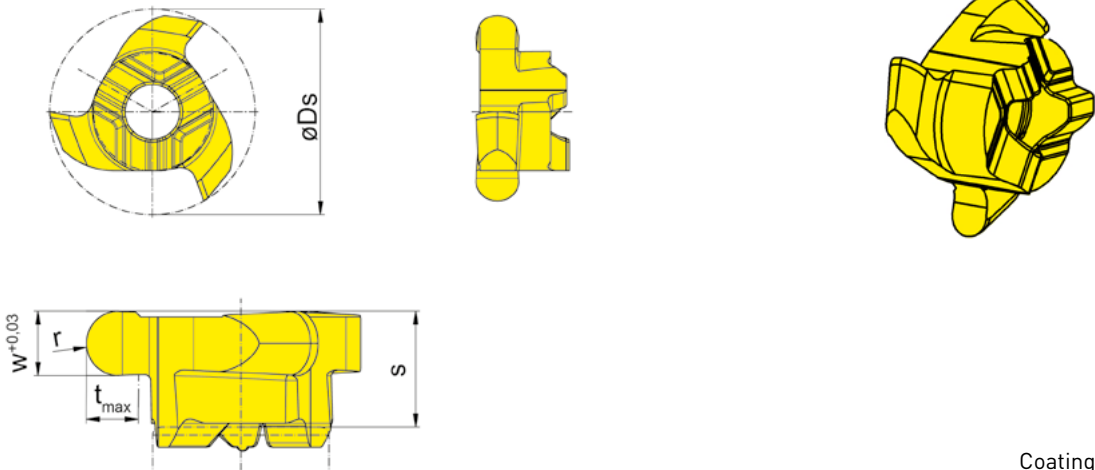
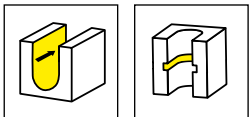
Part number	D_s	Nw	w	s	t_{max}	Z	HIS	EG55	IG35
304.0080.20	7.7	0.8	0.87	2.6	1.3	3	304044R	▲	▲
304.0090.20	7.7	0.9	0.97	2.6	1.3	3	304044R	▲	▲
304.0110.20	7.7	1.1	1.21	2.9	1.3	3	304044R	Δ	Δ
304.0130.20	7.7	1.3	1.41	2.9	1.3	3	304044R	Δ	Δ

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm

P	●	●
M	●	●
K	●	●
N	-	-
S	-	●
H	-	-



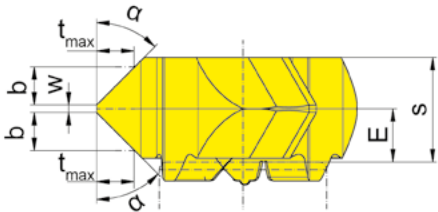
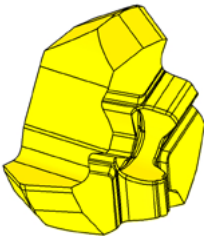
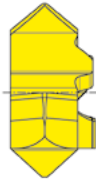
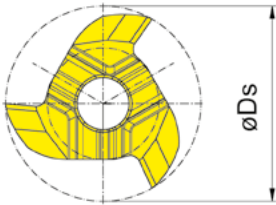
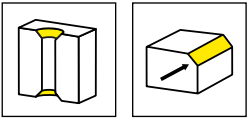
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		EG55	IG35
304.0004.08	7.7	0.8	2.6	0.4	1.3	3	304044R	▲	▲	
304.0006.12	7.7	1.2	2.9	0.6	1.3	3	304044R	Δ	Δ	
304.0008.16	7.7	1.6	2.9	0.8	1.3	3	304044R	Δ	Δ	
Dimensions in mm								P	●	●
								M	●	●
								K	●	●
								N	-	-
								S	-	●
								H	-	-

B

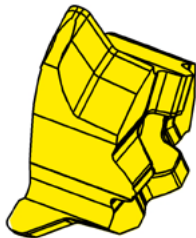
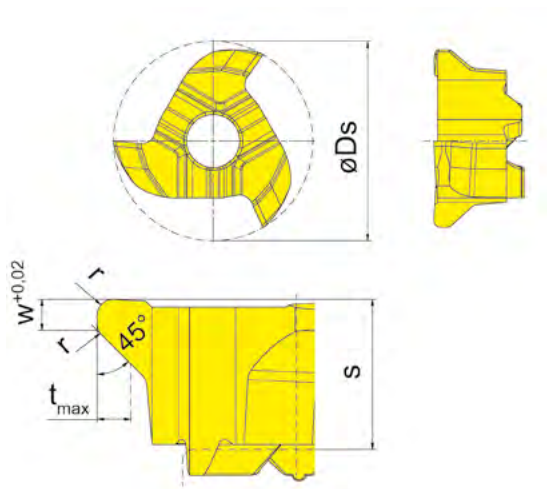
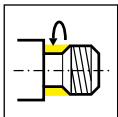


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	α	b	t _{max}	Z	HIS		
										EG55	IG35
304.1515.20	7.7	1.4	2.75	0.2	15°	1	0.3	3	304044R	Δ	Δ
304.3030.20	7.7	1.4	2.75	0.2	30°	1	0.6	3	304044R	Δ	Δ
304.4545.20	7.7	1.4	2.75	0.2	45°	1	1	3	304044R	▲	▲
Dimensions in mm										P	● ●
										M	● ●
										K	● ●
										N	- -
										S	- ●
										H	- -



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	EGS5	
304.0508.29	7.7	0.6	2.9	0.3	0.65	3	304044R	▲	
Thread relief DIN 76									P ●
Dimensions in mm									M ●
									K ●
									N -
									S -
									H -

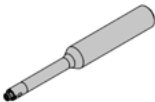
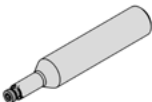
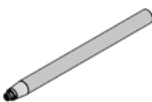
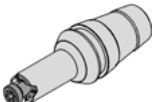
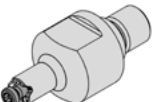
Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

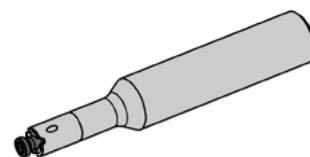
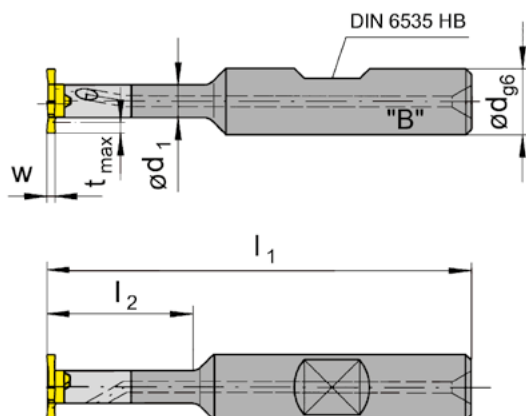
Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6



SYSTEM 306

INDEXABLE GROOVING, CHAMFERING, FACING, THREAD UNDERCUT

Inch Shanks		Inch Grooving Widths (3 Flute)		
				
Page 58 MU306 Ø.500"-.625" Shank	Page 59 U306 .046"-.094" Width	Page 60 U306 .031"-.047" Radius		
Metric Shanks			Specialty	
				
Page 61 M306 Ø12mm Shank	Page 62 M306.ST (Steel) Ø10-12mm Shank	Page 63 M306 Ø7.5-10mm Shank	Page 64 M306.ER ER11 Shank	Page 65 M306.M M8 Screw-in
Metric Circlip Grooving (3 Flute)		Metric Grooving Widths (3 Flute)		
				
Page 66-68 306 DIN Circlip	Page 69 306 Circlip with Chamfer	Page 70 306 1.5-3mm Width	Page 71 306 1-3mm Width	Page 72 306 1.5-2.5mm Width
Metric Full Radius (3 Flute)	Chamfering (3 Flute)	Metric Circlip (6 Flute)	Metric Grooving (6 Flute)	
				
Page 73 306 0.5-1.5mm Radius	Page 74 306 45° Chamfer	Page 75 606 DIN Circlip	Page 76 606 0.25-2.5mm Width	
Chamfering (6 Flute)		Facing (6 Flute)		Thread Undercut (6 Flute)
				
Page 77 606 15-45° Chamfer	Page 78 606 60° Chamfer	Page 79 606 Facing	Page 80 606 Facing	Page 81 606 45°, 1.2mm Width



Picture = right hand cutting version

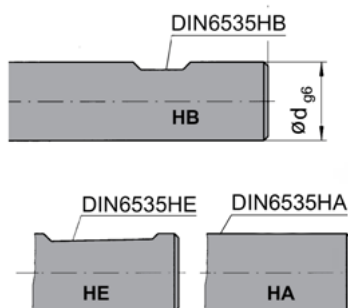
Part number	d	l_2	d_1	Form	HWS
MU306.0500.01B	.500	.827	.236	B	306060R • 306060L
MU306.0500.02B	.500	1.181	.236	B	306060R • 306060L
MU306.0500.03B	.500	1.654	.236	B	306060R • 306060L
MU306.0625.01B	.625	.984	.287	B	306060R • 306060L

w, Ds, tmax see inserts

Dimensions in inch



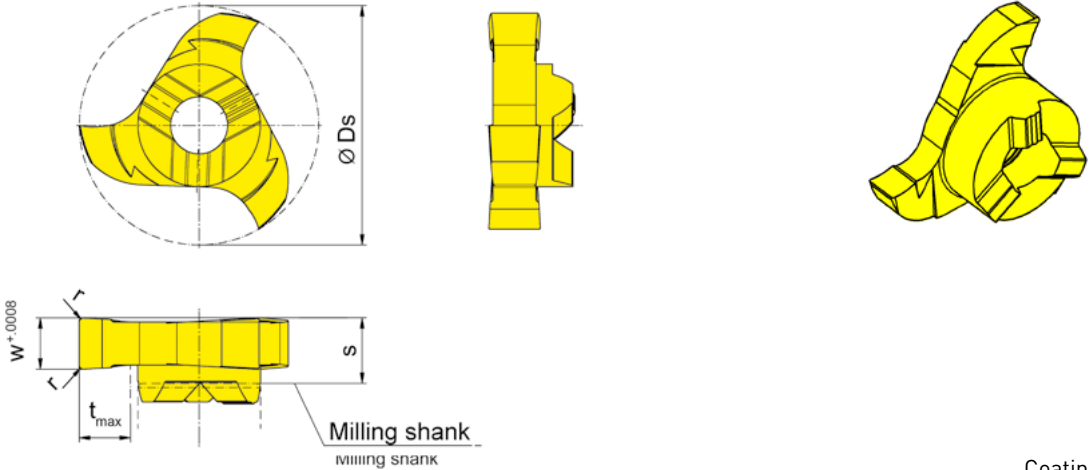
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU306...	2.6.5T8EP	T8PL	1.2 Nm

B



Picture = right hand cutting version

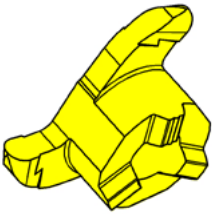
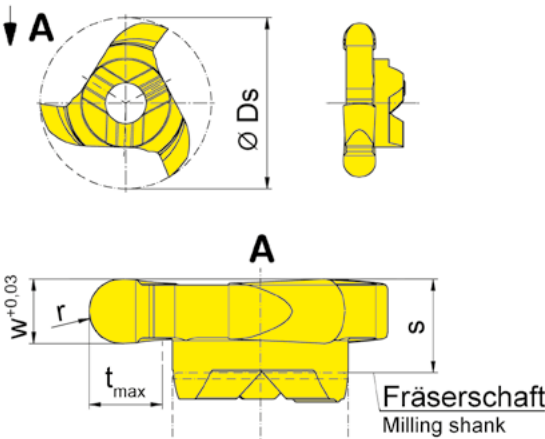
Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		MG12	IG65	TF45	TN35
U306.0046.00	.461	.046	.126	-	.098	3	306060R	▲	▲	▲	▲	
U306.0056.00	.461	.056	.126	-	.098	3	306060R		▲		▲	
U306.0062.00	.461	.062	.126	-	.098	3	306060R				▲	
U306.0078.00	.461	.078	.126	-	.098	3	306060R		▲		▲	
U306.0094.00	.461	.094	.126	-	.098	3	306060R		▲	Δ	▲	
U306.0046.08	.461	.046	.126	.008	.098	3	306060R		▲		▲	
U306.0062.08	.461	.062	.126	.008	.098	3	306060R		▲	▲	▲	
U306.0078.08	.461	.078	.126	.008	.098	3	306060R		▲	▲	▲	
U306.0094.08	.461	.094	.126	.008	.098	3	306060R	▲	▲	▲	▲	

Dimensions in inch



P	-	●	●	●
M	-	●	●	-
K	-	●	●	●
N	●	-	-	-
S	-	●	-	-
H	-	-	-	-



Picture = right hand cutting version

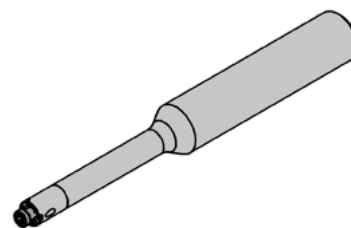
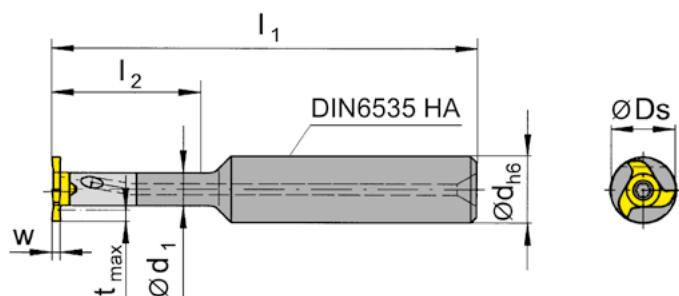
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TF45	TN35
U306.0031.62	.461	.062	.126	.031	.098	3	306060R		▲	▲	▲
U306.0047.94	.461	.094	.126	.047	.098	3	306060R		▲	▲	▲
Dimensions in inch								P	●	●	●
								M	●	●	-
								K	●	●	●
								N	-	-	-
								S	●	-	-
								H	-	-	-



B

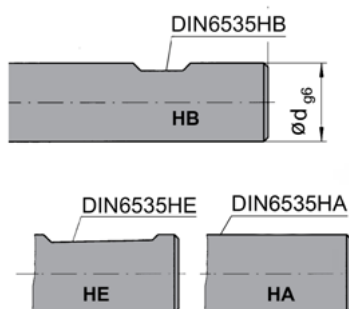


Part number	d	l ₁	l ₂	d ₁	Form	HWS
M306.0012.01A	12	80	21	6	HA	306060R • 306060L
M306.0012.02A	12	90	30	6	HA	306060R • 306060L
M306.0012.03A	12	100	42	6	HA	306060R • 306060L
M306.0012.01B	12	80	21	6	HB	306060R • 306060L
M306.0012.02B	12	90	30	6	HB	306060R • 306060L
M306.0012.03B	12	100	42	6	HB	306060R • 306060L
M306.0012.01E	12	80	21	6	HE	306060R • 306060L
M306.0012.02E	12	90	30	6	HE	306060R • 306060L
M306.0012.03E	12	100	42	6	HE	306060R • 306060L

w, Ds, tmax see inserts

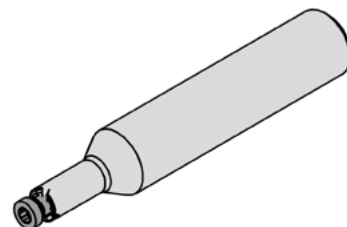
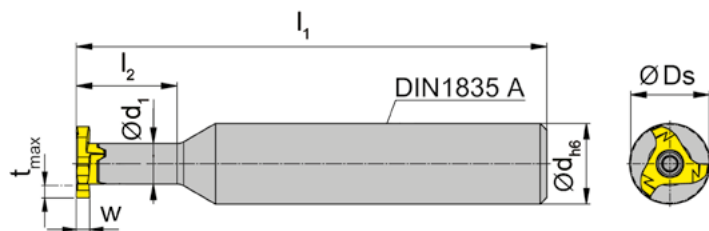
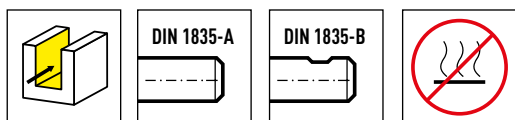
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M306...	2.6.5T8EP	T8PL	1.2 Nm



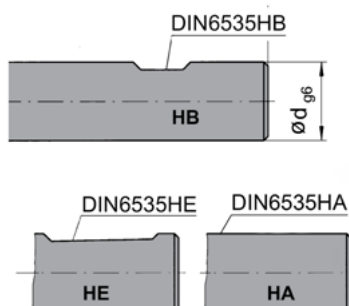
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M306.ST10.01A	10	60	15	6	A	306060R • 306060L
M306.ST12.01A	12	70	15	6	A	306060R • 306060L
M306.ST10.01B	10	60	15	6	B	306060R • 306060L
M306.ST12.01B	12	70	15	6	B	306060R • 306060L

Holders with ".ST " are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

Dimensions in mm

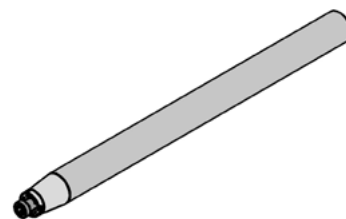
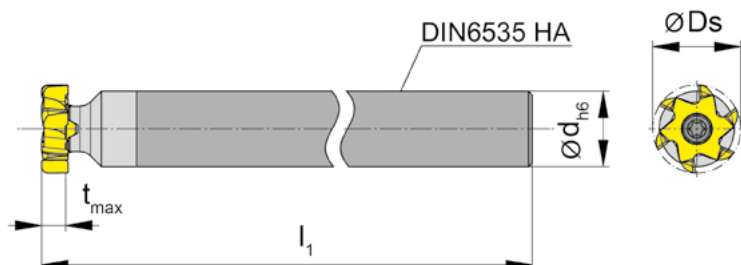
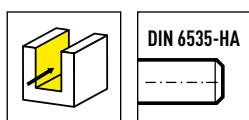
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M306...	2.6.5T8EP	T8PL	1.2 Nm

B

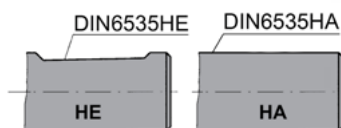
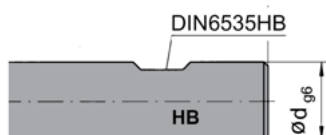


Part number	d	l ₁	Form	HWS
M306.0707.03A	7.5	100	HA	306060R • 306060L
M306.1010.03A	10	120	HA	306060R • 306060L

t_{max} and Ds see inserts

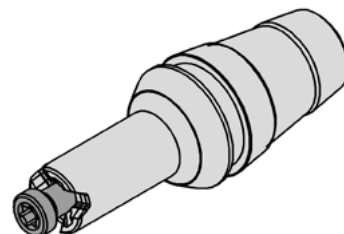
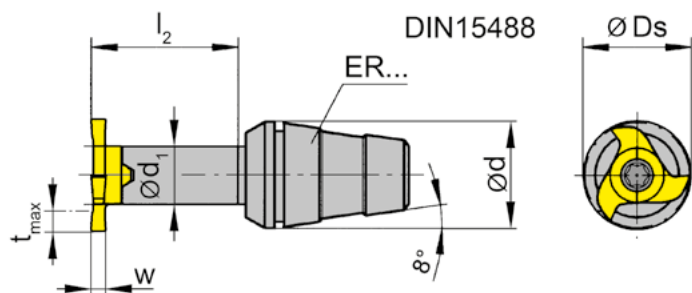
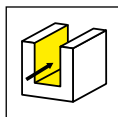
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M306...	2.6.5T8EP	T8PL	1.2 Nm



Part number	d	l ₂	d ₁	Clamping nut	HWS
M306.ER11.02	11	16	6	ER11.6499	306060R • 306060L

w, Ds, t_{max} see inserts

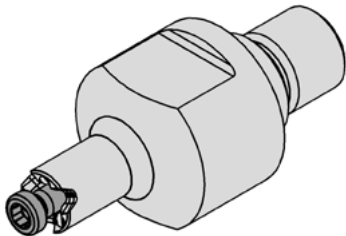
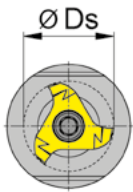
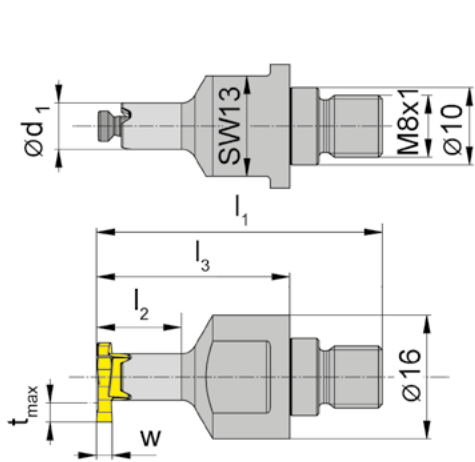
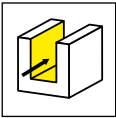
Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M306.ER11.02	2.6.5T8EP	T8PL	1.2 Nm

B



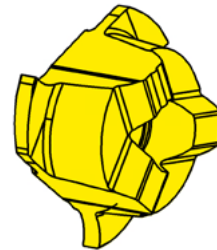
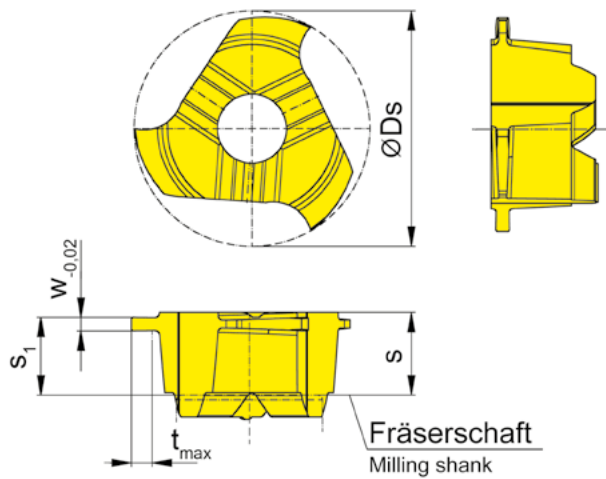
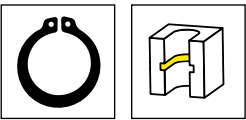
Part number	l_1	l_2	l_3	d_1	SW	HWS	HMS
M306.M081.01	37	11	25	6	13	306060R • 306060L	8201

w, Ds, tmax see inserts

Dimensions in mm

Spare Parts

Screw-in Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M306.M081.01	2.6.5T8EP	T8PL	1.2 Nm



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	s ₁	t _{max}	Z	HIS	IG65	TA45
306.0050.10.00	9.7	0.5	0.57	3.4	3.2	0.85	3	306060R	▲	▲
306.0070.10.00	9.7	0.7	0.77	3.4	3.2	1.15	3	306060R	▲	▲

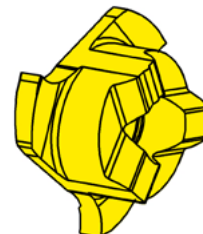
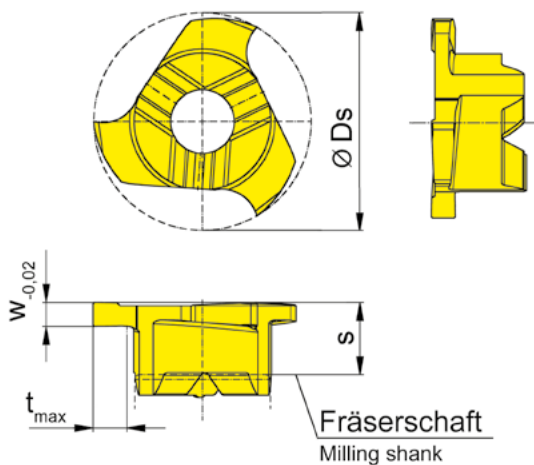
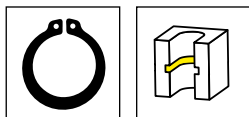
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm

P	●	●
M	●	●
K	●	●
N	-	-
S	●	-
H	-	-

B



Coating grades

Picture = right hand cutting version

▲ In stock

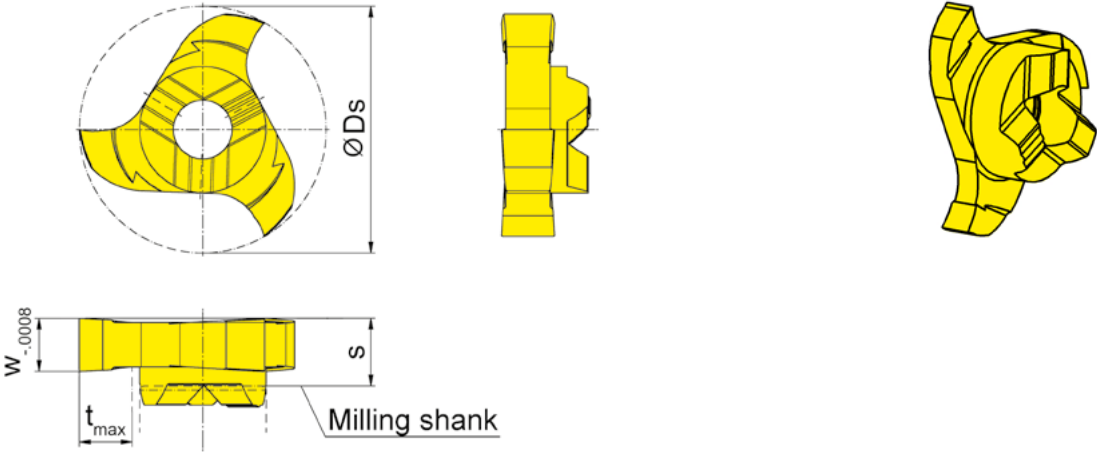
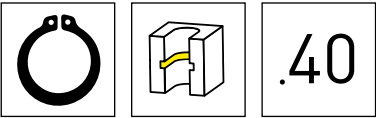
Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS		AS45	IG65	TA45	TF45	TN35
306.0080.10.00	9.7	0.8	0.87	3.2	1.5	3	306060R			▲	▲		
306.0090.10.00	9.7	0.9	0.97	3.2	1.5	3	306060R			▲	▲		
306.0100.10.00	9.7	1	1.07	3.2	1.5	3	306060R			▲	▲		
306.0110.10.00	9.7	1.1	1.21	3.2	1.5	3	306060R			▲	▲		
306.0130.10.00	9.7	1.3	1.41	3.2	1.5	3	306060R		▲	▲	▲		
306.0160.10.00	9.7	1.6	1.71	3.2	1.5	3	306060R		▲		▲		
306.0110.00	11.7	1.1	1.21	3.2	2.5	3	306060R					▲	▲
306.0130.00	11.7	1.3	1.41	3.2	2.5	3	306060R						▲
306.0160.00	11.7	1.6	1.71	3.2	2.5	3	306060R						▲
									P	●	●	●	●
									M	●	●	●	-
									K	●	●	●	●
									N	-	-	-	-
									S	o	●	-	-
									H	-	-	-	-

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm



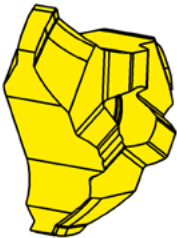
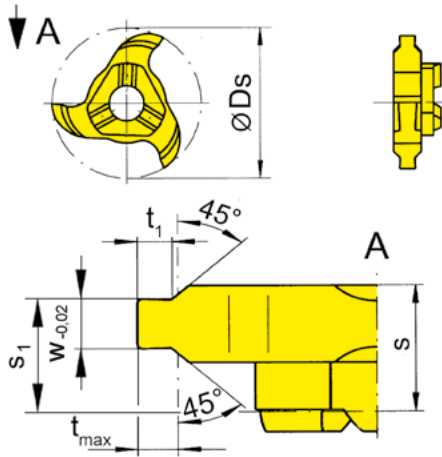
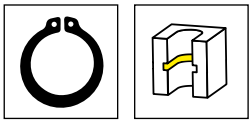
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS	T125	
306.0110.40	11.7	1.1	1.21	3.2	2.5	3	306060R	▲	
306.0130.40	11.7	1.3	1.41	3.2	2.5	3	306060R	Δ	
306.0160.40	11.7	1.6	1.71	3.2	2.5	3	306060R	▲	
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly								P	o
								M	o
								K	-
								N	•
								S	-
Widths for circlip grooves DIN 471/472								H	-
Dimensions in mm									

B



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

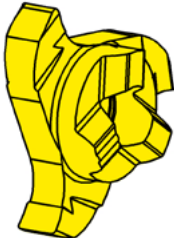
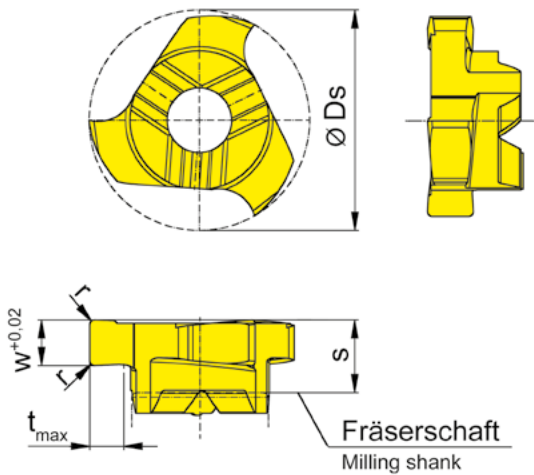
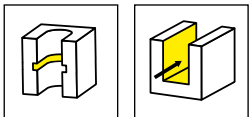
Part number	Ds	Nw	w	t ₁	s	s ₁	t _{max}	Z	HIS	AS45
306.1105.30	11.7	1.1	1.21	0.47	3.4	2.7	0.5	3	306060R	▲
306.1307.30	11.7	1.3	1.41	0.65	3.4	2.6	0.7	3	306060R	▲

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472 with chamfer

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



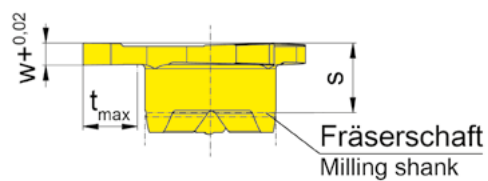
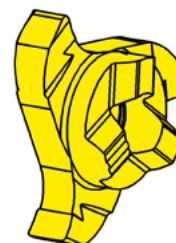
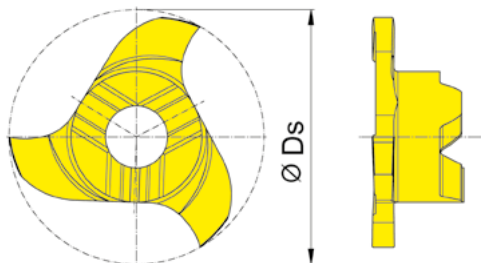
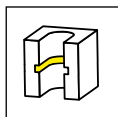
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	IG65	TA45	EG55
306.0150.10.00	9.7	1.5	3.2	-	1.5	3	306060R		▲		▲	▲
306.0200.10.00	9.7	2	3.2	0.2	1.5	3	306060R		▲	▲	▲	▲
306.0250.10.00	9.7	2.5	3.2	0.2	1.5	3	306060R					▲
306.0300.10.00	9.7	3	3.2	0.2	1.5	3	306060R					▲
Dimensions in mm									P	•	•	•
									M	•	•	•
									K	•	•	•
									N	-	-	-
									S	o	•	-
									H	-	-	-

B



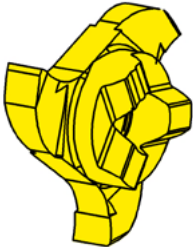
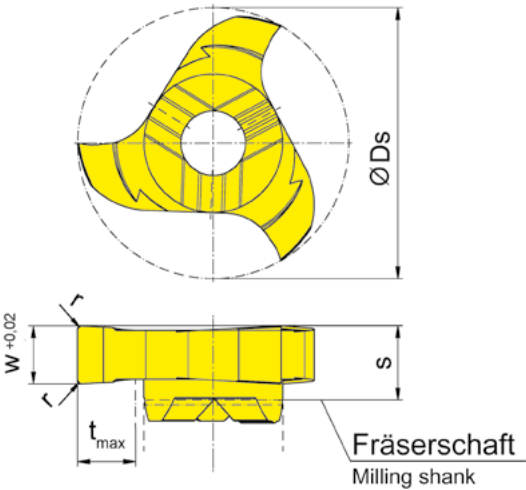
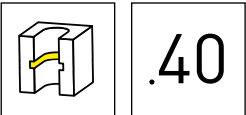
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	IG65	TF45	TN35
306.0100.1.00	11.7	1	3.2	-	2.5	3	306060R			▲		▲
306.0150.00	11.7	1.5	3.2	-	2.5	3	306060R	▲			▲	▲
306.0150.02	11.7	1.5	3.2	0.2	2.5	3	306060R	▲	▲			
306.0200.00	11.7	2	3.2	0.2	2.5	3	306060R	▲			▲	▲
306.0250.00	11.7	2.5	3.2	0.2	2.5	3	306060R	▲	▲		▲	▲
306.0300.00	11.7	3	4.2	0.2	2.5	3	306060R	▲	▲			▲
Dimensions in mm								P	●	●	●	●
								M	●	●	●	-
								K	●	●	●	●
								N	-	-	-	-
								S	o	●	-	-
								H	-	-	-	-



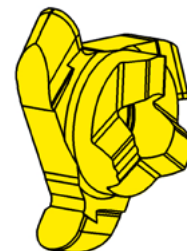
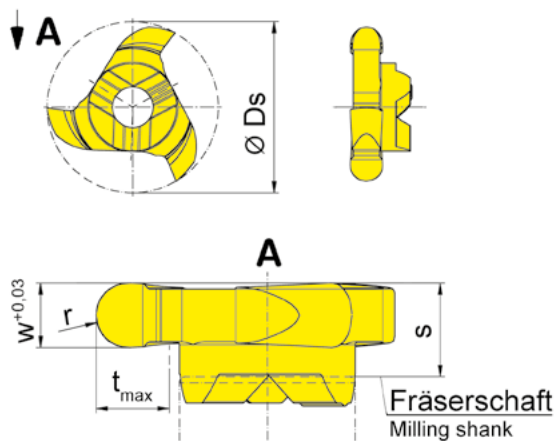
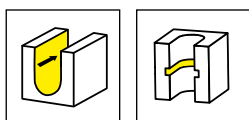
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TI25
306.0150.40	11.7	1.5	3.2	-	2.5	3	306060R		▲	▲
306.0200.40	11.7	2	3.2	0.2	2.5	3	306060R		▲	▲
306.0250.40	11.7	2.5	3.2	0.2	2.5	3	306060R		▲	▲
Dimensions in mm									P	● ●
									M	● ●
									K	● -
									N	- ●
									S	● ○
									H	- -

B



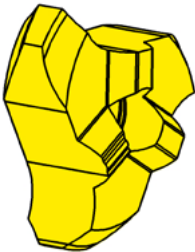
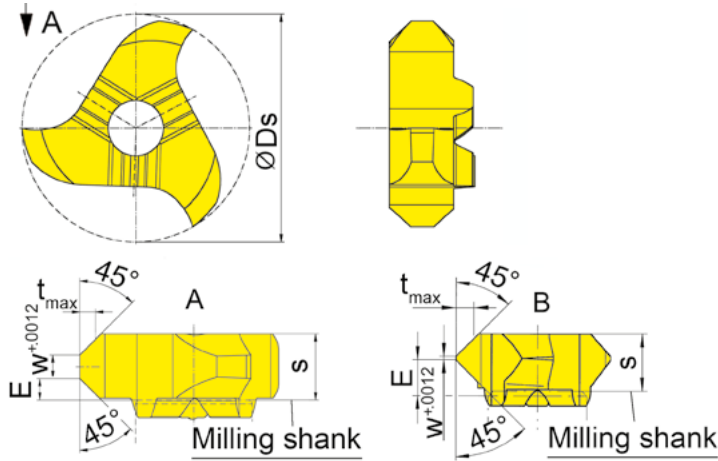
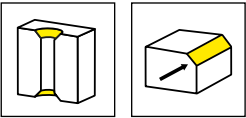
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	RC45	T125	TN35
306.0005.10	11.7	1	3.2	0.5	2.5	3	306060R			▲		
306.0007.15	11.7	1.5	3.2	0.75	2.5	3	306060R	▲				
306.0010.20	11.7	2	3.2	1	2.5	3	306060R	▲				
306.0011.22	11.7	2.2	3.2	1.1	2.5	3	306060R	▲		▲		
306.0015.30	11.7	3	4.2	1.5	2.5	3	306060R	▲				
Dimensions in mm								P	●	●	●	●
								M	●	●	●	-
								K	●	●	-	●
								N	-	-	●	-
								S	○	-	○	-
								H	-	-	-	-



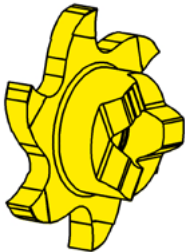
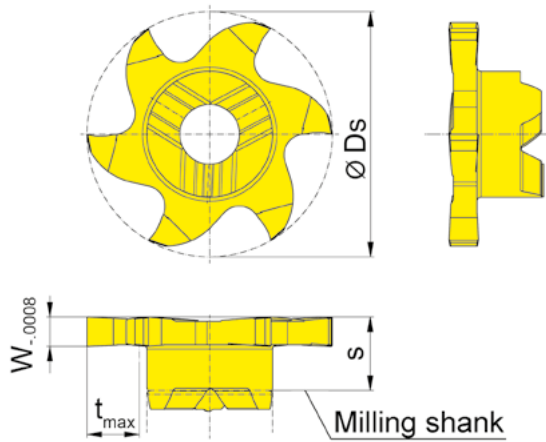
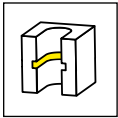
Coating grades

Picture = right hand cutting version

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	Form	t _{max}	Z	HIS		MG12	IG65	TF45	TI25	TN35
306.4545.00	11.7	1.1	3.4	1.2	A	0.8	3	306060R		▲	▲	▲	▲	▲
306.4593.20	9.3	1.6	3.4	0.2	B	1.4	3	306060R			▲		▲	
Dimensions in mm										P	-	●	●	●
										M	-	●	●	-
										K	-	●	●	●
										N	●	-	-	-
										S	-	●	-	-
										H	-	-	-	-

B



Coating grades

Picture = right hand cutting version

▲ In stock

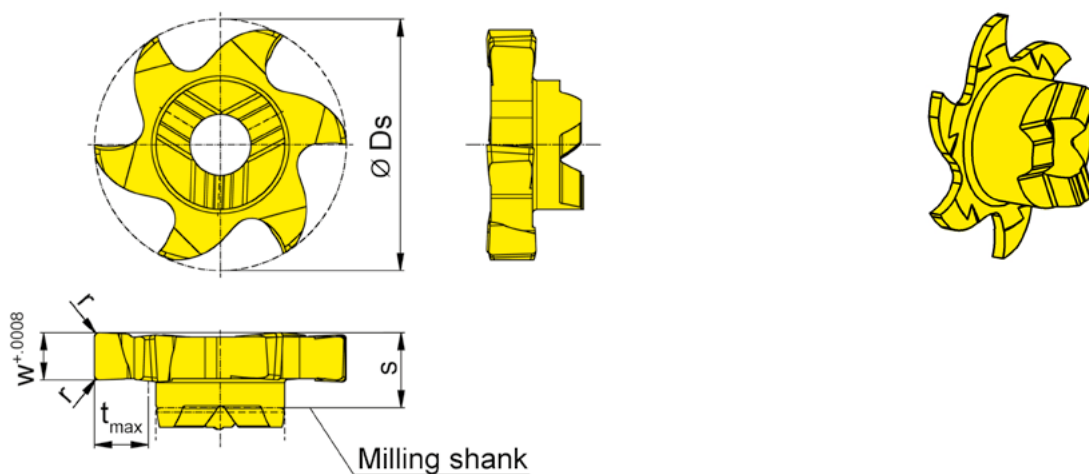
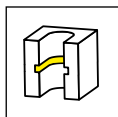
Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS		
								AS45	TA45
606.0110.00	11.7	1.1	1.21	3.5	2.5	6	306060R		▲
606.0130.00	11.7	1.3	1.41	3.5	2.5	6	306060R		▲
606.0160.00	11.7	1.6	1.71	3.5	2.5	6	306060R	▲	▲
								P	● ●
								M	● ●
								K	● ●
								N	- -
								S	o -
								H	- -

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

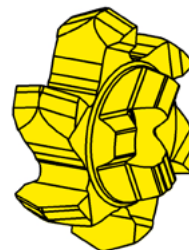
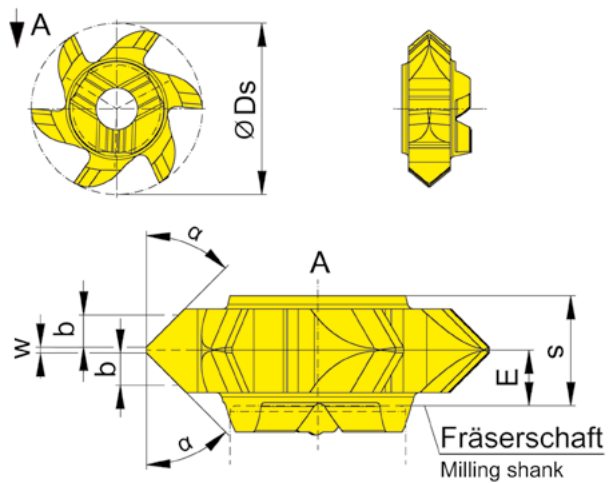
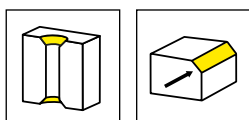
Part number	D_s	w	s	r	t_{max}	Z	HIS	AS45	EG35	IG35	TA45
606.0025.00	11.7	0.25	3.5	-	2.5	6	306060R		▲	▲	
606.0030.00	11.7	0.3	3.5	-	2.5	6	306060R		▲	▲	
606.0040.00	11.7	0.4	3.5	-	2.5	6	306060R		▲	▲	
606.0050.00	11.7	0.5	3.5	-	2.5	6	306060R		▲	▲	
606.0060.00	11.7	0.6	3.5	-	2.5	6	306060R		▲	▲	
606.0070.00	11.7	0.7	3.5	-	2.5	6	306060R		▲	▲	
606.0080.00	11.7	0.8	3.5	-	2.5	6	306060R		▲	▲	
606.0090.00	11.7	0.9	3.5	-	2.5	6	306060R		▲	▲	
606.0100.00	11.7	1	3.5	-	2.5	6	306060R		▲	▲	
606.0150.00	11.7	1.5	3.5	-	2.5	6	306060R	▲			▲
606.0200.00	11.7	2	3.5	0.2	2.5	6	306060R	▲			▲
606.0250.00	11.7	2.5	3.5	0.2	2.5	6	306060R	▲			▲

from width of groove 2.5 mm toothing with cross-cut

Dimensions in mm

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	-	-	-	-
S	o	-	•	-
H	-	-	-	-

B



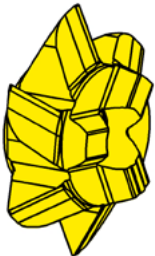
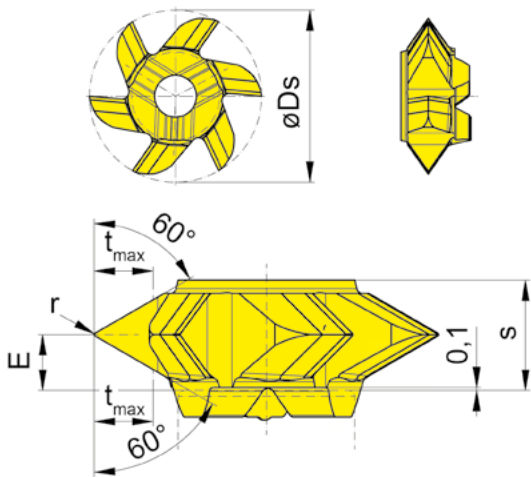
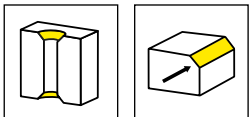
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	D_s	E	s	w	α	b	Z	HIS		
									IG35	TA45
606.1515.20	11.7	1.9	3.7	0.2	15°	1.5	6	306060R		Δ
606.2020.20	11.7	1.9	3.7	0.2	20°	1.5	6	306060R		▲
606.3030.20	11.7	1.9	3.7	0.2	30°	1.5	6	306060R		▲
606.4545.20	11.7	1.9	3.7	0.2	45°	1.1	6	306060R	▲	▲
Dimensions in mm										
										P ● ●
										M ● ●
										K ● ●
										N - -
										S ● -
										H - -



Picture = right hand cutting version

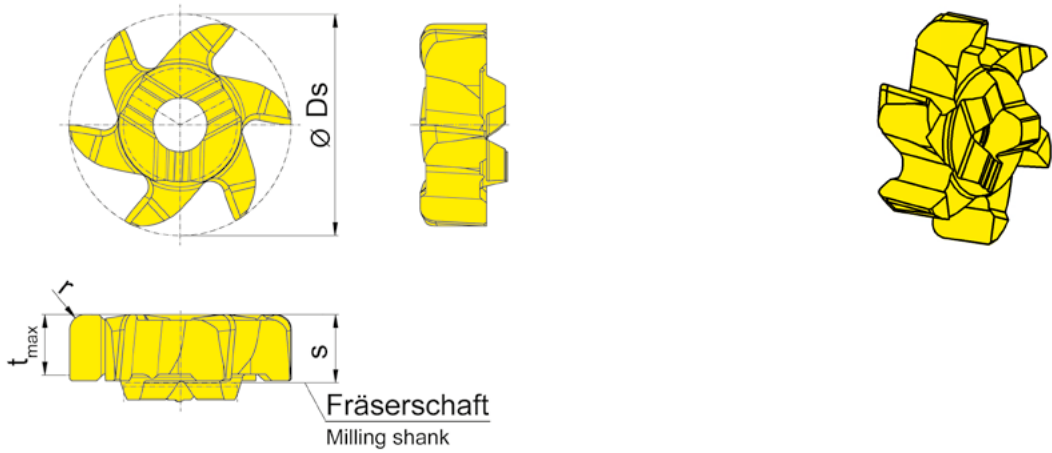
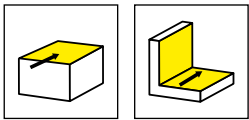
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	r	t _{max}	Z	HIS	AS45	
606.6060.05	11.7	1.9	3.75	0.05	2	6	306060R	▲	
									P ●
									M ●
									K ●
									N -
									S o
									H -

Dimensions in mm

B

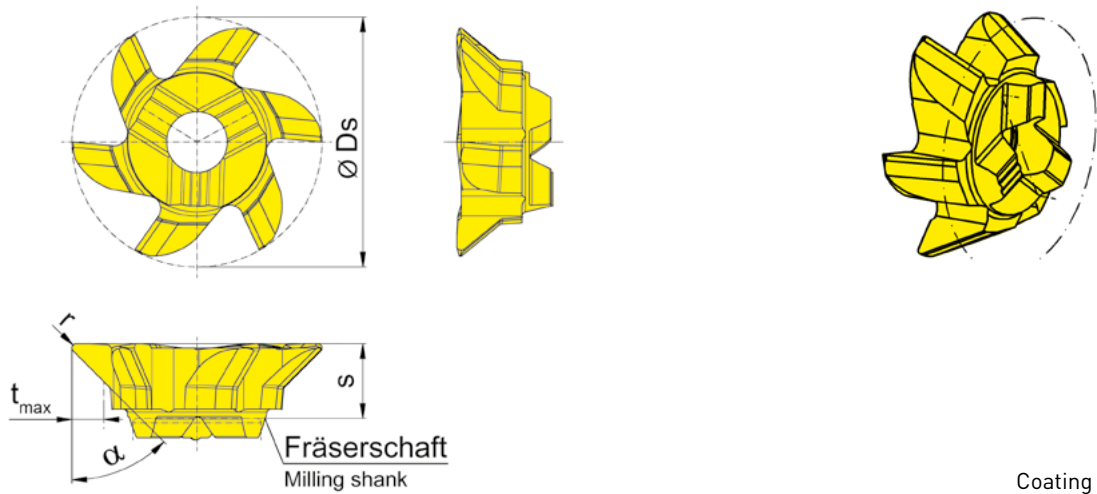
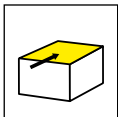


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Z	r	t _{max}	s	HIS		AS45	Ti25
606.PLT6.08	11.7	6	0.8	3.2	3.6	306060R		▲	▲
Dimensions in mm								P	● ●
								M	● ●
								K	● -
								N	- ●
								S	o o
								H	- -



Picture = right hand cutting version

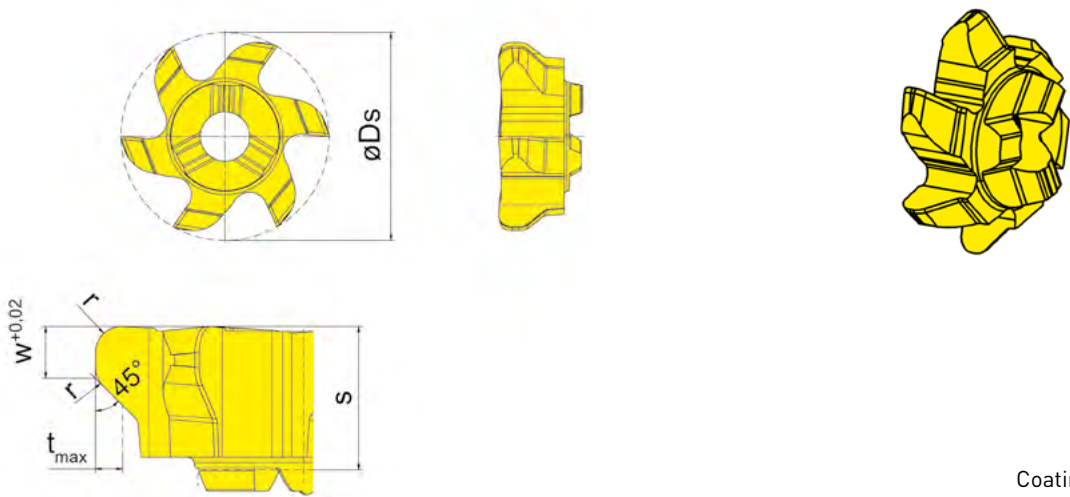
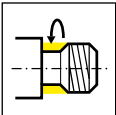
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Z	r	α	t _{max}	s	HIS	AS45	
606.0015.22	11.7	6	0.2	15°	0.7	3.5	306060R	▲	
606.0030.22	11.7	6	0.2	30°	1.4	3.5	306060R	▲	
606.0045.22	11.7	6	0.2	45°	1.5	3.5	306060R	▲	
									P ●
									M ●
									K ●
									N -
									S o
									H -

Dimensions in mm

B



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	EG55	
606.1015.35	11.7	1.2	3.5	0.7	1.15	6	306060R	▲	
Thread relief DIN 76									P ●
Dimensions in mm									M ●
									K ●
									N -
									S -
									H -

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6

B



SYSTEM 308

INDEXABLE GROOVING, CHAMFERING, THREAD UNDERCUT

HOLDERS
INSERTS

Inch Shanks

Page 85
MU308
Ø.500"-.625" Shank

Inch Grooving Widths (3 Flute)

Page 86
U308
.046"-.125" Width

Page 87
U308
.031"-.047" Radius

Metric Shanks

Page 88
M308
Ø12mm Shank

Page 89
M308.ST (Steel)
Ø10-13mm Shank

Page 90
M308.ER
ER11, ER16, ER20

Specialty

Metric Circlip Grooving (3 Flute)

Page 91-92
308
DIN Circlip

Page 93
308
Circlip with Chamfer

Page 94
308
1.5-2.5mm Width

Page 95
308
.40 Aluminum Geo

Metric Full
Radius (3 Flute)

Page 96
308
0.5-2mm Radius

Metric Grooving Widths (3 Flute)

Metric Chamfer
(3 Flute)

Page 97
308
45° Chamfer

Metric Grooving
Widths (6 Flute)

Page 98
608
0.25-2.5mm Width

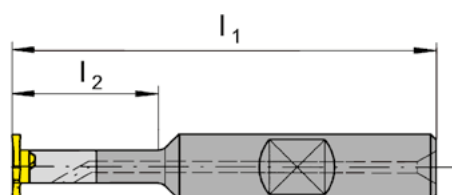
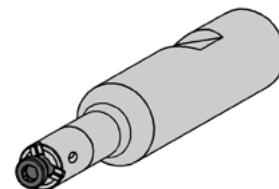
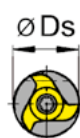
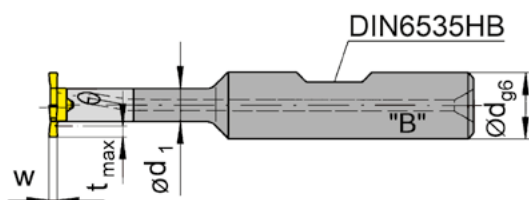
Metric Chamfer
(6 Flute)

Page 99
608
15-45° Chamfer

Thread Undercut
(6 Flute)

Page 100
608
45°, 1.8mm Width

B



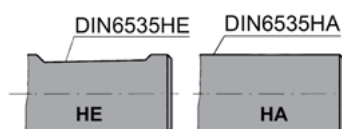
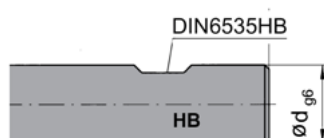
Part number	d	l_1	l_2	d_1	HWS
MU308.0500.01B	.500	3.740	1.142	.315	308080R • 308080L
MU308.0500.02B	.500	4.331	1.654	.315	308080R • 308080L
MU308.0500.03B	.500	4.724	2.205	.315	308080R • 308080L
MU308.0625.01B	.625	4.331	1.299	.374	308080R • 308080L

w, D_s , t_{max} see inserts

Dimensions in inch

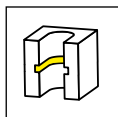


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)

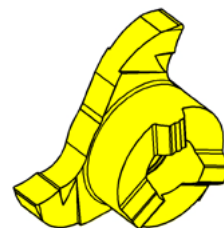
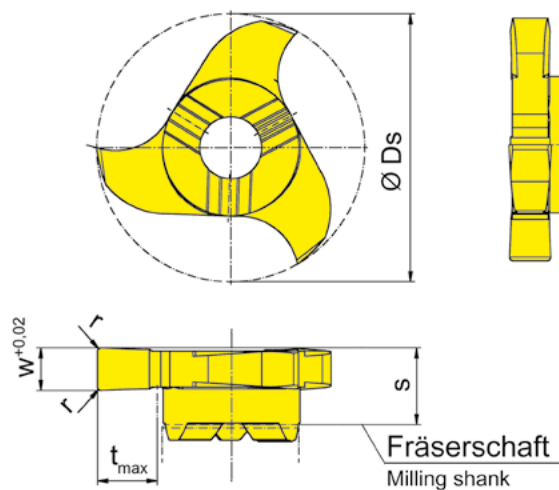


Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU308...	3.5.12T10EP	T10PL	3 Nm



z3



Coating grades

Picture = right hand cutting version

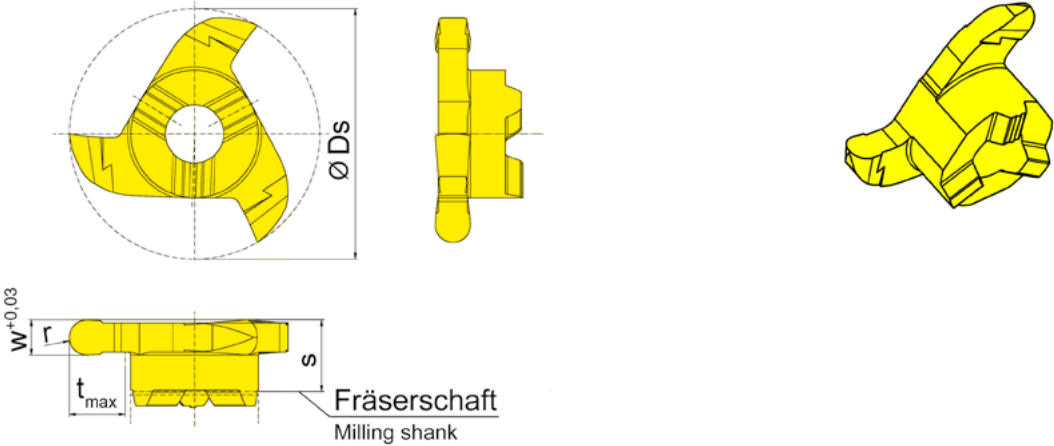
▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TF45	TN35	
U308.0046.00	.618	.046	.177	.008	.138	3	308080R		▲		▲	
U308.0062.00	.618	.062	.177	.008	.138	3	308080R		▲		▲	
U308.0046.08	.618	.046	.177	.008	.138	3	308080R		▲	▲	▲	
U308.0062.08	.618	.062	.177	.008	.138	3	308080R		▲	Δ	▲	
U308.0094.08	.618	.094	.177	.008	.138	3	308080R		▲	Δ	▲	
U308.0125.08	.618	.125	.177	.008	.138	3	308080R		▲	▲	▲	
Inserts for widths of groove tmax down to 0.5 mm can be delivered with reduced depth upon request.									P	●	●	●
Dimensions in inch									M	●	●	-
									K	●	●	●
									N	-	-	-
									S	●	-	-
									H	-	-	-



B



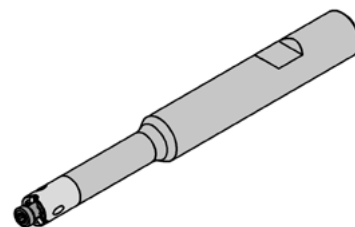
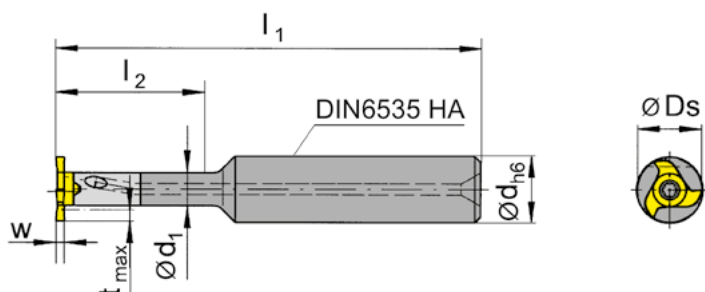
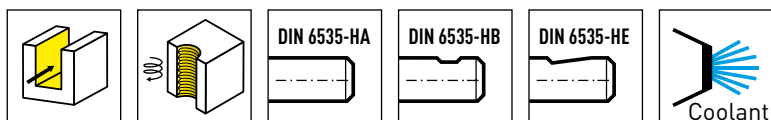
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	Ti25	TN35	
U308.0031.62	.618	.062	.177	.031	.138	3	308080R		▲		▲	
U308.0047.94	.618	.094	.177	.047	.138	3	308080R		▲	Δ	▲	
Dimensions in inch									P	●	●	●
									M	●	●	-
									K	●	-	●
									N	-	●	-
									S	●	○	-
									H	-	-	-



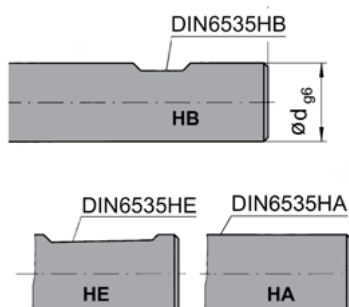


Part number	d	l_1	l_2	d_1	Form	HWS
M308.0012.01A	12	95	29	8	HA	308080R • 308080L
M308.0012.02A	12	110	42	8	HA	308080R • 308080L
M308.0012.03A	12	120	56	8	HA	308080R • 308080L
M308.0012.01B	12	95	29	8	HB	308080R • 308080L
M308.0012.02B	12	110	42	8	HB	308080R • 308080L
M308.0012.03B	12	120	56	8	HB	308080R • 308080L
M308.0012.01E	12	95	29	8	HE	308080R • 308080L
M308.0012.02E	12	110	42	8	HE	308080R • 308080L
M308.0012.03E	12	120	56	8	HE	308080R • 308080L

w, Ds, tmax see inserts

Dimensions in mm

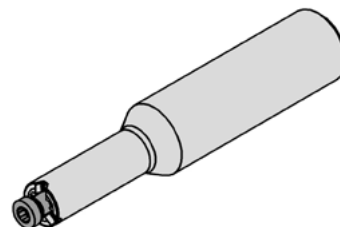
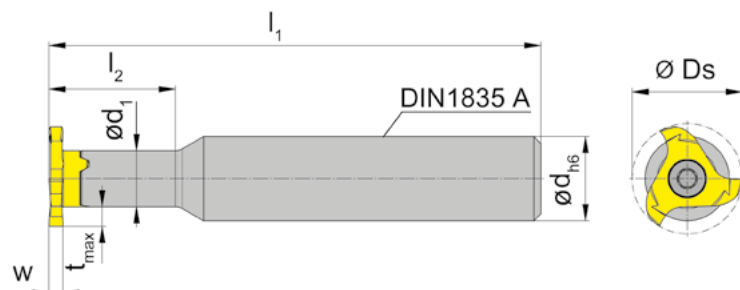
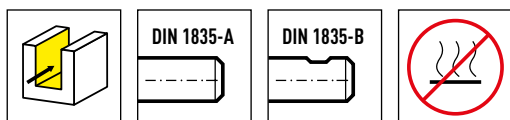
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M308...	3.5.12T10EP	T10PL	3 Nm

B



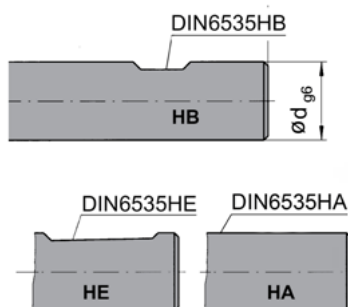
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M308.ST10.01A	10	60	18	8	A	308080R • 308080L
M308.ST12.01A	12	70	18	8	A	308080R • 308080L
M308.ST13.01A	13	70	26	8	A	308080R • 308080L
M308.ST10.01B	10	60	18	8	B	308080R • 308080L
M308.ST12.01B	12	70	18	8	B	308080R • 308080L

Holders with ".ST" are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

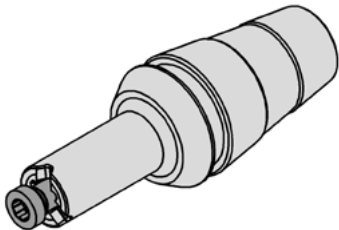
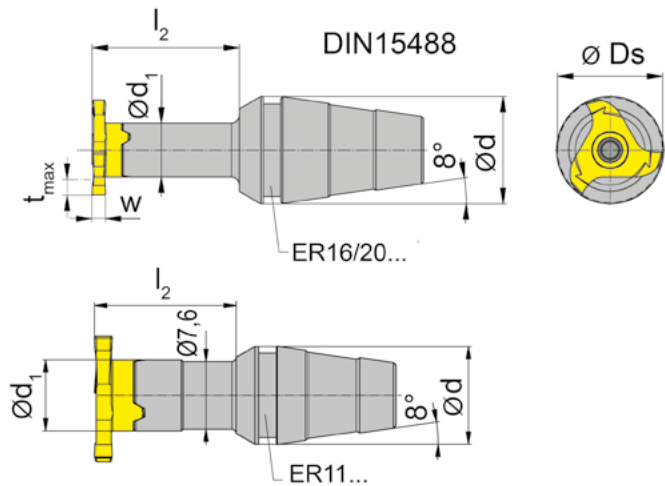
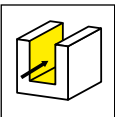
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M308...	3.5.12T10EP	T10PL	3 Nm



Part number	d	l ₂	d ₁	Clamping nut	HWS
M308.ER11.02	11	16	8	ER11.6499	308080R • 308080L
M308.ER16.02	16	22	8	ER16.6499/ERM16.6499	308080R • 308080L
M308.ER20.02	20	22	8	ER20.6499/ERM20.6499	308080R • 308080L

w, Ds, tmax see inserts

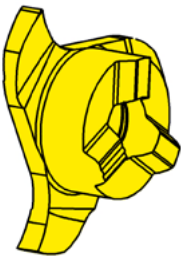
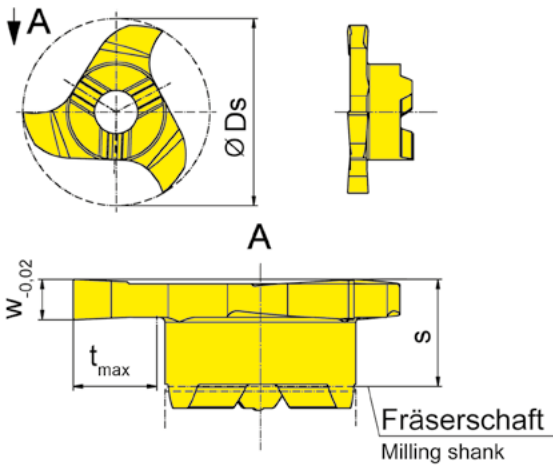
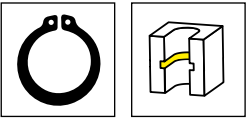
Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M308...	3.5.12T10EP	T10PL	3 Nm

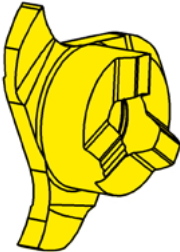
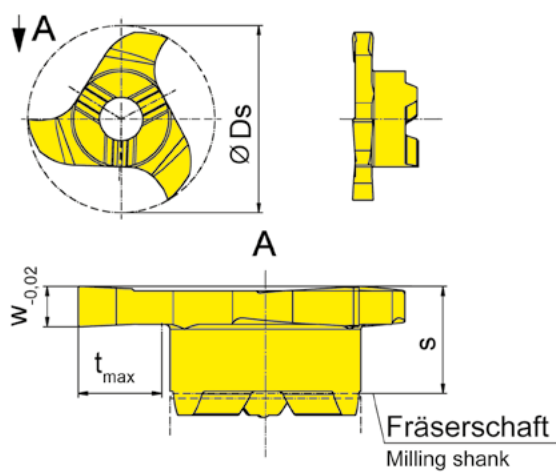
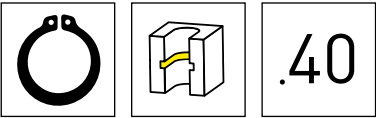
B



Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS	AS45	TF45	TN35
308.0110.00	15.7	1.1	1.21	4.5	3.5	3	308080R	▲	▲	▲
308.0130.00	15.7	1.3	1.41	4.5	3.5	3	308080R	▲	Δ	▲
308.0160.00	15.7	1.6	1.71	4.5	3.5	3	308080R	▲	Δ	▲
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly								P	●	●
Widths for circlip grooves DIN 471/472								M	●	●
Dimensions in mm								K	●	●
								N	-	-
								S	o	-
								H	-	-



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS	Ti25
308.0110.40	15.7	1.1	1.21	4.5	3.5	3	308080R	▲
308.0130.40	15.7	1.3	1.41	4.5	3.5	3	308080R	▲
308.0160.40	15.7	1.6	1.71	4.5	3.5	3	308080R	▲

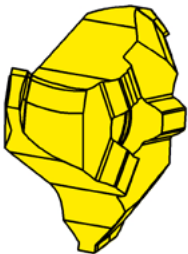
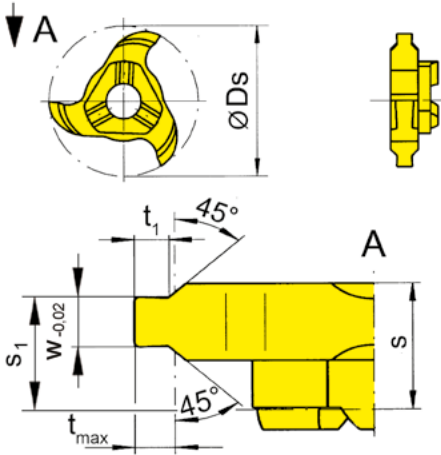
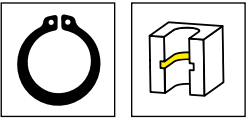
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm

P	o
M	o
K	-
N	•
S	-
H	-

B



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

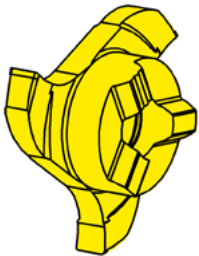
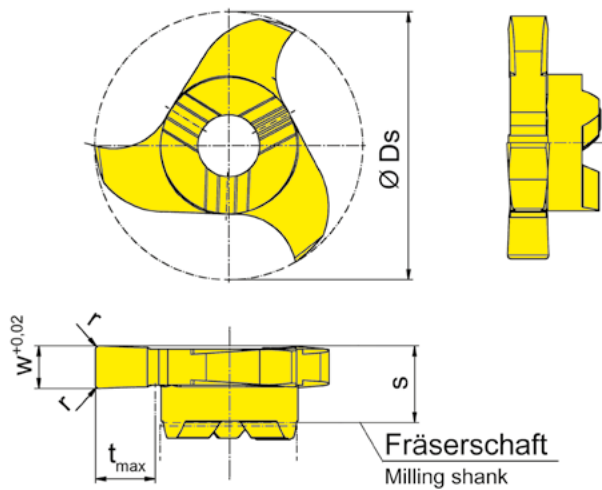
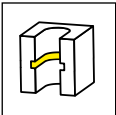
Part number	Ds	Nw	w	t ₁	s	s ₁	t _{max}	Z	HIS	AS45
308.1105.30	15.7	1.1	1.21	0.47	4.7	3.6	0.5	3	308080R	▲
308.1307.30	15.7	1.3	1.41	0.65	4.7	3.5	0.7	3	308080R	▲

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472 with chamfer

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



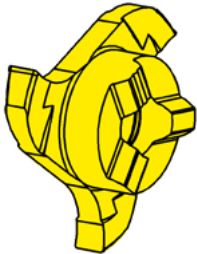
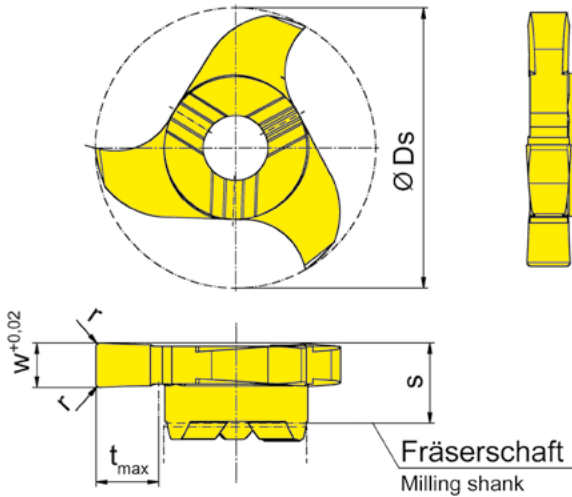
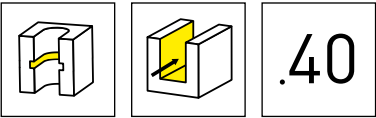
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	IG65	TF45	TN35	
308.0150.00	15.7	1.5	4.5	-	3.5	3	308080R		▲		▲	▲	
308.0200.00	15.7	2	4.5	0.2	3.5	3	308080R		▲			▲	
308.0250.00	15.7	2.5	4.5	0.2	3.5	3	308080R		▲	▲	▲	▲	
Inserts for widths of groove tmax down to 0.5 mm can be delivered with reduced depth upon request.									P	●	●	●	●
Dimensions in mm									M	●	●	●	-
									K	●	●	●	●
									N	-	-	-	-
									S	○	●	-	-
									H	-	-	-	-

B



Picture = right hand cutting version

Coating grades

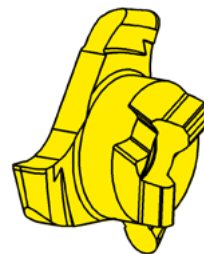
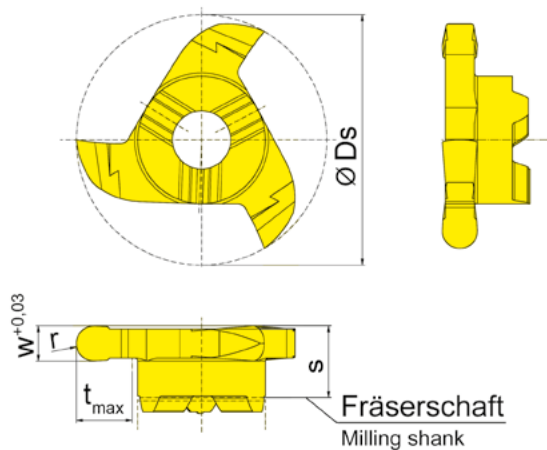
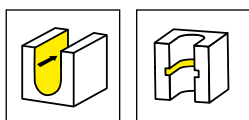
▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	Ti25	
308.0150.40	15.7	1.5	4.5	-	3.5	3	308080R	▲	
308.0200.40	15.7	2	4.5	0.2	3.5	3	308080R	▲	
308.0250.40	15.7	2.5	4.5	0.2	3.5	3	308080R	▲	

Inserts for widths of groove tmax down to 0.5 mm can be delivered with reduced depth upon request.

Dimensions in mm

P	●
M	●
K	-
N	●
S	o
H	-



Coating grades

Picture = right hand cutting version

▲ In stock

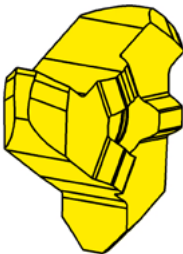
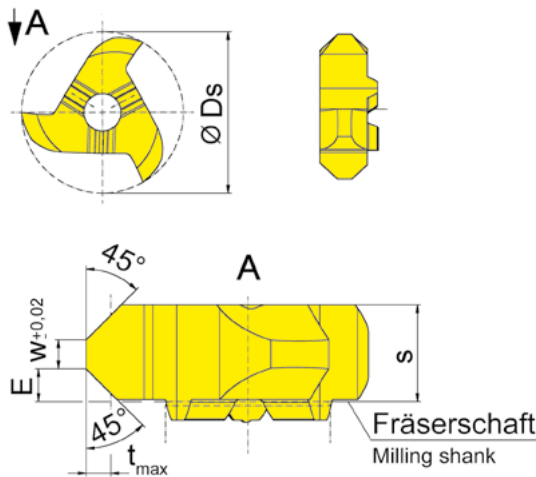
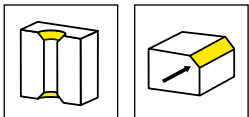
Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	RC45	TF45	TN35
308.0005.10	15.7	1	4.5	0.5	3.5	3	308080R		▲		
308.0007.15	15.7	1.5	4.5	0.75	3.5	3	308080R	▲			
308.0010.20	15.7	2	4.5	1	3.5	3	308080R	▲			
308.0011.22	15.7	2.2	4.5	1.1	3.5	3	308080R	▲		▲	▲
308.0015.30	15.7	3	4.5	1.5	3.5	3	308080R	▲			
308.0020.40	15.7	4	4.5	2	3.5	3	308080R	▲			

Dimensions in mm

P	•	•	•	•
M	•	•	•	-
K	•	•	•	•
N	-	-	-	-
S	o	-	-	-
H	-	-	-	-

B

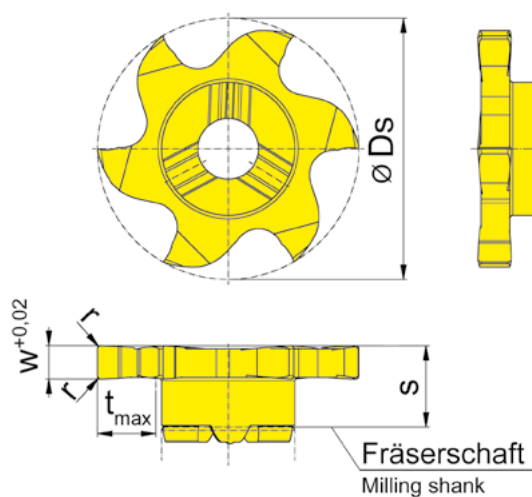
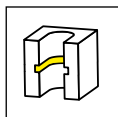


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	t _{max}	Z	HIS		IG65	TN35
308.4545.00	15.7	1.6	4.7	1.4	1.2	3	308080R		▲	▲
Dimensions in mm									P	● ●
									M	● -
									K	● ●
									N	- -
									S	● -
									H	- -



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

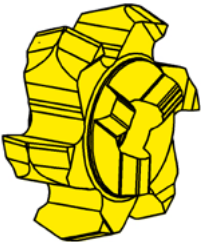
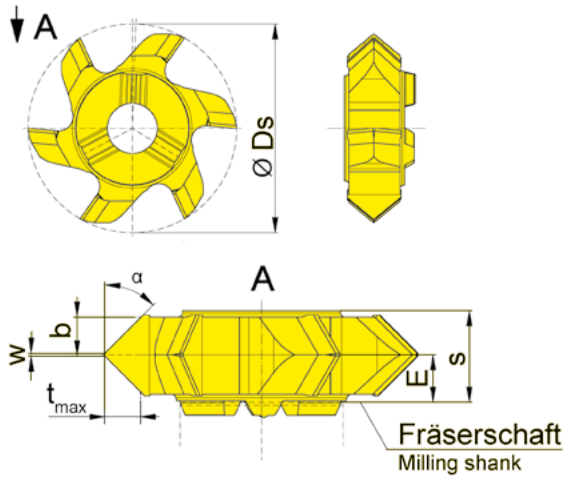
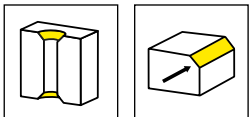
Part number	D_s	w	s	r	t_{max}	Z	HIS	AS45	EG35	IG35	Ti25
608.0025.00	15.7	0.25	4.9	-	3.5	6	308080R		▲	▲	
608.0030.00	15.7	0.3	4.9	-	3.5	6	308080R		▲	▲	
608.0040.00	15.7	0.4	4.9	-	3.5	6	308080R		▲	▲	
608.0050.00	15.7	0.5	4.9	-	3.5	6	308080R		▲	▲	
608.0060.00	15.7	0.6	4.9	-	3.5	6	308080R		▲	▲	
608.0070.00	15.7	0.7	4.9	-	3.5	6	308080R		▲	▲	
608.0080.00	15.7	0.8	4.9	-	3.5	6	308080R		▲	▲	
608.0090.00	15.7	0.9	4.9	-	3.5	6	308080R		▲	▲	
608.0100.00	15.7	1	4.9	-	3.5	6	308080R		▲	▲	
608.0150.00	15.7	1.5	4.9	-	3.5	6	308080R	▲			▲
608.0200.00	15.7	2	4.9	0.2	3.5	6	308080R	▲			▲
608.0250.00	15.7	2.5	4.9	0.2	3.5	6	308080R	▲			▲

Inserts for widths of groove t_{max} down to 0.5 mm can be delivered with reduced depth upon request.

Dimensions in mm

P	●	●	●	●
M	●	●	●	●
K	●	●	●	-
N	-	-	-	●
S	o	-	●	o
H	-	-	-	-

B

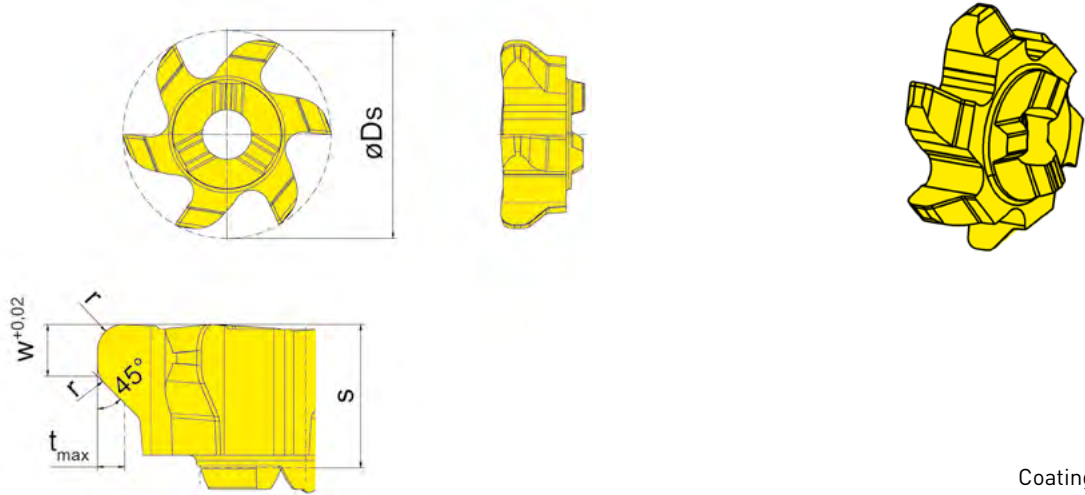
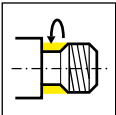


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	α	b	t _{max}	Z	HIS			
										IG65	TA45	Ti25
608.1515.20	15.7	2.6	5.1	0.2	15°	2.2	0.6	6	308080R		▲	
608.2020.20	15.7	2.6	5.1	0.2	20°	2.2	0.8	6	308080R		▲	
608.3030.20	15.7	2.6	5.1	0.2	30°	2.2	1.3	6	308080R		▲	
608.4545.20	15.7	2.6	5.1	0.2	45°	1.7	1.7	6	308080R	▲		▲
Dimensions in mm										P	•	•
										M	•	•
										K	•	•
										N	-	-
										S	•	•
										H	-	-



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS
608.1015.49	15.7	1.8	4.8	0.7	1.15	6	308080R

Thread relief DIN 76

Dimensions in mm

- P
- M
- K
- N
- S
- H

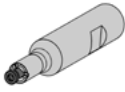
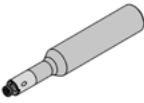
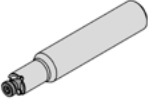
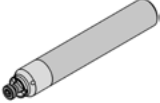
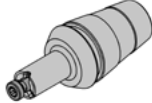
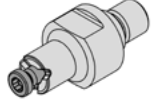
Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

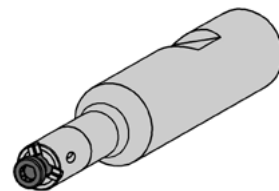
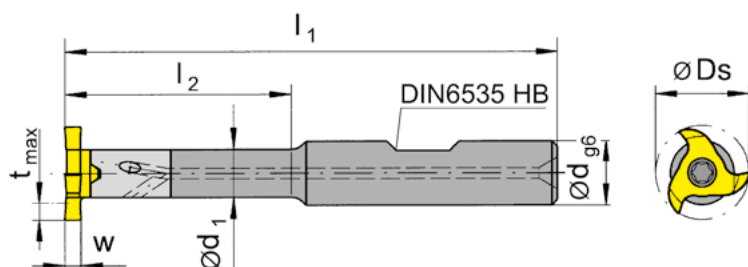
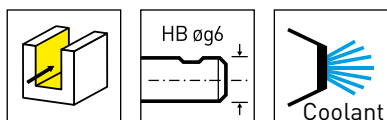
Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6



SYSTEM 311

INDEXABLE GROOVING, CHAMFERING, FACING, THREAD UNDERCUT

HOLDERS INSERTS	Inch Shanks			Inch Grooving Widths (3 Flute)	Inch Full Radius (3 Flute)
					
	Page 104 MU311 Ø.500"-.625" Shank	Page 105 MU311 Ø.500"-.625" Shank	Page 106 MU311 Ø.625" Shank	Page 107 U311 .046"-.125" Width	Page 108 U311 .031"-.062" Radius
	Metric Shanks			Specialty	
					
	Page 109 M311 Ø12-16mm Shank	Page 110 M311.ST (Steel) Ø10-16mm Shank	Page 111 M311 Ø12-16mm Shank	Page 112 M311.ER ER11, 16, 20, 25	Page 113 M311.M M8 Screw-in
	Metric Circlip Grooving (3 Flute)		Metric Grooving Widths (3 Flute)		Metric Full Radius (3 Flute)
					
	Page 114-115 311 DIN Circlip	Page 116 311 Circlip with Chamfer	Page 117 311 1-4mm Width	Page 118 311 .40 Aluminum Geo	Page 119 311 0.75-2mm Radius
	Metric Chamfer (3 Flute)	Metric Circlip Grooving (6 Flute)	Metric Grooving Widths (6 Flute)	Metric Facing (6 Flute)	Metric Chamfer (6 Flute)
					
	Page 120 311 45° Chamfer	Page 121 611 DIN Circlip	Page 122 611 0.5-4mm Width	Page 123 611 Facing	Page 124 611 15-45° Chamfer
	Thread Undercut (6 Flute)	Metric Grooving Widths (9 Flute)			
					
	Page 125 611 45°, 2.2mm Width	Page 126 911 1.5-3mm Width			



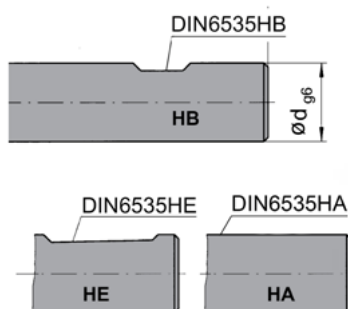
Part number	d	l_1	l_2	d_1	Form	HWS
MU311.0500.01B	.500	3.937	1.260	.354	B	311090R
MU311.0500.02B	.500	3.937	1.772	.354	B	311090R
MU311.0500.03B	.500	4.724	2.520	.354	B	311090R
MU311.0625.01B	.625	3.937	1.260	.354	B	311090R
MU311.0625.02B	.625	4.331	1.772	.354	B	311090R
MU311.0625.03B	.625	5.118	2.520	.354	B	311090R

w, Ds, tmax see inserts

Dimensions in inch



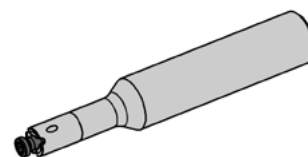
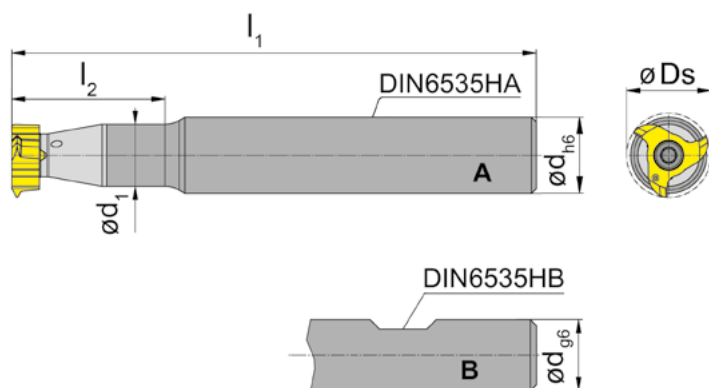
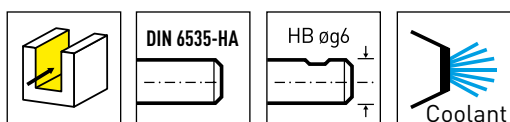
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU311...	4.14T15P	T15PQ	5 Nm

B

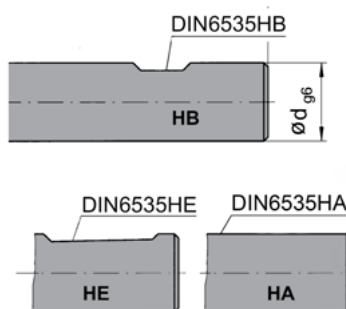


Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU311.1212.07A	.500	6.299	-	.354	A	311090R
MU311.0625.04B	.625	4.331	1.260	.512	B	311090R
MU311.0625.05B	.625	5.118	1.772	.512	B	311090R

w, Ds, tmax see inserts

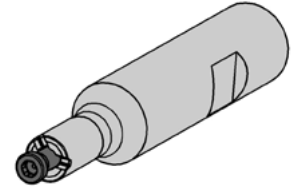
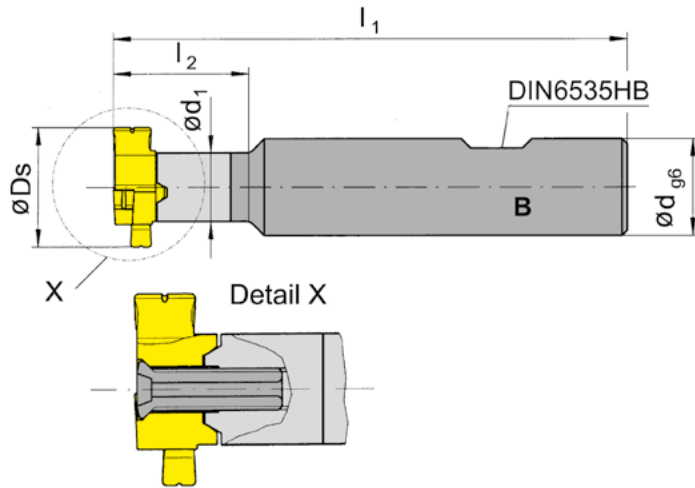
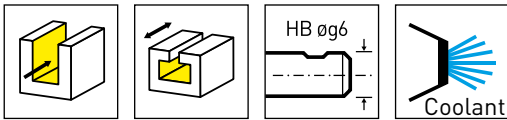


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU311...	4.14T15P	T15PQ	5 Nm



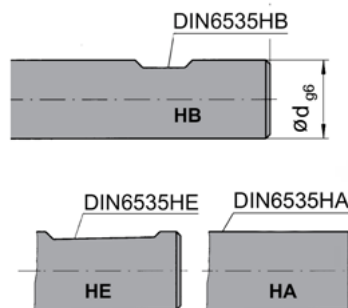
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU311.0625.00B	.625	3.543	.984	.354	B	311090R

Ds see inserts



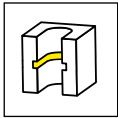
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



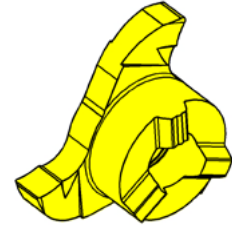
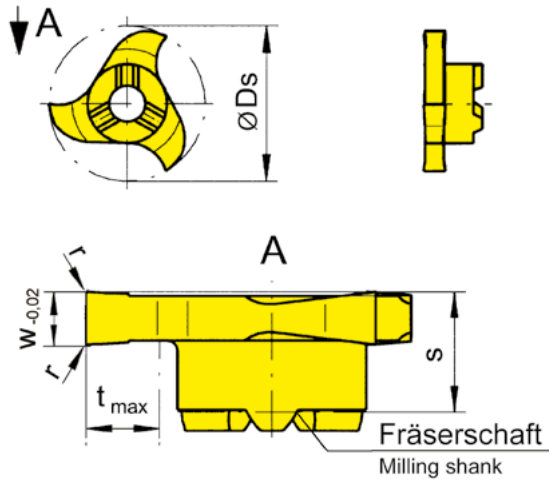
Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU311.0625.00B	4.16T15KP	T15PQ	5 Nm

B



z3



Coating grades

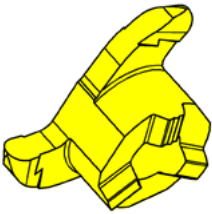
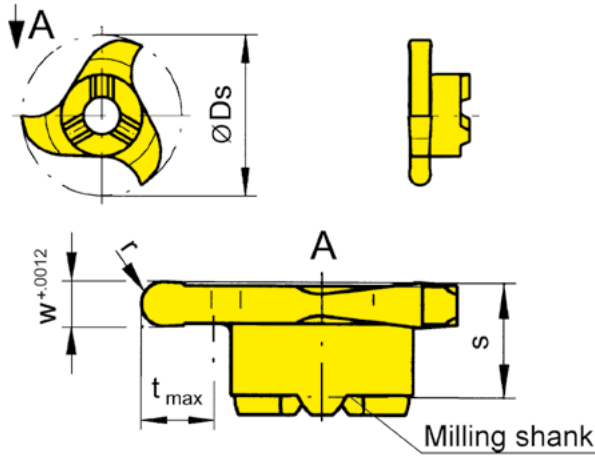
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		MG12	IG65	TF45	TN35	
U311.0046.00	.697	.046	.226	-	.138	3	311090R			▲		▲	
U311.0056.00	.697	.056	.226	-	.138	3	311090R			▲		▲	
U311.0062.00	.697	.062	.226	-	.138	3	311090R			▲		▲	
U311.0046.08	.697	.046	.226	.008	.138	3	311090R			▲		▲	
U311.0062.08	.697	.062	.226	.008	.138	3	311090R			▲		▲	
U311.0078.08	.697	.078	.226	.008	.138	3	311090R		▲	▲		▲	
U311.0094.08	.697	.094	.226	.008	.138	3	311090R		Δ	▲		▲	
U311.0125.08	.697	.125	.226	.008	.138	3	311090R		▲		Δ	▲	
Dimensions in inch									P	-	●	●	●
									M	-	●	●	-
									K	-	●	●	●
									N	●	-	-	-
									S	-	●	-	-
									H	-	-	-	-





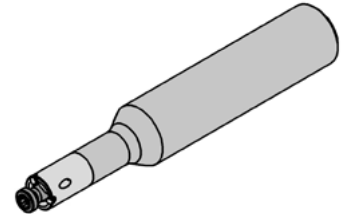
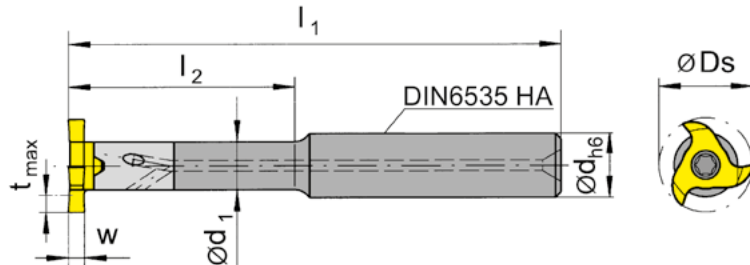
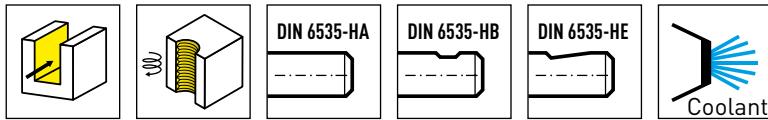
Coating grades

Picture = right hand cutting version

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TF45	TN35
U311.0031.62	.697	.062	.226	.031	.138	3	311090R		▲		▲
U311.0047.94	.697	.094	.226	.047	.138	3	311090R		▲		▲
U311.0062.125	.697	.125	.226	.062	.138	3	311090R		▲	Δ	▲
Dimensions in inch								P	●	●	●
								M	●	●	-
								K	●	●	●
								N	-	-	-
								S	●	-	-
								H	-	-	-



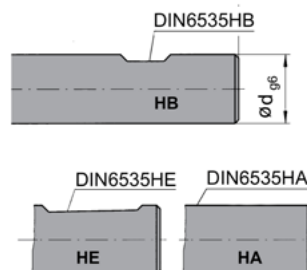


Part number	d	l_1	l_2	d_1	Form	HWS
M311.0012.01A	12	100	32	9	HA	311090R
M311.0012.02A	12	100	45	9	HA	311090R
M311.0012.03A	12	120	64	9	HA	311090R
M311.0012.05A	12	130	20	9	HA	311090R
M311.0016.01A	16	100	32	9	HA	311090R
M311.0016.02A	16	110	45	9	HA	311090R
M311.0016.03A	16	130	64	9	HA	311090R
M311.0012.01B	12	100	32	9	HB	311090R
M311.0012.02B	12	100	45	9	HB	311090R
M311.0012.03B	12	120	64	9	HB	311090R
M311.0016.01B	16	100	32	9	HB	311090R
M311.0016.02B	16	110	45	9	HB	311090R
M311.0016.03B	16	130	64	9	HB	311090R
M311.0012.01E	12	100	32	9	HE	311090R
M311.0012.02E	12	100	45	9	HE	311090R
M311.0012.03E	12	120	64	9	HE	311090R
M311.0016.01E	16	100	32	9	HE	311090R
M311.0016.02E	16	110	45	9	HE	311090R
M311.0016.03E	16	130	64	9	HE	311090R

w, Ds, tmax see inserts

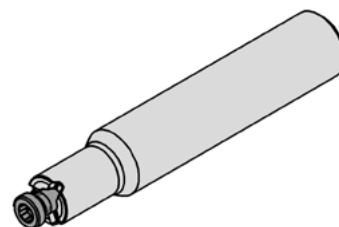
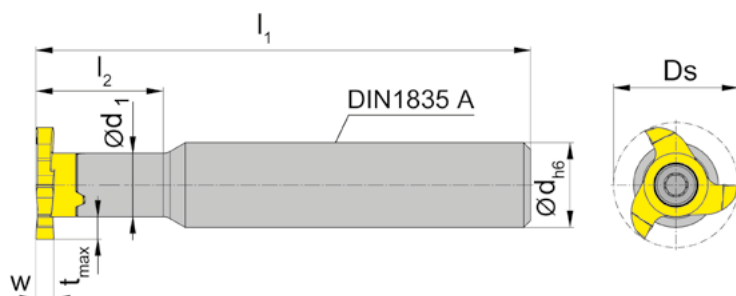
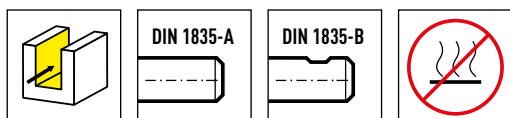
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311...	4.14T15P	T15PQ	5 Nm



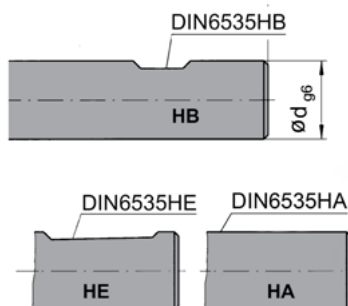
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M311.ST10.01A	10	60	18	9	A	311090R
M311.ST12.01A	12	70	18	9	A	311090R
M311.ST13.01A	13	70	26	9	A	311090R
M311.ST16.01A	16	80	26	9	A	311090R
M311.ST10.01B	10	60	18	9	B	311090R
M311.ST12.01B	12	70	18	9	B	311090R
M311.ST16.01B	16	80	26	9	B	311090R

Holders with ".ST " are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

Dimensions in mm

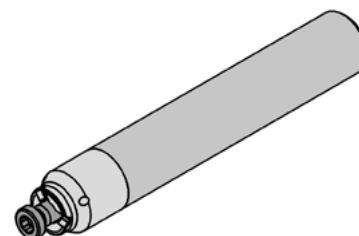
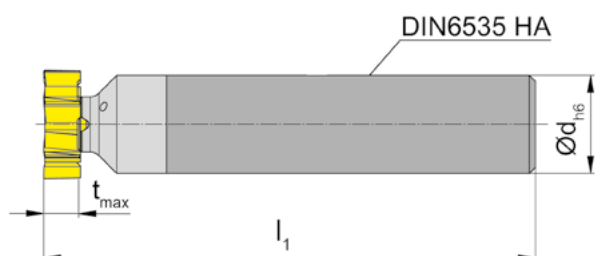
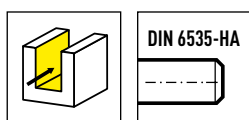
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311...	4.14T15P	T15PQ	5 Nm

B

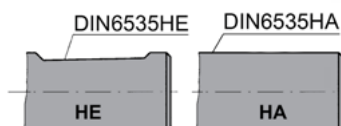
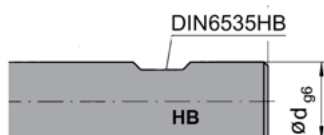


Part number	d	l_1	Form	HWS
M311.0012.D.00A	12	80	HA	311090R
M311.0016.D.00A	16	80	HA	311090R

t_{max} and D_s see inserts

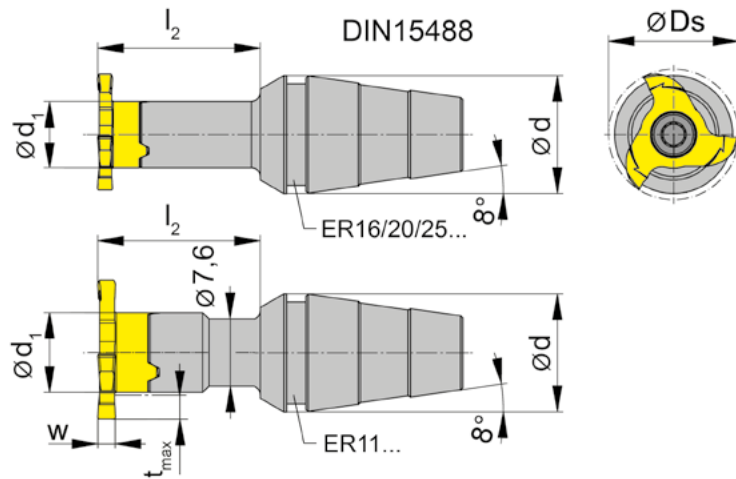
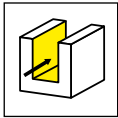
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311...	4.14T15P	T15PQ	5 Nm



Part number	d	l ₂	d ₁	Clamping nut	HWS
M311.ER11.02	11	22	9	ER11.6499	311090R
M311.ER25.02	25	22	9	ER25.6499	311090R
M311.ER16.02	16	22	9	ER16.6499/ERM16.6499	311090R
M311.ER20.02	20	22	9	ER20.6499/ERM20.6499	311090R
M311.ER20.14.01	20	19.7	12.5	ER20.6499/ERM20.6499	311090R
M311.ER25.14.01	25	19.7	14.5	ER25.6499	311090R

w, Ds, tmax see inserts

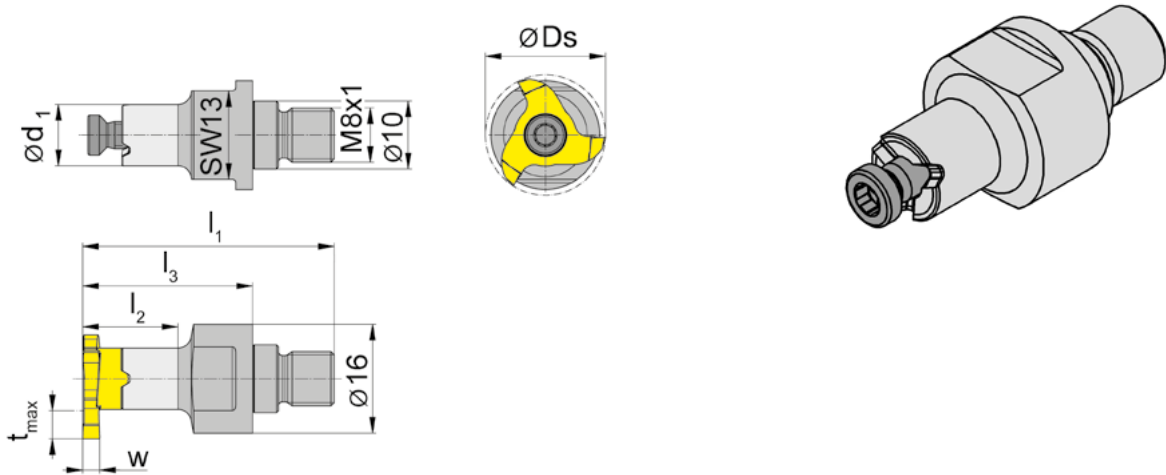
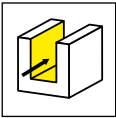
Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311.E...	4.14T15P	T15PQ	5 Nm
M311.ER25.14.01	4.14T15P	T15PL	5 Nm

B



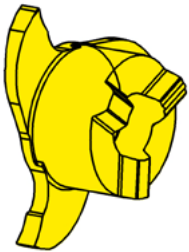
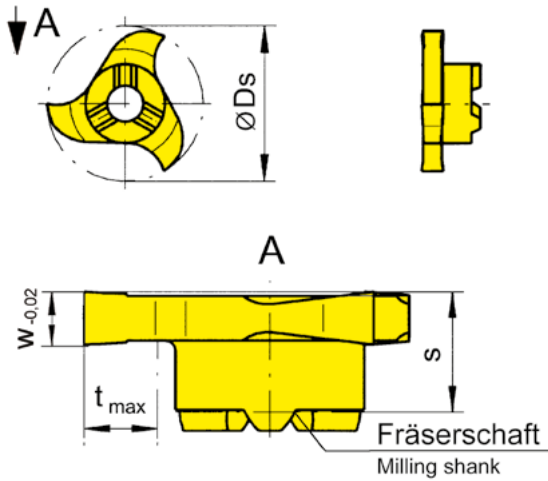
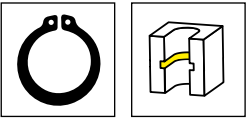
Part number	l_1	l_2	l_3	d_1	SW	HWS	HMS
M311.M081.01	37	14	25	9	13	311090R	8201

w, Ds, tmax see inserts

Dimensions in mm

Spare Parts

Screw-in Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311.M081.01	4.14T15P	T15PQ	5 Nm



Coating grades

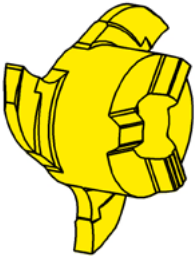
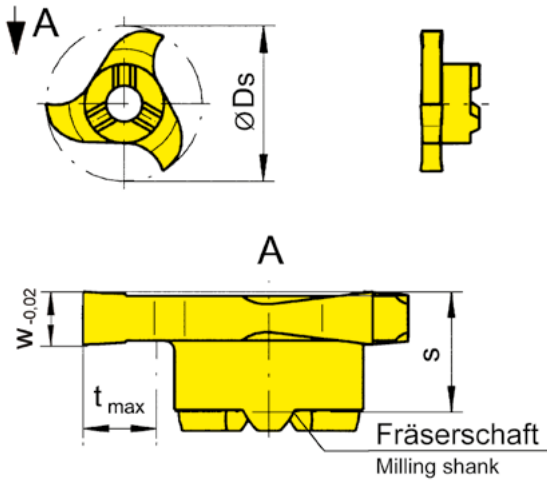
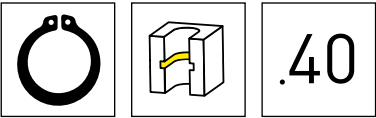
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS	AS45	TN35
311.0110.00	17.7	1.1	1.21	5.75	3.5	3	311090R	▲	▲
311.0130.00	17.7	1.3	1.41	5.75	3.5	3	311090R	▲	▲
311.0160.00	17.7	1.6	1.71	5.75	3.5	3	311090R	▲	▲
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly								P	●
Widths for circlip grooves DIN 471/472								M	●
Dimensions in mm								K	●
								N	-
								S	-
								H	-

B



Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

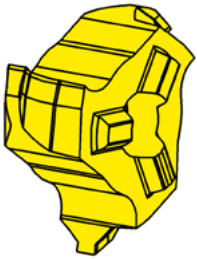
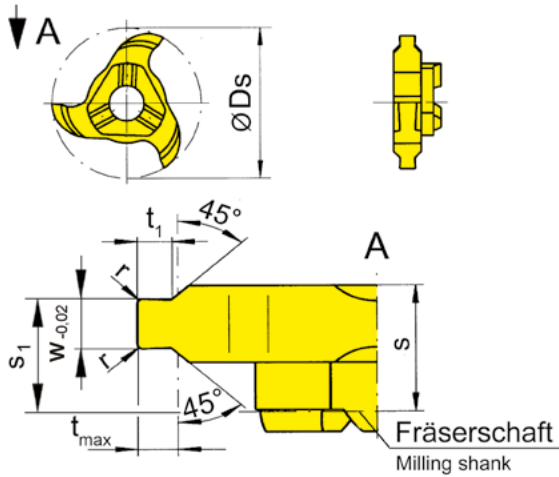
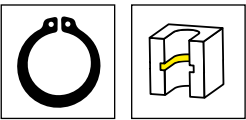
Part number	Ds	Nw	w	s	t _{max}	Z	HIS	Ti25
311.0110.40	17.7	1.1	1.21	5.75	3.5	3	311090R	▲
311.0130.40	17.7	1.3	1.41	5.75	3.5	3	311090R	▲
311.0160.40	17.7	1.6	1.71	5.75	3.5	3	311090R	Δ

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm

P	●
M	●
K	-
N	●
S	o
H	-



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	D_s	Nw	w	t_1	s	s_1	r	t_{max}	Z	HIS	AS45
311.1307.30	17.7	1.3	1.41	0.65	5.95	4.7	-	0.7	3	311090R	▲
311.1812.35	17.7	1.85	1.96	1.21	5.95	5	0.2	1.25	3	311090R	▲

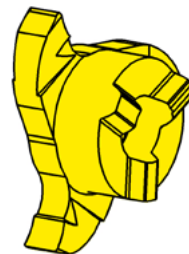
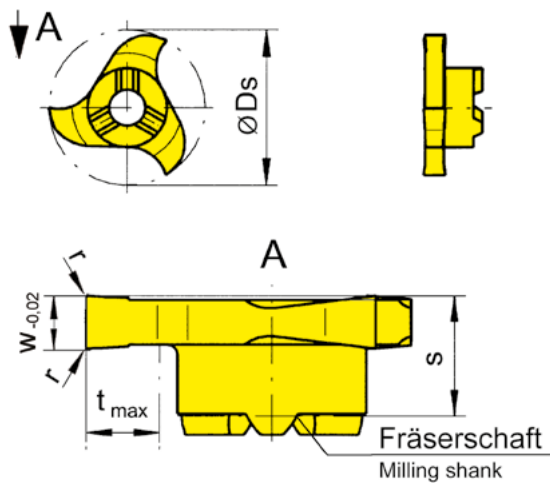
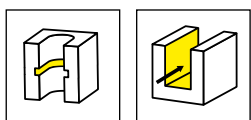
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472 with chamfer

Dimensions in mm

P	•
M	•
K	•
N	-
S	o
H	-

B



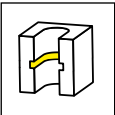
Coating grades

Picture = right hand cutting version

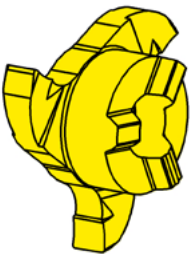
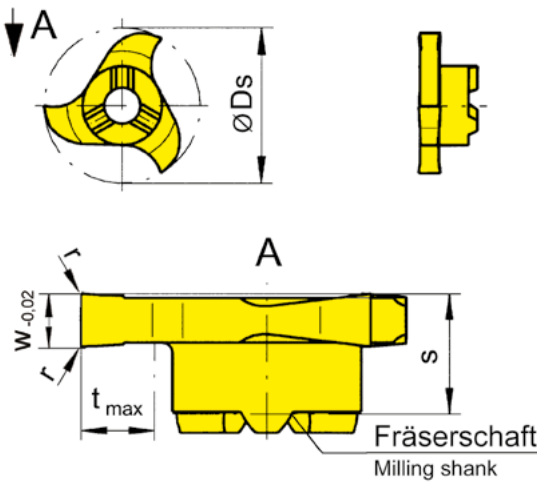
▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	IG65	TN35
311.0100.00	17.7	1	5.75	-	3.5	3	311090R			
311.0150.00	17.7	1.5	5.75	-	3.5	3	311090R	▲		▲
311.0200.00	17.7	2	5.75	0.2	3.5	3	311090R	▲	▲	▲
311.0250.00	17.7	2.5	5.75	0.2	3.5	3	311090R	▲		▲
311.0300.00	17.7	3	5.75	0.2	3.5	3	311090R	▲	▲	▲
311.0400.00	17.7	4	5.75	0.2	3.5	3	311090R	▲		
Dimensions in mm								P	●	●
								M	●	●
								K	●	●
								N	-	-
								S	o	●
								H	-	-



.40



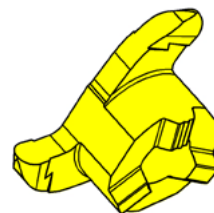
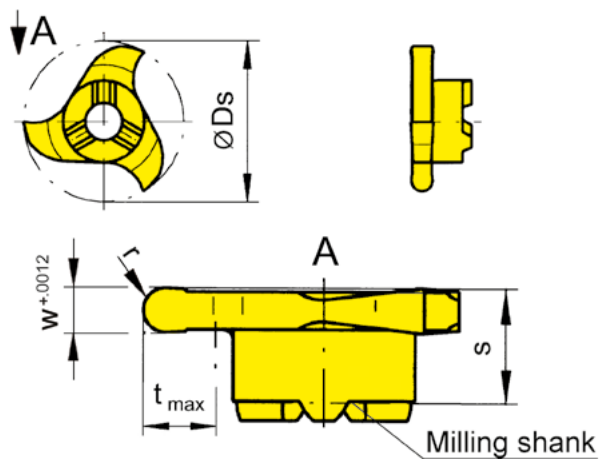
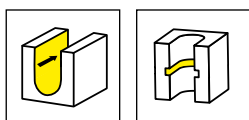
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	T125	
311.0150.40	17.7	1.5	5.75	-	3.5	3	311090R	▲	
311.0200.40	17.7	2	5.75	0.2	3.5	3	311090R	▲	
311.0250.40	17.7	2.5	5.75	0.2	3.5	3	311090R	▲	
311.0300.40	17.7	3	5.75	0.2	3.5	3	311090R	▲	
311.0400.40	17.7	4	5.75	0.2	3.5	3	311090R	▲	
Dimensions in mm								P	●
								M	●
								K	-
								N	●
								S	o
								H	-

B



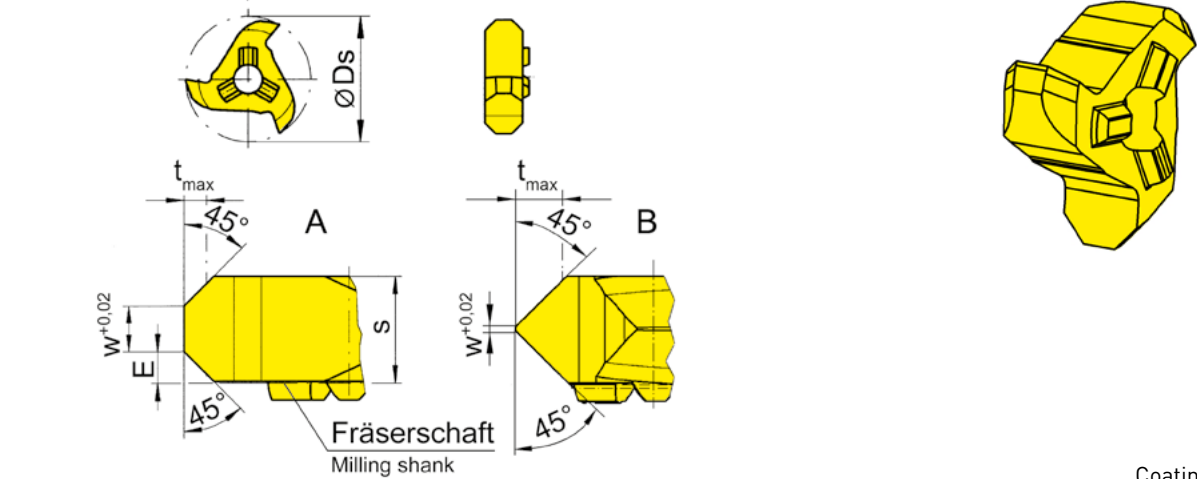
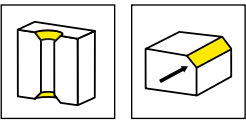
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	TN35
311.0007.15	17.7	1.5	5.75	0.75	3.5	3	311090R	▲	
311.0010.20	17.7	2	5.75	1	3.5	3	311090R	▲	
311.0011.22	17.7	2.2	5.75	1.1	3.5	3	311090R	▲	▲
311.0015.30	17.7	3	5.75	1.5	3.5	3	311090R	▲	
311.0020.40	17.7	4	5.75	2	3.5	3	311090R	▲	
Dimensions in mm								P	● ●
								M	● -
								K	● ●
								N	- -
								S	o -
								H	- -



Picture = right hand cutting version

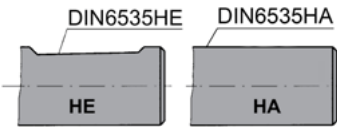
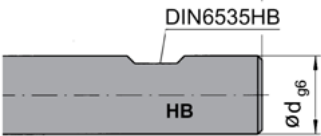
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	Form	t _{max}	Z	HIS	IG65	Ti25	TN35
311.4545.00	17.7	1.7	5.95	2.5	A	1.4	3	311090R	▲	▲	▲
311.4545.20	15	2.95	5.95	0.2	B	2.5	3	311090R	▲	▲	▲

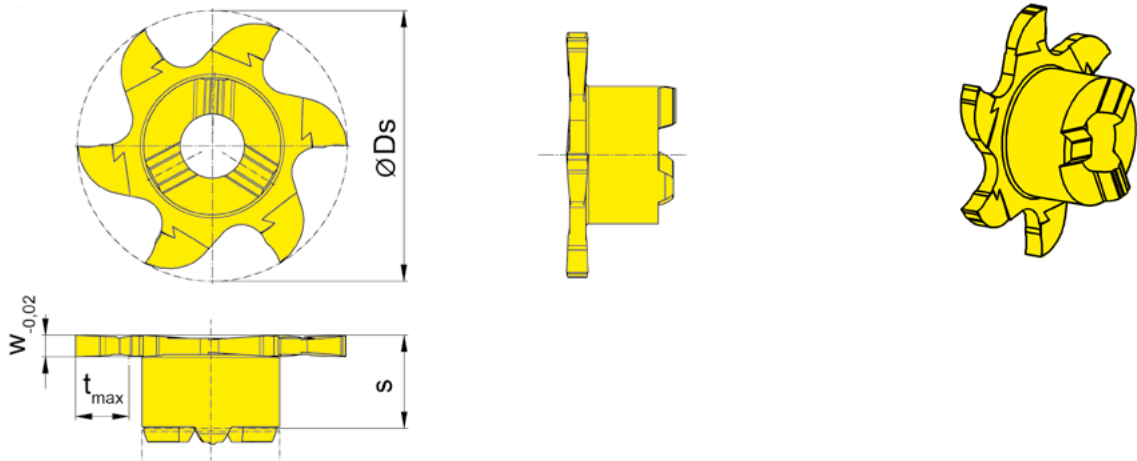
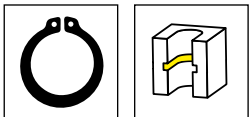
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



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

B

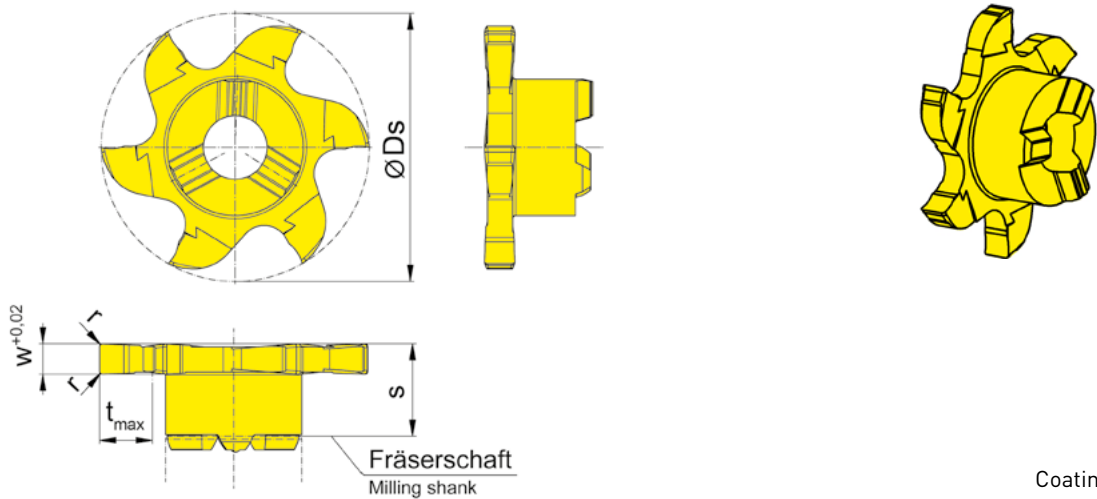
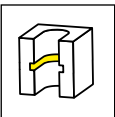


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Nw	w	s	t _{max}	Z	HIS		AS45	Ti25
611.0110.00	17.7	1.1	1.21	6.1	3.5	6	311090R		▲	▲
611.0130.00	17.7	1.3	1.41	6.1	3.5	6	311090R		▲	▲
611.0160.00	17.7	1.6	1.71	6.1	3.5	6	311090R		▲	▲
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly								P	●	●
Widths for circlip grooves DIN 471/472								M	●	●
Dimensions in mm								K	●	-
								N	-	●
								S	○	○
								H	-	-



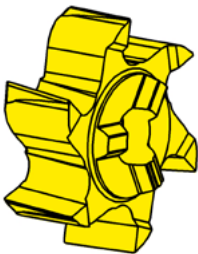
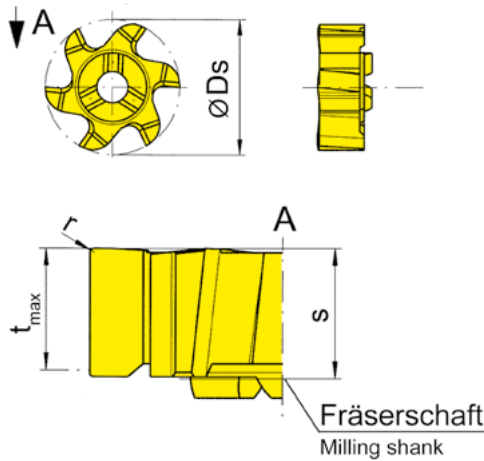
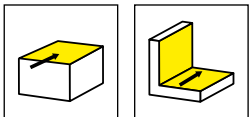
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	IG65	TI25
611.0050.00	17.7	0.5	6.1	-	3.5	6	311090R			
611.0100.00	17.7	1	6.1	-	3.5	6	311090R			
611.0150.00	17.7	1.5	6.1	-	3.5	6	311090R	▲		▲
611.0200.00	17.7	2	6.1	0.2	3.5	6	311090R	▲		▲
611.0250.00	17.7	2.5	6.1	0.2	3.5	6	311090R	▲	▲	▲
611.0300.00	17.7	3	6.1	0.2	3.5	6	311090R	▲	▲	▲
611.0400.00	17.7	4	6.1	0.2	3.5	6	311090R	▲		
from width of groove 2.5 mm toothing with cross-cut								P	●	●
Dimensions in mm								M	●	●
								K	●	●
								N	-	-
								S	o	o
								H	-	-

B



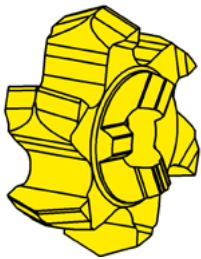
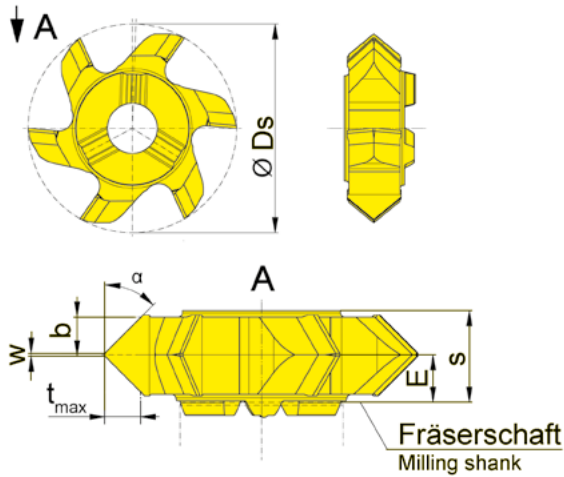
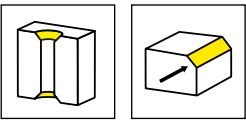
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	Z	r	t _{max}	s	HIS		AS45	TF45	Ti25
611.PL61.62	17.7	6	0.2	5.7	6.1	311090R		▲	▲	▲
Dimensions in mm								P	●	●
								M	●	●
								K	●	-
								N	-	●
								S	o	o
								H	-	-



Picture = right hand cutting version

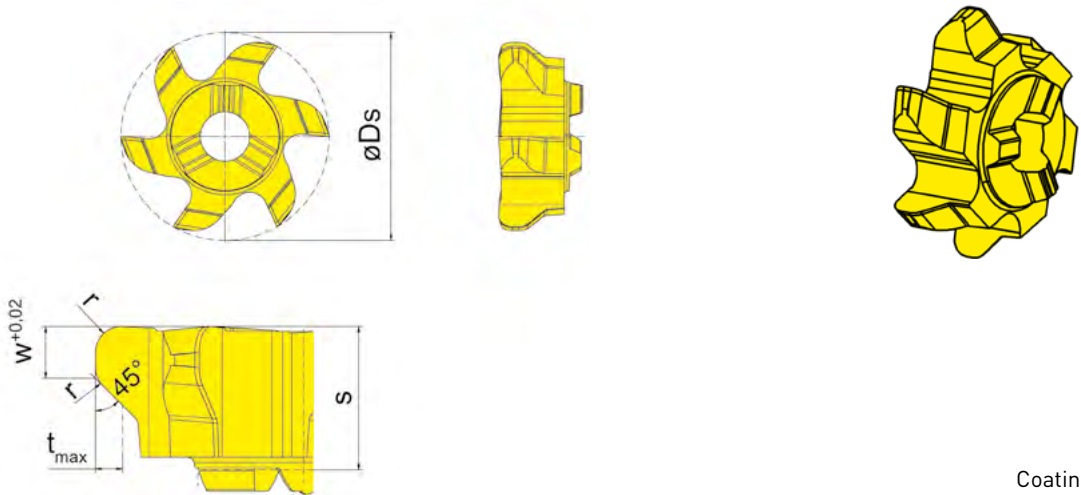
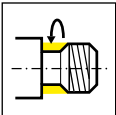
Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	E	s	w	α	b	t _{max}	Z	HIS		AS45	IG65	TA45	Ti25
611.1515.20	17.7	3.2	6.3	0.2	15°	2.8	0.75	6	311090R	▲			▲	
611.2020.20	17.7	3.2	6.3	0.2	20°	2.8	1	6	311090R	▲			▲	
611.3030.20	17.7	3.2	6.3	0.2	30°	2.8	1.6	6	311090R	▲			▲	
611.4545.20	17.7	3.2	6.3	0.2	45°	2.3	2.3	6	311090R	▲	▲			▲
Dimensions in mm											P	•	•	•
											M	•	•	•
											K	•	•	•
											N	-	-	•
											S	o	•	o
											H	-	-	-

B



Picture = right hand cutting version

Coating grades

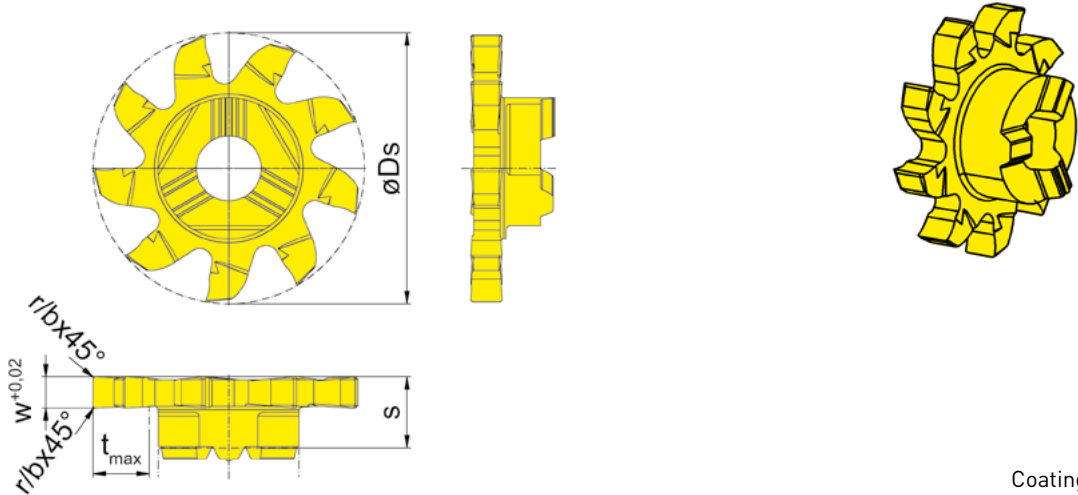
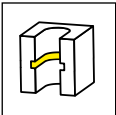
▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS
611.1725.61	17.7	2.2	6.1	1.1	1.3	6	311090R

Thread relief DIN 76

Dimensions in mm

- P
- M
- K
- N
- S
- H



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	b x 45°	r	t _{max}	Z	HIS	EG55	
911.0150.00	17.7	1.5	6.1	0.05	-	3.5	9	311090R	▲	
911.0200.00	17.7	2	6.1	-	0.2	3.5	9	311090R	▲	
911.0250.00	17.7	2.5	6.1	-	0.2	3.5	9	311090R	▲	
911.0300.00	17.7	3	6.1	-	0.2	3.5	9	311090R	▲	
Dimensions in mm										
										P ●
										M ●
										K ●
										N -
										S -
										H -

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6



SYSTEM 313

INDEXABLE GROOVING, CHAMFERING, FACING, THREAD UNDERCUT

Inch Shanks



Page 130
MU313

Ø.500"-.750" Shank



Page 131
MU313

Ø.625" Shank



Page 132
U313

.032"-.047" Circlip



Page 133
U313

.056"-.250" Width



Page 134
U313

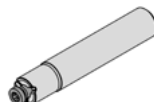
.031"-.125" Radius

Metric Shanks



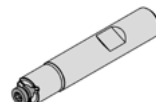
Page 135
M313

Ø12-16mm Shank



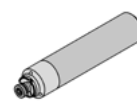
Page 136
M313.ST (Steel)

Ø10-16mm Shank



Page 137
M313.ST (Steel)

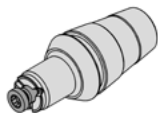
Ø12-16mm Shank



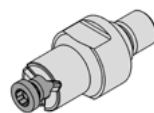
Page 138
M313

Ø16-20mm Shank

Specialty



Page 139-140
M313.ER
ER16, 20, 25, 32



Page 141
M313.M
M8 Screw-in



Page 142-145
313
DIN Circlip



Page 146
313
Circlip with Chamfer



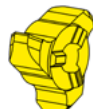
Page 147-149
313
1-6mm Width

Metric Full
Radius (3 Flute)



Page 150
313
0.5-2.5mm Radius

Metric Chamfer
(3 Flute)



Page 151
313
45° Chamfer

Metric Circlip
Grooving (6 Flute)



Page 152
613
DIN Circlip



Page 153
613
Circlip with Chamfer



Page 154
613
1.5-8mm Width

Metric Facing
(6 Flute)



Page 155
613
Facing



Page 156
613
Facing



Page 157
613
Edge Rounding



Page 158
613
15-45° Chamfer



Page 159
613
60° Chamfer

Thread Undercut
(6 Flute)



Page 160
613
45°, 3.8mm Width

Metric Grooving
Widths (7 Flute)



Page 161
713
0.25-3mm Width

Metric Facing
(7 Flute)

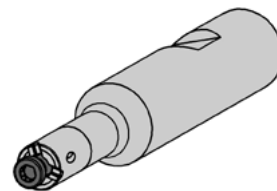
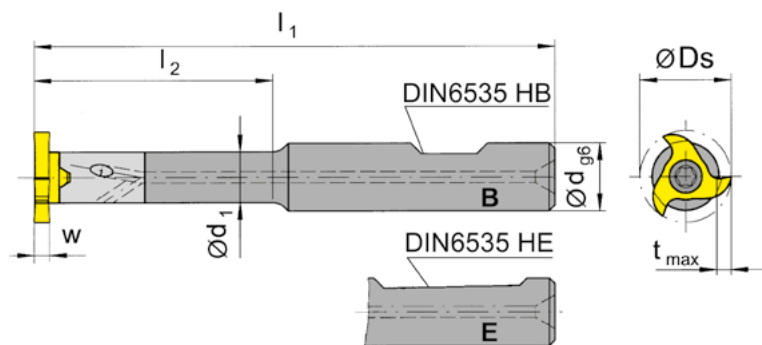
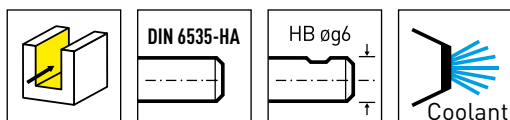


Page 162
713
Facing

Metric Grooving
Widths (9 Flute)



Page 163
913
1.5-3mm Width



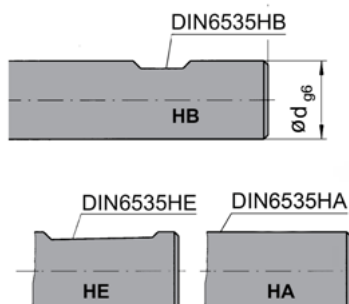
Part number	d	l_1	l_2	d_1	Form	HWS
MU313.0500.01B	.500	3.937	-	-	B	313113R • 313113L
MU313.0500.02B	.500	5.118	-	-	B	313113R • 313113L
MU313.0625.02B	.625	5.118	2.362	.472	B	313113R • 313113L
MU313.0625.03B	.625	6.299	3.346	.472	B	313113R • 313113L
MU313.0750.04B	.750	4.331	1.772	.630	B	313113R • 313113L
MU313.0750.05B	.750	5.118	2.559	.630	B	313113R • 313113L
MU313.1515.08A	.625	7.874	-	-	A	313113R • 313113L

w, Ds, tmax see inserts

Dimensions in inch



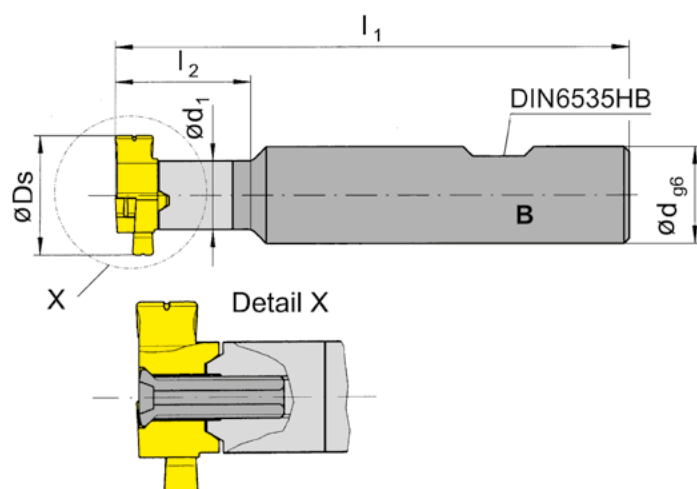
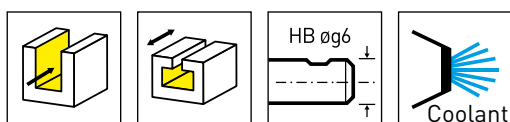
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU313...	5.14T20P	T20PQ	6.5 Nm

B



Picture = right hand cutting version

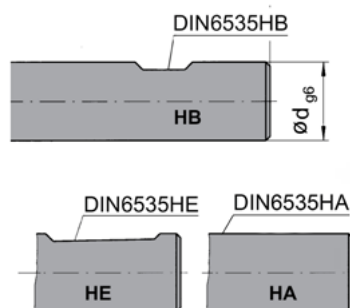
Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU313.0625.00B	.625	3.661	1.181	.445	B	313113R • 313113L

Ds see inserts

Dimensions in inch

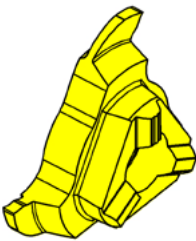
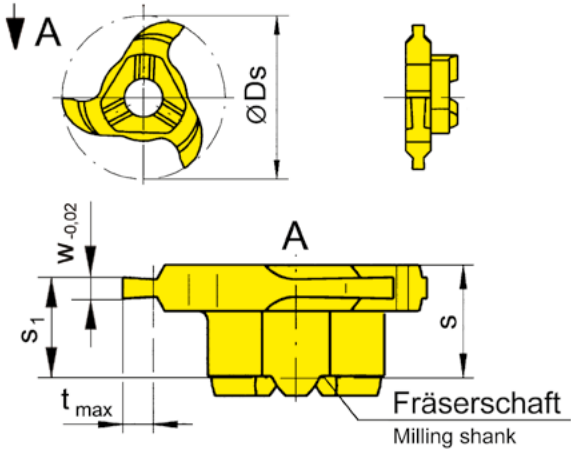


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU313.0625.00B	5.13T20KP	T20PQ	6.5 Nm



Coating grades

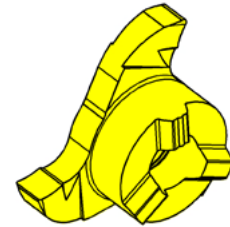
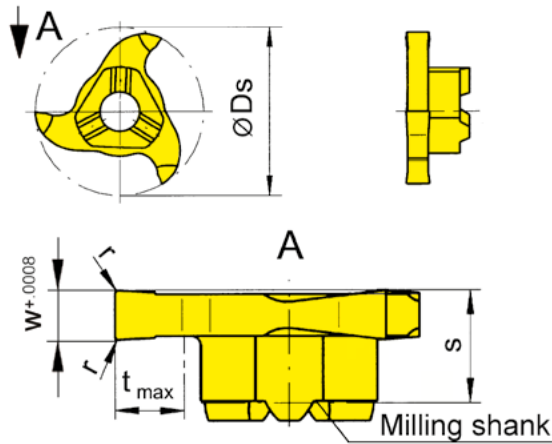
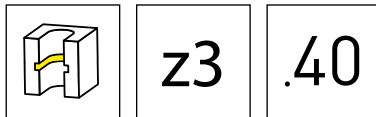
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	s ₁	t _{max}	Z	HIS	MG12	IG65	TN35
U313.0031.00	.854	.032	.232	.224	.059	3	313113R		▲	▲
U313.0034.00	.854	.034	.232	.224	.067	3	313113R			Δ
U313.0039.00	.854	.040	.232	.224	.075	3	313113R		▲	▲
U313.0046.00	.854	.047	.232	.224	.098	3	313113R	Δ	▲	▲
Dimensions in inch								P	-	●
								M	-	●
								K	-	●
								N	●	-
								S	-	●
								H	-	-

B



Coating grades

Picture = right hand cutting version

▲ In stock

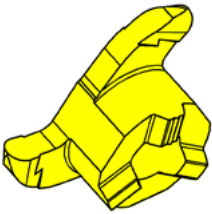
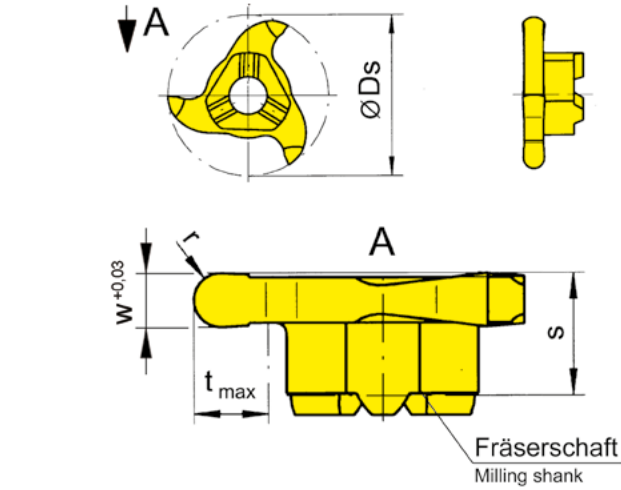
Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		MG12	AS45	IG65	TF45	TN35
U313.0056.00	.854	.056	.224	-	.177	3	313113R				▲		▲
U313.0062.00	.854	.062	.224	-	.177	3	313113R		Δ		▲		▲
U313.0062.08	.854	.062	.224	.008	.177	3	313113R				▲		▲
U313.0078.08	.854	.078	.224	.008	.177	3	313113R				▲		▲
U313.0094.08	.854	.094	.224	.008	.177	3	313113R				▲	▲	▲
U313.0125.08	.854	.125	.224	.008	.177	3	313113R		▲	▲	▲		▲
U313.0157.08	.854	.157	.224	.008	.177	3	313113R		Δ		▲		▲
U313.0172.08	.854	.172	.224	.008	.177	3	313113R						Δ
U313.0187.08	.854	.187	.224	.008	.177	3	313113R		Δ		▲		▲
U313.0250.08	.854	.250	.272	.008	.177	3	313113R		▲	▲	▲		▲
U313.0187.16	.854	.187	.224	.016	.177	3	313113R						Δ

Dimensions in inch



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



Picture = right hand cutting version

Coating grades

▲ In stock

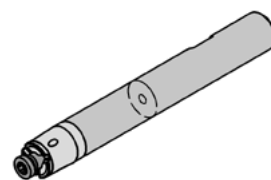
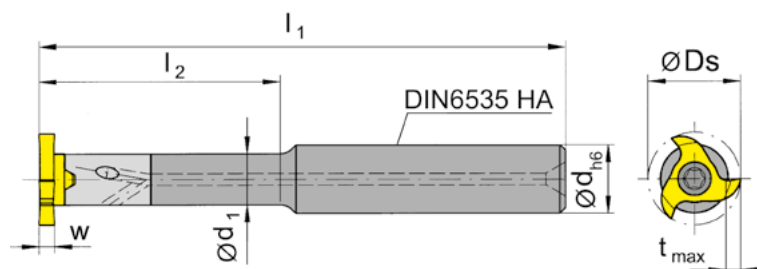
Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TF45	TI25	TN35
U313.0031.62	.854	.062	.224	.031	.177	3	313113R	▲	▲			▲
U313.0047.94	.854	.094	.224	.047	.177	3	313113R	▲		Δ		▲
U313.0062.125	.854	.125	.224	.062	.177	3	313113R	▲	Δ			▲
U313.0078.156	.854	.156	.224	.078	.177	3	313113R	▲				▲
U313.0094.188	.854	.188	.224	.094	.177	3	313113R	▲	Δ			▲
U313.0125.250	.854	.250	.224	.125	.177	3	313113R	▲				▲

Dimensions in inch



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

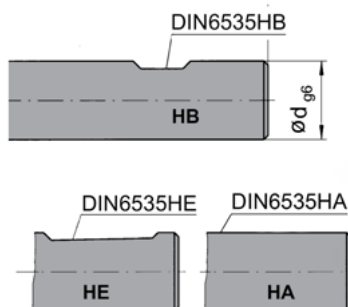


Part number	d	l ₁	l ₂	d ₁	Form	HWS
M313.0012.01A	12	100	-	-	HA	313113R • 313113L
M313.0012.02A	12	130	-	-	HA	313113R • 313113L
M313.0016.01A	16	100	42	12	HA	313113R • 313113L
M313.0016.02A	16	130	60	12	HA	313113R • 313113L
M313.0016.03A	16	160	85	12	HA	313113R • 313113L
M313.0012.01B	12	100	-	-	HB	313113R • 313113L
M313.0012.02B	12	130	-	-	HB	313113R • 313113L
M313.0016.01B	16	100	42	12	HB	313113R • 313113L
M313.0016.02B	16	130	60	12	HB	313113R • 313113L
M313.0016.03B	16	160	85	12	HB	313113R • 313113L
M313.0012.01E	12	100	-	-	HE	313113R • 313113L
M313.0012.02E	12	130	-	-	HE	313113R • 313113L
M313.0016.01E	16	100	42	12	HE	313113R • 313113L
M313.0016.02E	16	130	60	12	HE	313113R • 313113L
M313.0016.03E	16	160	85	12	HE	313113R • 313113L

w, Ds, tmax see inserts

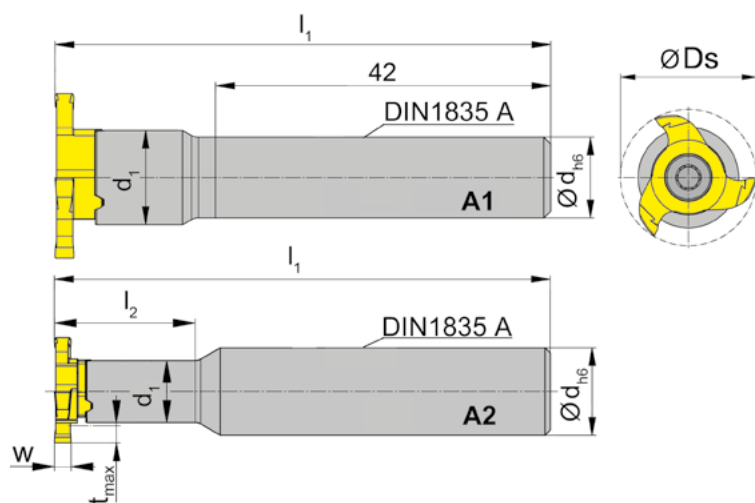
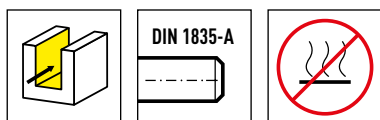
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm



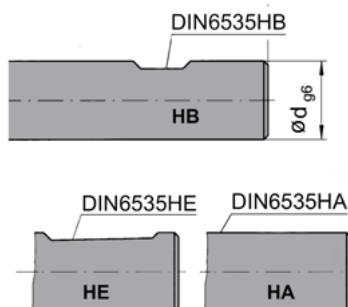
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M313.ST10.01A	10	60	-	11.3	A	313113R • 313113L
M313.ST12.01A	12	70	18	11.3	A	313113R • 313113L
M313.ST13.01A	13	70	26	11.3	A	313113R • 313113L
M313.ST16.01A	16	80	26	11.3	A	313113R • 313113L

Holders with ".ST " are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

Dimensions in mm

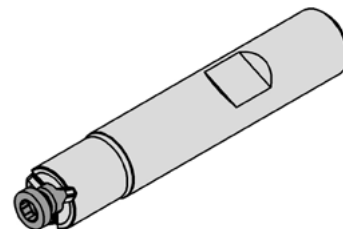
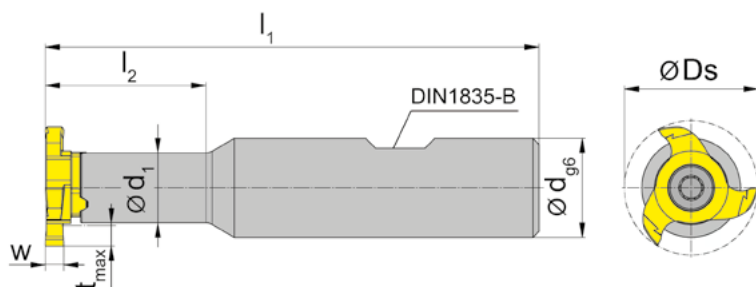
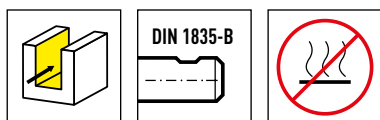
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm

B



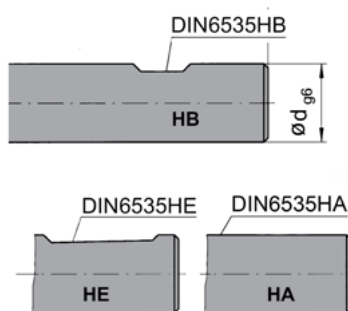
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M313.ST12.01B	12	70	18	11.3	B	313113R • 313113L
M313.ST16.01B	16	80	26	11.3	B	313113R • 313113L

Holders with ".ST " are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

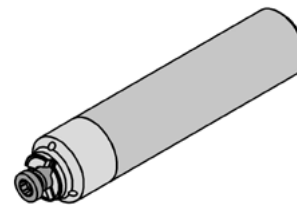
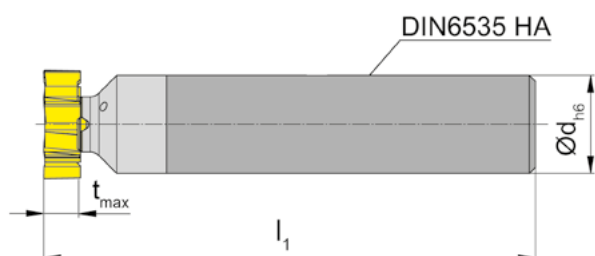
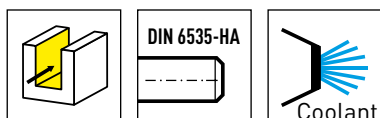
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm

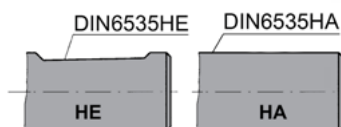
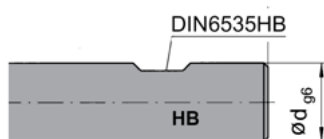


Part number	d	l ₁	Form	HWS
M313.0016.D.00A	16	80	HA	313113R • 313113L
M313.0020.D.00A	20	80	HA	313113R • 313113L

t_{max} and D_s see inserts

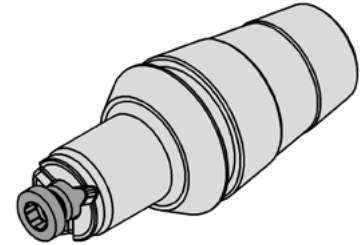
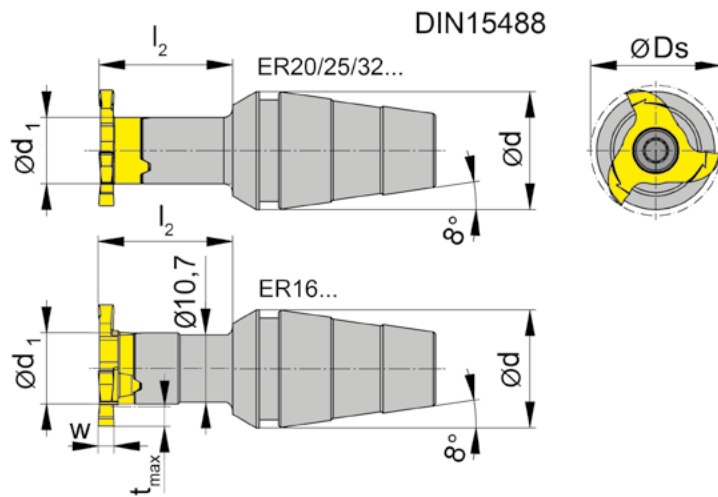
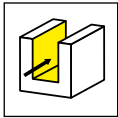
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm



Part number	d	l ₂	d ₁	Clamping nut	HWS
M313.ER16.01	16	20	11.3	ER16.6499/ERM16.6499	313113R • 313113L
M313.ER16.02	16	30	11.3	ER16.6499/ERM16.6499	313113R • 313113L
M313.ER20.01	20	20	11.3	ER20.6499/ERM20.6499	313113R • 313113L
M313.ER20.02	20	30	11.3	ER20.6499/ERM20.6499	313113R • 313113L
M313.ER25.02	25	30	11.3	ER25.6499	313113R • 313113L
M313.ER32.02	32	30	11.3	ER32.6499	313113R • 313113L

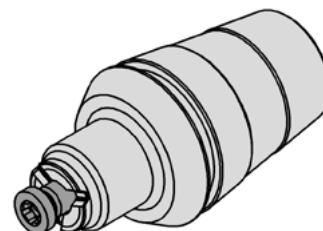
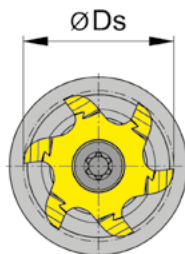
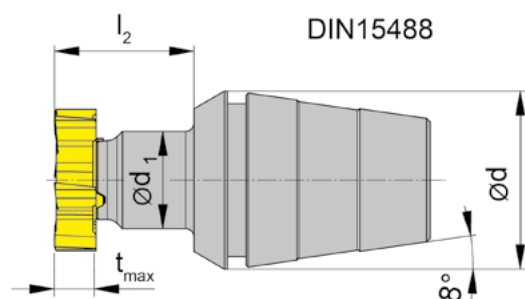
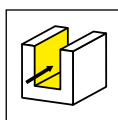
w, Ds, tmax see inserts

Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm



Part number	d	l_2	d_1	Clamping nut	HWS
M313.ER25.14.01	25	19.7	14	ER25.6499	313113R • 313113L
M313.ER32.14.01	32	19.7	14	ER32.6499	313113R • 313113L

tmax and Ds see inserts

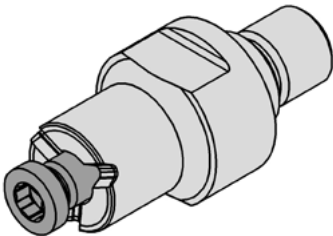
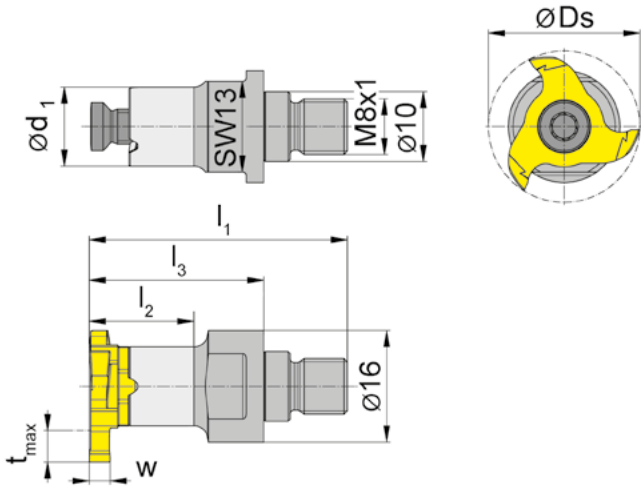
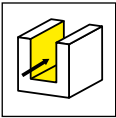
Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm

B



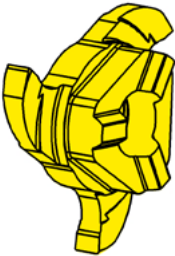
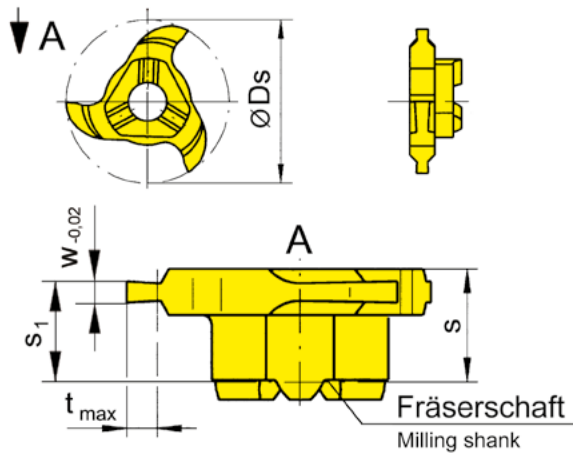
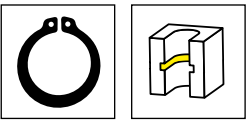
Part number	l_1	l_2	l_3	d_1	SW	HWS	HMS
M313.M081.01	37	15	25	11.3	13	313113R • 313113L	8201

w, Ds, tmax see inserts

Dimensions in mm

Spare Parts

Screw-in Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313.M081.01	5.14T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	Nw	w	s	s ₁	t _{max}	Z	HIS	EG55	TN35
313.0070.00	21.7	0.7	0.77	5.9	5.6	1.5	3	313113R	▲	▲
313.0080.00	21.7	0.8	0.87	5.9	5.6	1.7	3	313113R	▲	▲
313.0090.00	21.7	0.9	0.97	5.9	5.6	1.9	3	313113R	▲	▲
313.0100.00	21.7	1	1.07	5.9	5.6	2.2	3	313113R	▲	▲
313.0110.00	21.7	1.1	1.21	5.9	5.6	2.5	3	313113R	▲	▲

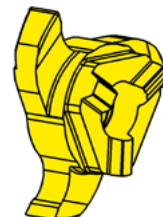
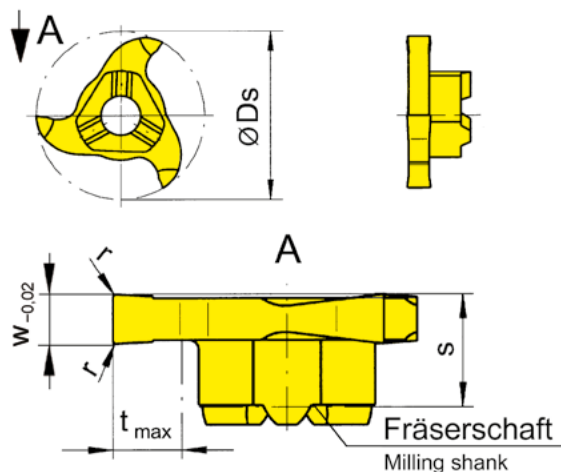
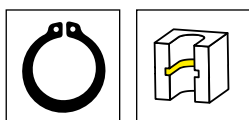
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

Dimensions in mm

P	●	●
M	●	-
K	●	●
N	-	-
S	-	-
H	-	-

B



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	r	t _{max}	Z	HIS		AS45	EG55	IG65	TI25	TN35
L313.0130.00	21.7	1.3	1.41	5.7	-	4.5	3	313113R	▲	▲	▲			▲
L313.0160.00	21.7	1.6	1.71	5.7	-	4.5	3	313113R	▲	▲	▲			▲
L313.0185.00	21.7	1.85	1.96	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0215.00	21.7	2.15	2.26	5.7	0.2	4.5	3	313113R	▲	▲	▲	Δ		▲
L313.0265.00	21.7	2.65	2.76	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0315.00	21.7	3.15	3.26	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0415.00	21.7	4.15	4.26	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0515.00	21.7	5.15	5.26	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
										P	●	●	●	●
										M	●	●	●	-
										K	●	●	●	●
										N	-	-	-	-
										S	o	-	o	-
										H	-	-	-	-

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

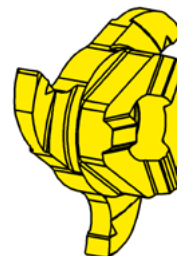
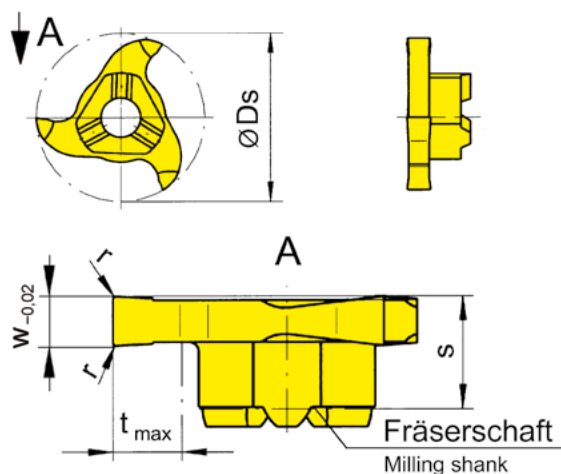
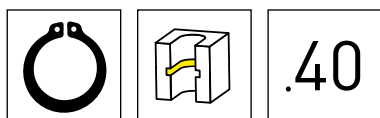
from cutting width = 4 mm -> recommendation for the shortest milling shank

Inserts for widths of groove t_{max} down to 0.5 mm can be delivered with reduced depth upon request.

Inserts 313.0415.00 and 313.0515.00

only with toolholder dimension l₂ = max. 42 mm

Dimensions in mm



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	r	t _{max}	Z	HIS	Tl25
313.0130.40	21.7	1.3	1.41	5.7	-	4.5	3	313113R	▲
313.0160.40	21.7	1.6	1.71	5.7	-	4.5	3	313113R	▲
313.0185.40	21.7	1.85	1.96	5.7	0.2	4.5	3	313113R	▲
313.0215.40	21.7	2.15	2.26	5.7	0.2	4.5	3	313113R	▲
313.0265.40	21.7	2.65	2.76	5.7	0.2	4.5	3	313113R	▲
313.0315.40	21.7	3.15	3.26	5.7	0.2	4.5	3	313113R	▲
313.0415.40	21.7	4.15	4.26	5.7	0.2	4.5	3	313113R	▲
313.0515.40	21.7	5.15	5.26	5.7	0.2	4.5	3	313113R	▲

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

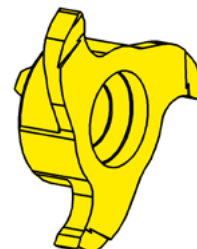
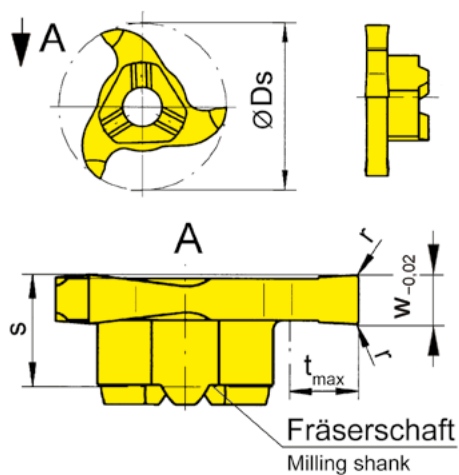
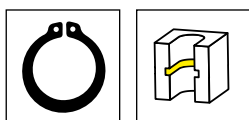
from cutting width = 4 mm -> recommendation for the shortest milling shank

Inserts 313.0415.40 and 313.0515.40

only with toolholder dimension l2 = max. 42 mm

Dimensions in mm

P	●
M	●
K	-
N	●
S	o
H	-



Coating grades

Picture = left hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	r	t _{max}	Z	HIS	AS45	EG55	Ti25
L313.0130.00	21.7	1.3	1.41	5.7	-	4.5	3	313113L	Δ	Δ	
L313.0160.00	21.7	1.6	1.71	5.7	-	4.5	3	313113L	Δ	Δ	
L313.0185.00	21.7	1.85	1.96	5.7	0.2	4.5	3	313113L	Δ	Δ	
L313.0215.00	21.7	2.15	2.26	5.7	0.2	4.5	3	313113L	Δ	Δ	Δ
L313.0265.00	21.7	2.65	2.76	5.7	0.2	4.5	3	313113L	Δ	Δ	
L313.0315.00	21.7	3.15	3.26	5.7	0.2	4.5	3	313113L	Δ	Δ	
L313.0415.00	21.7	4.15	4.26	5.7	0.2	4.5	3	313113L	Δ	Δ	
L313.0515.00	21.7	5.15	5.26	5.7	0.2	4.5	3	313113L	Δ	Δ	

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

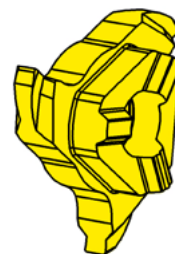
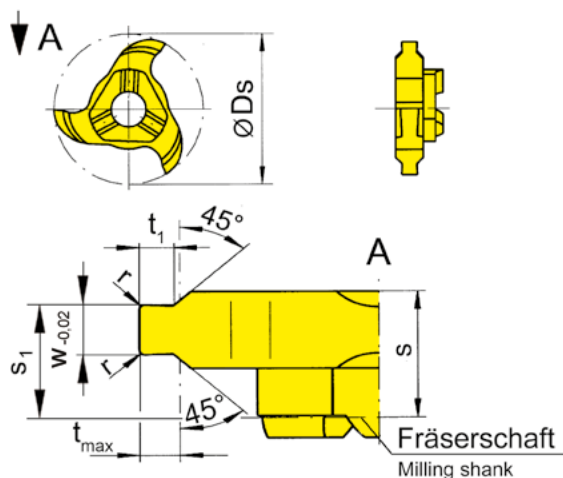
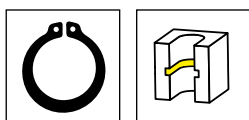
from cutting width = 4 mm -> recommendation for the shortest milling shank

Inserts L313.0415.00 and L313.0515.00

only with toolholder dimension l2 = max. 42 mm

Dimensions in mm

P	●	●	●
M	●	●	●
K	●	●	-
N	-	-	●
S	o	-	o
H	-	-	-



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	t ₁	s	s ₁	r	t _{max}	Z	HIS	AS45	EG55	IG65	TN35
313.1105.30	21.7	1.1	1.21	0.47	5.9	5.07	-	0.5	3	313113R		▲		▲
313.1307.30	21.7	1.3	1.41	0.65	5.9	5.17	-	0.7	3	313113R	Δ	▲		▲
313.1308.30	21.7	1.3	1.41	0.81	5.9	5.17	-	0.85	3	313113R		▲		▲
313.1609.35	21.7	1.6	1.71	0.81	5.9	5.07	-	0.85	3	313113R		▲		▲
313.1610.35	21.7	1.6	1.71	0.95	5.9	5.07	-	1	3	313113R	▲	▲	▲	▲
313.1812.35	21.7	1.85	1.96	1.21	5.9	5.19	0.2	1.25	3	313113R	▲	▲		▲
313.2616.45	21.7	2.65	2.76	1.45	5.9	5.09	0.2	1.5	3	313113R	▲	▲		▲
313.2617.45	21.7	2.65	2.76	1.7	5.9	5.09	0.2	1.75	3	313113R		▲		▲
313.3118.45	21.7	3.15	3.26	1.7	5.9	5.34	0.2	1.75	3	313113R	Δ	▲		▲
313.4120.55	21.7	4.15	4.26	1.95	5.9	5.34	0.2	2	3	313113R		▲		▲
313.4125.55	21.7	4.15	4.26	2.45	5.9	5.34	0.2	2.5	3	313113R		▲		▲

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472 with chamfer

from cutting width = 4 mm -> recommendation for the shortest milling shank

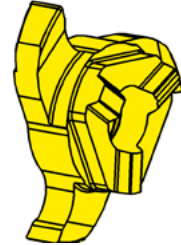
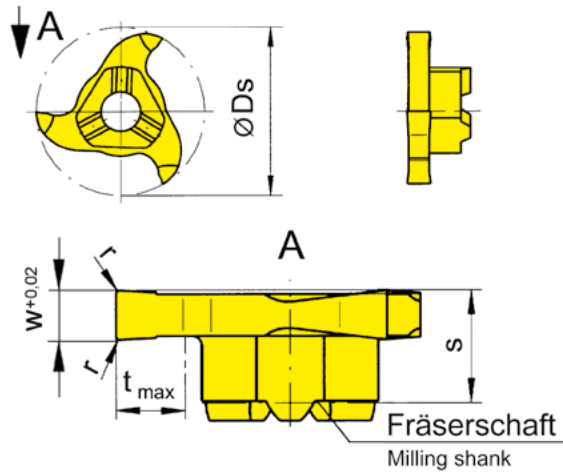
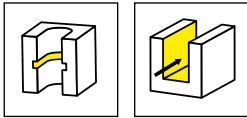
Inserts 313.4120.55 and 313.4125.55

only with toolholder dimension l2 = max. 42 mm

Dimensions in mm

	P	M	K	N	S	H
AS45	●	●	●	-	o	-
EG55	●	●	●	-	-	-
IG65	●	●	●	-	●	-
TN35	●	-	●	-	-	-

B



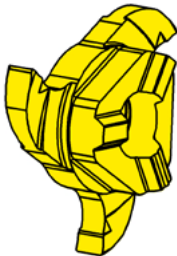
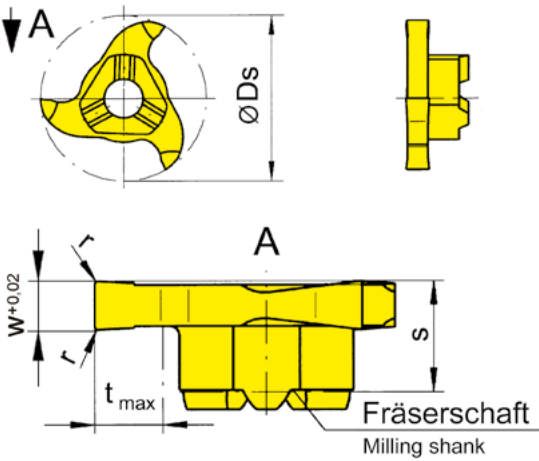
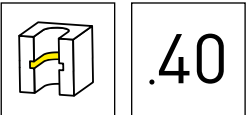
Coating grades

Picture = right hand cutting version

▲ In stock

△ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	EG55	IG65	TI25	TN35
L313.0150.00	21.7	1.5	5.7	-	4.5	3	313113R	▲	▲				▲
L313.0150.01	21.7	1.5	5.7	0.1	4.5	3	313113R	▲	▲				
L313.0200.00	21.7	2	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0250.00	21.7	2.5	5.7	0.2	4.5	3	313113R	▲	▲	▲	▲		▲
L313.0300.00	21.7	3	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0350.00	21.7	3.5	5.7	0.2	4.5	3	313113R	▲	▲		▲		
L313.0400.00	21.7	4	5.7	0.2	4.5	3	313113R	▲	▲	▲			▲
L313.0500.00	21.7	5	5.7	0.2	4.5	3	313113R	▲	▲				▲
L313.0600.00	21.7	6	6.9	0.2	4.5	3	313113R	▲	▲				▲
from cutting width = 4 mm -> recommendation for the shortest milling shank									P	●	●	●	●
Insert 313.0600.00 with chip divider!									M	●	●	●	-
Dimensions in mm									K	●	●	●	●
									N	-	-	-	-
									S	o	-	o	-
									H	-	-	-	-



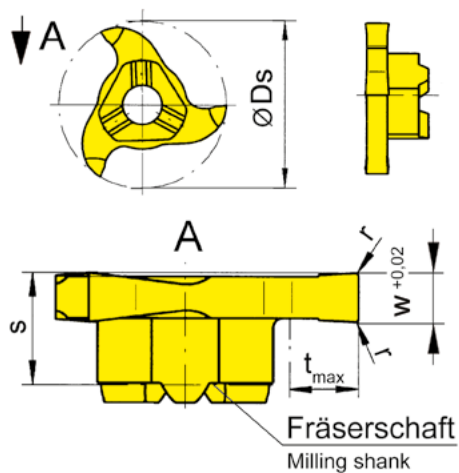
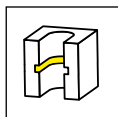
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	Ti25
313.0150.40	21.7	1.5	5.7	-	4.5	3	313113R	▲
313.0200.40	21.7	2	5.7	0.2	4.5	3	313113R	▲
313.0250.40	21.7	2.5	5.7	0.2	4.5	3	313113R	▲
313.0300.40	21.7	3	5.7	0.2	4.5	3	313113R	▲
313.0400.40	21.7	4	5.7	0.2	4.5	3	313113R	▲
from cutting width = 4 mm -> recommendation for the shortest milling shank								P ●
Dimensions in mm								M ●
								K -
								N ●
								S o
								H -

B



Coating grades

Picture = left hand cutting version

▲ In stock

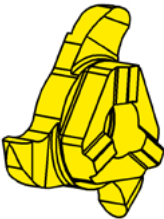
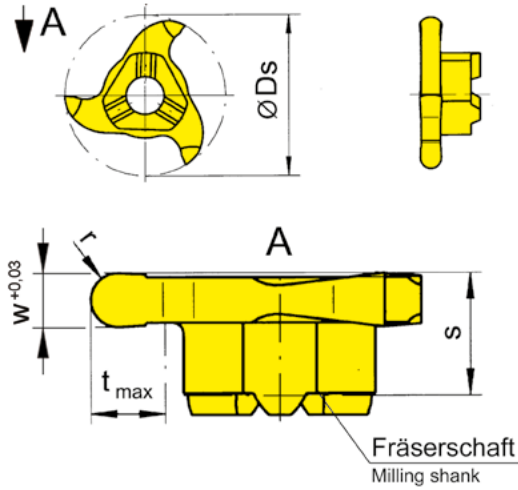
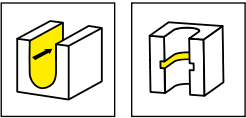
Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	EG55	IG65	TI25	TN35
L313.0150.00	21.7	1.5	5.7	-	4.5	3	313113L		Δ	Δ			
L313.0150.01	21.7	1.5	5.7	0.1	4.5	3	313113L		Δ	Δ			
L313.0200.00	21.7	2	5.7	0.2	4.5	3	313113L		Δ	Δ			
L313.0250.00	21.7	2.5	5.7	0.2	4.5	3	313113L		Δ	Δ			
L313.0300.00	21.7	3	5.7	0.2	4.5	3	313113L		Δ	Δ			
L313.0350.00	21.7	3.5	5.7	0.2	4.5	3	313113L		Δ	Δ		Δ	
L313.0400.00	21.7	4	5.7	0.2	4.5	3	313113L		Δ	Δ			
L313.0500.00	21.7	5	5.7	0.2	4.5	3	313113L		Δ	Δ			
L313.0600.00	21.7	6	6.9	0.2	4.5	3	313113L		Δ	Δ			
313.0100.1.00	21.7	1	5.7	-	4.5	3	313113R				▲	▲	▲

from cutting width = 4 mm -> recommendation for the shortest milling shank

Dimensions in mm

P	●	●	●	●	●
M	●	●	●	●	-
K	●	●	●	-	●
N	-	-	-	●	-
S	o	-	●	o	-
H	-	-	-	-	-



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

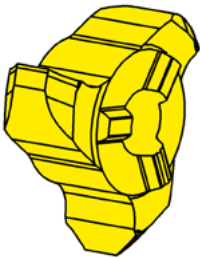
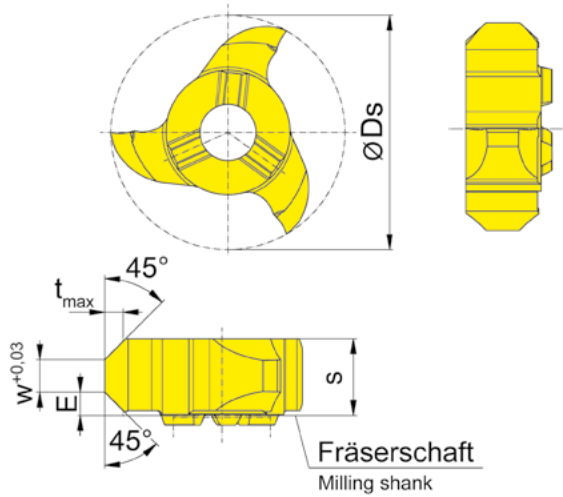
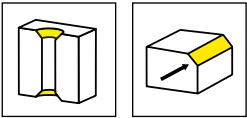
Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	EG55	IG35	IG65	TN35
313.0005.10	21.7	1	5.7	0.5	4.5	3	313113R			▲		▲	▲
313.0007.15	21.7	1.5	5.7	0.75	4.5	3	313113R	▲	▲			▲	▲
313.0010.20	21.7	2	5.7	1	4.5	3	313113R	▲	▲			▲	▲
313.0014.28	21.7	2.8	5.7	1.4	4.5	3	313113R	▲	▲			▲	▲
313.0015.30	21.7	3	5.7	1.5	4.5	3	313113R	▲	▲			▲	▲
313.0020.40	21.7	4	5.7	2	4.5	3	313113R	▲	▲	Δ		▲	▲
313.0025.50	21.7	5	5.7	2.5	4.5	3	313113R	▲	▲			▲	▲

from cutting width = 4 mm -> recommendation for the shortest milling shank

Dimensions in mm

P	●	●	●	●	●
M	●	●	●	●	-
K	●	●	●	●	●
N	-	-	-	-	-
S	o	-	●	●	-
H	-	-	-	-	-

B

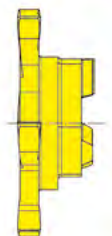
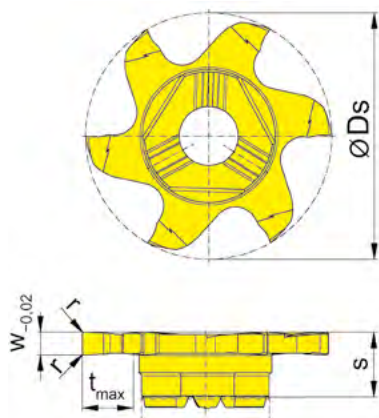
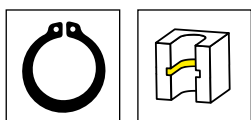


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	t _{max}	Z	HIS		EG55	IG65	TA45	TN35	
313.4545.00	21.7	2.15	7.1	3	1.7	3	313113R		▲	▲		▲	
313.4545.30.00	21.7	3.6	9.4	2.6	3	3	313113R		▲	▲	▲		
For Insert 7.1 mm use screw 5.17T20P									P	●	●	●	●
For Insert 9.4 mm use screw 5.13T20P									M	●	●	●	-
									K	●	●	●	●
Dimensions in mm									N	-	-	-	-
									S	-	●	-	-
									H	-	-	-	-



Coating grades

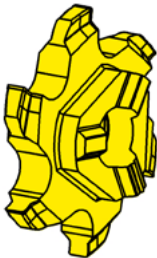
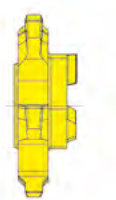
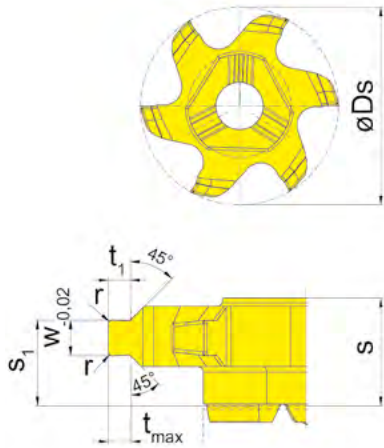
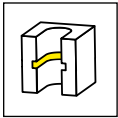
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	r	t _{max}	Z	HIS		AS45	EG55	IG65	TI25	
613.0130.00	21.7	1.3	1.41	5.7	-	4.5	6	313113R		▲	▲			
613.0215.00	21.7	2.15	2.26	5.7	0.2	4.5	6	313113R		▲	▲			
613.0315.00	21.7	3.15	3.26	5.7	0.2	4.5	6	313113R		▲	▲			
613.0415.00	21.7	4.15	4.26	5.7	0.2	4.5	6	313113R		▲	▲			
613.0515.00	21.7	5.15	5.26	5.7	0.2	4.5	6	313113R		▲	▲			
613.0100.1.00	21.7	-	1	5.7	-	4.5	6	313113R			▲	▲	▲	
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly										P	●	●	●	●
										M	●	●	●	●
										K	●	●	●	-
										N	-	-	-	●
Widths for circlip grooves DIN 471/472										S	○	-	●	○
										H	-	-	-	-
from width of groove = 2.25 mm toothing with cross-cut														

B



Coating grades

Picture = right hand cutting version

▲ In stock

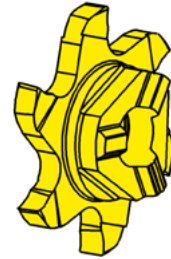
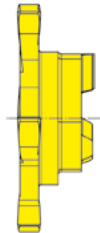
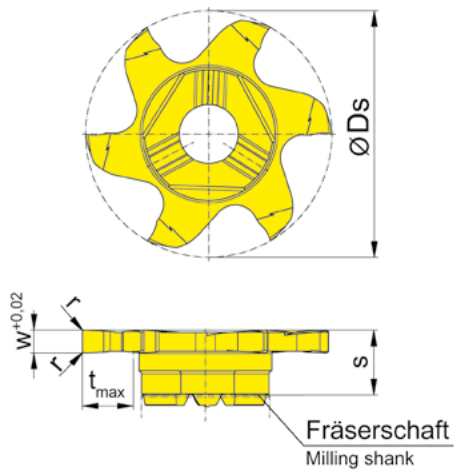
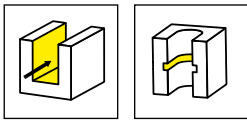
Δ 2 weeks

Part number	Ds	Nw	w	t ₁	s	s ₁	r	t _{max}	Z	HIS	AS45	EG55
613.1812.35	21.7	1.85	1.96	1.21	5.9	4.7	0.2	1.25	6	313113R	▲	▲
613.2115.35	21.7	2.15	2.26	1.45	5.9	4.9	0.2	1.5	6	313113R	▲	▲
											P	●
											M	●
											K	●
											N	-
											S	-
											H	-

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472 with chamfer

Dimensions in mm



Coating grades

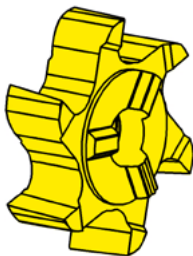
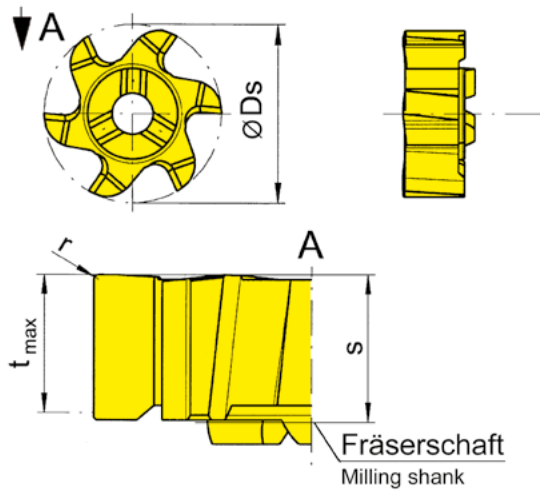
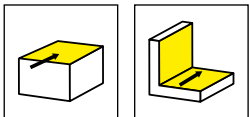
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	EG55	IG65	TI25
613.0150.00	21.7	1.5	5.7	-	4.5	6	313113R	▲	▲		▲
613.0200.00	21.7	2	5.7	0.2	4.5	6	313113R	▲	▲	▲	▲
613.0250.00	21.7	2.5	5.7	0.2	4.5	6	313113R	▲	▲		▲
613.0300.00	21.7	3	5.7	0.2	4.5	6	313113R	▲	▲		▲
613.0400.00	21.7	4	5.7	0.2	4.5	6	313113R	▲	▲	▲	▲
613.0600.00	21.7	6	7.35	0.2	4.5	6	313113R		▲		
613.0800.00	21.7	8	9.15	0.2	4.5	6	313113R		▲		
from width of groove 2.5 mm toothing with cross-cut								P	•	•	•
Insert w ≥ 4 mm								M	•	•	•
only with toolholder dimension l2 = max. 42 mm								K	•	•	-
from cutting width = 4 mm -> recommendation for the shortest milling shank								N	-	-	•
Dimensions in mm								S	o	-	o
								H	-	-	-

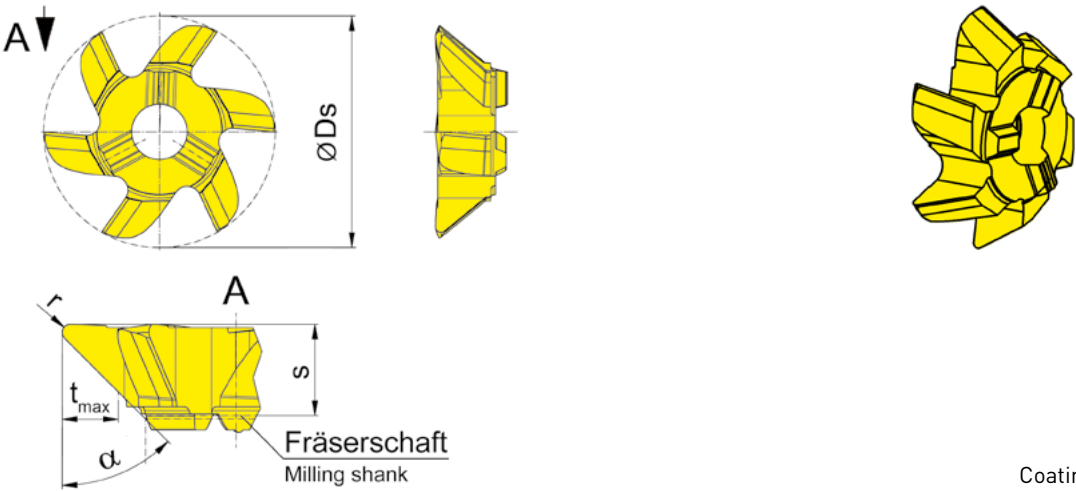
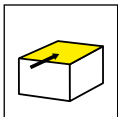
B



Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	Z	r	t _{max}	s	HIS		AS45	EG55	TF45	Ti25
613.PL61.62	21.7	6	0.2	5.7	6.1	313113R		▲	▲	▲	▲
613.PLT6.15	21.7	6	1.5	5.7	6.1	313113R		▲	▲		Δ
Dimensions in mm							P	●	●	●	●
							M	●	●	●	●
							K	●	●	●	-
							N	-	-	-	●
							S	o	-	-	o
							H	-	-	-	-



Picture = right hand cutting version

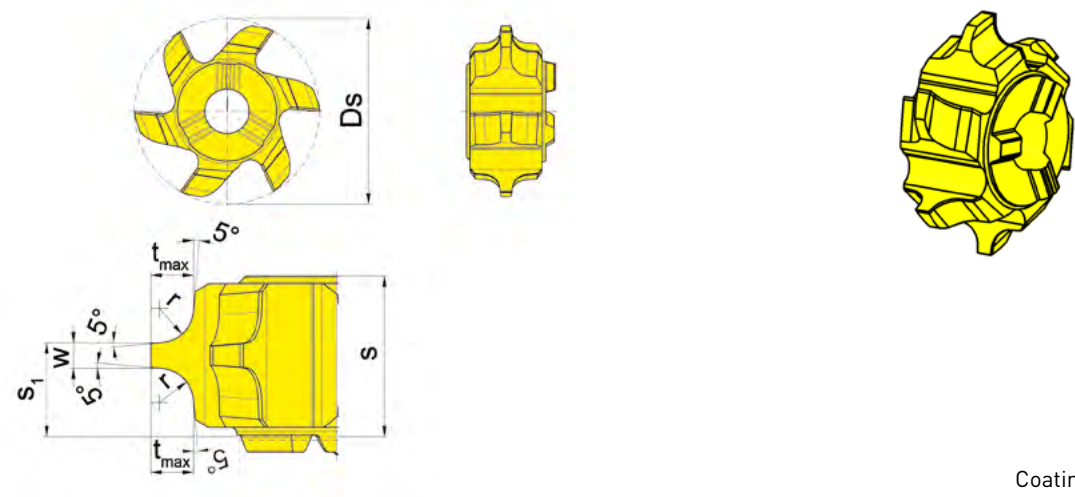
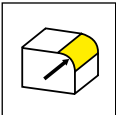
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Z	r	α	t_{max}	s	HIS		
								AS45	EG55
613.0015.25	21.7	6	0.5	15°	1.1	5.7	313113R	▲	▲
613.0030.25	21.7	6	0.5	30°	2.3	5.7	313113R	▲	▲
613.0045.25	21.7	6	0.5	45°	3.5	5.7	313113R	▲	▲
								P	● ●
								M	● ●
								K	● ●
								N	- -
								S	o -
								H	- -

Dimensions in mm

B



Picture = right hand cutting version

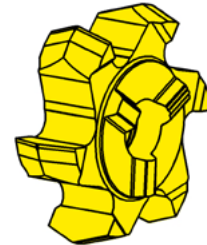
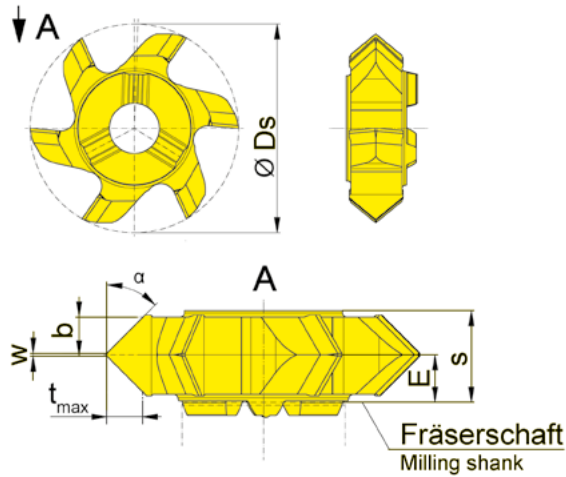
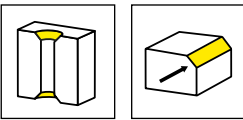
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	s	s ₁	r	w	t _{max}	Z	HIS	AS45	
613.R100.00	21.7	6.3	4	1	1.5	1.5	6	313113R	▲	P ●
613.R150.00	21.7	7.6	4.6	1.5	1.5	2	6	313113R	▲	M ●
613.R200.00	21.7	9.4	5.5	2	1.5	2.5	6	313113R	▲	K ●
613.R250.00	21.7	9.9	5.75	2.5	1.5	3	6	313113R	▲	N -
613.R300.00	21.7	9.9	5.75	3	1.5	3.5	6	313113R	▲	S o
										H -

For Insert = 6,3 mm use screw 5.14T20P
For Insert = 7,6 mm use screw 5.17T20P
For Insert = 9,4-9,9 mm use screw 5.13T20P

Dimensions in mm



Picture = right hand cutting version

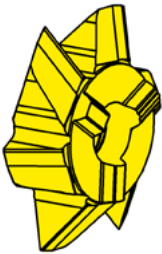
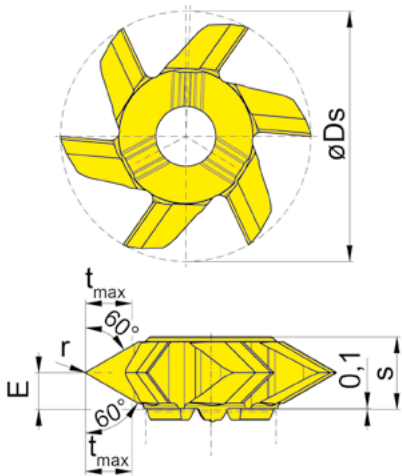
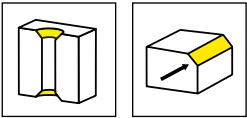
Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	E	s	w	a	b	t _{max}	Z	HIS		EG55	IG65	TA45	TI25
613.1515.20	21.7	3.3	6.3	0.2	15°	2.7	0.75	6	313113R	▲	▲	▲	▲	▲
613.2020.20	21.7	3.3	6.3	0.2	20°	2.7	1	6	313113R	▲	▲	▲	▲	▲
613.3030.20	21.7	3.3	6.3	0.2	30°	2.7	1.6	6	313113R	▲	▲	▲	▲	▲
613.4545.20	21.7	3.3	6.3	0.2	45°	2.5	2.5	6	313113R	▲	▲	▲	▲	▲
Dimensions in mm											P	•	•	•
											M	•	•	•
											K	•	•	•
											N	-	-	•
											S	-	•	•
											H	-	-	-

B

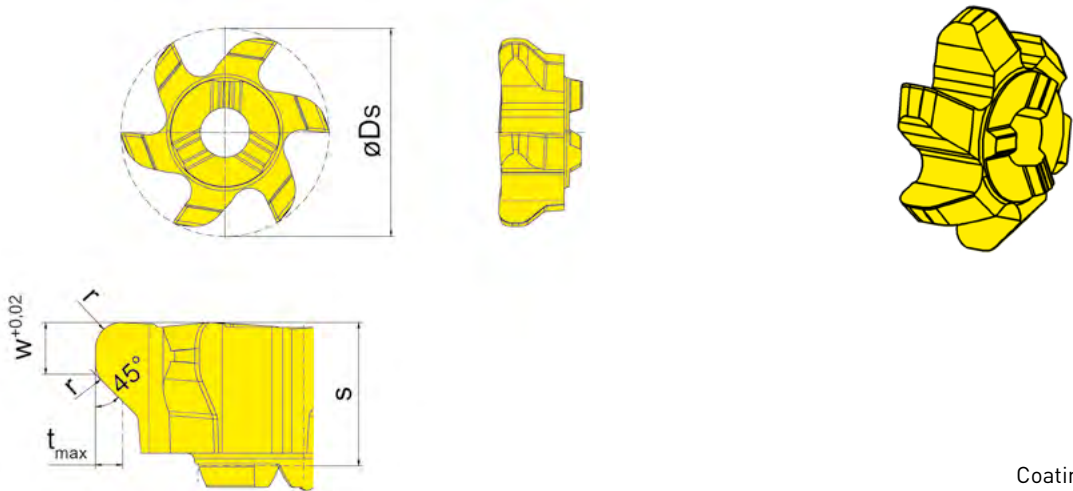
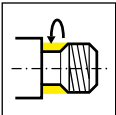


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	r	t _{max}	Z	HIS	AS45
613.6060.05	21.7	3.2	6.3	0.05	4	6	313113R	▲
Dimensions in mm								P ●
								M ●
								K ●
								N -
								S o
								H -



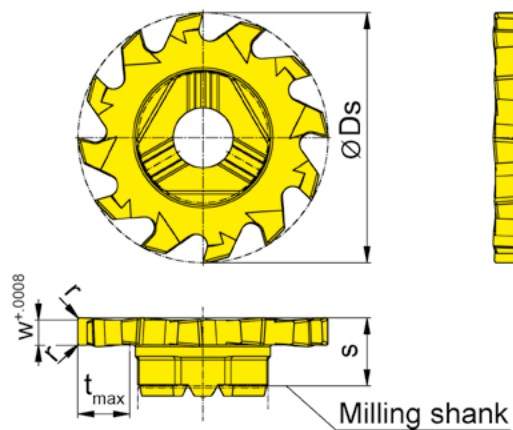
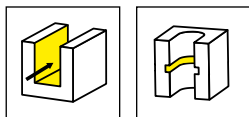
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	EG55	
613.3035.61	21.7	3.8	7.35	1.6	2.5	6	313113R	▲	
Thread relief DIN 76									P ●
Dimensions in mm									M ●
									K ●
									N -
									S -
									H -

B



Coating grades

Picture = right hand cutting version

▲ In stock

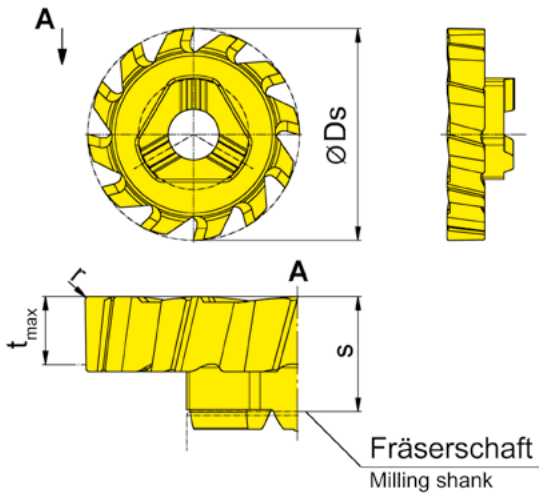
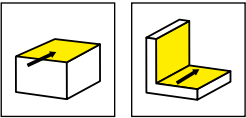
△ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	EG35	EG55	TI25
713.0025.00	21.7	0.25	5.9	-	2.3	12	313113R	▲		
713.0030.00	21.7	0.3	5.9	-	2.3	12	313113R	▲		
713.0040.00	21.7	0.4	5.9	-	2.3	12	313113R		▲	
713.0050.00	21.7	0.5	5.9	-	2.8	12	313113R		△	
713.0070.00	21.7	0.7	5.9	-	4.5	12	313113R			
713.0080.00	21.7	0.8	5.9	-	4.5	12	313113R		▲	
713.0090.00	21.7	0.9	5.9	-	4.5	12	313113R	▲		
713.0060.00	21.7	0.6	5.9	-	4.5	12	313113R	▲		
713.0100.00	21.7	1	5.9	-	4.5	12	313113R		▲	▲
713.0150.00	21.7	1.5	5.9	-	4.5	12	313113R		▲	▲
713.0200.00	21.7	2	5.9	0.2	4.5	12	313113R		▲	▲
713.0250.00	21.7	2.5	5.9	0.2	4.5	12	313113R		▲	▲
713.0300.00	21.7	3	5.9	0.2	4.5	12	313113R		▲	▲

from width of groove = 2 mm toothing with cross-cut

Dimensions in mm

P	●	●	●
M	●	●	●
K	●	●	-
N	-	-	●
S	-	-	o
H	-	-	-

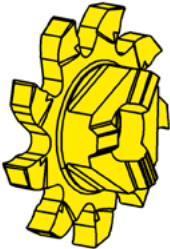
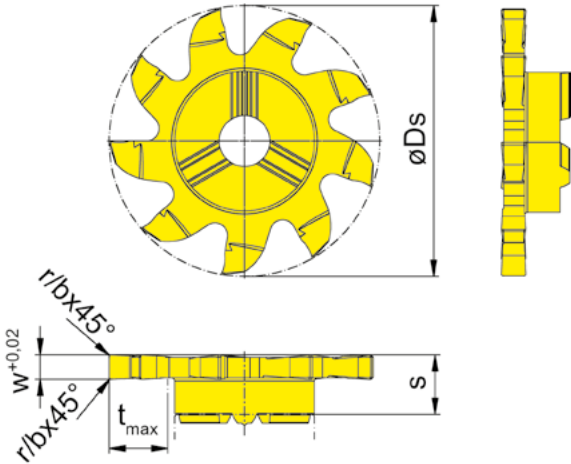
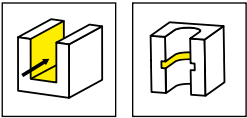


Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	Z	r	t _{max}	s	HIS	Coating grades	
							EG55	Ti25
713.PL35.15.02	21.7	12	0.2	3.5	5.9	313113R	▲	▲
Helical teeth							P	● ●
							M	● ●
Dimensions in mm							K	● -
							N	- ●
							S	- ○
							H	- -

B



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	b x 45°	r	t _{max}	Z	HIS	EG55	
913.0150.00	21.7	1.5	5.7	0.05	-	4.5	9	313113R	▲	P ●
913.0200.00	21.7	2	5.7	-	0.2	4.5	9	313113R	▲	M ●
913.0250.00	21.7	2.5	5.7	-	0.2	4.5	9	313113R	▲	K ●
913.0300.00	21.7	3	5.7	-	0.2	4.5	9	313113R	▲	N -
										S -
										H -

Dimensions in mm

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6

B



SYSTEM 328

INDEXABLE BORE MILLING, GROOVING, CHAMFERING, FACING

Inch Shanks



Page 167
MU328
Ø.500"-.750" Shank



Page 168
SMU328 (Tungsten)
Ø.750" Shank



Page 169
MU328
Ø.750" Shank

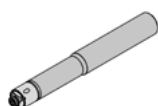


Page 170
U325
Multi-Function



Page 171
U328
.094"-.188" Width

Metric Shanks



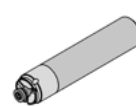
Page 172
M328
Ø16-20mm Shank



Page 173
M328
Ø9-12mm Shank

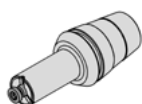


Page 174
M328.ST (Steel)
Ø12-20mm Shank

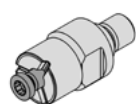


Page 175
M328
Ø16-20mm Shank

Specialty



Page 176-177
M328.ER
ER20, ER25, ER32



Page 178
M328.M
M8 Screw-in



Bore Milling &
Grooving (3 Flute)



Metric Circlip
(3 Flute)

Page 179
325
Multi-Function

Page 180
328
Circlip with Chamfer

Metric Grooving Widths (3 Flute)



Page 181
328
2-10mm Widths



Page 182
328
.40 Aluminum Geo



Page 183
328
0.82mm Width



Page 184
328
Deep Grooves



Page 185
328
1-2mm Radius

Metric Chamfer
(3 Flute)

Metric Circlip
Grooving (6 Flute)

Metric Grooving Widths
(6 Flute)



Page 186
328
45° Chamfer



Page 187
628
DIN Circlip



Page 188
628
1-4mm Width



Page 189
628
3-4mm Width



Page 190
628
Deep Grooves

Metric Full
Radius (6 Flute)

Metric Facing
(6 Flute)

Metric Chamfer
(6 Flute)

Metric Grooving
Widths (9 Flute)



Page 191
628
1-2mm Radius



Page 192
628
Deep Grooves



Page 193
628
Facing

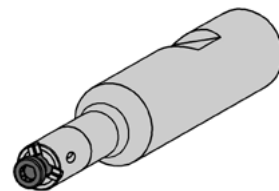
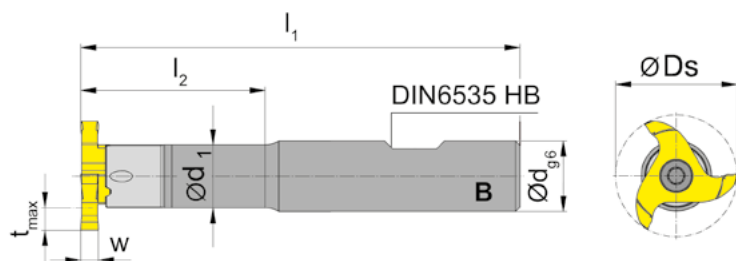
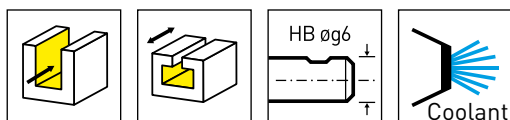


Page 194-195
628
15-60° Chamfer



Page 196
928
1.5-3mm Width

B



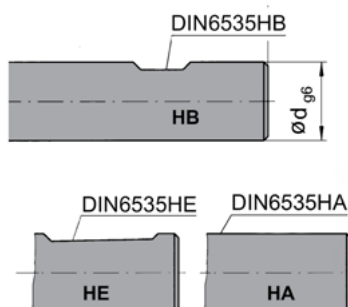
Part number	d	l ₁	l ₂	d ₁	HWS
MU328.0500.01B	.500	3.937	3.937	.563	328143R
MU328.0500.02B	.500	5.118	5.118	.563	328143R
MU328.0625.01B	.625	3.937	1.654	.563	328143R
MU328.0625.02B	.625	5.118	2.362	.563	328143R
MU328.0625.03B	.625	6.299	3.346	.563	328143R
MU328.0750.00B	.750	4.094	1.378	.531	328143R
MU328.0750.03B	.750	6.299	3.346	.563	328143R

w, Ds, tmax see inserts

Dimensions in inch

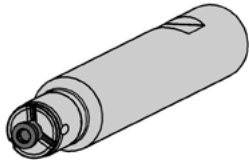
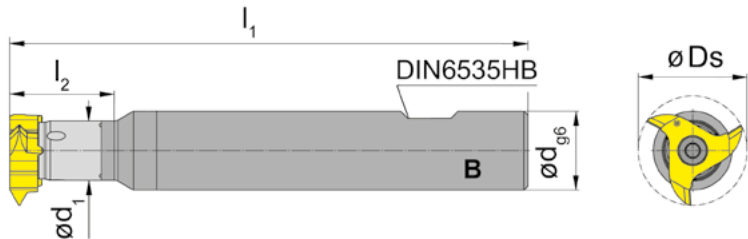
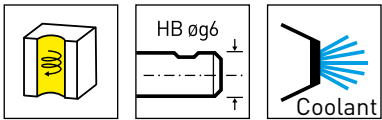


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU328...	5.14T20P	T20PQ	6.5 Nm
MU328.0750.00B	5.13T20KP	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	HWS
SMU328.0750.05B	.750	5.118	.984	.591	328143R
SMU328.0750.06B	.750	5.709	-	.750	328143R
SMU328.0750.07B	.750	6.299	.984	.591	328143R
SMU328.0750.08B	.750	7.874	-	.750	328143R

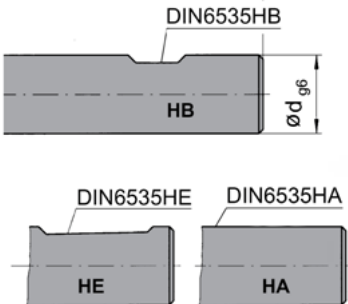
Shank material: Tungsten alloy for excellent vibration resistance.

Ds see inserts

Dimensions in inch



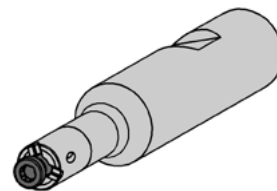
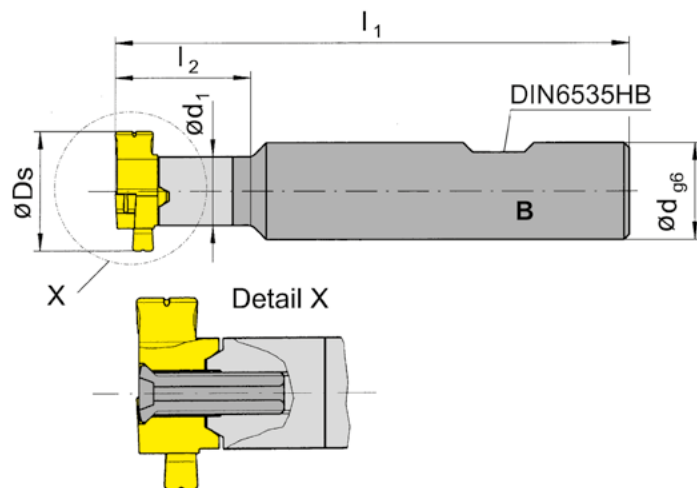
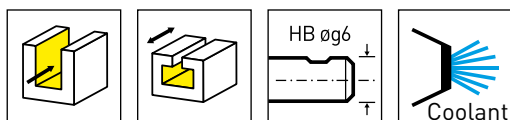
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
SMU328.0750....	5.14T20P	T20PQ	6.5 Nm
SMU328.0750....	5.17T20P	T20PQ	6.5 Nm

B



Picture = right hand cutting version

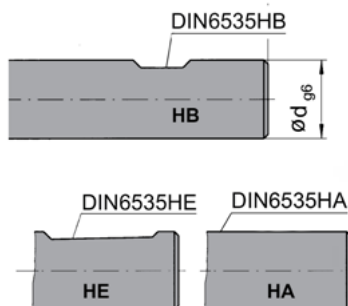
Part number	d	l_1	l_2	d_1	Form	HWS
MU328.0750.00B	.750	4.094	1.378	.531	B	328143R

Ds see inserts

Dimensions in inch

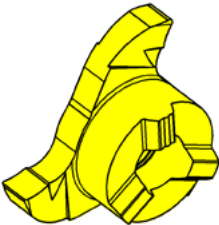
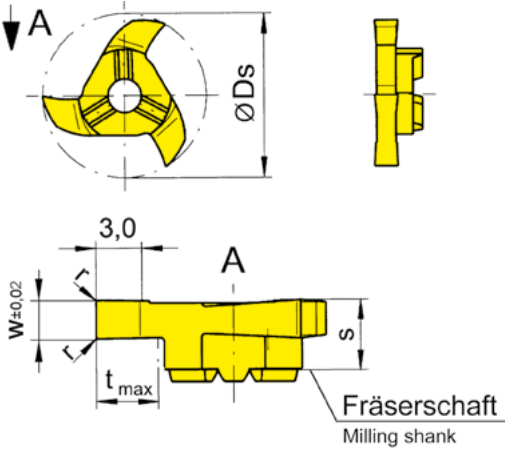
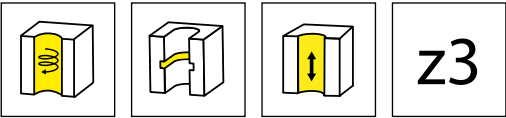


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU328.0750.00B	5.13T20KP	T20PQ	6.5 Nm



Picture = right hand cutting version

Coating grades

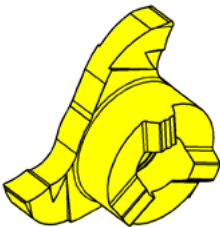
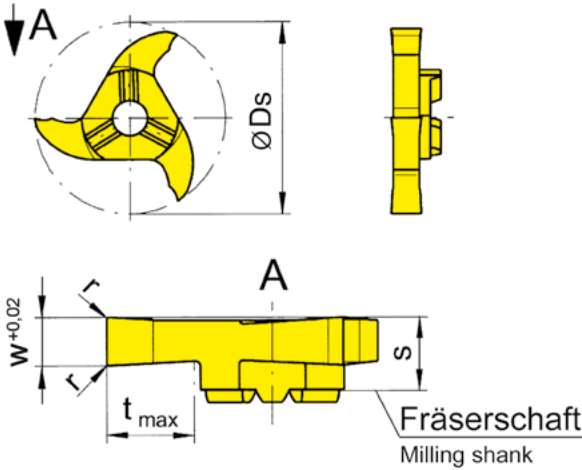
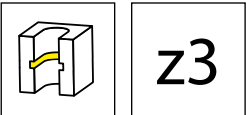
▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TN35
U325.0125.52	.976	.125	.224	.008	.197	3	328143R		▲	▲
Dimensions in inch									P	● ●
									M	● -
									K	● ●
									N	- -
									S	● -
									H	- -



B



Picture = right hand cutting version

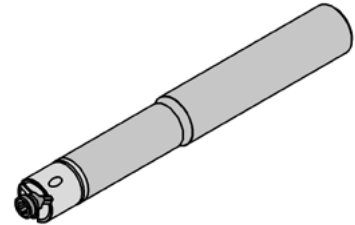
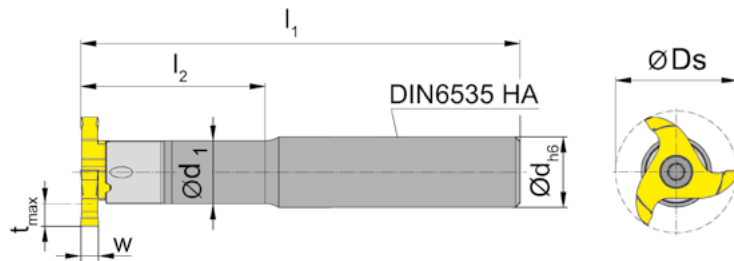
Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		IG65	TF45	TN35	
U328.0094.08	1.091	.094	.224	.008	.256	3	328143R		▲		▲	
U328.0125.08	1.091	.125	.224	.008	.256	3	328143R		▲	Δ	▲	
U328.0157.08	1.091	.157	.224	.008	.256	3	328143R		▲	Δ	▲	
U328.0187.08	1.091	.188	.224	.008	.256	3	328143R		▲		▲	
U328.0157.16	1.091	.157	.224	.016	.256	3	328143R		▲		▲	
U328.0187.16	1.091	.188	.224	.016	.256	3	328143R		▲	Δ	▲	
Dimensions in inch 									P	●	●	●
									M	●	●	-
									K	●	●	●
									N	-	-	-
									S	●	-	-
									H	-	-	-



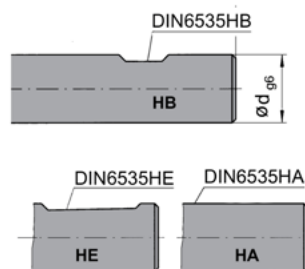


Part number	d	l ₁	l ₂	d ₁	Form	HWS
M328.0016.01A	16	100	42	14.3	HA	328143R
M328.0016.02A	16	130	60	14.3	HA	328143R
M328.0016.03A	16	160	85	14.3	HA	328143R
M328.0020.01A	20	100	42	14.3	HA	328143R
M328.0020.02A	20	130	60	14.3	HA	328143R
M328.0020.03A	20	160	85	14.3	HA	328143R
M328.0016.01B	16	100	42	14.3	HB	328143R
M328.0016.02B	16	130	60	14.3	HB	328143R
M328.0016.03B	16	160	85	14.3	HB	328143R
M328.0020.01B	20	100	42	14.3	HB	328143R
M328.0020.02B	20	130	60	14.3	HB	328143R
M328.0020.03B	20	160	85	14.3	HB	328143R
M328.0016.01E	16	100	42	14.3	HE	328143R
M328.0016.02E	16	130	60	14.3	HE	328143R
M328.0016.03E	16	160	85	14.3	HE	328143R
M328.0020.01E	20	100	42	14.3	HE	328143R
M328.0020.02E	20	130	60	14.3	HE	328143R
M328.0020.03E	20	160	85	14.3	HE	328143R

w, Ds, tmax see inserts

Dimensions in mm

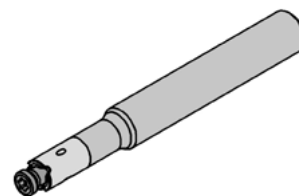
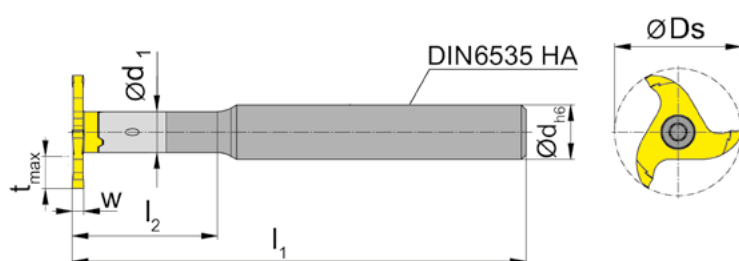
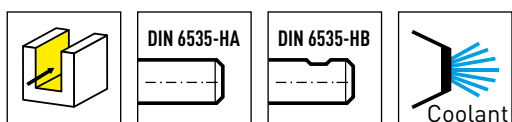
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.14T20P	T20PQ	6.5 Nm

B



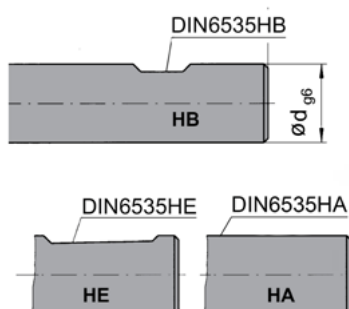
Part number	d	l ₁	l ₂	d ₁	Form	HWS
M328.0909.01A	9	114.3	-	9	HA	328090R
M328.0912.01A	12	100	32	9	HA	328090R
M328.0912.01B	12	100	32	9	HB	328090R

w, Ds, tmax see inserts

Toolholder M328.0909.01A = no through coolant supply!

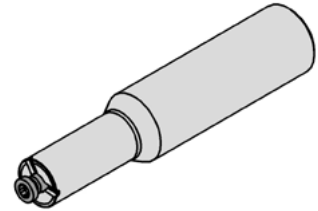
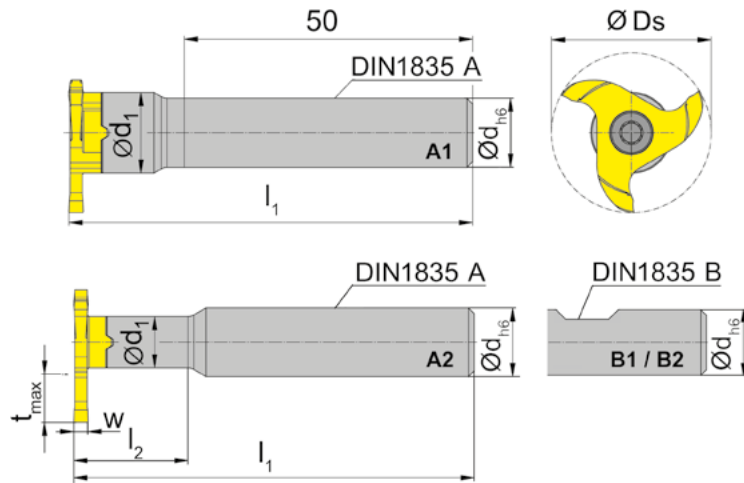
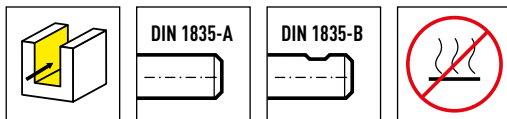
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.14T20P	T20PQ	6.5 Nm



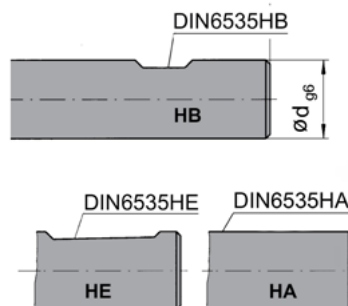
Part number	d	l_1	l_2	d_1	Form	HWS
M328.ST12.01A	12	70	-	14	A	328143R
M328.ST13.01A	13	70	-	14	A	328143R
M328.ST12.2.01A	12	70	20	9	A	328090R
M328.ST16.01A	16	90	36	14	A	328143R
M328.ST20.01A	20	100	36	14	A	328143R
M328.ST12.01B	12	70	-	14	B	328143R
M328.ST12.2.01B	12	70	20	9	B	328090R
M328.ST16.01B	16	90	36	14	B	328143R
M328.ST20.01B	20	100	36	14	B	328143R

Holders with ".ST" are steel shanks and cannot be heatshrunk

w, Ds, tmax see inserts

Dimensions in mm

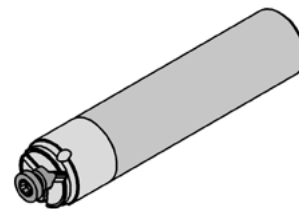
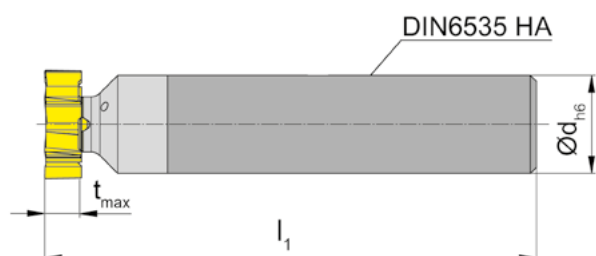
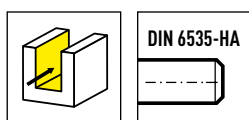
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.14T20P	T20PQ	6.5 Nm

B

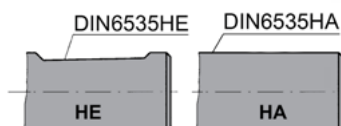
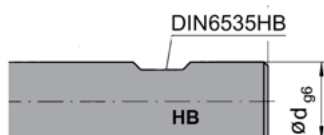


Part number	d	l_1	Form	HWS
M328.0016.D.00A	16	80	HA	328143R
M328.0020.D.00A	20	80	HA	328143R

t_{max} and D_s see inserts

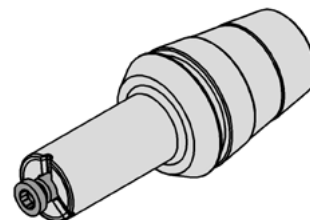
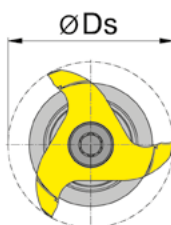
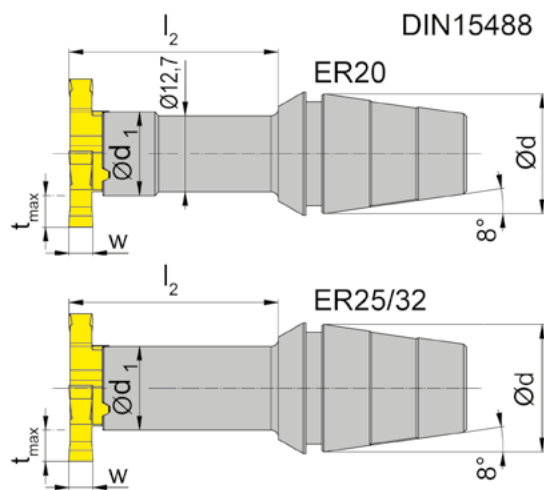
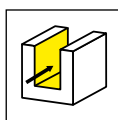
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.14T20P	T20PQ	6.5 Nm



Part number	d	l ₂	d ₁	Clamping nut	HWS
M328.ER20.02	20	35	14	ER20.6499/ERM20.6499	328143R
M328.ER25.02	25	35	14	ER25.6499	328143R
M328.ER32.02	32	35	14	ER32.6499	328143R

w, Ds, tmax see inserts

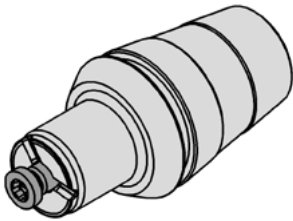
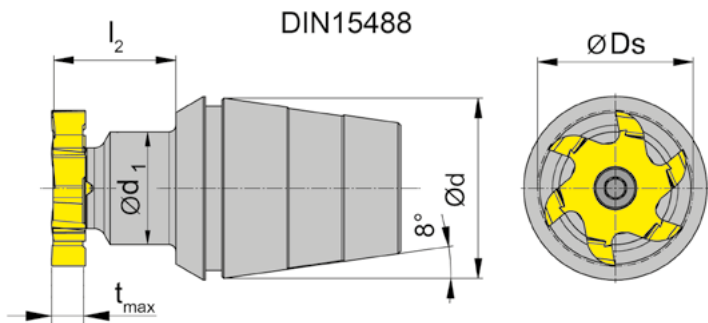
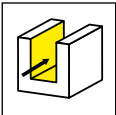
Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.14T20P	T20PQ	6.5 Nm

B



Part number	d	l ₂	d ₁	Clamping nut	HWS
M328.ER25.16.01	25	21.7	15	ER25.6499	328143R
M328.ER32.16.01	32	21.7	20	ER32.6499	328143R

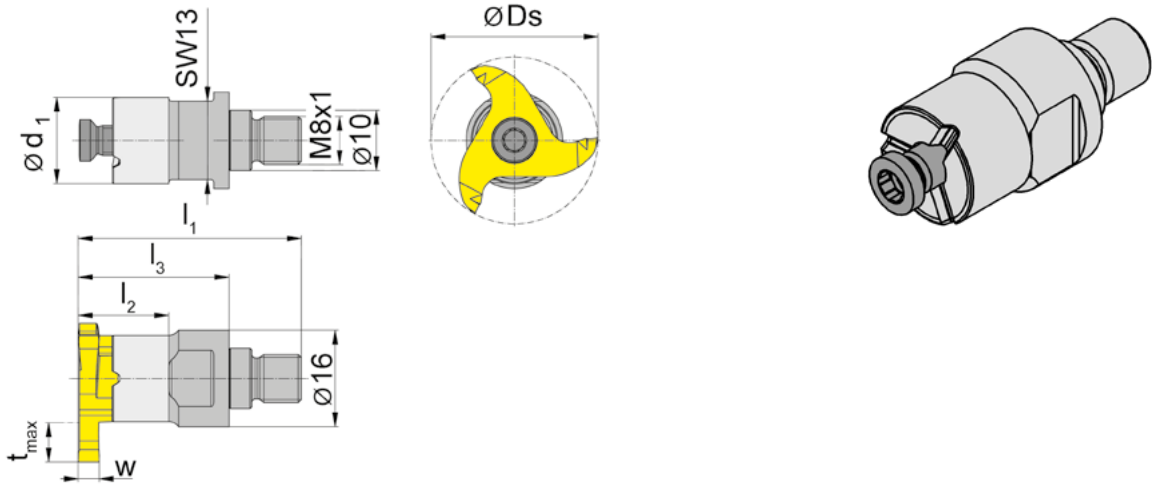
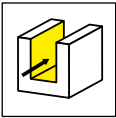
tmax and Ds see inserts

Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.14T20P	T20PQ	6.5 Nm



Part number	l_1	l_2	l_3	d_1	SW	HWS
M328.M081.01	37	15	25	14.3	13	328143R

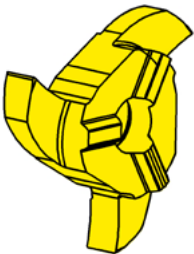
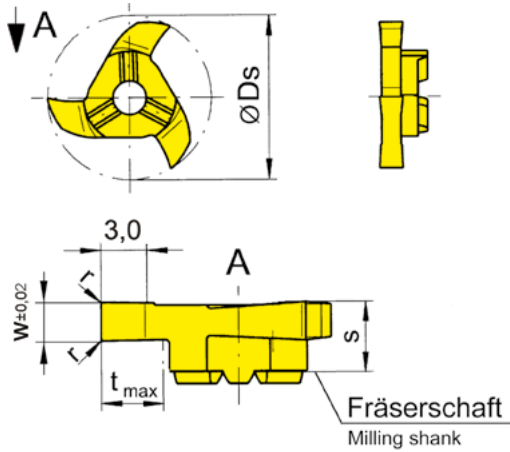
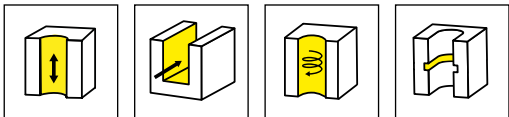
w, Ds, tmax see inserts

Dimensions in mm

Spare Parts

Screw-in Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328.M081.01	5.14T20P	T20PQ	6.5 Nm

B



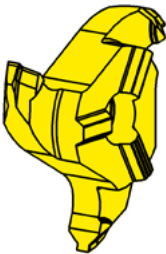
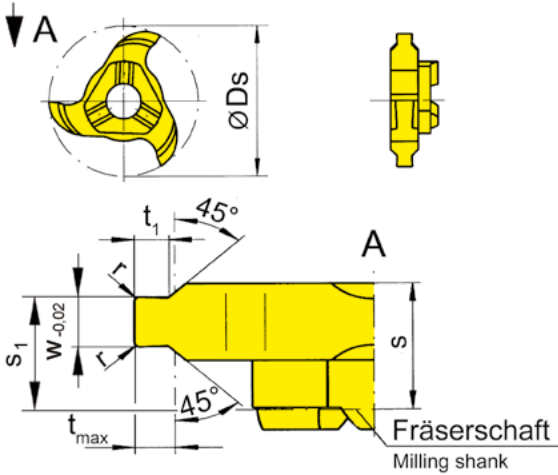
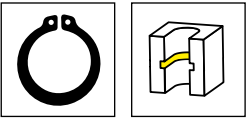
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	IG65	TN35
325.0350.52	24.8	3.5	5.7	0.2	5	3	328143R		▲	▲	▲
Dimensions in mm								P	●	●	●
								M	●	●	-
								K	●	●	●
								N	-	-	-
								S	○	●	-
								H	-	-	-



Coating grades

Picture = left hand cutting version

▲ In stock Δ 2 weeks

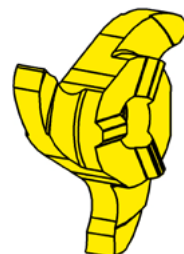
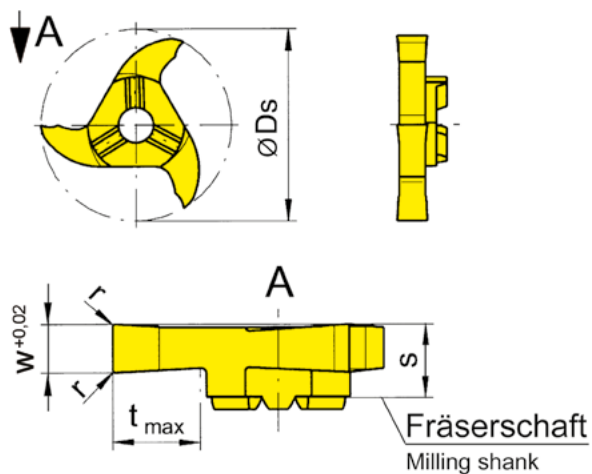
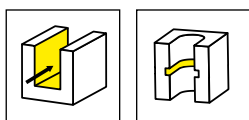
Part number	Ds	Nw	w	t ₁	s	s ₁	r	t _{max}	Z	HIS	AS45	
328.1307.30	27.7	1.3	1.41	0.65	5.95	4.9	-	0.7	3	328143R	▲	P ●
328.1812.35	27.7	1.85	1.96	1.21	5.95	5.1	0.2	1.25	3	328143R	▲	M ●
												K ●
												N -
												S o
												H -

Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472 with chamfer

Dimensions in mm

B



Coating grades

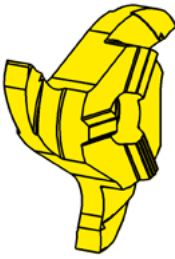
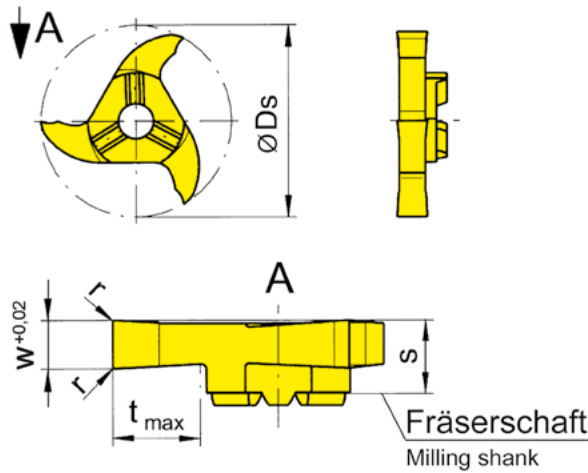
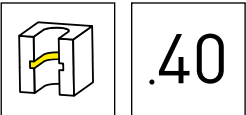
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	IG65	TN35
328.0200.00	27.7	2	5.7	0.2	6.5	3	328143R	▲	▲	▲
328.0250.00	27.7	2.5	5.7	0.2	6.5	3	328143R	▲	▲	▲
328.0300.00	27.7	3	5.7	0.2	6.5	3	328143R	▲	▲	▲
328.0350.00	27.7	3.5	5.7	0.2	6.5	3	328143R	▲	▲	▲
328.0400.00	27.7	4	5.7	0.2	6.5	3	328143R	▲	▲	▲
328.0500.00	27.7	5	5.7	0.2	6.5	3	328143R	▲	▲	▲
328.0600.00	27.7	6	7	0.2	6.5	3	328143R	▲	▲	▲
328.1000.00	27.7	10	10	0.2	6.5	3	328143R	▲	▲	▲
Insert 328.1000.00 with staggered tooth (Z=1) and insert 328.0600.00 with chip divider (Z=3)!								P	●	●
								M	●	●
								K	●	●
								N	-	-
								S	o	●
								H	-	-

Dimensions in mm



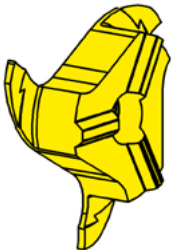
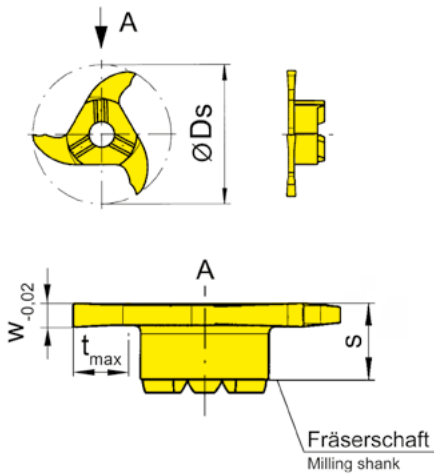
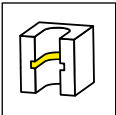
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	Ti/25	
328.0250.40	27.7	2.5	5.7	0.2	6.5	3	328143R	▲	
328.0300.40	27.7	3	5.7	0.2	6.5	3	328143R	▲	
328.0350.40	27.7	3.5	5.7	0.2	6.5	3	328143R	▲	
328.0400.40	27.7	4	5.7	0.2	6.5	3	328143R	▲	
Dimensions in mm								P	●
								M	●
								K	-
								N	●
								S	o
								H	-

B

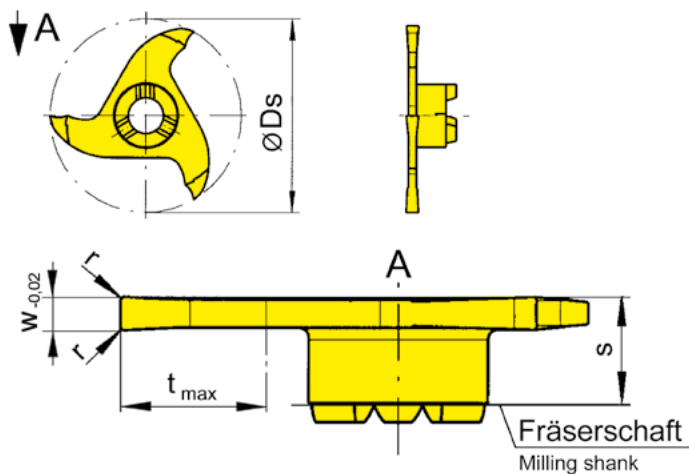
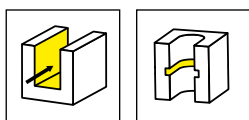


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	t _{max}	Z	HIS		Ti25	TN35
328.0082.1.00	27.7	0.82	5.7	5	3	328143R		▲	▲
Dimensions in mm								P	● ●
								M	● -
								K	- ●
								N	● -
								S	o -
								H	- -



Coating grades

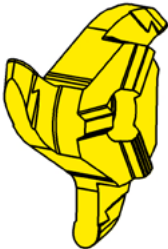
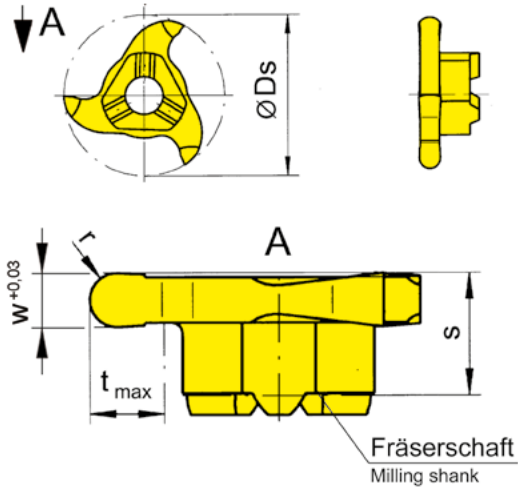
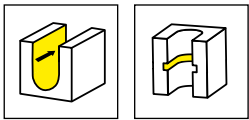
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	IG65	Ti25	TN35
328.0110.2.00	28	1.1	5.7	0.2	9.3	3	328090R			▲	▲	▲
328.0120.2.00	28	1.2	5.7	0.2	9.3	3	328090R				▲	▲
328.0132.2.00	28	1.32	5.7	0.15	9.3	3	328090R				▲	▲
328.0150.2.00	28	1.5	5.7	0.2	9.3	3	328090R		▲		▲	▲
328.0160.2.00	28	1.6	5.7	0.2	9.3	3	328090R		▲	▲	▲	▲
328.0200.2.00	28	2	5.7	0.2	9.3	3	328090R		▲	▲	▲	▲
328.0250.2.00	28	2.5	5.7	0.2	9.3	3	328090R		▲	▲	▲	▲
Dimensions in mm									P	•	•	•
									M	•	•	-
									K	•	•	•
									N	-	-	-
									S	o	o	-
									H	-	-	-

B



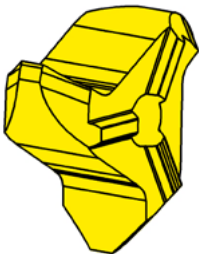
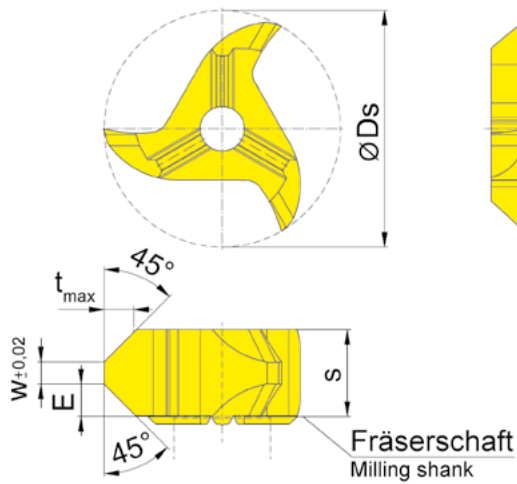
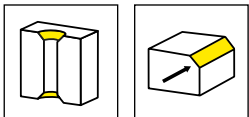
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS/45	
328.0010.20	27.7	2	5.7	1	6.5	3	328143R	▲	
328.0014.28	27.7	2.8	5.7	1.4	6.5	3	328143R	▲	
328.0015.30	27.7	3	5.7	1.5	6.5	3	328143R	▲	
328.0020.40	27.7	4	5.7	2	6.5	3	328143R	▲	
									P ●
									M ●
									K ●
									N -
									S o
									H -

Dimensions in mm



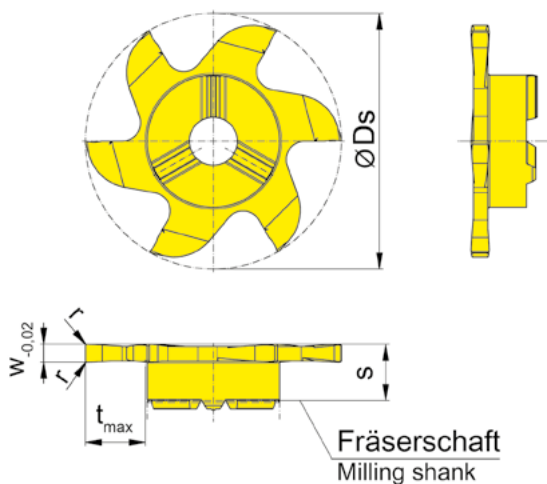
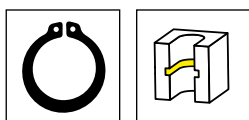
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	t _{max}	Z	HIS	TA45
328.4545.35.00	27.7	3.8	10.2	2.6	3.5	3	328143R	▲
For insert 328.4545.35.00 please use only the longer screw 5.13T20P.								P ●
Dimensions in mm								M ●
								K ●
								N -
								S -
								H -

B



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	Nw	w	s	r	t _{max}	Z	HIS	AS45	IG65	RC25	Ti25
628.0080.00	27.7	0.8	0.8	6.1	-	6.5	6	328143R			▲	
628.0130.00	27.7	1.3	1.41	6.1	-	6.5	6	328143R	▲			▲
628.0160.00	27.7	1.6	1.71	6.1	-	6.5	6	328143R	▲	▲		▲
628.0185.00	27.7	1.85	1.96	6.1	0.2	6.5	6	328143R	▲			▲
628.0215.00	27.7	2.15	2.26	6.1	0.2	6.5	6	328143R	▲			▲
628.0265.00	27.7	2.65	2.76	6.1	0.2	6.5	6	328143R	▲			▲

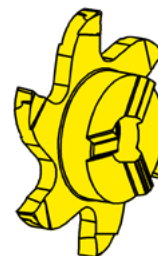
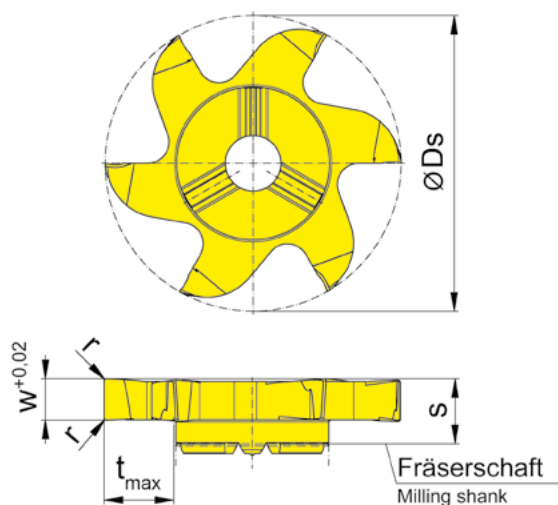
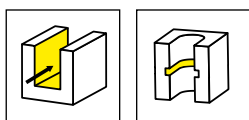
Nw is the nominal width of the circlip, W is the width of cutter. W is slightly wider than Nw to allow the circlip to seat properly

Widths for circlip grooves DIN 471/472

from width of groove = 2.26 mm toothing with cross-cut

Dimensions in mm

	P	M	K	N	S	H
AS45	●	●	●	-	o	-
IG65	●	●	●	-	●	-
RC25	●	●	●	-	-	-
Ti25	●	●	-	●	o	-



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	TH35	TI25
628.0100.00	27.7	1	6.1	-	6.5	6	328143R			
628.0150.00	27.7	1.5	6.1	-	6.5	6	328143R	▲		
628.0200.00	27.7	2	6.1	0.2	6.5	6	328143R	▲		
628.0250.00	27.7	2.5	6.1	0.2	6.5	6	328143R	▲		▲
628.0300.00	27.7	3	6.1	0.2	6.5	6	328143R	▲		▲
628.0350.00	27.7	3.5	6.1	0.2	6.5	6	328143R	▲		▲
628.0400.00	27.7	4	6.1	0.2	6.5	6	328143R	▲	▲	▲

Insert 628.0400.00

only with toolholder dimension l2 = max. 42 mm

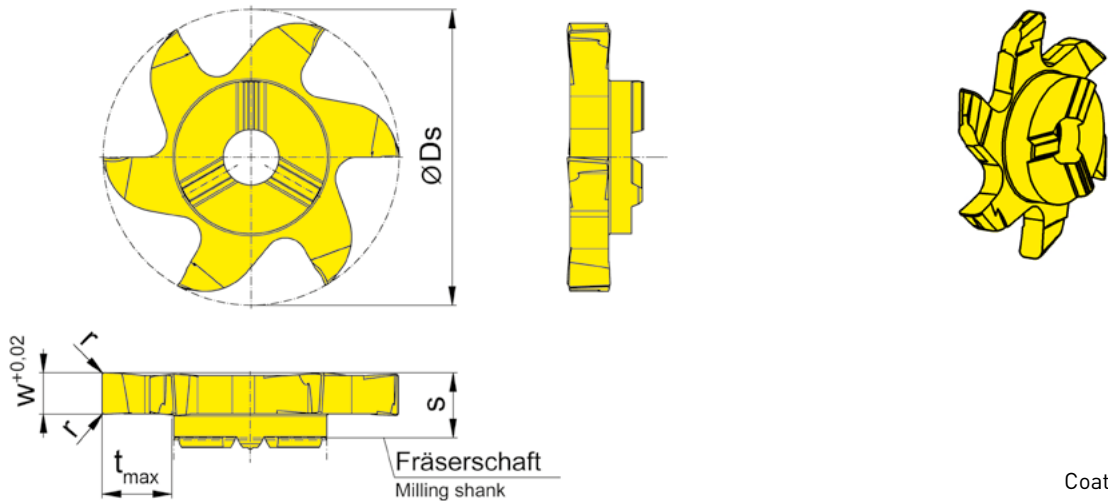
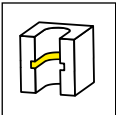
from cutting width = 4 mm -> recommendation for the shortest milling shank

only with toolholder dimension l2 = max. 42 mm

Dimensions in mm

	P	M	K	N	S	H
AS45	●	●	●	-	o	-
TH35	●	●	-	-	-	-
TI25	●	●	-	●	o	-

B

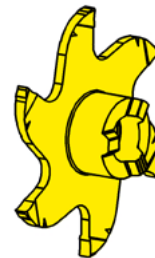
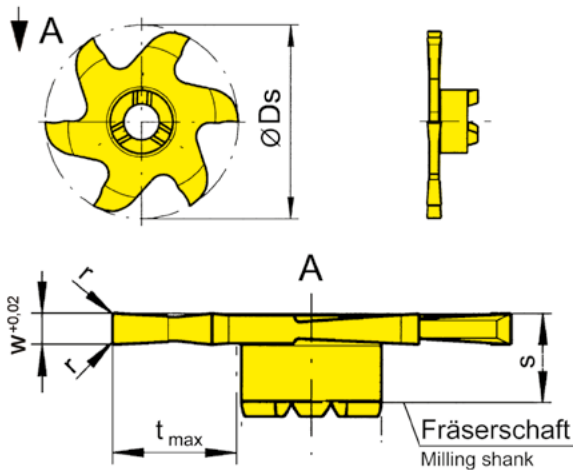
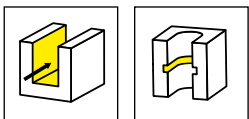


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	
628.0300.04	27.7	3	6.1	0.4	6.5	6	328143R	▲	
628.0300.08	27.7	3	6.1	0.8	6.5	6	328143R	▲	
628.0400.04	27.7	4	6.1	0.4	6.5	6	328143R	▲	
628.0400.08	27.7	4	6.1	0.8	6.5	6	328143R	▲	
Cross-toothed inserts								P	●
Dimensions in mm								M	●
								K	●
								N	-
								S	o
								H	-



Coating grades

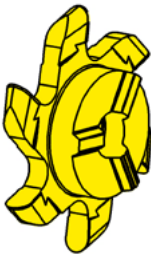
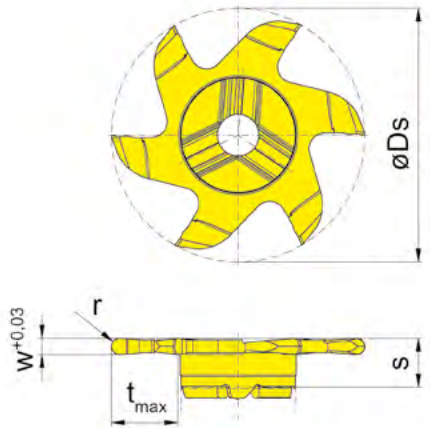
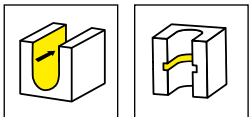
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	IG65	TI25
628.0050.2.00	28	0.5	6.1	-	9.3	6	328090R	▲		
628.0100.2.00	28	1	6.1	-	9.3	6	328090R			▲
628.0120.2.00	28	1.2	6.1	0.2	9.3	6	328090R			▲
628.0150.2.00	28	1.5	6.1	0.2	9.3	6	328090R	▲		▲
628.0160.2.00	28	1.6	6.1	0.2	9.3	6	328090R	▲	▲	▲
628.0200.2.00	28	2	6.1	0.2	9.3	6	328090R	▲		▲
628.0240.2.00	28	2.4	6.1	0.2	9.3	6	328090R	▲		▲
628.0250.2.00	28	2.5	6.1	0.2	9.3	6	328090R	▲		▲
from width of groove = 2.4 mm toothing with cross-cut								P	●	●
Dimensions in mm								M	●	●
								K	●	●
								N	-	-
								S	o	o
								H	-	-

B

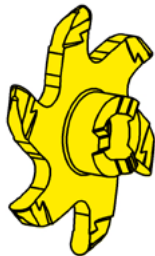
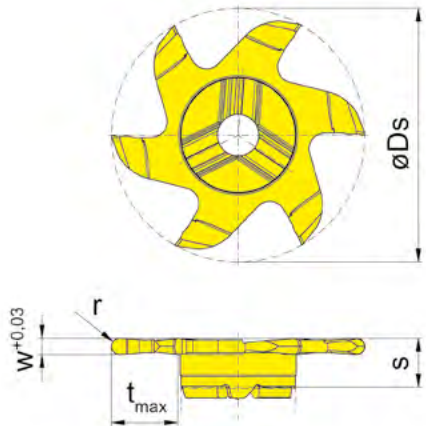
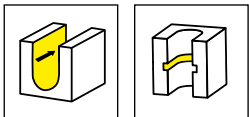


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	
628.0010.20	27.7	2	6.1	1	6.5	6	328143R	▲	
628.0015.30	27.7	3	6.1	1.5	6.5	6	328143R	▲	
628.0020.40	27.7	4	6.1	2	6.5	6	328143R	▲	
Dimensions in mm									
									P ●
									M ●
									K ●
									N -
									S o
									H -



Picture = right hand cutting version

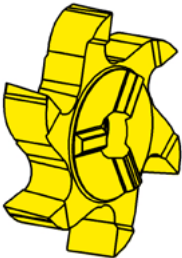
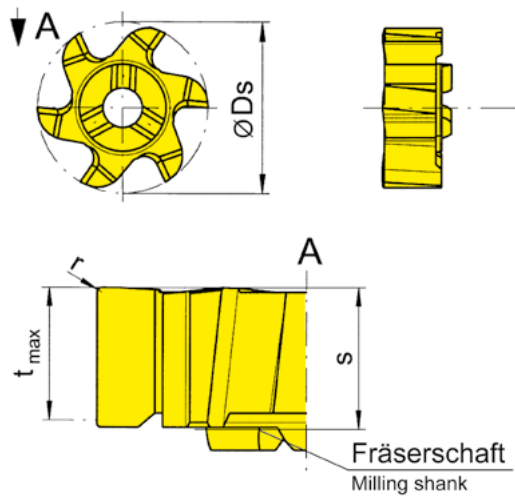
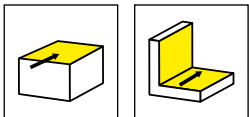
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	
628.0080.2.16	28	1.6	6.1	0.8	9.3	6	328090R	▲	
628.0100.2.20	28	2	6.1	1	9.3	6	328090R	▲	
628.0125.2.25	28	2.5	6.1	1.25	9.3	6	328090R	▲	
628.0150.2.30	28	3	6.1	1.5	9.3	6	328090R	▲	
								P	●
								M	●
								K	●
								N	-
								S	o
								H	-

Dimensions in mm

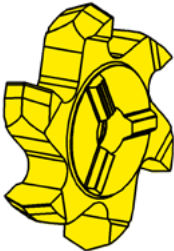
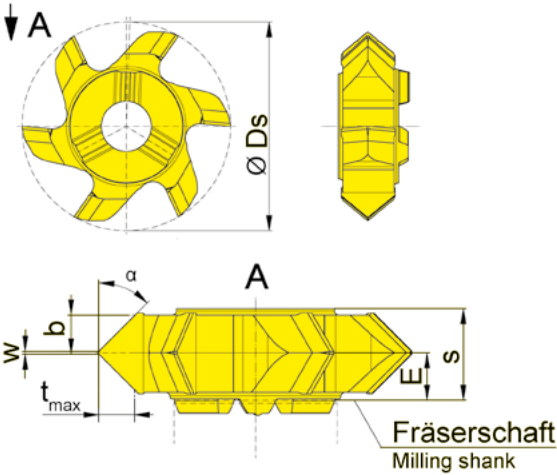
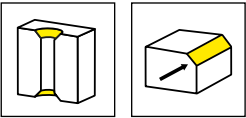
B



Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	Z	r	t _{max}	s	HIS		AS45	TF45	Ti25
628.PL61.62	27.7	6	0.2	5.7	6.1	328143R		▲	▲	▲
Helical teeth							P	●	●	●
Dimensions in mm							M	●	●	●
							K	●	●	-
							N	-	-	●
							S	o	-	o
							H	-	-	-



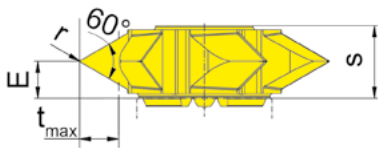
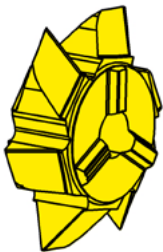
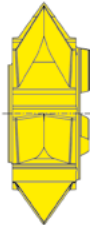
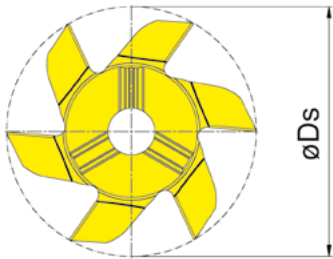
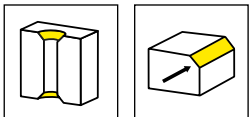
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	a	b	t _{max}	Z	HIS	AS45	TA45	
628.1515.20	27.7	3.2	6.3	0.2	15°	2.8	0.75	6	328143R			
628.2020.20	27.7	3.2	6.3	0.2	20°	2.8	1	6	328143R			
628.3030.20	27.7	3.2	6.3	0.2	30°	2.8	1.6	6	328143R			
628.4545.20	27.7	3.2	6.3	0.2	45°	2.8	2.8	6	328143R			
Dimensions in mm										P	●	●
										M	●	●
										K	●	●
										N	-	-
										S	o	-
										H	-	-

B

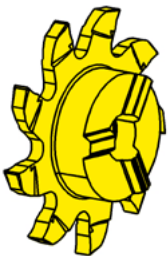
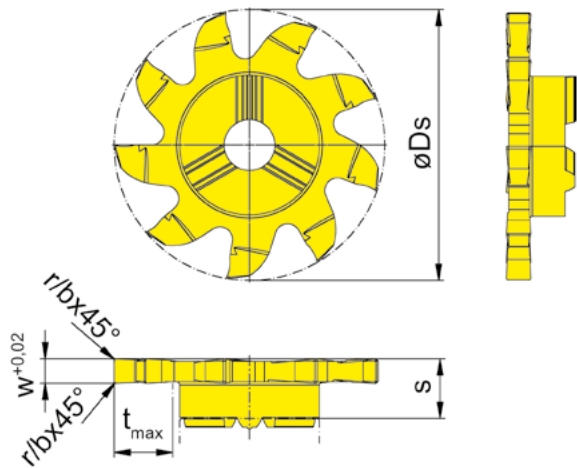
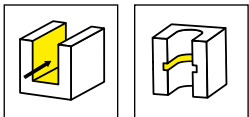


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	r	t _{max}	Z	HIS	EG55	
628.6060.05	27.7	4.1	8.05	0.05	5	6	328143R	▲	
Dimensions in mm									P ●
									M ●
									K ●
									N -
									S -
									H -



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	b x 45°	r	t _{max}	Z	HIS	EG55	
928.0150.00	27.7	1.5	6.1	0.05	-	6.5	9	328143R	▲	
928.0200.00	27.7	2	6.1	-	0.2	6.5	9	328143R	▲	
928.0250.00	27.7	2.5	6.1	-	0.2	6.5	9	328143R	▲	
928.0300.00	27.7	3	6.1	-	0.2	6.5	9	328143R	▲	
Dimensions in mm										
										P ●
										M ●
										K ●
										N -
										S -
										H -

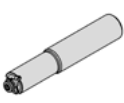
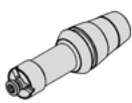
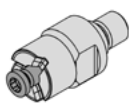
Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

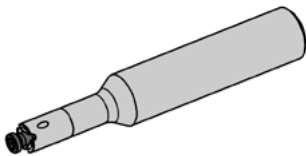
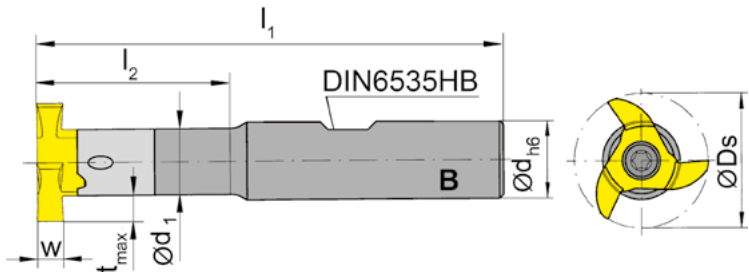
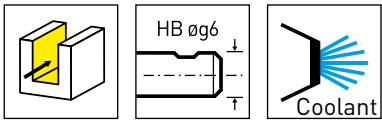
Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6



SYSTEM 332

INDEXABLE GROOVING, CHAMFERING, PARTING OFF

HOLDERS INSERTS	Inch Shanks	Metric Shanks		Specialty	
					
	Page 200 MU332 Ø.625"-.750" Shank	Page 201-202 M332 Ø12-20mm Shank	Page 203 M332.ST (Steel) Ø10-16mm Shank	Page 204 M332.ER ER20	Page 205 M332.M M8 Screw-in
	Metric Grooving Widths (3 Flute)		Metric Full Radius (3 Flute)	Metric Chamfer (3 Flute)	
					
	Page 206 332 2-4mm Width	Page 207 332 1-3mm Width	Page 208 332 1-2mm Radius	Page 209 332 45° Chamfering	
	Metric Grooving Widths (6 Flute)		Metric Full Radius (6 Flute)	Metric Parting Off (6 Flute)	
					
	Page 210 632 2-4mm Width	Page 211-213 632/636 Deep Grooves	Page 214 632 1-2mm Radius	Page 215-216 632/636 Parting Off	
	Metric Grooving Widths (9 Flute)		Metric Full Radius (9 Flute)	Metric Parting Off (9 Flute)	
					
	Page 217 932 2-4mm Width	Page 218-219 939 Deep Grooves	Page 220 939 0.7-1.5mm Radius	Page 221 939 Parting Off	



Picture = right hand cutting version

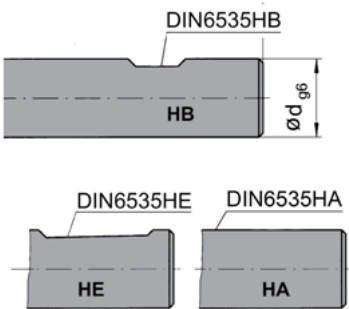
Part number	d	l ₁	l ₂	d ₁	HWS
MU332.0625.01B	.625	3.937	1.654	.563	332143R
MU332.0625.02B	.625	5.118	2.362	.563	332143R
MU332.0625.03B	.625	6.299	3.346	.563	332143R
MU332.0750.01B	.750	3.937	1.654	.563	332143R
MU332.0750.02B	.750	5.118	2.362	.563	332143R
MU332.0750.03B	.750	6.299	3.346	.563	332143R

w, Ds, tmax see inserts

Dimensions in inch



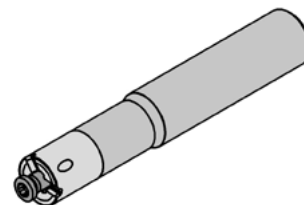
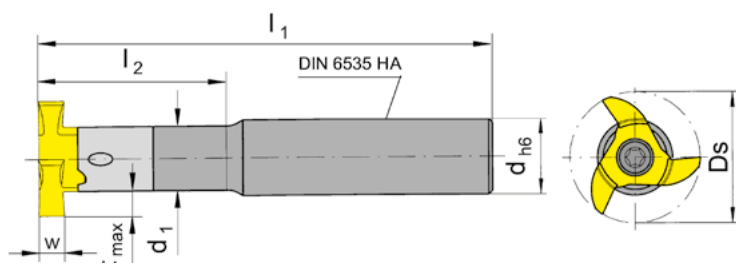
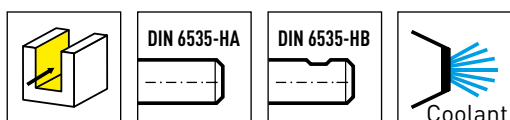
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU332...	5.17T20P	T20PQ	14 Nm

B



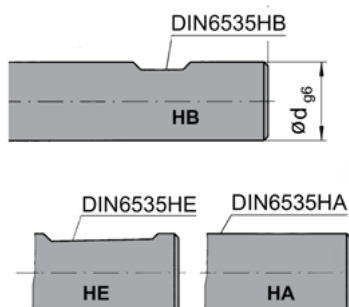
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M332.0016.01A	16	100	42	14.3	HA	332143R
M332.0016.02A	16	130	60	14.3	HA	332143R
M332.0016.03A	16	160	85	14.3	HA	332143R
M332.0020.01A	20	100	42	14.3	HA	332143R
M332.0020.02A	20	130	60	14.3	HA	332143R
M332.0020.03A	20	160	85	14.3	HA	332143R
M332.0016.01B	16	100	42	14.3	HB	332143R
M332.0016.02B	16	130	60	14.3	HB	332143R
M332.0016.03B	16	160	85	14.3	HB	332143R
M332.0020.01B	20	100	42	14.3	HB	332143R
M332.0020.02B	20	130	60	14.3	HB	332143R
M332.0020.03B	20	160	85	14.3	HB	332143R

w, Ds, tmax see inserts

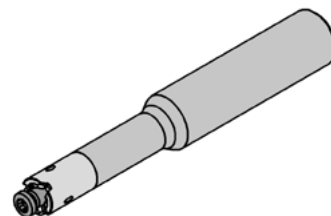
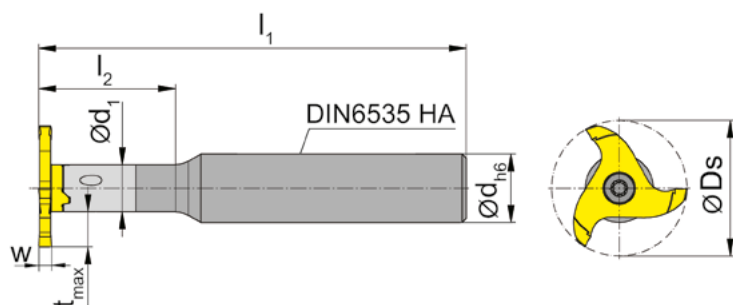
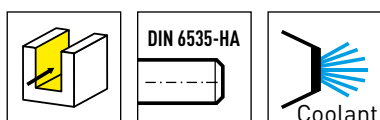
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M332...	5.17T20P	T20PQ	14 Nm



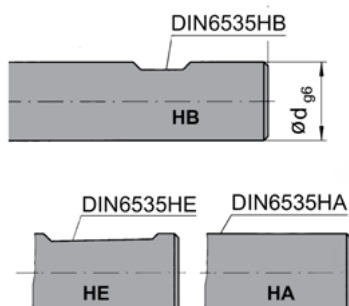
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M332.0012.2.01A	12	100	32	11	HA	332110R
M332.0012.3.00A	12	100	-	12	HA	332120R
M332.0016.2.02A	16	130	68	11	HA	332110R
M332.0016.2.01A	16	100	32	11	HA	332110R

w, Ds, tmax see inserts

Dimensions in mm

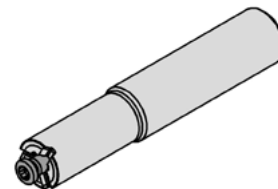
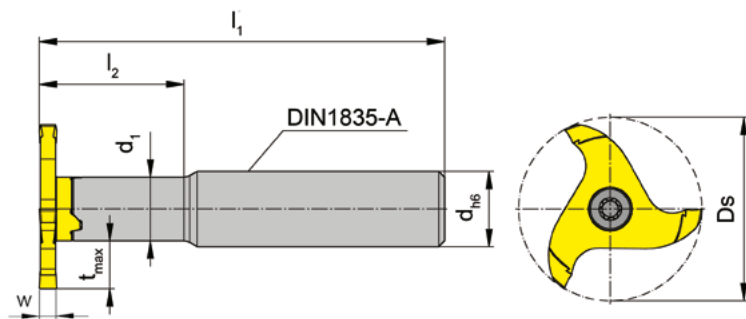
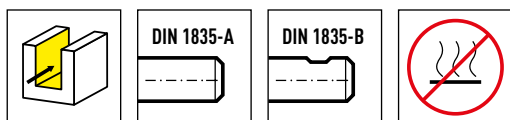
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M332...	5.17T20P	T20PQ	14 Nm

B



Picture = right hand cutting version

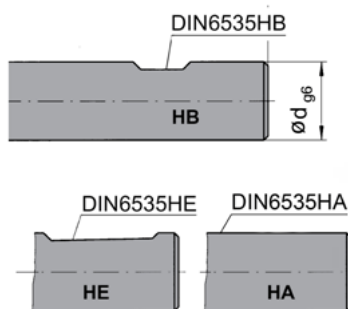
Part number	d	l_1	l_2	d_1	Form	HWS
M332.ST10.2.01A	10	70	25	11	A	332110R
M332.ST12.2.01A	12	70	25	11	A	332110R
M332.ST13.2.01A	13	70	25	11	A	332110R
M332.ST16.01A	16	90	36	14.3	A	332143R
M332.ST20.01A	20	100	36	14.3	A	332143R
M332.ST12.2.01B	12	70	25	11	B	332110R
M332.ST16.01B	16	90	36	14.3	B	332143R

w, Ds, tmax see inserts

Milling shanks **M332.ST12.2.01A**, **M332.ST12.2.01B** and **M332.ST13.2.01A** are usable for inserts with increased milling depth!

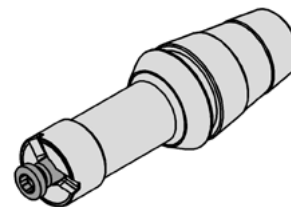
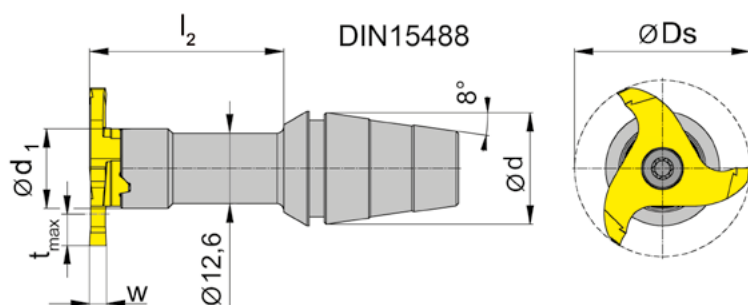
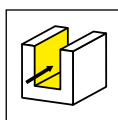
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M332...	5.17T20P	T20PQ	14 Nm



Picture = right hand cutting version

Part number	d	l ₂	d ₁	Clamping nut	HWS
M332.ER20.02	20	35	14.3	ER20.6499/ERM20.6499	332143R

w, Ds, tmax see inserts

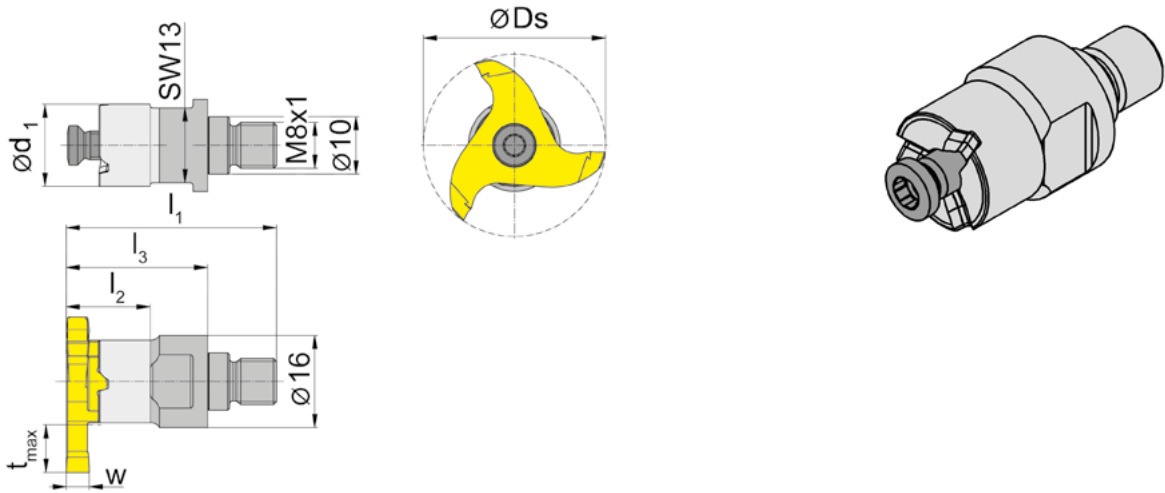
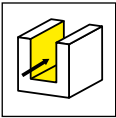
Clamping nut is not combined with milling shank - separate order required!

Dimensions in mm

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M332.ER20.02	5.17T20P	T20PQ	14 Nm

B



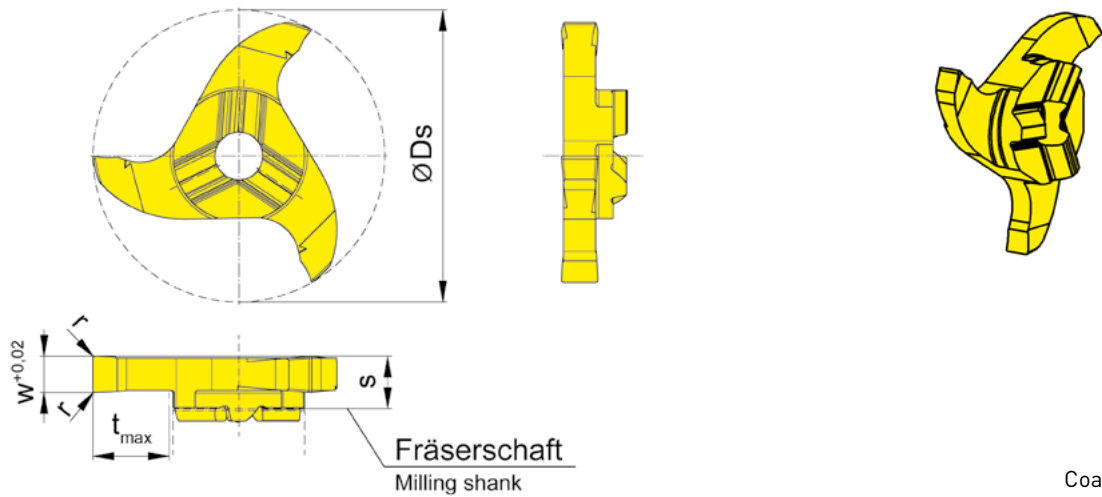
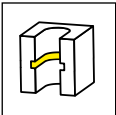
Part number	l_1	l_2	l_3	d_1	SW	HWS	HMS
M332.M081.01	37	15	25	14.3	13	332143R	08001

w, Ds, tmax see inserts

Dimensions in mm

Spare Parts

Screw-in Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M332.M081.01	5.17T20P	T20PQ	14 Nm



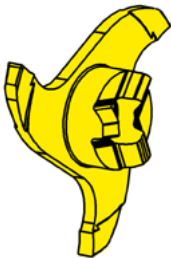
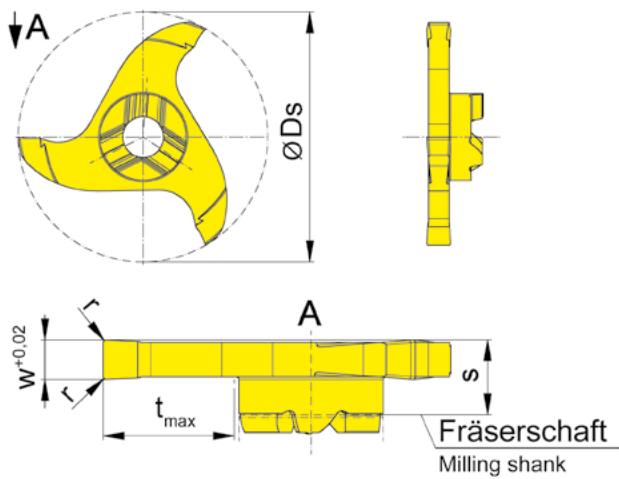
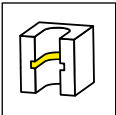
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	IG65	Ti25
332.0200.00	31.7	2	5.7	0.2	8.3	3	332143R		Δ	▲	▲
332.0250.00	31.7	2.5	5.7	0.2	8.3	3	332143R		Δ	▲	▲
332.0300.00	31.7	3	5.7	0.2	8.3	3	332143R		▲		▲
332.0350.00	31.7	3.5	5.7	0.2	8.3	3	332143R		▲		
332.0400.00	31.7	4	5.7	0.2	8.3	3	332143R		▲	▲	▲
Dimensions in mm								P	●	●	●
								M	●	●	●
								K	●	●	-
								N	-	-	●
								S	o	●	o
								H	-	-	-

B

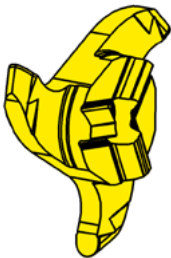
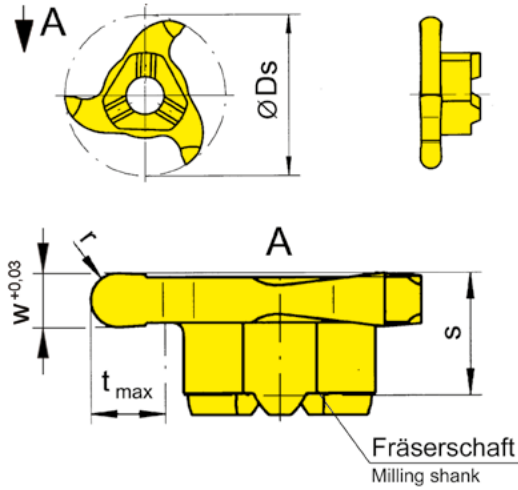
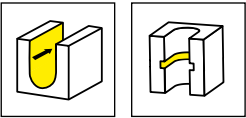


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	IG65	Ti25
332.0150.2.00	31.7	1.5	5.7	0.2	10	3	332110R	Δ		▲
332.0160.2.00	31.7	1.6	5.7	0.2	10	3	332110R	Δ		▲
332.0200.2.00	31.7	2	5.7	0.2	10	3	332110R	▲	▲	▲
332.0250.2.00	31.7	2.5	5.7	0.2	10	3	332110R	▲	▲	▲
332.0300.2.00	31.7	3	5.7	0.2	10	3	332110R	▲		▲
Dimensions in mm								P	●	●
								M	●	●
								K	●	-
								N	-	●
								S	o	o
								H	-	-



Picture = right hand cutting version

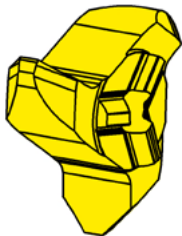
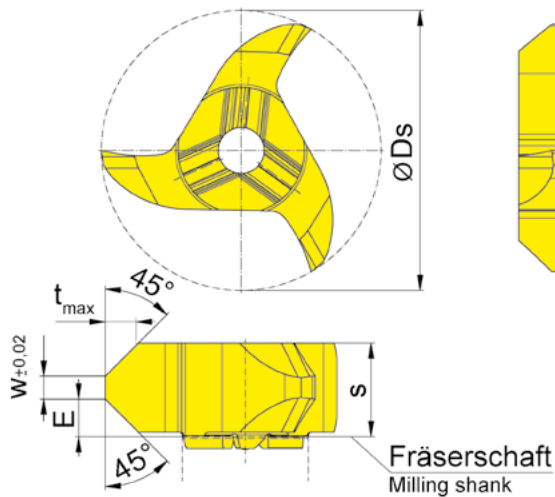
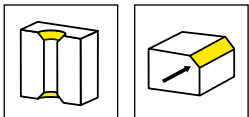
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	
332.0010.20	31.7	2	5.7	1	8.3	3	332143R	▲	
332.0015.30	31.7	3	5.7	1.5	8.3	3	332143R	▲	
332.0020.40	31.7	4	5.7	2	8.3	3	332143R	▲	
									P ●
									M ●
									K ●
									N -
									S o
									H -

Dimensions in mm

B

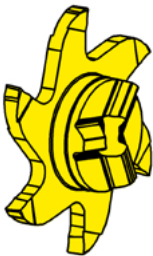
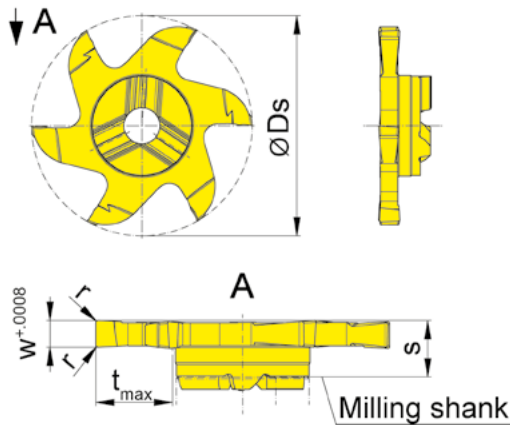
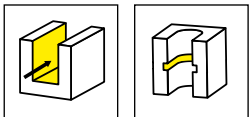


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	w	t _{max}	Z	HIS	TA45
332.4545.35.00	31.7	4.25	10.6	2.6	3.5	3	332143R	▲
For Insert = 10,6 mm use screw 5.13T20P								P ●
Dimensions in mm								M ●
								K ●
								N -
								S -
								H -



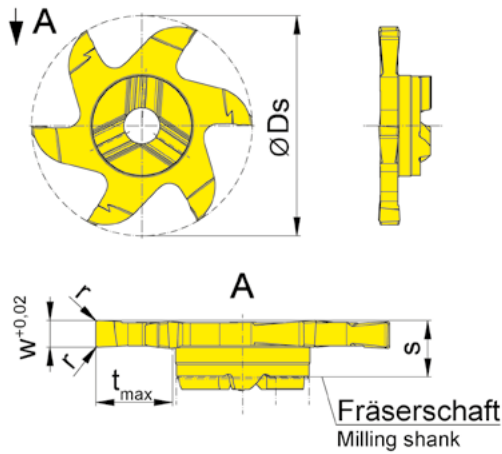
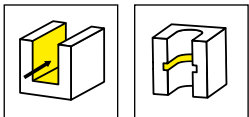
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS		AS45	TA45
632.0200.00	31.7	2	6.1	0.2	8.3	6	332143R	▲	▲	
632.0250.00	31.7	2.5	6.1	0.2	8.3	6	332143R	Δ	▲	
632.0300.00	31.7	3	6.1	0.2	8.3	6	332143R	▲	▲	
632.0400.00	31.7	4	6.1	0.2	8.3	6	332143R	▲	▲	
from width of groove 2.5 mm toothing with cross-cut									P	● ●
Dimensions in mm									M	● ●
									K	● ●
									N	- -
									S	o -
									H	- -

B

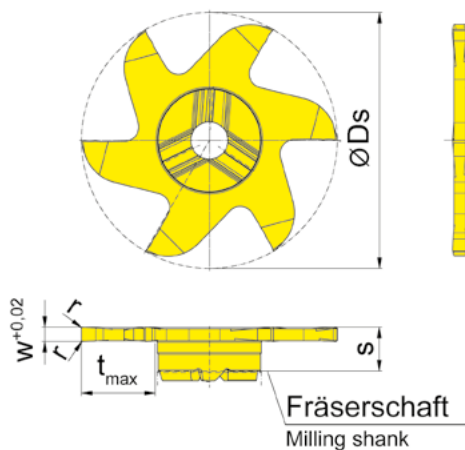
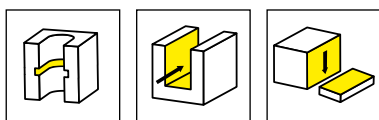


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	TA45
632.0100.2.00	31.7	1	6.1	-	10	6	332110R	Δ	
632.0120.2.00	31.7	1.2	6.1	0.1	10	6	332110R	Δ	
632.0150.2.00	31.7	1.5	6.1	0.2	10	6	332110R	Δ	▲
632.0160.2.00	31.7	1.6	6.1	0.2	10	6	332110R	▲	▲
632.0200.2.00	31.7	2	6.1	0.2	10	6	332110R	Δ	▲
632.0250.2.00	31.7	2.5	6.1	0.2	10	6	332110R	Δ	▲
632.0300.2.00	31.7	3	6.1	0.2	10	6	332110R	▲	▲
from width of groove 2.5 mm toothing with cross-cut								P	● ●
Dimensions in mm								M	● ●
								K	● ●
								N	- -
								S	o -
								H	- -



Coating grades

Picture = right hand cutting version

▲ In stock

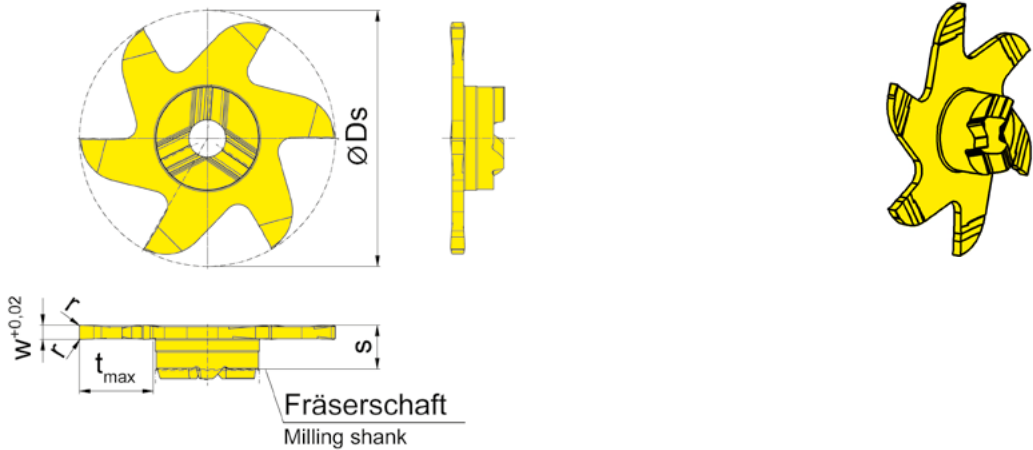
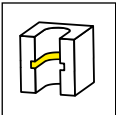
Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	TA45	EG35	EG55
636.0050.00	35.7	0.5	6.1	-	10.2	6	332143R			▲	
636.0100.00	35.7	1	6.1	-	10.2	6	332143R				▲
636.0150.00	35.7	1.5	6.1	0.1	10.2	6	332143R	▲	▲		
636.0200.00	35.7	2	6.1	0.2	10.2	6	332143R	▲	▲		
636.0250.00	35.7	2.5	6.1	0.2	10.2	6	332143R	▲	▲		
636.0300.00	35.7	3	6.1	0.2	10.2	6	332143R	▲	▲		

Dimensions in mm

P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
N	-	-	-	-
S	o	-	-	-
H	-	-	-	-

B

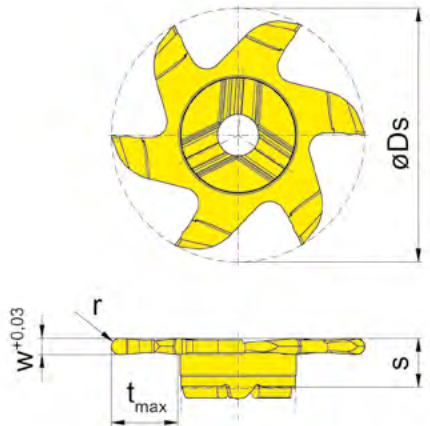
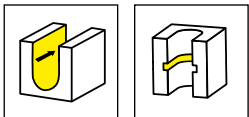


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	TA45
636.0110.2.00	35.7	1.1	6.1	0.1	12	6	332110R	Δ	
636.0130.2.00	35.7	1.3	6.1	0.1	12	6	332110R	Δ	
636.0150.2.00	35.7	1.5	6.1	0.1	12	6	332110R	▲	▲
636.0200.2.00	35.7	2	6.1	0.2	12	6	332110R	▲	▲
636.0250.2.00	35.7	2.5	6.1	0.2	12	6	332110R	▲	▲
from width of groove 2.5 mm toothing with cross-cut								P	● ●
Please consider the pocket seat $\varnothing d_i$ of the milling shank!								M	● ●
Dimensions in mm								K	● ●
								N	- -
								S	o -
								H	- -



Picture = right hand cutting version

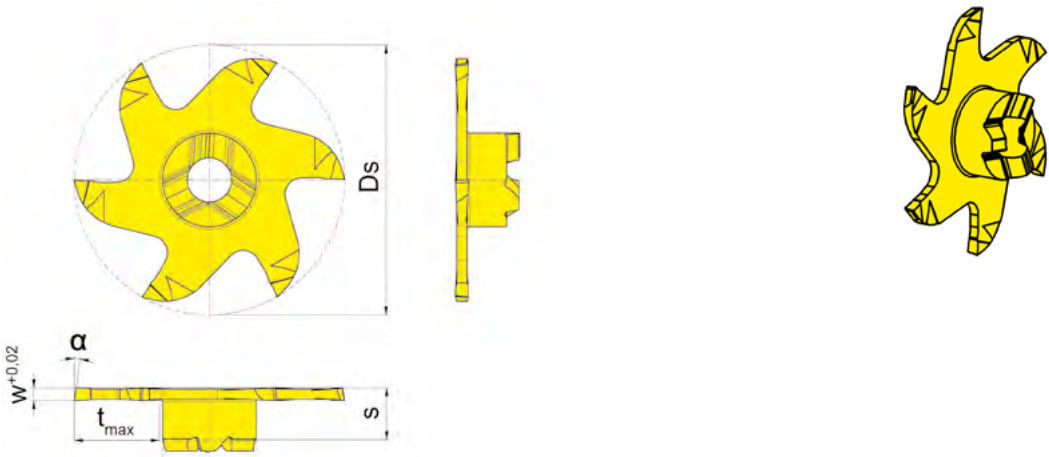
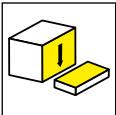
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	
632.0010.20	31.7	2	6.1	1	8.3	6	332143R	▲	
632.0015.30	31.7	3	6.1	1.5	8.3	6	332143R	▲	
632.0020.40	31.7	4	6.1	2	8.3	6	332143R	▲	
									P ●
									M ●
									K ●
									N -
									S o
									H -

Dimensions in mm

B

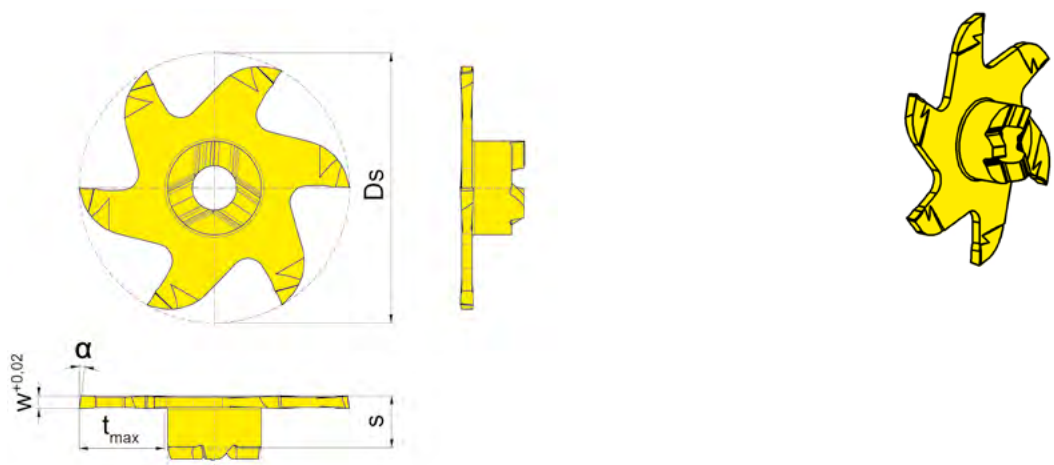
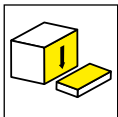


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	α	t _{max}	Z	HIS	RC25	
632.L810.2.00	31.7	1	6.1	8°	10	6	332110R	▲	
632.L815.2.00	31.7	1.5	6.1	8°	10	6	332110R	▲	
632.L820.2.00	31.7	2	6.1	8°	10	6	332110R	▲	
Dimensions in mm								P	●
								M	●
								K	●
								N	-
								S	-
								H	-



Picture = right hand cutting version

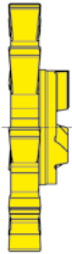
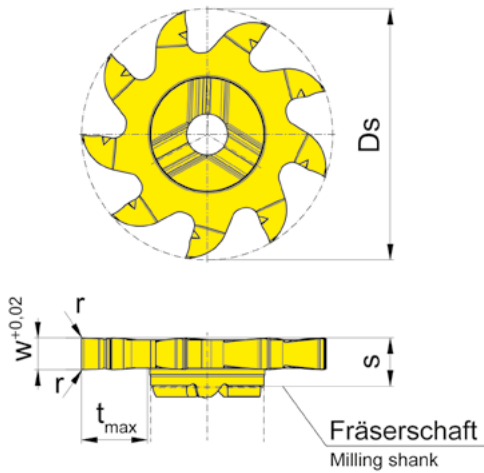
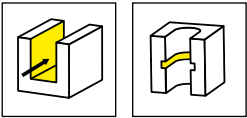
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	α	t _{max}	Z	HIS	RC25	
636.L810.2.00	35.7	1	6.1	8°	12	6	332110R	▲	
636.L815.2.00	35.7	1.5	6.1	8°	12	6	332110R	▲	
636.L820.2.00	35.7	2	6.1	8°	12	6	332110R	▲	
								P	●
								M	●
								K	●
								N	-
								S	-
								H	-

Dimensions in mm

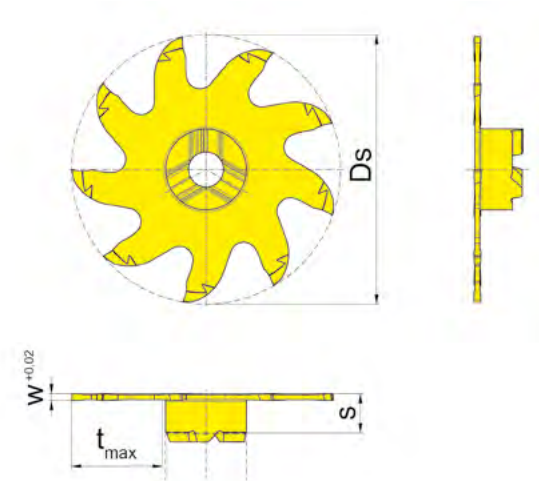
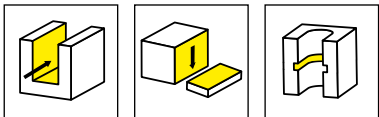
B



Picture = right hand cutting version

Coating grades
▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	
932.0200.00	31.7	2	6.1	0.2	8.3	9	332143R	▲	
932.0250.00	31.7	2.5	6.1	0.2	8.3	9	332143R	▲	
932.0300.00	31.7	3	6.1	0.2	8.3	9	332143R	▲	
932.0400.00	31.7	4	6.1	0.2	8.3	9	332143R	▲	
Dimensions in mm								P	●
								M	●
								K	●
								N	-
								S	o
								H	-



Picture = right hand cutting version

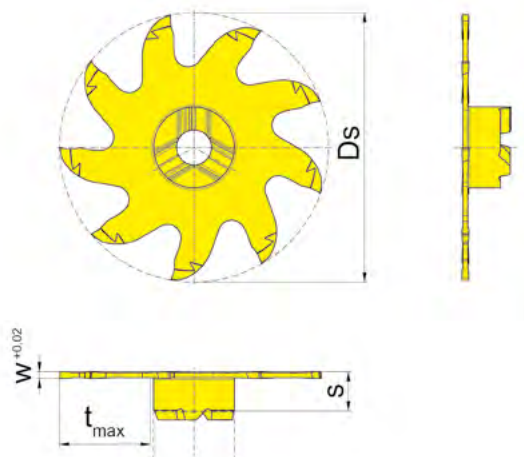
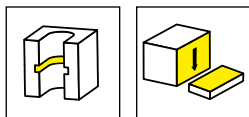
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	t _{max}	Z	HIS	RC25	
939.0100.3.00	40	1	5.8	13.5	9	332120R	▲	
939.0150.3.00	40	1.5	5.8	13.5	9	332120R	▲	
939.0200.3.00	40	2	5.8	13.5	9	332120R	▲	
939.0250.3.00	40	2.5	5.8	13.5	9	332120R	▲	
							P	●
							M	●
							K	●
							N	-
							S	-
							H	-

Dimensions in mm

B



Coating grades

Picture = right hand cutting version

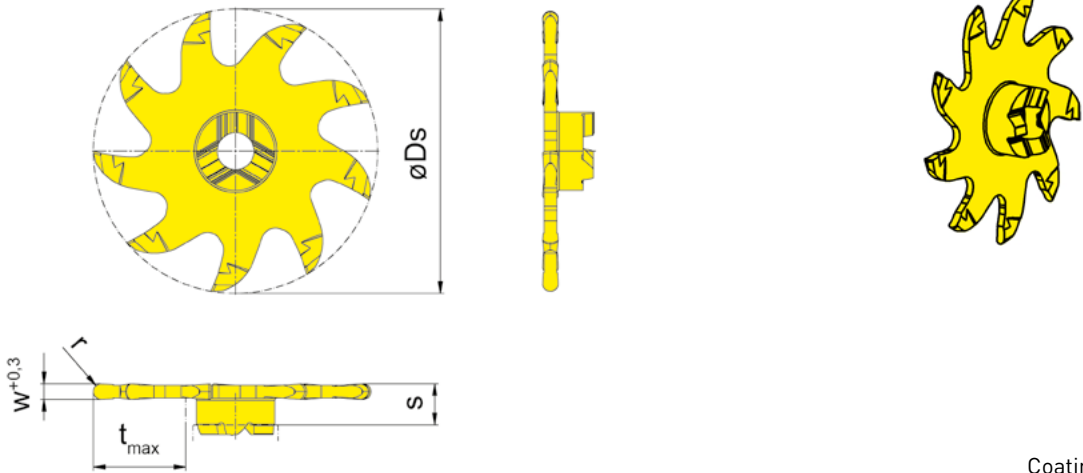
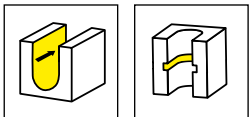
▲ In stock

Δ 2 weeks

Part number	Ds	w	s	t _{max}	Z	HIS	RC25
939.0040.4.00	40	0.4	5.8	14	9	332110R	▲
939.0050.4.00	40	0.5	5.8	14	9	332110R	▲
939.0060.4.00	40	0.6	5.8	14	9	332110R	▲
939.0070.4.00	40	0.7	5.8	14	9	332110R	▲
939.0080.4.00	40	0.8	5.8	14	9	332110R	▲
939.0090.4.00	40	0.9	5.8	14	9	332110R	▲
939.0100.4.00	40	1	5.8	14	9	332110R	▲
939.0150.4.00	40	1.5	5.8	14	9	332110R	▲

Dimensions in mm

P	●
M	●
K	●
N	-
S	-
H	-



Picture = right hand cutting version

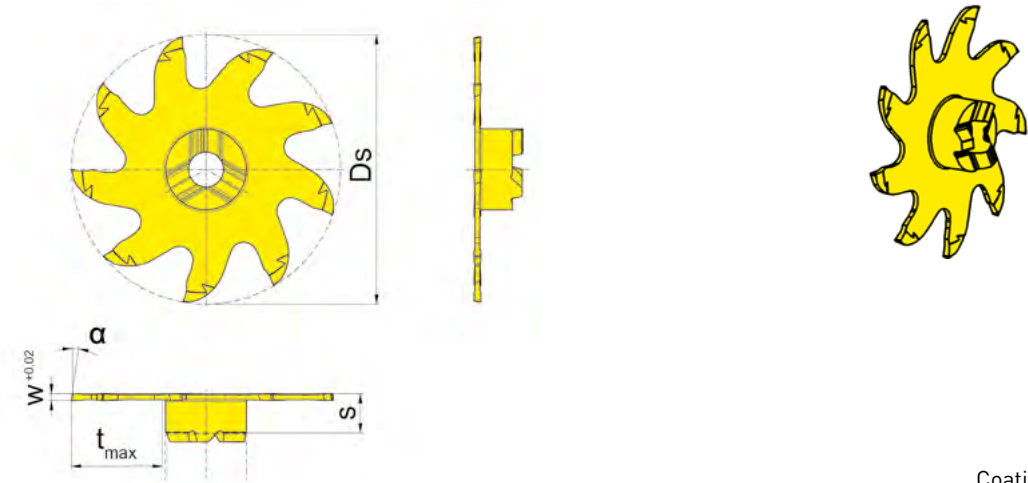
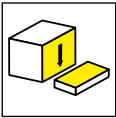
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	RC45	
939.0007.4.14	40	1.4	5.8	0.7	14	9	332110R	▲	
939.0011.4.22	40	2.2	5.8	1.1	14	9	332110R	▲	
939.0015.4.30	40	3	5.8	1.5	14	9	332110R	▲	
									P ●
									M ●
									K ●
									N -
									S -
									H -

Dimensions in mm

B



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	w	s	α	t _{max}	Z	HIS	RC25	
939.L810.3.00	40	1	5.8	8°	13.5	9	332120R	▲	
939.L810.4.00	40	1	5.8	8°	14	9	332110R	▲	
939.L815.4.00	40	1.5	5.8	8°	14	9	332110R	▲	
								P	●
								M	●
								K	●
								N	-
								S	-
								H	-

Dimensions in mm

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

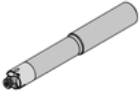
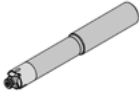
Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6

B



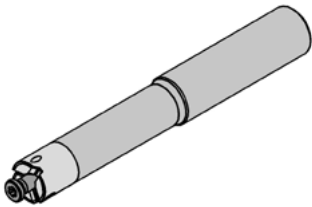
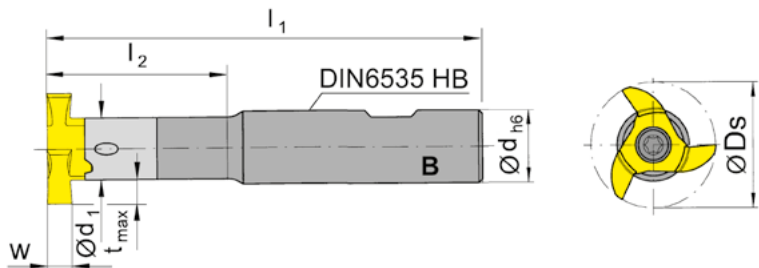
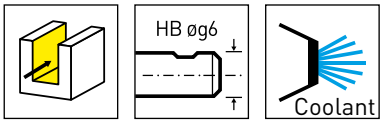
SYSTEM 335

INDEXABLE GROOVING

HOLDERS INSERTS	Inch Shanks	Metric Shanks
	 Page 225 MU335 Ø.750" Shank	 Page 226 M335 Ø20mm Shank
	Metric Grooving Widths (3 Flute)  Page 227 335 2-6mm Widths	

Cutting Data and Technical Instructions - Chapter M / Page 618

B



Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	HWS
MU335.0750.01B	.750	3.937	1.575	.689	335175R
MU335.0750.02B	.750	5.118	2.362	.689	335175R
MU335.0750.03B	.750	6.299	3.346	.689	335175R

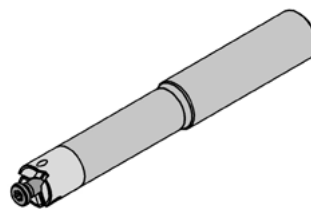
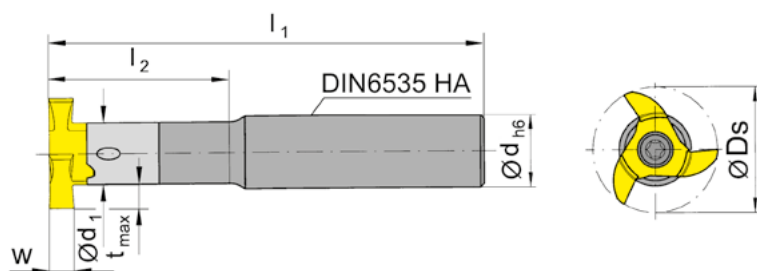
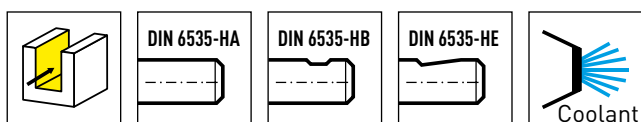
w, Ds, tmax see inserts

Dimensions in inch



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU335...	6.17T25P	T25PQ	12 Nm



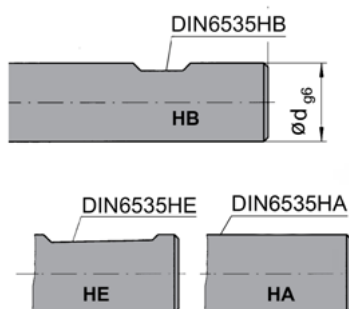
Picture = right hand cutting version

Part number	d	l_1	l_2	d_1	Form	HWS
M335.0020.01A	20	100	40	17.5	HA	335175R
M335.0020.02A	20	130	60	17.5	HA	335175R
M335.0020.03A	20	150	80	17.5	HA	335175R
M335.0020.01B	20	100	40	17.5	HB	335175R
M335.0020.02B	20	130	60	17.5	HB	335175R
M335.0020.02E	20	130	60	17.5	HE	335175R

w, Ds, tmax see inserts

Dimensions in mm

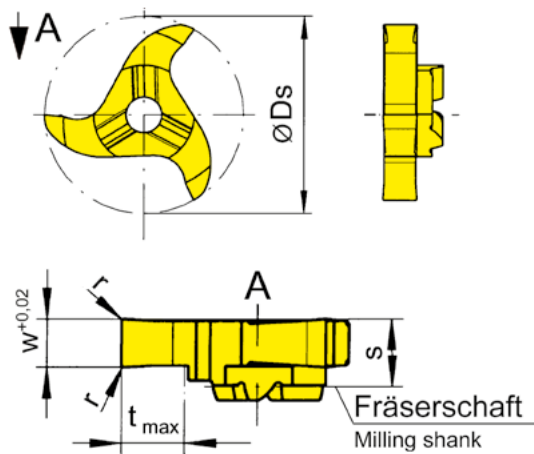
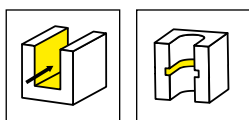
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M335...	6.17T25P	T25PQ	12 Nm

B



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	Ds	w	s	r	t _{max}	Z	HIS	AS45	Ti25
335.0200.00	34.7	2	8.7	0.2	8	3	335175R	▲	▲
335.0300.00	34.7	3	8.7	0.2	8	3	335175R	▲	▲
335.0400.00	34.7	4	8.7	0.2	8	3	335175R	▲	▲
335.0500.00	34.7	5	8.7	0.2	8	3	335175R	▲	▲
335.0600.00	34.7	6	8.7	0.2	8	3	335175R	▲	▲
Upon request:								P	●
Special inserts are available in widths from 8.0-15.0 mm.								M	●
								K	●
								N	-
								S	o
								H	-

Dimensions in mm

Chapter	A	B								
Page #	32	46	56	83	102	128	165	198	223	229
Tool System	DC	304	306	308	311	313	328	332	335	620
System Capabilities										
	•	•	•	•	•	•	•	•	•	
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•	•	
		•	•	•	•	•	•			
							•	•		
			•		•	•	•			•
	•	•	•	•	•	•	•	•		
	•	•	•	•	•	•	•	•		
							•			
		•	•	•	•	•				

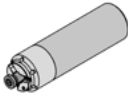
Ø DS	(in) (mm)	.118 - 1.574 3 - 40	.303 7.7	.377 - .460 9.6 - 11.7	.618 15.7	.696 17.7	.854 21.7	.976 - 1.102 24.8 - 28	1.248 - 1.574 31.7 - 40	1.366 34.7	.854 21.7
t _{max}	(in) (mm)	.590 15	.051 1.3	.098 2.5	.137 3.5	.137 3.5	.177 4.5	.366 9.3	.551 14	.314 8	.208 5.3
Flutes		3 / 6	3	3 / 6	3 / 6	6 / 9	3 / 6 / 9 / 12	3 / 6 / 9	3 / 6 / 9	3	6

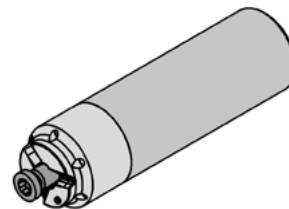
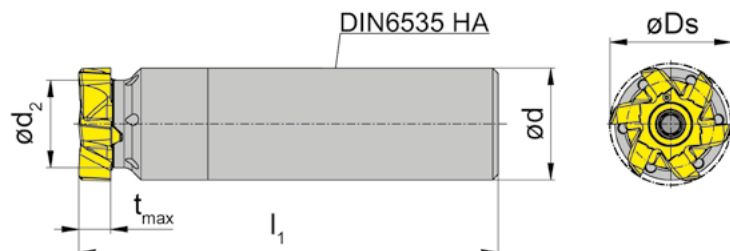
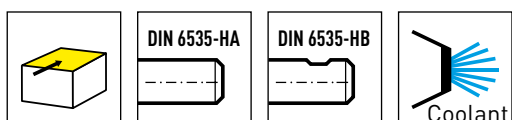
B



SYSTEM 620

INDEXABLE FACING, RAMPING, HELICAL MILLING

HOLDERS INSERTS	Metric Shanks	
		
	Page 231 M620 Ø21.7mm Shank	
	Facing	High Feed
		
	Page 232 620 Facing	Page 233 620 Face, Ramp, Helical

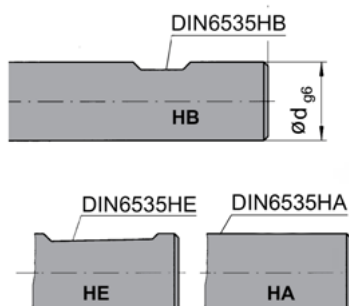


Part number	Ds	d	l_1	d_2	Form	HWS
M620.0020.D.00A	21.7	20	75	15.6	HA	620156R
M620.0020.D.00B	21.7	20	75	15.6	HB	620156R
M620.0020.D.04A	21.7	20	130	15.6	HA	620156R
M620.0020.D.04B	21.7	20	130	15.6	HB	620156R

t_{max} see inserts

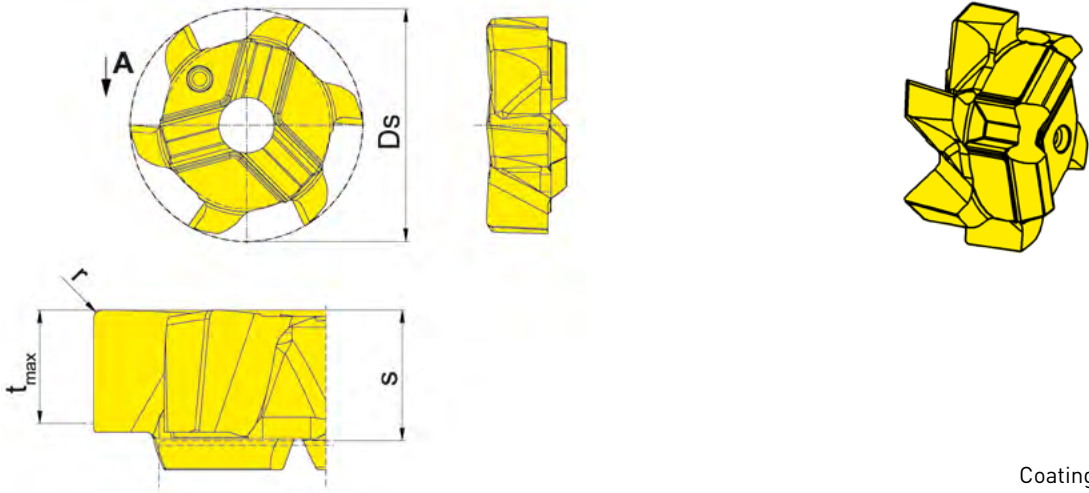
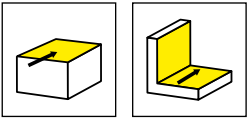
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M620...	5.14T20P	T20PQ	6.5 Nm



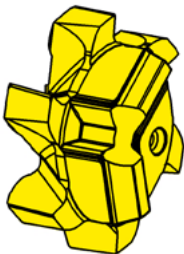
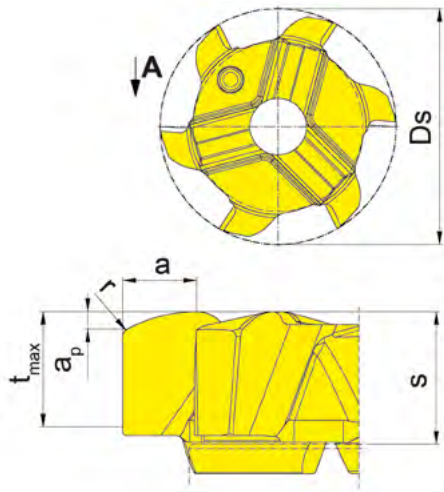
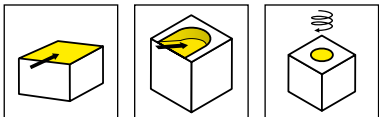
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	Z	r	t _{max}	s	HIS	AS45	
620.PL53.64	21.7	6	0.4	5.3	6.1	620156R	▲	
							P	●
							M	●
							K	●
							N	-
							S	o
							H	-

Dimensions in mm

B



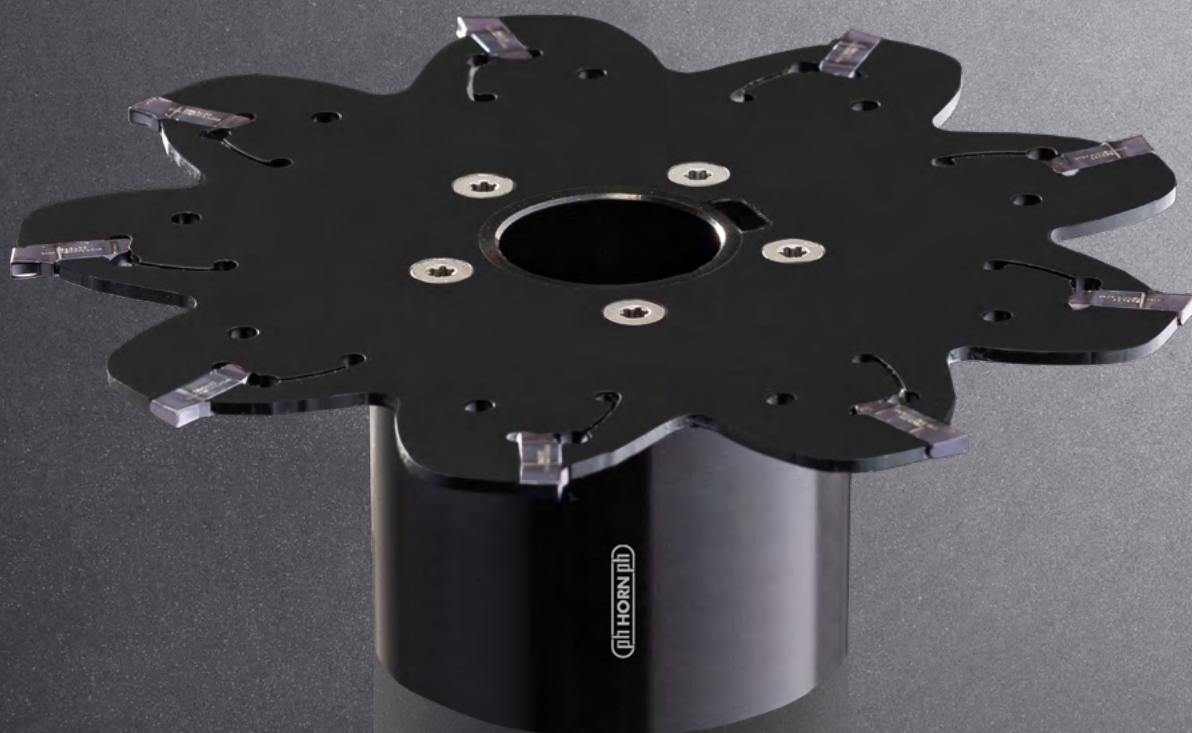
Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	a	Z	r	t _{max}	a _p	s	HIS	AS45	
620.HV08.04	21.7	4.4	6	0.4	5.3	0.8	6.1	620156R	▲	
Dimensions in mm										
										P ●
										M ●
										K ●
										N -
										S o
										H -

High Feed Milling

Ramping angle	Theoretical corner radius r _{th} = programming radius	Max. difference
1°	1.15 mm	0.43 mm



SYSTEM - M101

INDEXABLE GROOVING AND PARTING OFF

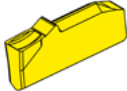
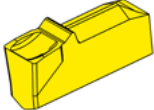
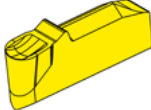
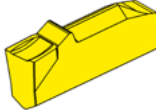
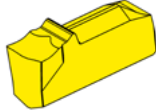
C

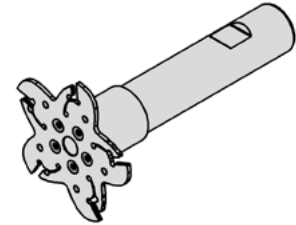
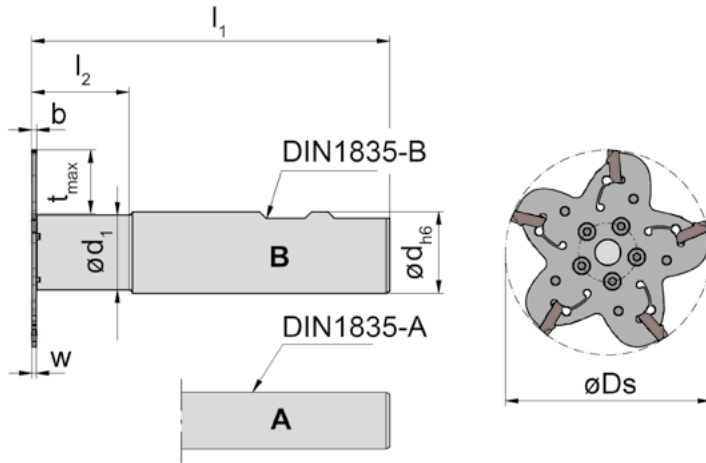
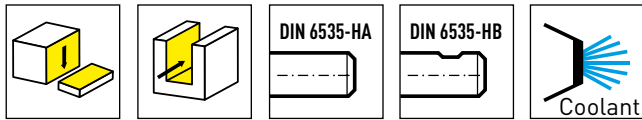
Chapter	C	D	E	F		
Page #	234	248	264	276	291	305
Tool System	101	380/381	M275	382/383	310	475
System Capabilities						
	•	•	•	•	•	•
	•			•	•	
	•	•	•	•	•	
	•				•	•
			•	•		

Ø DS	(in) (mm)	2.480 - 7.874 63 - 200	1.732 - 3.937 44 - 100	1.220 - 3.070 31 - 78	3.149 - 7.874 80 - 200	1.968 - 7.874 50 - 200	1.574 - 7.874 40 - 200
Width	(in) (mm)	.047 - .157 1.2 - 4	.046 - .275 1.17 - 7	.047 - .127 1.2 - 3.25	.046 - .275 1.17 - 7	.118 - .196 3 - 5	.062 - .172 1.6 - 4.39
Insert		S101	314	S275	314	S310	S475

P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	-	o	o	o	-	o
S	o	o	-	o	-	o
H	-	-	-	-	-	-

HOLDERS	Round Shank	Disc Milling Cutter		Arbor Mounted	
	 Page 237 1.2-2.3mm Width 19.5mm t _{max}	 Page 238 1.2-2.5mm Width 20-33mm t _{max}	 Page 239 2.8-4.6mm Width 20-59mm t _{max}	 Page 240 1.2-2.3mm Width 20-34mm t _{max}	 Page 241 2.8-4.6mm Width 19-59mm t _{max}

INSERTS	Grooving, Parting Off		Full Radius	Parting Off	
	 Page 242 Grooving, Parting Off .3 Geometry	 Page 243 Grooving, Parting Off .E Geometry	 Page 244 Grooving, Parting Off .E Geometry	 Page 245 Parting Off .3 Geometry	 Page 246 Parting Off .FY Geometry



Picture = right hand cutting version

Part number	Z	Ds	d	l_1	l_2	d_1	b	t_{max}	Form	Width of groove (mm)	n_{max}	HWS
M101.063.D16.23.2.12A	5	63	16	110	30	23	0.95	19.5	A	1.2-1.2	7500	10112
M101.063.D16.23.2.14A	5	63	16	110	30	23	1.15	19.5	A	1.4-1.4	7500	10114
M101.063.D16.23.2.16A	5	63	16	110	30	23	1.3	19.5	A	1.6-1.8	7500	10116
M101.063.D16.23.2.20A	5	63	16	110.35	30.4	23	1.6	19.5	A	2.0-2.3	7500	10120
M101.063.D20.23.2.12B	5	63	20	110	30	23	0.95	19.5	B	1.2-1.2	7500	10112
M101.063.D20.23.2.14B	5	63	20	110	30	23	1.15	19.5	B	1.4-1.4	7500	10140
M101.063.D20.23.2.16B	5	63	20	110	30	23	1.3	19.5	B	1.6-1.8	7500	10116
M101.063.D20.23.2.20B	5	63	20	110.35	30.4	23	1.6	19.5	B	2.0-2.3	7500	10120
M101.063.D25.23.2.12B	5	63	25	110	30	23	0.95	19.5	B	1.2-1.2	7500	10112
M101.063.D25.23.2.16B	5	63	25	110	30	23	1.3	19.5	B	1.6-1.8	7500	10116
M101.063.D25.23.2.20B	5	63	25	110	30	23	1.6	19.5	B	2.0-2.3	7500	10120

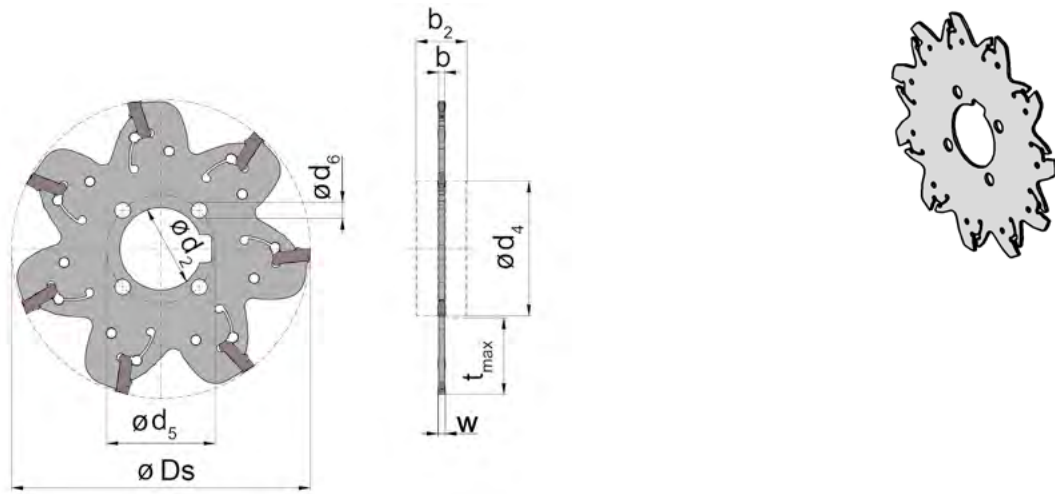
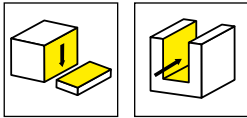
For the (w) dimension, see inserts

Wrench **P101.01** is not combined with slotting cutter - separate order required!

Dimensions in mm

Spare Parts

Groove milling cutter	Shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M101.063.D16.23.2....	020.D16.23.2.12 A	030.3543.T8P	T8PL	2 Nm
M101.063.D16.23.2....	020.D16.23.2.16A	030.3543.T8P	T8PL	2 Nm
M101.063.D20.23.2....	020.D20.23.2.12B	030.3543.T8P	T8PL	2 Nm
M101.063.D20.23.2....	020.D20.23.2.16B	030.3543.T8P	T8PL	2 Nm
M101.063.D25.23.2.12B	020.D25.23.2.12B	030.3543.T8P	T8PL	2 Nm
M101.063.D25.23.2.16B	020.D25.23.2.16B	030.3543.T8P	T8PL	2 Nm
M101.063.D25.23.2.20B	020.D25.23.2.20B	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	b	d ₂	b ₂	d ₄	d ₆	d ₅	Width of groove (mm)	n _{max}	HWS
M101.0080.22.12	7	80	20	0.95	22	13	36	4.25	29	1.2-1.2	6000	10112
M101.0080.22.14	7	80	20	1.15	22	13.1	36	4.25	29	1.4-1.4	6000	10114
M101.0080.22.16	7	80	20	1.3	22	13.3	36	4.25	29	1.6-1.8	6000	10116
M101.0100.22.16	9	100	30	1.3	22	13.3	36	4.25	29	1.6-1.8	5000	10116
M101.0125.32.16	11	125	33	1.3	32	21.3	55	6.25	45	1.6-1.8	4000	10116
M101.0080.22.20	7	80	20	1.6	22	13.6	36	4.25	29	2.0-2.3	6000	10120
M101.0100.22.20	9	100	30	1.6	22	13.6	36	4.25	29	2.0-2.3	5000	10120
M101.0125.32.20	11	125	33	1.6	32	21.6	55	6.25	45	2.0-2.3	4000	10120
M101.0080.22.25	7	80	20	2	22	14	36	4.25	29	2.5-2.5	6000	10125
M101.0100.22.25	9	100	20	2	22	14	36	4.25	29	2.5-2.5	5000	10125
M101.0125.32.25	11	125	33	2	32	22	55	4.25	45	2.5-2.5	4000	10125

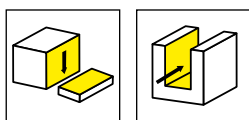
For the (w) dimension, see inserts

Wrench **P101.01** and the Ringset are not combined with slotting cutter - separate order required!

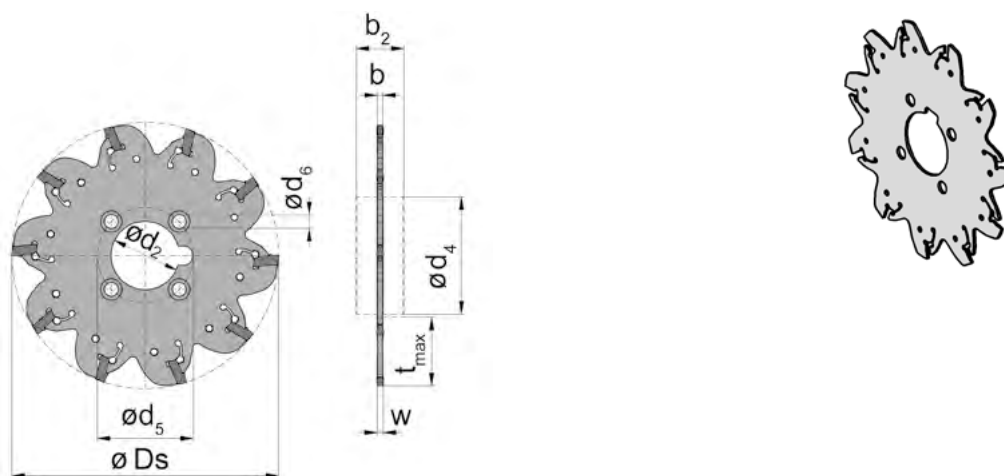
Dimensions in mm

Spare Parts

Disc milling cutter	Ringset	Wrench	Torque Value
M101....	020.22.06.36	P101.01	6.5 Nm
M101.0125.32...	020.32.10.55	P101.01	8 Nm



C



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	b	d ₂	b ₂	d ₄	d ₆	d ₅	Width of groove (mm)	n _{max}	HWS
M101.0080.22.30	6	80	20	2.4	22	14.4	36	4.25	29	2.8-3.4	6000	10130
M101.0100.22.30	8	100	26	2.4	22	22.4	46	5.25	32	2.8-3.4	5000	10130
M101.0125.32.30	10	125	34	2.4	32	22.4	55	6.25	45	2.8-3.4	4000	10130
M101.0160.40.30	12	160	39	2.4	40	26.4	80	11.25	63	2.8-3.4	3000	10130
M101.0080.22.40	6	80	20	3.2	22	15.2	36	4.25	29	3.8-4.6	6000	10140
M101.0100.22.40	8	100	26	3.2	22	23.2	46	5.25	32	3.8-4.6	5000	10140
M101.0125.32.40	10	125	34	3.2	32	23.2	55	6.25	45	3.8-4.6	4000	10140
M101.0160.40.40	12	160	39	3.2	40	27.2	80	11.25	63	3.8-4.6	3000	10140
M101.0200.40.40	16	200	59	3.2	40	27.2	80	11.25	63	3.8-4.6	2500	10140

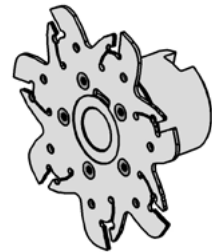
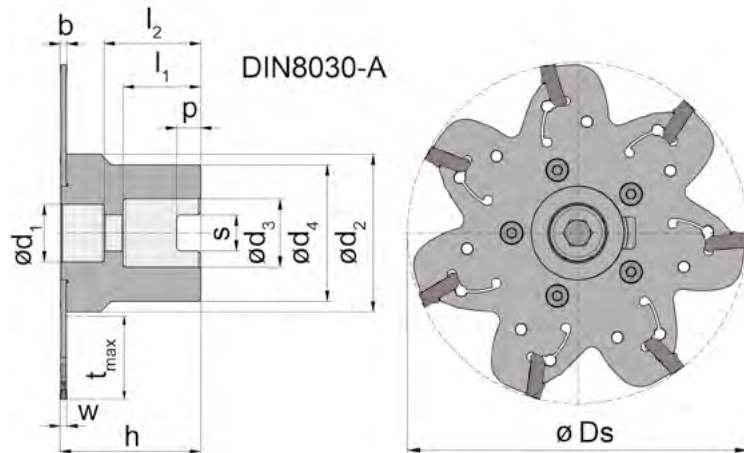
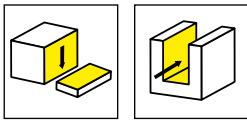
For the (w) dimension, see inserts

Wrench **P101.02** and the Ringset are not combined with slotting cutter - separate order required!

Dimensions in mm

Spare Parts

Disc milling cutter	Ringset	Wrench	Torque Value
M101.0080.22...	020.22.06.36	P101.02	6.5 Nm
M101.0100.22...	020.22.10.46	P101.02	6.5 Nm
M101.0125.32...	020.32.10.55	P101.02	8 Nm
M101....	020.40.12.80	P101.02	15 Nm



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	h	b	d ₁	d ₄	l ₁	l ₂	s	P	d ₂	d ₃	n _{max}	Width of groove (mm)	HWS
M101.0080.A16.12	7	80	20	33	0.95	13.5	32	18	22.7	8.4	5.6	37	16	6000	1.2-1.2	10112
M101.0080.A16.14	7	80	20	33.2	1.15	13.5	32	18	22.7	8.4	5.6	37	16	6000	1.4-1.4	10114
M101.0080.A16.16	7	80	20	33	1.3	13.5	32	18	22.7	8.4	5.6	37	16	6000	1.6-1.8	10116
M101.0100.A22.16	9	100	28	37	1.3	18.5	40.5	20	24.7	10.4	6.3	40.5	22	5000	1.6-1.8	10116
M101.0125.A32.16	11	125	34	50	1.3	28.5	45	25	36.7	14.4	8	55	32	4000	1.6-1.8	10116
M101.0080.A16.20	7	80	20	33	1.6	13.5	32	18	22.7	8.4	5.6	37	16	6000	2.0-2.3	10120
M101.0100.A22.20	9	100	28	37	1.6	18.5	40.5	20	24.7	10.4	6.3	40.5	22	5000	2.0-2.3	10120
M101.0125.A32.20	11	125	34	50	1.6	28.5	45	25	36.7	14.4	8	55	32	4000	2.0-2.3	10120

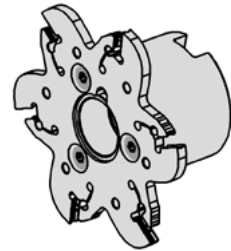
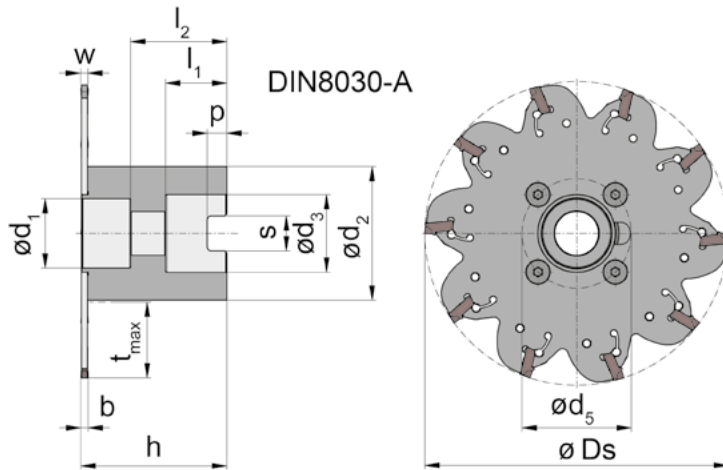
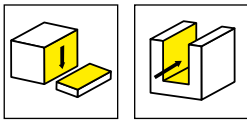
For the (w) dimension, see inserts

Wrench **P101.01** is not combined with slotting cutter - separate order required!

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Flange	Wrench	Torque Value
M101.0080.A16....	020.0016.32.09	T8PL	
M101.0080.A16.16	020.0016.32.13	T8PL	
M101.0100.A22.16	020.0022.40.13	T8PL	6.5 Nm
M101.0125.A32.16	020.0032.55.13	T8PL	8 Nm
M101.0080.A16.20	020.0016.32.16	T8PL	
M101.0100.A22.20	020.0022.40.16	T8PL	6.5 Nm
M101.0125.A32.20	020.0032.55.16	T8PL	8 Nm



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	h	b	d ₁	l ₁	l ₂	s	P	d ₂	d ₃	n _{max}	Width of groove (mm)	HWS
M101.0080.A22.30	6	80	19	37	2.4	18.5	20	24.7	10.4	6.3	40	22	5000	2.8-3.4	10130
M101.0100.A22.30	8	100	29	37	2.4	18.5	20	24.7	10.4	6.3	40	22	5000	2.8-3.4	10130
M101.0125.A32.30	10	125	34	50	2.4	28.5	25	36.7	14.4	8	55	32	4000	2.8-3.4	10130
M101.0160.A40.30	12	160	39	50	2.4	34.5	28	35	16.4	9	80	40	3000	2.8-3.4	10130
M101.0080.A22.40	6	80	19	37.9	3.2	18.5	20	24.7	10.4	6.3	40	22	5000	3.8-4.6	10140
M101.0100.A22.40	8	100	29	37.9	3.2	18.5	20	24.7	10.4	6.3	40	22	5000	3.8-4.6	10140
M101.0125.A32.40	10	125	34	50.9	3.2	28.5	25	36.7	14.4	8	55	32	4000	3.8-4.6	10140
M101.0160.A40.40	12	160	39	50.9	3.2	34.5	28	35	16.4	9	80	40	3000	3.8-4.6	10140
M101.0200.A40.40	16	200	59	50.9	3.2	34.5	28	35	16.4	9	80	40	2500	3.8-4.6	10140

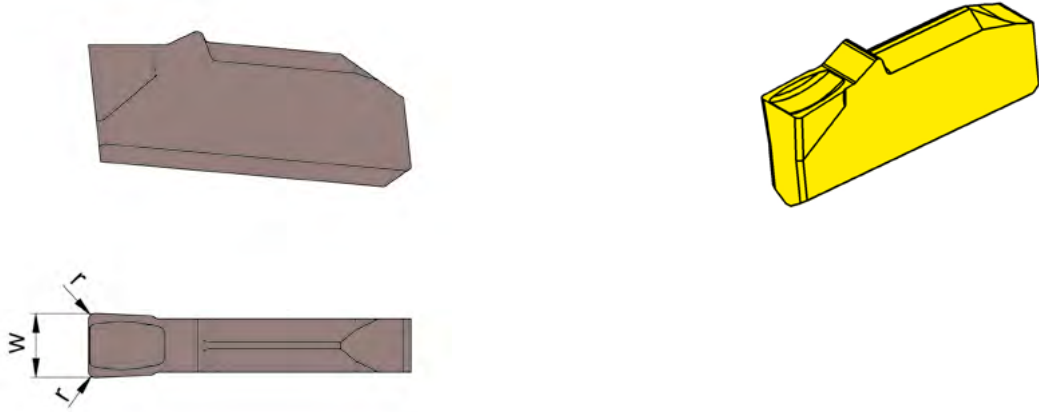
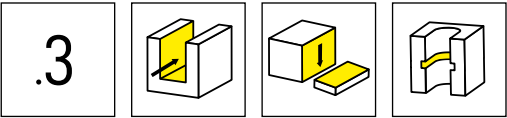
For the (w) dimension, see inserts

Wrench **P101.02** is not combined with the cutter - a separate order is required.

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Flange	Clamping Screw	Wrench	Torque Value
M101.0080.A22...	020.0022.40.3.30	030.0520.0912	T15PQ	6.5 Nm
M101.0100.A22...	020.0022.40.30	030.0520.0912	T15PQ	6.5 Nm
M101.0125.A32...	020.0032.55.30	030.0620.0913	T20PQ	8 Nm



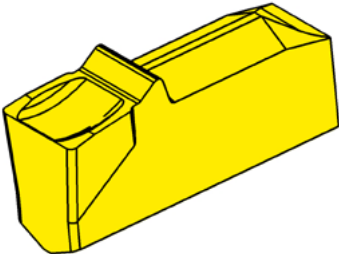
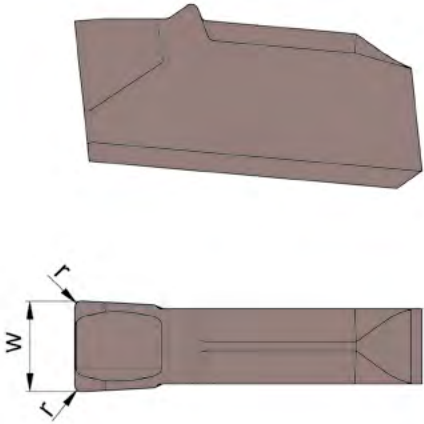
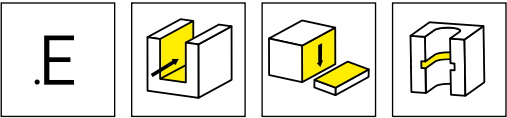
C

Coating grades

▲ In stock Δ 2 weeks

Part number	w	r	HIS		AS45	IG35
S101.0120.315	1.2	0.15	10112	▲	▲	▲
S101.0140.315	1.4	0.15	10114	▲	▲	▲
S101.0160.315	1.6	0.15	10116	▲	▲	▲
S101.0200.320	2	0.2	10120	▲	▲	▲
S101.0250.320	2.5	0.2	10125	▲	▲	▲
Dimensions in mm				P	●	●
				M	●	●
				K	●	●
				N	-	-
				S	o	●
				H	-	-

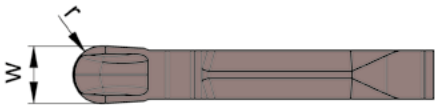
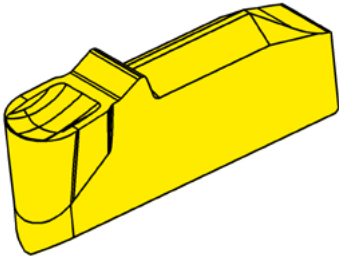
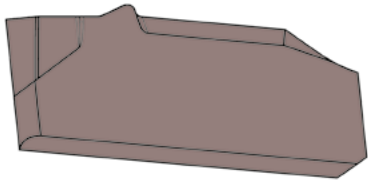
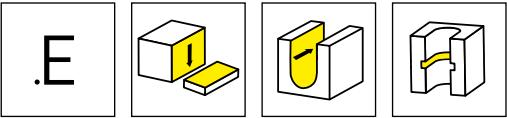
C



Coating grades

▲ In stock Δ 2 weeks

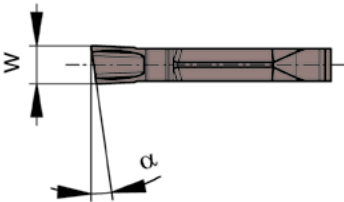
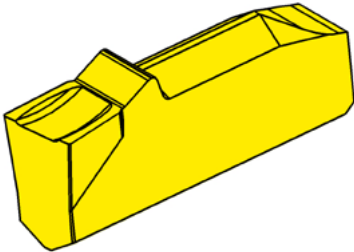
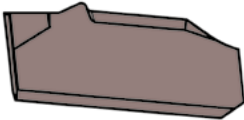
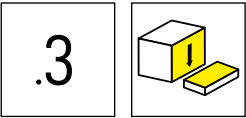
Part number	w	r	HIS	AS45	
S101.0300.E32	3	0.2	10130	▲	
S101.0400.E33	4	0.3	10140	▲	
Dimensions in mm				P	●
				M	●
				K	●
				N	-
				S	o
				H	-



Coating grades

▲ In stock Δ 2 weeks

Part number	w	r	HIS	AS45	
S101.0160.E3.R08	1.6	0.8	10116	▲	
S101.0200.E3.R10	2	1	10120	▲	
S101.0300.E3.R15	3	1.5	10130	▲	
Dimensions in mm				P	●
				M	●
				K	●
				N	-
				S	O
				H	-



Coating grades

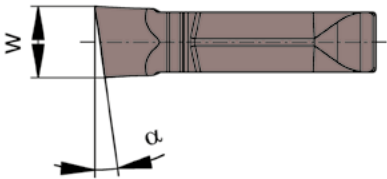
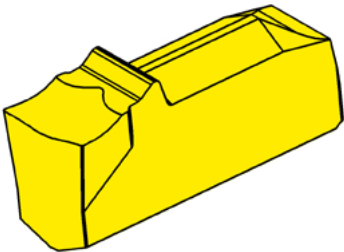
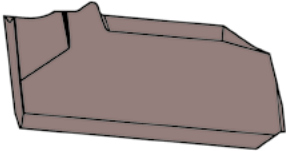
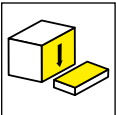
R = right hand version shown

L = left hand version

▲ In stock

Δ 2 weeks

Part number	w	α	HIS		AS45	EG55	IG35
RS101.0812.30	1.2	8°	10112			▲	▲
RS101.0816.30	1.6	8°	10116		▲		▲
RS101.0820.30	2	8°	10120		▲		▲
RS101.0825.30	2.5	8°	10125		▲		▲
LS101.0812.30	1.2	8°	10112			▲	▲
LS101.0816.30	1.6	8°	10116		▲		▲
LS101.0820.30	2	8°	10120		▲		▲
LS101.0825.30	2.5	8°	10125		▲		▲
Dimensions in mm				P	●	●	●
				M	●	●	●
				K	●	●	●
				N	-	-	-
				S	o	-	●
				H	-	-	-



R = right hand version shown

L = left hand version

Coating grades

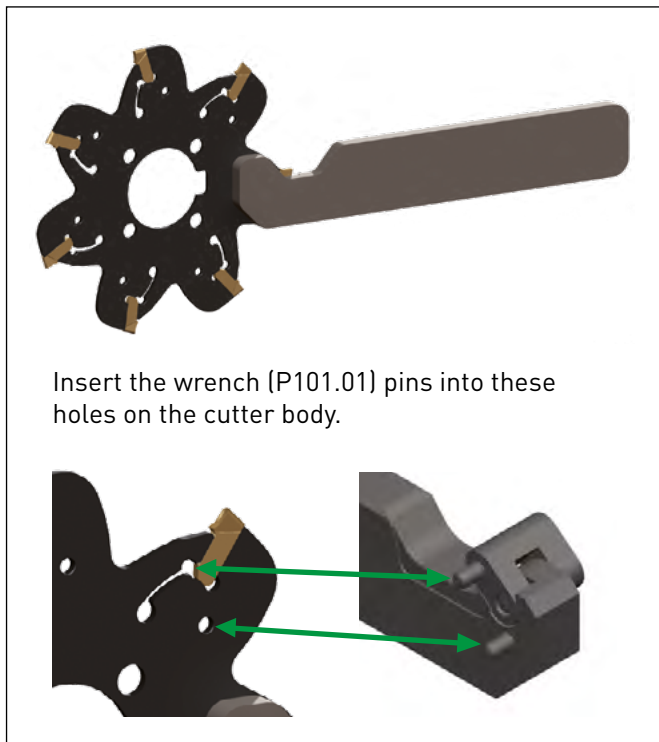
▲ In stock

Δ 2 weeks

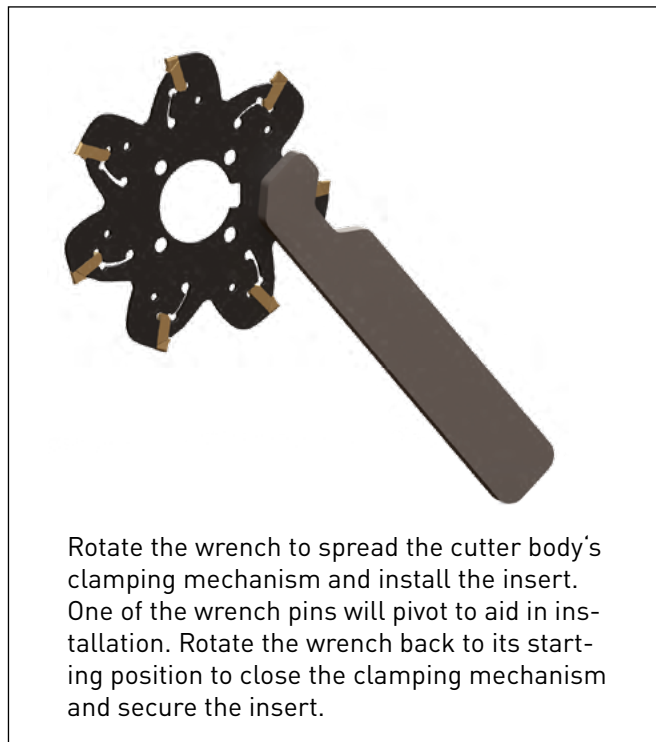
Part number	w	α	HIS	AS45	IG35
RS101.0830.FY0	3	8°	10130	▲	▲
LS101.0830.FY0	3	8°	10130	▲	▲
Dimensions in mm				P	●
				M	●
				K	●
				N	-
				S	o
				H	-

How to Install Inserts in M101 Cutters

Step 1



Step 2



Preferred use in climb milling.

After changing the inserts, reduce the feed rate by 50% until reaching an initial cutting depth of 0.5–1.0 mm (.020"–.039").

Ø Cutter diameter	Max RPM
Ø 63 mm	7,500
Ø 80 mm	6,000
Ø 100 mm	5,000
Ø 125 mm	4,000
Ø 160 mm	3,000
Ø 200 mm	2,500

D



SYSTEM M380/381

GROOVE MILLING

Chapter	C	D	E	F		
Page #	234	248	264	276	291	305
Tool System	101	380/381	M275	382/383	310	475

System Capabilities

	•	•	•	•	•	•
	•			•	•	
	•	•	•	•	•	
	•				•	•
			•	•		

Ø DS	(in) (mm)	2.480 - 7.874 63 - 200	1.732 - 3.937 44 - 100	1.220 - 3.070 31 - 78	3.149 - 7.874 80 - 200	1.968 - 7.874 50 - 200	1.574 - 7.874 40 - 200
Width	(in) (mm)	.047 - .157 1.2 - 4	.046 - .275 1.17 - 7	.047 - .127 1.2 - 3.25	.046 - .275 1.17 - 7	.118 - .196 3 - 5	.062 - .172 1.6 - 4.39
Insert		S101	314	S275	314	S310	S475

P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	-	o	o	o	-	o
S	o	o	-	o	-	o
H	-	-	-	-	-	-

HOLDERS

Inch Shank

Page 251
Ø Ds 1.732"
Milling Shank

Page 252
Ø Ds 2.480"
Arbor Mounted

Page 253
Ø Ds 3.150"
Arbor Mounted

Page 254
Ø Ds 2.480-3.937"
Disk Cutter

Metric Shank

Page 255
Ø Ds 44mm
Milling Shank

Page 256-257
Ø Ds 63mm
Arbor Mounted

Page 258-259
Ø Ds 80mm
Arbor Mounted

Page 260
Ø Ds 44-80mm
ABS/Komet

Page 261
Ø Ds 63-100mm
Disc Cutter

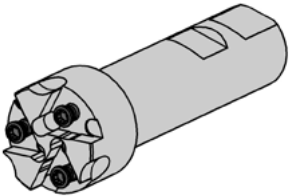
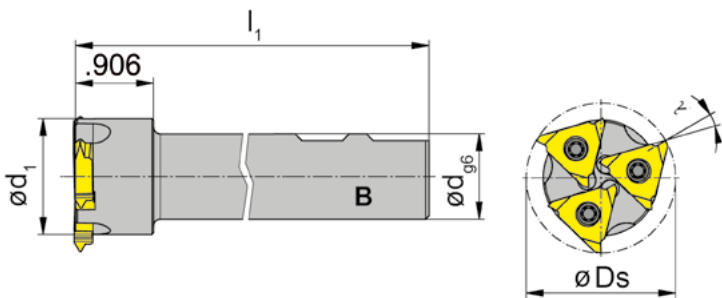
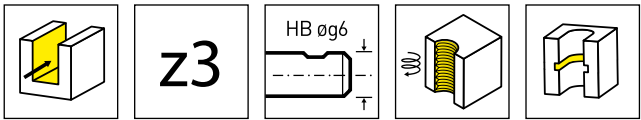
Grooving

Page 262
Grooving and DIN
Circlip

Page 263
Grooving and DIN
Circlip w/ Chamfer

INSERTS

Cutting Data and Technical Instructions - Chapter M / Page 618



Picture = right hand cutting version

Part number	Z	Ds	d	d ₁	t _{max}	λ	Form	HWS
U380.1732.03B	3.000	1.732	1.000	1.339	.157	14°	B	314027R • 314041R • 314052R

tmax see inserts

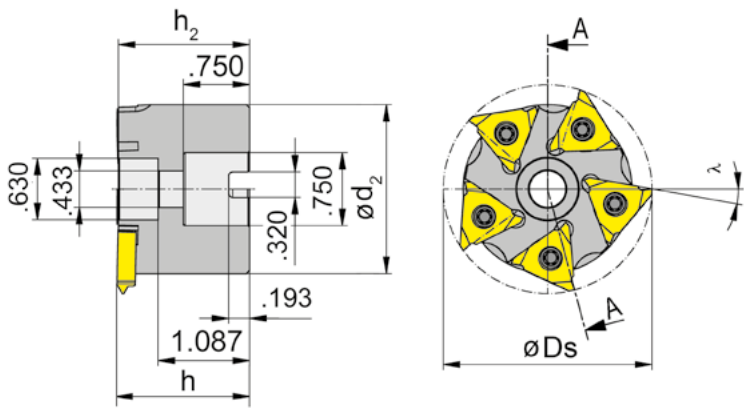
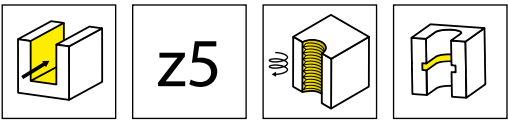
Dimensions in inch



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
U380.1732.03B	5.12T20P	T20PQ	6.5 Nm

Arbor Mounted Cutter U380



Picture = right hand cutting version

Part number	Z	Ds	h ₂	h	d ₃	l ₁	l ₂	λ	d ₂	HWS
U380.2480.05	5.000	2.480	1.559	1.575	.750	.750	1.087	10°	2.008	314027R • 314041R • 314052R

Cutterhole and cross keyway as per DIN 138

t_{max} see inserts

Dimensions in inch



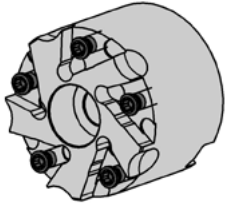
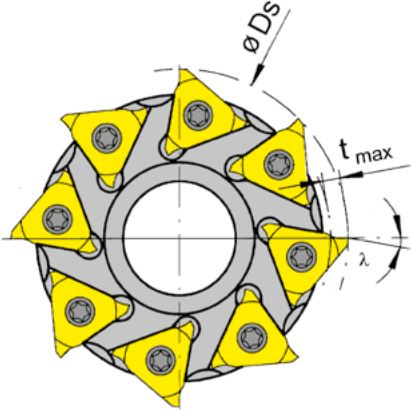
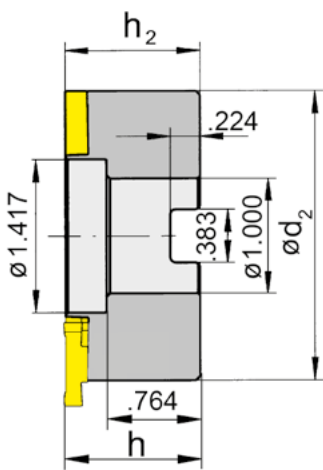
Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
U380.2480.05	5.12T20P	T20PQ	6.5 Nm

D

Arbor Mounted Cutter

U380



Picture = right hand cutting version

Part number	Z	Ds	h ₂	h	l ₂	λ	d ₂	d ₃	HWS
U380.3150.08	8	3.150	1.244	1.260	.764	10°	2.677	1.000	314027R • 314041R • 314052R

Cutterhole and cross keyway as per DIN 138

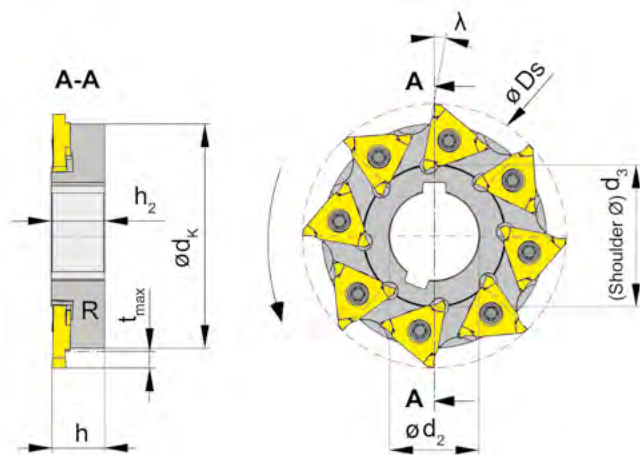
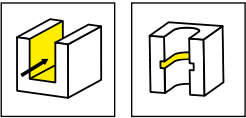
Bolt screw **030.0012.0726** is combined with the milling cutter.

Dimensions in inch



Spare Parts

Milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
U380.3150.08	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	Ds	t _{max}	d ₂	λ	HWS
RU381.2480.05	2.480	.197	.750	14°	314027R • 314041R • 314052R
RU381.3150.08	3.150	.197	1.000	10°	314027R • 314041R • 314052R
RU381.3937.10	3.937	.197	1.250	10°	314027R • 314041R • 314052R
LU381.2480.05	2.480	.197	.750	14°	314027L • 314041L • 314052L
LU381.3150.08	3.150	.197	1.000	10°	314027L • 314041L • 314052L
LU381.3937.10	3.937	.197	1.250	10°	314027L • 314041L • 314052L

Bore (d2) with longitudinal keyway to DIN 138

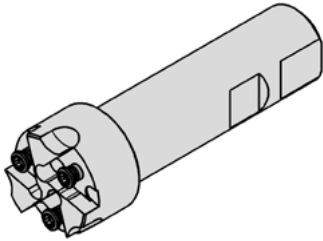
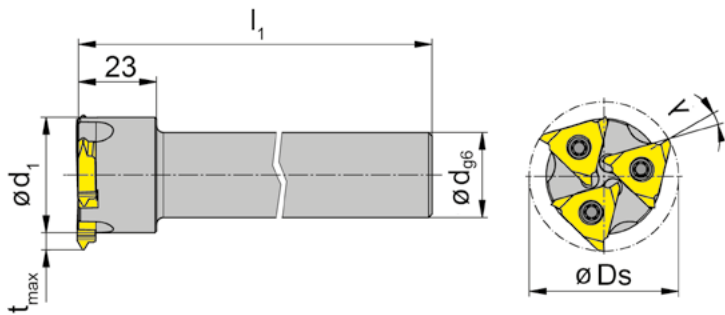
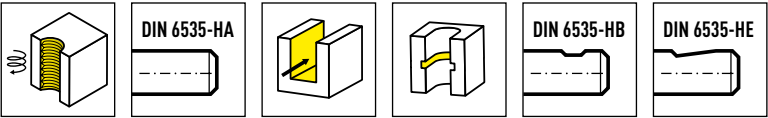
tmax see inserts

Dimensions in inch



Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
R/LU381...	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

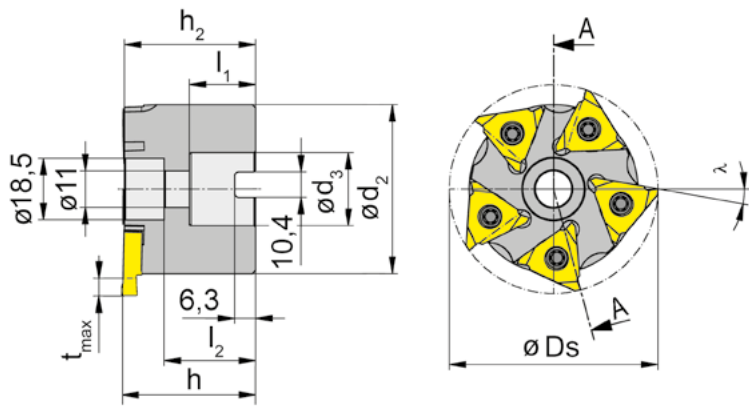
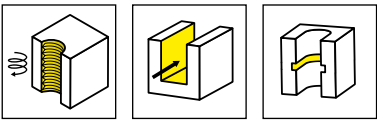
Part number	Ds	d	l_1	d_1	λ	Form	HWS
380.0044.03A	44	25	125	34	14°	HA	314027R • 314041R • 314052R
380.0044.03B	44	25	125	34	14°	HB	314027R • 314041R • 314052R
380.0044.03E	44	25	125	34	14°	HE	314027R • 314041R • 314052R

tmax see inserts

Dimensions in mm

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
380...	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	Ds	h ₂	h	d ₃	l ₁	l ₂	λ	d ₂	HWS
380.0063.05	63	39.6	40	22	20	27.6	10°	51	314027R • 314041R • 314052R

Cutterhole and cross keyway as per DIN 138

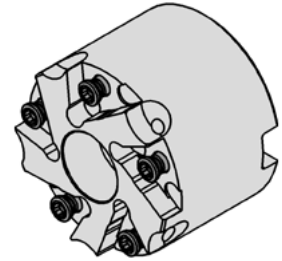
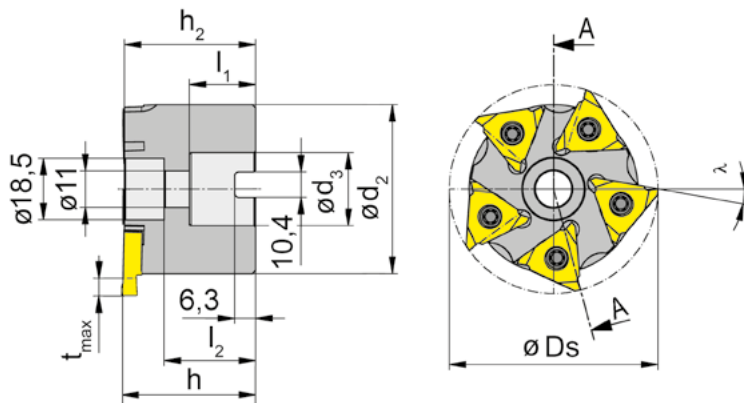
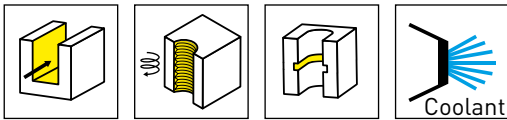
tmax see inserts

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
380.0063.05	5.12T20P	T20PQ	6.5 Nm

D



Picture = right hand cutting version

Part number	Z	Ds	h ₂	h	d ₃	l ₁	l ₂	λ	d ₂	HWS
380.0063.05IK	5	63	39.6	40	22	20	27.6	10°	51	314027R • 314041R • 314052R

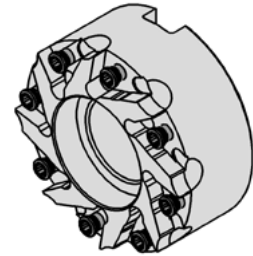
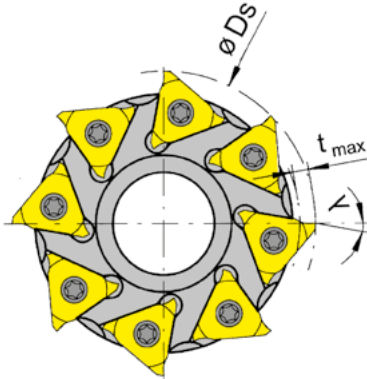
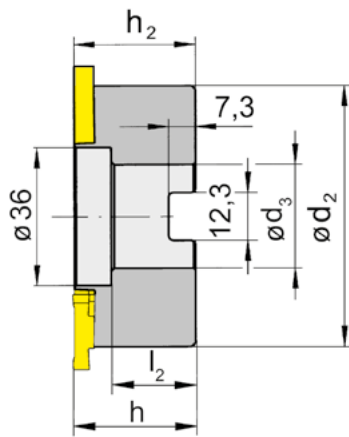
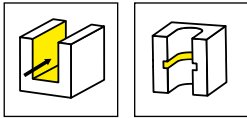
Cutterhole and cross keyway as per DIN 138

tmax see inserts

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
380.0063.05IK	5.12T20P	T20PQ	6.5 Nm



D

Picture = right hand cutting version

Part number	Z	Ds	h ₂	h	d ₃	l ₂	λ	d ₂	HWS
380.0080.08	8	80	31.6	32	27	21.6	10°	68	314027R • 314041R • 314052R

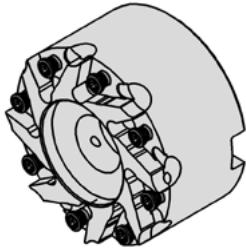
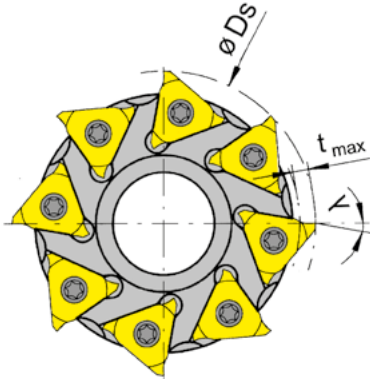
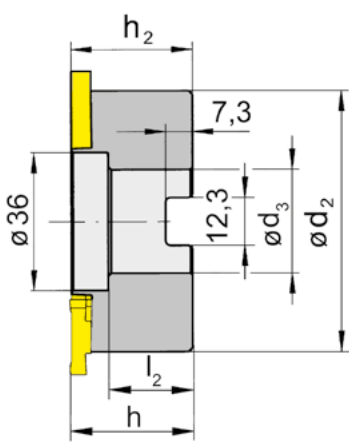
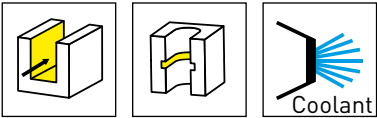
Cutterhole and cross keyway as per DIN 138

Bolt screw **030.0012.0726** is combined with the milling cutter.

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
380.0080.08	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	h ₂	h	d ₃	l ₂	λ	d ₂	HWS
380.0080.08IK	8	80	39.8	40	27	21.6	10°	68	314027R • 314041R • 314052R

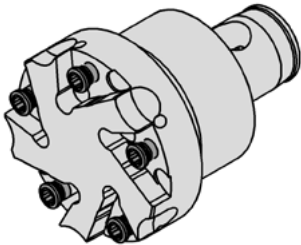
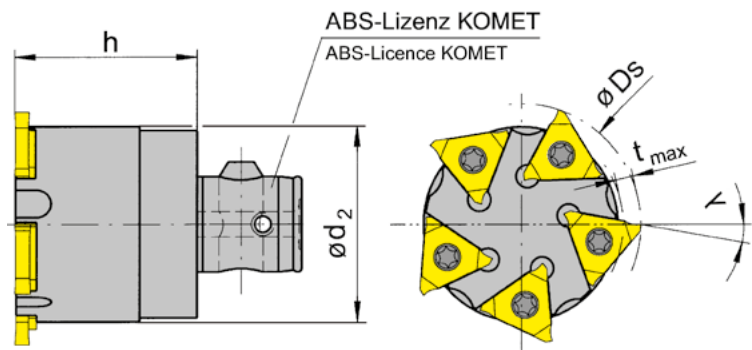
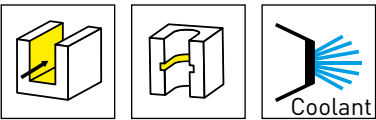
Cutterhole and cross keyway as per DIN 138

Bolt screw **030.0012.0726** is combined with the milling cutter.

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
380.0080.08IK	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

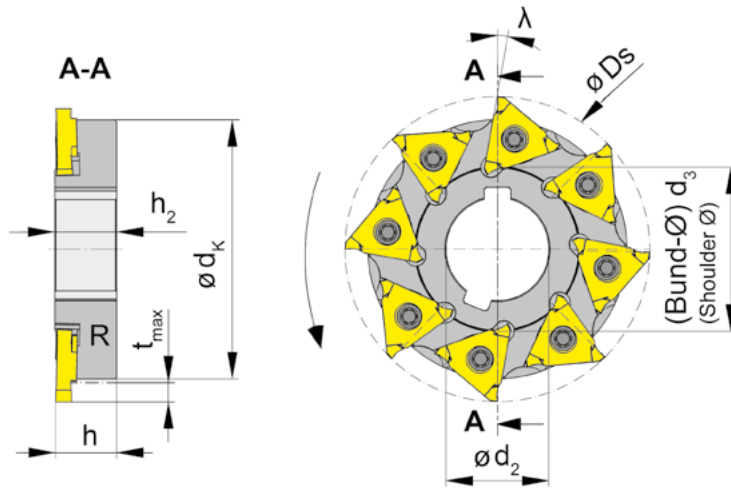
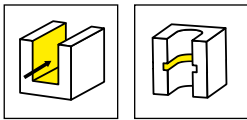
Part number	Ds	Z	t _{max}	h	d ₂	λ	HWS
ABS32.380.0044.03	44	3	4	35	34	14°	314027R • 314041R • 314052R
ABS40-380.0050.04	50	4	4.5	40	40	14°	314027R • 314041R • 314052R
ABS50.380.0063.05	63	5	5	50	51	10°	314027R • 314041R • 314052R
ABS50.380.0080.08	80	8	5	50	68	10°	314027R • 314041R • 314052R
ABS63.380.0080.08	80	8	5	63	68	10°	314027R • 314041R • 314052R

tmax see inserts

Dimensions in mm

Spare Parts

Mono Milling Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
ABS32...	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	d ₂	h ₂	h	d _k	λ	d ₃	HWS
R381.0063.05	5	63	22	14.2	14	51	14°	34	314027R • 314041R • 314052R
R381.0080.08	8	80	27	16.2	16	68	10°	43	314027R • 314041R • 314052R
R381.0100.10	10	100	32	20.2	20	88	10°	48	314027R • 314041R • 314052R
L381.0063.05	5	63	22	14.2	14	51	14°	34	314027L • 314041L • 314052L
L381.0080.08	8	80	27	16.2	16	68	10°	43	314027L • 314041L • 314052L
L381.0100.10	10	100	32	20.2	20	88	10°	48	314027L • 314041L • 314052L

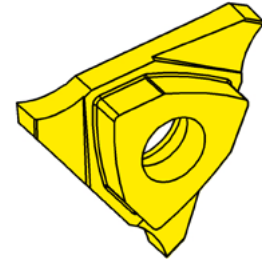
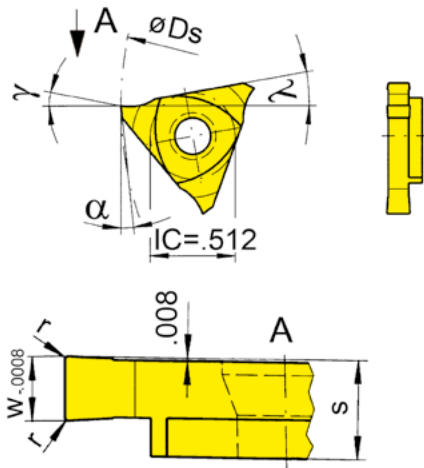
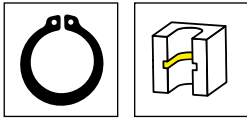
Bore (d₂) with longitudinal keyway to DIN 138

t_{max} see inserts

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
R/L381...	5.12T20P	T20PQ	6.5 Nm



D

Coating grades

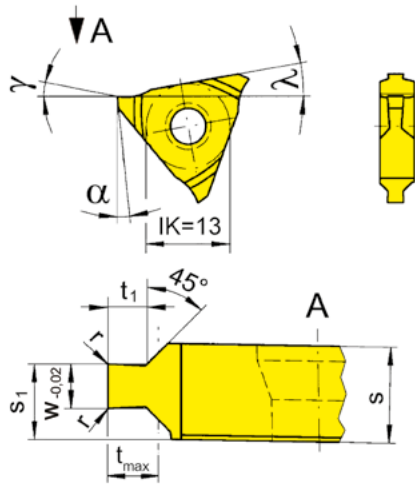
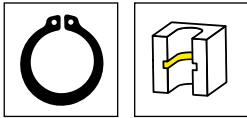
R = right hand version shown

L = left hand version

▲ In stock

△ 2 weeks

Part number	Nw	w	r	s	HIS	AS45	TI25	TN35
R314.0130.00	1.3	1.41	0.1	5.4	314027R	▲		▲
R314.0160.00	1.6	1.71	0.1	5.4	314027R	▲		▲
R314.0185.00	1.85	1.96	0.15	5.4	314027R	▲		▲
R314.0265.00	2.65	2.76	0.15	5.4	314027R	▲	▲	▲
R314.0315.00	3.15	3.26	0.15	5.4	314027R	▲	▲	▲
R314.0415.00	4.15	4.26	0.15	5.4	314041R	▲	▲	▲
R314.0515.00	5.15	5.26	0.15	5.4	314052R	▲	▲	▲
L314.0130.00	1.3	1.41	0.1	5.4	314027L			▲
L314.0160.00	1.6	1.71	0.1	5.4	314027L			▲
L314.0185.00	1.85	1.96	0.15	5.4	314027L	▲		
L314.0265.00	2.65	2.76	0.15	5.4	314027L			▲
L314.0315.00	3.15	3.26	0.15	5.4	314027L	▲		▲
L314.0415.00	4.15	4.26	0.15	5.4	314041L	▲		▲
L314.0515.00	5.15	5.26	0.15	5.4	314052L	▲		▲
Widths for circlip grooves DIN 471/472						P	•	•
Nw = nominal groove width, the exact width of the circlip groove before tolerances are applied						M	•	•
Dimensions in mm						K	•	•
						N	-	-
						S	o	o
						H	-	-



Coating grades

R = right hand version shown

L = left hand version

▲ In stock

Δ 2 weeks

Part number	Nw	w	r	s ₁	s	t _{max}	t ₁	HIS	AS45	TN35
R314.1609.54	1.6	1.71	0.1	4.52	5.45	0.85	0.83	314041R	▲	▲
R314.1610.54	1.6	1.71	0.1	4.52	5.45	1	0.97	314041R	Δ	Δ
R314.1812.54	1.85	1.96	0.15	4.64	5.45	1.25	1.23	314041R	▲	▲
R314.2115.54	2.15	2.26	0.15	4.79	5.45	1.5	1.47	314041R	▲	▲
R314.2616.54	2.65	2.76	0.15	4.54	5.45	1.5	1.47	314041R	▲	▲
R314.2617.54	2.65	2.76	0.15	4.54	5.45	1.75	1.72	314041R	▲	▲
R314.3118.54	3.15	3.26	0.15	4.54	5.45	1.75	1.72	314041R	▲	▲
L314.1609.54	1.6	1.71	0.1	4.52	5.45	0.85	0.83	314041L	Δ	Δ
L314.1610.54	1.6	1.71	0.1	4.52	5.45	1	0.97	314041L		▲
L314.1812.54	1.85	1.96	0.15	4.64	5.45	1.25	1.23	314041L		▲
L314.2115.54	2.15	2.26	0.15	4.79	5.45	1.5	1.47	314041L		▲
L314.2616.54	2.65	2.76	0.15	4.54	5.45	1.5	1.47	314041L		▲
L314.2617.54	2.65	2.76	0.15	4.54	5.45	1.75	1.72	314041L		▲

Widths for circlip grooves DIN 471/472 with chamfer

Nw = nominal groove width, the exact width of the circlip groove before tolerances are applied

Dimensions in mm

P	●	●
M	●	-
K	●	●
N	-	-
S	o	-
H	-	-

E



SYSTEM - M275

GROOVE MILLING AND FACING

Chapter	C	D	E	F		
Page #	234	248	264	276	291	305
Tool System	101	380/381	M275	382/383	310	475

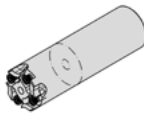
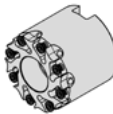
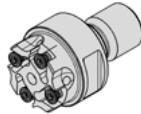
System Capabilities

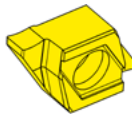
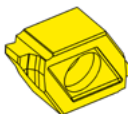
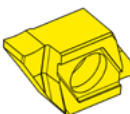
	•	•	•	•	•	•
	•			•	•	
	•	•	•	•	•	
	•				•	•
			•	•		

Ø DS	(in) (mm)	2.480 - 7.874 63 - 200	1.732 - 3.937 44 - 100	1.220 - 3.070 31 - 78	3.149 - 7.874 80 - 200	1.968 - 7.874 50 - 200	1.574 - 7.874 40 - 200
Width	(in) (mm)	.047 - .157 1.2 - 4	.046 - .275 1.17 - 7	.047 - .127 1.2 - 3.25	.046 - .275 1.17 - 7	.118 - .196 3 - 5	.062 - .172 1.6 - 4.39
Insert		S101	314	S275	314	S310	S475

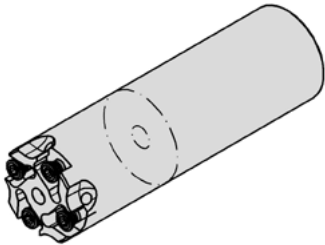
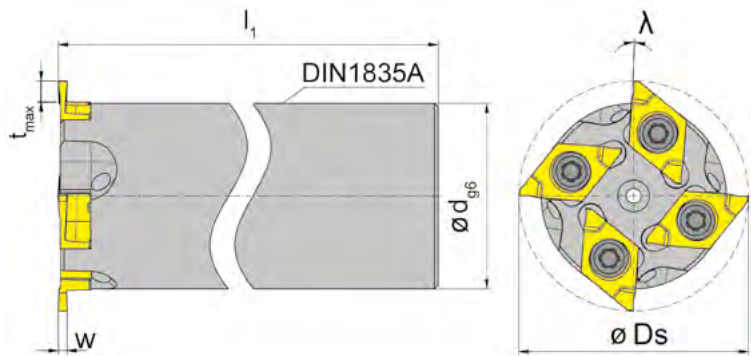
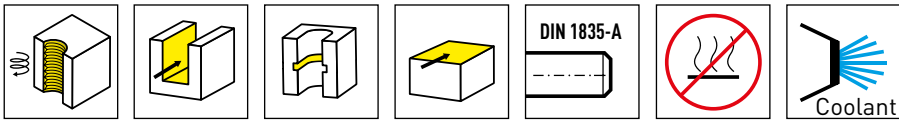
P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	-	o	o	o	-	o
S	o	o	-	o	-	o
H	-	-	-	-	-	-

E

HOLDERS	Metric Shank		
			
	Page 267 Ø Ds 31mm Milling Shank	Page 268 Ø Ds 38-78mm Arbor Mounted	Page 269 Ø Ds 31-36mm Screw-in Cutter

INSERTS	Grooving		Facing	
				
	Page 270 Grooving and DIN Circlip	Page 271 Grooving and DIN Circlip, Chamfer	Page 272 .40 Geometry for Aluminum	Page 273 Facing

Cutting Data and Technical Instructions - Chapter M / Page 618				
--	--	--	--	--



Picture = right hand cutting version

Part number	Ds	d	l ₁	λ	HWS
M275.031.D25.3.04A	31	25	125	4°	275041R • 275043R

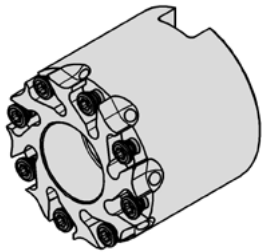
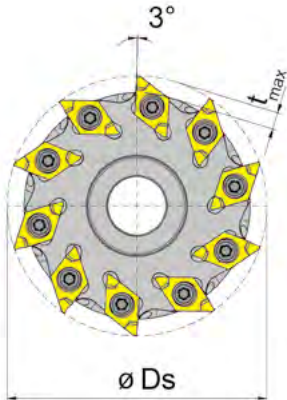
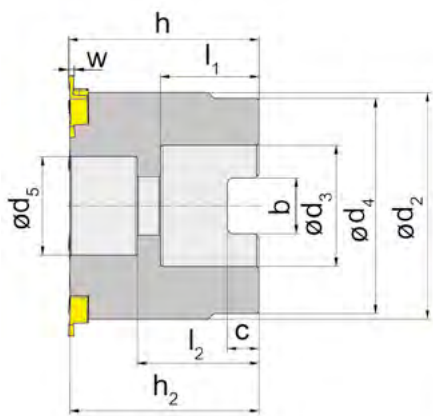
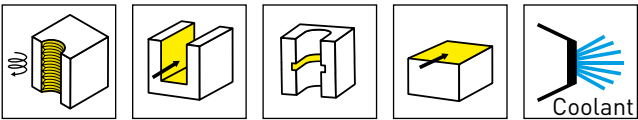
w and tmax see inserts

Material of shank: Steel (not recommended for shrink fitting)

Dimensions in mm

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
M275.031.D25.3.04A	3.5.10T10P	T10PL	3 Nm



Picture = right hand cutting version

Part number	Z	Ds	h ₂	h	d ₅	d ₄	d ₃	l ₁	l ₂	b	C	d ₂	HWS
M275.0038.A16.05	5	38	32.7	33	13.5	32	16	18	22.7	8.4	5.6	32	275041R • 275043R
M275.0048.A22.08	8	48	36.7	37	18.5	40.5	22	20	24.7	10.4	6.3	40.5	275041R • 275043R
M275.0058.A27.10	10	58	42.2	42.5	22	48	27	22	27.2	12.4	7	50	275041R • 275043R
M275.0078.A32.14	14	78	49.7	50	33	58	32	25	36.7	14.4	8	70.5	275041R • 275043R

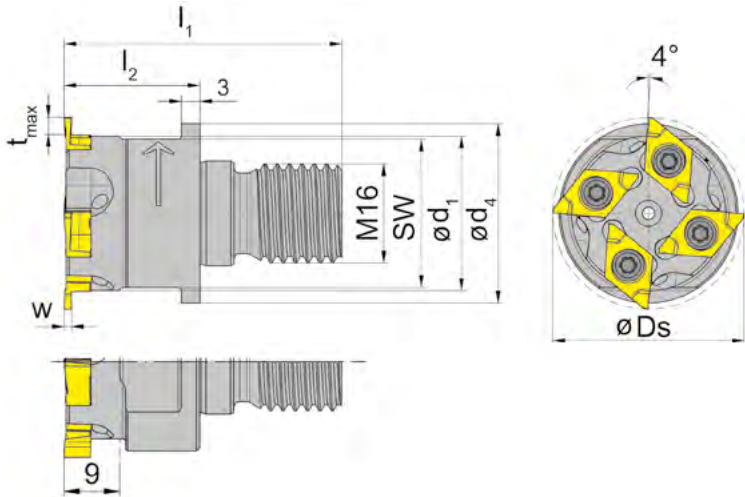
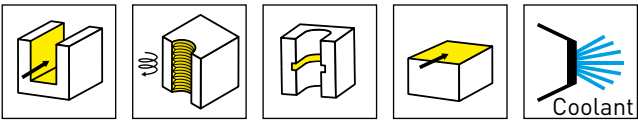
w and tmax see inserts

Cutterhole and cross keyway as per DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M275...	3.5.10T10P	T10PL	3 Nm



Picture = right hand cutting version

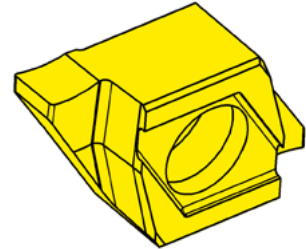
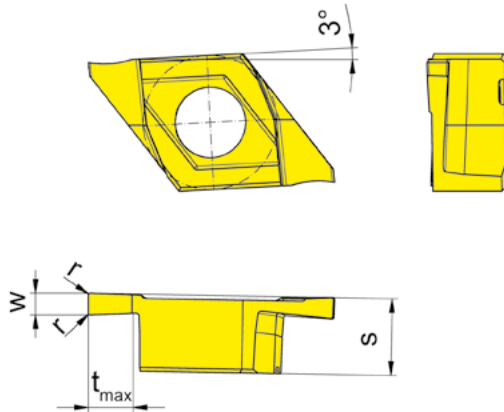
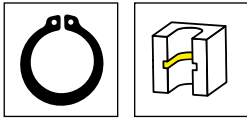
Part number	Z	Ds	l ₁	l ₂	d ₁	d ₄	SW	HWS
M275.031.M16.1.04	4	31	45	22	25	29	24	275041R • 275043R
M275.036.M16.1.04	4	36	45	22	30	29	27	275041R • 275043R

w and tmax see inserts

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M275...	3.5.10T10P	T10PL	3 Nm



Coating grades

R = right hand version shown

L = left hand version

▲ In stock

Δ 2 weeks

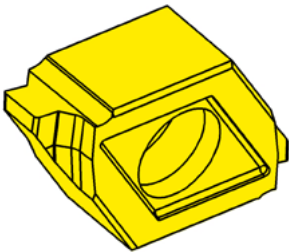
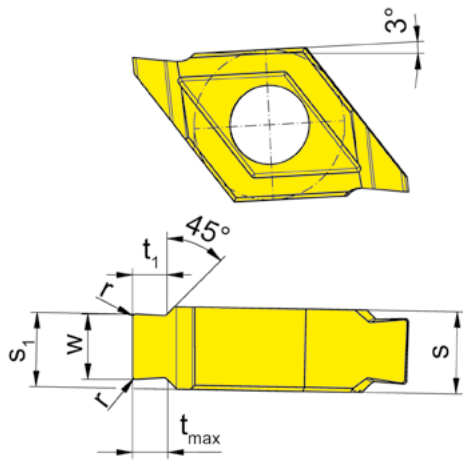
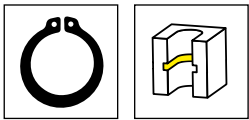
Part number	Nw	w	s	r	t _{max}	HIS	AS45
RS275.0110.00	1.1	1.2	4.3	0.1	2.5	275043R	▲
RS275.0130.00	1.3	1.4	4.3	0.1	2.5	275043R	▲
RS275.0185.00	1.85	1.95	4.3	0.15	2.5	275043R	▲
RS275.0215.00	2.15	2.25	4.3	0.15	2.5	275043R	▲
RS275.0265.00	2.65	2.75	4.3	0.15	2.5	275043R	▲
RS275.0315.00	3.15	3.25	4.3	0.15	2.5	275043R	▲
LS275.0265.00	2.65	2.75	4.3	0.15	2.5	275043L	▲
LS275.0315.00	3.15	3.25	4.3	0.15	2.5	275043L	▲

Widths for circlip grooves DIN 471/472

Nw = nominal groove width, the exact width of the circlip groove before tolerances are applied

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



Coating grades

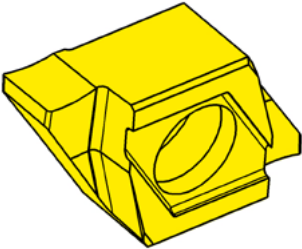
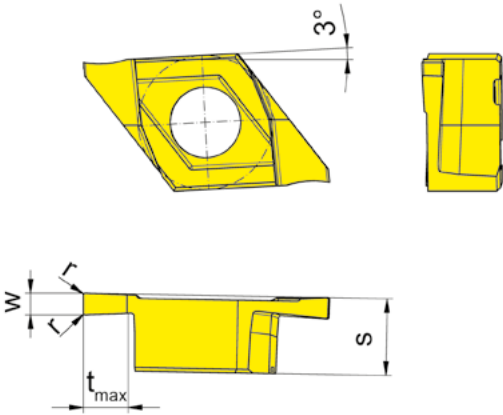
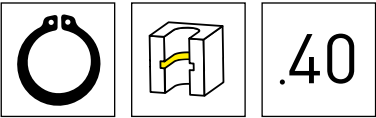
R = right hand version shown

L = left hand version

▲ In stock

Δ 2 weeks

Part number	Nw	w	t ₁	s	s ₁	r	t _{max}	HIS	AS45	
RS275.1610.41	1.6	1.7	0.95	4.1	3.17	0.1	1	275041R	▲	P ●
RS275.1812.41	1.85	1.95	1.21	4.1	3.29	0.15	1.25	275041R	▲	M ●
RS275.2115.41	2.15	2.25	1.45	4.1	3.44	0.15	1.5	275041R	▲	K ●
RS275.2617.41	2.65	2.75	1.7	4.1	3.39	0.15	1.75	275041R	▲	N -
RS275.3118.41	3.15	3.25	1.7	4.1	3.7	0.15	1.75	275041R	▲	S o
Widths for circlip grooves DIN 471/472 with chamfer										H -
Nw = nominal groove width, the exact width of the circlip groove before tolerances are applied										
Dimensions in mm										



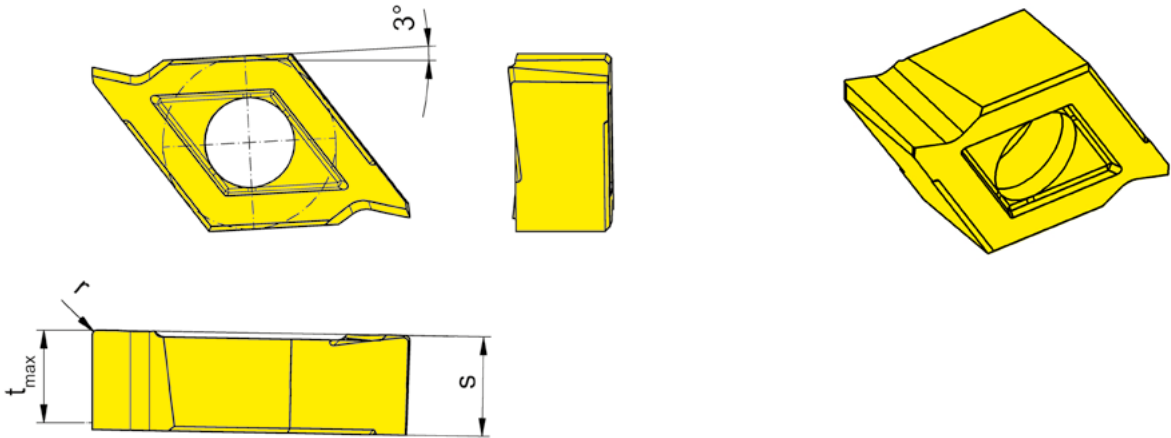
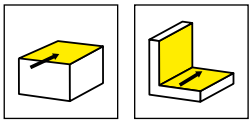
R = right hand version shown

L = left hand version

Coating grades
▲ In stock Δ 2 weeks

Part number	Nw	w	s	r	t _{max}	HIS	TA45	
RS275.0130.40	1.3	1.4	4.3	0.1	2.5	275043R	▲	
RS275.0215.40	2.15	2.25	4.3	0.15	2.5	275043R	▲	
RS275.0265.40	2.65	2.75	4.3	0.15	2.5	275043R	▲	
RS275.0315.40	3.15	3.25	4.3	0.15	2.5	275043R	▲	
LS275.0315.40	3.15	3.25	4.3	0.15	2.5	275043L	▲	
Widths for circlip grooves DIN 471/472							P	o
Nw = nominal groove width, the exact width of the circlip groove before tolerances are applied							M	o
Dimensions in mm							K	o
							N	•
							S	-
							H	-

E



E

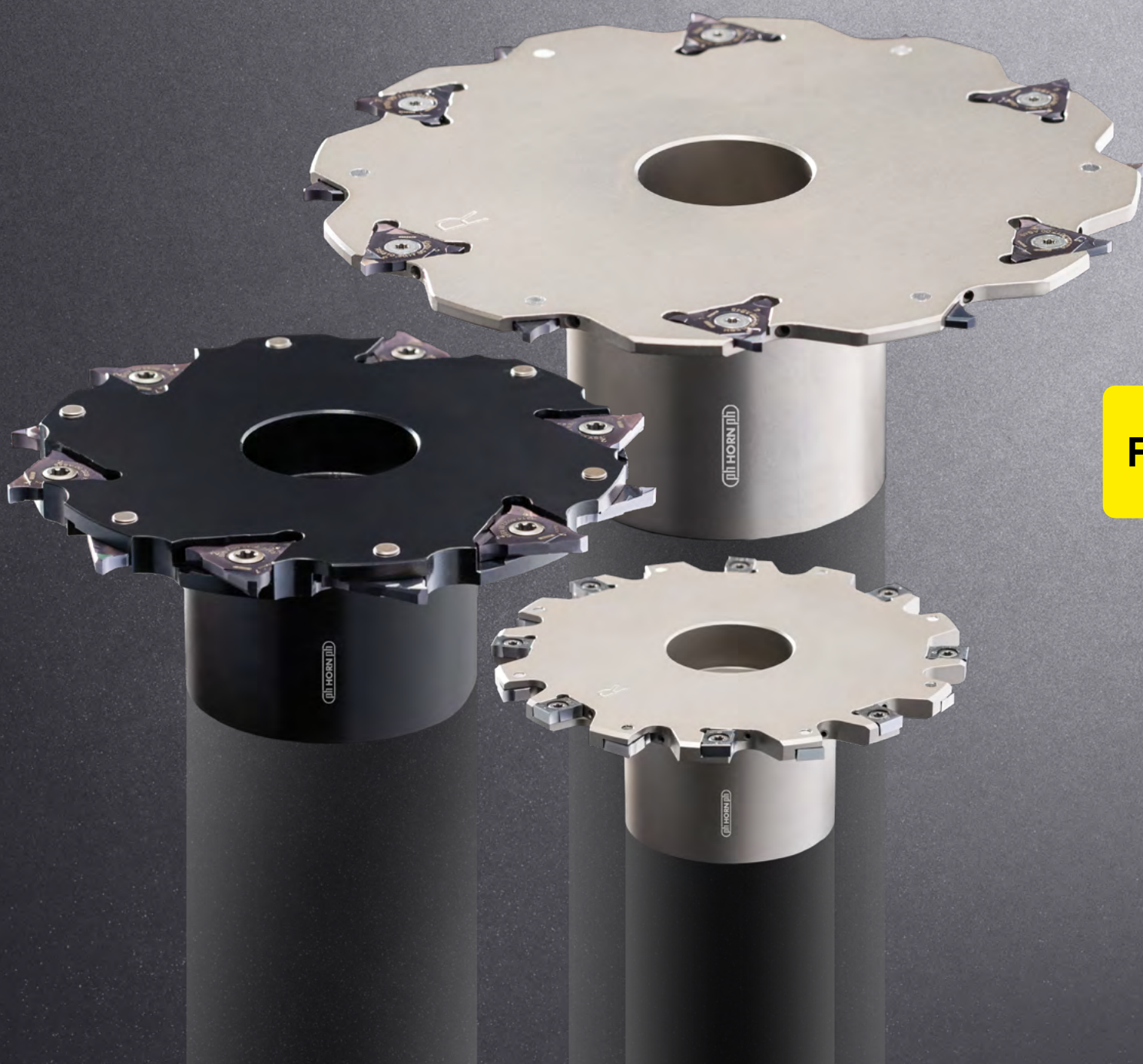
R = right hand version shown

Coating grades

▲ In stock

Δ 2 weeks

Part number	r	t _{max}	s	HIS		AS45	TA45
RS275.PL40.62	0.15	4	4.3	275043R			▲
RS275.PL43.52	0.2	4	4.3	275043R		▲	
Dimensions in mm					P	●	●
					M	●	●
					K	●	●
					N	-	-
					S	o	-
					H	-	-



GROOVE MILLING SYSTEMS

SYSTEMS 382/383, M310, M475

Chapter	C	D	E	F		
Page #	234	248	264	276	291	305
Tool System	101	380/381	M275	382/383	310	475

System Capabilities

	•	•	•	•	•	•
	•			•	•	
	•	•	•	•	•	
	•				•	•
			•	•		

Ø DS	(in) (mm)	2.480 - 7.874 63 - 200	1.732 - 3.937 44 - 100	1.220 - 3.070 31 - 78	3.149 - 7.874 80 - 200	1.968 - 7.874 50 - 200	1.574 - 7.874 40 - 200
Width	(in) (mm)	.047 - .157 1.2 - 4	.046 - .275 1.17 - 7	.047 - .127 1.2 - 3.25	.046 - .275 1.17 - 7	.118 - .196 3 - 5	.062 - .172 1.6 - 4.39
Insert		S101	314	S275	314	S310	S475

P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	-	o	o	o	-	o
S	o	o	-	o	-	o
H	-	-	-	-	-	-



F

SYSTEM 382/383

GROOVING AND FACING

HOLDERS,
INSERTS

System 382/383 -Inch

A technical line drawing of a disc cutter, showing a circular body with a central hole and several mounting points around the perimeter.

Page 278

Ø Ds 3.250"-7.875"
Disc Cutter

A technical line drawing of an arbor-mounted insert, showing a circular body with a central hole and several mounting points around the perimeter.

Page 279

Ø Ds 4.000"
Arbor Mounted

System 382/383 - Metric

A technical line drawing of a disc cutter, showing a circular body with a central hole and several mounting points around the perimeter.

Page 280-283

Ø Ds 80-200mm
Disc Cutter

A technical line drawing of an arbor-mounted insert, showing a circular body with a central hole and several mounting points around the perimeter.

Page 284-286

Ø Ds 100-200mm
Arbor Mounted

For 382/383 - Grooving

A technical line drawing of a grooving insert, showing a V-shaped body with a central hole and several mounting points around the perimeter.

Page 287

Grooving

A technical line drawing of a full radius insert, showing a V-shaped body with a central hole and several mounting points around the perimeter.

Page 288-290

Grooving
Full Radius

HOLDERS,
INSERTS

System M310 -Inch

Page 294

Ø Ds 4.000-6.250"
Disc Cutter

Page 295

Ø Ds 3.250-6.250"
Disc Cutter

System M310 - Metric

Page 296

Ø Ds 80-200mm
Disc Cutter

Page 297-298

ØDs 50-63mm
Screw-in Cutter

Page 299-301

Ø Ds 80-200mm
Arbor Mounted

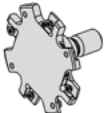
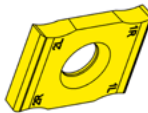
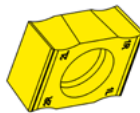
For M310 - Grooving

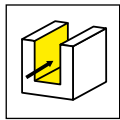
Page 302

Grooving

Page 303-304

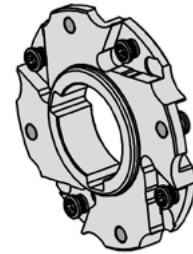
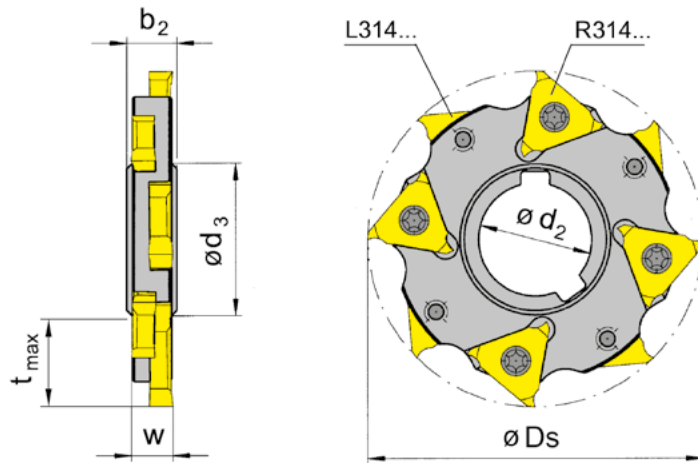
Grooving
Full Radius

HOLDERS, INSERTS	System M475 - Metric			For M475 - Groove/Part Off	
					
	Page 308-309 Ø Ds 80-200mm Disc Cutter	Page 310 Ø Ds 40-63mm Screw-in Cutter	Page 311-312 Ø Ds 63-200mm Arbor Mounted	Page 313 Grooving and Part-Off	Page 314 Grooving and Part-Off



z8

z10



Picture = right hand cutting version

F

Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	right hand insert	left hand insert	HWS
U382.3250.06	8	3.250	.827	1.000	.374	1.500	.236	4x R314.6032.00	4x L314.6032.00	314027R • 314027L
U382.3250.08	8	3.250	.827	1.000	.500	1.500	.315	4x R314.8043.00	4x L314.8043.00	314041R • 314041L
U382.3250.10	8	3.250	.827	1.000	.500	1.500	.394	4x R314.0054.00	4x L314.0054.00	314052R • 314052L
U382.4000.06	10	4.000	1.004	1.250	.374	1.874	.236	5x R314.6032.00	5x L314.6032.00	314027R • 314027L
U382.4000.08	10	4.000	1.004	1.250	.500	1.874	.315	5x R314.8043.00	5x L314.8043.00	314041R • 314041L
U382.4000.10	10	4.000	1.004	1.250	.500	1.874	.394	5x R314.0054.00	5x L314.0054.00	314052R • 314052L
U382.5000.06	12	5.000	1.280	1.500	.374	2.252	.236	6x R314.6032.00	6x L314.6032.00	314027R • 314027L
U382.5000.08	12	5.000	1.280	1.500	.500	2.252	.315	6x R314.8043.00	6x L314.8043.00	314041R • 314041L
U382.5000.10	12	5.000	1.280	1.500	.551	2.252	.394	6x R314.0054.00	6x L314.0054.00	314052R • 314052L
U382.5000.12	12	5.000	1.280	1.500	.551	2.252	.472	8x R314.0054.00	4x L314.0054.00	314052R • 314052L
U382.6250.06	16	6.250	1.969	1.500	.374	2.252	.236	8x R314.6032.00	8x L314.6032.00	314027R • 314027L
U382.6250.08	16	6.250	1.969	1.500	.500	2.252	.315	8x R314.8043.00	8x L314.8043.00	314041R • 314041L
U382.6250.10	16	6.250	1.969	1.500	.551	2.252	.394	8x R314.0054.00	8x L314.0054.00	314052R • 314052L
U382.6250.12	15	6.250	1.969	1.500	.551	2.252	.472	10x R314.0054.00	5x L314.0054.00	314052R • 314052L
U382.7875.14	18	7.875	2.500	2.000	.626	2.874	.551	12x R314.0054.00	6x L314.0054.00	314052R • 314052L

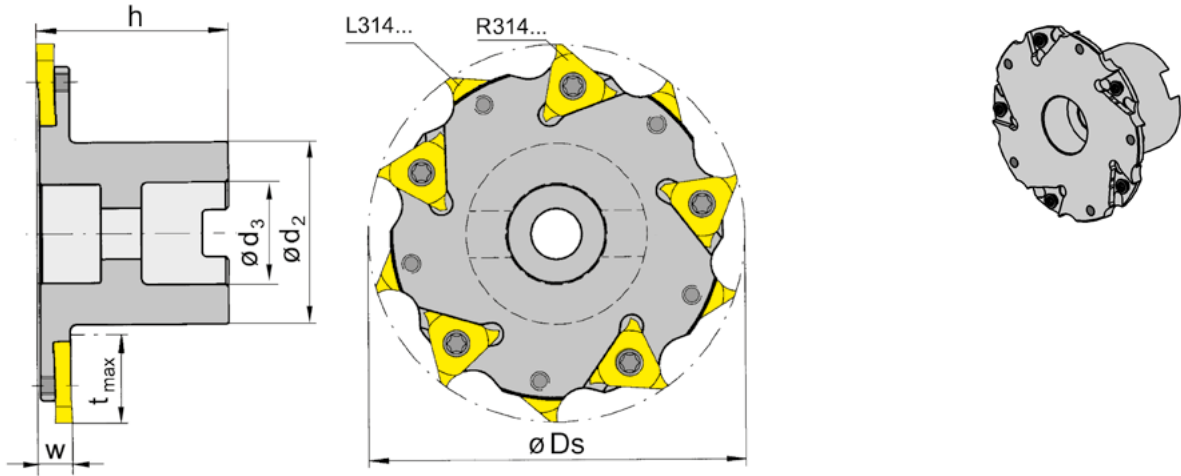
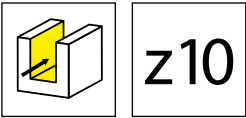
Bore [d2] with longitudinal keyway to DIN 138

Dimensions in inch



Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
U382...06	5F.06T15P	T15PQ	5.5 Nm
U382...08	5F.08T20P	T20PQ	5.5 Nm
U382...10/.12/.14	5.10T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
U383.4000.06	10	4.000	1.023	2.000	1.874	1.000	.236	5x R314.6032.00	5x L314.6032.00	314027R • 314027L
U383.4000.08	10	4.000	1.023	2.000	1.874	1.000	.315	5x R314.8043.00	5x L314.8043.00	314041R • 314041L
U383.4000.10	10	4.000	1.023	2.000	1.874	1.000	.394	5x R314.0054.00	5x L314.0054.00	314052R • 314052L

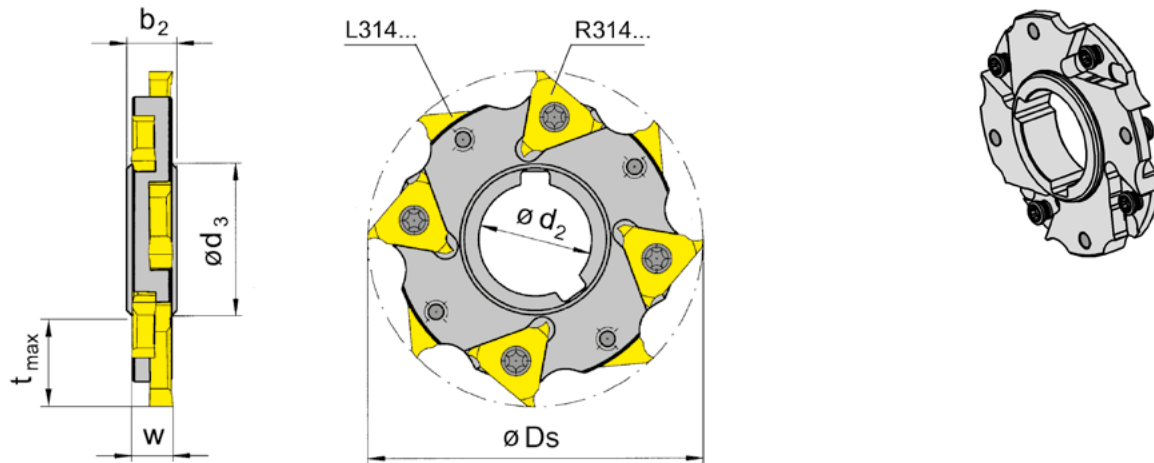
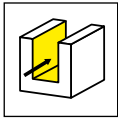
Bore (d2) with longitudinal keyway to DIN 138

Dimensions in inch



Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
U383.4000.06	5F.06T15P	T15PQ	5.5 Nm
U383.4000.08	5F.08T20P	T20PQ	5.5 Nm
U383.4000.10	5.10T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

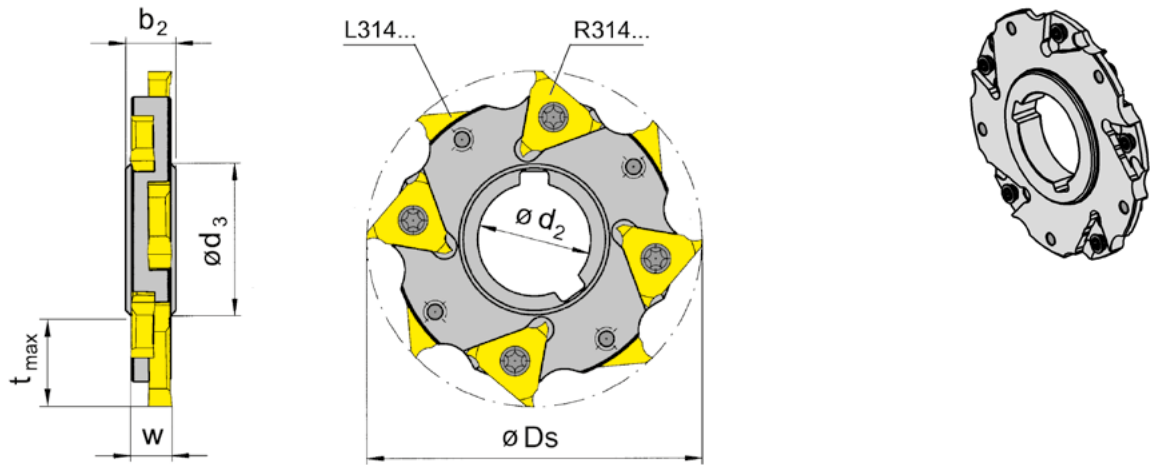
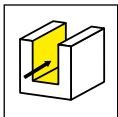
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	right hand insert	left hand insert	HWS
382.0080.27.06	4	80	21	27	10	36	6	4x R314....	4x L314...	314027R • 314027L
382.0080.27.08	4	80	21	27	12	36	8	4x R314....	4x L314...	314041R • 314041L
382.0080.27.10	4	80	21	27	12	36	10	4x R314....	4x L314...	314052R • 314052L

Bore [d2] with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
382.0080.27.06	5F.06T15P	T15PQ	5.5 Nm
382.0080.27.08	5F.08T20P	T20PQ	5.5 Nm
382.0080.27.10	5.10T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

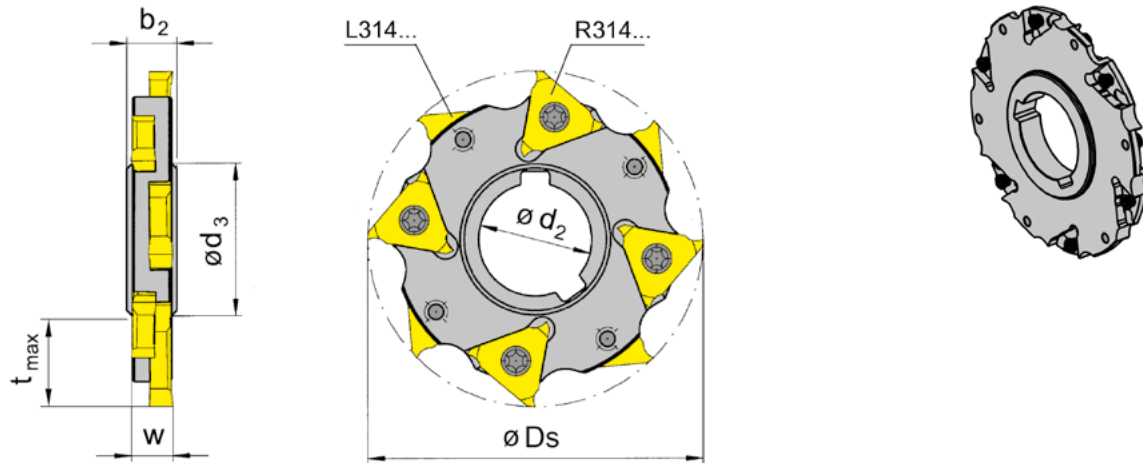
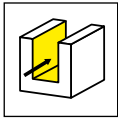
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	right hand insert	left hand insert	HWS
382.0100.32.06	5	100	25.5	32	10	47	6	5x R314...	5x L314...	314027R • 314027L
382.0100.32.08	5	100	25.5	32	12	47	8	5x R314...	5x L314...	314041R • 314041L
382.0100.32.10	5	100	25.5	32	12	47	10	5x R314...	5x L314...	314052R • 314052L

Bore [d2] with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
382.0100.32.06	5F.06T15P	T15PQ	5.5 Nm
382.0100.32.08	5F.08T20P	T20PQ	5.5 Nm
382.0100.32.10	5.10T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

F

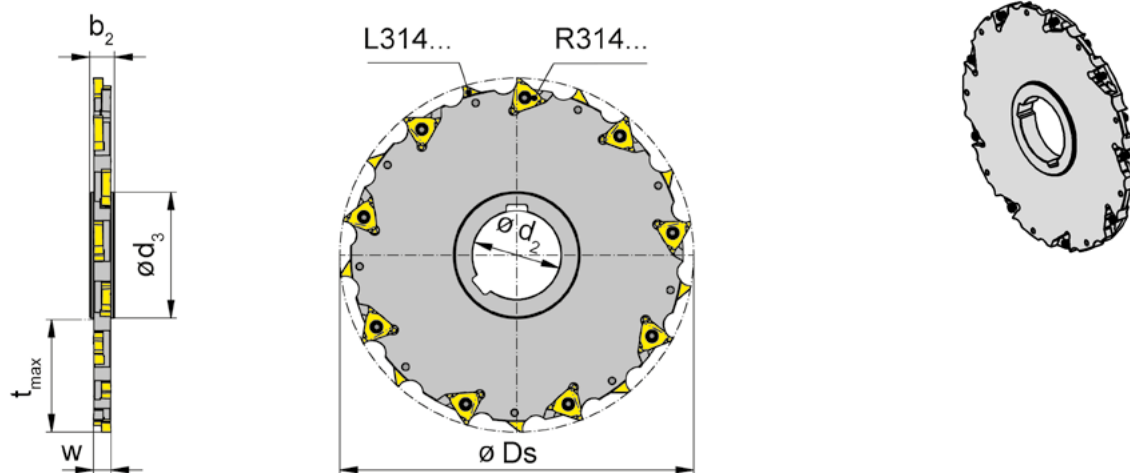
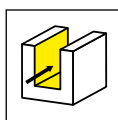
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	right hand insert	left hand insert	HWS
382.0125.40.06	6	125	32.5	40	10	58	6	6x R314...	6x L314...	314027R • 314027L
382.0125.40.08	6	125	32.5	40	12	58	8	6x R314...	6x L314...	314041R • 314041L
382.0125.40.10	6	125	32.5	40	14	58	10	6x R314...	6x L314...	314052R • 314052L
382.0160.40.06	8	160	50	40	10	58	6	8x R314...	8x L314...	314027R • 314027L
382.0160.40.08	8	160	50	40	12	58	8	8x R314...	8x L314...	314041R • 314041L
382.0160.40.10	8	160	50	40	14	58	10	8x R314...	8x L314...	314052R • 314052L
382.0160.40.12	5	160	50	40	14	58	12	2x5 R314...	5x L314...	314052R • 314052L

Bore (d₂) with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
382.0...06	5F.06T15P	T15PQ	5.5 Nm
382.0...08	5F.08T20P	T20PQ	5.5 Nm
382.0...10/.12	5.10T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

F

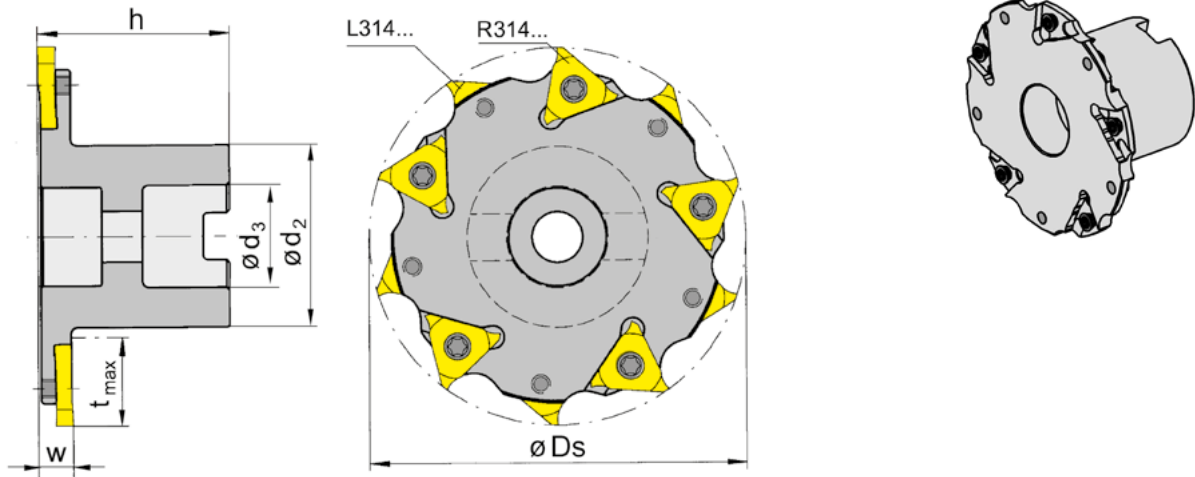
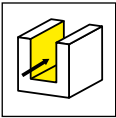
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	right hand insert	left hand insert	HWS
382.0200.50.06	9	200	63.5	50	10	71	6	9x R314...	9x L314...	314027R • 314027L
382.0200.50.08	9	200	63.5	50	12	71	8	9x R314...	9x L314...	314041R • 314041L
382.0200.50.10	9	200	63.5	50	14	71	10	9x R314...	9x L314...	314052R • 314052L
382.0200.50.12	9	200	63.5	50	14	71	12	2x6 R314...	6x L314...	314052R • 314052L
382.0200.50.14	9	200	63.5	50	16	71	14	2x6 R314...	6x L314...	314052R • 314052L

Bore (d₂) with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
382.0200.50.06	5F.06T15P	T15PQ	5.5 Nm
382.0200.50.08	5F.08T20P	T20PQ	5.5 Nm
382.0200.50...10/.12/.14	5.10T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
383.0100.27.06	5	100	25	50	48	27	6	5x R314...	5x L314...	314027R • 314027L
383.0100.27.08	5	100	25	50	48	27	8	5x R314...	5x L314...	314041R • 314041L
383.0100.27.10	5	100	25	50	48	27	10	5x R314...	5x L314...	314052R • 314052L

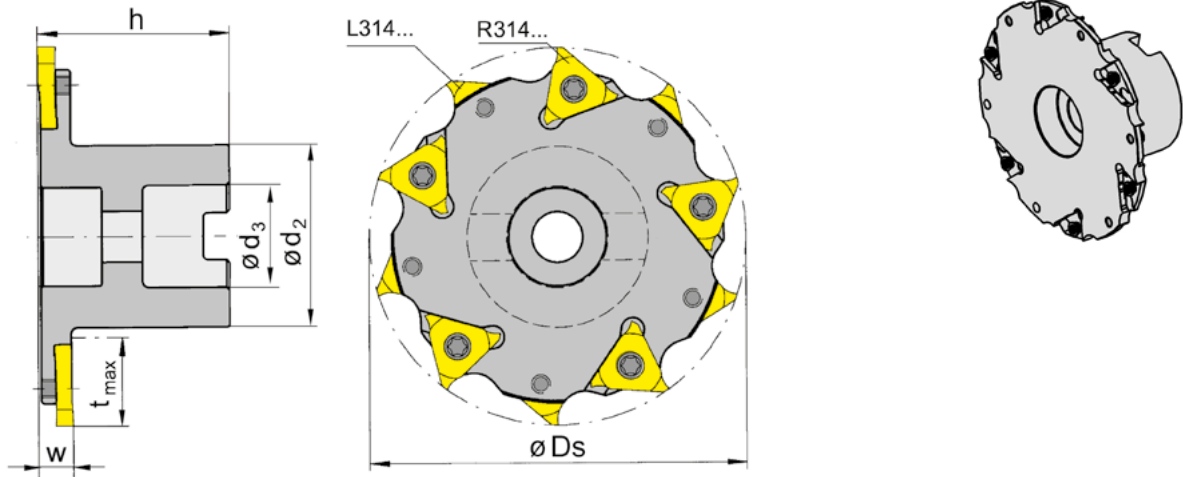
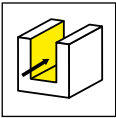
Bore [d3] with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
383.0100.27.06	5F.06T15P	T15PQ	5.5 Nm
383.0100.27.08	5F.08T20P	T20PQ	5.5 Nm
383.0100.27.10	5.10T20P	T20PQ	6.5 Nm

F



Picture = right hand cutting version

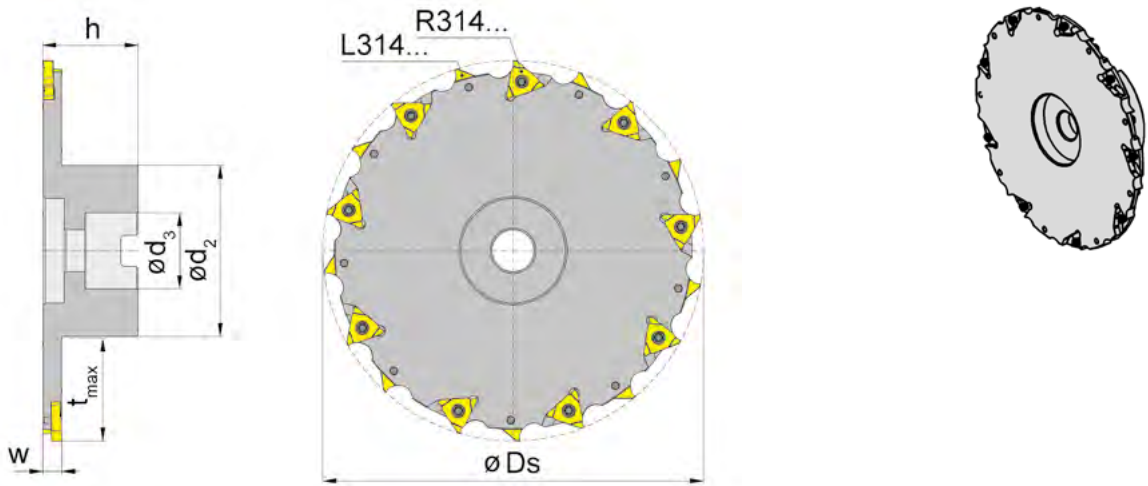
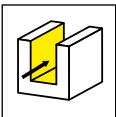
Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
383.0125.32.06	6	125	32	50	56	32	6	6x R314...	6x L314...	314027R • 314027L
383.0125.32.08	6	125	32	50	56	32	8	6x R314...	6x L314...	314041R • 314041L

Bore [d3] with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
383.0125.32.06	5F.06T15P	T15PQ	5.5 Nm
383.0125.32.08	5F.08T20P	T20PQ	5.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
383.0160.40.06	8	160	44	60	70	40	6	8x R314...	8x L314...	314027R • 314027L
383.0160.40.08	8	160	44	60	70	40	8	8x R314...	8x L314...	314041R • 314041L
383.0200.40.06	9	200	54	50	90	40	6	9x R314...	9x L314...	314027R • 314027L
383.0200.40.08	9	200	54	50	90	40	8	9x R314...	9x L314...	314041R • 314041L
383.0200.40.10	9	200	54	50	90	40	10	9x R314...	9x L314...	314052R • 314052L
383.0200.40.12	6	200	54	50	90	40	12	2x6 R314...	6x L314...	314052R • 314052L

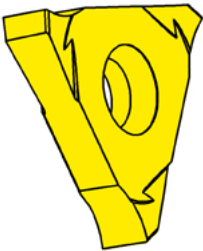
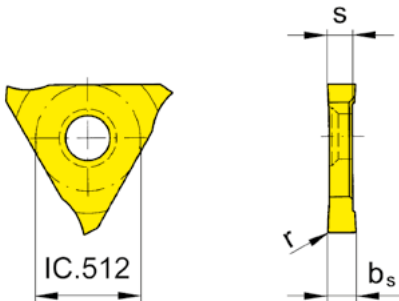
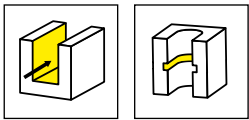
Bore (d3) with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
383...06	5F.06T15P	T15PQ	5.5 Nm
383...08	5F.08T20P	T20PQ	5.5 Nm
383...10/.12	5.10T20P	T20PQ	6.5 Nm

F



R = right hand version shown

L = left hand version

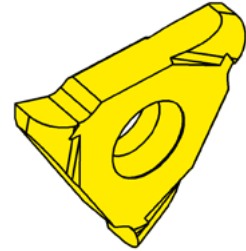
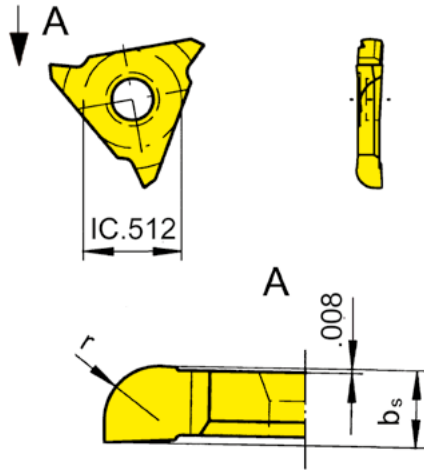
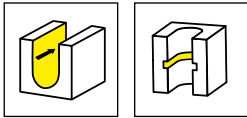
Coating grades

▲ In stock

Δ 2 weeks

Part number	bs	r	s	HIS	AS45	Ti25	TN35
R314.8043.00	4.3	0.2	4.1	314041R	▲	▲	▲
R314.0054.00	5.4	0.2	5.2	314052R	▲	▲	▲
R314.6032.00	3.2	0.2	2.7	314027R	▲	▲	▲
L314.8043.00	4.3	0.2	4.1	314041L	▲	▲	▲
L314.0054.00	5.4	0.2	5.2	314052L	▲	▲	▲
L314.6032.00	3.2	0.2	2.7	314027L	▲	▲	▲
N314.0056.00	5.6	0.2	5.2	314052N	▲		▲
Note:					P	●	●
Standard insert N314.0056.00 for use with special cutters.					M	●	-
					K	●	-
					N	-	●
					S	o	o
					H	-	-

Dimensions in mm



Coating grades

R = right hand version shown

L = left hand version

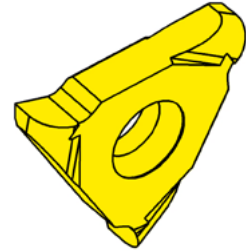
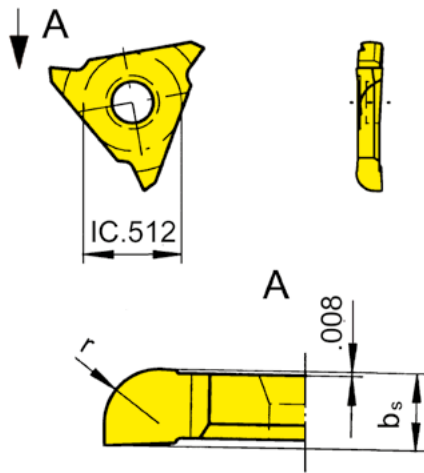
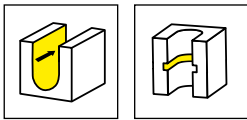
▲ In stock

Δ 2 weeks

F

Part number	b_s	r	HIS	AS45	TI25
R314.0320.20	3.2	2	314027R	▲	▲
R314.0430.20	4.3	2	314041R	▲	▲
R314.0430.25	4.3	2.5	314041R	▲	▲
R314.0540.20	5.43	2	314052R	▲	▲
R314.0540.25	5.44	2.5	314052R	▲	▲
R314.0540.40	5.47	4	314052R	▲	▲
L314.0320.20	3.2	2	314027L	▲	▲
L314.0430.20	4.3	2	314041L	▲	▲
L314.0430.25	4.3	2.5	314041L	▲	▲
L314.0540.20	5.43	2	314052L	▲	▲
L314.0540.25	5.44	2.5	314052L	▲	▲
L314.0540.40	5.47	4	314052L	▲	▲
				P	● ●
				M	● ●
				K	● -
				N	- ●
				S	o o
				H	- -

Dimensions in mm



Coating grades

R = right hand version shown

L = left hand version

▲ In stock

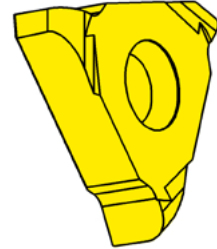
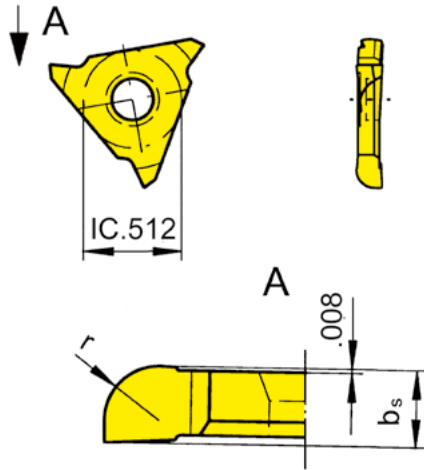
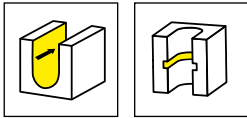
△ 2 weeks

F

Part number	b _s	r	HIS	AS45	TI25
R314.0320.04	3.2	0.4	314027R	△	
R314.0320.05	3.2	0.5	314027R	▲	
R314.0320.10	3.2	1	314027R	△	
R314.0320.15	3.2	1.5	314027R	▲	
R314.0320.16	3.2	1.6	314027R	△	
R314.0320.20	3.2	2	314027R	▲	▲
R314.0430.04	4.3	0.4	314041R	▲	
R314.0430.05	4.3	0.5	314041R	△	
R314.0430.10	4.3	1	314041R	▲	
R314.0430.15	4.3	1.5	314041R	▲	
R314.0430.16	4.3	1.6	314041R	△	
R314.0430.20	4.3	2	314041R	▲	▲
R314.0430.25	4.3	2.5	314041R	▲	▲
L314.0320.04	3.2	0.4	314027L	△	
L314.0320.05	3.2	0.5	314027L	△	
L314.0320.10	3.2	1	314027L	△	
L314.0320.15	3.2	1.5	314027L	▲	
L314.0320.16	3.2	1.6	314027L	△	
L314.0320.20	3.2	2	314027L	▲	▲
L314.0430.04	4.3	0.4	314041L	▲	
L314.0430.05	4.3	0.5	314041L	△	
L314.0430.10	4.3	1	314041L	▲	
L314.0430.15	4.3	1.5	314041L	▲	
L314.0430.16	4.3	1.6	314041L	△	
L314.0430.20	4.3	2	314041L	▲	▲
L314.0430.25	4.3	2.5	314041L	▲	▲

Dimensions in mm

P	●	●
M	●	●
K	●	-
N	-	●
S	o	o
H	-	-



R = right hand version shown

L = left hand version

▲ In stock

Δ 2 weeks

F

Part number	b_s	r	HIS	AS45	TI25
R314.0540.04	5.43	0.4	314052R	Δ	
R314.0540.05	5.43	0.5	314052R	Δ	
R314.0540.10	5.43	1	314052R	▲	
R314.0540.15	5.43	1.5	314052R	Δ	
R314.0540.16	5.43	1.6	314052R	Δ	
R314.0540.20	5.43	2	314052R	▲	▲
L314.0540.04	5.43	0.4	314052L	Δ	
L314.0540.05	5.43	0.5	314052L	Δ	
L314.0540.10	5.43	1	314052L	▲	
L314.0540.15	5.43	1.5	314052L	Δ	
L314.0540.16	5.43	1.6	314052L	Δ	
L314.0540.20	5.43	2	314052L	▲	▲
Dimensions in mm				P	● ●
				M	● ●
				K	● -
				N	- ●
				S	o o
				H	- -

F



SYSTEM M310

GROOVING AND PART OFF

Chapter	C	D	E	F		
Page #	234	248	264	276	291	305
Tool System	101	380/381	M275	382/383	310	475

System Capabilities

	•	•	•	•	•	•
	•			•	•	
	•	•	•	•	•	
	•				•	•
			•	•		

F

Ø DS	(in) (mm)	2.480 - 7.874 63 - 200	1.732 - 3.937 44 - 100	1.220 - 3.070 31 - 78	3.149 - 7.874 80 - 200	1.968 - 7.874 50 - 200	1.574 - 7.874 40 - 200
Width	(in) (mm)	.047 - .157 1.2 - 4	.046 - .275 1.17 - 7	.047 - .127 1.2 - 3.25	.046 - .275 1.17 - 7	.118 - .196 3 - 5	.062 - .172 1.6 - 4.39
Insert		S101	314	S275	314	S310	S475

P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	-	o	o	o	-	o
S	o	o	-	o	-	o
H	-	-	-	-	-	-

HOLDERS, INSERTS

System M310 - Inch



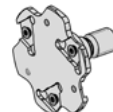
Page 294
Ø Ds 4.000-6.250"
Disc Cutter



Page 295
Ø Ds 3.250-6.250"
Disc Cutter



Page 296
Ø Ds 80-200mm
Disc Cutter



Page 297-298
ØDs 50-63mm
Screw-in Cutter



Page 299-301
Ø Ds 80-200mm
Arbor Mounted

For M310 - Grooving



Page 302
Grooving



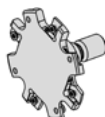
Page 303-304
Grooving
Full Radius

HOLDERS, INSERTS

System M475 - Metric



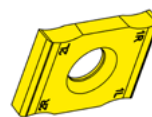
Page 308-309
Ø Ds 80-200mm
Disc Cutter



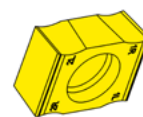
Page 310
Ø Ds 40-63mm
Screw-in Cutter



Page 311-312
Ø Ds 63-200mm
Arbor Mounted

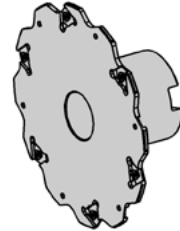
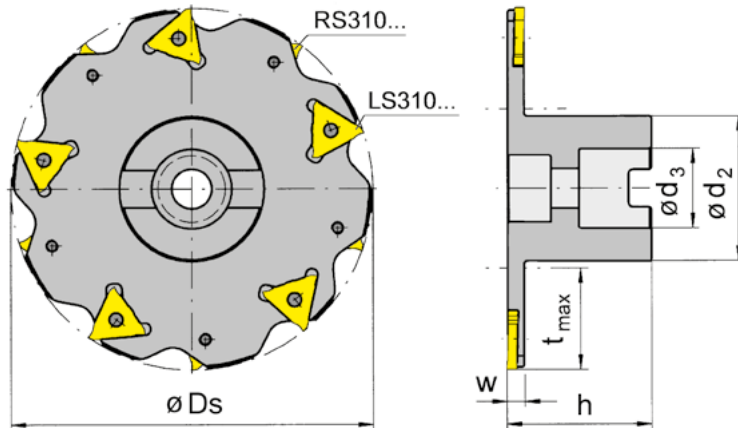
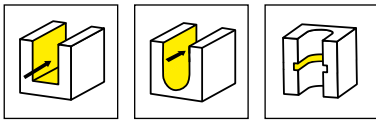


Page 313
Grooving and
Part-Off



Page 314
Grooving and
Part-Off

Cutting Data and Technical Instructions - Page 315



Picture = right hand cutting version

F

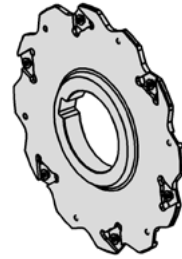
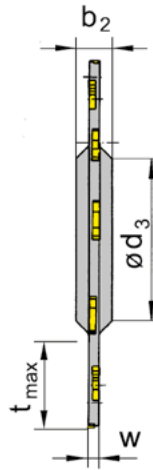
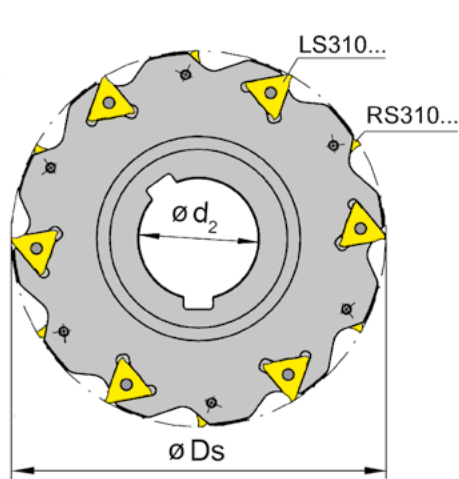
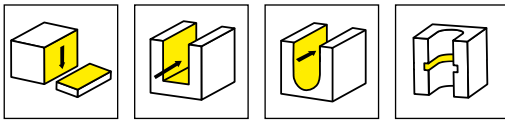
Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
MU310.1140.04	10	4.000	1.023	2.000	1.874	1.000	.157	5x RS310.4023.00	5x LS310.4023.00	310023R • 310023L
MU310.1140.05	10	4.000	1.023	2.000	1.874	1.000	.197	5x RS310.5028.00	5x LS310.5028.00	310028R • 310028L
MU310.1150.04	12	5.000	1.086	2.000	2.752	1.500	.157	6x RS310.4023.00	6x LS310.4023.00	310023R • 310023L
MU310.1150.05	12	5.000	1.086	2.000	2.752	1.500	.197	6x RS310.5028.00	6x LS310.5028.00	310028R • 310028L
MU310.1162.04	16	6.250	1.711	2.000	2.752	1.500	.157	8x RS310.4023.00	8x LS310.4023.00	310023R • 310023L
MU310.1162.05	16	6.250	1.711	2.000	2.752	1.500	.197	8x RS310.5028.00	8x LS310.5028.00	310028R • 310028L

Dimensions in inch



Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU310.1...04	030.3535.T8P	T8PL	2 Nm
MU310.1...05	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

F

Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₄	w	right hand insert	left hand insert	HWS
MU310.3250.04	8	3.250	.787	1.000	.327	1.500	.157	4x RS310.4023...	4x LS310.4023...	310023R • 310023L
MU310.3250.05	8	3.250	.787	1.000	.327	1.500	.197	4x RS310.5028...	4x LS310.5028...	310028R • 310028L
MU310.4000.04	10	4.000	.984	1.250	.327	1.874	.157	5x RS310.4023.00	5x LS310.4023.00	310023R • 310023L
MU310.4000.05	10	4.000	.984	1.250	.327	1.874	.197	5x RS310.5028.00	5x LS310.5028.00	310028R • 310028L
MU310.5000.04	12	5.000	1.260	1.500	.374	2.252	.157	6x RS310.4023.00	6x LS310.4023.00	310023R • 310023L
MU310.5000.05	12	5.000	1.260	1.500	.374	2.252	.197	6x RS310.5028.00	6x LS310.5028.00	310028R • 310028L
MU310.6250.04	16	6.250	1.921	1.500	.375	2.252	.157	8x RS310.4023.00	8x LS310.4023.00	310023R • 310023L
MU310.6250.05	16	6.250	1.921	1.500	.374	2.252	.197	8x RS310.5028.00	8x LS310.5028.00	310028R • 310028L

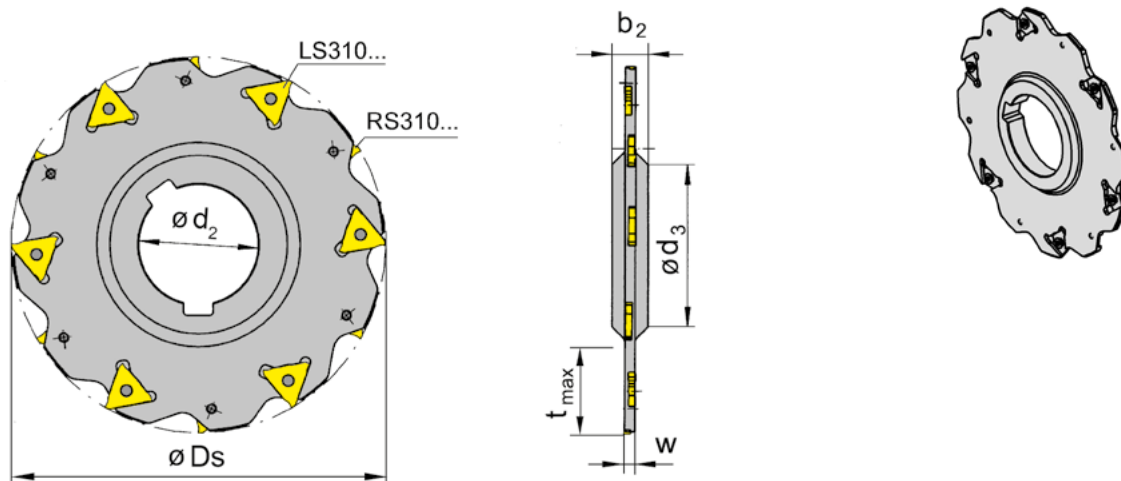
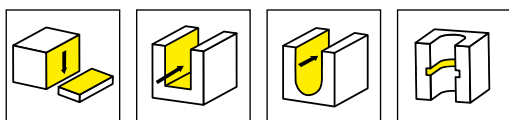
Bore [d2] with longitudinal keyway to DIN 138

Dimensions in inch



Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU310...	030.3535.T8P	T8PL	2 Nm
MU310...	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

F

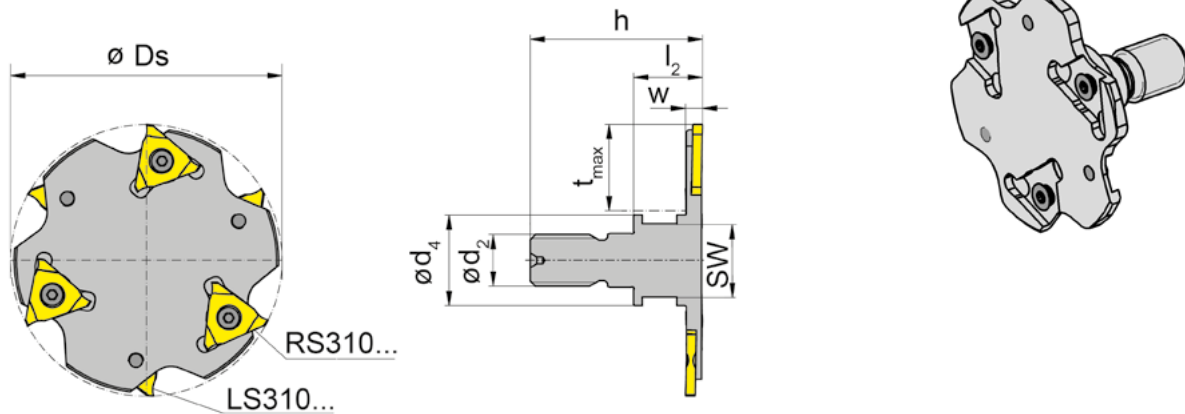
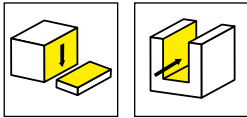
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	right hand insert	left hand insert	HWS
M310.0080.27.03	4	80	18	27	8	40	3	4x RS310.3017...	4x LS310.3017...	310017R • 310017L
M310.0080.27.04	4	80	18	27	8	40	4	4x RS310.4023...	4x LS310.4023...	310023R • 310023L
M310.0080.27.05	4	80	18	27	8	40	5	4x RS310.5028...	4x LS310.5028...	310028R • 310028L
M310.0100.32.03	5	100	25	32	8	46	3	5x RS310.3017...	5x LS310.3017...	310017R • 310017L
M310.0100.32.04	5	100	25	32	8	46	4	5x RS310.4023.00	5x LS310.4023.00	310023R • 310023L
M310.0100.32.05	5	100	25	32	8	46	5	5x RS310.5028.00	5x LS310.5028.00	310028R • 310028L
M310.0125.40.03	6	125	32	40	10	54	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.0125.40.04	6	125	32	40	10	54	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.0125.40.05	6	125	32	40	10	54	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.0160.40.03	8	160	50	40	10	54	3	8x RS310.3017...	8x LS310.3017...	310017R • 310017L
M310.0160.40.04	8	160	50	40	10	54	4	8x RS310.4023...	8x LS310.4023...	310023R • 310023L
M310.0160.40.05	8	160	50	40	10	54	5	8x RS310.5028...	8x LS310.5028...	310028R • 310028L
M310.0200.40.04	10	200	70	40	10	54	4	10x RS310.4023...	10x LS310.4023...	310023R • 310023L
M310.0200.40.05	10	200	70	40	10	54	5	10x RS310.5028...	10x LS310.5028...	310028R • 310028L

Bore [d2] with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M310...03	030.0324.T7P	T7PL	1.2 Nm
M310...04	030.3535.T8P	T8PL	2 Nm
M310...05	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

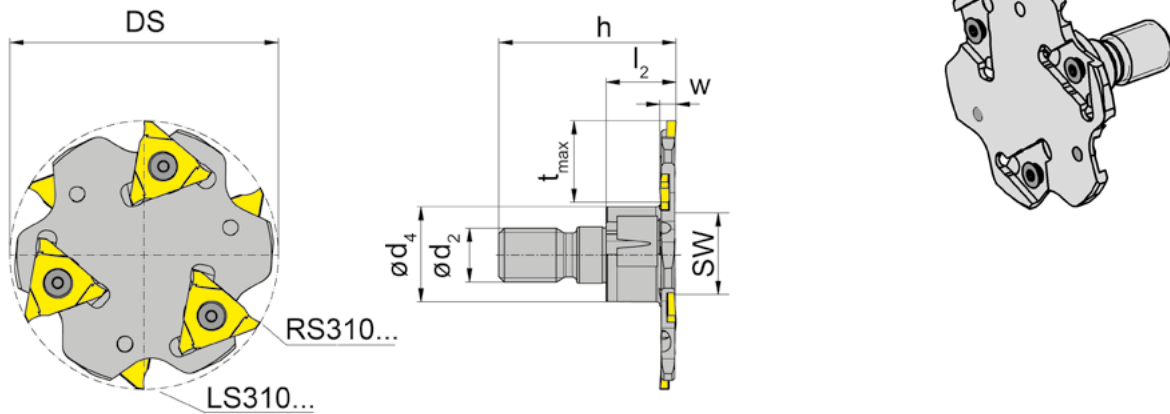
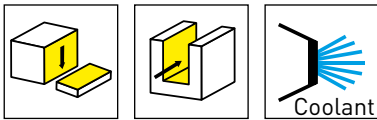
F

Part number	Z	Ds	h	l_2	d_2	d_4	SW	w	t_{max}	right hand insert	left hand insert	HWS	HMS
M310.0050.M10.03	3	50	33	13	M10	18	15	3	15	3x RS310.3017...	3x LS310.3017...	310017R • 310017L	10001
M310.0050.M10.04	3	50	34	14	M10	18	15	4	15	3x RS310.4023...	3x LS310.4023...	310023R • 310023L	10001
M310.0050.M10.05	3	50	35	15	M10	18	15	5	15	3x RS310.5028...	3x LS310.5028...	310028R • 310028L	10001
M310.0063.M12.03	3	63	39	15	M12	21	17	3	20	3x RS310.3017...	3x LS310.3017...	310017R • 310017L	12001
M310.0063.M12.04	3	63	40	16	M12	21	17	4	20	3x RS310.4023...	3x LS310.4023...	310023R • 310023L	12001
M310.0063.M12.05	3	63	41	17	M12	21	17	5	20	3x RS310.5028...	3x LS310.5028...	310028R • 310028L	12001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M310...03	030.0324.T7P	T7PL	1.2 Nm
M310...04	030.3535.T8P	T8PL	2 Nm
M310...05	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

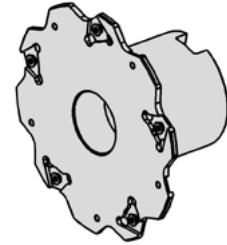
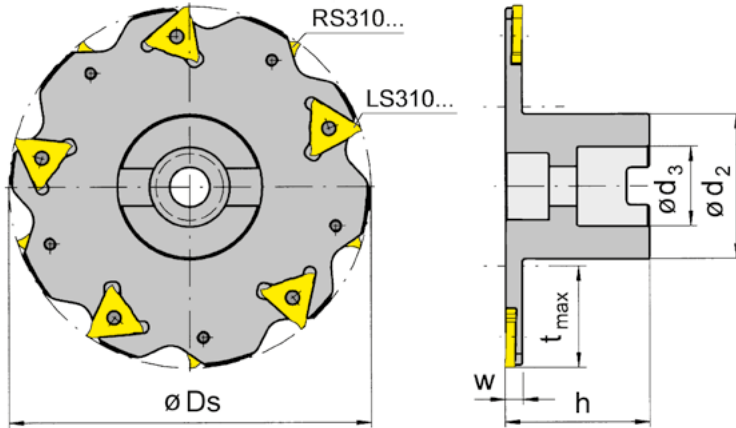
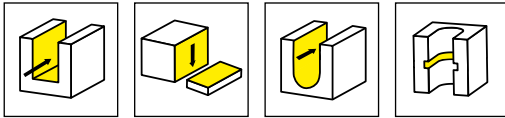
F

Part number	Z	Ds	h	l_2	d_2	d_4	SW	w	t_{max}	right hand insert	left hand insert	HWS	HMS
M310.0050.M10.03.IK	3	50	33	13	M10	18	15	3	15	3x RS310.3017...	3x LS310.3017...	310017R • 310017L	10001
M310.0050.M10.04.IK	3	50	34	14	M10	18	15	4	15	3x RS310.4023...	3x LS310.4023...	310023R • 310023L	10001
M310.0050.M10.05.IK	3	50	35	15	M10	18	15	5	15	3x RS310.5028...	3x LS310.5028...	310028R • 310028L	10001
M310.0063.M12.03.IK	3	63	39	15	M12	21	17	3	20	3x RS310.3017...	3x LS310.3017...	310017R • 310017L	12001
M310.0063.M12.04.IK	3	63	40	16	M12	21	17	4	20	3x RS310.4023...	3x LS310.4023...	310023R • 310023L	12001
M310.0063.M12.05.IK	3	63	41	17	M12	21	17	5	20	3x RS310.5028...	3x LS310.5028...	310028R • 310028L	12001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M310...03	030.0324.T7P	T7PL	1.2 Nm
M310...04	030.3535.T8P	T8PL	2 Nm
M310...05	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

F

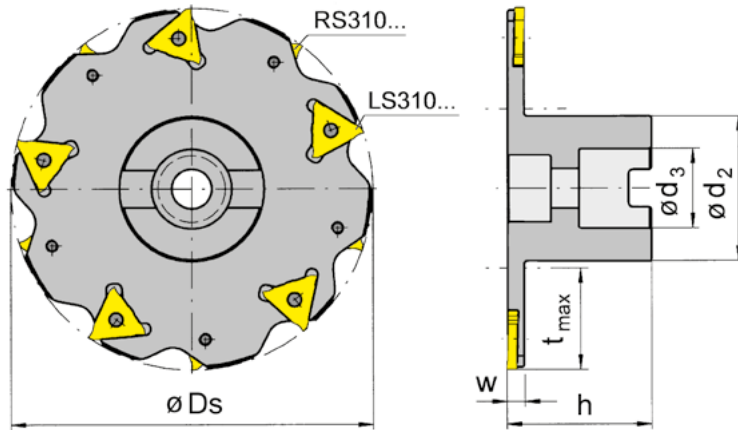
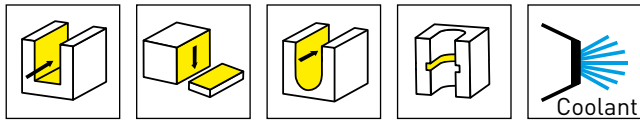
Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
M310.0080.22.03	4	80	23	40	33	22	3	4x RS310.3017...	4x LS310.3017...	310017R • 310017L
M310.0080.22.04	4	80	23	40	33	22	4	4x RS310.4023...	4x LS310.4023...	310023R • 310023L
M310.0080.22.05	4	80	23	40	33	22	5	4x RS310.5028...	4x LS310.5028...	310028R • 310028L
M310.1100.27.03	5	100	25	50	48	27	3	5x RS310.3017...	5x LS310.3017...	310017R • 310017L
M310.1100.27.04	5	100	25	50	48	27	4	5x RS310.4023.00	5x LS310.4023.00	310023R • 310023L
M310.1100.27.05	5	100	25	50	48	27	5	5x RS310.5028.00	5x LS310.5028.00	310028R • 310028L
M310.1125.27.03	6	125	37.5	50	48	27	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.27.04	6	125	37.5	50	48	27	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.1125.27.05	6	125	37.5	50	48	27	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.1125.32.03	6	125	32.5	50	58	32	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.32.04	6	125	32	50	56	32	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.1125.32.05	6	125	32.5	50	56	32	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.1125.40.03	6	125	26.5	50	70	40	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.40.04	6	125	26.5	50	70	40	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.1125.40.05	6	125	26.5	50	70	40	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.1160.40.03	8	160	44	50	70	40	3	8x RS310.3017...	8x LS310.3017...	310017R • 310017L
M310.1160.40.04	8	160	44	50	70	40	4	8x RS310.4023...	8x LS310.4023...	310023R • 310023L
M310.1160.40.05	8	160	44	50	70	40	5	8x RS310.5028...	8x LS310.5028...	310028R • 310028L
M310.1200.40.04	10	200	64	50	70	40	4	10x RS310.4023...	10x LS310.4023...	310023R • 310023L
M310.1200.40.05	10	200	64	50	70	40	5	10x RS310.5028...	10x LS310.5028...	310028R • 310028L

Bore [d3] with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M310...03	030.0324.T7P	T7PL	1.2 Nm
M310...04	030.3535.T8P	T8PL	2 Nm
M310...05	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

F

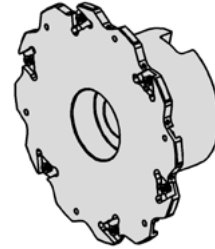
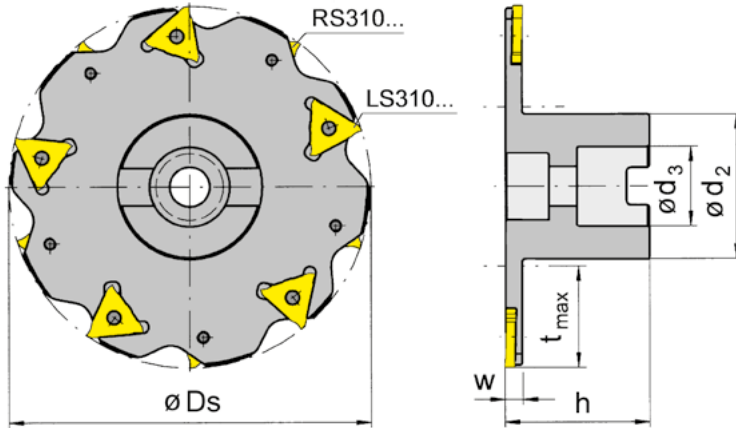
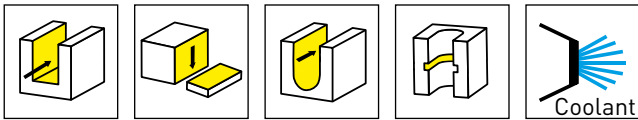
Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
M310.0063.16.03.IK	3	63	17.5	35	26	16	3	3x RS310.3017...	3x LS310.3017...	310017R • 310017L
M310.0063.16.04.IK	3	63	17.5	35	26	16	4	3x RS310.4023...	3x LS310.4023...	310023R • 310023L
M310.0063.16.05.IK	3	63	17.5	35	26	16	5	3x RS310.5028...	3x LS310.5028...	310028R • 310028L
M310.0080.16.03.IK	4	80	25	40	28	16	3	4x RS310.3017...	4x LS310.3017...	310017R • 310017L
M310.0080.16.04.IK	4	80	25	40	28	16	4	4x RS310.4023...	4x LS310.4023...	310023R • 310023L
M310.0080.16.05.IK	4	80	25	40	28	16	5	4x RS310.5028...	4x LS310.5028...	310028R • 310028L
M310.0080.22.03.IK	4	80	23	40	33	22	3	4x RS310.3017...	4x LS310.3017...	310017R • 310017L
M310.0080.22.04.IK	4	80	23	40	33	22	4	4x RS310.4023...	4x LS310.4023...	310023R • 310023L
M310.0080.22.05.IK	4	80	23	40	33	22	5	4x LS310.5028...	4x RS310.5028...	310028R • 310028L
M310.1100.27.03.IK	5	100	25	50	48	27	3	5x RS310.3017...	5x LS310.3017...	310017R • 310017L
M310.1100.27.04.IK	5	100	25	50	48	27	4	5x RS310.4023.00	5x LS310.4023.00	310023R • 310023L

Bore (d3) with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M310...03	030.0324.T7P	T7PL	1.2 Nm
M310...04	030.3535.T8P	T8PL	2 Nm
M310...05	030.3543.T8P	T8PL	2 Nm



Picture = right hand cutting version

F

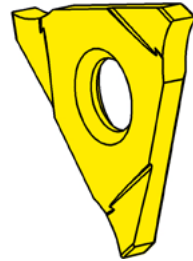
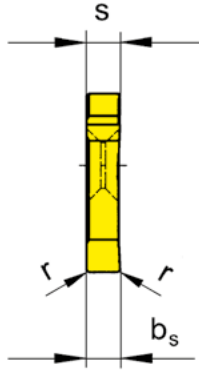
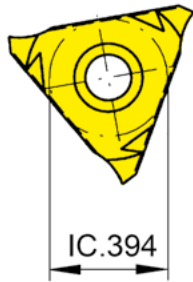
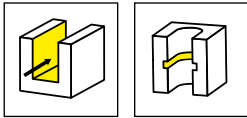
Part number	Z	Ds	t _{max}	h	d ₂	d ₃	w	right hand insert	left hand insert	HWS
M310.1125.27.03.IK	6	125	37.5	50	48	27	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.27.04.IK	6	125	37.5	50	48	27	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.1125.27.05.IK	6	125	37.5	50	48	27	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.1125.32.03.IK	6	125	32	50	56	32	3	6x LS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.32.04.IK	6	125	32	50	56	32	4	6x LS310.4023...	6x RS310.4023...	310023R • 310023L
M310.1125.32.05.IK	6	125	32	50	56	32	5	6x LS310.5028...	6x RS310.5028...	310028R • 310028L
M310.1125.40.05.IK	6	125	26.5	50	70	40	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.1160.40.03.IK	8	160	44	50	70	40	3	8x RS310.3017...	8x LS310.3017...	310017R • 310017L
M310.1160.40.04.IK	8	160	44	50	70	40	4	8x RS310.4023...	8x LS310.4023...	310023R • 310023L
M310.1160.40.05.IK	8	160	44	50	70	40	5	8x LS310.5028...	8x RS310.5028...	310028R • 310028L
M310.1200.40.04.IK	10	200	64	50	70	40	4	10x LS310.4023...	10x RS310.4023...	310023R • 310023L
M310.1200.40.05.IK	10	200	64	50	70	40	5	10x LS310.5028...	10x RS310.5028...	310028R • 310028L

Bore (d3) with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M310...03	030.0324.T7P	T7PL	1.2 Nm
M310...04	030.3535.T8P	T8PL	2 Nm
M310...05	030.3543.T8P	T8PL	2 Nm



Coating grades

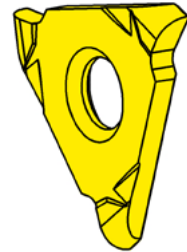
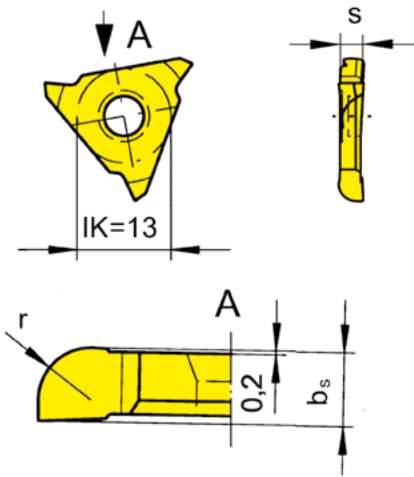
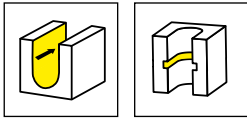
R = right hand version shown

L = left hand version

▲ In stock

Δ 2 weeks

Part number	r	b _s	s	HIS		AS45	DD25	IG35	TN35
RS310.3017.00	0.15	1.7	1.6	310017R	▲	▲	▲		
RS310.3118.00	0.15	1.8	1.6	310017R	▲	▲	▲		
RS310.4023.00	0.2	2.3	2.2	310023R	▲	▲	▲	▲	
RS310.5028.00	0.2	2.8	2.7	310028R	▲	▲	▲	▲	
LS310.3017.00	0.15	1.7	1.6	310017L	▲	▲	▲		
LS310.3118.00	0.15	1.8	1.6	310017L	▲	▲	▲		
LS310.4023.00	0.2	2.3	2.2	310023L	▲	▲	▲	▲	
LS310.5028.00	0.2	2.8	2.7	310028L	▲	▲	▲	▲	
Dimensions in mm					P	●	-	●	●
					M	●	-	●	-
					K	●	-	●	●
					N	-	●	-	-
					S	○	-	●	-
					H	-	-	-	-



Coating grades

R = right hand version shown

L = left hand version

▲ In stock

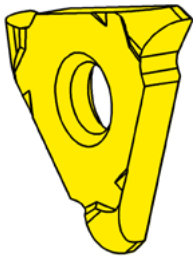
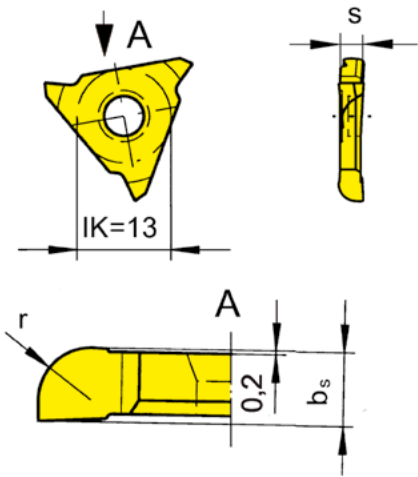
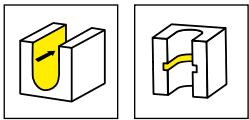
Δ 2 weeks

F

Part number	w	r	b _s	s	HIS	AS45
RS310.3017.04	3	0.4	1.7	1.57	310017R	Δ
RS310.3017.05	3	0.5	1.7	1.57	310017R	Δ
RS310.3017.10	3	1	1.7	1.57	310017R	▲
RS310.3017.15	3	1.5	1.7	1.57	310017R	Δ
RS310.4023.04	4	0.4	2.3	2.17	310023R	Δ
RS310.4023.05	4	0.5	2.3	2.17	310023R	Δ
RS310.4023.10	4	1	2.3	2.17	310023R	▲
RS310.4023.15	4	1.5	2.3	2.17	310023R	Δ
RS310.4023.16	4	1.6	2.3	2.17	310023R	▲
RS310.4023.20	4	2	2.3	2.17	310023R	▲
LS310.3017.04	3	0.4	1.7	1.57	310017L	Δ
LS310.3017.05	3	0.5	1.7	1.57	310017L	Δ
LS310.3017.10	3	1	1.7	1.57	310017L	▲
LS310.3017.15	3	1.5	1.7	1.57	310017L	Δ
LS310.4023.04	4	0.4	2.3	2.17	310023L	Δ
LS310.4023.05	4	0.5	2.3	2.17	310023L	Δ
LS310.4023.10	4	1	2.3	2.17	310023L	▲
LS310.4023.15	4	1.5	2.3	2.17	310023L	Δ
LS310.4023.16	4	1.6	2.3	2.17	310023L	▲
LS310.4023.20	4	2	2.3	2.17	310023L	▲

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



R = right hand version shown

L = left hand version

Coating grades

▲ In stock

Δ 2 weeks

Part number	w	r	bs	s	HIS	AS45
RS310.5028.04	5	0.4	2.68	2.62	310028R	Δ
RS310.5028.05	5	0.5	2.68	2.62	310028R	▲
RS310.5028.10	5	1	2.68	2.62	310028R	▲
RS310.5028.15	5	1.5	2.68	2.62	310028R	▲
RS310.5028.16	5	1.6	2.68	2.62	310028R	Δ
RS310.5028.20	5	2	2.68	2.62	310028R	▲
LS310.5028.04	5	0.4	2.68	2.62	310028L	Δ
LS310.5028.05	5	0.5	2.68	2.62	310028L	▲
LS310.5028.10	5	1	2.68	2.62	310028L	▲
LS310.5028.15	5	1.5	2.68	2.62	310028L	▲
LS310.5028.16	5	1.6	2.68	2.62	310028L	Δ
LS310.5028.20	5	2	2.68	2.62	310028L	▲
						P ●
						M ●
						K ●
						N -
						S o
						H -

Dimensions in mm

F

F



SYSTEM M475

GROOVING AND PART OFF

Chapter	C	D	E	F		
Page #	234	248	264	276	291	305
Tool System	101	380/381	M275	382/383	310	475

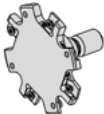
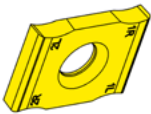
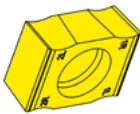
System Capabilities

	•	•	•	•	•	•
	•			•	•	
	•	•	•	•	•	
	•				•	•
			•	•		

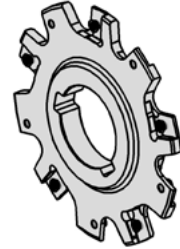
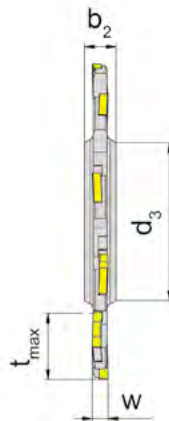
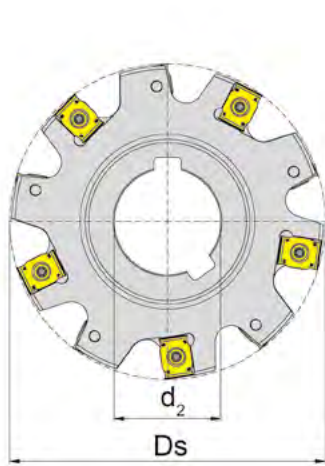
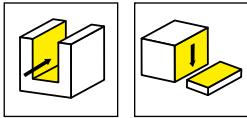
F

Ø DS	(in) (mm)	2.480 - 7.874 63 - 200	1.732 - 3.937 44 - 100	1.220 - 3.070 31 - 78	3.149 - 7.874 80 - 200	1.968 - 7.874 50 - 200	1.574 - 7.874 40 - 200
Width	(in) (mm)	.047 - .157 1.2 - 4	.046 - .275 1.17 - 7	.047 - .127 1.2 - 3.25	.046 - .275 1.17 - 7	.118 - .196 3 - 5	.062 - .172 1.6 - 4.39
Insert		S101	314	S275	314	S310	S475

P	•	•	•	•	•	•
M	•	•	•	•	•	•
K	•	•	•	•	•	•
N	-	o	o	o	-	o
S	o	o	-	o	-	o
H	-	-	-	-	-	-

HOLDERS, INSERTS	System M475 - Metric			For M475 - Groove/Part Off	
					
	Page 308-309	Page 310	Page 311-312	Page 313	Page 314
	Ø Ds 80-200mm Disc Cutter	Ø Ds 40-63mm Screw-in Cutter	Ø Ds 63-200mm Arbor Mounted	Grooving and Part-Off	Grooving and Part-Off

Cutting Data and Technical Instructions - Page 315



Picture = right hand cutting version

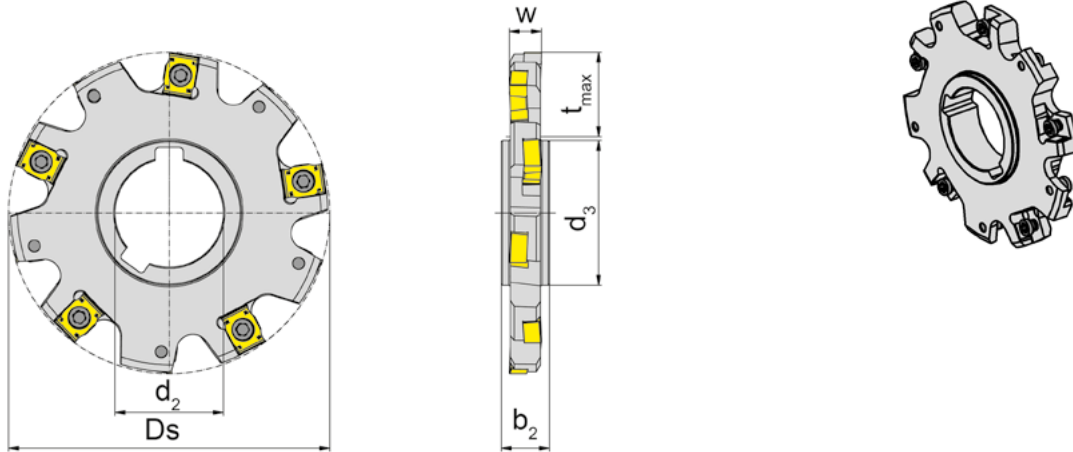
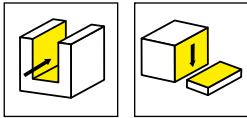
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	n _{max}	HWS
M475.0080.27.03	5	80	18	27	8	40	3	20000	475016N
M475.0080.27.04	5	80	18	27	8	40	4	21000	475022N
M475.0100.32.03	6	100	25	32	8	46	3	17000	475016N
M475.0100.32.04	6	100	25	32	8	46	4	18000	475022N
M475.0125.40.03	8	125	32	40	10	54	3	15000	475016N
M475.0125.40.04	8	125	32	40	10	54	4	15000	475022N
M475.0160.40.03	10	160	50	40	10	54	3	12000	475016N
M475.0160.40.04	10	160	50	40	10	54	4	13000	475022N
M475.0200.40.04	13	200	70	40	10	54	4	11000	475022N

Bore (d2) with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M475...03	030.2523.T6P	T6PL	0.7 Nm
M475...04	030.0330.1217	T7PL	1.2 Nm



Picture = right hand cutting version

F

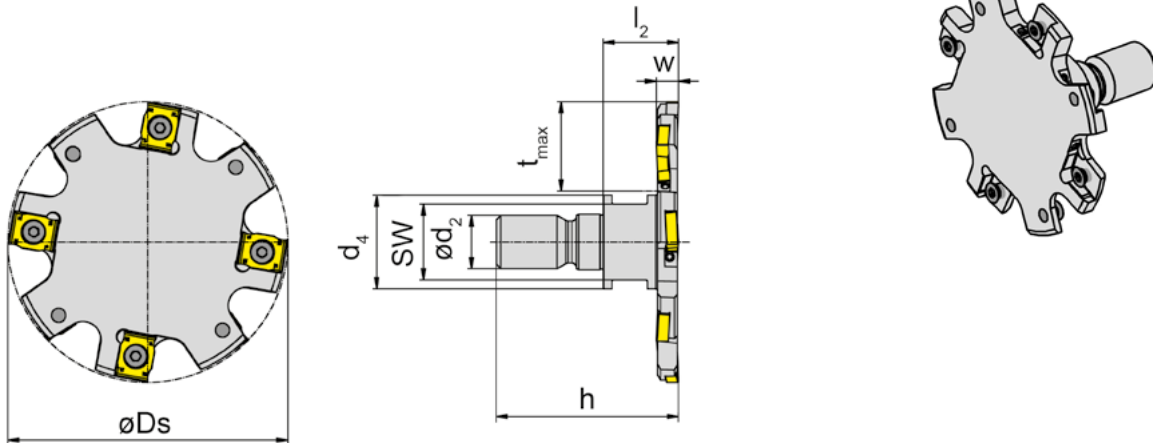
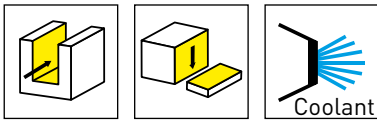
Part number	Z	Ds	t _{max}	d ₂	b ₂	d ₃	w	n _{max}	HWS
M475.0080.27.05	5	80	18	27	8	40	5	22000	475027N
M475.0080.27.06	5	80	21	27	10	36	6	21000	475032N
M475.0080.27.08	5	80	21	27	12	36	8	17000	475043N
M475.0100.32.05	6	100	25	32	8	46	5	19000	475027N
M475.0100.32.06	6	100	25.5	32	10	47	6	18000	475032N
M475.0100.32.08	6	100	25.5	32	12	47	8	15000	475043N
M475.0125.40.05	8	125	32	40	10	54	5	17000	475027N
M475.0125.40.06	8	125	32.5	40	10	58	6	15000	475032N
M475.0125.40.08	8	125	32.5	40	12	58	8	12000	475043N
M475.0160.40.05	10	160	50	40	10	54	5	14000	475027N
M475.0160.40.06	10	160	50	40	10	58	6	13000	475032N
M475.0160.40.08	10	160	50	40	12	58	8	10000	475027N
M475.0200.40.05	13	200	70	40	10	54	5	12000	475027N
M475.0200.50.06	13	200	63.5	50	10	71	6	11000	475032N
M475.0200.50.08	13	200	63.5	50	12	71	8	8000	475043N

Bore [d2] with longitudinal keyway to DIN 138

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M475...05	030.3541.T8P	T8PL	2 Nm
M475...06	030.3550.T10P	T10PL	3 Nm
M475...08	030.350P.1110	T15PQ	3.5 Nm



Picture = right hand cutting version

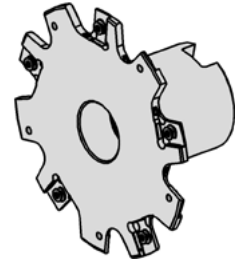
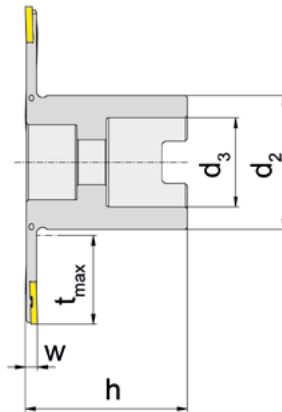
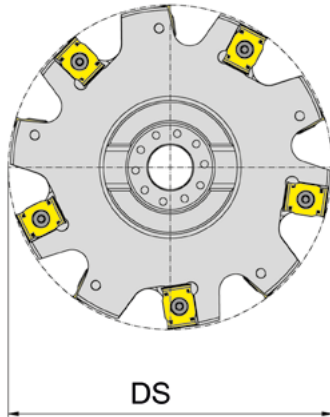
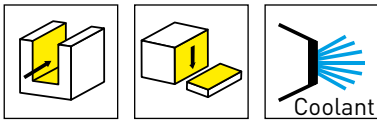
F

Part number	Z	Ds	h	l_2	d_4	d_2	SW	w	t_{max}	n_{max}	HWS
M475.0040.M8.03.IK	2	40	33	15	13	M8	10	3	13	32000	475016N
M475.0040.M8.04.IK	2	40	33	15	13	M8	10	4	13	33000	475022N
M475.0040.M8.05.IK	2	40	33	15	13	M8	10	5	13	35000	475027N
M475.0050.M10.03.IK	3	50	35	15	18	M10	15	3	15	28000	475016N
M475.0050.M10.04.IK	3	50	35	15	18	M10	15	4	15	28000	475022N
M475.0050.M10.05.IK	3	50	35	15	18	M10	15	5	15	30000	475027N
M475.0063.M12.03.IK	4	63	41	17	21	M12	17	3	20	24000	475016N
M475.0063.M12.04.IK	4	63	41	17	21	M12	17	4	20	25000	475022N
M475.0063.M12.05.IK	4	63	41	17	21	M12	17	5	20	26000	475027N

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M475.0...03	030.2523.T6P	T6PL	0.7 Nm
M475.0...04	030.0330.1217	T7PL	1.2 Nm
M475.0...05	030.3541.T8P	T8PL	2 Nm



Picture = right hand cutting version

F

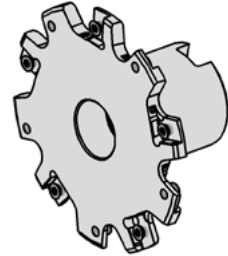
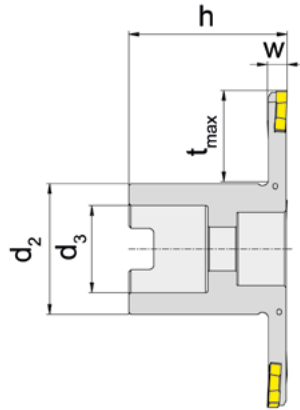
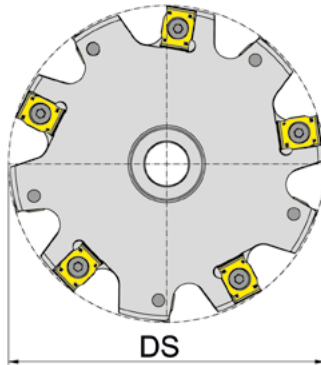
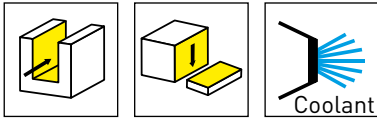
Part number	Z	Ds	t _{max}	h	d ₃	d ₂	n _{max}	w	HWS
M475.0063.16.03.IK	4	63	17.5	35	16	32	24000	3	475016N
M475.0063.16.04.IK	4	63	17.5	35	16	32	25000	4	475022N
M475.0080.16.03.IK	5	80	25	40	16	28	20000	3	475016N
M475.0080.16.04.IK	5	80	25	40	16	28	21000	4	475022N
M475.0080.22.03.IK	5	80	23	40	22	33	20000	3	475016N
M475.0080.22.04.IK	5	80	23	40	22	33	21000	4	475022N
M475.0100.27.03.IK	6	100	25	50	27	48	17000	3	475016N
M475.0100.27.04.IK	6	100	25	50	27	48	18000	4	475022N
M475.0125.27.03.IK	8	125	37.5	50	27	48	15000	3	475016N
M475.0125.27.04.IK	8	125	37.5	50	27	48	15000	4	475022N
M475.0125.32.03.IK	8	125	32.5	50	32	56	15000	3	475016N
M475.0125.32.04.IK	8	125	32.5	50	32	56	15000	4	475022N
M475.0125.40.03.IK	8	125	26.5	50	40	70	15000	3	475016N
M475.0125.40.04.IK	8	125	26.5	50	40	70	15000	4	475022N
M475.0160.40.03.IK	10	160	44	50	40	70	12000	3	475016N
M475.0160.40.04.IK	10	160	44	50	40	70	13000	4	475022N
M475.0200.40.04.IK	13	200	64	50	40	70	11000	4	475022N

Bore [d3] with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M475...03	030.2523.T6P	T6PL	0.7 Nm
M475...04	030.0330.1217	T7PL	1.2 Nm



Picture = right hand cutting version

F

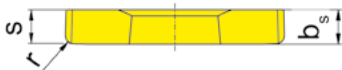
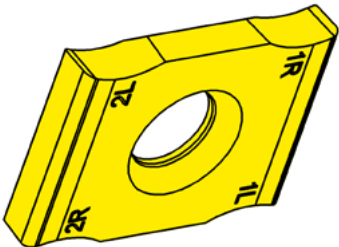
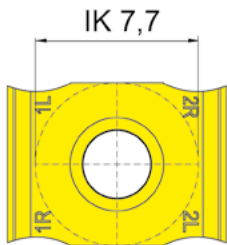
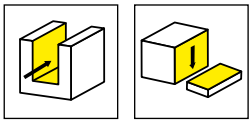
Part number	Z	DS	t _{max}	h	d ₃	d ₂	n _{max}	w	HWS
M475.0063.16.05.IK	4	63	17.5	35	16	32	26000	5	475027N
M475.0080.16.05.IK	5	80	25	40	16	28	22000	5	475027N
M475.0080.22.05.IK	5	80	23	40	22	33	22000	5	475027N
M475.0100.27.05.IK	6	100	25	50	27	48	19000	5	475027N
M475.0100.27.06.IK	6	100	25	50	27	48	18000	6	475032N
M475.0100.27.08.IK	6	100	25	50	27	48	15000	8	475043N
M475.0125.27.05.IK	8	125	37.5	50	27	48	17000	5	475027N
M475.0125.32.05.IK	8	125	32.5	50	32	56	17000	5	475027N
M475.0125.32.06.IK	8	125	32	50	32	56	15000	6	475032N
M475.0125.32.08.IK	8	125	32	50	32	56	12000	8	475043N
M475.0125.40.05.IK	8	125	26.5	50	40	70	17000	5	475027N
M475.0160.40.05.IK	10	160	44	50	40	70	14000	5	475027N
M475.0160.40.06.IK	10	160	44	60	40	70	13000	6	475032N
M475.0160.40.08.IK	10	160	44	60	40	70	10000	8	475043N
M475.0200.40.05.IK	13	200	64	50	40	70	12000	5	475027N
M475.0200.40.06.IK	13	200	54	50	40	90	11000	6	475032N
M475.0200.40.08.IK	13	200	54	50	40	90	8000	8	475043N

Bore [d3] with cross keyway to DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M475...05	030.3541.T8P	T8PL	2 Nm
M475...06	030.3550.T10P	T10PL	3 Nm
M475...08	030.350P.1110	T15PQ	3.5 Nm



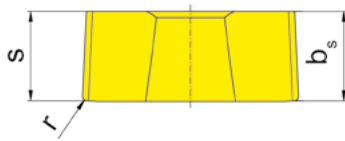
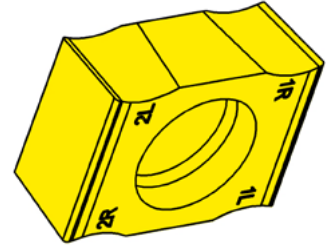
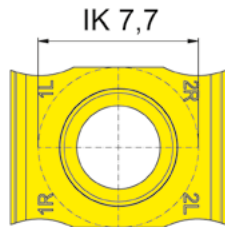
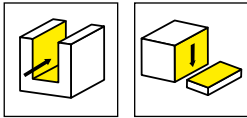
Coating grades

▲ In stock

Δ 2 weeks

Part number	b _s	r	s	HIS	RC4G
S475.0162.10.02	1.6	0.2	1.62	475016N	▲
S475.0163.10.04	1.61	0.4	1.63	475016N	▲
S475.0163.10.05	1.61	0.5	1.63	475016N	▲
S475.0222.10.02	2.2	0.2	2.22	475022N	▲
S475.0223.10.04	2.21	0.4	2.23	475022N	▲
S475.0223.10.05	2.21	0.5	2.23	475022N	▲
S475.0222.10.08	2.22	0.8	2.22	475022N	▲
					P ●
					M ●
					K ●
					N -
					S -
					H -

Dimensions in mm



Coating grades

▲ In stock

Δ 2 weeks

F

Part number	b _s	r	s	HIS	RC4G
S475.0273.10.02	2.7	0.2	2.73	475027N	▲
S475.0274.10.04	2.71	0.4	2.74	475027N	▲
S475.0275.10.05	2.72	0.5	2.75	475027N	▲
S475.0275.10.08	2.74	0.8	2.74	475027N	▲
S475.0275.10.10	2.75	1	2.75	475027N	▲
S475.0276.10.12	2.76	1.2	2.76	475027N	▲
S475.0323.10.02	3.2	0.2	3.23	475032N	▲
S475.0324.10.04	3.21	0.4	3.24	475032N	▲
S475.0325.10.05	3.22	0.5	3.25	475032N	▲
S475.0325.10.08	3.24	0.8	3.24	475032N	▲
S475.0325.10.10	3.25	1	3.25	475032N	▲
S475.0326.10.12	3.26	1.2	3.26	475032N	▲
S475.0327.10.15	3.27	1.5	3.27	475032N	▲
S475.0433.10.02	4.3	0.2	4.33	475043N	▲
S475.0434.10.04	4.31	0.4	4.34	475043N	▲
S475.0435.10.05	4.32	0.5	4.35	475043N	▲
S475.0435.10.08	4.34	0.8	4.34	475043N	▲
S475.0435.10.10	4.35	1	4.35	475043N	▲
S475.0436.10.12	4.36	1.2	4.36	475043N	▲
S475.0437.10.15	4.37	1.5	4.37	475043N	▲
S475.0439.10.20	4.39	2	4.39	475043N	▲

Dimensions in mm

P	●
M	●
K	●
N	-
S	-
H	-

Material		Material group	M475 Disc Milling Cutter w = 3 + 4 mm				M475 Disc Milling Cutter w = 6 + 8 mm			
			Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)			
			100%	50%	20%	10%	100%	50%	20%	10%
P	Carbon steel	P1.1 - P1.5	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	Alloyed steel (<5%)	P2.1 - P2.4	.002 0.07	.003 0.08	.003 0.09	.004 0.12	.003 0.09	.003 0.10	.004 0.11	.005 0.15
	High alloyed steel (>5%)	P3.1 - P3.2								
	Cast steel	P4.1 - P4.2								
	Sintered steel	P5.1								
M	Stainless steel	M1.1-M1.3	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
K	Grey cast iron	K1.1-K1.2	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.005 0.14	.006 0.16	.007 0.18	.009 0.23
	Spheroidal graphite cast iron	K2.1-K2.2	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	Malleable cast iron	K3.1-K3.2	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	Ausferritic spheroidal cast iron ADI	K4.1-K4.3								
N	Al-alloys	N1.1-N1.2	.002 0.07	.003 0.08	.003 0.09	.004 0.12	.003 0.09	.003 0.10	.004 0.11	.005 0.15
	Al-cast-alloy	N2.1-N2.3	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.003 0.09	.003 0.10	.005 0.13
	Copper-alloys	N3.1-N3.4								
S	Heat resistant alloy (Fe)	S1.1-S1.2	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
	Titanium	S3.1-S3.3	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10

TABLE FORMAT

.002	=	Suggested cutting speed (SFM)
0.07		Suggested cutting speed (m/min)

Material			Example Material	RC4G a _e /D _c		AS46 a _e /D _c		AS4B a _e /D _c		IG35 a _e /D _c	
			SAE, DIN	25%	10%	25%	10%	25%	10%	25%	10%
P	Carbon steel	~ 0,2 % C	1015 , CK15	525 160	785 240	425 130	625 190	425 130	625 190	475 145	625 190
		~ 0,4% C annealed	A515 , 19Mn6	525 160	785 240	425 130	625 190	425 130	625 190	475 145	625 190
		~ 0,4% C quenched	1335 , 36Mn5	525 160	785 240	425 130	625 190	425 130	625 190	475 145	625 190
		~ 0,6% C annealed	1055 , C55	525 160	785 240	425 130	625 190	425 130	625 190	475 145	625 190
		~ 0,6% C quenched	1060 , CK60	525 160	785 240	425 130	625 190	425 130	625 190	475 145	625 190
		free cutting steel	1213 , 9SMn28	525 160	785 240	425 130	625 190	425 130	625 190	475 145	625 190
	Alloyed steel (<5%)	annealed	52100 , 100Cr6	590 180	720 220	475 145	575 175	475 145	575 175	475 145	575 175
		quenched	3415 , 14NiCr10	590 180	720 220	475 145	575 175	475 145	575 175	475 145	575 175
		quenched	4135 , 34CrMo4	590 180	720 220	475 145	575 175	475 145	575 175	475 145	575 175
		quenched	5155 , 55Cr3	590 180	720 220	475 145	575 175	475 145	575 175		
	High alloyed steel (>5%)	annealed	442 , X10CrAl18	260 80	395 120						
		hardened	D3 , X210Cr2	260 80	330 100						
	Cast steel	unalloyed	A27 , GE200	525 160	720 220						
		alloyed	10295 , GX40CrSi28	260 80	460 140						
	Sintered steel	soft	P3082 , Sint-D39								
M	Stainless steel	martensitic ferritic	17-4 PH , 455 , 465 , X16Cr13	260 80	460 140	215 65	345 105	195 60	345 105	215 65	345 105
		austenitic ferritic	316Ti , X6CrNiMo-Ti17-12-2	230 70	395 120	215 65	345 105	195 60	345 105	215 65	345 105
		austenitic	316LN , X2CrNiMo-N17-13-3	230 70	395 120	215 65	345 105	195 60	345 105	215 65	345 105

F

TABLE FORMAT

655	=	Suggested cutting speed (SFM)
200		Suggested cutting speed (m/min)

Material			Example Material	RC4G a _e /D _c		AS46 a _e /D _c		AS4B a _e /D _c		IG35 a _e /D _c		NE2B	
			SAE, DIN	25%	10%	25%	10%	25%	10%	25%	10%	25%	10%
K	Grey cast iron	low tensile strength	A48 Class 35B, GG-25	590 180	820 250	575 175	785 240	575 175	785 240	425 130	475 145		
		high tensile strength	A48 Class 60, GG-40	395 120	590 180	575 175	785 240	575 175	785 240	425 130	475 145		
	Spheroidal graphite cast iron	ferritic	A536 60-40-18, GGG-40	395 120	525 160	575 175	785 240	575 175	785 240	425 130	475 145		
		pearlitic	A536 80-60-03, GGG-60	395 120	525 160	575 175	785 240	575 175	785 240	425 130	475 145		
	Malleable cast iron	ferritic	A47 Grade 35018, GTW-45	195 60	395 120								
		pearlitic	A47 Grade 55004, GTS-55-04	195 60	460 140								
	Ausferritic spheroidal cast iron / ADI	quenched											
		quenched											
		quenched											
	Al-alloys	not heat treatable	5005, AlMg1			920 280	2625 800	920 280	2625 800				
		heat treatable	6061, 7075, AlMgSi1			920 280	2625 800	920 280	2625 800				
N	Al-cast-alloy	< 6% Si	AA 441, AlMgSi6									1310 400	7875 2400
		6-10% Si	AA 356, AlSi7Mg									1310 400	5250 1600
		10-15 % Si	AA 413, AlSi12									920 280	3935 1200
	Copper alloys	pure copper	C11000, Cu									575 175	785 240
		brass	C38500, CuZn40Pb									475 145	605 185
		lead-free brass	C28000, CuZn40									475 145	625 190
		high strength	C67800, CuZn25Al5-Mn4Fe3									425 130	655 200
	Al-alloys	not heat treatable	5005, AlMg1			920 280	2625 800	920 280	2625 800				
		heat treatable	6061, 7075, AlMgSi1			920 280	2625 800	920 280	2625 800				
		< 6% Si	AA 441, AlMgSi6									1310 400	7875 2400
	Al-cast-alloy	6-10% Si	AA 356, AlSi7Mg									1310 400	5250 1600
		10-15 % Si	AA 413, AlSi12									920 280	3935 1200
	Copper alloys	pure copper	C11000, Cu									575 175	785 240
		brass	C38500, CuZn40Pb									475 145	605 185
		lead-free brass	C28000, CuZn40									475 145	625 190
		high strength	C67800, CuZn25Al5-Mn4Fe3									425 130	655 200

TABLE FORMAT

655	=	Suggested cutting speed (IPM)
200		Suggested cutting speed (mm/min)

Material			Example Material SAE, DIN	K10 a_e/D_c		IG35 a_e/D_c		NE2B	
				25%	10%	25%	10%	25%	10%
S	Heat resistant alloy (Fe)	annealed				80 25	215 65		
		hardened				80 25	215 65		
	Heat resistant alloy (Ni, Co)	annealed	Inconel 600			80 25	215 65		
		hardened	Inconel 713			80 25	215 65		
	Titanium	Titanium alloy α	Grade 1-2 Ti , Ti99,7			80 25	215 65		
		Titanium alloy α - β	Grade 5 Ti , Ti6Al4V			80 25	215 65		
		Titanium alloy β	Ti-10-2-3 , Ti-10V-2Fe-3Al			80 25	215 65		
	Thermo plastics			1310 400	3935 1200			1310 400	3935 1200
	Thermosets			1310 400	3935 1200			1310 400	3935 1200

F

TABLE FORMAT

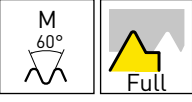
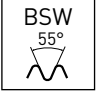
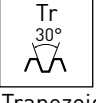
655	=	Suggested cutting speed (SFM)
200		Suggested cutting speed (m/min)



G

THREAD MILLING

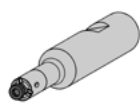
SYSTEMS DC, M304, M306, M308, M311, M313, M328, M332, M275, 380

Page	325	334	339	348	355	363	372	381	385	389
System	DC	304	306	308	311	313	328	332	M275	380
System Capabilities										
	•	•	•	•	•	•	•	•	•	•
TPI (in) Pitch (mm)	16 - 48 0.25-1.5	18 - 48 1.75	8 - 48 0.5-3	6 - 32 1.0-3.0	6 - 32 0.5-3.5	6 - 32 1.0-4.5	6 - 32 1.0-6.0	5 - 12 2.5-6.0	8 - 16 1.5-3.5	4 - 16 1.5-6.0
	•	•	•		•	•				
Pitch (mm)	0.35-1.75	1.5	1.0-2.0		1.5-3.5	1.5-4.5				
	•	•	•	•	•	•	•			
TPI (in) G1/4" G1/8" G3/8"		19	11 14 19	14	11 14	8 11	11			
				•						
Trapezoidal Pitch (mm)				2.5-4.0						
	•									
Thread type	UNC UNF									

Ø DS	(in) (mm)	.027 - .385 0.7 - 9.8	.303 7.7	.393 10	.519 13.2	.696 17.7	.854 21.7	1.090 27.7	1.248 31.7	1.220 31	1.732 44
Min. Bore Ø	(in) (mm)	.039 1	.354 9	.472 12	.708 18	.787 20	1.062 27	1.259 32	1.653 42	1.771 45	2.047 52
Flutes		3, 4	3	3, 6	3, 6	3, 6	3, 6	3, 6	3, 4	5, 8, 10, 14	3

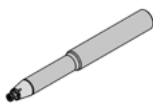
HOLDERS, INSERTS

MU311
Inch Shank



Page 356
Weldon Shank

M311
Metric Shank



Page 357
Round, Weldon,
Whistle Shank

For M311/MU311 (3 Flute)



Page 358
60° Thread
Partial Profile



Page 359
60° Thread
Full Profile



Page 360
BSW 55° Thread
Full Profile

For M311/MU311 (6 Flute)



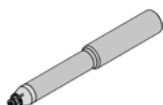
Page 361
60° Thread
Partial Profile



Page 362
60° Thread
Full Profile

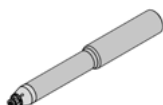
HOLDERS, INSERTS

MU313
Inch Shank



Page 364
Round and
Weldon Shank

M313
Metric Shank



Page 365
Round, Weldon,
Whistle Shank



Page 366
Round Shank
Short Neck

For M313/MU313 (3 Flute)



Page 367
60° Thread
Partial Profile



Page 368
60° Thread
Full Profile



Page 369
BSW 55° Thread
Full Profile

For M313/MU313 (6 Flute)



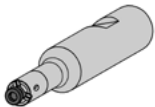
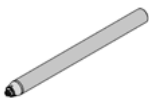
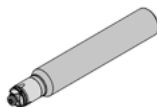
Page 370
60° Thread
Partial Profile

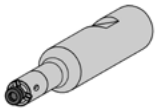
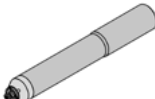


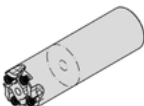
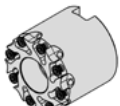
Page 371
BSW 55° Thread
Full Profile

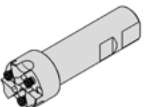
Cutting Data and Technical Instructions - Chapter M / Page 618

Continues on next page

HOLDERS, INSERTS	MU328 Inch Shank		M328 Metric Shank	
				
	Page 373 Weldon Shank	Page 374 Tungsten Shank Weldon, Whistle	Page 375 Round, Weldon, Whistle	Page 376 Tungsten Shank Weldon, Whistle
	For M328/MU328 (3 Flute)		For M328/MU328 (6 Flute)	
				
	Page 377 60° Thread Partial Profile	Page 378 BSW 55° Thread Full Profile	Page 379 60° Thread Partial Profile	Page 380 BSW 55° Thread Full Profile

HOLDERS, INSERTS	MU332 Inch Shank	M332 Metric Shank	For M332/ MU332 (6 Flutes)
			
	Page 382 Weldon Shank	Page 383 Round Shank	Page 384 60° Thread Partial Profile

HOLDERS, INSERTS	M275 - Metric Shank		For M275
			
	Page 386 Ds 31mm Round Shank	Page 387 Ds 38-78mm Arbor Mounted	Page 388 Partial Profile 60° Thread

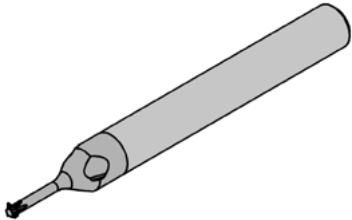
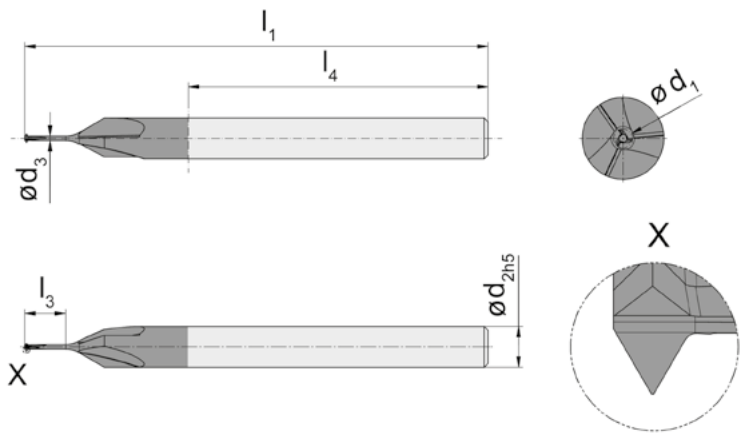
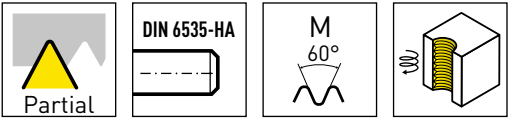
HOLDERS, INSERTS	380 - Metric Shank		For 380
			
	Page 390 Ds 44mm Round, Weldon, Whistle	Page 391 Ds 63mm Arbor Mounted	Page 392 60° Thread Partial Profile

G



SYSTEM DC

Ø MINIMUM BORE DIAMETER = .039" (1mm)



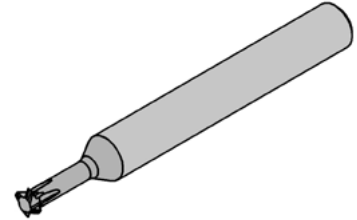
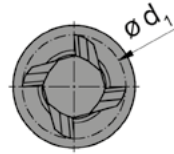
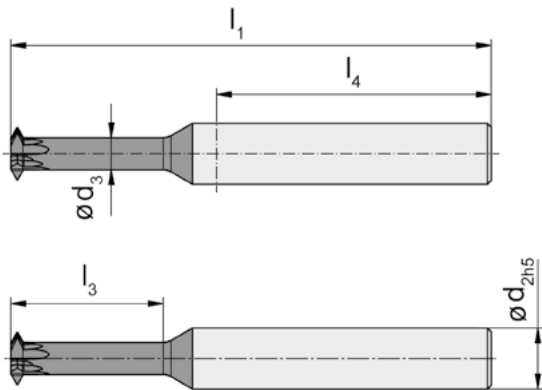
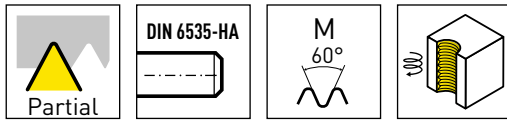
Coating grades

▲ In stock Δ 2 weeks

Part number	Thread	Z	P	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	ES15	
DCG.3.M1.025.2.1.03	M1	3	0.25	0.7	3	0.33	34	2.5	22	▲	P ●
DCG.3.M11.025.2.1.03	M1.1	3	0.25	0.75	3	0.4	34	2.75	22	▲	M ●
DCG.3.M12.025.2.1.03	M1.2	3	0.25	0.8	3	0.43	34	3	22	▲	K ○
DCG.3.M14.030.2.1.03	M1.4	3	0.3	1	3	0.55	34	4	22	▲	N -
DCG.3.M16.035.2.1.03	M1.6	3	0.35	1.18	3	0.64	34	4	22	▲	S -
DCG.3.M18.035.2.1.03	M1.8	3	0.35	1.38	3	0.84	34	4	22	▲	H -
DCG.3.M2.040.2.1.03	M2	3	0.4	1.53	3	0.93	34	6	22	▲	
DCG.3.M22.045.2.1.03	M2.2	3	0.45	1.68	3	0.98	34	6	22	▲	
DCG.3.M25.045.2.1.03	M2.5	3	0.45	1.98	3	1.28	34	8	22	▲	

Dimensions in mm



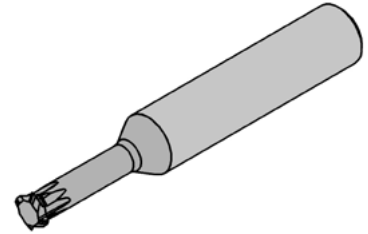
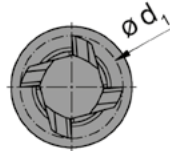
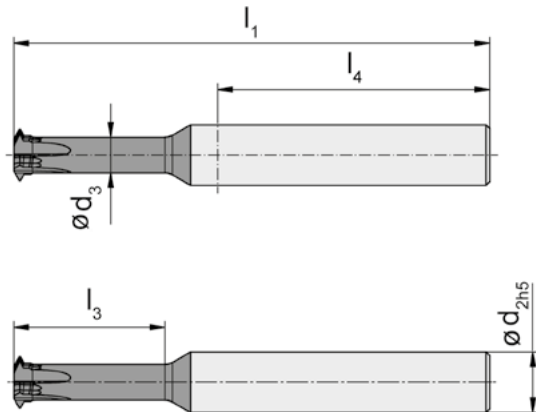
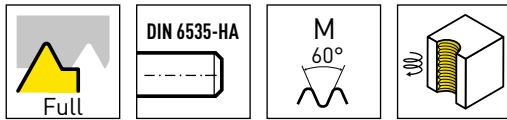


Coating grades

▲ In stock

△ 2 weeks

Part number	Thread	Z	P	P _{max}	TPI	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄		RC25	RC45
DCG.3.M3.025.2.1.04	M3	3	0.25	-	-	2	4	1.45	39	8	22	▲		
DCG.3.M3.035.2.1.04	M3	3	0.35	-	-	2	4	1.35	39	8	22	▲		
DCG.3.M3.050.2.1.04	M3	3	0.5	-	-	2	4	1.2	39	9	22	▲		
DCG.3.M35.050.2.1.04	M3.5	3	0.5	0.6	44-48	2.3	4	1.35	39	9	22	▲		
DCG.3.M4.070.3.1.06	M4	3	0.7	0.75	36	2.8	6	1.7	50	10	36	▲		
DCG.3.M5.050.3.1.06	M5	3	0.5	0.75	36-48	3.6	6	2.5	50	10	36	▲		
DCG.3.M5.080.3.1.06	M5	3	0.8	1	27-28	3.6	6	2.2	50	10	36	▲		
DCG.4.M6.100.3.1.06	M6	4	1	1.25	24	4.2	6	2.4	63	10	36			▲
DCG.4.M6.100.5.1.06	M6	4	1	1.25	24	4.2	6	2.4	63	16	36			▲
DCG.4.M8.075.5.1.08	M8-M10	4	0.75	1	27-32	5.5	8	3.85	63	16	36			▲
DCG.4.M8.075.6.1.08	M8-M10	4	0.75	1	27-32	5.5	8	3.85	63	20	36			▲
DCG.4.M8.075.7.1.08	M8-M10	4	0.75	1	27-32	5.5	8	3.85	77	25	36			▲
DCG.4.M8.125.6.1.08	M8-M10	4	1.25	1.5	18-20	5.5	8	3.4	63	20	36			▲
DCG.4.M8.125.8.1.08	M8-M10	4	1.25	1.5	18-20	5.5	8	3.4	77	30	36			▲
DCG.4.M10.150.6.1.08	M10-M12	4	1.5	1.75	16	6.8	8	4.1	63	20	36			▲
DCG.4.M10.150.8.1.08	M10-M12	4	1.5	1.75	16	6.8	8	4.1	77	30	36			▲
Dimensions in mm												P	●	●
												M	●	●
												K	●	●
												N	-	-
												S	-	-
												H	-	-



Coating grades

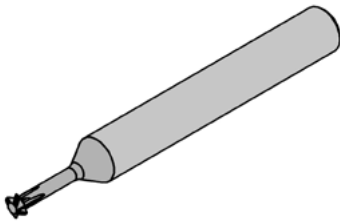
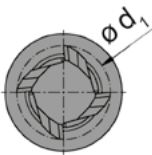
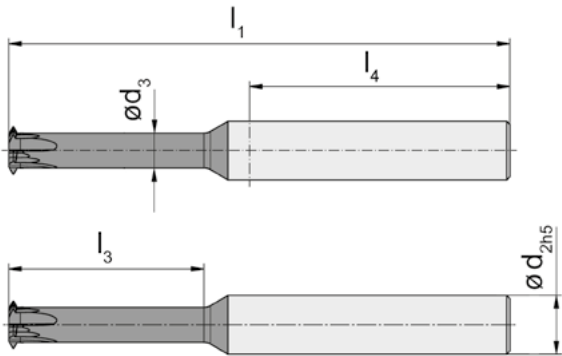
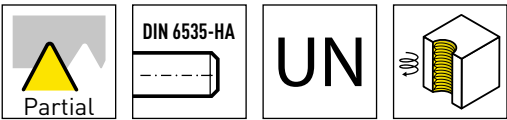
▲ In stock

△ 2 weeks

Part number	Thread	Z	P	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄		RC25	RC45
DCG.3.M3.035.2.2.04	M3	3	0.35	2	4	1.4	39	8	22	▲		
DCG.3.M3.050.2.2.04	M3	3	0.5	2	4	1.25	39	8	22	▲		
DCG.3.M35.060.2.2.04	M3,5	3	0.6	2.3	4	1.45	39	9	22	▲		
DCG.3.M4.070.3.2.06	M4	3	0.7	2.8	6	1.9	50	10	36	▲		
DCG.3.M5.050.3.2.06	M5	3	0.5	3.6	6	2.85	50	10	36	▲		
DCG.4.M6.075.5.2.06	M6	4	0.75	4.2	6	3.1	63	16	36			▲
DCG.4.M6.100.5.2.06	M6	4	1	4.2	6	2.8	63	16	36			▲
DCG.4.M8.125.5.2.08	M8	4	1.25	5.5	8	3.7	63	16	36			▲
DCG.4.M10.100.6.2.08	M10	4	1	6.8	8	5.4	63	20	36			▲
DCG.4.M10.100.7.2.08	M10	4	1	6.8	8	5.4	77	25	36			▲
DCG.4.M10.150.6.2.08	M10	4	1.5	6.8	8	4.7	63	20	36			▲
DCG.4.M12.100.6.2.10	M12	4	1	8	10	6.3	63	20	36			▲
DCG.4.M12.125.8.2.10	M12	4	1.25	8	10	6.1	77	30	36			▲
DCG.4.M12.125.9.2.08	M12	4	1.25	8	8	6.1	80	40	36			▲
DCG.4.M12.175.6.2.10	M12	4	1.75	8	8	5.5	63	20	36			▲
DCG.4.M12.175.8.2.10	M12	4	1.75	8	10	5.5	77	30	40			▲
DCG.4.M12.175.9.2.08	M12	4	1.75	8	8	5.5	80	40	36			▲

Dimensions in mm

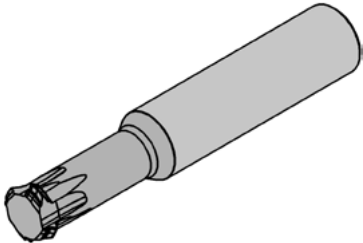
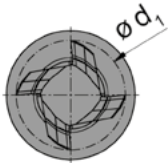
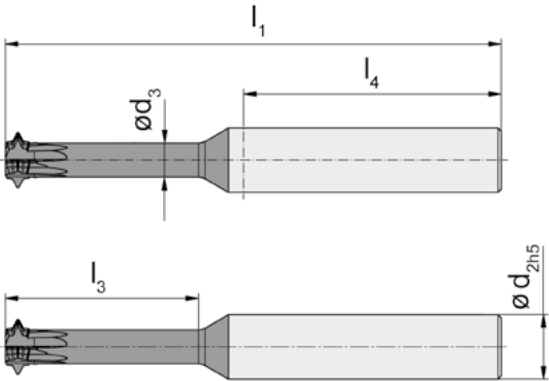
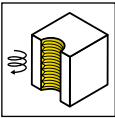
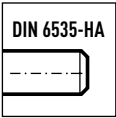
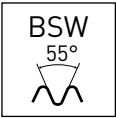
P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-



Coating grades

▲ In stock Δ 2 weeks

Part number	Thread	Z	P	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄		RC25	RC45
DCG.3.60.540.2.04	#5 - 40 UNC	3	0.635	2	4	1.1	39	8	22		▲	
DCG.3.60.632.2.04	#6 - 32UNC #8 - 32UNC	3	0.794	2.2	4	1.05	39	8	22		▲	
DCG.3.60.1024.3.06	#10 - 24UNC #12 - 24UNC	3	1.058	2.9	6	1.4	50	10	36		▲	
DCG.4.60.1213.7.08	1/2" - 13 UNC	4	1.953	7.9	8	5.3	77	-	36			▲
DCG.4.60.1420.3.06	1/4" - 20 UNC	4	1.27	3.5	6	1.7	63	-	36		▲	
DCG.4.60.1428.3.06	1/4" - 28 UNF	4	0.907	3.5	6	2.15	63	-	36		▲	
DCG.4.60.3816.7.08	3/8" - 16 UNC	4	1.588	5.5	8	3.5	77	-	36			▲
DCG.4.60.51618.3.06	5/16" - 18 UNC	4	1.411	4.2	6	2.25	63	-	36			▲
DCG.4.60.71620.7.08	7/16" - 20 UNF	4	1.27	7.2	8	5.35	77	-	36			▲
Dimensions in mm											P	● ●
											M	● ●
											K	● ●
											N	- -
											S	- -
											H	- -



Coating grades

▲ In stock

Δ 2 weeks

Part number	Thread	Z	P	d ₁	d ₂	d ₃	l ₁	l ₃	l ₄	RC45	
DCG.4.55.G14.6.10	G 1/4"	4	1.34	9.5	10	7.1	63	20	36		
DCG.4.55.G18.5.08	G 1/8"	4	0.91	6.6	8	5	63	16	36		
DCG.4.55.G38.8.10	G 3/8"	4	1.34	9.8	10	7.4	77	30	40		
Dimensions in mm										P	●
										M	●
										K	●
										N	-
										S	-
										H	-

Dimensions in mm



Material			Material group	Hardness Brinell (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	Cutting speed Vc (SFM) - Suggested range	
							Cutting speed Vc (m/min) - Suggested range	
							Grade RC25 RC45	fz
			Min-Max	Min-Max				
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015, CK15	590-820 180-250	.0003-.001 0.01-0.03
		~ 0.4% C annealed	P1.2	190	610	A515, 19Mn6	525-720 160-220	.0003-.001 0.01-0.03
		~ 0.4% C quenched	P1.3	210	640	1335, 36Mn5	460-655 140-200	.0003-.001 0.01-0.03
		~ 0.6% C annealed	P1.4	190	610	1055, C55	395-590 120-180	.0003-.001 0.01-0.03
		~ 0.6% C quenched	P1.5	300	1000	1060, CK60	295-490 90-150	.0003-.001 0.01-0.03
		Free cutting steel	P1.6	220	750	1213, 9SMn28	590-820 180-250	.0003-.001 0.01-0.03
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100, 100Cr6	460-655 140-200	.0003-.001 0.01-0.03
		quenched	P2.2	280	960	3415, 14NiCr10	295-490 90-150	.0003-.001 0.01-0.03
		quenched	P2.3	350	1250	4135, 34CrMo4	260-460 80-140	.0003-.001 0.01-0.03
		quenched	P2.4	430	1450	5155, 55Cr3	260-460 80-140	.0003-.001 0.01-0.03
	High alloyed steel (>5%)	annealed	P3.1	200	680	442, X10CrAl18	395-590 120-180	.0003-.001 0.01-0.03
		hardened	P3.2	350	1200	D3, X210Cr2	260-460 80-140	.0003-.001 0.01-0.03
	Cast steel	unalloyed	P4.1	180	590	A27, GE200	590-820 180-250	.0003-.001 0.01-0.03
		alloyed	P4.2	220	750	10295, GX40CrSi28	525-720 160-220	.0003-.001 0.01-0.03
	Sintered steel	soft	P5.1	220	570	P3082, Sint-D39	395-820 120-250	.0003-.001 0.01-0.03
M	Stainless steel	martensitic ferritic	M1.1	200	680	410, X16Cr13	295-490 90-150	.0003-.001 0.01-0.03
		austenitic	M1.2	300	1000	316Ti, X6CrNiMo- Ti17-12-2	260-460 80-140	.0003-.001 0.01-0.03
		austenitic ferritic	M1.3	230	780	316LN, X2CrNiMo- N17-13-3	195-395 60-120	.0003-.001 0.01-0.03

Material		Material group	Hardness Brinell (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	Cutting speed Vc (SFM) - Suggested range		
						Grade RC25 RC45	Cutting speed Vc (m/min) - Suggested range	
						Min-Max	fz	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B, GG-25	625-755 190-230	.0003-.001 0.01-0.03
		high tensile strength	K1.2	250	350	A48 Class 60, GG-40	625-755 190-230	.0003-.001 0.01-0.03
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18, GGG-40	525-720 160-220	.0003-.001 0.01-0.03
		pearlitic	K2.1	260	700	A536 80-60-03, GGG-60	525-720 160-220	.0003-.001 0.01-0.03
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018, GTW-45	525-720 160-220	.0003-.001 0.01-0.03
		pearlitic	K3.2	260	700	A47 Grade 55004, GTS-55-04	525-720 160-220	.0003-.001 0.01-0.03
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800			
		quenched	K4.2	350	1050			
		quenched	K4.3	450	1400			
	N	Al-alloys	not heat treatable	N1.1	30		5005, AlMg1	Up to 3280 Up to 1000
heat treatable			N1.2	100	340	6082, AlMgSi1	655-1970 200-600	.0007-.001 0.02-0.04
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441, AlMgSi6	655-1310 200-400	.0007-.001 0.02-0.04
		6-10% Si	N2.2	100	320	AA 356, AlSi7Mg		
		10-15 % Si	N2.3	130	450	AA 413, AlSi12		
Copper-alloys		pure copper	N3.1	100	340	C11000, Cu	655-1310 200-400	.0007-.001 0.02-0.04
		brass	N3.2	90	310	C38500, CuZn40Pb	655-1310 200-400	.0007-.001 0.02-0.04
		lead-free brass	N3.3	110	430	C28000, CuZn40	655-1310 200-400	.0007-.001 0.02-0.04
		high strength	N3.4	300	1000	C67800, CuZn25Al5-Mn4Fe3	330-525 100-160	.0007-.001 0.02-0.04

Format

G

Material			Material group	Hardness Brinell (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	Cutting speed Vc (SFM) - Suggested range	
							Cutting speed Vc (m/min) - Suggested range	
							Grade RC25 RC45	fz
							Min-Max	Min-Max
S	Heat resistant alloy	annealed	S1.1	200	670		195-395 60-120	.0007-.001 0.02-0.04
		hardened	S1.2	275	930		195-395 60-120	.0007-.001 0.02-0.04
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	100-295 30-90	.0007-.001 0.02-0.04
		hardened	S2.2	350	1200	Inconel 713	100-295 30-90	.0007-.001 0.02-0.04
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	260-395 80-120	.0007-.001 0.02-0.04
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	260-395 80-120	.0007-.001 0.02-0.04
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	260-395 80-120	.0007-.001 0.02-0.04

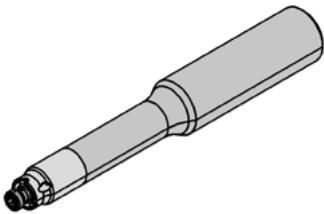
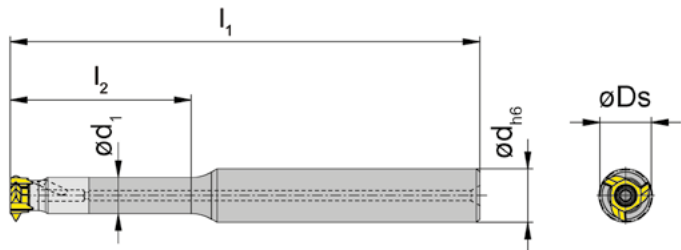
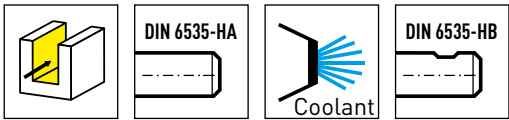
Format



G

SYSTEM 304

Ø MINIMUM BORE DIAMETER = .354" (9mm)



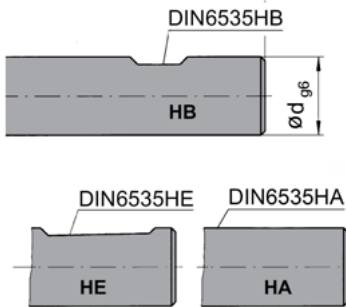
Picture = right hand cutting version

Part number	d	l_1	l_2	d_1	Form	HWS
M304.0508.02A	8	63	20	5.4	HA	304044R
M304.0508.03A	8	70	27	5.4	HA	304044R
M304.0508.02B	8	63	20	5.4	HB	304044R
M304.0508.03B	8	70	27	5.4	HB	304044R

Ds see inserts

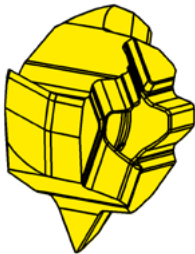
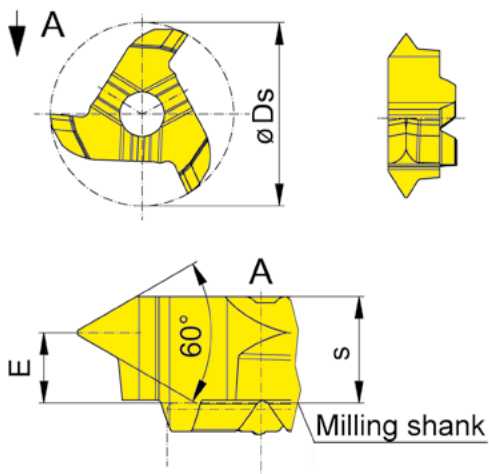
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M304...	1.8.4T6EP	T6PL	0.9 Nm



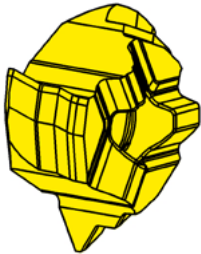
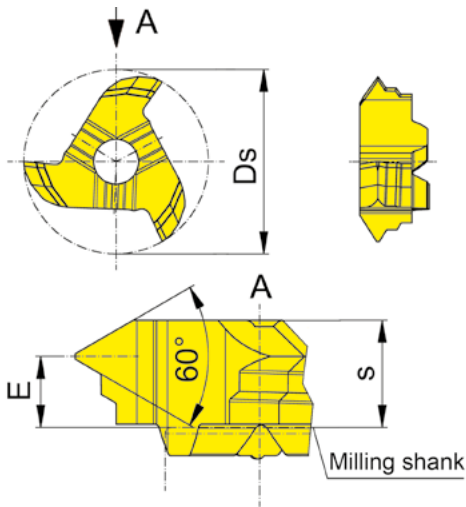
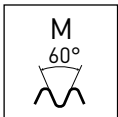
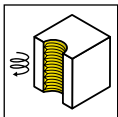
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	AS/45
304.0515.01	0.5	1.5	16 - 48	1.9	2.75	7.7	304044R	▲
Dimensions in mm								P ●
								M ●
								K ●
								N -
								S o
								H -





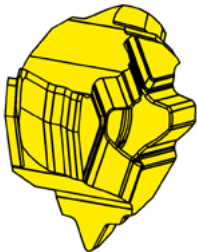
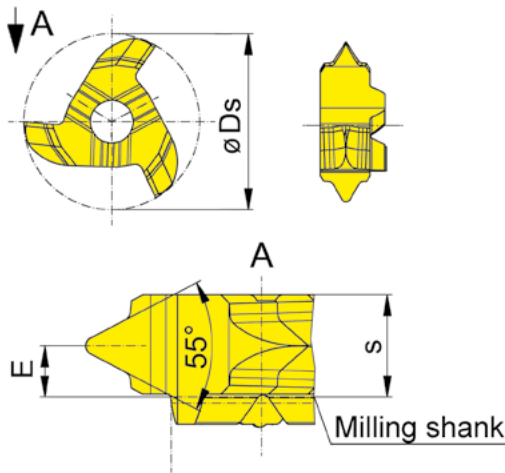
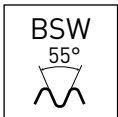
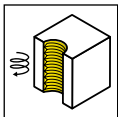
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	P	E	s	Ds	HIS	AS45
304.0815.02	1.5	2	2.75	7.7	304044R	▲
Dimensions in mm						P ●
						M ●
						K ●
						N -
						S o
						H -



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	TPI	E	s	Ds	HIS	AS45
304.5519.02	19	1.5	2.75	7.7	304044R	▲
Dimensions in mm						P ●
						M ●
						K ●
						N -
						S o
						H -

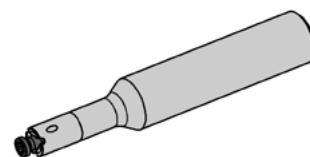
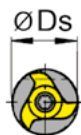
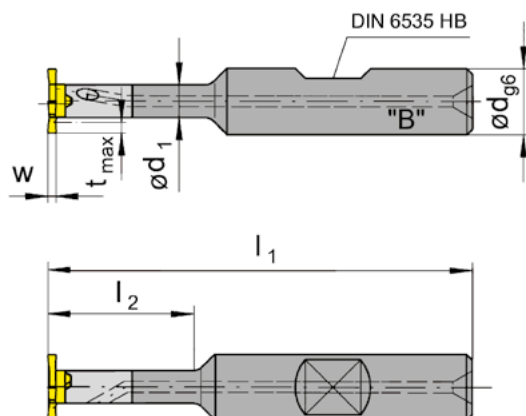


G



SYSTEM 306

Ø MINIMUM BORE DIAMETER = .472" (12mm)



Picture = right hand cutting version

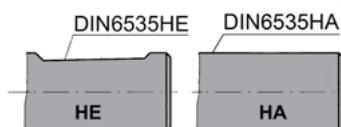
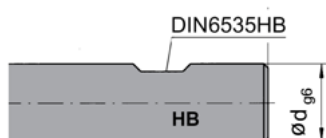
Part number	d	l_2	d_1	Form	HWS
MU306.0500.01B	.500	.827	.236	B	306060R • 306060L
MU306.0500.02B	.500	1.181	.236	B	306060R • 306060L
MU306.0500.03B	.500	1.654	.236	B	306060R • 306060L
MU306.0625.01B	.625	.984	.287	B	306060R • 306060L

w, Ds, tmax see inserts

Dimensions in inch

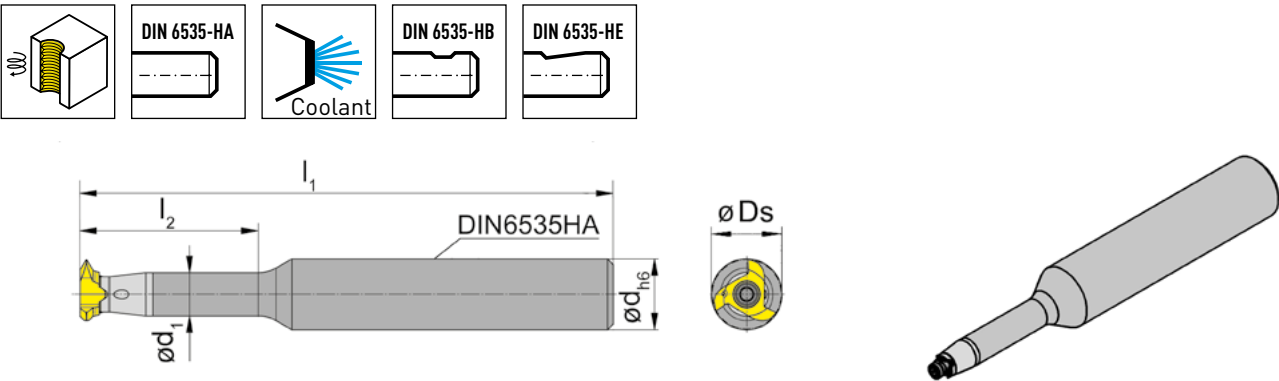


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU306...	2.6.5T8EP	T8PL	1.2 Nm



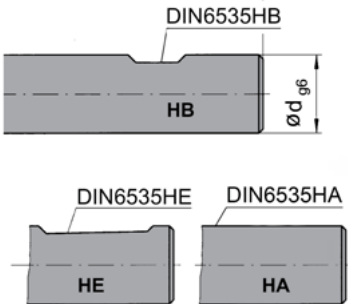
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M306.0712.02A	12	90	30	7.3	HA	306060R • 306060L
M306.0716.01A	16	100	25	7.3	HA	306060R • 306060L
M306.0716.02A	16	110	35	7.3	HA	306060R • 306060L
M306.0712.02B	12	90	30	7.3	HB	306060R • 306060L
M306.0716.01B	16	100	25	7.3	HB	306060R • 306060L
M306.0716.02B	16	110	35	7.3	HB	306060R • 306060L
M306.0712.02E	12	90	30	7.3	HE	306060R • 306060L
M306.0716.01E	16	100	25	7.3	HE	306060R • 306060L

Ds see inserts

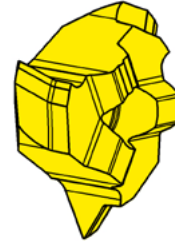
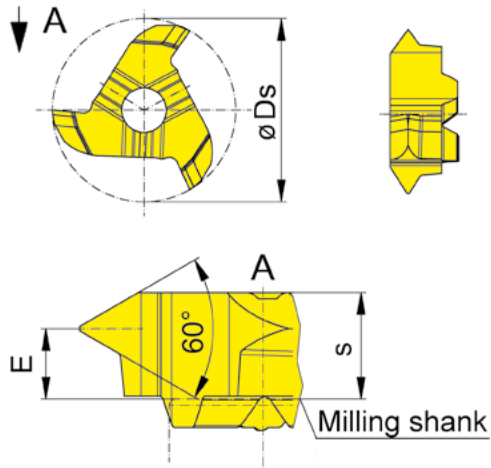
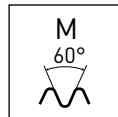
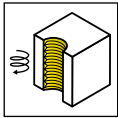
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M306...	2.6.5T8EP	T8PL	1.2 Nm



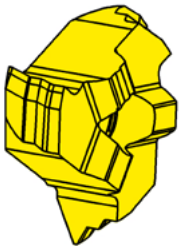
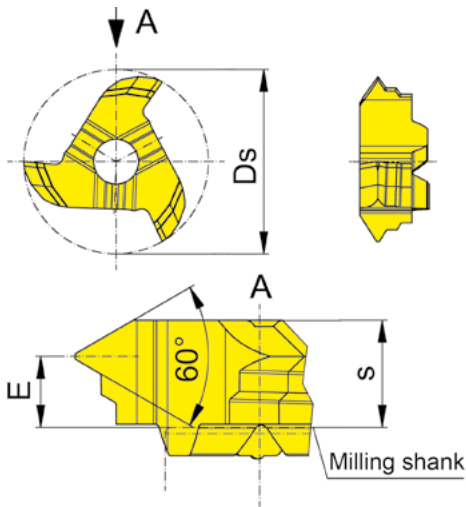
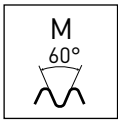
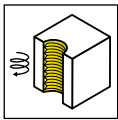
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS		AS45	IG65	TA45	TI25
306.0515.01	0.5	1.5	18 - 48	2.3	3.4	10	306060R	▲	▲	▲	▲	▲
306.0720.01	1	2	12 - 20	1.95	3.4	11.7	306060R	▲	▲	▲	▲	▲
306.0815.01	1.5	1.5	12 - 16	2.25	3.4	11.7	306060R	▲	▲	▲	▲	▲
306.1020.01	2	2	14 - 16	2.2	3.4	10	306060R	▲	▲	▲	▲	▲
306.2530.01	2.5	3	8 - 11	1.7	3.4	11.7	306060R	▲	▲	▲	▲	▲
Dimensions in mm								P	•	•	•	•
								M	•	•	•	•
								K	•	•	•	-
								N	-	-	-	•
								S	o	•	-	o
								H	-	-	-	-



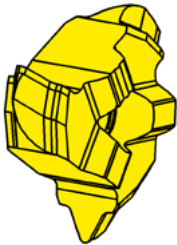
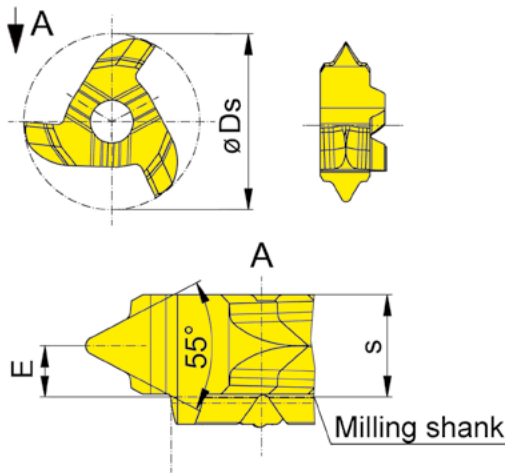
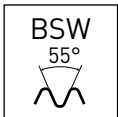
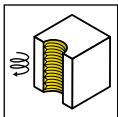
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	P	E	s	Ds	HIS		
						AS45	TA45
306.0510.02	1	2.5	3.4	11.7	306060R	▲	
306.0815.02	1.5	2.25	3.4	11.7	306060R	▲	▲
306.1020.02	2	2.2	3.4	10	306060R	▲	▲
Dimensions in mm						P	● ●
						M	● ●
						K	● ●
						N	- -
						S	o -
						H	- -



Picture = right hand cutting version

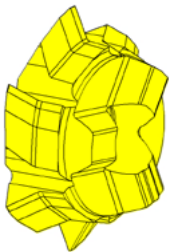
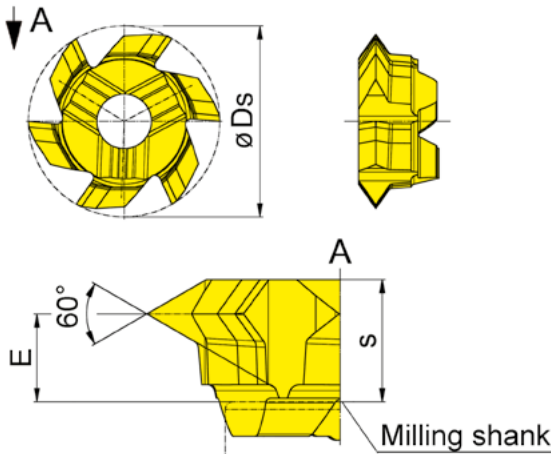
Coating grades

▲ In stock

Δ 2 weeks

Part number	TPI	E	s	Ds	HIS	Coating grades				
						AS45	TA45	TF45	TI25	TN35
306.5511.02	11	1.7	3.4	11.7	306060R	▲	▲		Δ	Δ
306.5514.02	14	2	3.4	11.7	306060R	▲	▲	Δ		Δ
306.5519.02	19	2.2	3.4	11.7	306060R	▲	▲			
306.5519.10.02	19	2.2	3.4	9.7	306060R	▲	▲			
Dimensions in mm						P	•	•	•	•
						M	•	•	•	-
						K	•	•	•	•
						N	-	-	-	-
						S	o	-	-	-
						H	-	-	-	-





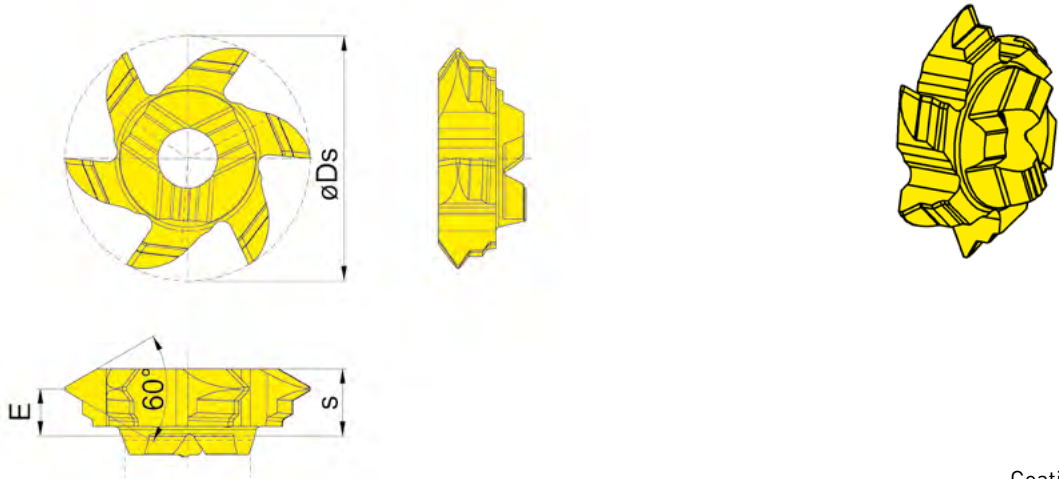
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	AS45	TA45
606.0515.01	0.5	1.5	18 - 48	2.3	3.15	10	306060R	▲	▲
606.0720.01	1	2	12 - 20	1.95	3.15	11.7	306060R	▲	▲
Dimensions in mm								P	● ●
								M	● ●
								K	● ●
								N	- -
								S	o -
								H	- -



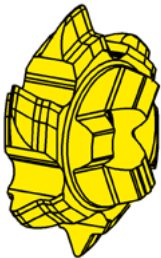
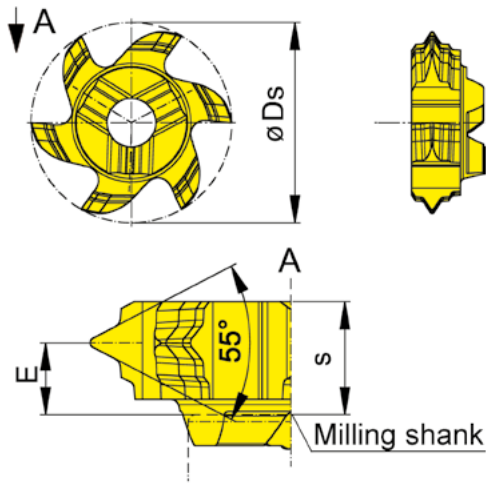
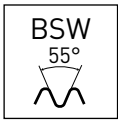
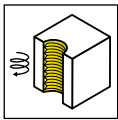
Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	P	E	s	Ds	HIS		AS45	TA45
606.0510.02	1	2.5	3.2	11.7	306060R		▲	▲
606.0815.02	1.5	2.25	3.2	11.7	306060R		▲	
Dimensions in mm							P	●
							M	●
							K	●
							N	-
							S	o
							H	-





Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

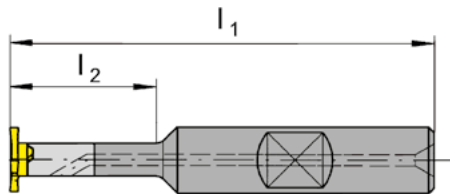
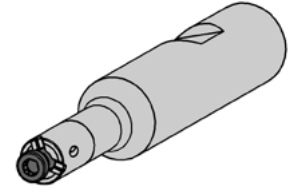
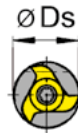
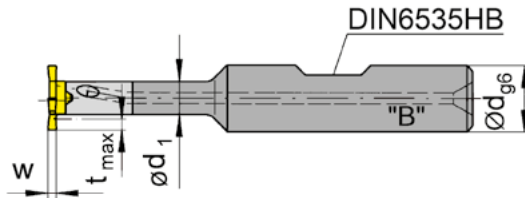
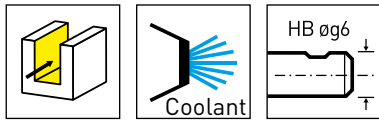
Part number	TPI	E	s	Ds	HIS	Coating grades	
						AS45	TA45
606.5519.10.02	19	2.1	3.3	9.7	306060R	▲	▲
606.5514.02	14	2	3.3	11.7	306060R	▲	▲
606.5519.02	19	2.1	3.3	11.7	306060R	▲	▲
Dimensions in mm						P	•
						M	•
						K	•
						N	-
						S	-
						H	-



G

SYSTEM 308

Ø MINIMUM BORE DIAMETER = .708" (18mm)



Picture = right hand cutting version

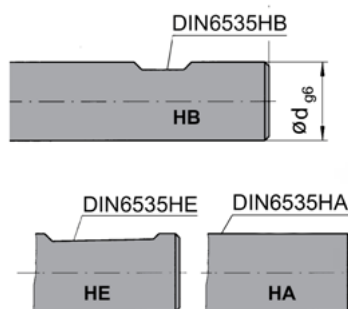
Part number	d	l ₁	l ₂	d ₁	HWS
MU308.0500.01B	.500	3.740	1.142	.315	308080R • 308080L
MU308.0500.02B	.500	4.331	1.654	.315	308080R • 308080L
MU308.0500.03B	.500	4.724	2.205	.315	308080R • 308080L
MU308.0625.01B	.625	4.331	1.299	.374	308080R • 308080L

w, Ds, tmax see inserts

Dimensions in inch

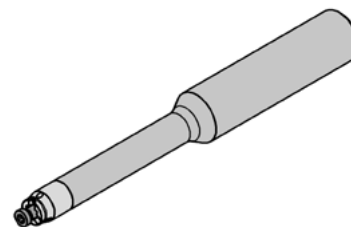
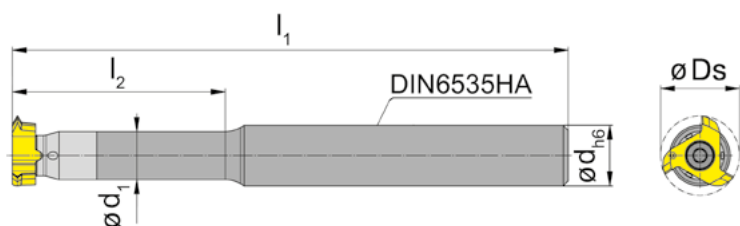


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU308...	3.5.12T10EP	T10PL	3 Nm



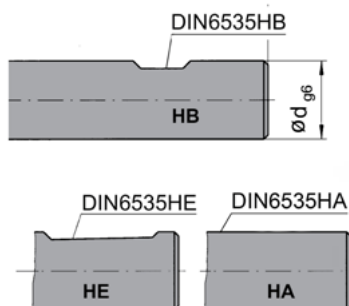
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M308.0012.07A	12	160	-	8	HA	308080R • 308080L
M308.1012.02A	12	110	42	9.5	HA	308080R • 308080L
M308.1016.01A	16	110	33	9.5	HA	308080R • 308080L
M308.1016.02A	16	110	45	9.5	HA	308080R • 308080L
M308.1016.03A	16	130	64	9.5	HA	308080R • 308080L
M308.1012.02B	12	110	42	9.5	HB	308080R • 308080L
M308.1016.01B	16	110	33	9.5	HB	308080R • 308080L
M308.1016.02B	16	110	45	9.5	HB	308080R • 308080L
M308.1016.03B	16	130	64	9.5	HB	308080R • 308080L
M308.1012.02E	12	110	42	9.5	HE	308080R • 308080L
M308.1016.01E	16	110	33	9.5	HE	308080R • 308080L
M308.1016.02E	16	110	45	9.5	HE	308080R • 308080L
M308.1016.03E	16	130	64	9.5	HE	308080R • 308080L

Ds see inserts

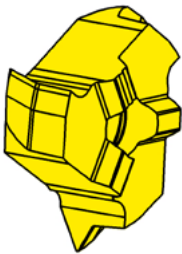
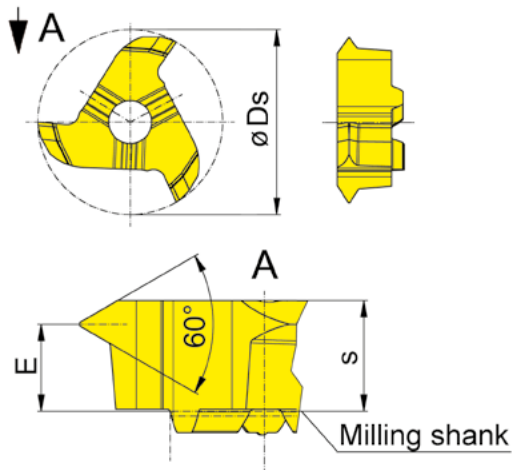
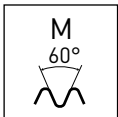
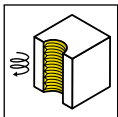
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M308...	3.5.12T10EP	T10PL	3 Nm



Picture = right hand cutting version

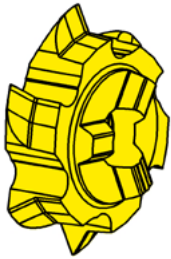
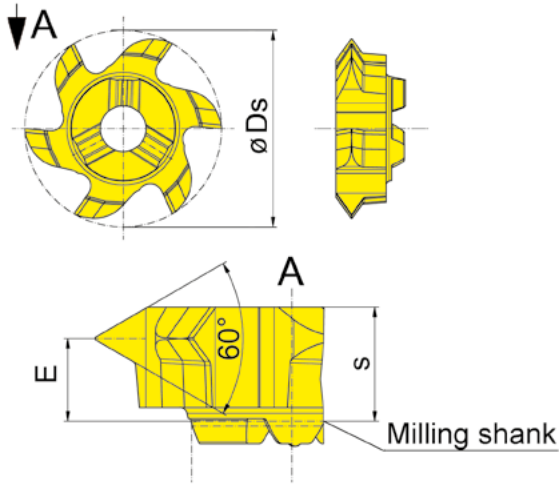
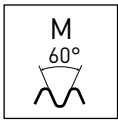
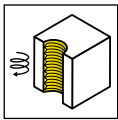
Coating grades

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS		AS45	IG65	TA45	TN35
308.0720.01	1	2	12 - 32	3.3	4.7	15.7	308080R		▲	▲		▲
308.0815.01	1.5	1.5	16 - 20	3.7	4.7	15.7	308080R		▲	▲		▲
308.1325.01	2.5	2.5	11 - 12	3.3	4.7	13.2	308080R		▲	▲	▲	
308.2530.01	2.5	3	6 - 8	2.7	4.7	15.7	308080R		▲	▲		▲
Note: 308.0815.01 is also suitable for thread UNF 7/8"-14									P	●	●	●
									M	●	●	-
									K	●	●	●
									N	-	-	-
									S	○	●	-
									H	-	-	-

Dimensions in mm



Picture = right hand cutting version

Coating grades

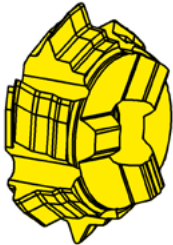
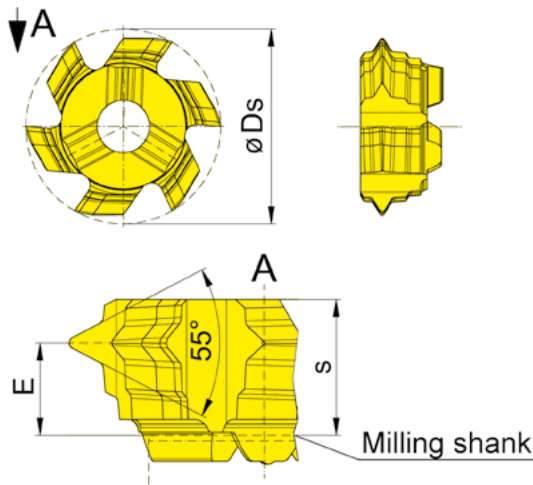
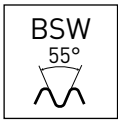
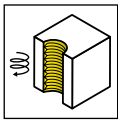
▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS		AS45	TA45	TI25
608.0720.01	1	2	12 - 32	3.3	4.55	15.7	308080R		▲		▲
608.1325.01	2.5	2.5	11 - 12	3.3	4.55	13.2	308080R		▲	▲	
608.2530.01	2.5	3	6 - 8	2.9	4.55	15.7	308080R		▲		▲
Note: 608.1325.01 also suitable for production of thread UNF 7/8"-14									P	●	●
									M	●	●
									K	●	●
									N	-	-
									S	o	o
									H	-	-

Dimensions in mm





Picture = right hand cutting version

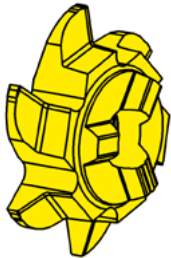
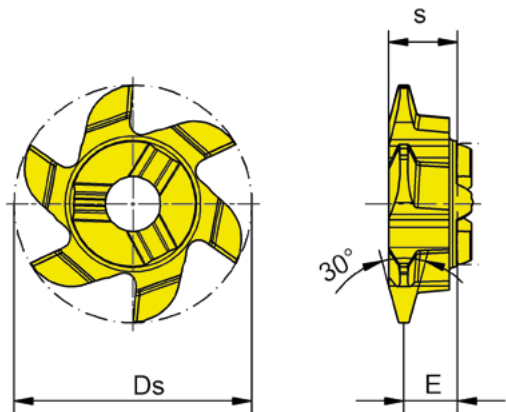
Coating grades

▲ In stock

Δ 2 weeks

Part number	TPI	E	s	Ds	HIS	Coating grades	
						AS45	TA45
608.5514.02	14	3.2	4.7	13.5	308080R	▲	▲
Dimensions in mm						P	●
						M	●
						K	●
						N	-
						S	o
						H	-

G



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	P	s	E	Ds	HIS	EG55	
608.1525.01	2.5	4.55	3.56	15.7	308080R	▲	
608.1730.01	3	4.55	3.4	15.7	308080R		
608.2240.01	4	4.55	3.16	15.7	308080R		
						P	●
						M	●
						K	●
						N	-
						S	-
						H	-

Dimensions in mm

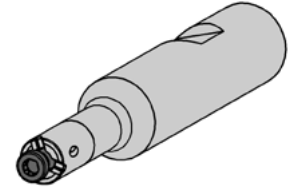
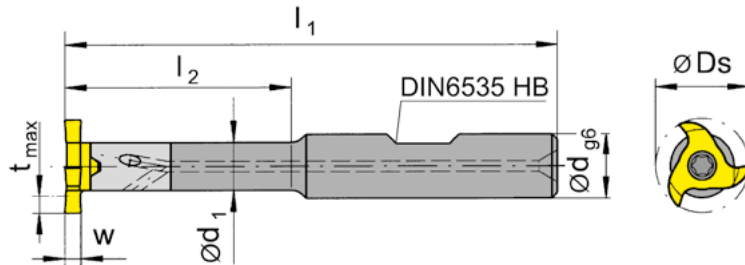
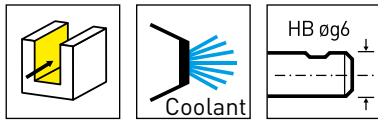


G



SYSTEM 311

Ø MINIMUM BORE DIAMETER = .787" (20mm)



Picture = right hand cutting version

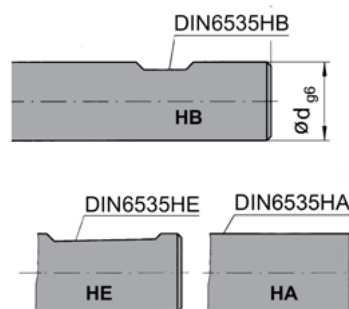
Part number	d	l_1	l_2	d_1	Form	HWS
MU311.0500.01B	.500	3.937	1.260	.354	B	311090R
MU311.0500.02B	.500	3.937	1.772	.354	B	311090R
MU311.0500.03B	.500	4.724	2.520	.354	B	311090R
MU311.0625.01B	.625	3.937	1.260	.354	B	311090R
MU311.0625.02B	.625	4.331	1.772	.354	B	311090R
MU311.0625.03B	.625	5.118	2.520	.354	B	311090R

w, Ds, tmax see inserts

Dimensions in inch

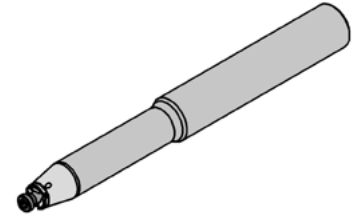
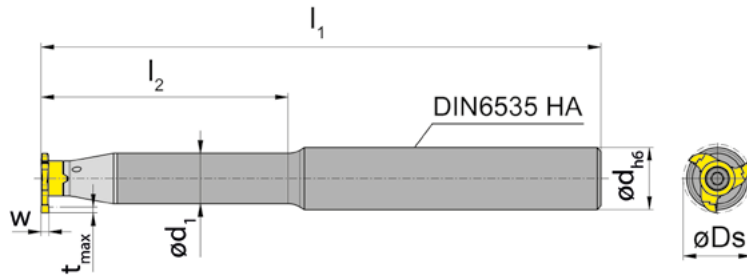
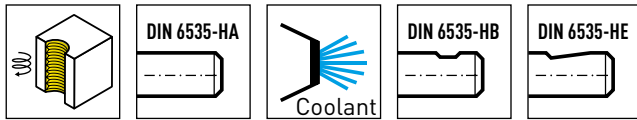


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU311...	4.14T15P	T15PQ	5 Nm



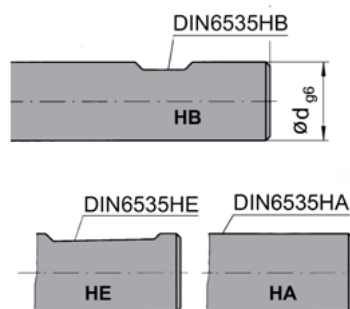
Picture = right hand cutting version

Part number	d	l_1	l_2	d_1	Form	HWS
M311.1316.01A	16	110	32	13	HA	311090R
M311.1316.02A	16	130	45	13	HA	311090R
M311.1316.03A	16	145	64	13	HA	311090R
M311.1316.01B	16	110	32	13	HB	311090R
M311.1316.02B	16	130	45	13	HB	311090R
M311.1316.03B	16	145	64	13	HB	311090R
M311.1316.01E	16	110	32	13	HE	311090R
M311.1316.02E	16	130	45	13	HE	311090R
M311.1316.03E	16	145	64	13	HE	311090R

Ds see inserts

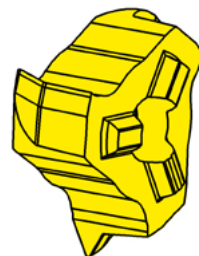
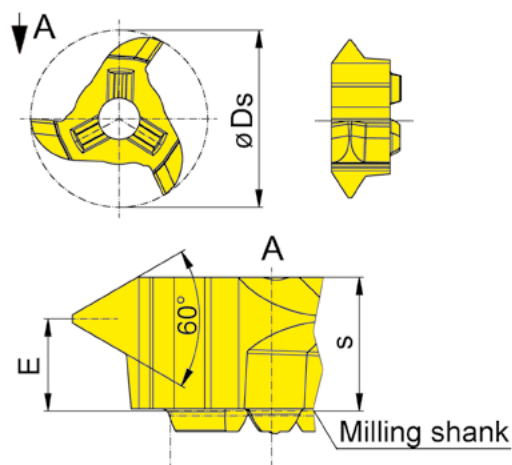
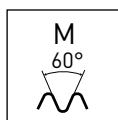
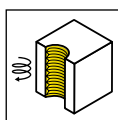
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311...	4.14T15P	T15PQ	5 Nm



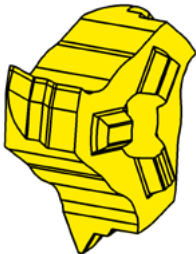
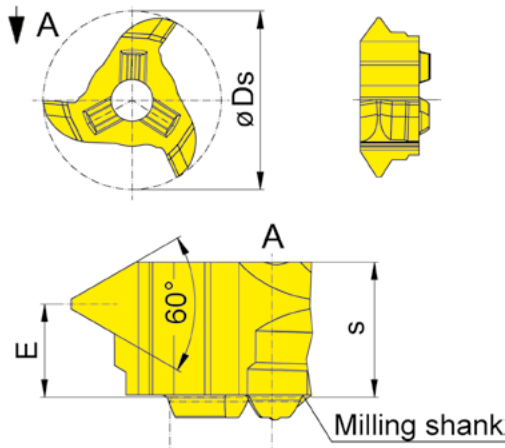
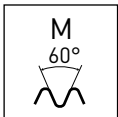
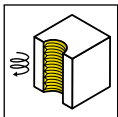
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	AS45	IG65	TA45	TN35
311.0510.01	1	1	24 - 32	5	5.95	17.7	311090R	▲			▲
311.0515.01	0.5	1.5	18 - 32	4.8	5.95	17.7	311090R	▲		▲	
311.0720.01	1	2	12 - 32	4.6	5.95	17.7	311090R	▲	▲		▲
311.0815.01	1.5	1.5	16 - 20	4.8	5.95	17.7	311090R	▲			▲
311.1020.01	2	2	14 - 16	4.6	5.95	17.7	311090R	▲			▲
311.1325.01	2.5	2.5	11 - 12	4.4	5.95	17.7	311090R	▲			▲
311.1630.01	3	3	8 - 9	4.3	5.95	17.7	311090R	▲	▲		▲
311.1835.01	3.5	3.5	7 - 8	4.1	5.95	17.7	311090R	▲			▲
311.2535.01	2.5	3.5	6 - 8	3.7	5.95	17.7	311090R	▲	▲		▲
Dimensions in mm								P	•	•	•
								M	•	•	-
								K	•	•	•
								N	-	-	-
								S	o	•	-
								H	-	-	-



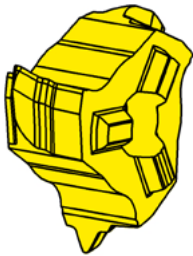
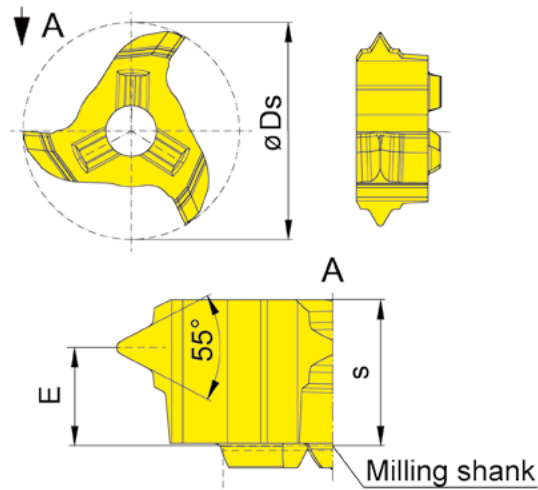
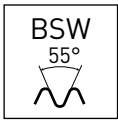
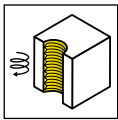
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	P	E	s	Ds	HIS	Coating grades	
						AS45	TN35
311.0815.02	1.5	4.8	5.95	17.7	311090R	▲	▲
311.0917.02	1.75	4.7	5.95	17.7	311090R	▲	▲
311.1020.02	2	4.6	5.95	17.7	311090R	▲	▲
311.1325.02	2.5	4.4	5.95	17.7	311090R	▲	Δ
311.1630.02	3	4.3	5.95	17.7	311090R	▲	▲
311.1835.02	3.5	4.1	5.95	17.7	311090R	▲	▲
Dimensions in mm						P	● ●
						M	● -
						K	● ●
						N	- -
						S	o -
						H	- -



Picture = right hand cutting version

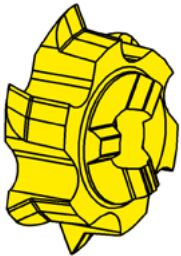
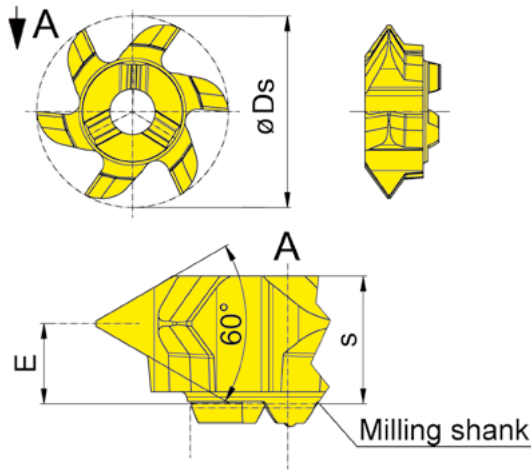
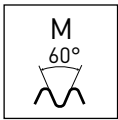
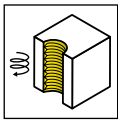
Coating grades

▲ In stock

Δ 2 weeks

Part number	TPI	E	s	Ds	HIS		AS45	TN35
311.5511.02	11	4	5.95	17.7	311090R		▲	▲
311.5514.02	14	4.35	5.95	17.7	311090R		▲	▲
Dimensions in mm						P	●	●
						M	●	-
						K	●	●
						N	-	-
						S	○	-
						H	-	-





Picture = right hand cutting version

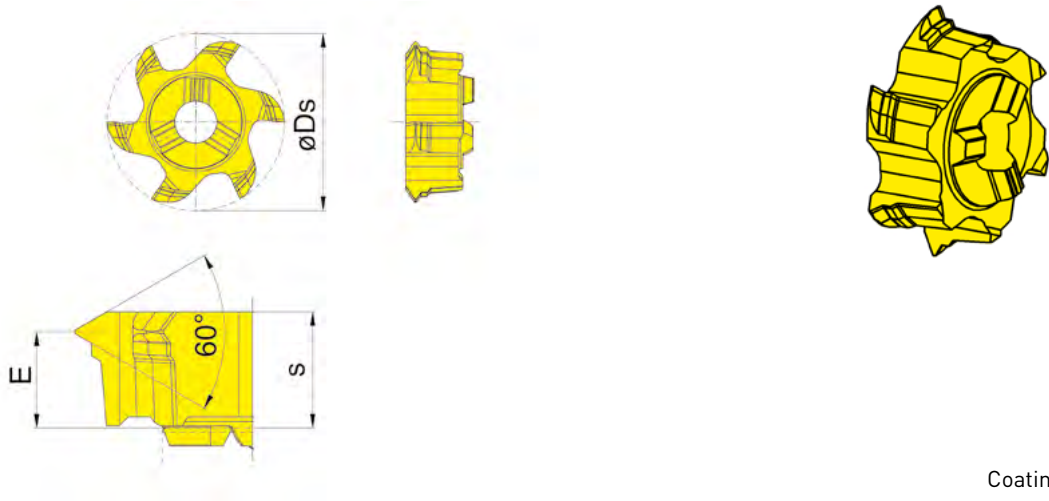
Coating grades

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	Coating grades			
								AS45	IG65	TA45	TI25
611.0515.01	0.5	1.5	24 - 32	4.8	5.75	17.7	311090R	▲		▲	
611.0720.01	1	2	12 - 32	4.6	5.75	17.7	311090R	▲	▲		▲
611.2535.01	2.5	3.5	6 - 12	3.7	5.75	17.7	311090R	▲			▲
Note: 611.2535.01 also suitable for production of thread UNF 1 1/4"-12, 1 1/8"-12 and 1 5/8"-12								P	●	●	●
								M	●	●	●
								K	●	●	-
								N	-	-	●
								S	○	●	○
								H	-	-	-

Dimensions in mm



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	P	E	s	Ds	HIS	AS45
611.0815.02	1.5	4.8	5.95	17.7	311090R	▲
	P	•				
	M	•				
	K	•				
	N	-				
	S	o				
	H	-				

Dimensions in mm

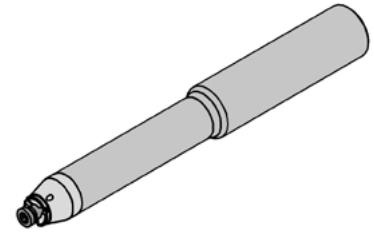
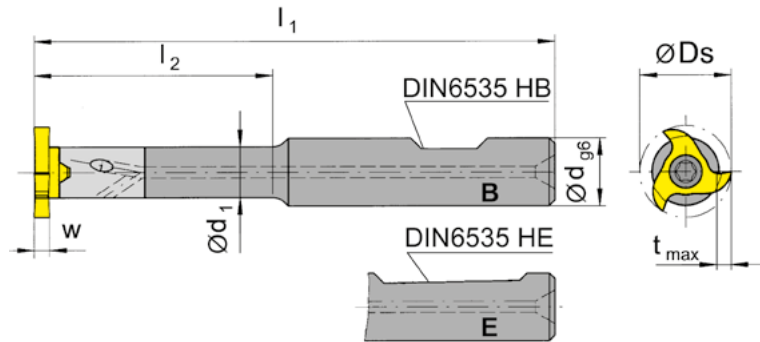
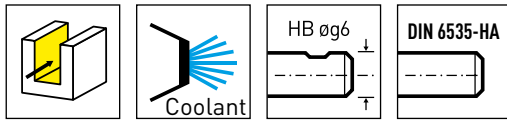


G



SYSTEM 313

Ø MINIMUM BORE DIAMETER = 1.062" (27mm)



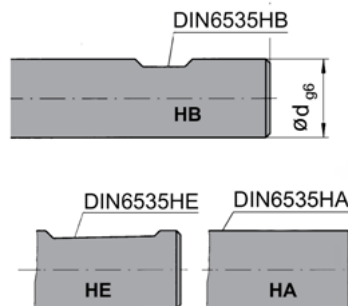
Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU313.0500.01B	.500	3.937	-	-	B	313113R • 313113L
MU313.0500.02B	.500	5.118	-	-	B	313113R • 313113L
MU313.0625.02B	.625	5.118	2.362	.472	B	313113R • 313113L
MU313.0625.03B	.625	6.299	3.346	.472	B	313113R • 313113L
MU313.0750.04B	.750	4.331	1.772	.630	B	313113R • 313113L
MU313.0750.05B	.750	5.118	2.559	.630	B	313113R • 313113L
MU313.1515.08A	.625	7.874	-	-	A	313113R • 313113L

w, Ds, tmax see inserts

Dimensions in inch

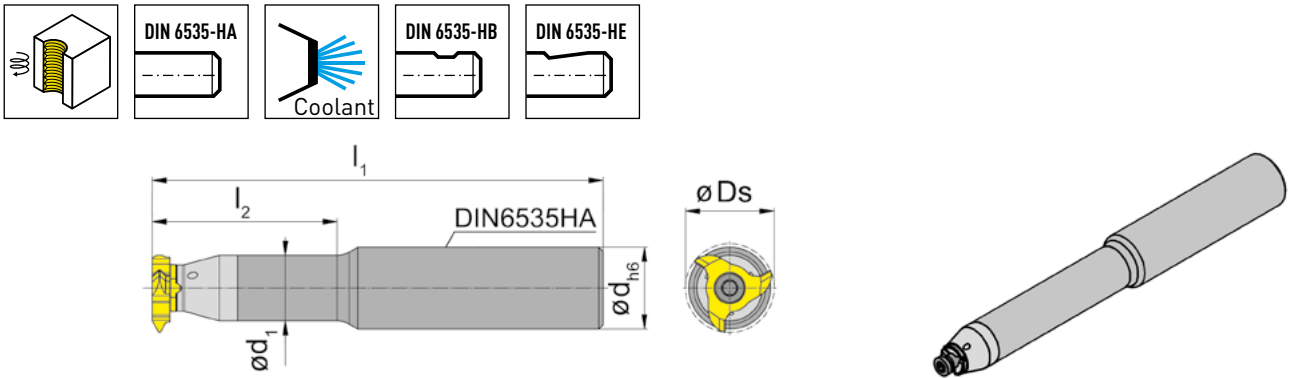


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU313...	5.14T20P	T20PQ	6.5 Nm



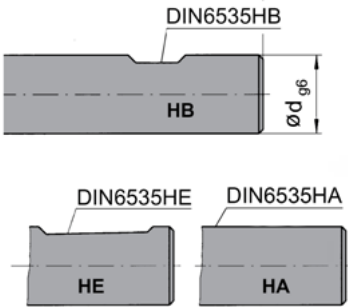
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M313.1620.01A	20	110	45	16	HA	313113R • 313113L
M313.1620.02A	20	130	65	16	HA	313113R • 313113L
M313.1620.03A	20	160	85	16	HA	313113R • 313113L
M313.1620.01B	20	110	45	16	HB	313113R • 313113L
M313.1620.02B	20	130	65	16	HB	313113R • 313113L
M313.1620.03B	20	160	85	16	HB	313113R • 313113L
M313.1620.01E	20	110	45	16	HE	313113R • 313113L
M313.1620.02E	20	130	65	16	HE	313113R • 313113L
M313.1620.03E	20	160	85	16	HE	313113R • 313113L

Ds see inserts

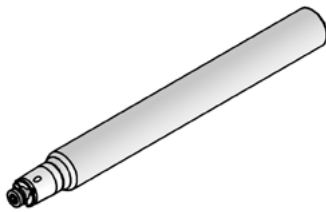
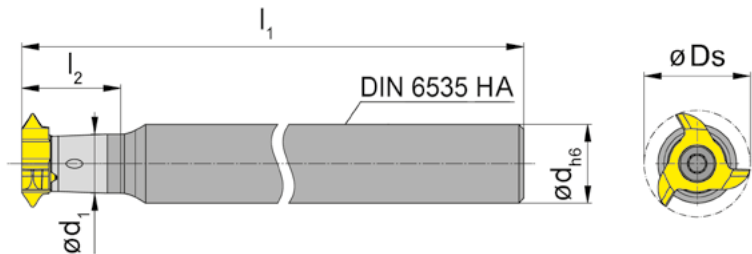
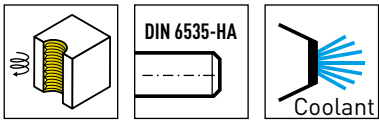
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.14T20P	T20PQ	6.5 Nm



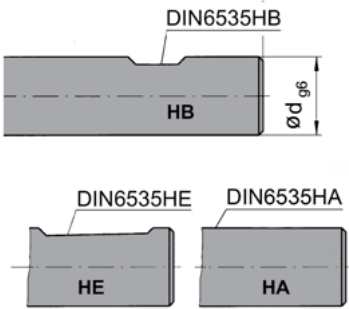
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M313.0016.07A	16	160	20	12	HA	313113R • 313113L

Ds see inserts

Dimensions in mm

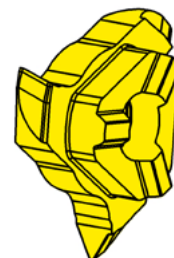
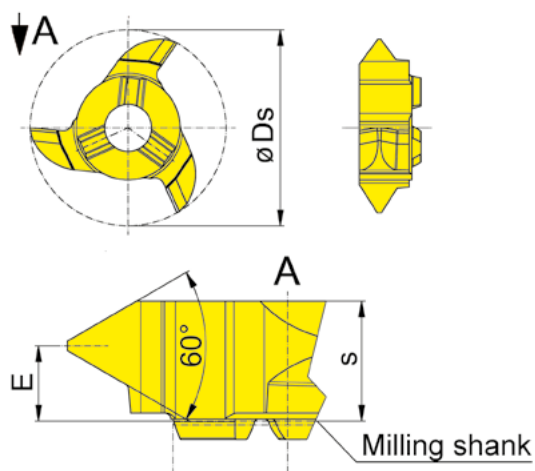
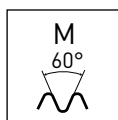
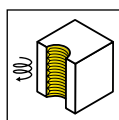
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313.0016.07A	5.14T20P	T20PQ	6.5 Nm





Coating grades

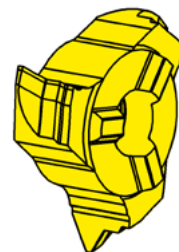
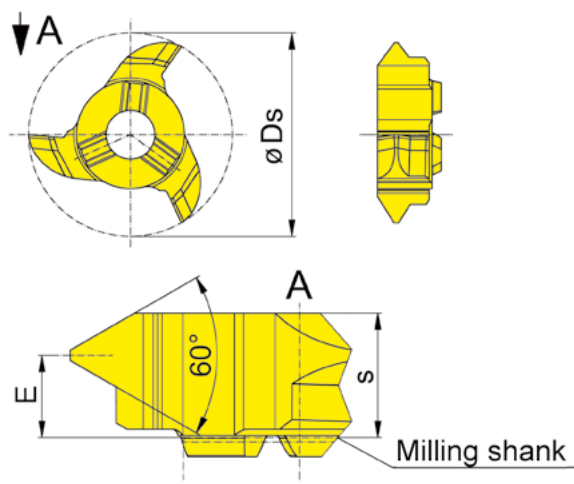
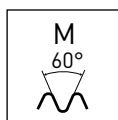
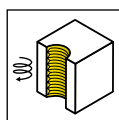
Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS		AS45	EG55	IG65	TN35
313.0720.01	1	2	12 - 32	4.6	5.9	21.7	313113R		▲	▲	▲	▲
313.0815.01	1.5	1.5	16 - 20	4.8	5.9	21.7	313113R		▲	▲		▲
313.1020.01	2	2	14 - 16	4.6	5.9	21.7	313113R		▲	▲		▲
313.1630.01	3	3	8 - 10	4.3	5.9	21.7	313113R		▲	▲	▲	▲
313.1835.01	3.5	3.5	7 - 8	4.1	5.9	21.7	313113R		▲	▲		▲
313.2140.01	4	4	7 - 8	3.9	5.9	21.7	313113R		▲	▲		▲
313.2445.01	4.5	4.5	6 - 7	3.7	5.9	21.7	313113R		▲	▲		▲
313.2545.01	2.5	4.5	6 - 12	3.7	5.9	21.7	313113R		▲	▲	▲	▲
Note:								P	●	●	●	●
313.1020.01 also suitable for production of thread UNF 1 1/4"-12, 1 1/8"-12 and 1 5/8"-12								M	●	●	●	-
								K	●	●	●	●
Dimensions in mm								N	-	-	-	-
								S	O	-	●	-
								H	-	-	-	-

Dimensions in mm



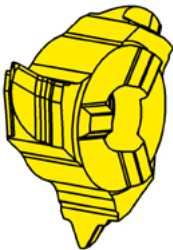
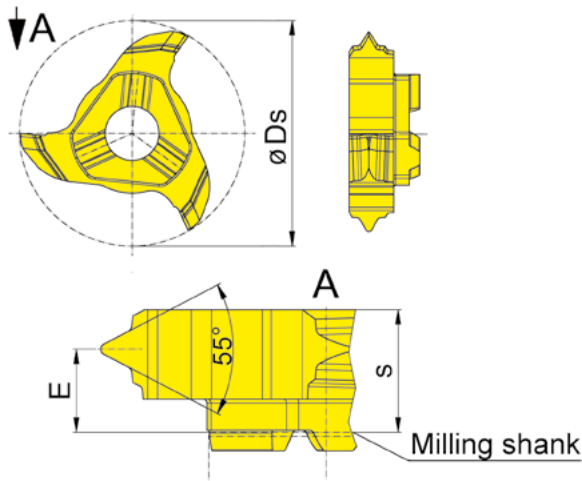
Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	P	E	s	Ds	HIS	AS45	EG55	TN35
313.0815.02	1.5	4.8	5.9	21.7	313113R	▲	▲	▲
313.1020.02	2	4.6	5.9	21.7	313113R	▲	▲	▲
313.1630.02	3	4.3	5.9	21.7	313113R	▲	▲	▲
313.1835.02	3.5	4.1	5.9	21.7	313113R	▲	▲	▲
313.2140.02	4	3.9	5.9	21.7	313113R	▲	▲	▲
313.2445.02	4.5	3.8	5.9	21.7	313113R	▲	▲	▲
Dimensions in mm						P	•	•
						M	•	•
						K	•	•
						N	-	-
						S	o	-
						H	-	-

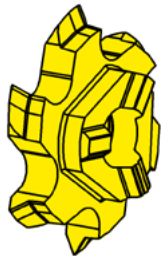
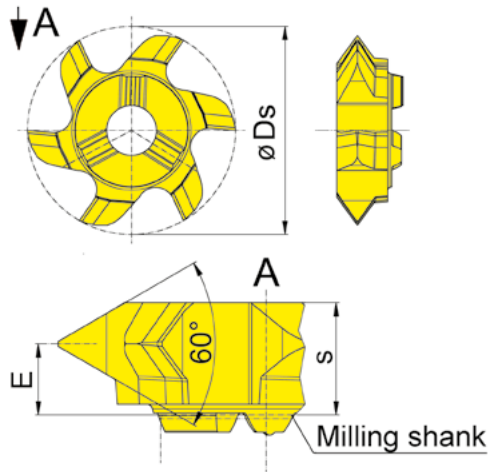


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	TPI	E	s	Ds	HIS	Coating grades		
						AS45	EG55	TN35
313.5506.02	6	3	5.9	21.7	313113R	▲	▲	Δ
313.5508.02	8	3.6	5.9	21.7	313113R	▲	▲	▲
313.5511.02	11	4	5.9	21.7	313113R	▲	▲	▲
Dimensions in mm						P	●	●
						M	●	-
						K	●	●
						N	-	-
						S	o	-
						H	-	-



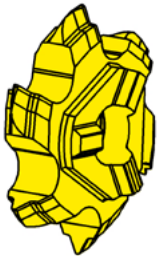
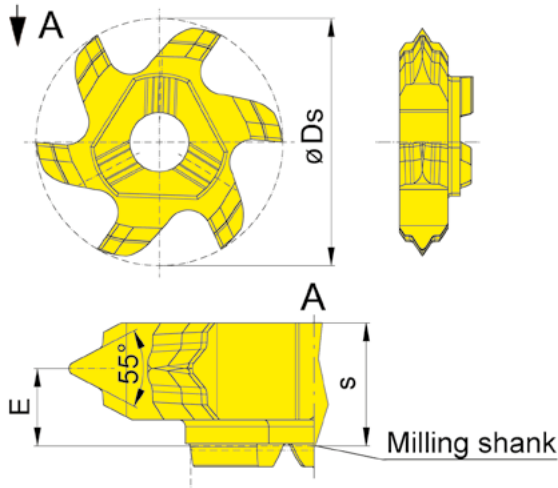
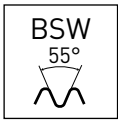
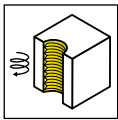
Coating grades

Picture = right hand cutting version

▲ In stock Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS		AS45	EG55	TI25
613.0720.01	1	2	12 - 32	4.6	5.6	21.7	313113R		▲	▲	▲
613.2545.01	2.5	4.5	6 - 12	3.7	5.75	21.7	313113R		▲	▲	▲
Dimensions in mm								P	●	●	●
								M	●	●	●
								K	●	●	-
								N	-	-	●
								S	o	-	o
								H	-	-	-





Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

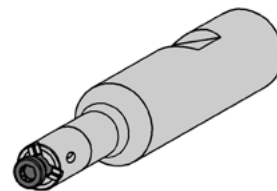
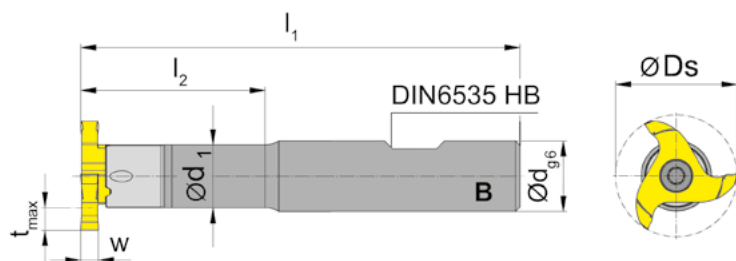
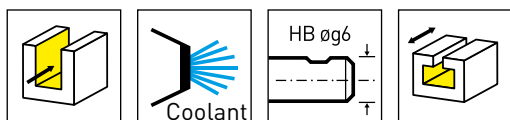
Part number	TPI	E	s	Ds	HIS	Coating grades				
						AS45	EG55	TA45	Ti25	
613.5511.02	11	3.4	5.4	21.7	313113R	▲	▲	▲	▲	
Dimensions in mm						P	●	●	●	●
						M	●	●	●	●
						K	●	●	●	-
						N	-	-	-	●
						S	○	-	-	○
						H	-	-	-	-



G

SYSTEM 328

Ø MINIMUM BORE DIAMETER = 1.259" (32mm)



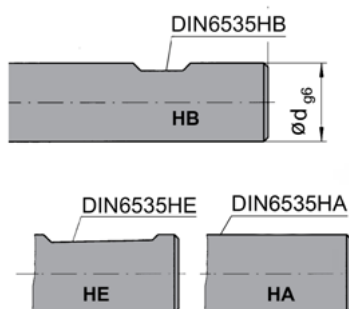
Part number	d	l ₁	l ₂	d ₁	HWS
MU328.0500.01B	.500	3.937	3.937	.563	328143R
MU328.0500.02B	.500	5.118	5.118	.563	328143R
MU328.0625.01B	.625	3.937	1.654	.563	328143R
MU328.0625.02B	.625	5.118	2.362	.563	328143R
MU328.0625.03B	.625	6.299	3.346	.563	328143R
MU328.0750.00B	.750	4.094	1.378	.531	328143R
MU328.0750.03B	.750	6.299	3.346	.563	328143R

w, Ds, tmax see inserts

Dimensions in inch

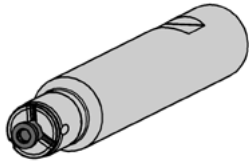
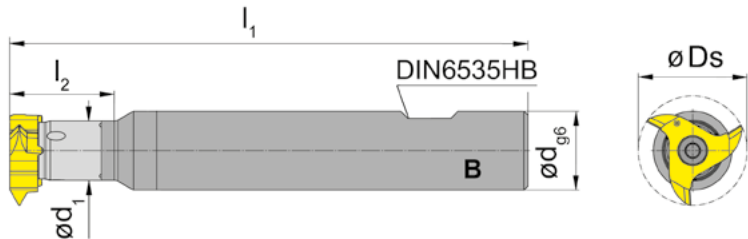
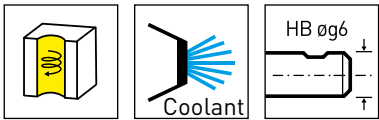


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU328....	5.14T20P	T20PQ	6.5 Nm
MU328.0750.00B	5.13T20KP	T20PQ	6.5 Nm



Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	HWS
SMU328.0750.05B	.750	5.118	.984	.591	328143R
SMU328.0750.06B	.750	5.709	-	.750	328143R
SMU328.0750.07B	.750	6.299	.984	.591	328143R
SMU328.0750.08B	.750	7.874	-	.750	328143R

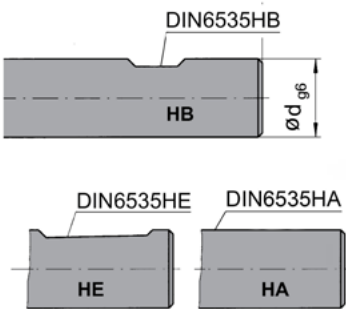
Shank material: Tungsten alloy for excellent vibration resistance.

Ds see inserts

Dimensions in inch



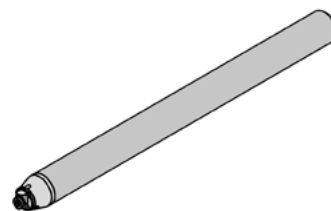
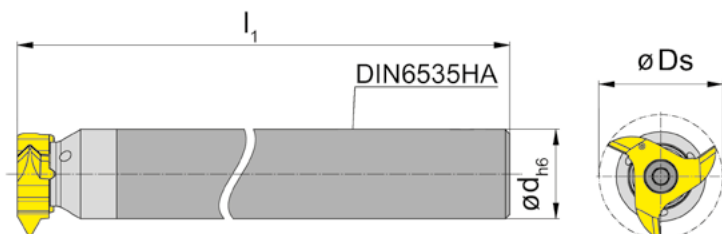
Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
SMU328.0750....	5.14T20P	T20PQ	6.5 Nm
SMU328.0750....	5.17T20P	T20PQ	6.5 Nm





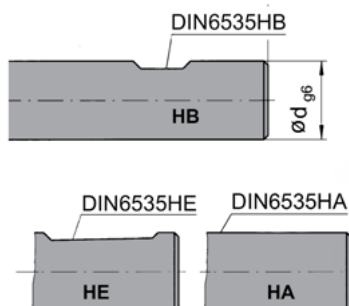
Picture = right hand cutting version

Part number	d	l_1	Form	HWS
M328.0020.10A	20	250	HA	328143R
M328.0020.D.05A	20	145	HA	328143R
M328.0020.D.06A	20	160	HA	328143R
M328.0020.D.07A	20	180	HA	328143R
M328.0020.D.05B	20	145	HB	328143R
M328.0020.D.06B	20	160	HB	328143R
M328.0020.D.07B	20	180	HB	328143R
M328.0020.D.05E	20	145	HE	328143R
M328.0020.D.06E	20	160	HE	328143R
M328.0020.D.07E	20	180	HE	328143R

Ds see inserts

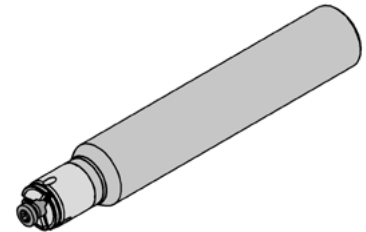
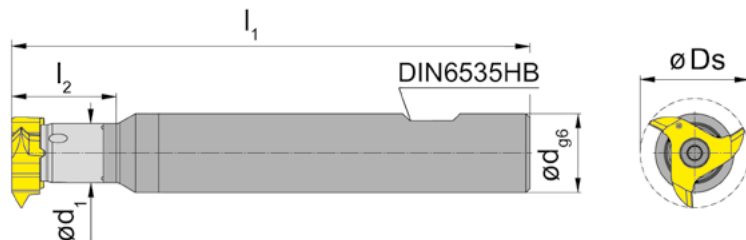
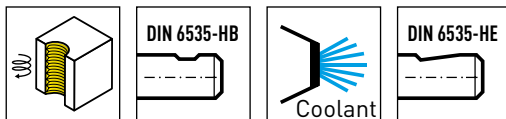
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328.0020.10A	5.14T20P	T20PQ	6.5 Nm
M328.0020.D....	5.17T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

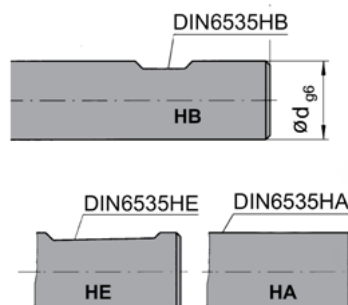
Part number	d	l_1	l_2	d_1	Form	HWS
SM328.0020.05B	20	130	25	15	HB	328143R
SM328.0020.06B	20	145	-	20	HB	328143R
SM328.0020.07B	20	160	25	15	HB	328143R
SM328.0020.08B	20	200	-	20	HB	328143R
SM328.0020.05E	20	130	25	15	HE	328143R
SM328.0020.06E	20	145	-	20	HE	328143R
SM328.0020.07E	20	160	25	15	HE	328143R
SM328.0020.08E	20	200	-	20	HE	328143R

Shank material: Tungsten alloy for excellent vibration resistance.

Ds see inserts

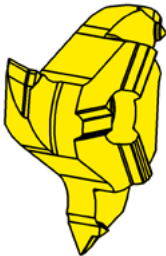
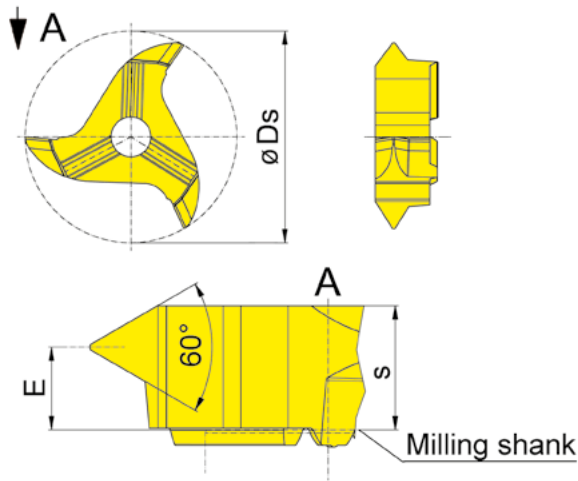
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
SM328...	5.17T20P	T20PQ	6.5 Nm

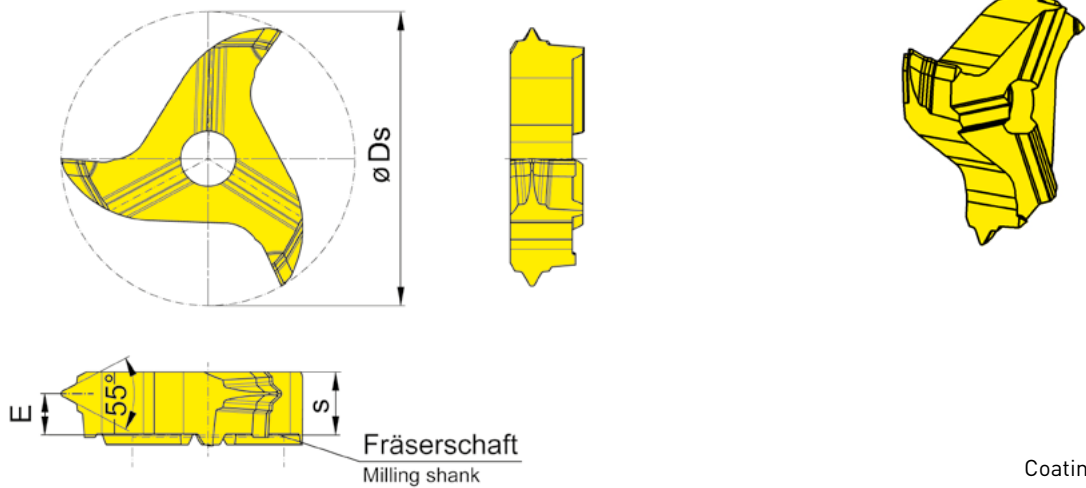
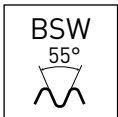
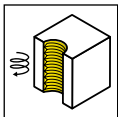


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS		AS45	IG65	Ti25	TN35	
328.0720.01	1	2	14 - 32	4.6	5.95	27.7	328143R		▲			▲	
328.1525.01	1.5	2.5	12 - 20	4.3	5.95	27.7	328143R		▲	▲		▲	
328.3050.01	3	5	6 - 10	4.8	7.2	27.7	328143R		▲	▲	▲	▲	
328.5060.01	5	6	5 - 6	4.4	7.2	27.7	328143R		▲			▲	
Dimensions in mm									P	●	●	●	●
									M	●	●	●	-
									K	●	●	-	●
									N	-	-	●	-
									S	○	●	○	-
									H	-	-	-	-



Picture = right hand cutting version

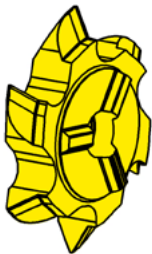
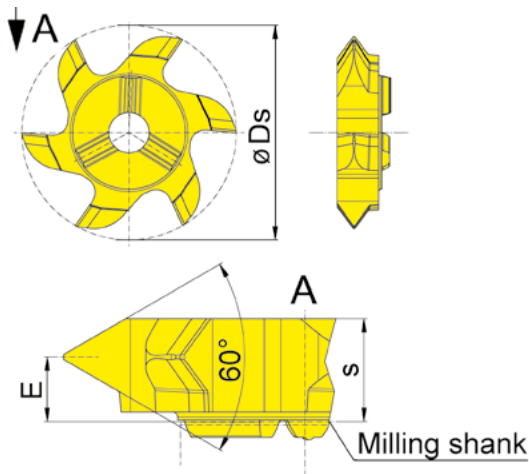
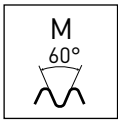
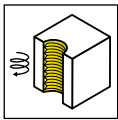
Coating grades

▲ In stock Δ 2 weeks

Part number	TPI	E	s	Ds	HIS	AS45
328.5511.02	11	3.9	5.95	27.7	328143R	▲
						P ●
						M ●
						K ●
						N -
						S o
						H -

Dimensions in mm





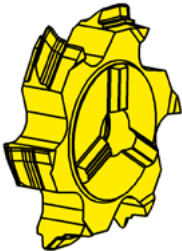
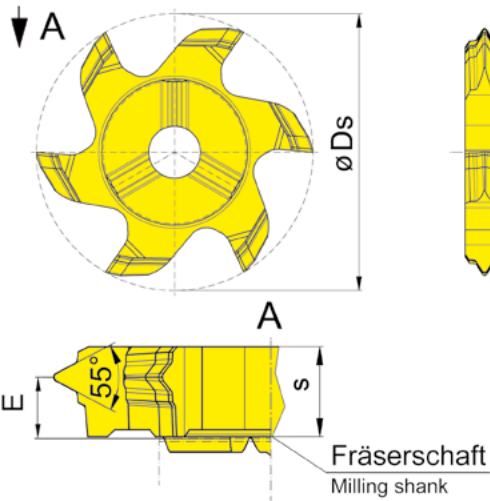
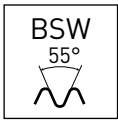
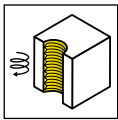
Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	AS45	TI25
628.1525.01	1.5	2.5	12 - 20	4.8	6	27.7	328143R	▲	▲
628.3050.01	3	5	6 - 10	3.7	5.75	27.7	328143R	▲	▲
628.5060.01	5	6	5 - 6	3.2	5.75	27.7	328143R	▲	▲
Dimensions in mm								P	●
								M	●
								K	●
								N	-
								S	o
								H	-



Picture = right hand cutting version

Coating grades

▲ In stock

Δ 2 weeks

Part number	TPI	E	s	Ds	HIS	AS45
628.5511.02	11	3.9	5.85	27.7	328143R	▲
						P ●
						M ●
						K ●
						N -
						S o
						H -

Dimensions in mm

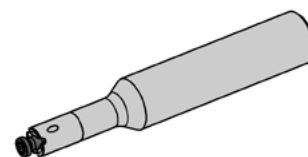
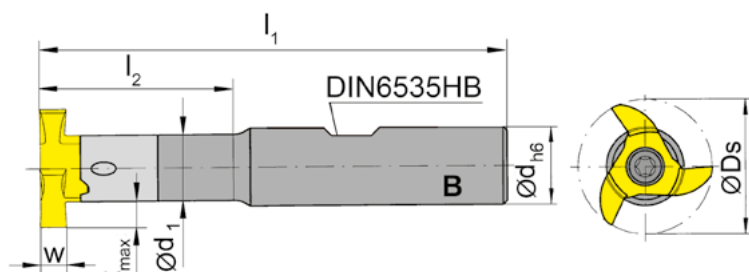
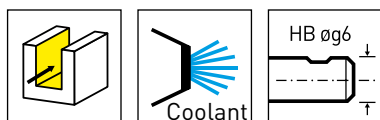


G



SYSTEM 332

Ø MINIMUM BORE DIAMETER = 1.653" (42mm)



Picture = right hand cutting version

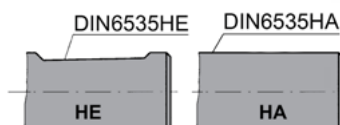
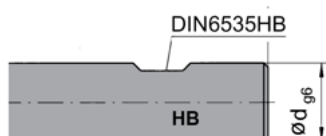
Part number	d	l ₁	l ₂	d ₁	HWS
MU332.0625.01B	.625	3.937	1.654	.563	332143R
MU332.0625.02B	.625	5.118	2.362	.563	332143R
MU332.0625.03B	.625	6.299	3.346	.563	332143R
MU332.0750.01B	.750	3.937	1.654	.563	332143R
MU332.0750.02B	.750	5.118	2.362	.563	332143R
MU332.0750.03B	.750	6.299	3.346	.563	332143R

w, Ds, tmax see inserts

Dimensions in inch

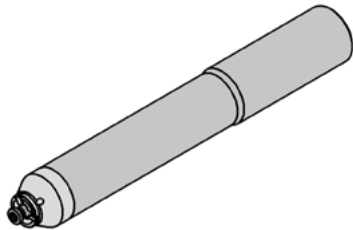
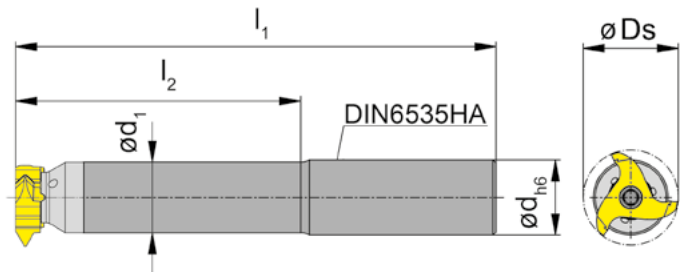
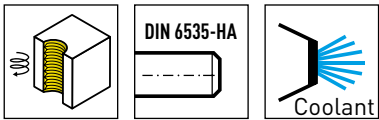


Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU332...	5.17T20P	T20PQ	14 Nm



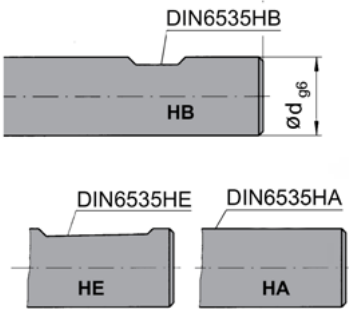
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M332.2325.06A	25	160	95	23.5	HA	332143R
M332.2325.07A	25	180	115	23.5	HA	332143R
M332.2325.08A	25	200	135	23.5	HA	332143R
M332.2325.09A	25	250	185	23.5	HA	332143R

Ds see inserts

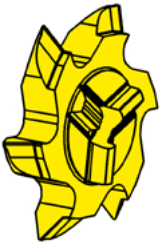
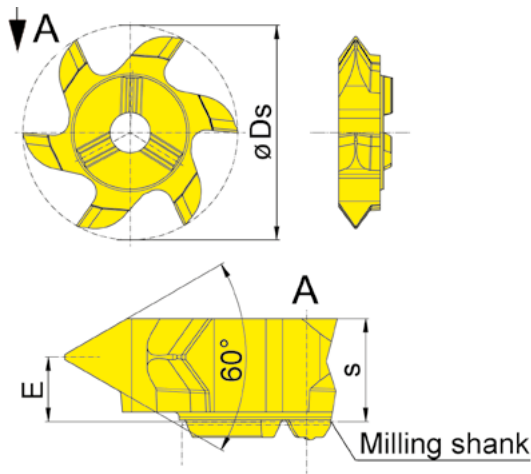
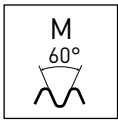
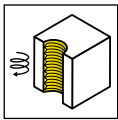
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M332...	5.17T20P	T20PQ	14 Nm



Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	AS45	TI25
632.2545.01	2.5	4.5	6 - 12	3.7	5.8	31.7	332143R	▲	▲
632.4060.01	4	6	5 - 7	3.2	5.8	31.7	332143R	▲	▲
Dimensions in mm								P	● ●
								M	● ●
								K	● -
								N	- ●
								S	o o
								H	- -

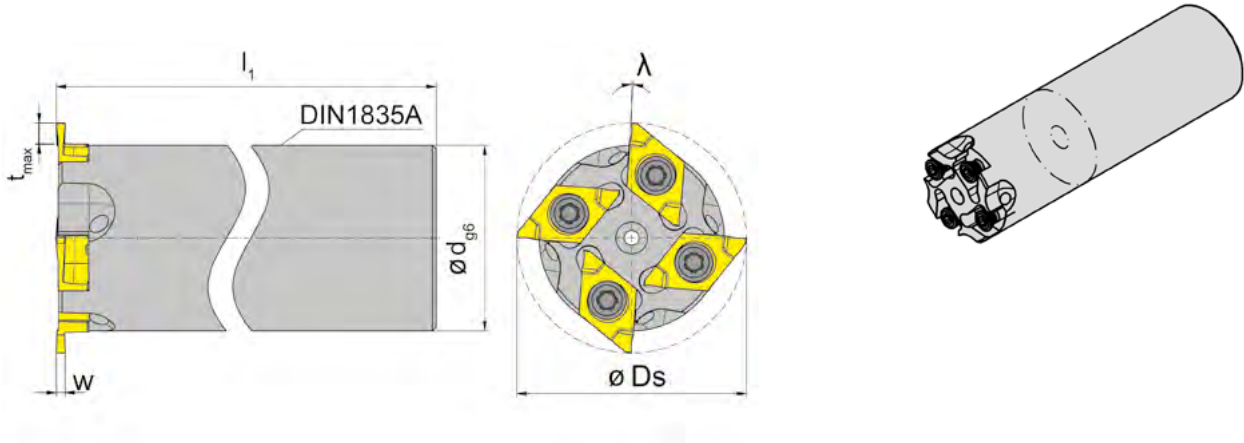
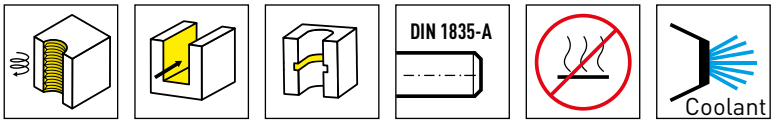


G



SYSTEM M275

Ø MINIMUM BORE DIAMETER = 1.771" (45mm)



Picture = right hand cutting version

Part number	Ds	d	l ₁	λ	HWS
M275.031.D25.3.04A	31	25	125	4°	275041R • 275043R

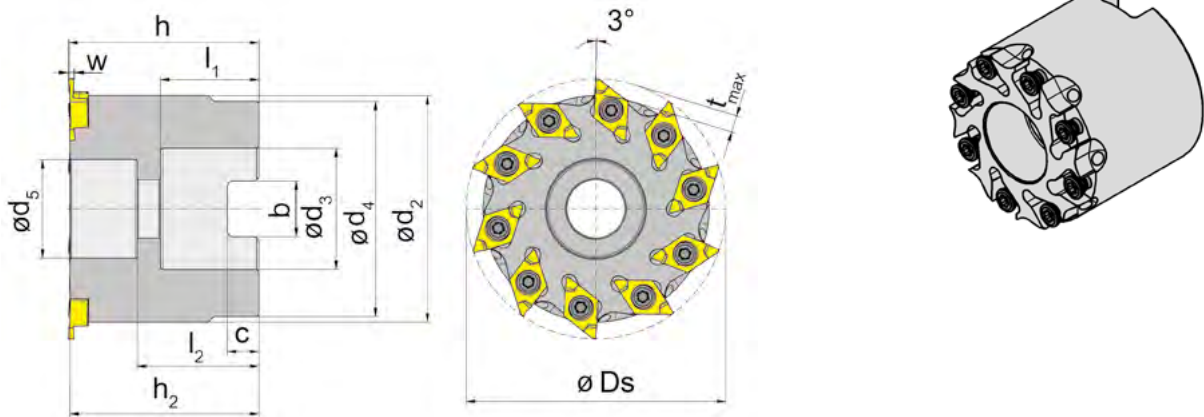
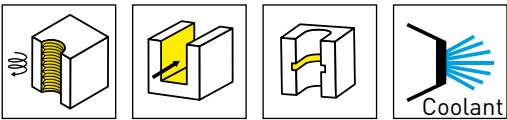
Dimensions in mm

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
M275.031.D25.3.04A	3.5.10T10P	T10PL	3 Nm



Arbor Mounted Cutter M275



Picture = right hand cutting version

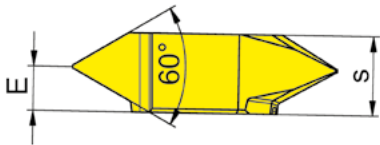
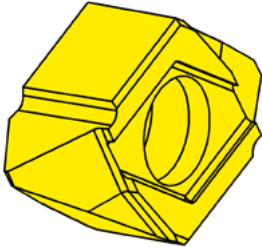
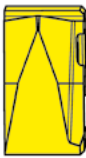
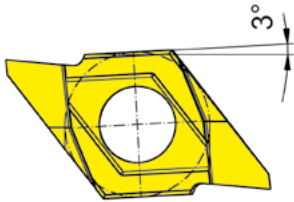
Part number	Z	Ds	h ₂	h	d ₅	d ₄	d ₃	l ₁	l ₂	b	C	d ₂	HWS
M275.0038.A16.05	5	38	32.7	33	13.5	32	16	18	22.7	8.4	5.6	32	275041R • 275043R
M275.0048.A22.08	8	48	36.7	37	18.5	40.5	22	20	24.7	10.4	6.3	40.5	275041R • 275043R
M275.0058.A27.10	10	58	42.2	42.5	22	48	27	22	27.2	12.4	7	50	275041R • 275043R
M275.0078.A32.14	14	78	49.7	50	33	58	32	25	36.7	14.4	8	70.5	275041R • 275043R

Cutterhole and cross keyway as per DIN 138

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M275...	3.5.10T10P	T10PL	3 Nm



R = right hand version shown

Coating grades

▲ In stock Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	HIS	TA45
RS275.1535.01	1.5	3.5	7 - 16	2.3	4.1	275041R	▲
Dimensions in mm							P ●
							M ●
							K ●
							N -
							S -
							H -

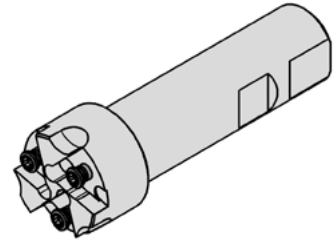
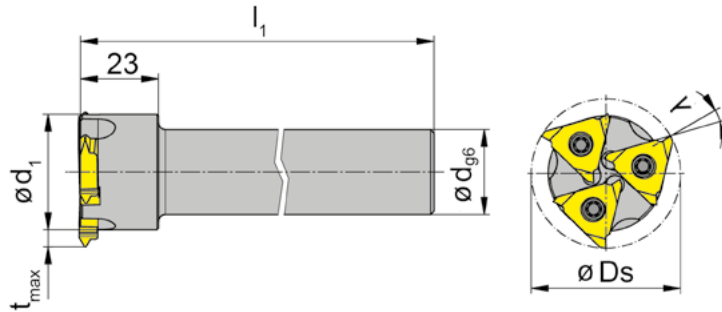
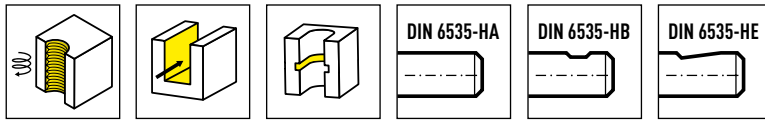


G



SYSTEM 380

Ø MINIMUM BORE DIAMETER = 2.047" (52mm)

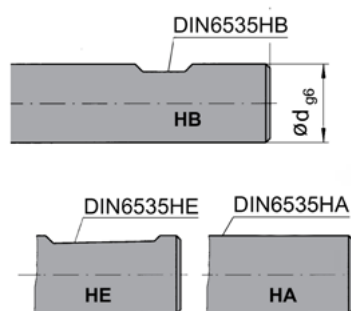


Picture = right hand cutting version

Part number	Ds	d	l_1	d_1	λ	Form	HWS
380.0044.03A	44	25	125	34	14°	HA	314027R • 314041R • 314052R
380.0044.03B	44	25	125	34	14°	HB	314027R • 314041R • 314052R
380.0044.03E	44	25	125	34	14°	HE	314027R • 314041R • 314052R

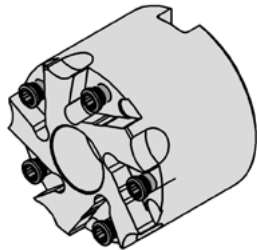
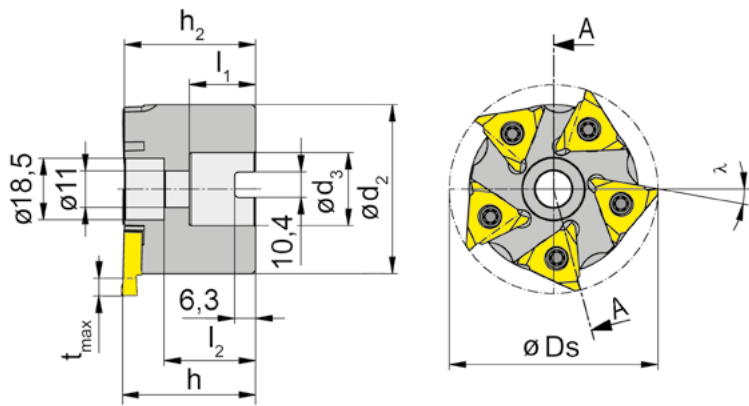
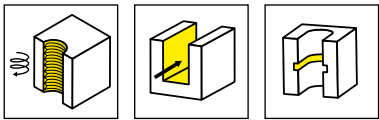
Dimensions in mm

Shank Forms: Cylindrical (A),
Weldon (B), Whistle Notch (E)



Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
380...	5.12T20P	T20PQ	6.5 Nm



Picture = right hand cutting version

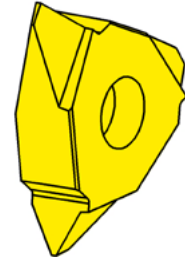
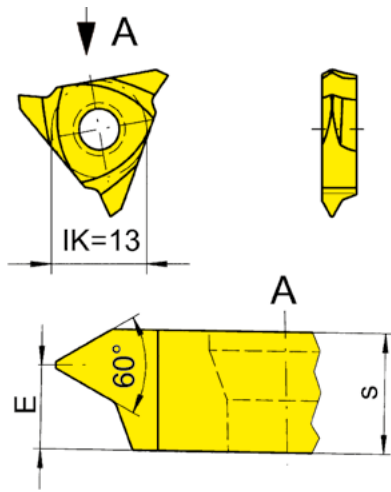
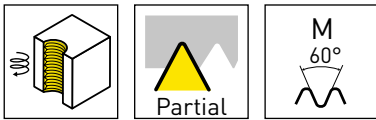
Part number	Ds	h ₂	h	d ₃	l ₁	l ₂	λ	d ₂	HWS
380.0063.05	63	39.6	40	22	20	27.6	10°	51	314027R • 314041R • 314052R

Cutterhole and cross keyway as per DIN 138

Dimensions in mm

Spare Parts

Milling cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
380.0063.05	5.12T20P	T20PQ	6.5 Nm



Coating grades

Picture = right hand cutting version

▲ In stock

Δ 2 weeks

Part number	P	P _{max}	TPI	E	s	Ds	HIS	TN35
R314.1535.01	1.5	3.5	7 - 16	3.3	5.45	44	314052R	▲
R314.2140.01	4	4	6	3	5.45	44	314052R	▲
R314.4060.01	4	6	4 - 6	2.7	5.45	44	314052R	▲
R314.3260.01	6	6	4	2.7	5.45	63	314052R	▲

Note:

R314.3260.01 only for milling cutter 380.0063.05

Dimensions in mm

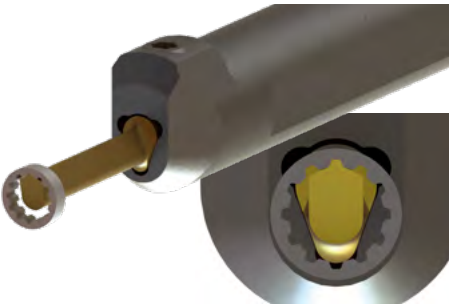
P	●
M	-
K	●
N	-
S	-
H	-



H

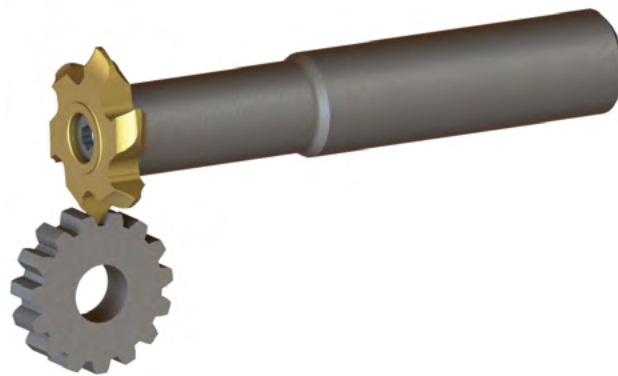
GEAR MILLING

SPLINE MILLING, GEAR BROACHING, GEAR SKIVING, DEBURRING

Technology	Small production batches	Medium production batches	Large production batches
Gear milling (external) 	+++	++	-
Gear broaching (external and internal) 	+++	++	+
Gear skiving (external and internal) 	-	+	+++
Gear skiving (external) 	-	+	+++

Technology	Small production batches	Medium production batches	Large production batches
Fly cutting of gears (external) 	-	+++	+
Bevel gear milling (external) 	+	+	+++
5-Axis gear milling (external) 	+++	-	-
Gear deburring 	+++	+++	+++

Milling inserts for spur gears and gear shafts



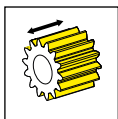
Cylindrical gears, Toothed Shafts Basic profile 1 DIN 3972	Gear shafts, Shaft-hub, Gear Teeth DIN 5480/ANSI B92.1	Tool System	Ø Ds (in) [mm]
$mn \leq 0.8$	$mn \leq 1 / dB \geq 40$	606	.460 11.7
$mn \leq 1$	$mn \leq 1.5 / dB \geq 40$	608	.618 15.7
$mn \leq 1.25$	$mn \leq 2 / dB \geq 40$	611	.696 17.7
$mn \leq 1.5$	$mn \leq 3 / dB \geq 22$	613	.854 21.7
$mn \leq 2$	$mn \leq 2.5 / dB \geq 40$	628	1.090 27.7
$mn \leq 2.5 / \text{Nr. } 5 - 8$	$mn \leq 2.5 / dB \geq 30$	632	1.248 31.7
$mn \leq 2.25 / \text{Nr. } 2 - 8$	$mn \leq 2.5 / dB \geq 30$	632	1.248 31.7
$mn \leq 2 \text{ Nr. } 1 - 8$	$mn \leq 2.5 / dB \geq 30$	632	1.248 31.7
$mn \leq 3$	$mn \leq 3 / dB \geq 50$	635	1.366 34.7
$mn \leq 1.5$	$mn \leq 2 / dB \geq 60$	636	1.405 35.7



H

Gear Milling

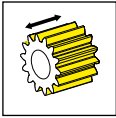
Module sizes
from 0.5 up to 4 mm



Tool System	304								X06								X08								X11								
Cutting edge Ø Ds	Ø 7.7								Ø 11.7								Ø 15.7								Ø 17.7								
Module	Number of teeth								Number of teeth								Number of teeth								Number of teeth								
	3		6		9		12		3		6		9		12		3		6		9		12		3		6		9		12		
	Pressure angle								Pressure angle								Pressure angle								Pressure angle								
	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°			
0.2	o	•								o	•	o	•					o	•	o	•	o	•			o	•	o	•	o	•		
0.3	o	•								o	•	o	•					o	•	o	•		•			o	•	o	•	o	•		
0.4	o	•								o	•	o	•					o	•	o	•		•			o	•	o	•		•		
0.5	o	•								o	•	o	•					o	•	o	•		•			o	•	o	•		•		
0.6	o	•								o	•	o	•					o	•	o	•		•			o	•	o	•		•		
0.7										o	•		•					o	•	o	•		•			o	•	o	•		•		
0.8										o	•		•					o	•	o	•		•			o	•	o	•		•		
0.9										o	•							o	•	o	•		•			o	•	o	•		•		
1										o	•							o	•	o	•		•			o	•	o	•		•		
1.1																				•					o	•		•		•			
1.2																				•					o	•		•		•			
1.3																								o	•		•						
1.4																								o	•		•						
1.5																								o	•		•						
1.6																									•								
1.7																									•								
1.8																									•								
1.9																									•								
2																									•								
2.1																									•								
2.2																									•								
2.3																									•								
2.4																									•								
2.5																									•								
2.6																																	
2.7																																	
2.8																																	
2.9																																	
3																																	
Shank System	M304								M306								M308								M311								

- Additional module sizes can be created upon request
- Flute count and shank type can be modified for specific applications
- When specifying the type, **X** is the placeholder for the number of teeth, ex: **913**, **311**

ph HORN ph

[illegible]

H

EXTERNAL TEETH

For System 313 (6 Flute)



Page 402
613

0.5-0.7mm Module



Page 403
613

0.8-0.9mm Module



Page 404
613

1-1.25mm Module



Page 405
613

1.5mm Module

System 328 (6 Flute)



Page 406
628

1.75-2mm Module

System 332 (6 Flute)



Page 407
632

2.25mm Module

System 335 (6 Flute)



Page 408
635

2.25-3mm Module

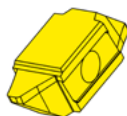
For holders, see Chapter B

System M279



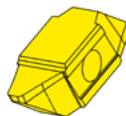
Page 409
M279

ØDs 100mm



Page 410
RS279

3.25-3.5mm Module



Page 411
RS279

3.75-4mm Module

SPLINES

System M274



Page 413
M274

ØDs 63mm



Page 414
RS274

Without Relief

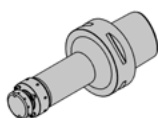


Page 415
RS274

With Relief

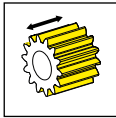
SKIVING

System MDR

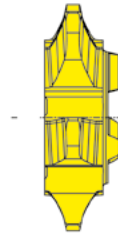
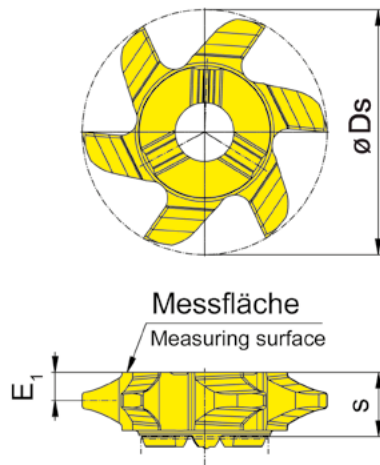


Page 421
MDR

Adjustable Holder



DIN
3972



Coating grades

▲ In stock

Δ 2 weeks

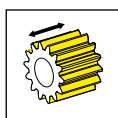
Part number	Module	$z_{\min}$	$z_{\max}$	E_1	s	$t_{\max}$	D_s	HIS	AS/45
613.3972.050.1	.5	12	13	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.2	.5	14	16	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.3	.5	17	20	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.4	.5	21	25	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.5	.5	26	34	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.6	.5	35	55	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.7	.5	55	134	1.1	5.7	1.1	21.7	313113R	▲
613.3972.050.8	.5	135	999	1.1	5.7	1.1	21.7	313113R	▲
613.3972.070.1	.7	12	13	1.6	5.3	1.5	21.7	313113R	Δ
613.3972.070.2	.7	14	16	1.6	5.3	1.5	21.7	313113R	Δ
613.3972.070.3	.7	17	20	1.6	5.3	1.5	21.7	313113R	Δ
613.3972.070.4	.7	21	25	1.6	5.3	1.5	21.7	313113R	Δ
613.3972.070.5	.7	26	34	1.6	5.3	1.6	21.7	313113R	Δ
613.3972.070.6	.7	35	55	1.6	5.3	1.6	21.7	313113R	Δ
613.3972.070.7	.7	55	134	1.6	5.3	1.6	21.7	313113R	Δ
613.3972.070.8	.7	135	999	1.6	5.3	1.6	21.7	313113R	Δ

Pressure angle 20°

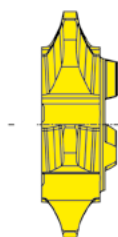
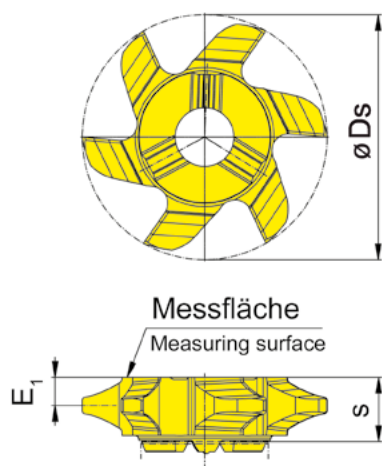
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



DIN
3972



Coating grades

▲ In stock

Δ 2 weeks

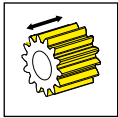
Part number	Module	$z_{\min}$	$z_{\max}$	E_1	s	$t_{\max}$	D_s	HIS	AS/45
613.3972.080.1	.8	12	13	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.2	.8	14	16	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.3	.8	17	20	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.4	.8	21	25	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.5	.8	26	34	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.6	.8	35	55	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.7	.8	55	134	1.6	5.3	1.8	21.7	313113R	▲
613.3972.080.8	.8	135	999	1.6	5.3	1.8	21.7	313113R	▲
613.3972.090.1	.9	12	13	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.2	.9	14	16	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.3	.9	17	20	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.4	.9	21	25	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.5	.9	26	34	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.6	.9	35	55	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.7	.9	55	134	2.5	5.7	2.1	21.7	313113R	Δ
613.3972.090.8	.9	135	999	2.5	5.7	2.1	21.7	313113R	Δ

Pressure angle 20°

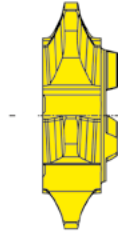
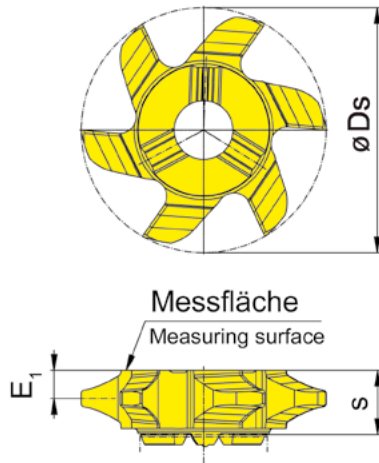
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



DIN
3972

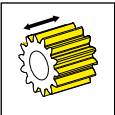


Coating grades

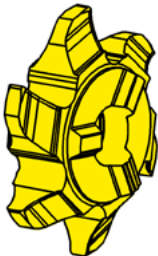
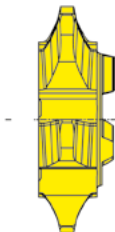
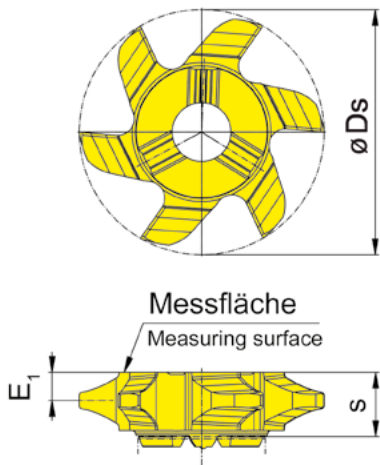
▲ In stock

Δ 2 weeks

Part number	Module	$z_{\min}$	$z_{\max}$	E_1	s	$t_{\max}$	D_s	HIS	AS45
613.3972.100.1	1	12	13	2.5	5.7	2.2	21.7	313113R	▲
613.3972.100.2	1	14	16	2.5	5.7	2.2	21.7	313113R	▲
613.3972.100.3	1	17	20	2.5	5.7	2.2	21.7	313113R	▲
613.3972.100.4	1	21	25	2.5	5.7	2.2	21.7	313113R	▲
613.3972.100.5	1	26	34	2.5	5.7	2.2	21.7	313113R	▲
613.3972.100.6	1	35	54	2.5	5.7	2.3	21.7	313113R	▲
613.3972.100.7	1	55	134	2.5	5.7	2.3	21.7	313113R	▲
613.3972.100.8	1	135	999	2.5	5.7	2.4	21.7	313113R	▲
613.3972.125.1	1.25	12	13	2.5	5.7	2.6	21.7	313113R	▲
613.3972.125.2	1.25	14	16	2.5	5.7	2.7	21.7	313113R	▲
613.3972.125.3	1.25	17	20	2.5	5.7	2.7	21.7	313113R	▲
613.3972.125.4	1.25	21	25	2.5	5.7	2.7	21.7	313113R	▲
613.3972.125.5	1.25	26	34	2.5	5.7	2.7	21.7	313113R	▲
613.3972.125.6	1.25	35	54	2.5	5.7	2.7	21.7	313113R	▲
613.3972.125.7	1.25	55	134	2.5	5.7	2.8	21.7	313113R	▲
613.3972.125.8	1.25	135	999	2.5	5.7	2.8	21.7	313113R	▲
Pressure angle 20°									P ●
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0									M ●
Dimensions in mm									K ●
									N -
									S o
									H -



DIN
3972

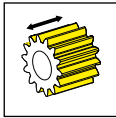


Coating grades

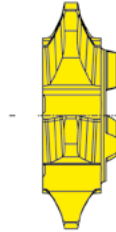
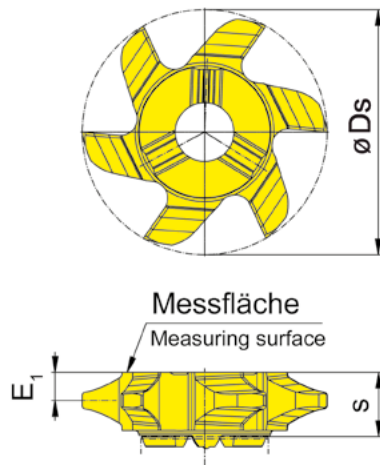
▲ In stock

Δ 2 weeks

Part number	Module	z_{min}	z_{max}	E_1	s	t_{max}	D_s	HIS	AS/45
613.3972.150.1	1.5	12	13	2.5	5.7	3.1	21.7	313113R	Δ
613.3972.150.2	1.5	14	16	2.5	5.7	3.2	21.7	313113R	▲
613.3972.150.3	1.5	17	20	2.5	5.7	3.2	21.7	313113R	▲
613.3972.150.4	1.5	21	25	2.5	5.7	3.3	21.7	313113R	▲
613.3972.150.5	1.5	26	34	2.5	5.7	3.3	21.7	313113R	▲
613.3972.150.6	1.5	35	54	2.5	5.7	3.3	21.7	313113R	▲
613.3972.150.7	1.5	55	134	2.5	5.7	3.3	21.7	313113R	Δ
613.3972.150.8	1.5	135	999	2.5	5.7	3.3	21.7	313113R	▲
Pressure angle 20°									P ●
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0									M ●
Dimensions in mm									K ●
									N -
									S o
									H -



DIN
3972



Coating grades

▲ In stock

△ 2 weeks

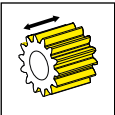
Part number	Module	$z_{\min}$	$z_{\max}$	E_1	s	$t_{\max}$	D_s	HIS	AS45
628.3972.175.1	1.75	12	13	3.4	7.45	3.8	27.7	328143R	△
628.3972.175.2	1.75	14	16	3.4	7.45	3.8	27.7	328143R	△
628.3972.175.3	1.75	17	20	3.4	7.45	3.8	27.7	328143R	△
628.3972.175.4	1.75	21	25	3.4	7.45	3.9	27.7	328143R	△
628.3972.175.5	1.75	26	34	3.4	7.45	3.9	27.7	328143R	△
628.3972.175.6	1.75	35	54	3.4	7.45	3.9	27.7	328143R	△
628.3972.175.7	1.75	55	134	3.4	7.45	3.9	27.7	328143R	△
628.3972.175.8	1.75	135	999	3.4	7.45	3.9	27.7	328143R	△
628.3972.200.1	2	12	13	3.4	7.45	4.2	27.7	328143R	△
628.3972.200.2	2	14	16	3.4	7.45	4.2	27.7	328143R	▲
628.3972.200.3	2	17	20	3.4	7.45	4.2	27.7	328143R	△
628.3972.200.4	2	21	25	3.4	7.45	4.3	27.7	328143R	▲
628.3972.200.5	2	26	34	3.4	7.45	4.4	27.7	328143R	▲
628.3972.200.6	2	35	54	3.4	7.45	4.4	27.7	328143R	△
628.3972.200.7	2	55	134	3.4	7.45	4.4	27.7	328143R	▲
628.3972.200.8	2	135	999	3.4	7.45	4.5	27.7	328143R	△

Pressure angle 20°

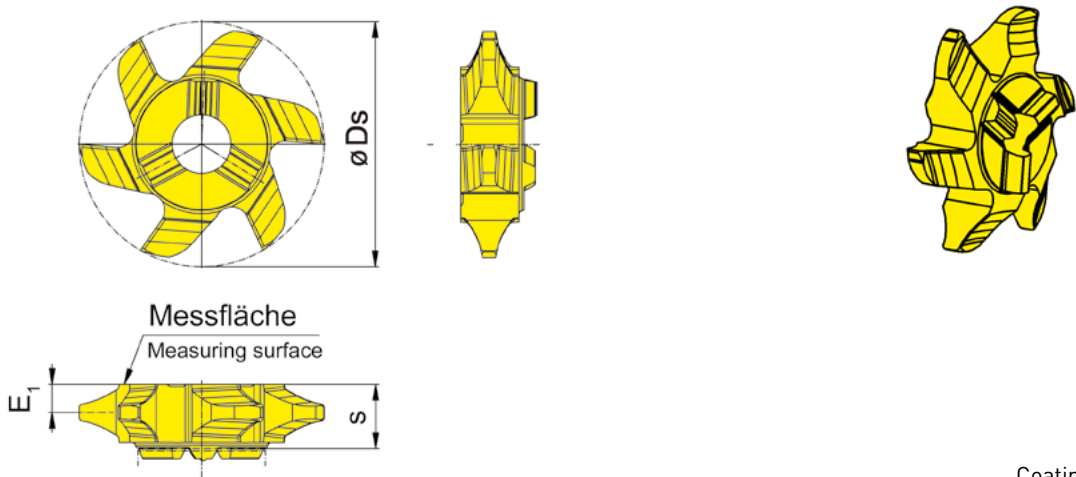
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-



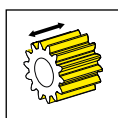
DIN
3972



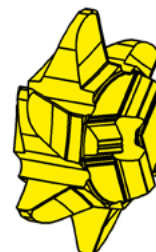
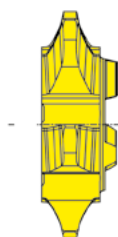
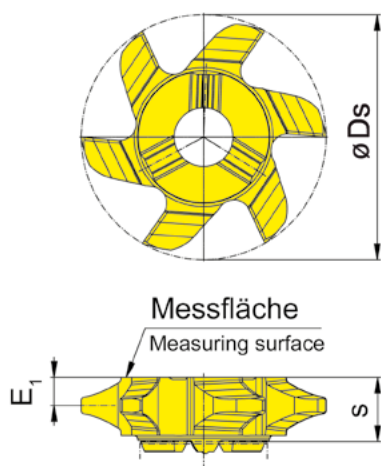
Coating grades

▲ In stock Δ 2 weeks

Part number	Module	z_{min}	z_{max}	E_1	s	t_{max}	D_s	HIS	AS45	
632.3972.225.2	2.25	14	16	3.45	7.5	4.7	31.7	332143R	Δ	•
632.3972.225.3	2.25	17	20	3.45	7.5	4.8	31.7	332143R	Δ	•
632.3972.225.4	2.25	21	25	3.45	7.5	4.9	31.7	332143R	Δ	•
632.3972.225.5	2.25	26	34	3.45	7.5	4.9	31.7	332143R	Δ	•
632.3972.225.6	2.25	35	54	3.45	7.5	5	31.7	332143R	Δ	•
632.3972.225.7	2.25	55	134	3.45	7.5	5	31.7	332143R	Δ	•
632.3972.225.8	2.25	135	999	3.45	7.5	5	31.7	332143R	Δ	•
Pressure angle 20°										P •
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0										M •
										K •
										N -
										S o
										H -
Dimensions in mm										



DIN
3972



Coating grades

▲ In stock

Δ 2 weeks

Part number	Module	z_{min}	z_{max}	E_1	s	t_{max}	D_s	HIS	AS45
635.3972.225.1	2.25	12	13	5.5	11.9	4.7	34.7	335175R	Δ
635.3972.250.1	2.5	12	13	5.5	11.9	5.4	34.7	335175R	Δ
635.3972.250.2	2.5	14	16	5.5	11.9	5.4	34.7	335175R	Δ
635.3972.250.3	2.5	17	20	5.5	11.9	5.4	34.7	335175R	Δ
635.3972.250.4	2.5	21	25	5.5	11.9	5.5	34.7	335175R	Δ
635.3972.250.5	2.5	26	34	5.5	11.9	5.5	34.7	335175R	Δ
635.3972.250.6	2.5	35	54	5.5	11.9	5.5	34.7	335175R	Δ
635.3972.250.7	2.5	55	134	5.5	11.9	5.7	34.7	335175R	Δ
635.3972.250.8	2.5	135	999	5.5	11.9	5.7	34.7	335175R	Δ
635.3972.275.1	2.75	12	13	5.5	11.9	5.7	34.7	335175R	Δ
635.3972.275.2	2.75	14	16	5.5	11.9	5.8	34.7	335175R	Δ
635.3972.275.3	2.75	17	20	5.5	11.9	5.8	34.7	335175R	Δ
635.3972.275.4	2.75	21	25	5.5	11.9	5.9	34.7	335175R	Δ
635.3972.275.5	2.75	26	34	5.5	11.9	5.9	34.7	335175R	Δ
635.3972.275.6	2.75	35	54	5.5	11.9	6	34.7	335175R	Δ
635.3972.275.7	2.75	55	134	5.5	11.9	6.1	34.7	335175R	Δ
635.3972.275.8	2.75	135	999	5.5	11.9	6.1	34.7	335175R	Δ
635.3972.300.1	3	12	13	5.5	11.9	6.2	34.7	335175R	Δ
635.3972.300.2	3	14	16	5.5	11.9	6.4	34.7	335175R	Δ
635.3972.300.3	3	17	20	5.5	11.9	6.4	34.7	335175R	Δ
635.3972.300.4	3	21	25	5.5	11.9	6.4	34.7	335175R	Δ
635.3972.300.5	3	26	34	5.5	11.9	6.5	34.7	335175R	Δ
635.3972.300.6	3	35	54	5.5	11.9	6.5	34.7	335175R	Δ
635.3972.300.7	3	55	134	5.5	11.9	6.6	34.7	335175R	Δ
635.3972.300.8	3	135	999	5.5	11.9	6.6	34.7	335175R	Δ

Pressure angle 20°

Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

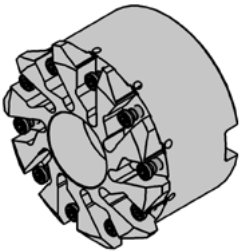
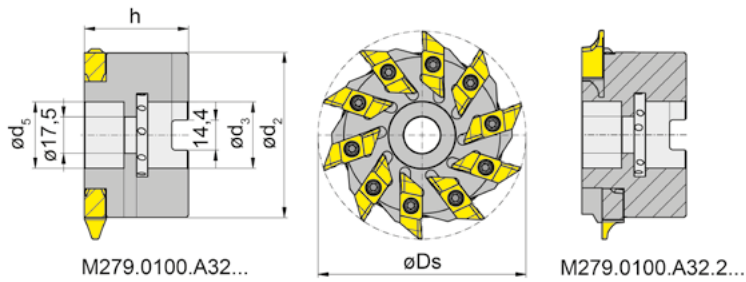
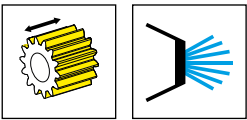
For Insert width = 11,9 mm use screw 6.23T25P

Dimensions in mm

P	●
M	●
K	●
N	-
S	o
H	-

H

Arbor Mounted Cutter M279



Picture = right hand cutting version

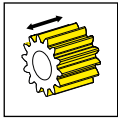
Part number	Z	Ds	h	d ₅	d ₂	d ₃	HWS
M279.0100.A32.10.10.IK	10	100	50	17.5	79	32	279105R
M279.0100.A32.2.10.05.IK	10	100	50	17.5	79	32	279105R • 279105L

Dimensions in mm

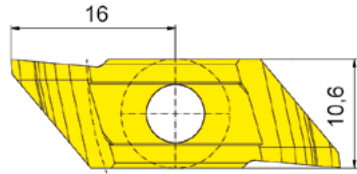
H

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M279...	030.0516.T20P	T20PQ	6.5 Nm



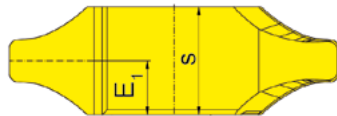
DIN
3972



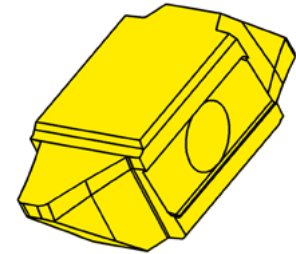
A



B



L



Coating grades

Form A = single row

Form A = two row

▲ In stock

Δ 2 weeks

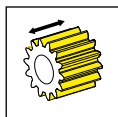
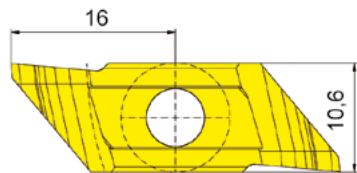
Part number	Module	z_{min}	z_{max}	E_1	s	t_{max}	Z	Form	HIS	AS45
RS279.3972.325.1	3.25	12	13	5.25	10.5	6.7	2	A	279105R	Δ
RS279.3972.325.2	3.25	14	16	5.25	10.5	6.8	2	A	279105R	Δ
RS279.3972.325.3	3.25	17	20	5.25	10.5	7	2	A	279105R	Δ
RS279.3972.325.4	3.25	21	25	5.25	10.5	7	2	A	279105R	Δ
RS279.3972.325.5	3.25	26	34	5.25	10.5	7.1	2	A	279105R	Δ
RS279.3972.325.6	3.25	35	54	5.25	10.5	7.2	2	A	279105R	Δ
RS279.3972.325.7	3.25	55	134	5.25	10.5	7.2	2	A	279105R	Δ
RS279.3972.325.8	3.25	135	999	5.25	10.5	7.2	2	A	279105R	Δ
RS279.3972.350.1L	3.5	12	13	5.25	10.5	7.35	2	B	279105L	Δ
RS279.3972.350.1R	3.5	12	13	5.25	10.5	7.35	2	B	279105R	Δ
RS279.3972.350.2L	3.5	14	16	5.25	10.5	7.45	2	B	279105L	Δ
RS279.3972.350.2R	3.5	14	16	5.25	10.5	7.45	2	B	279105R	Δ
RS279.3972.350.3	3.5	17	20	5.25	10.5	7.4	2	A	279105R	Δ
RS279.3972.350.4	3.5	21	25	5.25	10.5	7.5	2	A	279105R	Δ
RS279.3972.350.5	3.5	26	34	5.25	10.5	7.65	2	A	279105R	Δ
RS279.3972.350.6	3.5	35	54	5.25	10.5	7.7	2	A	279105R	Δ
RS279.3972.350.7	3.5	55	134	5.25	10.5	7.8	2	A	279105R	Δ
RS279.3972.350.8	3.5	135	999	5.25	10.5	7.8	2	A	279105R	Δ

Pressure angle 20°

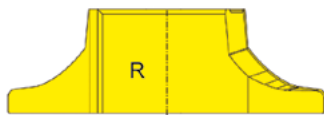
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

Dimensions in mm

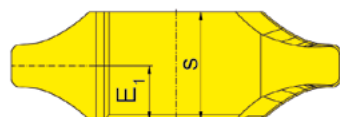
P	●
M	●
K	●
N	-
S	o
H	-

DIN
3972

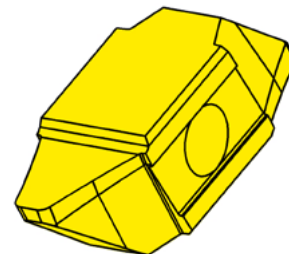
A



B



L



Coating grades

Form A = single row

Form A = two row

▲ In stock

Δ 2 weeks

Part number	Module	z_{min}	z_{max}	E_1	s	t_{max}	Z	Form	HIS	AS45
RS279.3972.375.1L	3.75	12	13	5.25	10.5	7.8	2	B	279105L	Δ
RS279.3972.375.1R	3.75	12	13	5.25	10.5	7.8	2	B	279105R	Δ
RS279.3972.375.2L	3.75	14	16	5.25	10.5	7.85	2	B	279105L	Δ
RS279.3972.375.2R	3.75	14	16	5.25	10.5	7.85	2	B	279105R	Δ
RS279.3972.375.3L	3.75	17	20	5.25	10.5	8	2	B	279105L	Δ
RS279.3972.375.3R	3.75	17	20	5.25	10.5	8	2	B	279105R	Δ
RS279.3972.375.4L	3.75	21	25	5.25	10.5	8.1	2	B	279105L	Δ
RS279.3972.375.4R	3.75	21	25	5.25	10.5	8.1	2	B	279105R	Δ
RS279.3972.375.5	3.75	26	34	5.25	10.5	8.1	2	A	279105R	Δ
RS279.3972.375.6	3.75	35	54	5.25	10.5	8.2	2	A	279105R	Δ
RS279.3972.375.7	3.75	55	134	5.25	10.5	8.3	2	A	279105R	Δ
RS279.3972.375.8	3.75	135	999	5.25	10.5	8.35	2	A	279105R	Δ
RS279.3972.400.1L	4	12	13	5.25	10.5	8.3	2	B	279105L	Δ
RS279.3972.400.1R	4	12	13	5.25	10.5	8.3	2	B	279105R	Δ
RS279.3972.400.2L	4	14	16	5.25	10.5	8.4	2	B	279105R	Δ
RS279.3972.400.2R	4	14	16	5.25	10.5	8.4	2	B	279105R	Δ
RS279.3972.400.3L	4	17	20	5.25	10.5	8.55	2	B	279105L	Δ
RS279.3972.400.3R	4	17	20	5.25	10.5	8.55	2	B	279105R	Δ
RS279.3972.400.4L	4	21	25	5.25	10.5	8.65	2	B	279105L	Δ
RS279.3972.400.4R	4	21	25	5.25	10.5	8.65	2	B	279105R	Δ
RS279.3972.400.5L	4	26	34	5.25	10.5	8.75	2	B	279105R	Δ
RS279.3972.400.5R	4	26	34	5.25	10.5	8.75	2	B	279105R	Δ
RS279.3972.400.6L	4	35	54	5.25	10.5	8.8	2	B	279105L	Δ
RS279.3972.400.6R	4	35	54	5.25	10.5	8.8	2	B	279105R	Δ
RS279.3972.400.7	4	55	134	5.25	10.5	8.8	2	A	279105R	Δ
RS279.3972.400.8	4	135	999	5.25	10.5	8.9	2	A	279105R	Δ

Pressure angle 20°

Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

Dimensions in mm

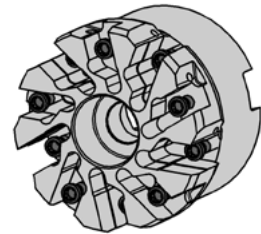
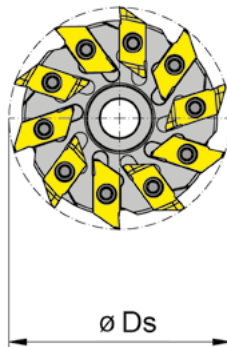
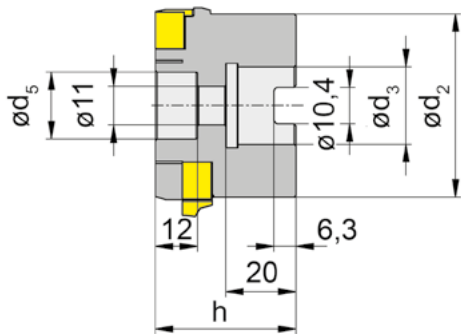
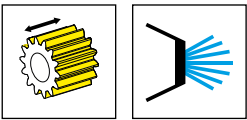
P	•
M	•
K	•
N	-
S	o
H	-



H

Spline Milling

Solutions for power take-off
shafts according to DIN 9611 / 5003



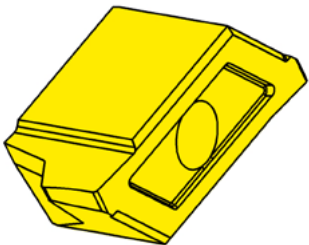
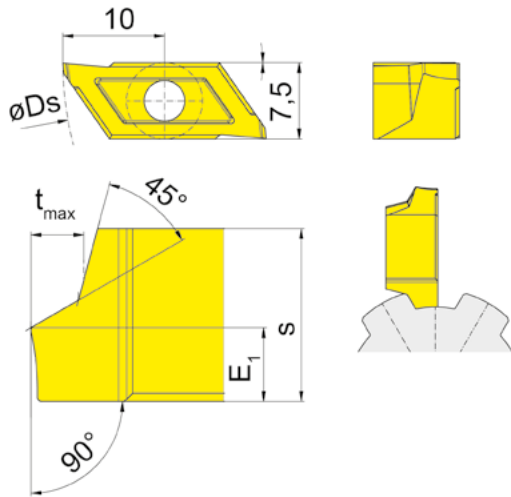
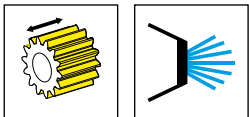
Picture = right hand cutting version

Part number	Z	Ds	h	d ₅	d ₃	d ₂
M274.0051.A22.7.5.IK	6	51	40	-	22	40
M274.0063.A22.7.5.IK	10	63	40	22	22	52

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
M274.0051.A22.7.5.IK	030.3513.T15P	T15PL	3.5 Nm
M274.0063.A22.7.5.IK	030.3513.T15P	T15PQ	3.5 Nm

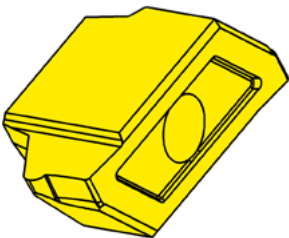
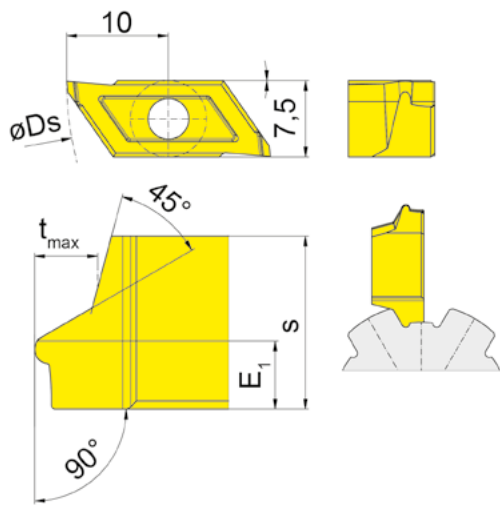
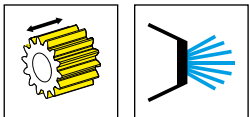


Coating grades

▲ In stock Δ 2 weeks

Part number	z _{min}	z _{max}	E ₁	s	t _{max}	Ds	Z	Type	RC45	
RS274.5003.134.0.L	5	10	4.3	8.5	3.7	63	2	1 3/4"		
RS274.5003.134.0.R	5	10	4.3	8.5	3.7	63	2	1 3/4"		
RS274.5003.138.0.L	5	10	3.6	8.5	2.6	63	2	1 3/8"		
RS274.5003.138.0.R	5	10	3.6	8.5	2.6	63	2	1 3/8"		
Dimensions in mm									P	●
									M	●
									K	●
									N	-
									S	-
									H	-





Coating grades

▲ In stock

Δ 2 weeks

Part number	z _{min}	z _{max}	E ₁	s	t _{max}	Ds	Z	Type	RC45	
RS274.5003.134.1.L	5	10	5.6	8.5	4.2	63	2	1 3/4"		
RS274.5003.134.1.R	5	10	5.6	8.5	4.2	63	2	1 3/4"		
RS274.5003.138.1.L	5	10	3.3	8.5	3.1	63	2	1 3/8"		
RS274.5003.138.1.R	5	10	3.3	8.5	3.1	63	2	1 3/8"		
Dimensions in mm									P	●
									M	●
									K	●
									N	-
									S	-
									H	-



H

Gear Broaching

Up to module 5

Supermini Special Broach

Example:



H



Insert

N105
N110
S117

Type	max. Module size m_n	min. tip circle for ring gear	max. length of flank
N105	.059" 1.5mm	.157" 4mm	.787" 20mm
N110	.059" 1.5mm	.196" 5mm	1.574" 40mm
S117	.196" 5mm	.551" 14mm	-

Advantages:

- Special tools designed for your application
- High productivity when used with broaching units
- One-machine finishing
- Up to module 5 mm
- Fast production due to Greenline production program



H

Gear Broaching

Up to module 5

Product range WSA:

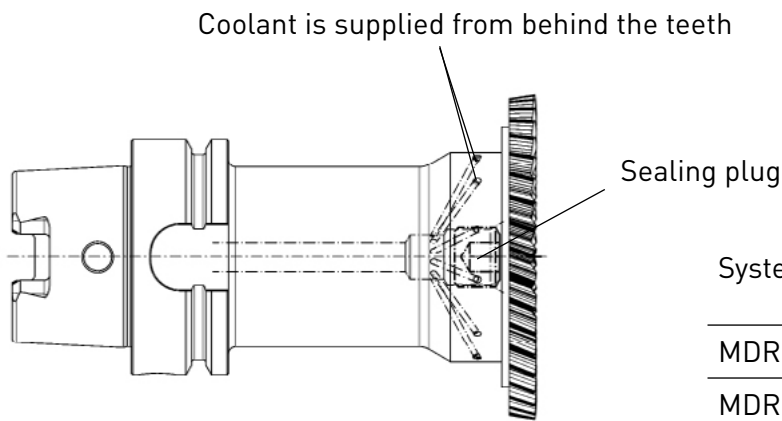
- From module $m_n = 0.2$ mm with step cut
- From $d = 7$ mm
- Up to module $m = 1$
- Up to $d = 30$ mm
- Solid carbide version
- Resharpenable
- Head cutting if required (patented)

Product range WSR:

- Precision interface for high concentricity (patented)
- Interchangeable insert systems up to module $m_n = 4$ mm
- From $d = 25$ mm
- Adjustable coolant supply
- Standard shanks of different lengths from stock

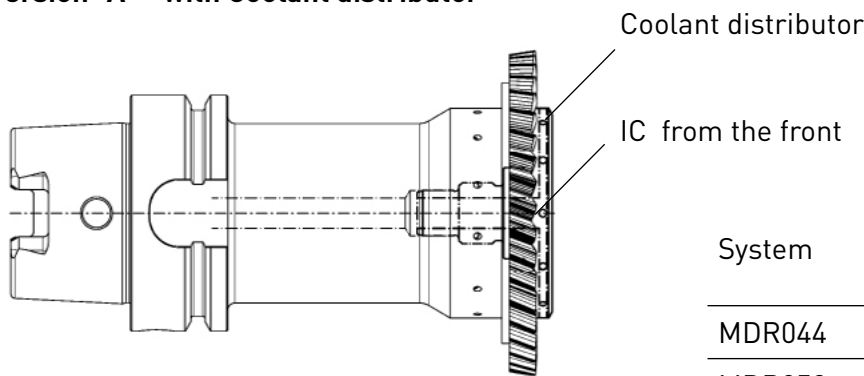
Internal Coolant Supply

Version "D" - with Sealing plug



System	Sealing plug
MDR044	10.1.08.913
MDR052	12.1.12.913
MDR081	16.1.12.913

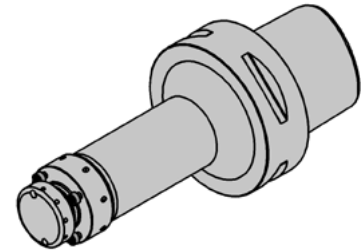
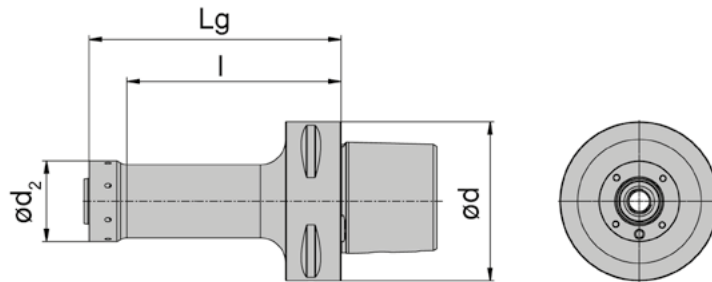
Version "A" - with Coolant distributor



System	Coolant distributor
MDR044	020.2510.6506
MDR052	020.3212.6505
MDR081	020.5616.6246



Coolant tube	System Holder
020.4012.1306	HSK-A 40
020.5016.1307	HSK-A 50
020.6318.1308	HSK-A 63
020.0024.1310	HSK-A 100



Part number	l	Lg	d	d ₂	Coolant	Size
MDR.044.C6.060.W	45	60	63	32	D	04
MDR.044.C6.080.W	65	80	63	32	D	04
MDR.044.C6.100.W	85	100	63	32	D	04
MDR.044.HSKT063.060.W	45	60	63	32	D	04
MDR.044.HSKT063.100.W	85	100	63	32	D	04
MDR.052.C6.060.W	45	60	63	39	D	05
MDR.052.C6.100.W	85	100	63	39	D	05
MDR.052.HSKT063.060.W	45	60	63	39	D	05
MDR.052.HSKT063.100.W	85	100	63	56	D	05
MDR.081.C6.060.W	45	60	63	56	D	08
MDR.081.C6.100.W	77	100	63	56	D	08
MDR.081.C6.125.W	102	125	63	56	D	08
MDR.081.C8.060.W	45	60	80	56	D	08
MDR.081.C8.100.W	77	100	80	56	D	08
MDR.081.C8.125.W	102	125	80	56	D	08
MDR.081.HSKT063.060.W	45	60	63	56	D	08
MDR.081.HSKT063.100.W	77	100	63	56	D	08
MDR.081.HSKT063.125.W	102	125	63	56	D	08
MDR.081.HSKT100.125.W	102	125	100	56	D	08

The shanks are designed for the WSR Gear Skiving System and are compatible with DR reaming inserts. Standard version with internal coolant supply has the "D" value. By replacing the coolant plug with the optionally available coolant distributor, the shanks can be converted to coolant supply version "A".

Dimensions in mm

Spare Parts

Gear Skiving Holder	Screw	Torx Wrench
MDR....	C009002	T8L
MDR.081...	C00 90 04	T15Q 364 T15 x 100

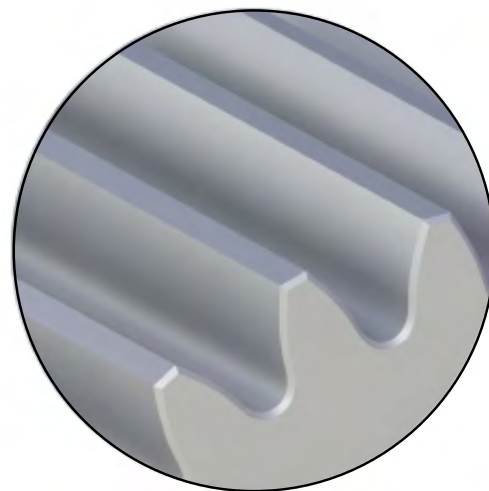
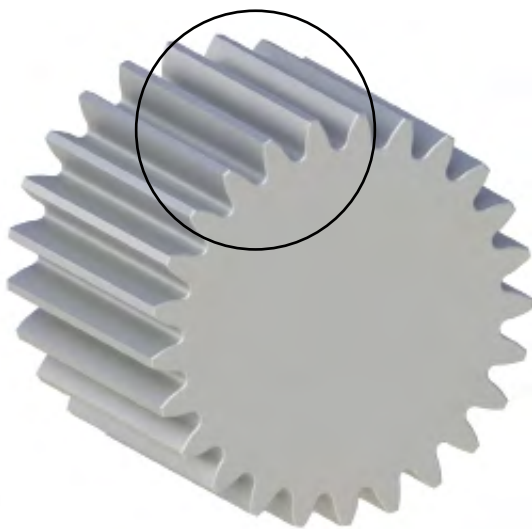


H

Gear Deburring

The chamfering of spur gears allows complete machining on one machine with exact geometries. Synchronized rotation of workpiece and tool allow short machining times, even for gears with shoulders. The tool is designed exactly for each gear and the process data is determined.

Machining example
Material: 1.7137 / 16MnCr5
Number of teeth: 25
Module: 1.25
Cycle time: 8 s
Cutting speed: 200 m/min
f: 150 mm/min





H

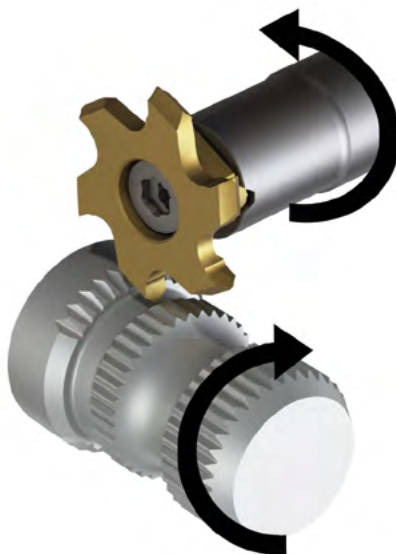
Fly Cutting of Gears

Fly cutting of gears is a machining process in which the workpiece and the tool rotate at a given speed ratio. The tool is set at a fixed angle to the workpiece. It is important that the spindle and tool run in synchrony with each other.

The process can be used to efficiently produce involute or spline gears in addition to crown and spur gears. Almost all HORN milling systems can be used for this purpose.

The advantages of the process are reduced tool movements as all tooth spaces are produced in one pass. The process can be implemented on almost all turn-mill centers and is therefore universally applicable.

Spline gearing
Material: 1.7137 / 16MnCr5
Number of teeth: 36
Module: 0.5
Cycle time: 15 s
Cutting speed: 150 m/min
 f_z : 0,1 mm / Z





H

Bevel Gear Milling

Module 0.6 - 4 mm

The product range includes tools for the manufacture of spiral bevel gears with epicycloidal longitudinal tooth shape and constant tooth height. Other tooth forms require special testing.

The design of the gear cutting process including all machining parameters is carried out in cooperation with Index based on the customer's component. The definition of the tool geometry and coordination of the tool parameters depends on the workpiece material and is carried out with the aim of achieving high workpiece accuracy and economical machining time.

Front and rear machining in one set-up enables complete machining with all functionally relevant features are machined in one clamping with the aim of achieving maximum precision. Bevel gears from bar on universal machines.

Product range:

Our product range includes milling cutters with HSK-T40 and HSK-T63 interfaces in various flight circles and tooth rows/gear speeds. One set of cutters can be used for different modules and bevel gear dimensions.

Two different insert sizes cover gear tooth sizes from module $m = 0.6 \text{ mm}$ to module $m = 4 \text{ mm}$.

The tool program has been adapted to Index machines and includes the following:

- Milling body with HSK-T40 or HSK-T63 interface
- Separate cutter head for inside and outside cutters – 1 flank machining for higher precision and flexibility when making corrections
- Identical body for the internal and external cutters
- System inserts in 2 sizes for different module sizes
- Systems for clockwise or counter-clockwise rotation
- Adapter discs for adapting the tools to different diameters / flight circle radii
- Flexible correction of the longitudinal shape of the tooth by adjusting the eccentricity of the outer and inner radius using various spacer plates
- Coordinated substrates for different materials





H

5-Axis Gear Milling

Spur Gear - module 30 straight fluted, up to Ø 4000 mm

Roughing high feed milling / Finishing copy milling



DAHM.37



DGH

Cyclo-Palloid Gear - module 13.56

Roughing high feed milling / Finishing copy milling



DGH



DSDS

Material	Tool System	Ds [mm]	v_c [m/min]	Type of Machining
C45	DGH	12/16	300	5-Axis
C45	DSDS	8	200	5-Axis
C45	DSK	10	190	5-Axis
C45	DSM	12	260	5-Axis

Axial Module 7,9 / Ø 420 mm

Conventional roughing, copy mill finishing



DPTP



DSK



DPTR

H

Material	Tool System	Ds [mm]	v_c [m/min]	Q [cm ³ /min]	Type of Machining
CuSn12Ni	DPTP	8	200	145	5-Axis
CuSn12Ni	DSK	8	225	80	5-Axis
CuSn12Ni	DPTR	6	225		5-Axis



T-SLOT MILLING SYSTEMS

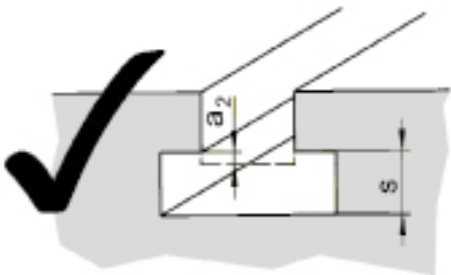
SYSTEMS M311, M313, M328

System	311	313	328	406	409
Dimension of T-Slot b x h (mm)					
17 x 7.2	•				
20 x 8.2		•			
24 x 9.2			•		
25 x 11				•	
32-50 x 14-22					•

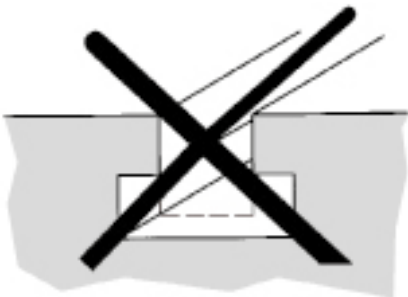
P	•	•	•	•	•
M	•	•	•	○	○
K	•	•	•	•	•
N	○	-	-	○	○
S	○	-	-	-	-
H	-	-	-	-	-

I

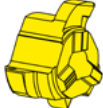
$a_2 \approx 0.2 \times s$

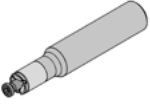
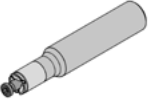


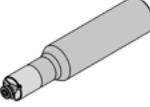
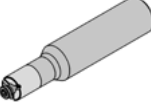
Recommended

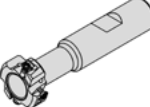


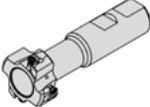
Not Recommended

SYSTEM 311	Holders		Inserts	
				
	Page 436 MU311 Inch Shank	Page 437 M311 Metric Shank	Page 438 17 x 7.2 mm T-Slot Profile	Page 439 T-Slot Chamfering

SYSTEM 313	Holders		Inserts	
				
	Page 441 MU313 Inch Shank	Page 442 M313 Metric Shank	Page 443 20 x 8.2 mm T-Slot Profile	

SYSTEM 328	Holders		Inserts	
				
	Page 445 MU328 Inch Shank	Page 446 M328 Metric Shank	Page 447 24 x 9.2 mm T-Slot Profile	

SYSTEM 406	Holders	Inserts		
				
	Page 449 25 x 11 mm Profile Metric Shank	Page 450 406 Multi-Purpose		

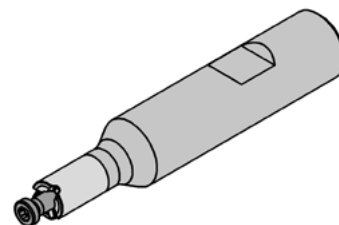
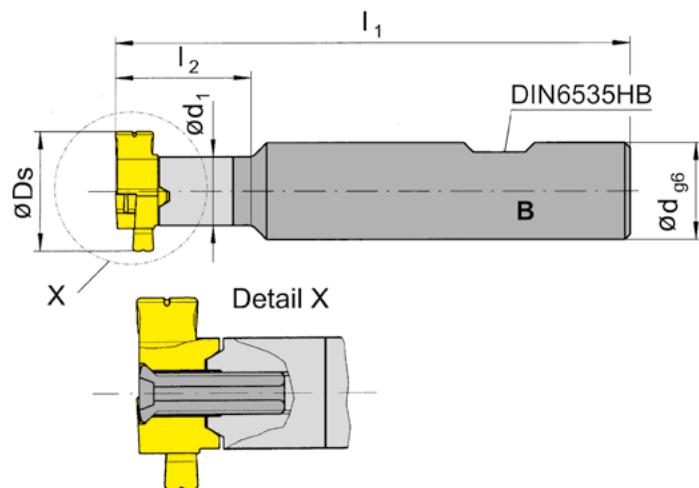
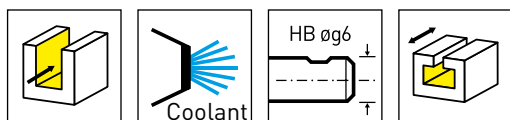
SYSTEM 409	Holders	Inserts		
				
	Page 451 32-50 x 14-22 mm Metric Shank	Page 452 409 Multi-Purpose		

I



SYSTEM 311

17 x 7.2 mm T-Slot



Picture = right hand cutting version

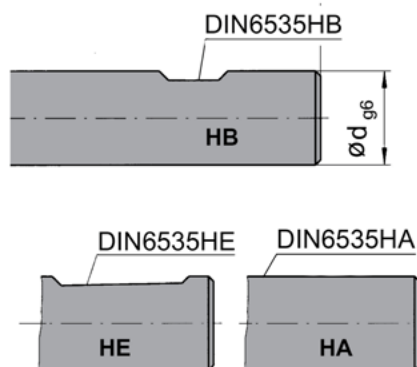
Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU311.0625.00B	.625	3.543	.984	.354	B	311090R

Ds see inserts

Dimensions in inch



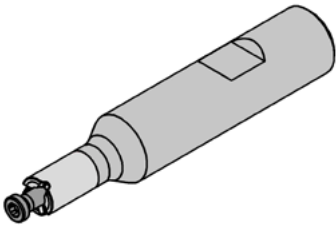
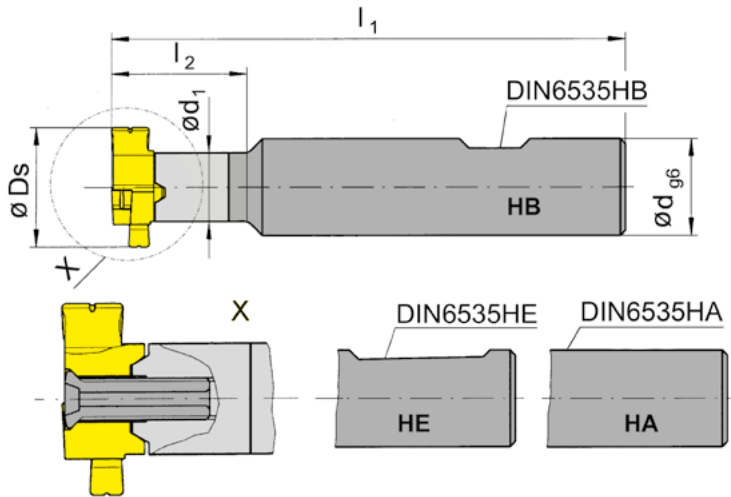
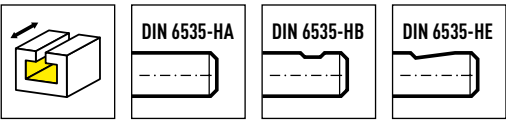
Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)



I

Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU311.0625.00B	4.16T15KP	T15PQ	5 Nm



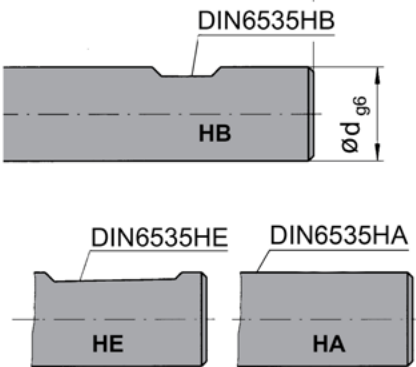
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M311.0016.00A	16	90	25	9	HA	311090R
M311.0016.00B	16	90	25	9	HB	311090R
M311.0016.00E	16	90	25	9	HE	311090R

Ds see inserts

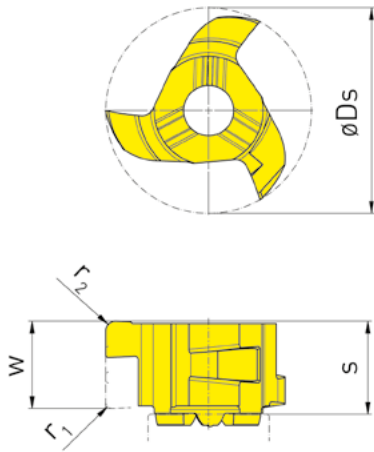
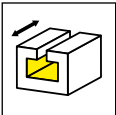
Dimensions in mm

Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)

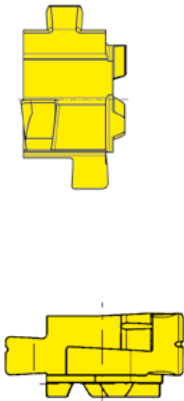


Spare Parts

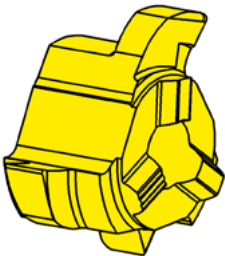
Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M311...	4.16T15KP	T15PQ	5 Nm



311.1016.1.00



311.1016.00

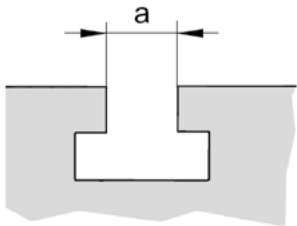


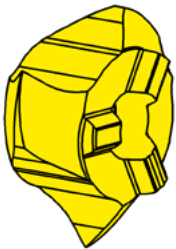
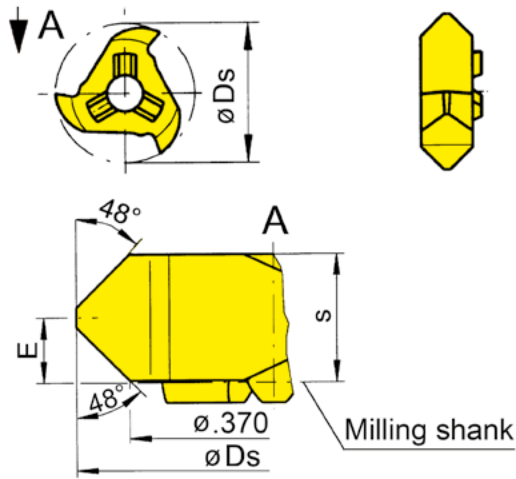
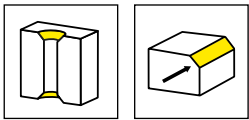
Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	Z	s	w	r ₁	r ₂	a	HIS	AS45	RC45	TI25
311.1016.1.00	17	1	7.7	7.2	0.5	0.8	10	311090R		▲	
311.1016.00	17	1	7.7	7.2	0.5	0.8	10	311090R	▲		▲
T-Slots DIN 650									P	●	●
Dimensions in mm									M	●	●
									K	●	-
									N	-	●
									S	o	o
									H	-	-



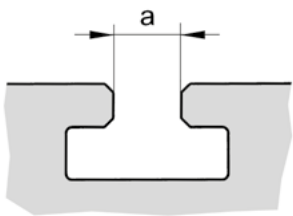


Picture = right hand cutting version

Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	E	s	a	HIS	Ti25
311.4216.00	15.8	3	5.95	10	311090R	▲
T-Slots DIN 650						P ●
Dimensions in mm						M ●
						K -
						N ●
						S o
						H -

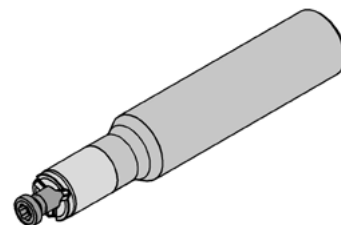
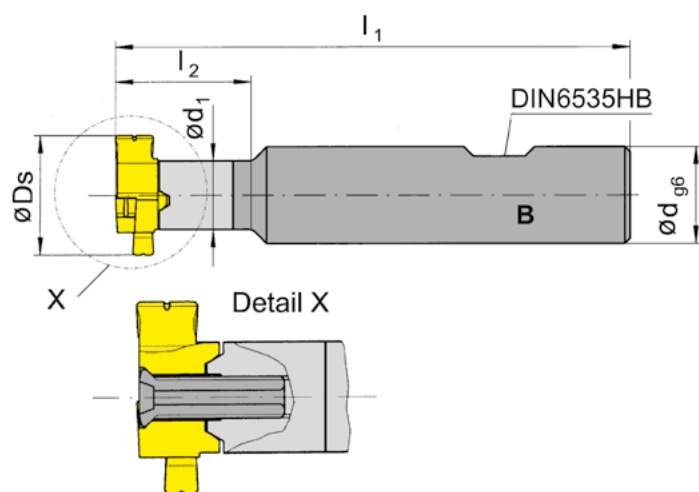
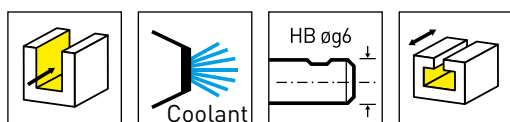




I

SYSTEM 313

20 x 8.2 mm T-Slot



Picture = right hand cutting version

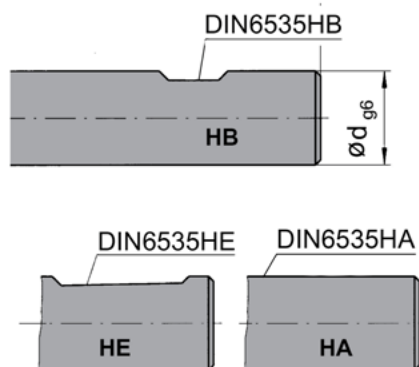
Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU313.0625.00B	.625	3.661	1.181	.445	B	313113R • 313113L

Ds see inserts

Dimensions in inch

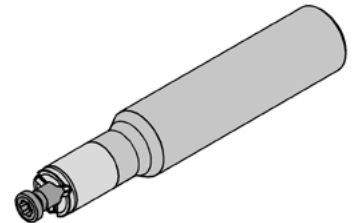
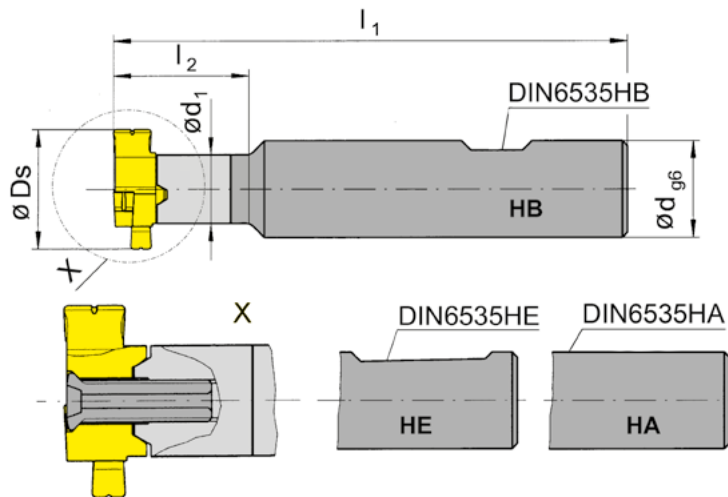
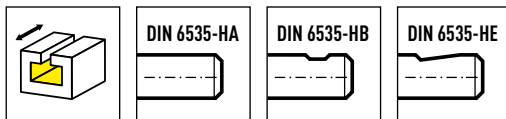


Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU313.0625.00B	5.13T20KP	T20PQ	6.5 Nm



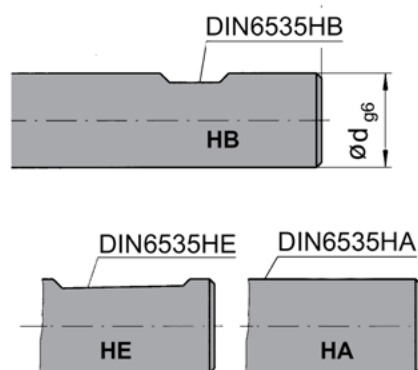
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M313.0016.00A	16	93	30	11.5	HA	313113R • 313113L
M313.0016.00B	16	93	30	11.5	HB	313113R • 313113L
M313.0016.00E	16	93	30	11.5	HE	313113R • 313113L

Ds see inserts

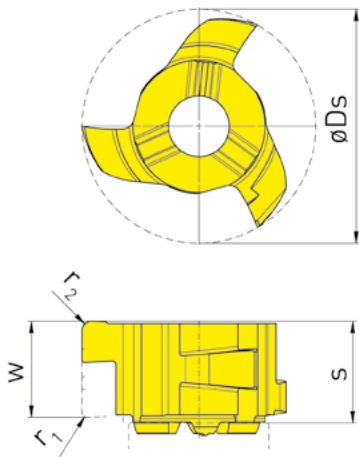
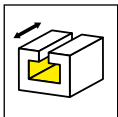
Dimensions in mm

Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)

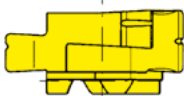
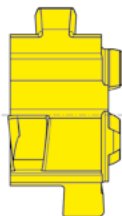


Spare Parts

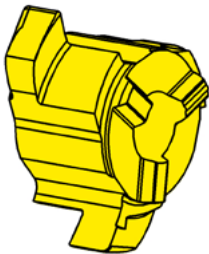
Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M313...	5.13T20KP	T20PQ	6.5 Nm



313.1219.1.00



313.1219.00

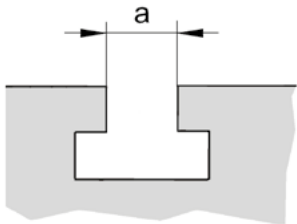


Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	Z	s	w	r ₁	r ₂	a	HIS		AS45	RC45	TI25
313.1219.1.00	20	1	8.7	8.2	0.5	0.8	12	313113R			▲	
313.1219.00	20	1	8.7	8.2	0.5	0.8	12	313113R		▲		▲
T-Slots DIN 650									P	●	●	●
Dimensions in mm									M	●	●	●
									K	●	●	-
									N	-	-	●
									S	o	-	o
									H	-	-	-

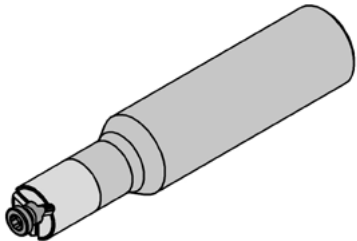
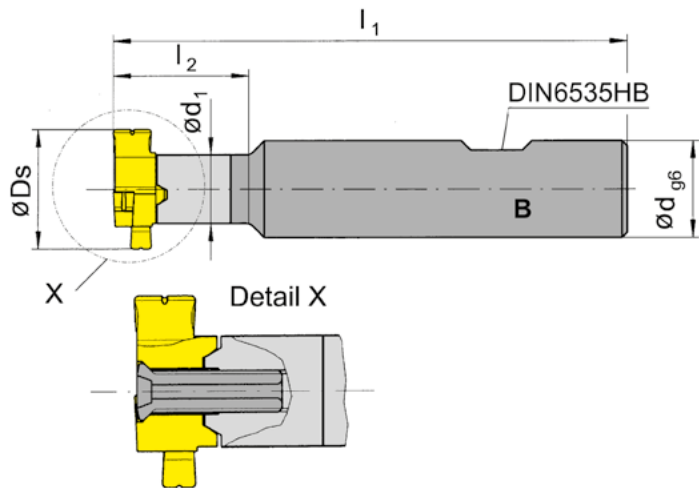
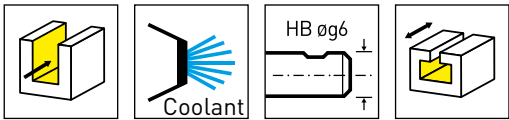




I

SYSTEM 328

24 x 9.2 mm T-Slot



Picture = right hand cutting version

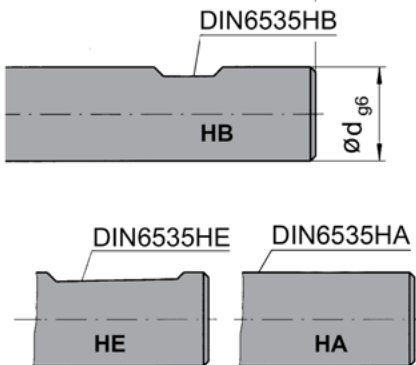
Part number	d	l ₁	l ₂	d ₁	Form	HWS
MU328.0750.00B	.750	4.094	1.378	.531	B	328143R

Ds see inserts

Dimensions in inch

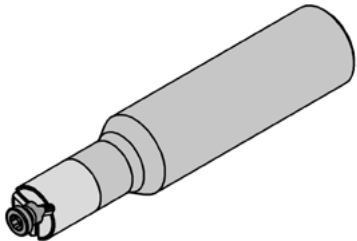
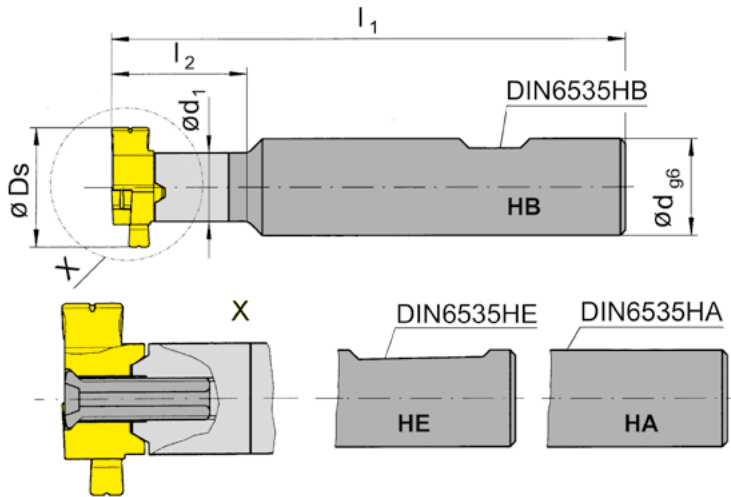
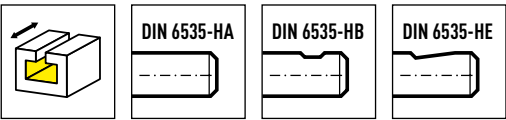


Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)



Spare Parts

Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
MU328.0750.00B	5.13T20KP	T20PQ	6.5 Nm



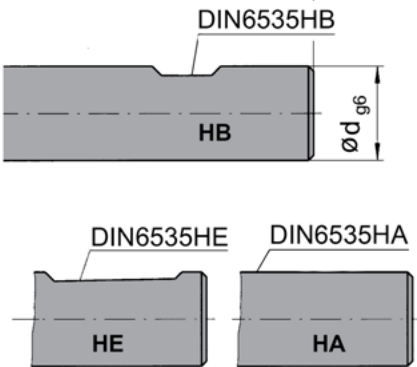
Picture = right hand cutting version

Part number	d	l ₁	l ₂	d ₁	Form	HWS
M328.0020.00A	20	104	35	13.5	HA	328143R
M328.0020.00B	20	104	35	13.5	HB	328143R
M328.0020.00E	20	104	35	13.5	HE	328143R

Ds see inserts

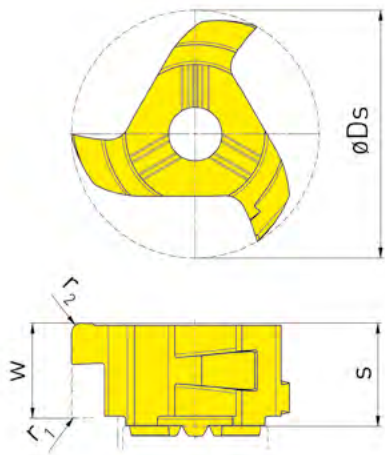
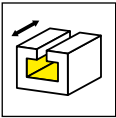
Dimensions in mm

Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)

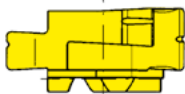
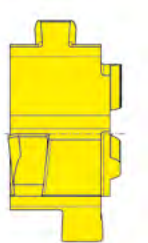


Spare Parts

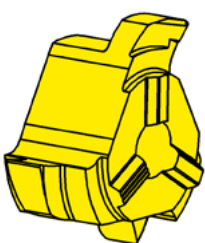
Milling shank	Clamping Screw	TORX PLUS® Wrench	Torque Value
M328...	5.13T20KP	T20PQ	6.5 Nm



328.1423.1.00



328.1423.00

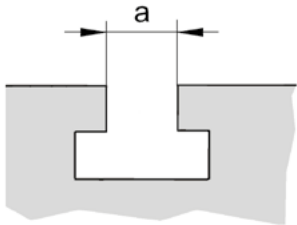


Coating grades

▲ In stock

Δ 2 weeks

Part number	Ds	Z	s	w	r ₁	r ₂	a	HIS		AS45	RC45	IG65	TI25
328.1423.1.00	24	1	10	9.2	0.5	1	14	328143R			▲		
328.1423.00	24	1	9.8	9.2	0.5	1	14	328143R		▲		▲	▲
T-Slots DIN 650										P	●	●	●
Dimensions in mm										M	●	●	●
										K	●	●	-
										N	-	-	●
										S	○	-	○
										H	-	-	-



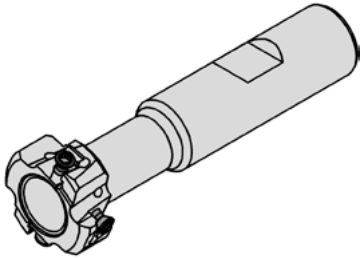
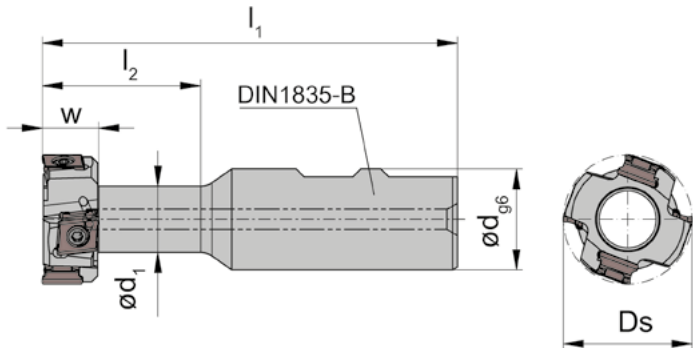
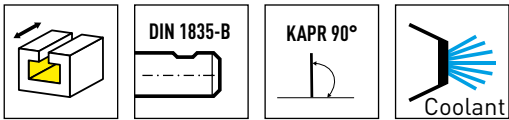


I

SYSTEMS 406/409

406: 25 x 11 mm T-Slot

409: 32-50 x 14-22mm T-Slot

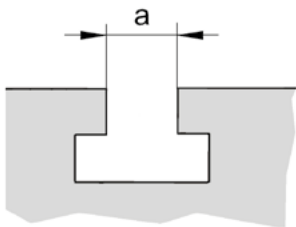


Picture = right hand cutting version

Part number	Z	Z _{eff}	Ds	d	l ₁	l ₂	d ₁	w	a	n _{max}	right hand insert	left hand insert	HWS
M406.025.11.D16.1.02.B	4	2	25	16	83	31	12.4	11	12.9	19000	2x R406.063.U...	2x L406.063.U...	40600R • 40600L

Tools with Ds ≥ 25mm have 2 clamping flats

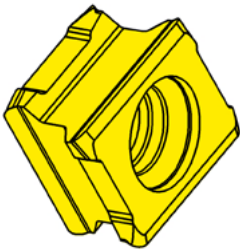
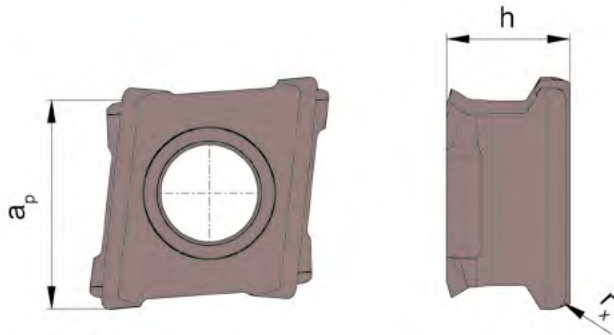
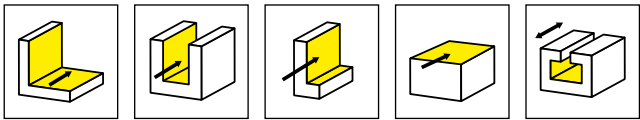
Dimensions in mm



I

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
M406.025.11.D16.1.02.B	030.2608.T8P	T8PL	1.2 Nm



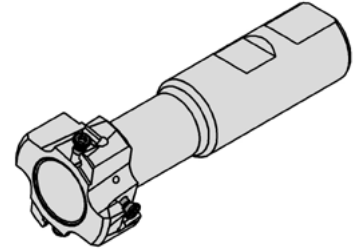
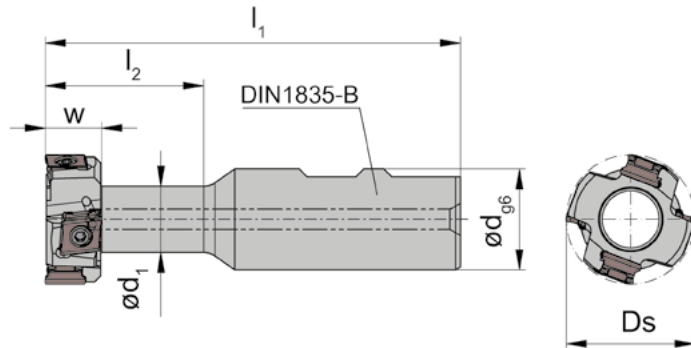
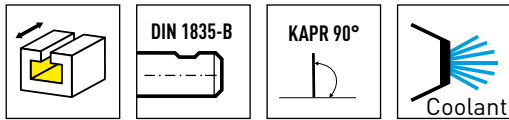
Coating grades

▲ In stock

Δ 2 weeks

Part number	a _p	h	r _x	HIS		AS46	AS4B
R406.063.U.02	6.3	3.85	0.2	40600R		Δ	▲
R406.063.U.04	6.3	3.85	0.4	40600R		▲	▲
R406.063.U.08	6.3	3.85	0.8	40600R		▲	▲
L406.063.U.02	6.3	3.85	0.2	40600L		Δ	▲
L406.063.U.04	6.3	3.85	0.4	40600L		▲	▲
L406.063.U.08	6.3	3.85	0.8	40600L		▲	▲
4 cutting edges					P	o	•
Dimensions in mm					M	o	•
					K	•	•
					N	o	o
					S	o	•
					H	-	-



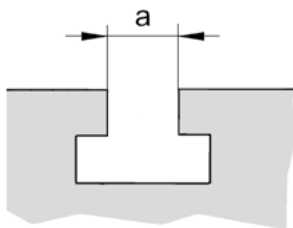


Picture = right hand cutting version

Part number	Z	Z _{eff}	Ds	d	L ₁	L ₂	d ₁	w	a	n _{max}	right hand insert	left hand insert	HWS
M409.032.14.D25.1.02.B	4	2	32	25	103	39	16.4	14	16.9	15600	2x R409.093.U...	2x L409.093.U...	40900R • 40900L
M409.040.18.D25.1.02.B	4	2	40	25	109	48	20.4	18	20.9	13900	2x R409.093.U...	2x L409.093.U...	40900R • 40900L
M409.050.22.D32.1.02.B	6	2	50	32	125	59	26.4	22	26.9	12500	4x R409.093.U...	2x L409.093.U...	40900R • 40900L

Tools with Ds ≥ 25mm have 2 clamping flats

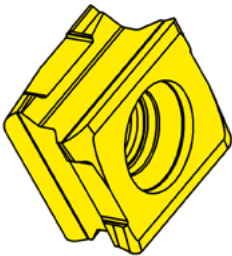
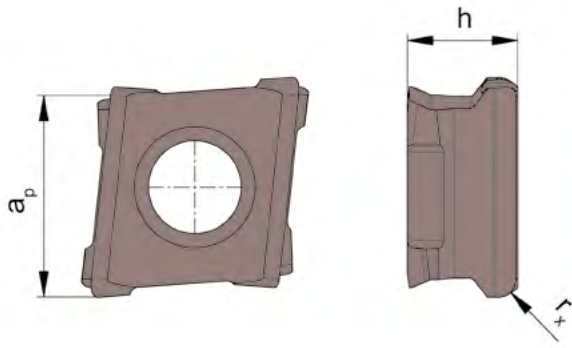
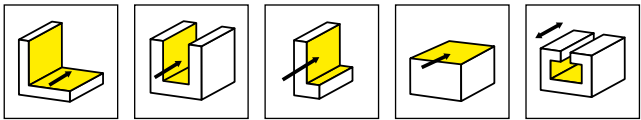
Dimensions in mm



I

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
M409...	030.3511.T10P	T10PL	3.5 Nm



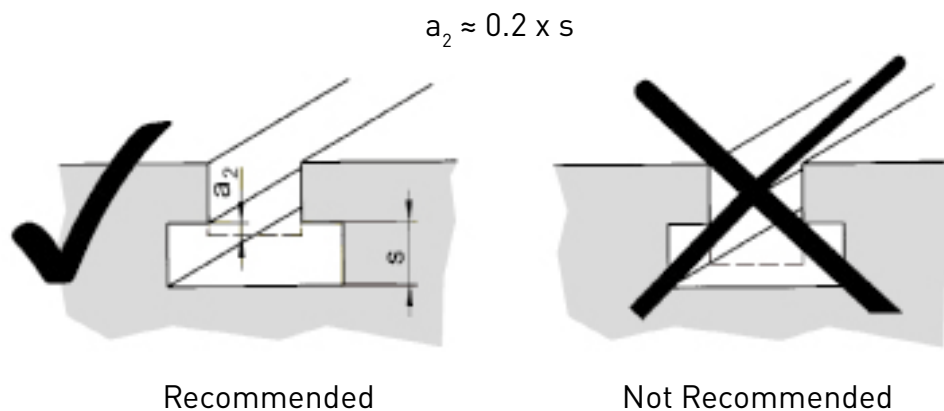
Coating grades

▲ In stock

Δ 2 weeks

Part number	a _p	h	r _x	HIS		AS46	AS4B
R409.093.U.04	9.3	5.2	0.4	40900R		▲	▲
R409.093.U.08	9.3	5.2	0.8	40900R		▲	▲
R409.093.U.12	9.3	5.2	1.2	40900R		▲	▲
L409.093.U.04	9.3	5.2	0.4	40900L		▲	▲
L409.093.U.08	9.3	5.2	0.8	40900L		▲	▲
L409.093.U.12	9.3	5.2	1.2	40900L		▲	▲
4 cutting edges					P	o	•
Dimensions in mm					M	o	•
					K	•	•
					N	o	o
					S	o	•
					H	-	-





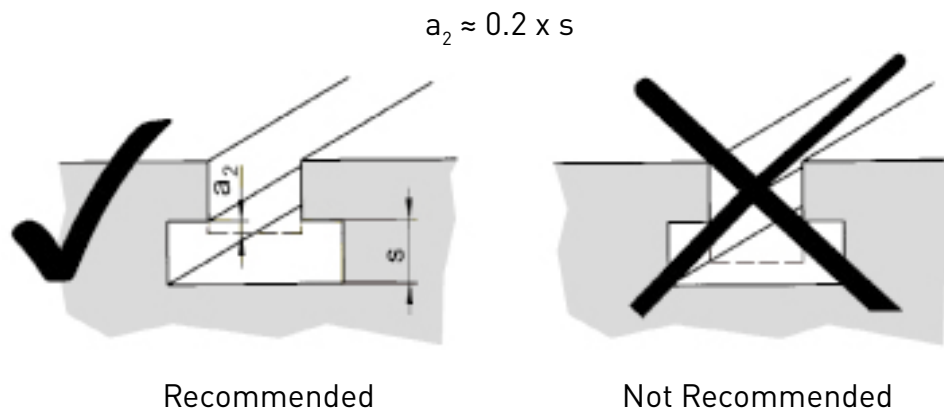
Cutting Data for 311 / 313 / 328 System Tools

T-Slot Milling for 1 flute tools

Workpiece material	Coating Grade	v_c (SFM) (m/min)	f_z	f_z
			Ø Ds 17 mm	Ø Ds 20-24 mm
Carbon steel	TI25 / RC45	655 - 985 200 - 300	.001 - .002 0.03 - 0.06	.002 - .003 0.05 - 0.08
Alloyed steel	TI25 / RC45	460 - 720 140 - 220	.0008 - .0016 0.02 - 0.04	.001 - .002 0.03 - 0.05
Grey cast iron	TI25 / RC45	330 - 525 100 - 160	.001 - .002 0.03 - 0.06	.002 - .004 0.05 - 0.1

T-Slot Milling for 3 flute tools

Workpiece material	Coating Grade	v_c (SFM) (m/min)	f_z
			(in) (mm)
Carbon steel	TI25 / RC45	985 - 1310 300 - 400	.004 - .005 0.1 - 0.13
Alloyed steel	TI25 / RC45	590 - 985 180 - 300	.005 - .008 0.13 - 0.21
Grey cast iron	TI25 / RC45	460 - 785 140 - 240	.006 - .011 0.16 - 0.27



Cutting Data for 406 / 409 System Tools

T-Slot Milling Ø25 - 32 mm

Workpiece material	Coating Grade	v_c (SFM) (m/min)	f_z (in) (mm)
Heat-treatable steel	AS4B / AS46	395 - 525 120 - 160	.003 - .006 0.07 - 0.14
Grey cast iron	AS4B / AS46	330 - 525 100 - 160	.003 - .006 0.07 - 0.14

T-Slot Milling Ø40 - 50 mm

Workpiece material	Coating Grade	v_c (SFM) (m/min)	f_z (in) (mm)
Heat-treatable steel	AS4B / AS46	195 - 295 60 - 90	.002 - .003 0.06 - 0.08
Grey cast iron	AS4B / AS46	295 - 460 90 - 140	.002 - .003 0.06 - 0.08

T-Slot Milling - Cutting Speeds



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	AS46 a _e /D _c		AS4B a _e /D _c	
							100%	50%	100%	50%
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	425 130	525 160	425 130	525 160
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	425 130	525 160	425 130	525 160
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	425 130	525 160	425 130	525 160
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	425 130	525 160	425 130	525 160
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	425 130	525 160	425 130	525 160
		free cutting steel	P1.6	220	750	1213 , 9SMn28	425 130	525 160	425 130	525 160
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	475 145	525 160	475 145	525 160
		quenched	P2.2	280	960	3415 , 14NiCr10	475 145	525 160	475 145	525 160
		quenched	P2.3	350	1250	4135 , 34CrMo4	475 145	525 160	475 145	525 160
		quenched	P2.4	430	1450	5155 , 55Cr3	475 145	525 160	475 145	525 160
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18				
		hardened	P3.2	350	1200	D3 , X210Cr2				
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200				
		alloyed	P4.2	220	750	10295 , GX40CrSi28				
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39				
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455, 465 , X16Cr13	215 65	280 85	215 65	280 85
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	215 65	280 85	215 65	280 85
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	215 65	280 85	215 65	280 85

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	AS46 a _e /D _c		AS4B a _e /D _c	
							100%	50%	100%	50%
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	590 180	690 210	590 180	690 210
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	590 180	690 210	590 180	690 210
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	590 180	690 210	590 180	690 210
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	590 180	690 210	590 180	690 210
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1	920 280	1770 540	920 280	1770 540
		heat treatable	N1.2	100	340	6061, 7075 , AlMgSi1	920 280	1770 540	920 280	1770 540
N	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441 , AlMgSi6				
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg				
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12				
	Copper-alloys	pure copper	N3.1	100	340	C11000 , Cu				
		brass	N3.2	90	310	C38500 , CuZn40Pb				
		lead-free brass	N3.3	110	430	C28000 , CuZn40				
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3				

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)



J

INDEXABLE AND HIGH FEED

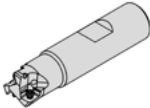
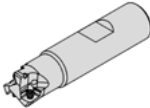
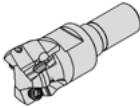
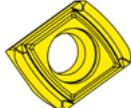
SYSTEMS DAM (INDEXABLE), DAHM (HIGH FEED)

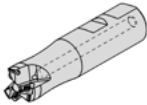
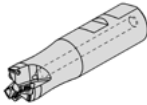
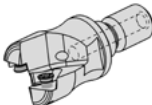
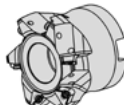
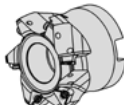
Machining	Tool Systems			
	DAH25 High Feed	DAH37 High Feed	DAH82 High Feed	DAH84 High Feed
	•	•	•	•
	•	•	•	•
	•	•	•	•
	•	•	•	•

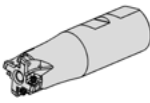
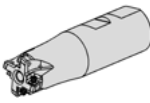
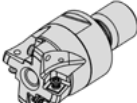
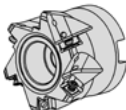
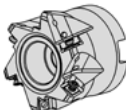
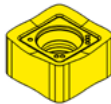
ø DC (diameter)	.472 - .984" 12-25mm	.787 - 3.149" 20-80mm	.787 - 1.968" 20-50mm	1.968 - 4.921" 50-125mm
a _p (max DOC)	.039" 1.0mm	.047" 1.2mm	.039" 1mm	.059" 1.5mm
Insert type	DAH25	DAH37	DAH82	DAH84

P - General Steels	•	•	•	•
M - Stainless Steels	•	•	•	•
K - Cast Iron	•	•	•	•
N - Non-Ferrous	o	-	o	o
S - Superalloys	-	-	o	o
H - Hardened Steels	-	-	-	-

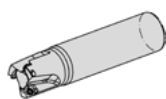
•	= Recommended
o	= Suitable/Secondary
-	= Not Recommended

HIGH FEED	Weldon		Screw-in	Inserts
	 Page 464 DAHMU25 Ø.500"-1"	 Page 465 DAHM25 Ø12-25mm	 Page 466 DAHM25 Ø12-25mm	 Page 467 DAH25 Multi-Purpose

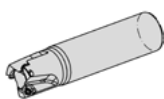
HIGH FEED	Weldon		Screw-in	Arbor	
	 Page 469 DAHMU37 Ø1.000"-1.500"	 Page 470 DAHM37 Ø20-32mm	 Page 471 DAHM37 Ø20-40mm	 Page 472 DAHMU37 Ø1.500"-3.000"	 Page 473 DAHM37 Ø40-80mm
	Inserts				
	 Page 474 DAH37 Neutral Geometry	 Page 475 DAH37 Positive Geometry			

HIGH FEED	Weldon		Screw-in		
	 Page 481 DAHMU82 Ø1.000"-1.500"	 Page 482 DAHM82 Ø20-40mm	 Page 483 DAHM82 Ø20-40mm		
	Arbor			Inserts	
	 Page 484 DAHMU82 Ø1.500"-2.000"	 Page 485 DAHM84 Ø2.000"-5.000"	 Page 486 DAHM82 / DAHM84 Ø40-125mm	 Page 487 DAH82 / DAH84 Multi-Purpose	

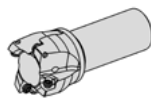
Round Shank and Weldon



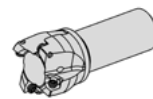
Page 492-493
DAMU31
Ø.409"-1.250"



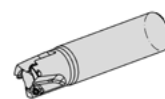
Page 494
DAMU32
Ø.689"



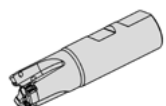
Page 495
DAMU32
Ø.750"-1.250"



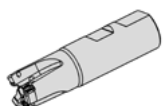
Page 496
DAM31 / DAM32
Ø20-32mm



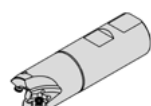
Page 497
DAM31 / DAM32
Ø16-32mm



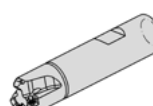
Page 498
DAMU62
Ø.750"-1.250"



Page 499
DAM62
Ø20-32mm

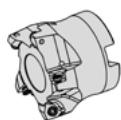


Page 500
DAM65
Ø32-40mm

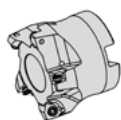


Page 501
DAM31
Chamfer Milling

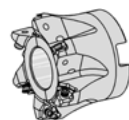
Arbor Mounted



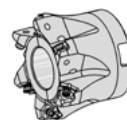
Page 502
DAMU32
Ø1.500"-2.500"



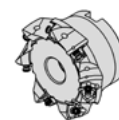
Page 503
DAM32
Ø40-63mm



Page 504
DAMU62
Ø1.500"-3.000"

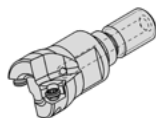


Page 505
DAM62
Ø40-80mm

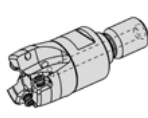


Page 506
DAM65
Ø50-100mm

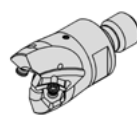
Screw-in



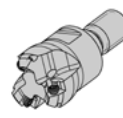
Page 507
DAM31 / DAM32
Ø16-32mm



Page 508
DAM62
Ø 25-32mm

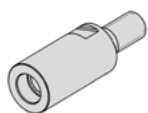


Page 509
DAM65
Ø 32-40mm

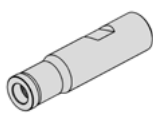


Page 510
DAM31
Chamfer Milling

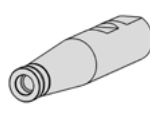
Screw-in Adaptors and Extensions



Page 511
MD
Screw-in Extension



Page 512
MD
Screw-in Adaptor

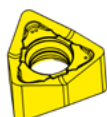


Page 513
MD
Screw-in Adaptor

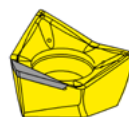
Carbide Inserts



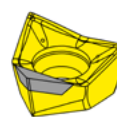
Page 514
DA31 / DA32
Multi-Purpose



Page 515
DA62 / DA65
Multi-Purpose



Page 516
DA32
CVD-D Tipped



Page 517
DA32
PCD Tipped

Tipped Inserts



J

SYSTEM DAHM - HIGH FEED

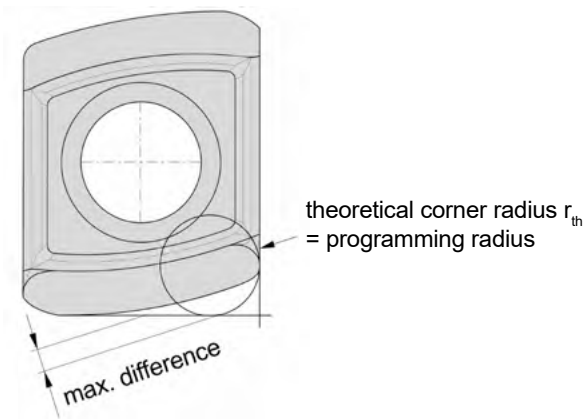
90° Mill, 90° Screw-in Cutter, Arbor Mounted Cutter

Ramp Angle

Tool Ø	Max Ramp Angle
.472" / 12mm	6.5°
.630" / 16mm	2.5°
.787" / 20mm	1.5°
.984" / 25mm	1.0°

Programming Radius and Difference

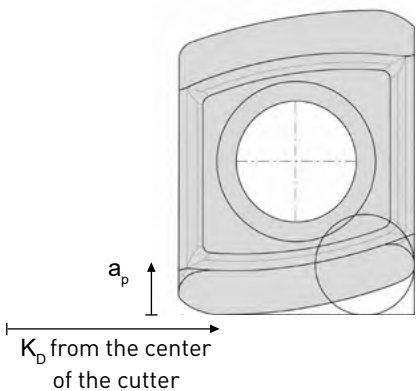
r_{th}	Max. Difference
.055" / 1.4mm	.024" / 0.61mm



The effective/actual cutting diameter d_{eff} must be calculated to determine the correct RPM and the cutting feed.

The effective cutting diameter is calculated using the following values and formula.

a_p = depth of cut
 D_s = cutter diameter
 K_D = from correction value chart

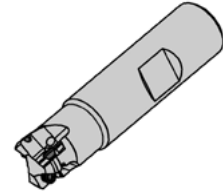
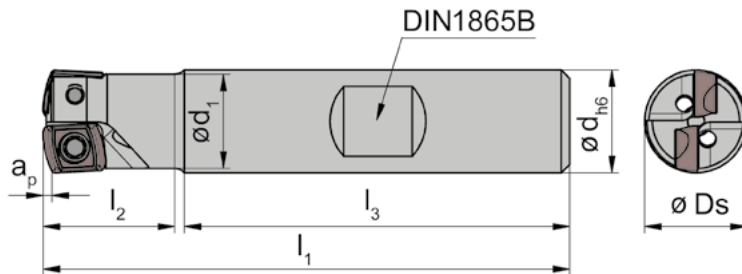
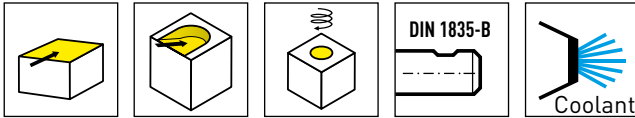


Correction Value Inch

a_p	K_D
.004"	.208"
.008"	.256"
.012"	.291"
.016"	.319"
.020"	.346"
.024"	.370"
.027"	.393"
.031"	.413"
.035"	.433"
.039"	.472"

Correction Value Metric

a_p	K_D
0.1mm	5.3mm
0.2mm	6.5mm
0.3mm	7.4mm
0.4mm	8.1mm
0.5mm	8.8mm
0.6mm	9.4mm
0.7mm	10.0mm
0.8mm	10.5mm
0.9mm	11.0mm
1.0mm	12.0mm



Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAHMU.25.050.D050.2.02B	2	.500	.500	2.445	.591	.461	1.783	.039	DAH25
DAHMU.25.050.D050.4.02B	2	.500	.500	3.319	1.496	.461	1.783	.039	DAH25
DAHMU.25.062.D062.3.03B	3	.625	.625	2.750	.787	.586	1.909	.039	DAH25
DAHMU.25.062.D062.5.02B	2	.625	.625	3.839	1.890	.586	1.909	.039	DAH25
DAHMU.25.062.D062.5.03B	3	.625	.625	3.839	1.929	.586	1.909	.039	DAH25
DAHMU.25.075.D075.3.03B	3	.750	.750	3.024	.984	.671	2.031	.039	DAH25
DAHMU.25.075.D075.6.03B	3	.750	.750	4.339	2.283	.671	2.031	.039	DAH25
DAHMU.25.100.D100.4.04B	4	1.000	1.000	3.465	1.102	.921	2.283	.039	DAH25
DAHMU.25.100.D100.7.04B	4	1.000	1.000	5.354	2.953	.921	2.283	.039	DAH25

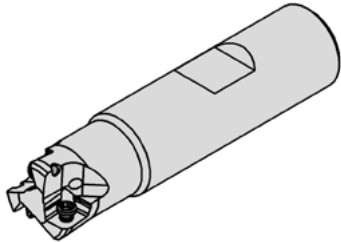
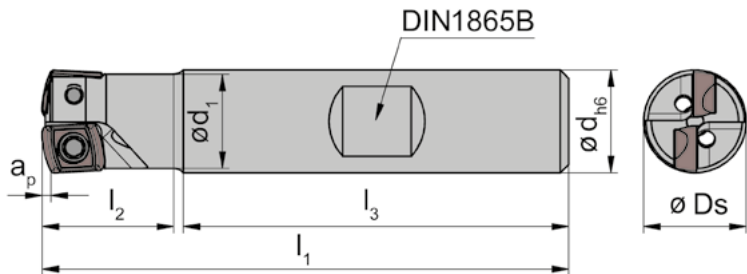
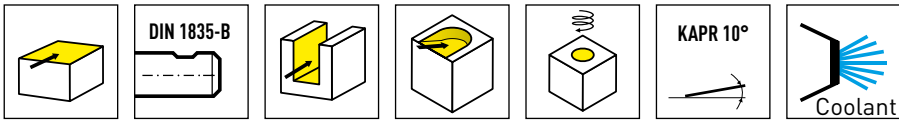
Dimensions in inch



J

Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHMU.25.050.D050...	030.2547.T8P	T8PL	1.3 Nm
DAHMU.25...	030.2553.T8P	T8PL	1.3 Nm



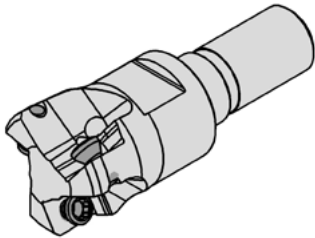
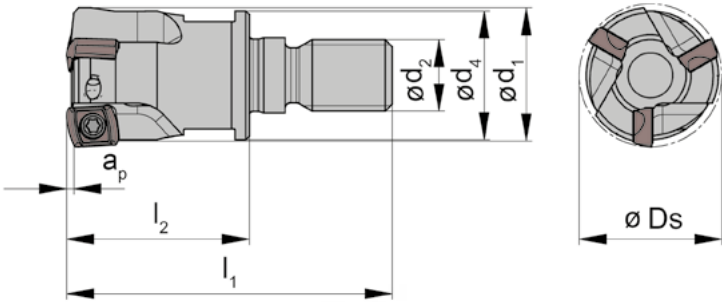
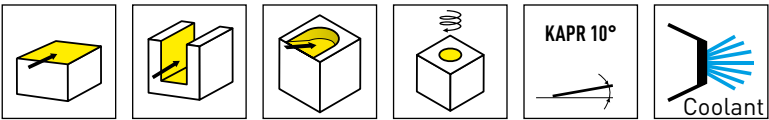
Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAH25.012.D122.02B	2	12	12	61.5	15	11	45	1	DAH25
DAH25.016.D163.03B	3	16	16	69.5	20	14.5	48	1	DAH25
DAH25.020.D204.03B	3	20	20	76.5	25	18	50	1	DAH25
DAH25.012.D124.02B	2	12	12	82.5	36	11.5	45	1	DAH25
DAH25.016.D165.02B	2	16	16	97.5	48	15.4	48	1	DAH25
DAH25.016.D165.03B	3	16	16	97.5	48	15.4	48	1	DAH25
DAH25.020.D206.03B	3	20	20	111.5	60	19	50	1	DAH25
DAH25.025.D257.04B	4	25	25	132.5	75	24	56	1	DAH25

Dimensions in mm

J

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAH25.012.D1...	030.2547.T8P	T8PL	1.3 Nm
DAH25....	030.2553.T8P	T8PL	1.3 Nm

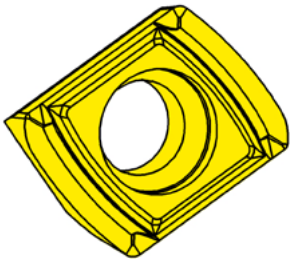
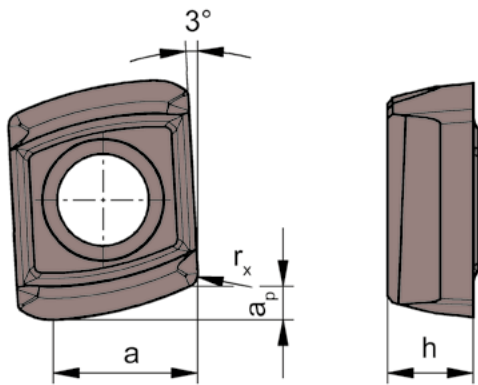
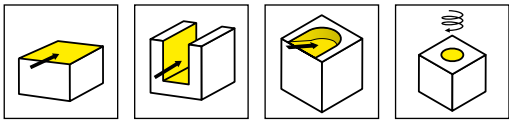


Part number	Z	Ds	l ₁	l ₂	d ₁	a _p	d ₂	d ₄	HWS	HMS
DAH25.012.M062.02	2	12	26	13.5	11	1	M6	11.5	DAH25	6001
DAH25.016.M083.02	2	16	39	20.5	13	1	M8	15.4	DAH25	08001
DAH25.016.M083.03	3	16	39	20.5	13	1	M8	15.4	DAH25	08001
DAH25.020.M104.03	3	20	45	25.5	18	1	M10	19	DAH25	10001
DAH25.025.M125.04	4	25	50	28	21	1	M12	24	DAH25	12001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAH25.012.M062.02	030.2547.T8P	T8PL	1.3 Nm
DAH25....	030.2553.T8P	T8PL	1.3 Nm



Coating grades

▲ In stock Δ 2 weeks

Part number	a _p	a	h	r _x	HIS	SA4B	
DAH.25.011.D.04	1	4.4	2.6	0.4	DAH25	▲	
						P	●
						M	●
						K	●
						N	●
						S	-
						H	-

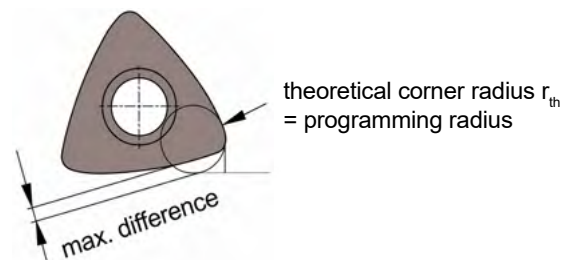
Dimensions in mm

Ramp Angle

Tool Ø	Ramp Angle
.787" / 20mm	5.0°
.984" / 25mm	4.0°
1.260" / 32mm	1.0°
1.574" / 40mm	0.5°
1.968" / 50mm	0.5°
2.480" / 63mm	0.4°
3.150" / 80mm	0.4°

Programming Radius and Difference

r_{th}	Max. Difference
.078" / 2mm	.032" / 0.83mm



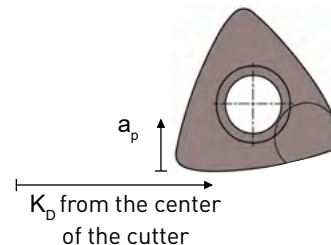
The effective/actual cutting diameter d_{eff} must be calculated to determine the correct RPM and the cutting feed.

The effective cutting diameter is calculated using the following values and formula.

a_p = depth of cut

D_s = cutter diameter

K_D = from correction value chart

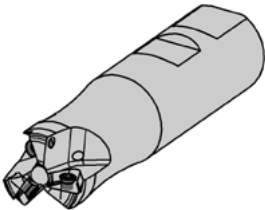
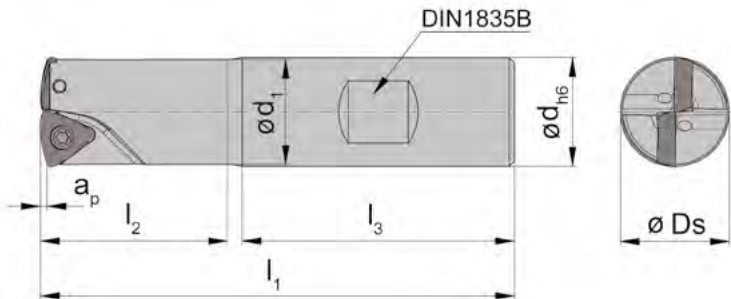
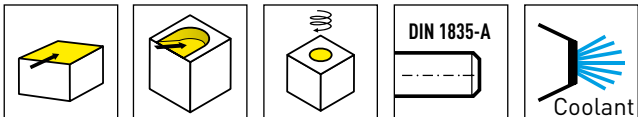


Correction Value Inch

a_p	K_D
.004"	.382"
.008"	.451"
.012"	.504"
.016"	.548"
.020"	.587"
.024"	.622"
.027"	.655"
.031"	.685"
.035"	.713"
.039"	.739"
.043"	.764"
.047"	.787"

Correction Value Metric

a_p	K_D
.01mm	9.71mm
.02mm	11.47mm
.03mm	12.81mm
.04mm	13.93mm
.05mm	14.92mm
.06mm	15.82mm
.07mm	16.63mm
.08mm	17.39mm
.09mm	18.10mm
1.0mm	18.77mm
1.1mm	19.40mm
1.2mm	20.00mm



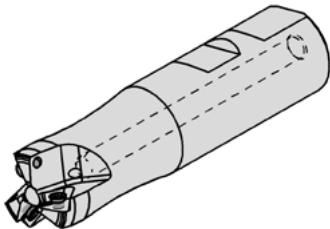
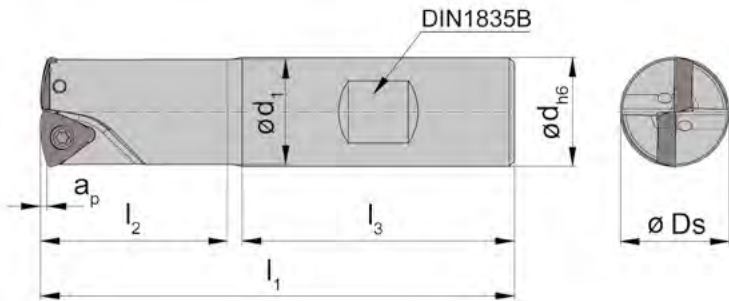
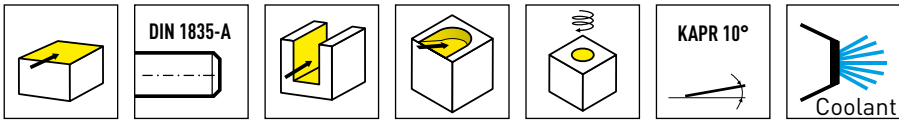
Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAHMU.37.100.D100.5.03B	3	1.000	1.000	4.087	1.803	.961	2.283	.047	DAH37
DAHMU.37.125.D125.6.04B	4	1.250	1.000	4.276	1.992	1.211	2.283	.047	DAH37
DAHMU.37.150.D125.6.05B	5	1.500	1.250	4.276	1.992	1.461	2.283	.047	DAH37

Dimensions in inch



Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHMU.37	030.3070.T10P	T10PL	3.4 Nm

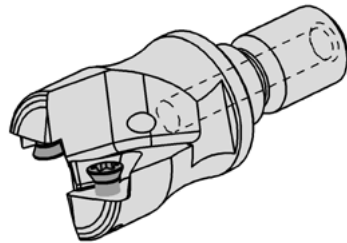
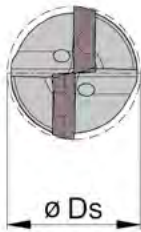
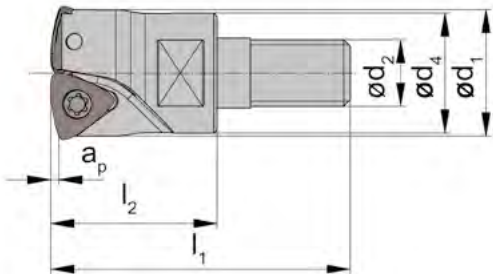
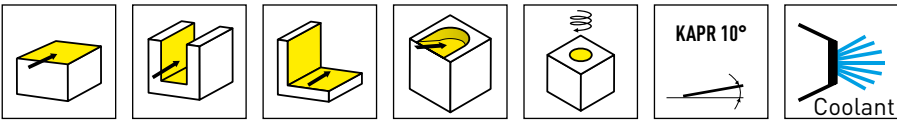


Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAH37.020.D204.02B	2	20	20	87	34	19	50	1.2	DAH37
DAH37.025.D255.03B	3	25	25	101	41	24	56	1.2	DAH37
DAH37.032.D326.04B	4	32	32	111	47	31	60	1.2	DAH37

Dimensions in mm

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAH37	030.3070.T10P	T10PL	3.4 Nm

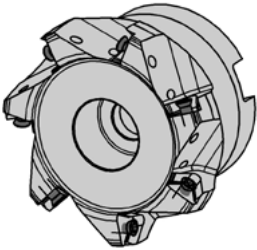
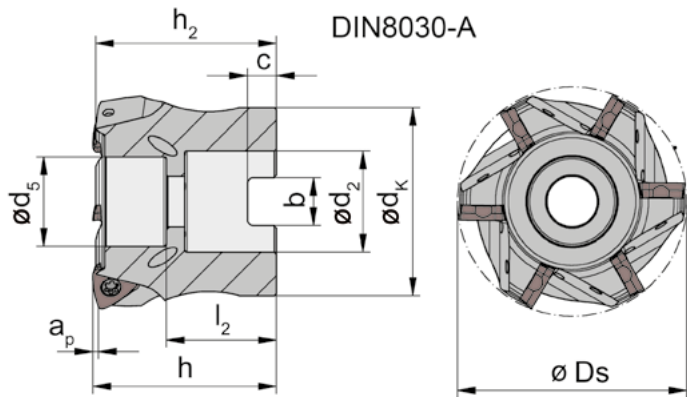
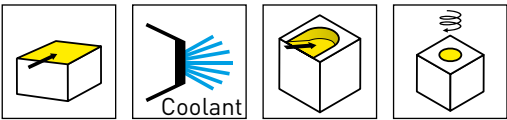


Part number	Z	Ds	l ₁	l ₂	d ₁	a _p	d ₂	d ₄	SW	HWS	HMS
DAH37.020.M104.02	2	20	45	25	19	1.2	M10	18	15	DAH37	10001
DAH37.025.M125.03	3	25	52	30	24	1.2	M12	21	17	DAH37	12001
DAH37.032.M166.04	4	32	58	35	31	1.2	M16	29	24	DAH37	16001
DAH37.040.M166.05	5	40	58	35	39	1.2	M16	29	24	DAH37	16001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAH37	030.3070.T10P	T10PL	3.4 Nm



Part number	Z	Ds	ap	h ₂	h	d ₅	d _k	l ₂	b	C	d ₂	HWS
DAHMU.37.015.A050.05	5	1.500	.047	1.354	1.378	.472	1.378	.961	.258	.165	.500	DAH37
DAHMU.37.020.A075.06	6	2.000	.047	1.551	1.575	.669	1.752	1.043	.320	.193	.750	DAH37
DAHMU.37.025.A075.07	7	2.500	.047	1.551	1.575	.669	1.752	1.043	.320	.193	.750	DAH37
DAHMU.37.025.A100.07	7	2.500	.047	1.976	2.000	.866	2.382	1.327	.383	.224	1.000	DAH37
DAHMU.37.030.A100.08	8	3.000	.047	1.976	2.000	.866	2.382	1.327	.383	.224	1.000	DAH37

Dimensions in inch

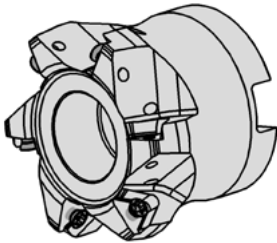
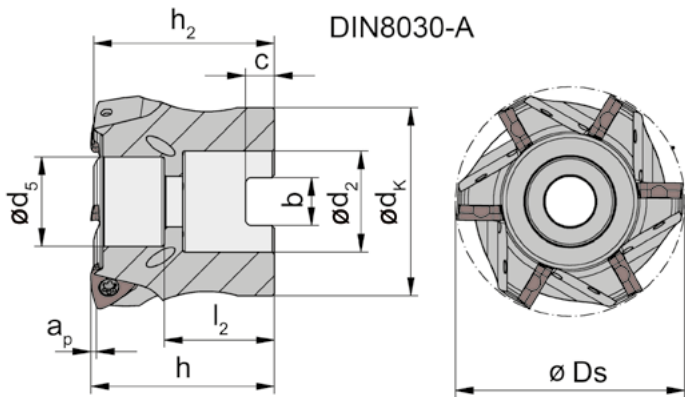
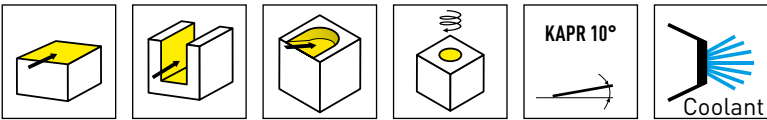


Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHMU.37	030.3070.T10P	T10PL	3.4 Nm

Arbor Mounted Cutter

DAH37



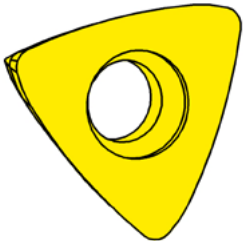
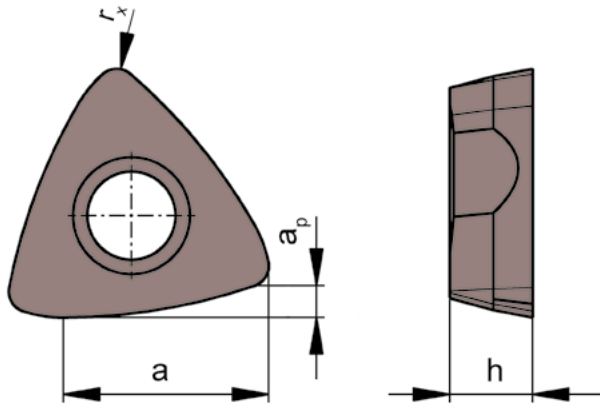
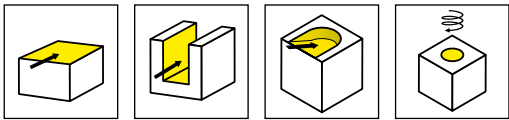
Picture = right hand cutting version

Part number	Z	Ds	ap	h2	h	d5	dk	l2	b	C	d2	HWS
DAH37.040.A1635.05	5	40	1.2	34.4	35	16	33	22	8.4	5.6	16	DAH37
DAH37.050.A2235.06	6	50	1.2	39.4	40	19.5	41	24	10.4	6.3	22	DAH37
DAH37.063.A2240.07	7	63	1.2	39.4	40	19.5	49	24	10.4	6.3	22	DAH37
DAH37.063.A2740.07	7	63	1.2	44.4	45	21.5	49	27	12.4	7	27	DAH37
DAH37.080.A3245.08	8	80	1.2	54.4	55	29.5	59	33	12.4	8	32	DAH37

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAH37	030.3070.T10P	T10PL	3.4 Nm

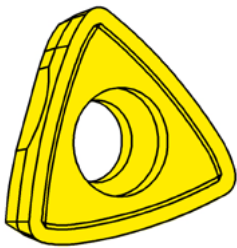
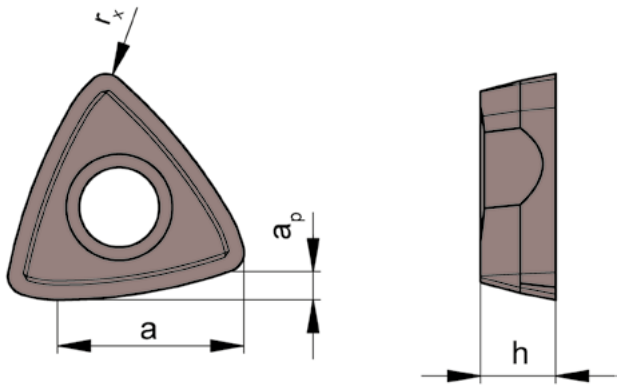
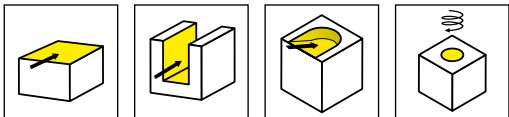


Coating grades

▲ In stock Δ 2 weeks

Part number	a _p	a	h	r _x	HIS		SA4B	SC6A
DAH.37.022.N.08	1.2	7.9	3.18	0.8	DAH37		▲	▲
Neutral geometry for stronger, more stable edges - useful for rigid machines, roughing, interrupted cuts, and demanding production conditions.							P	● ●
							M	● ●
							K	● ●
							N	● ●
							S	- -
							H	- -

Dimensions in mm



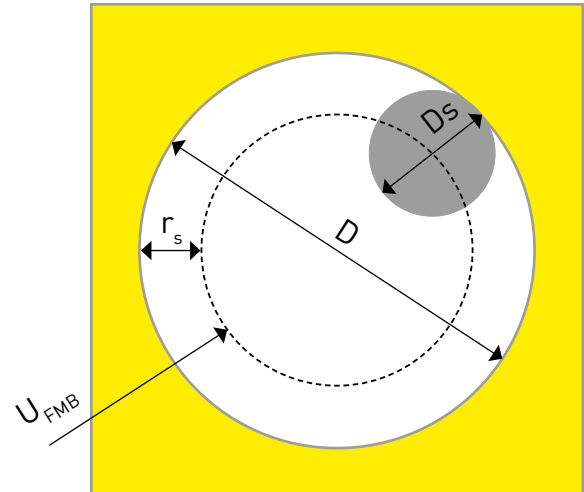
Coating grades

▲ In stock Δ 2 weeks

Part number	a _p	a	h	r _x	HIS	SA4B	
DAH.37.022.S.08	1.2	7.9	3.18	0.8	DAH37	▲	
Positive geometry for smoother, lower-force cutting - useful for lighter machines, long stickout, and difficult materials. Dimensions in mm						P	●
						M	●
						K	●
						N	●
						S	-
						H	-

Calculation of cutter center path

D = Bore diameter of the workpiece
 D_s = Cutting diameter of the tool
 r_s = Cutting radius of the tool
 U_{FMB} = Circumference of cutter center path



$$U_{FMB} = \pi \times (\text{Bore diameter of workpiece} - \text{Cutting diameter of the tool})$$

$$\longrightarrow U_{FMB} = \pi \times (D - D_s)$$

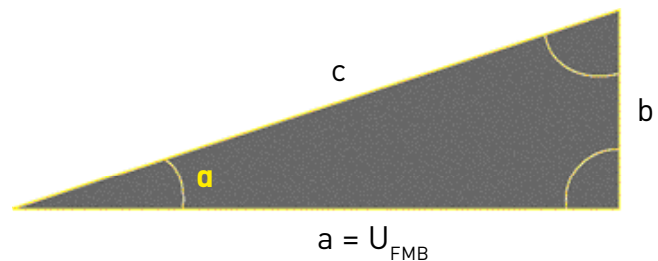
or

$$U_{FMB} = \pi \times (\text{Bore diameter of workpiece} - (2 \times \text{Cutting radius}))$$

$$\longrightarrow U_{FMB} = \pi \times (D - (2 \times r_s))$$

Calculation using cutter center path: The start is the right-angled triangle

α = Ramp angle
 b = Depth of cut per rotation (Pitch)
 a = Circumference of cutter center path



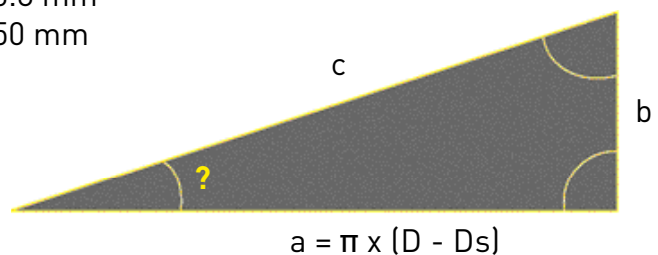
Example of missing ramp angle = ?

Bore diameter of workpiece $D = 98 \text{ mm}$
 Depth of cut per rotation $b = 0.8 \text{ mm}$
 Cutting diameter $D_s = 50 \text{ mm}$

$$\tan \alpha = \frac{\text{Opposite side } b}{\text{Adjacent side } a}$$

$$\tan \alpha = \frac{0.8 \text{ mm}}{150.8 \text{ mm}}$$

$$\alpha = 0.30^\circ$$



Cutter center path - Theoretical values

DAH82	
Cutting Ø	Ramp angle
.787" --- 20mm	5°
.984" --- 25mm	3.9°
1.260" --- 32mm	2.8°
1.378" --- 35mm	2.4°
1.575" --- 40mm	1.9°
1.654" --- 42mm	1.8°
1.969" --- 50mm	1.4°

DAH84	
Cutting Ø	Ramp angle
1.969" --- 50mm	2.7°
2.047" --- 52mm	2.5°
2.480" --- 63mm	1.8°
2.598" --- 66mm	1.7°
3.150" --- 80mm	1.3°
3.346" --- 85mm	1.2°
3.937" --- 100mm	1.0°
4.921" --- 125mm	0.8°

Recommendations for ramping with DAH82:

$$a_{p \max} = .039" / 1 \text{ mm}$$

→ Feed per revolution: 50% of $a_{p \max}$ as starting value

→ Depending on conditions, up to 80 % of the $a_{p \max}$ possible

→ .019" / 0.5 mm up to .031" / 0.8 mm feed per revolution

Recommendations for ramping with DAH84:

$$a_{p \max} = .059" / 1.5 \text{ mm}$$

→ Feed per revolution: 67% of $a_{p \max}$ as starting value

→ Depending on conditions, up to 80 % of the $a_{p \max}$ possible

→ .039" / 1.0 mm up to .047" / 1.2 mm feed per revolution

Calculation of bore diameter with flat base DAH82

$$D_{\min} = (D_s - a) \times 2$$

$$D_{\min} = (50 \text{ mm} - 6.8 \text{ mm}) \times 2$$

$$D_{\min} = 86.4 \text{ mm}$$



Meaning:

With a cutting diameter of 50 mm, a bore diameter of 86.4 mm with a flat base can be achieved.

$$D_{\max} = (D_s - r_x) \times 2$$

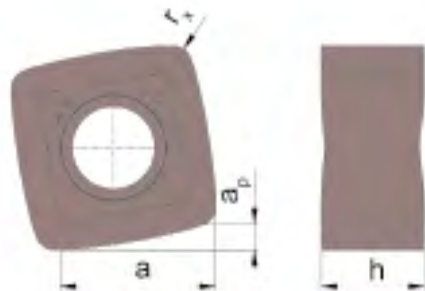
$$D_{\max} = (50 \text{ mm} - 0.8 \text{ mm}) \times 2$$

$$D_{\max} = 98.4 \text{ mm}$$



Meaning:

With a cutting diameter of 50 mm, a diameter of 98.4 mm will be created without a flat base. Material remains in the center.



$$r_x = 0.8 \text{ mm}$$

$$a = 6.8 \text{ mm}$$

Calculation of bore diameter with flat base DAH84

$$D_{\min} = (Ds - a) \times 2$$

$$D_{\min} = (50 \text{ mm} - 9.8 \text{ mm}) \times 2$$

$$D_{\min} = 80.4 \text{ mm}$$



Meaning:

With a cutting diameter of 50 mm, of a bore diameter of 80.4 mm **with** a flat base can be achieved.

$$D_{\max} = (Ds - r_x) \times 2$$

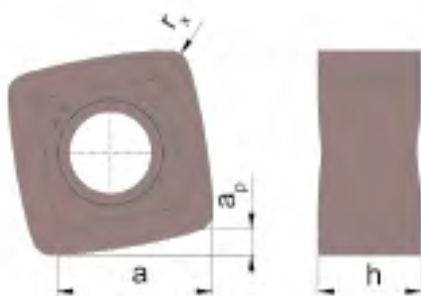
$$D_{\max} = (50 \text{ mm} - 1.2 \text{ mm}) \times 2$$

$$D_{\max} = 97.6 \text{ mm}$$



Meaning:

With a cutting diameter of 50 mm, a diameter of 97.6 mm will be created **without** a flat base. Material remains in the center.



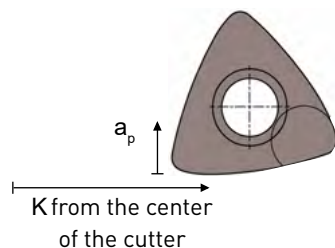
$$r_x = 1.2 \text{ mm}$$

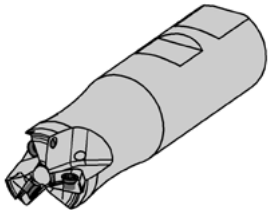
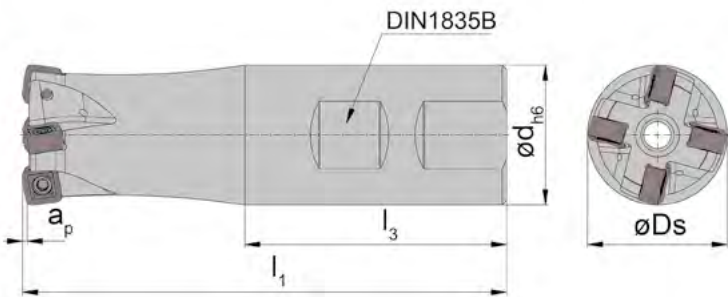
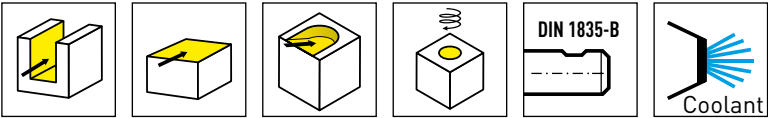
$$a = 9.8 \text{ mm}$$

- When using a high feed milling cutter, the effective cutting diameter is not identical with the specified value.
- The correction factors are dependent on the cutting depth a_p .
- This applies to face milling.
- Calculation for D_s effective for face milling: **$D_s \text{ effective} = D_s - K$**

DAH82	
Depth of cut a_p [in] --- [mm]	Correction factor K [in] --- [mm]
.003" --- 0.1mm	.429" --- 10.9mm
.007" --- 0.2mm	.374" --- 9.5mm
.011" --- 0.3mm	.326" --- 8.3mm
.015" --- 0.4mm	.275" --- 7.0mm
.019" --- 0.5mm	.232" --- 5.9mm
.023" --- 0.6mm	.188" --- 4.8mm
.027" --- 0.7mm	.153" --- 3.9mm
.031" --- 0.8mm	.118" --- 3.0mm
.035" --- 0.9mm	.086" --- 2.2mm
.039" --- 1.0mm	.062" --- 1.6mm

DAH84	
Depth of cut a_p [in] --- [mm]	Correction factor K [in] --- [mm]
.003" --- 0.1mm	.641" --- 16.3mm
.007" --- 0.2mm	.574" --- 14.6mm
.011" --- 0.3mm	.511" --- 13.0mm
.015" --- 0.4mm	.460" --- 11.7mm
.019" --- 0.5mm	.409" --- 10.4mm
.023" --- 0.6mm	.366" --- 9.3mm
.027" --- 0.7mm	.322" --- 8.2mm
.031" --- 0.8mm	.287" --- 7.3mm
.035" --- 0.9mm	.251" --- 6.4mm
.039" --- 1.0mm	.220" --- 5.6mm
.043" --- 1.1mm	.192" --- 4.9mm
.047" --- 1.2mm	.161" --- 4.1mm
.051" --- 1.3mm	.137" --- 3.5mm
.055" --- 1.4mm	.110" --- 2.8mm
.059" --- 1.5mm	.090" --- 2.3mm





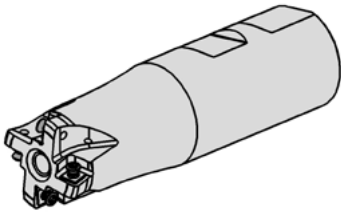
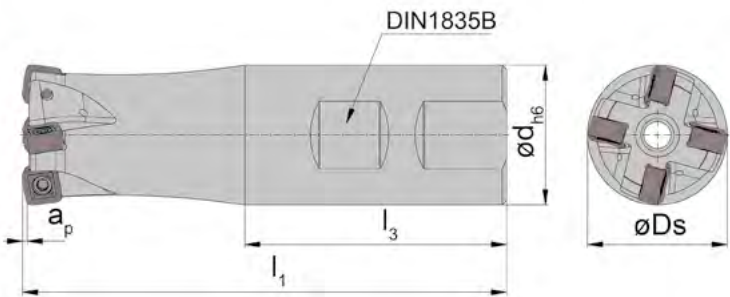
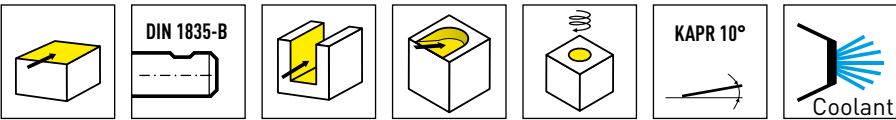
Part number	Z	Ds	d	l_1	l_3	a_p	n_{max}	HWS
DAHMU.82.100.D100.5.03B	3	1.000	1.000	4.087	2.283	.059	18500	DAH82
DAHMU.82.125.D125.6.04B	4	1.250	1.250	4.276	2.283	.059	16500	DAH82
DAHMU.82.150.D125.6.05B	5	1.500	1.250	4.276	2.283	.059	14500	DAH82

Dimensions in inch



Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHMU.82	030.3070.T10P	T10PL	3.4 Nm



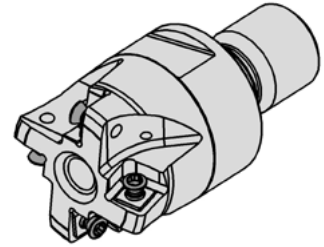
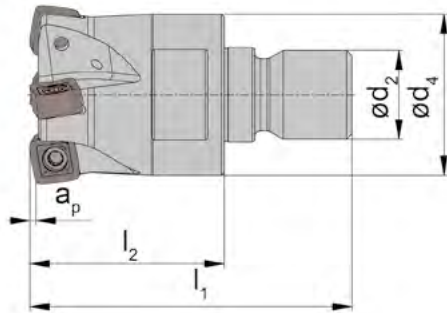
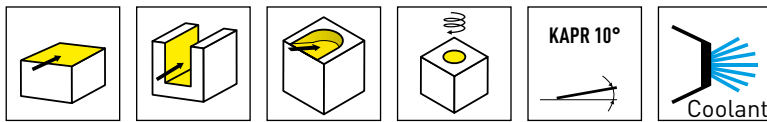
Picture = right hand cutting version

Part number	Z	Ds	d	l_1	l_3	a_p	n_{max}	HWS
DAH82.020.D204.02B	2	20	20	87	50	1	21000	DAH82
DAH82.025.D255.03B	3	25	25	101	56	1	18500	DAH82
DAH82.032.D326.04B	4	32	32	111	60	1	16500	DAH82
DAH82.035.D326.04B	4	35	32	111	60	1	15500	DAH82
DAH82.040.D326.05B	5	40	32	111	60	1	14500	DAH82

Dimensions in mm

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAH82	030.3070.T10P	T10PL	3.4 Nm



Picture = right hand cutting version

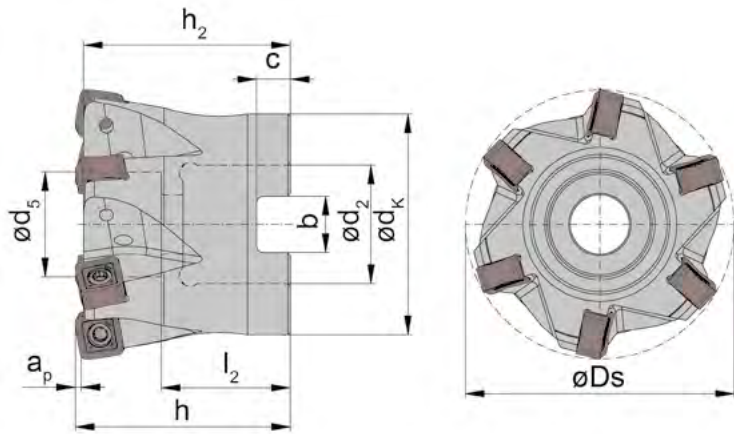
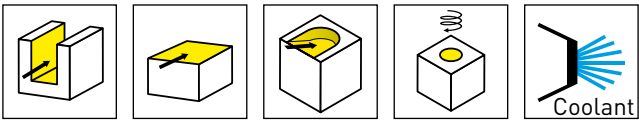
Part number	Z	Ds	l_1	l_2	d_4	a_p	d_2	SW	n_{max}	HWS	HMS
DAHM.82.020.M104.02	2	20	45	25	18	1	M10	15	21000	DAH82	10001
DAHM.82.025.M125.03	3	25	52	30	21	1	M12	17	18500	DAH82	12001
DAHM.82.032.M166.04	4	32	58	35	29	1	M16	24	16500	DAH82	16001
DAHM.82.035.M166.04	4	35	58	35	29	1	M16	24	15500	DAH82	16001
DAHM.82.040.M166.05	5	40	58	35	29	1	M16	24	14500	DAH82	16001

Dimensions in mm

J

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHM.82	030.3070.T10P	T10PL	3.4 Nm



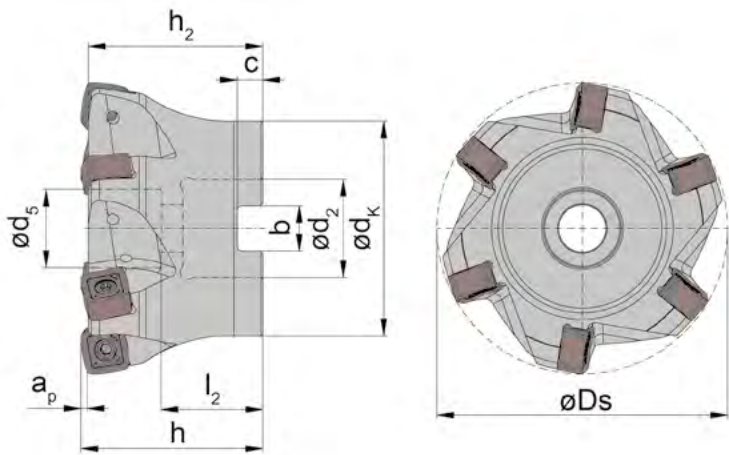
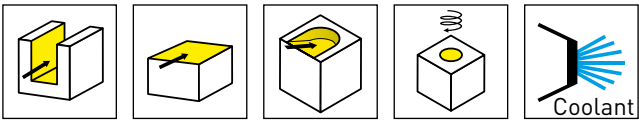
Part number	Z	Ds	ap	h2	h	d5	dk	l2	b	C	d2	nmax	HWS
DAHMU.82.015.A050.05	5	1.500	.039	1.319	1.378	.472	1.378	.965	.258	.165	.500	14500	DAH82
DAHMU.82.015.A075.05	5	1.500	.060	1.319	1.378	.590	1.730	.885	.320	.193	.750	14500	DAH82
DAHMU.82.020.A075.06	6	2.000	.039	1.516	1.575	.669	1.752	1.043	.320	.193	.750	13000	DAH82

Dimensions in inch



Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHMU.82	030.3070.T10P	T10PL	3.4 Nm



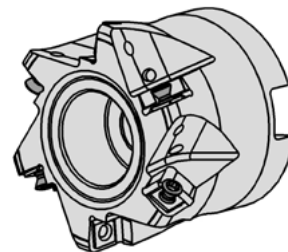
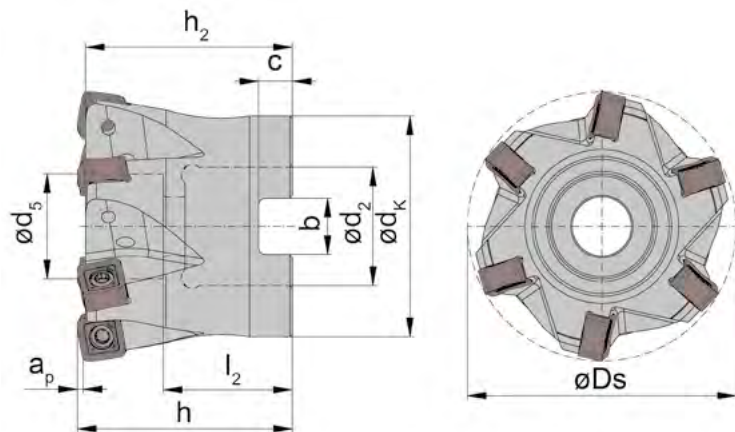
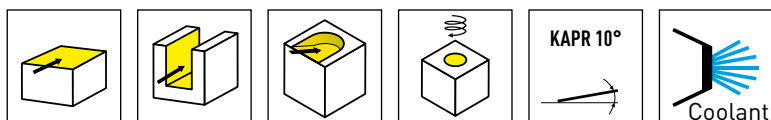
Part number	Z	Ds	ap	h2	h	ds	dk	l2	b	C	d2	nmax	HWS
DAHMU.84.020.A075.04	4	2.000	.059	1.496	1.575	.669	1.752	1.043	.320	.193	.750	8000	DAH84
DAHMU.84.025.A100.05	5	2.500	.059	1.921	2.000	.866	2.382	1.327	.383	.224	1.000	6500	DAH84
DAHMU.84.030.A100.06	6	3.000	.059	1.921	2.000	.866	2.382	1.327	.383	.224	1.000	5500	DAH84
DAHMU.84.040.A150.07	7	4.000	.059	2.421	2.500	1.220	3.799	1.555	.633	.382	1.500	5000	DAH84
DAHMU.84.050.A150.08	8	5.000	.059	2.421	2.500	1.220	3.799	1.555	.633	.382	1.500	4000	DAH84

Dimensions in inch



Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAHMU.84	030.0412.T15P	T15PQ	4.5 Nm



Picture = right hand cutting version

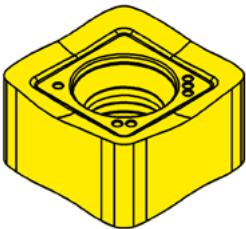
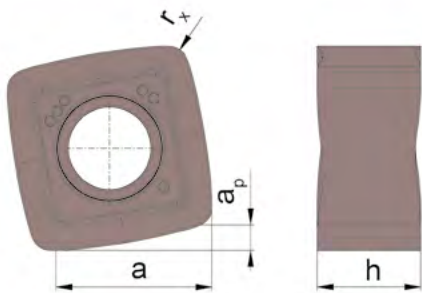
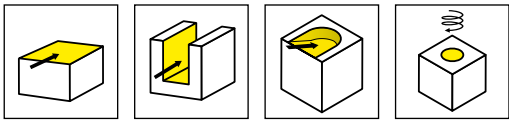
Part number	Z	Ds	a _p	h ₂	h	d ₅	d _K	l ₂	b	C	d ₂	n _{max}	HWS
DAHM.82.040.A1635.05	5	40	1	33.5	35	16	33	22	8.4	5.6	16	14500	DAH82
DAHM.84.050.A2240.04	4	50	1.5	38	40	16.5	41	25	10.4	6.3	22	8000	DAH84
DAHM.82.042.A1635.05	5	42	1	33.5	35	16	33	22	8.4	5.6	16	14000	DAH82
DAHM.84.052.A2240.04	4	52	1.5	38	40	16.5	41	25	10.4	6.3	22	7500	DAH84
DAHM.82.050.A2240.06	6	50	1	38.5	40	19.5	41	24	10.4	6.3	22	13000	DAH82
DAHM.84.063.A2240.05	5	63	1.5	38	40	19.5	49	25	10.4	6.3	22	6500	DAH84
DAHM.82.052.A2240.06	6	52	1	38.5	40	19.5	41	24	10.4	6.3	22	13000	DAH82
DAHM.84.066.A2240.05	5	66	1.5	38	40	19.5	49	25	10.4	6.3	22	6500	DAH84
DAHM.82.063.A2240.07	7	63	1	38.5	40	19.5	41	24	10.4	6.3	22	13000	DAH82
DAHM.84.080.A2750.06	6	80	1.5	48	50	21.5	59	28	12.4	7	27	5500	DAH84
DAHM.84.085.A2750.06	6	85	1.5	48	50	21.5	59	28	12.4	7	27	5500	DAH84
DAHM.84.100.A3250.07	7	100	1.5	48	50	30	80	33	14.4	8	32	5000	DAH84
DAHM.84.125.A4063.08	8	125	1.5	61	63	56	89	35	16.4	9	40	4000	DAH84

Dimensions in mm

J

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Tightening Bolt	Torque Value
DAHM.82....	030.3070.T10P	T10PL		3.4 Nm
DAHM.84...	030.0412.T15P	T15PQ		4.5 Nm
DAHM.84.125.A4063.08	030.0412.T15P	T15PQ	20.30.6367	4.5 Nm



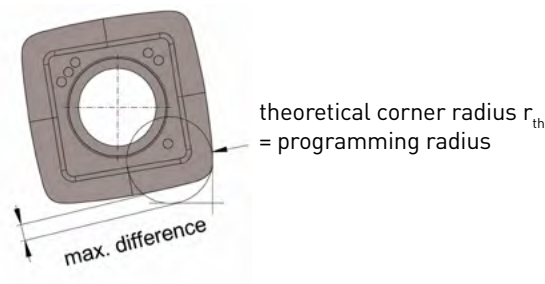
Coating grades

▲ In stock

Δ 2 weeks

Part number	a_p	a	h	r_x	HIS		IG6B	SA4B	SC6A
DAH.82.030.S.08	1	6.8	4.5	0.8	DAH82		▲	▲	▲
DAH.84.030.S.12	1.5	9.8	7	1.2	DAH84		▲	▲	▲
Positive geometry for smoother, lower-force cutting - useful for lighter machines, long stickout, and difficult materials.							P	●	●
Dimensions in mm							M	○	●
							K	○	●
							N	○	●
							S	○	-
							H	-	-

Programming Radius and Difference



Part number	r_{th}	max. difference
DAH.82	0.079" --- 2mm	.028" --- 0.72mm
DAH.84	.128" --- 3.25mm	.038" --- 0.96mm



SYSTEM DAM - INDEXABLE

90° Mill, 90° Screw-in Cutter, 45° Screw-in and Weldon, Arbor Mounted Cutter

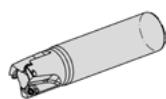
Machining	Tool Systems			
	DAM31	DAM32	DAM62	DAM65
	●	●	●	●
	●	●		
	●	●	●	●
	●	●		
	●	●	●	●
	●	●	●	●
	●	●	●	●

ø DC (diameter)	.630 - 1.260" 16-32mm	.787 - 2.480" 20-63mm	.787 - 3.149" 20-80mm	1.260 - 3.937" 32-100mm
a _p (max DOC)	.118" 3mm	.189" 4.8mm	.177" 4.5mm	.275" 7mm
Insert	DA31	DA32	DA62 SDA62	DA65 SDA65

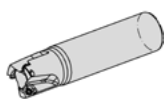
P - General Steels	●	●	●	●
M - Stainless Steels	●	●	●	●
K - Cast Iron	○	○	○	○
N - Non-Ferrous	●	●	○	○
S - Superalloys	○	○	○	○
H - Hardened Steels	-	-	-	-

●	= Recommended
○	= Suitable/Secondary
-	= Not Recommended

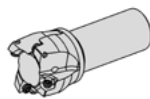
Round Shank and Weldon



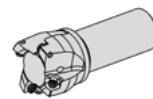
Page 492-493
DAMU31
Ø.409"-1.250"



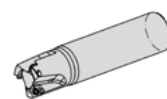
Page 494
DAMU32
Ø.689"



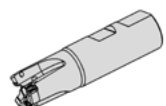
Page 495
DAMU32
Ø.750"-1.250"



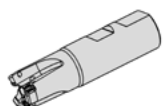
Page 496
DAM31 / DAM32
Ø20-32mm



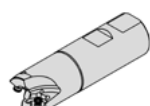
Page 497
DAM31 / DAM32
Ø16-32mm



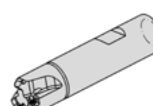
Page 498
DAMU62
Ø.750"-1.250"



Page 499
DAM62
Ø20-32mm

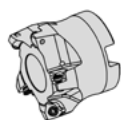


Page 500
DAM65
Ø32-40mm

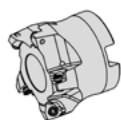


Page 501
DAM31
Chamfer Milling

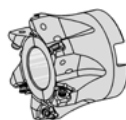
Arbor Mounted



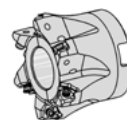
Page 502
DAMU32
Ø1.500"-2.500"



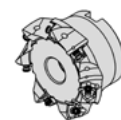
Page 503
DAM32
Ø40-63mm



Page 504
DAMU62
Ø1.500"-3.000"

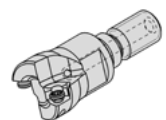


Page 505
DAM62
Ø40-80mm

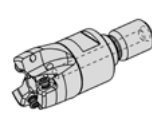


Page 506
DAM65
Ø50-100mm

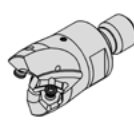
Screw-in



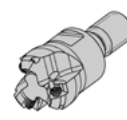
Page 507
DAM31 / DAM32
Ø16-32mm



Page 508
DAM62
Ø 25-32mm

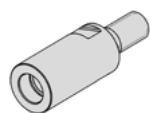


Page 509
DAM65
Ø 32-40mm

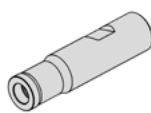


Page 510
DAM31
Chamfer Milling

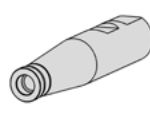
Screw-in Adaptors and Extensions



Page 511
MD
Screw-in Extension



Page 512
MD
Screw-in Adaptor

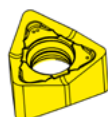


Page 513
MD
Screw-in Adaptor

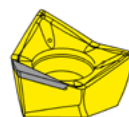
Carbide Inserts



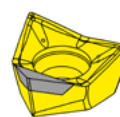
Page 514
DA31 / DA32
Multi-Purpose



Page 515
DA62 / DA65
Multi-Purpose



Page 516
DA32
CVD-D Tipped



Page 517
DA32
PCD Tipped

Tipped Inserts

Max ramp angles and plunge milling values for 90° DAM31/DAM32 cutters

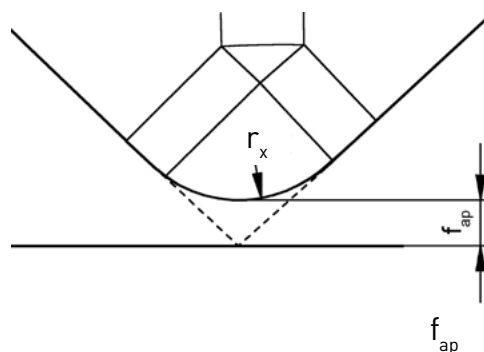
Tool System	DAM32	DAM32	DAM32	DAM31	DAM31	DAM31	DAM31
Cutter Diameter (mm)	Ø 32	Ø 25	Ø 20	Ø 32	Ø 25	Ø 20	Ø 16
Max ramp angle [°]	3.5°	3.5°	3.5°	4.0°	3.5°	3.5°	3.0°
Max vertical plunging depth	.039" 1.0mm	.023" 0.6mm	.015" 0.4mm	.066" 1.7mm	.031" 0.8mm	.023" 0.6mm	.015" 0.4mm
Max stepover for plunge milling a_e	.181" 4.6mm	.181" 4.6mm	.181" 4.6mm	.122" 3.1mm	.122" 3.1mm	.122" 3.1mm	.122" 3.1mm

Max ramp angles and plunge milling values for 45° DAM31/DAM32 cutters

Tool System	DAM32	DAM31	DAM31
Cutter Diameter (mm)	Ø 17	Ø 14.4	Ø 10.5
Max ramp angle [°]	11°	7°	10,5°
Max vertical plunging depth	.125" 3.2mm	.078" 2.0mm	.078" 2.0mm

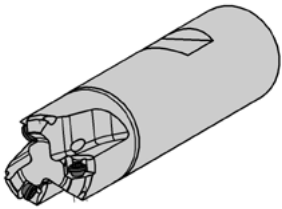
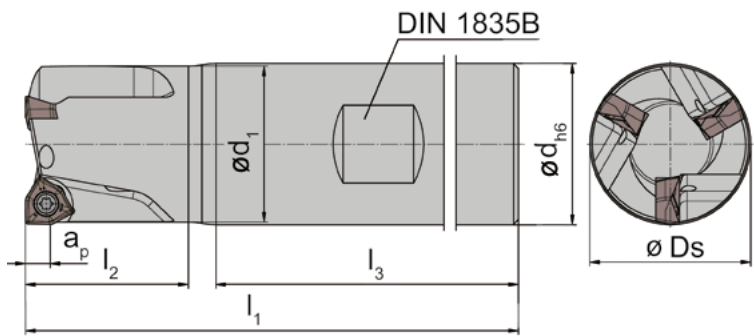
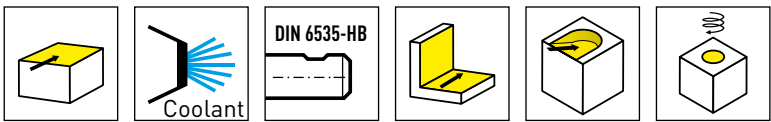
Correction factor for reduced cutting depth as a function of the corner radius in 45° milling

DAM31/32 Corner radius r_x	DAM31/32 Correction factor f_{ap}
0" 0mm	0" 0mm
.007" 0.2mm	.003" 0.08mm
.015" 0.4mm	.006" 0.17mm
.031" 0.8mm	.012" 0.33mm
.039" 1.0mm	.016" 0.41mm



Max ramp angle for DAM62

Ø Cutting diameter [mm]	Max ramp angle
20	2.4°
25	1.75°
32	1.25°
40	0.95°
50	0.7°
63	0.55°
80	0.4°



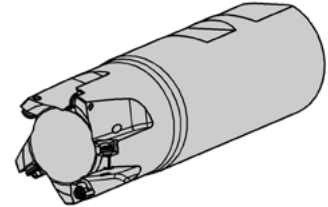
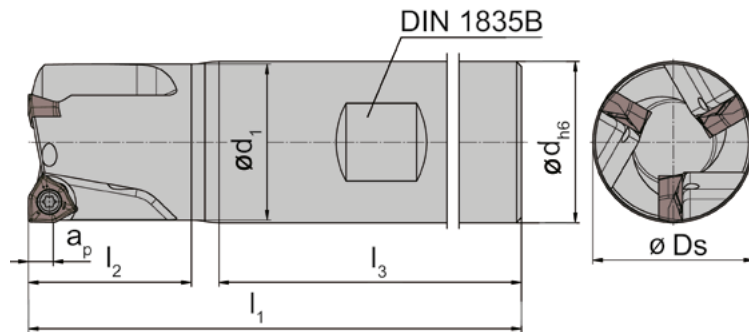
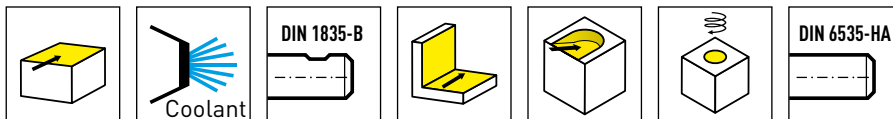
Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	d ₆	d ₅	HWS
DAMU31.411.D062.02B	2	.409	.625	3.000	.984	.622	2.000	.622	.591	DA3116
DAMU31.414.D075.03B	3	.565	.750	3.252	1.102	.780	2.125	.780	.740	DA3120

Dimensions in inch



Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU31.411.D062.02B	030.2541.T8P	T8PL	1.1 Nm
DAMU31.414.D075.03B	030.2547.T8P	T8PL	1.1 Nm

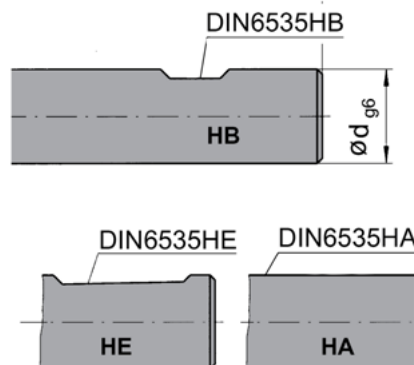


Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAMU31.062.D062.02B	2	.625	.625	3.000	.984	.586	2.000	.118	DA3116
DAMU31.075.D062.03A	3	.750	.625	2.125	.747	.711	1.378	.118	DA3120
DAMU31.075.D075.03B	3	.750	.750	3.250	1.102	.711	2.125	.118	DA3120
DAMU31.100.D062.04A	4	1.000	.625	2.250	.872	.961	1.378	.118	DA3125
DAMU31.100.D075.04A	4	1.000	.750	2.250	.872	.961	1.378	.118	DA3125
DAMU31.100.D100.04B	4	1.000	1.000	3.750	1.375	.961	2.375	.118	DA3125
DAMU31.125.D062.05A	5	1.250	.625	2.500	1.102	1.211	1.378	.118	DA3132
DAMU31.125.D075.05A	5	1.250	.750	2.500	1.102	1.211	1.378	.118	DA3132
DAMU31.125.D125.05B	5	1.250	1.250	4.000	1.614	1.211	2.375	.118	DA3132

Dimensions in inch

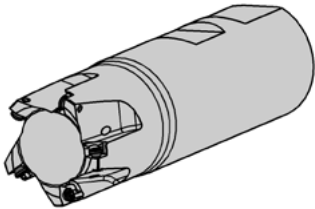
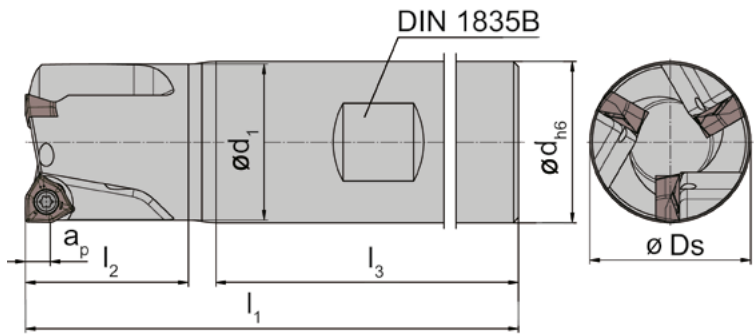
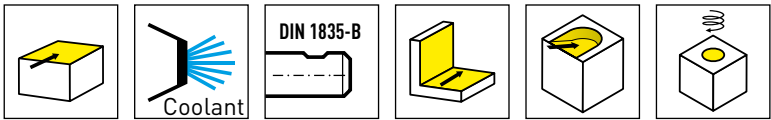


Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)



Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU31.062.D062.02B	030.2541.T8P	T8PL	1.1 Nm
DAMU31.075.D...	030.2547.T8P	T8PL	1.1 Nm
DAMU31.100....	030.2553.T8P	T8PL	1.1 Nm
DAMU31.125....	030.2557.T8P	T8PL	1.1 Nm



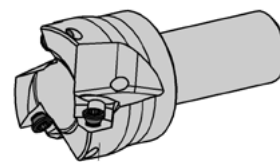
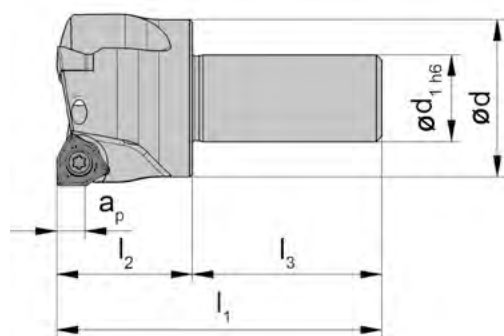
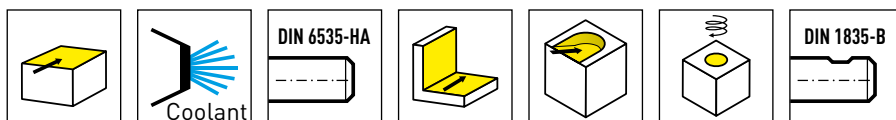
Part number	Z	Ds	d	l_1	l_2	d_1	l_3	d_6	d_5	HWS
DAMU32.417.D100.03B	3	.689	1.000	4.000	2.362	1.000	1.378	1.047	.939	DA3232

Dimensions in inch



Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU32.417.D100.03B	030.3569.T10P	T10PL	3.5 Nm

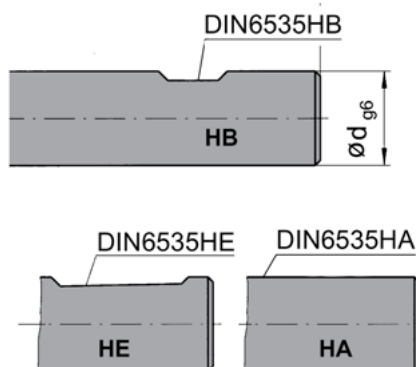


Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAMU32.075.D062.02A	2	.750	.625	2.125	.709	.711	1.378	.177	DA3220
DAMU32.075.D075.02B	2	.750	.750	3.250	1.102	.711	2.125	.177	DA3220
DAMU32.100.D062.03A	3	1.000	.625	2.250	.866	.961	1.378	.177	DA3225
DAMU32.100.D100.03B	3	1.000	1.000	4.000	1.614	.961	2.375	.177	DA3225
DAMU32.125.D062.03A	3	1.250	.625	2.500	1.102	1.211	1.378	.177	DA3232
DAMU32.125.D125.03B	3	1.250	1.250	4.000	1.614	1.211	2.375	.177	DA3232

Dimensions in inch

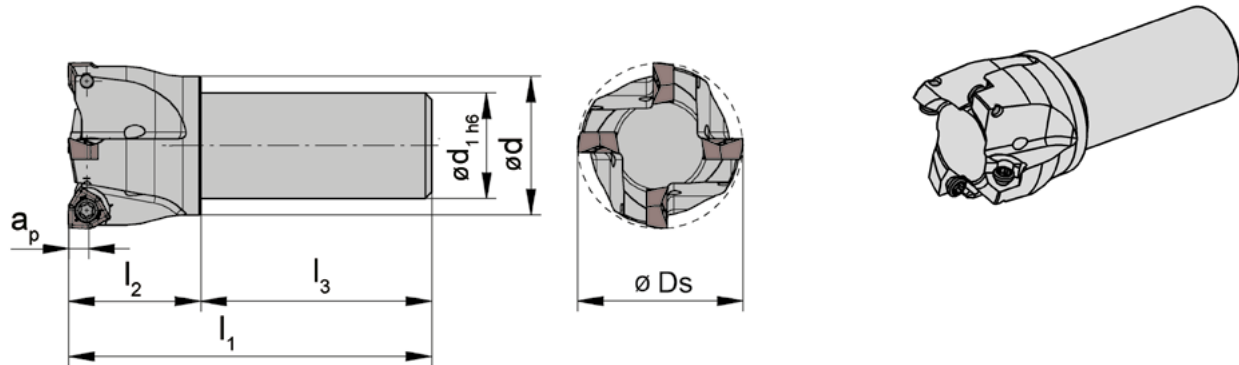
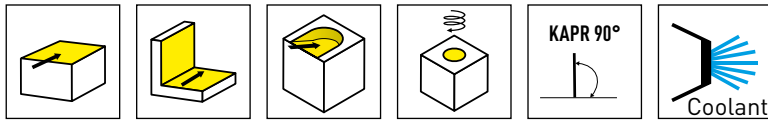


Shank Forms: Cylindrical (A), Weldon (B), Whistle Notch (E)



Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU32.075.D...	030.3562.T10P	T10PL	3.5 Nm
DAMU32.100....	030.3569.T10P	T10PL	3.5 Nm
DAMU32.125....	030.3576.T10P	T10PL	3.5 Nm

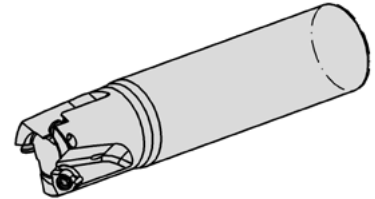
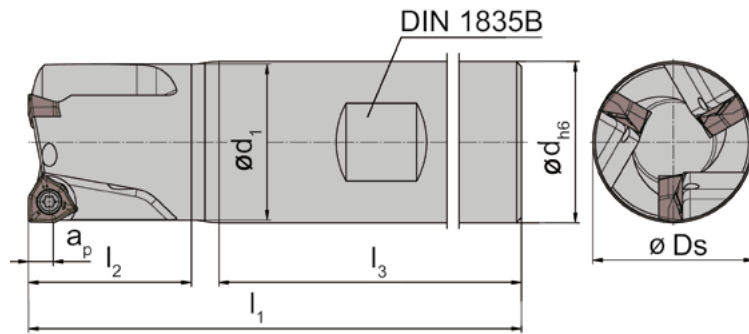
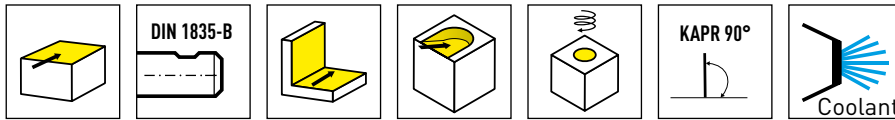


Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAM31.020.D100.03A	3	20	19	52	27	10	25	3	DA3120
DAM31.025.D101.04A	3	25	24	55	30	10	25	3	DA3125
DAM31.020.D160.03A	3	20	19	52	17	16	35	3	DA3120
DAM31.025.D161.04A	4	25	24	55	20	16	35	3	DA3125
DAM31.032.D162.05A	5	32	31	60	25	16	35	3	DA3132
DAM31.032.D202.05A	5	32	31	60	25	20	35	3	DA3132
DAM32.020.D160.02A	2	20	19	52	17	16	35	4.5	DA3220
DAM32.025.D161.03A	3	25	24	55	20	16	35	4.5	DA3225
DAM32.032.D162.03A	3	32	31	60	25	16	35	4.5	DA3232

Dimensions in mm

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM31.020.D100.03A	030.2547.T8P	T8PL	1.1 Nm
DAM31.025.D101.04A	030.2553.T8P	T8PL	1.1 Nm
DAM31.020.D160.03A	030.2547.T8P	T8PL	1.1 Nm
DAM31.025.D161.04A	030.2553.T8P	T8PL	1.1 Nm
DAM31.032....	030.2557.T8P	T8PL	1.1 Nm
DAM32.020.D160.02A	030.3562.T10P	T10PL	3.5 Nm
DAM32.025.D161.03A	030.3569.T10P	T10PL	3.5 Nm
DAM32.032.D162.03A	030.3576.T10P	T10PL	3.5 Nm



Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAM31.016.D163.02B	2	16	16	79	17	15	54	3	DA3116
DAM31.020.D204.03B	3	20	20	86	21	19	59	3	DA3120
DAM31.025.D255.04B	4	25	25	97	27	24	64	3	DA3125
DAM31.032.D326.05B	5	32	32	106	32	31	68	3	DA3132
DAM32.020.D205.02B	2	20	20	87	22	19	19	4.8	DA3220
DAM32.025.D256.03B	3	25	25	102	32	24	64	4.8	DA3225
DAM32.032.D327.03B	3	32	32	106	32	31	68	4.8	DA3232

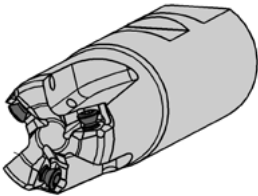
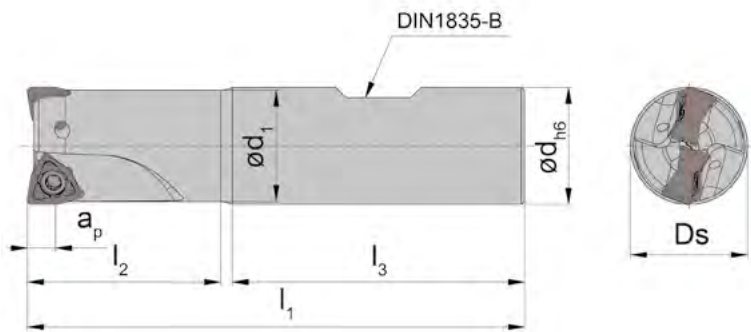
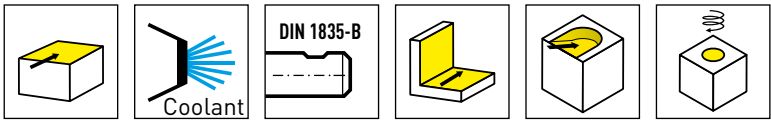
Tools with Ds ≥ 25mm have 2 clamping flats

Dimensions in mm

J

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM31.016.D163.02B	030.2541.T8P	T8PL	1.1 Nm
DAM31.020.D204.03B	030.2547.T8P	T8PL	1.1 Nm
DAM31.025.D255.04B	030.2553.T8P	T8PL	1.1 Nm
DAM31.032.D326.05B	030.2557.T8P	T8PL	1.1 Nm
DAM32.020.D205.02B	030.3562.T10P	T10PL	3.5 Nm
DAM32.025.D256.03B	030.3569.T10P	T10PL	3.5 Nm
DAM32.032.D327.03B	030.3576.T10P	T10PL	3.5 Nm



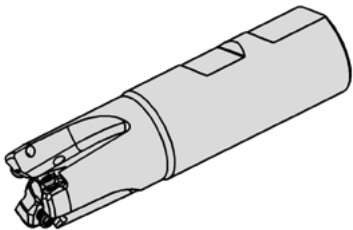
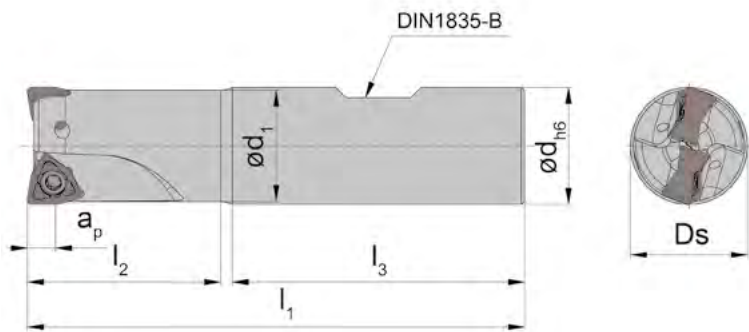
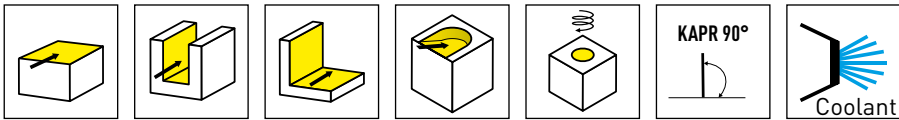
Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	HWS
DAMU62.075.D075.4.02B	2	.750	.750	3.346	1.315	.711	2.031	DA6200
DAMU62.100.D100.5.03B	3	1.000	1.000	3.843	1.559	.961	2.283	DA6200
DAMU62.125.D125.6.04B	4	1.250	1.250	4.276	1.992	1.211	2.283	DA6200

Dimensions in inch



Spare Parts

High Feed Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU62...	030.3070.T10P	T10PL	3 Nm



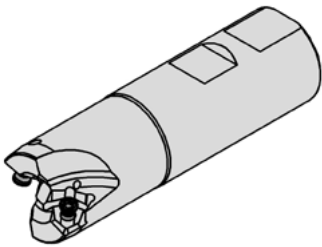
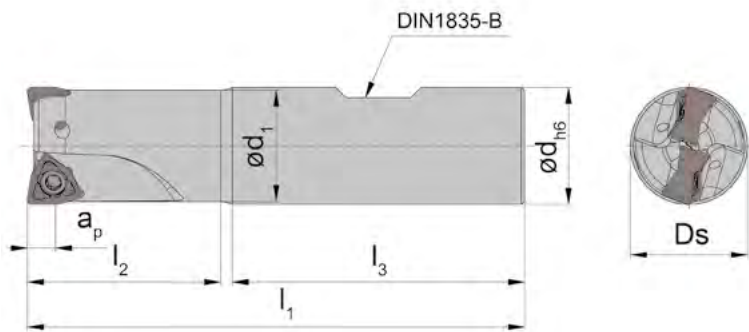
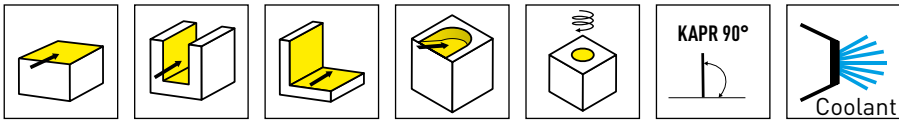
Picture = right hand cutting version

Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAM62.020.D20.4.02B	2	20	20	85	33	19	50	4.5	DA6200
DAM62.025.D25.5.03B	3	25	25	95	37	24	56	4.5	DA6200
DAM62.032.D32.6.04B	4	32	32	111	47	31	60	4.5	DA6200

Dimensions in mm

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM62...	030.3070.T10P	T10PL	3 Nm



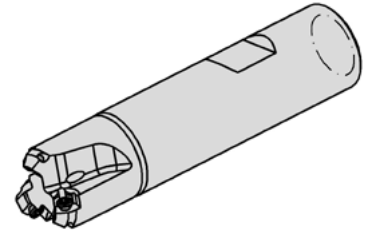
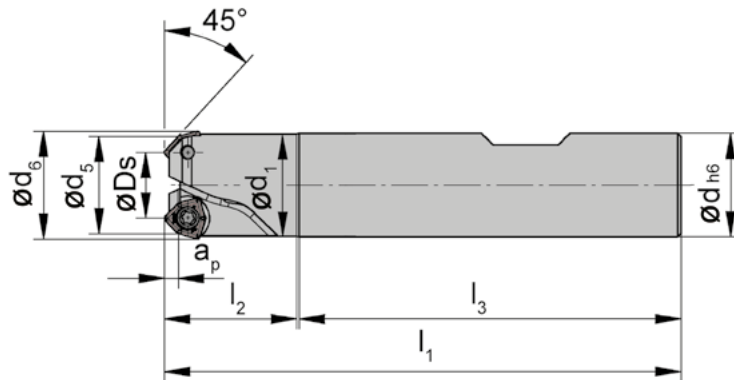
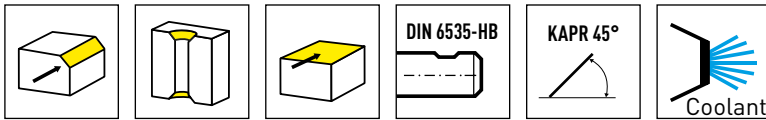
Picture = right hand cutting version

Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAM65.032.D32.6.02B	2	32	32	111	43	31.5	66	7	DA6500
DAM65.040.D32.6.03B	3	40	32	111	43	39.5	66	7	DA6500

Dimensions in mm

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM65...	030.0411.T15P	T15PQ	3.5 Nm

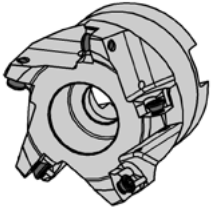
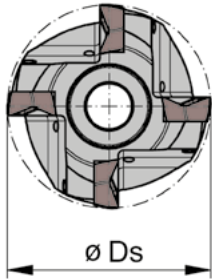
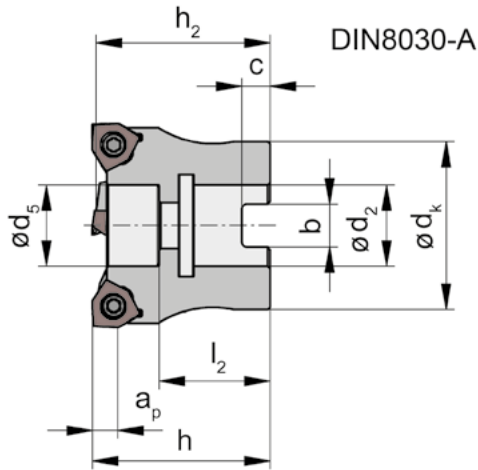
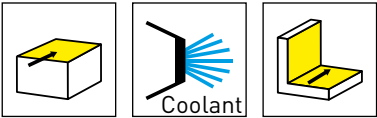


Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	d_6	d_5	HWS
DAM31.411.D163.02B	2	10.4	16	80	20	15.8	59	2	16.9	15	DA3116
DAM31.414.D204.03B	3	14.4	20	87	23	18.8	62	2	20.9	19	DA3120

Dimensions in mm

Spare Parts

Indexable Mill	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM31.411.D163.02B	030.2541.T8P	T8PL	1.1 Nm
DAM31.414.D204.03B	030.2547.T8P	T8PL	1.1 Nm



Part number	Z	Ds	ap	h2	h	d5	d2	l2	b	C	dk	HWS
DAMU32.015.A050.04	4	1.500	.189	1.252	1.378	.472	.500	.965	.258	.165	1.378	DA3232
DAMU32.020.A075.05	5	2.000	.189	1.449	1.575	.669	.750	.906	.320	.193	1.752	DA3232
DAMU32.025.A075.06	6	2.500	.189	1.449	1.575	.669	.750	.906	.320	.193	1.752	DA3232

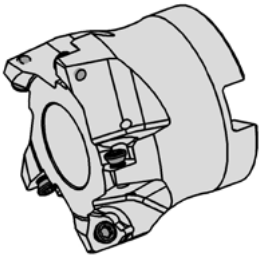
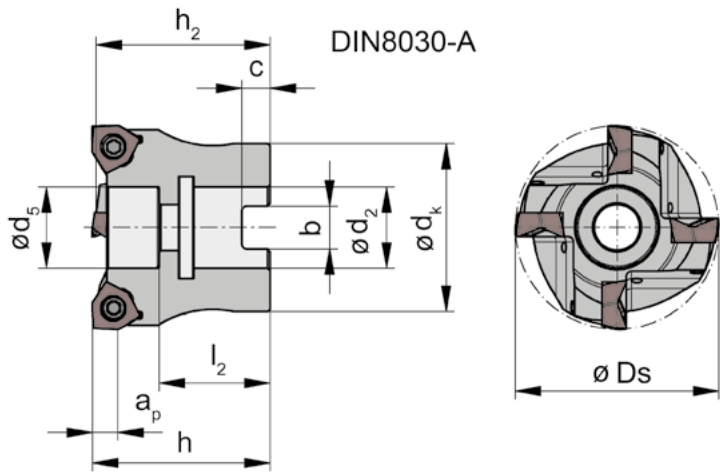
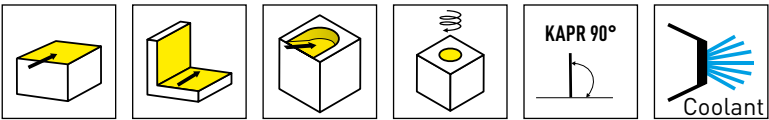
Dimensions in inch



Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU32...	030.3576.T10P	T10PL	3.5 Nm

Arbor Mounted Cutter DAM32



Picture = right hand cutting version

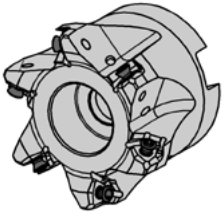
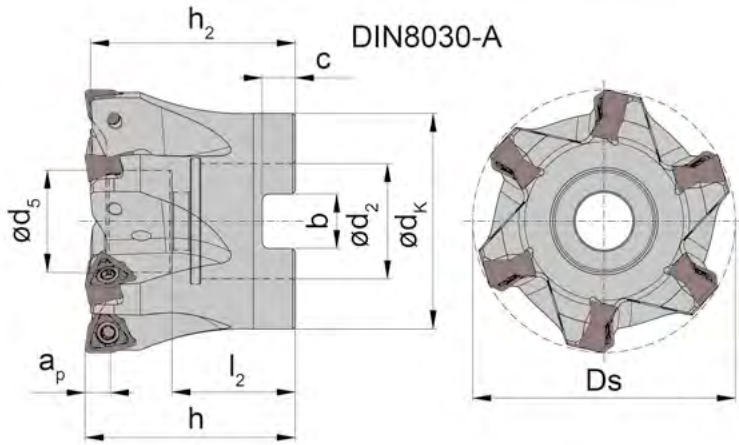
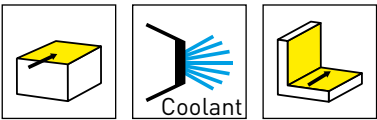
Part number	Z	Ds	ap	h ₂	h	d ₅	d ₂	l ₂	b	C	d _k	HWS
DAM32.040.A1635.04	4	40	4.8	34.4	35	16	16	22	8.4	5.6	33	DA3232
DAM32.050.A2240.05	5	50	4.8	39.4	40	19.5	22	24	10.4	6.3	41	DA3232
DAM32.063.A2745.06	6	63	4.8	44.4	45	21.5	27	27	12.4	7	49	DA3232

Dimensions in mm

J

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM32...	030.3576.T10P	T10PL	3.5 Nm



Part number	Z	Ds	ap	h	d5	d2	l2	b	C	dk	HWS
DAMU62.015.A050.05	5	1.500	.177	1.378	.472	.500	.945	.258	.165	1.378	DA6200
DAMU62.020.A075.06	6	2.000	.177	1.575	.669	.750	1.004	.320	.193	1.752	DA6200
DAMU62.025.A075.08	8	2.500	.177	1.575	.669	.750	1.004	.320	.193	1.752	DA6200
DAMU62.030.A100.10	10	3.000	.177	2.000	.866	1.000	1.299	.383	.224	2.382	DA6200

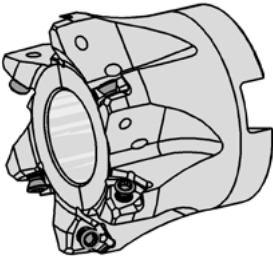
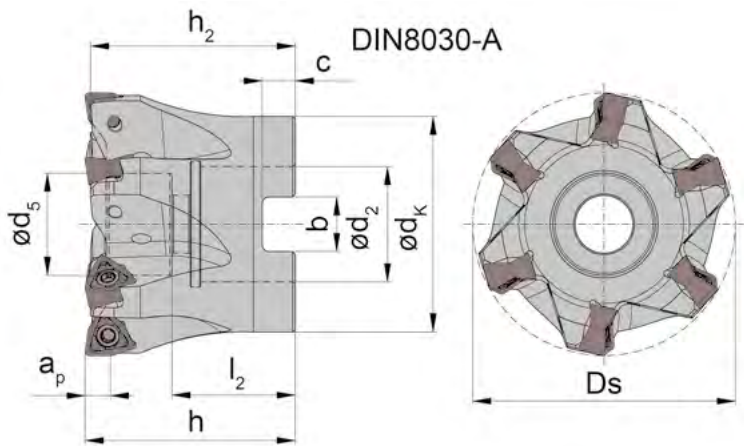
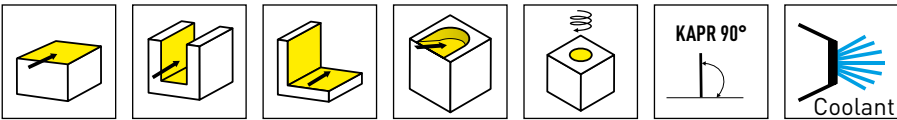
Dimensions in inch



Spare Parts

	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAMU62...	030.3070.T10P	T10PL	3 Nm

Arbor Mounted Cutter DAM62



Picture = right hand cutting version

Part number	Z	Ds	a _p	h ₂	h	d ₅	d ₂	l ₂	b	C	d _k	HWS
DAM62.0040.A16.05	5	40	4.5	34	35	16	16	21.5	8.4	5.6	33	DA6200
DAM62.0050.A22.06	6	50	4.5	39	40	19.5	22	23.5	10.4	6.3	41	DA6200
DAM62.0063.A22.08	8	63	4.5	39	40	19.5	22	24	10.4	6.3	49	DA6200
DAM62.0080.A27.10	10	80	4.5	49	50	21.5	27	27.5	12.4	7	59	DA6200

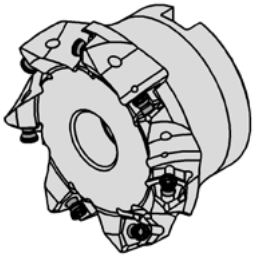
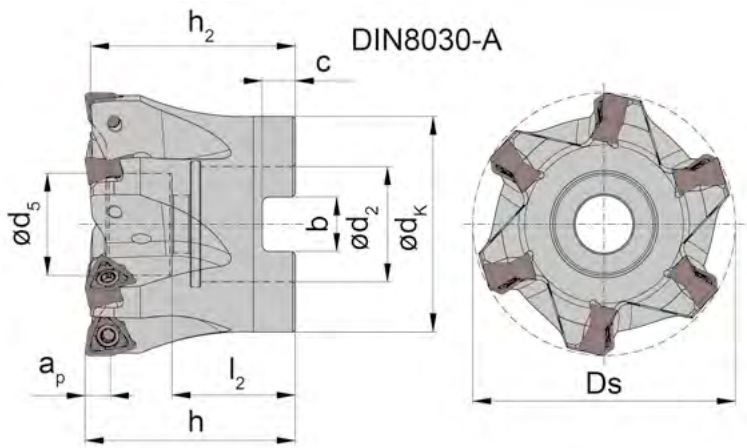
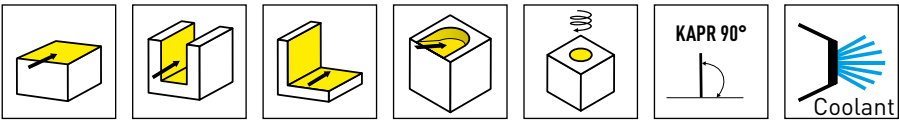
Dimensions in mm



Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM62...	030.3070.T10P	T10PL	3 Nm

Arbor Mounted Cutter DAM65



Picture = right hand cutting version

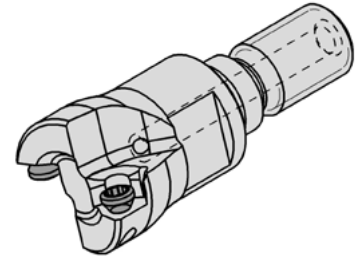
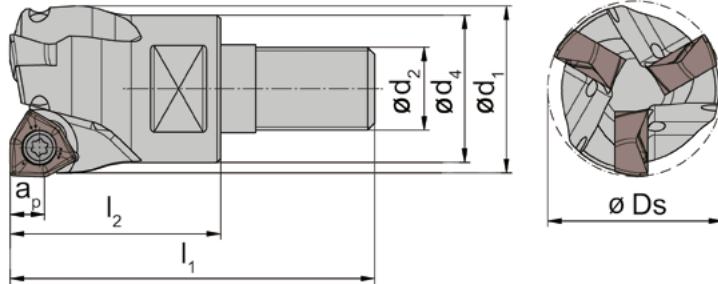
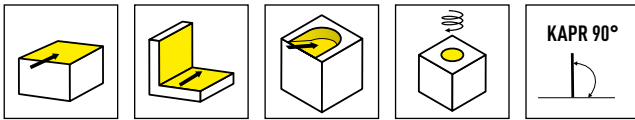
Part number	Z	Ds	ap	h ₂	h	d ₅	d ₂	l ₂	b	C	d _k	HWS
DAM65.050.A22.04	4	50	7	38	40	19.5	22	22.2	10.4	6.3	49	DA6500
DAM65.050.A22.05	5	50	7	38	40	19.5	22	22.2	10.4	6.3	49	DA6500
DAM65.063.A22.05	5	63	7	38	40	19.5	22	22.2	10.4	6.3	49	DA6500
DAM65.063.A22.07	7	63	7	38	40	19.5	22	22.2	10.4	6.3	49	DA6500
DAM65.080.A27.07	7	80	7	48	50	30	27	28.7	12.4	7	59	DA6500
DAM65.080.A27.09	9	80	7	48	50	30	27	28.7	12.4	7	59	DA6500
DAM65.100.A32.08	8	100	7	48	50	35	32	28.7	14.4	8	80	DA6500
DAM65.100.A32.11	11	100	7	48	50	35	32	28.7	14.4	8	80	DA6500

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM65...	030.0411.T15P	T15PQ	3.5 Nm





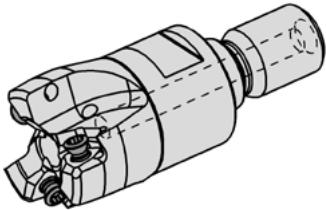
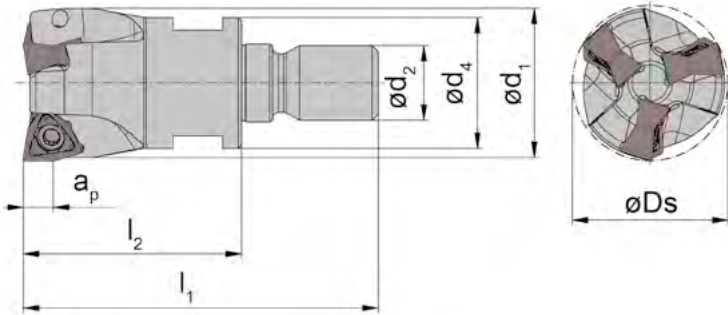
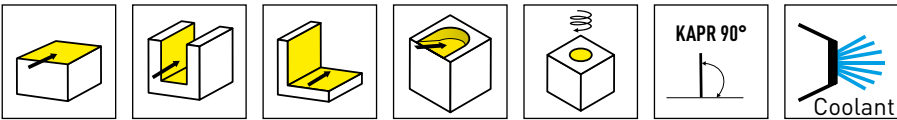
Part number	Z	Ds	l ₁	l ₂	d ₁	a _p	d ₂	d ₄	SW	HWS	HMS
DAM31.016.M083.02B	2	16	38	20	15	3	M8	13	10	DA3116	08001
DAM31.020.M104.03B	3	20	45	25	19	3	M10	18	15	DA3120	10001
DAM31.025.M125.04B	4	25	52	30	24	3	M12	21	17	DA3125	12001
DAM31.032.M166.05B	5	32	58	35	31	3	M16	29	24	DA3132	16001
DAM32.020.M104.02B	2	20	45	25	19	4.8	M10	18	15	DA3220	10001
DAM32.025.M125.03B	3	25	52	30	24	4.8	M12	21	17	DA3225	12001
DAM32.032.M166.03B	3	32	58	35	31	4.8	M16	29	24	DA3232	16001

Dimensions in mm

J

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM31.016.M083.02B	030.2541.T8P	T8PL	1.1 Nm
DAM31.020.M104.03B	030.2547.T8P	T8PL	1.1 Nm
DAM31.025.M125.04B	030.2553.T8P	T8PL	1.1 Nm
DAM31.032.M166.05B	030.2557.T8P	T8PL	1.1 Nm
DAM32.020.M104.02B	030.3562.T10P	T10PL	3.5 Nm
DAM32.025.M125.03B	030.3569.T10P	T10PL	3.5 Nm
DAM32.032.M166.03B	030.3576.T10P	T10PL	3.5 Nm



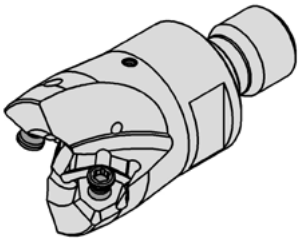
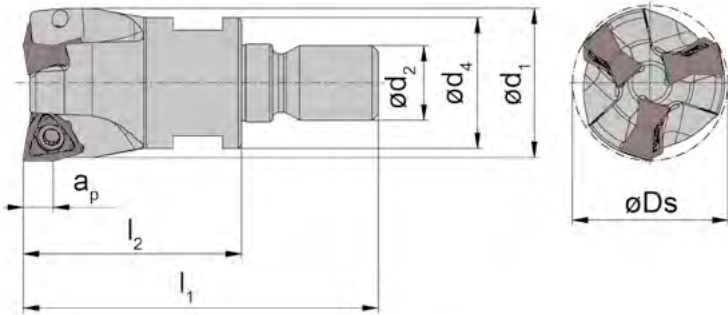
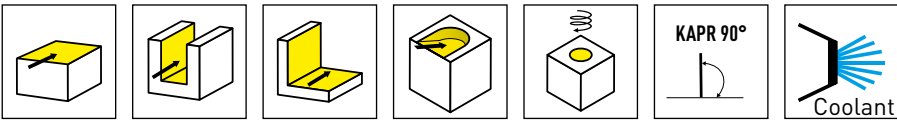
Picture = right hand cutting version

Part number	Z	Ds	l ₁	l ₂	d ₁	a _p	d ₂	d ₄	SW	HWS	HMS
DAM62.025.M12.5.03	3	25	57	35	24	4.5	M12	21	17	DA6200	12001
DAM62.032.M16.6.04	4	32	66	43	31	4.5	M16	29	24	DA6200	16001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM62...	030.3070.T10P	T10PL	3 Nm



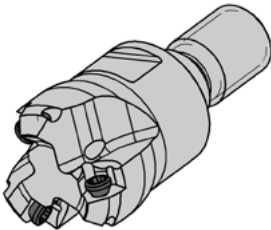
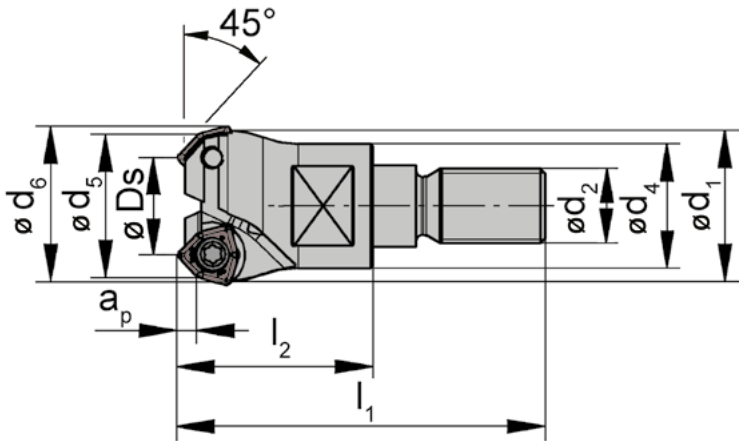
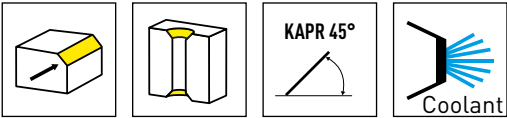
Picture = right hand cutting version

Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	SW	HWS	HMS
DAM65.032.M16.6.02	2	32	66	43	31.5	7	M16	29	24	DA6500	16001
DAM65.040.M16.6.03	3	40	66	43	39.5	7	M16	29	24	DA6500	16001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM65...	030.0411.T15P	T15PQ	3.5 Nm

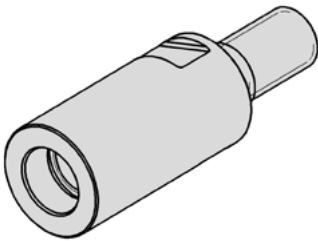
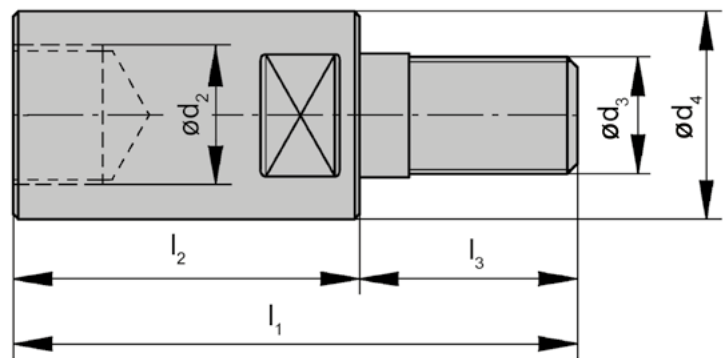


Part number	Z	Ds	l ₁	l ₂	d ₁	a _p	d ₂	d ₄	d ₅	d ₆	SW	HWS	HMS
DAM31.414.M104.03B	3	14.4	45	25	19.8	2	M10	18	19	20.9	15	DA3120	10001

Dimensions in mm

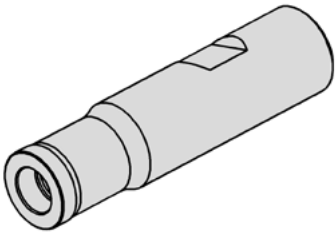
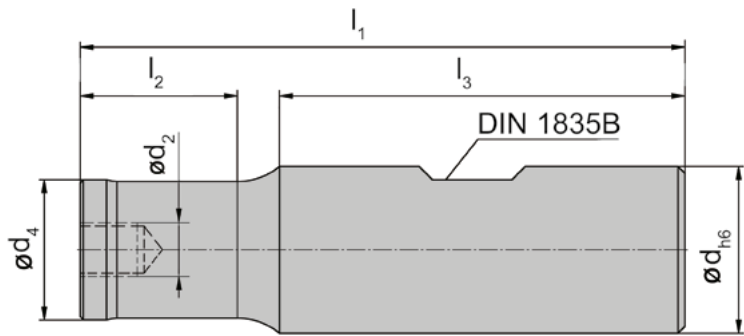
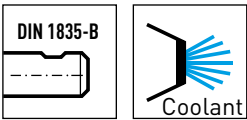
Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
DAM31.414.M104.03B	030.2547.T8P	T8PL	1.1 Nm



Part number	l_1	l_2	l_3	d_2	d_3	d_4	SW	HWS	HMS
MD13.02.00.M08	48	30	18	M8	M8	13	10	08001	08001
MD18.04.00.M10	55	35	20	M10	M10	18	15	10001	10001
MD21.06.00.M12	57	35	22	M12	M12	21	17	12001	12001
MD29.08.00.M16	58	35	23	M16	M16	29	24	16001	16001

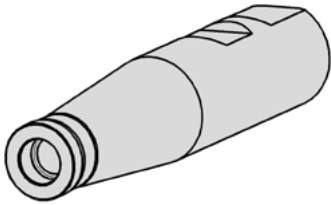
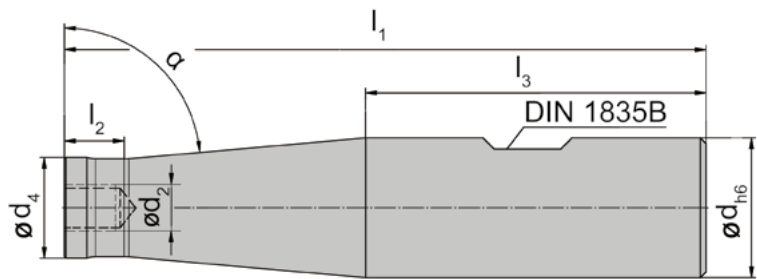
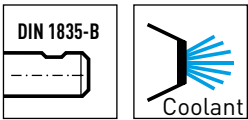
Dimensions in mm



Part number	l_1	l_2	l_3	d	d_4	d_2	HWS
MD13.02.00.D16B	73	14	53	16	13	M8	08001
MD18.04.00.D20B	80	20	55	20	18	M10	10001
MD21.06.00.D25B	91	23	61	25	21	M12	12001
MD29.08.00.D32B	100	29	65	32	29	M16	16001

Tools with $D \geq 25\text{mm}$ have 2 clamping flats

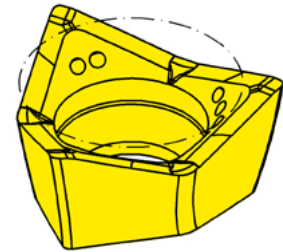
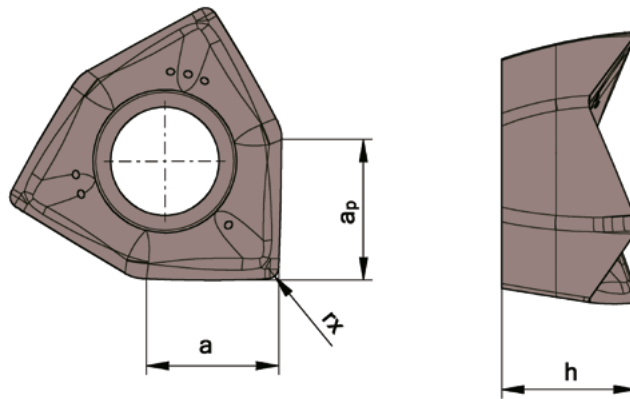
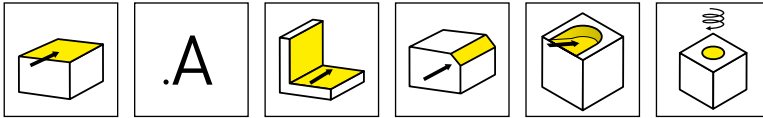
Dimensions in mm



Part number	l_1	l_2	l_3	d	d_4	d_2	α	HWS
MD13.02.85.D20B	105	7	55	20	13	M8	85°	08001
MD18.04.85.D25B	115	10	61	25	18	M10	85°	10001
MD21.06.85.D32B	140	8	65	32	21	M12	85°	12001
MD29.08.85.D40B	150	8	75	40	29	M16	85°	16001

Tools with $D \geq 25\text{mm}$ have 2 clamping flats

Dimensions in mm



Coating grades

▲ In stock

△ 2 weeks

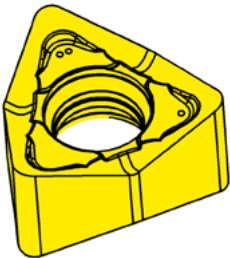
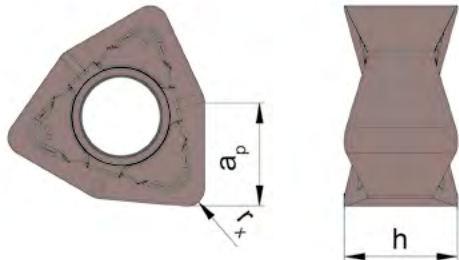
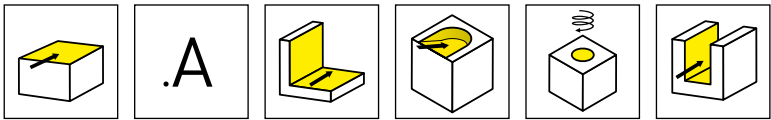
Part number	Ds	a _p	a	h	r _x	HIS	SA4B	TA45
DA31.016.A.00	16	3	3	3.1	-	DA3116	▲	▲
DA31.016.A.02	16	3	3	3.1	0.2	DA3116	▲	▲
DA31.016.A.04	16	3	3	3.1	0.4	DA3116	▲	▲
DA31.020.A.00	20	3	3	3.1	-	DA3120	▲	▲
DA31.020.A.02	20	3	3	3.1	0.2	DA3120	▲	▲
DA31.020.A.04	20	3	3	3.1	0.4	DA3120	▲	▲
DA31.025.A.00	25	3	3	3.1	-	DA3125	▲	▲
DA31.025.A.02	25	3	3	3.1	0.2	DA3125	▲	▲
DA31.025.A.04	25	3	3	3.1	0.4	DA3125	▲	▲
DA31.032.A.00	32	3	3	3.1	-	DA3132	▲	▲
DA31.032.A.02	32	3	3	3.1	0.2	DA3132	▲	▲
DA31.032.A.04	32	3	3	3.1	0.4	DA3132	▲	▲
DA32.020.A.00	20	4.8	4.6	4.7	-	DA3220	▲	▲
DA32.020.A.02	20	4.8	4.6	4.7	0.2	DA3220	▲	△
DA32.020.A.04	20	4.8	4.6	4.7	0.4	DA3220	▲	▲
DA32.020.A.08	20	4.8	4.6	4.7	0.8	DA3220	▲	▲
DA32.020.A.10	20	4.8	4.6	4.7	1	DA3220	▲	▲
DA32.025.A.00	25	4.8	4.6	4.7	-	DA3225	▲	△
DA32.025.A.02	25	4.8	4.6	4.7	0.2	DA3225	▲	▲
DA32.025.A.04	25	4.8	4.6	4.7	0.4	DA3225	▲	▲
DA32.025.A.08	25	4.8	4.6	4.7	0.8	DA3225	▲	▲
DA32.025.A.10	25	4.8	4.6	4.7	1	DA3225	▲	▲
DA32.032.A.00	32	4.8	4.6	4.7	-	DA3232	▲	▲
DA32.032.A.02	32	4.8	4.6	4.7	0.2	DA3232	▲	▲
DA32.032.A.04	32	4.8	4.6	4.7	0.4	DA3232	▲	▲
DA32.032.A.08	32	4.8	4.6	4.7	0.8	DA3232	▲	▲
DA32.032.A.10	32	4.8	4.6	4.7	1	DA3232	▲	▲

Carbide grade TA45 is preferred for easy to machine materials, aluminum and finishing. Carbide grade SA4B is preferred for moderate and difficult to machine materials.

Dimensions in mm

P	●	●
M	●	●
K	●	●
N	●	-
S	-	-
H	-	-

J

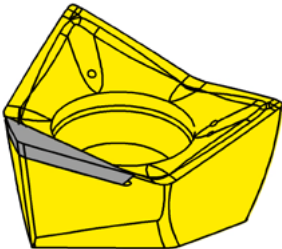
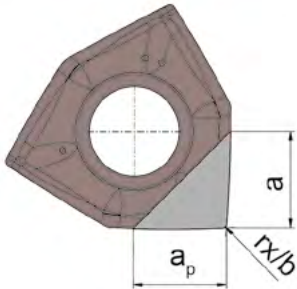
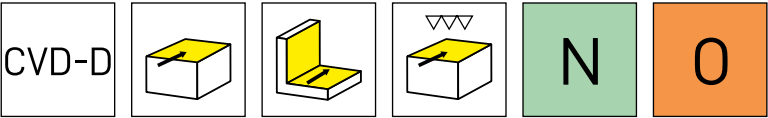


Coating grades

▲ In stock

Δ 2 weeks

Part number	a _p	h	r _x	HIS	IG6B	SA4B	SC6A	SD6A
SDA62.0400.A.08	4.5	5.16	0.8	DA6200		▲		
DA62.0400.A.04	4.5	5.2	0.4	DA6200		▲		▲
DA62.0400.A.08	4.5	5.16	0.8	DA6200		▲		▲
SDA65.0700.A.08	7	8.37	0.8	DA6500	▲	▲	▲	
SDA65.0700.A.12	7	8.24	1.2	DA6500	▲	▲	▲	
DA65.0700.A.08	7	8.37	0.8	DA6500	▲	▲	▲	
DA65.0700.A.12	7	8.24	1.2	DA6500	▲	▲	▲	
SDA62 and SDA65 are precision sintered for tighter tolerances and consistency - compared to standard sintered inserts.					P	●	●	●
Carbide grade SA4B is preferred for moderate and difficult to machine materials.					M	○	●	-
Dimensions in mm					K	○	●	●
					N	○	●	-
					S	○	-	-
					H	-	-	-



Coating grades

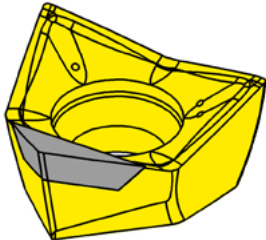
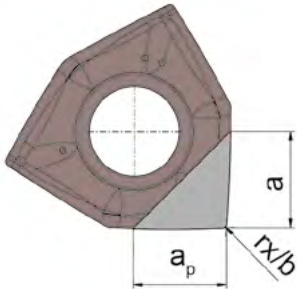
▲ In stock Δ 2 weeks

Part number	Ds	a _p	a	h	r _x	b x 45°	HIS	HD05
DA32.020.25.02.C	20	3.8	3.5	4.7	0.2	-	DA3220	
DA32.025.25.02.C	25	3.8	3.5	4.7	0.2	-	DA3225	
DA32.025.25.X2.C	25	3.8	3.5	4.7	-	0.2	DA3225	
DA32.032.25.02.C	32	3.8	3.5	4.7	0.2	-	DA3232	
DA32.032.25.X2.C	32	3.8	3.5	4.7	-	0.2	DA3232	
Dimensions in mm								P -
								M -
								K -
								N •
								S -
								H -

PKD
PCD

N

O



Coating grades

▲ In stock Δ 2 weeks

Part number	Ds	a _p	a	h	r _x	HIS	PD75	
DA32.020.25.02.P	20	3.8	3.5	4.7	0.2	DA3220	▲	
DA32.025.25.02.P	25	3.8	3.5	4.7	0.2	DA3225	▲	
DA32.032.25.02.P	32	3.8	3.5	4.7	0.2	DA3232	▲	
							P	-
							M	-
							K	-
							N	●
							S	-
							H	-

Dimensions in mm

DAM Shoulder Mill - Feed Rates



Material		Material group	DAM31 Shoulder mill 90°				DAM32 Shoulder mill 90°				DAM62 Shoulder mill 90°			
			Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)			
			100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
P	Carbon steel	P1.1 - P1.5	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.005 0.15	.006 0.17	.007 0.19	.009 0.25
	Alloyed steel (<5%)	P2.1 - P2.4	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	High alloyed steel (>5%)	P3.1 - P3.2												
	Cast steel	P4.1 - P4.2												
	Sintered steel	P5.1												
M	Stainless steel	M1.1-M1.3	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13
K	Grey cast iron	K1.1-K.1.2	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.007 0.19	.008 0.22	.009 0.24	.012 0.32
	Spheroidal graphite cast iron	K2.1-K2.2	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.15	.006 0.17	.007 0.19	.009 0.25
	Malleable cast iron	K3.1-K3.2	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.15	.006 0.17	.007 0.19	.009 0.25
	Ausferritic spheroidal cast iron / ADI	K4.1-K4.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.004 0.11	.005 0.13	.005 0.14	.007 0.18
N	Al-alloys	N1.1-N1.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	Al-cast-alloy	N2.1-N2.3	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.13	.005 0.15	.006 0.16	.008 0.22
	Copper-alloys	N3.1-N3.4	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.004 0.11	.005 0.13	.005 0.14	.007 0.18

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

J

High Feed Mill - Feed Rates



Material		Material group	DAHM25 High Feed Mill 24°				DAHM37 High Feed Mill 19°				
			Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				
			100%	50%	20%	10%	100%	50%	20%	10%	
P	Carbon steel	P1.1 - P1.5	.035 0.90	.040 1.04	.044 1.13	.059 1.50	.047 1.20	.054 1.38	.059 1.50	.078 2.00	
	Alloyed steel (<5%)	P2.1 - P2.4	.031 0.80	.036 0.92	.039 1.00	.052 1.34	.039 1.00	.054 1.38	.059 1.50	.078 2.00	
	High alloyed steel (>5%)	P3.1 - P3.2									
	Cast steel	P4.1 - P4.2									
	Sintered steel	P5.1									
M	Stainless steel	M1.1-M1.3	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.054 1.38	.059 1.50	.078 2.00	
K	Grey cast iron	K1.1-K1.2	.043 1.10	.050 1.27	.054 1.38	.072 1.84	.047 1.20	.054 1.38	.059 1.50	.078 2.00	
	Spheroidal graphite cast iron	K2.1-K2.2	.035 0.90	.040 1.04	.044 1.13	.059 1.50	.039 1.00	.054 1.38	.059 1.50	.078 2.00	
	Malleable cast iron	K3.1-K3.2	.035 0.90	.040 1.04	.044 1.13	.059 1.50	.039 1.00	.054 1.38	.059 1.50	.078 2.00	
	Ausferritic spheroidal cast iron / ADI	K4.1-K4.3									
N	Al-alloys	N1.1-N1.2									
	Al-cast-alloy	N2.1-N2.3									
	Copper-alloys	N3.1-N3.4									
S	Heat resistant alloy (Fe)	S1.1-S1.2	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.022 0.58	.024 0.63	.033 0.84	
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.022 0.58	.024 0.63	.033 0.84	
	Titanium	S3.1-S3.3	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.022 0.58	.024 0.63	.033 0.84	

.002

0.07

=

Suggested feed rate (inch)

Suggested feed rate (metric)

Material	DAHM82 High Feed Mill 10°				DAHM84 High Feed Mill 10°			
	Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)			
	100%	50%	20%	10%	100%	50%	20%	10%
Carbon steel	.047 1.20	.054 1.38	.059 1.50	.078 2.00	.051 1.30	.059 1.50	.064 1.63	.085 2.17
Alloyed steel (<5%)	.039 1.00	.054 1.38	.059 1.50	.078 2.00	.043 1.10	.050 1.27	.054 1.38	.072 1.84
High alloyed steel (>5%)								
Cast steel								
Sintered steel								
Stainless steel	.019 0.50	.022 0.58	.024 0.63	.033 0.84	.023 0.60	.027 0.69	.029 0.75	.039 1.00
Grey cast iron	.047 1.20	.054 1.38	.059 1.50	.078 2.00	.051 1.30	.059 1.50	.064 1.63	.085 2.17
Spheroidal graphite cast iron	.039 1.00	.045 1.15	.049 1.25	.065 1.67	.043 1.10	.050 1.27	.054 1.38	.072 1.84
Malleable cast iron	.039 1.00	.045 1.15	.049 1.25	.065 1.67	.043 1.10	.050 1.27	.054 1.38	.072 1.84
Ausferritic spheroidal cast iron / ADI								
Al-alloys								
Al-cast-alloy								
Copper-alloys								
Heat resistant alloy (Fe)	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17
Heat resistant alloy (Ni, Co)	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17
Titanium	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a _e /D _c			SD6A a _e /D _c			SC6A a _e /D _c			IG6B a _e /D _c			SA4B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
Carbon steel		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
Alloyed steel (<5%)											590 180	655 200	720 220	590 180	655 200	720 220
											590 180	655 200	720 220	590 180	655 200	720 220
											590 180	655 200	720 220	590 180	655 200	720 220
														590 180	655 200	720 220
High alloyed steel (>5%)																
Cast steel																
Sintered steel																
Stainless steel								260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130
								260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130
								260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

J

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	SA4B a _e /D _c			
							100%	50%	20%	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	720 220	855 260	985 300	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	720 220	785 240	855 260	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	720 220	785 240	855 260	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	720 220	785 240	855 260	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1	1150 350	2215 675	3280 1000
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1	1150 350	2215 675	3280 1000	
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6				
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg				
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12				
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu				
		brass	N3.2	90	310	C38500 , CuZn40Pb				
		lead-free brass	N3.3	110	430	C28000 , CuZn40				
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3				

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37,
DAHM82, DAHM84



	Material	TA45 a _e /D _c			HD05 a _e /D _c			PD75 a _e /D _c			SD6A a _e /D _c			SC6A a _e /D _c			IG6B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	460 140	490 150	525 160							720 220	855 260	985 300	720 220	855 260	985 300	525 160	560 170	590 180
		460 140	490 150	525 160							720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180
	Spheroidal graphite cast iron	460 140	490 150	525 160							720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180
		460 140	490 150	525 160							720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180
	Malleable cast iron																		
	Ausferritic spheroidal cast iron / ADI																		
	Al-alloys	1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
	Al-cast-alloy	1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
	Copper-alloys				1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
	Copper-alloys	1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									



655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

	Material	TA45 a _e /D _c			SD6A a _e /D _c			SC6A a _e /D _c			IG6B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)	80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
	Heat resistant alloy (Ni, Co)	25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
	Titanium	80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	SA4B a _e / D _c		TA45 a _e / D _c	
							20%	10%	20%	10%
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	785 240	950 290	590 180	705 215
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	785 240	950 290	590 180	705 215
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	785 240	950 290	590 180	705 215
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	785 240	950 290	590 180	705 215
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	785 240	950 290	590 180	705 215
		free cutting steel	P1.6	220	750	1213 , 9SMn28	785 240	950 290		
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	720 220	870 265		
		quenched	P2.2	280	960	3415 , 14NiCr10	720 220	870 265		
		quenched	P2.3	350	1250	4135 , 34CrMo4	720 220	870 265		
		quenched	P2.4	430	1450	5155 , 55Cr3	720 220	870 265		
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18				
		hardened	P3.2	350	1200	D3 , X210Cr2				
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200				
		alloyed	P4.2	220	750	10295 , GX40CrSi28				
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39				
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	425 130	510 155		
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	425 130	510 155		
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	425 130	510 155		

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	SA4B a _e / D _c		TA45 a _e / D _c	
							20%	10%	20%	10%
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B, GG-25	985 300	1180 360	525 160	640 195
		high tensile strength	K1.2	250	350	A48 Class 60, GG-40	855 260	1180 360	525 160	640 195
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18, GGG-40	855 260	1180 360	525 160	640 195
		pearlitic	K2.1	260	700	A536 80-60-03, GGG-60	855 260	1180 360	525 160	640 195
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018, GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004, GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	Al-alloys	not heat treatable	N1.1	30		5005, AlMg1	3280 1000	3935 1200	3935 1200	4755 1450
		heat treatable	N1.2	100	340	6061, 7075, AlMgSi1	3280 1000	3935 1200	3935 1200	4755 1450
N	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441, AlMgSi6			3935 1200	4755 1450
		6-10% Si	N2.2	100	320	AA 356, AlSi7Mg			3935 1200	4755 1450
		10-15 % Si	N2.3	130	450	AA 413, AlSi12				
	Copper-alloys	pure copper	N3.1	100	340	C11000, Cu			3935 1200	4755 1450
		brass	N3.2	90	310	C38500, CuZn40Pb			3935 1200	4755 1450
		lead-free brass	N3.3	110	430	C28000, CuZn40			3935 1200	4755 1450
		high strength	N3.4	300	1000	C67800, CuZn25Al5-Mn4Fe3			3935 1200	4755 1450

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

J

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	TA45 a_e/D_c			SD6A a_e/D_c			SC6A a_e/D_c			IG6B a_e/D_c			SA4B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Carbon steel	410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
		410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
		410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
	Alloyed steel (<5%)	410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
											525	590	655	475	590	705
											160	180	200	145	180	215
											525	590	655	525	590	655
											160	180	200	160	180	200
	High alloyed steel (>5%)															
	Cast steel															
	Sintered steel															
	Stainless steel							230	310	395	230	310	395	230	310	395
								70	95	120	70	95	120	70	95	120
								230	310	395	230	310	395	230	310	395
								70	95	120	70	95	120	70	95	120

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45	
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04	
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800		
		quenched	K4.2	350	1050		
		quenched	K4.3	450	1400		
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1	
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12	
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu	
		brass	N3.2	90	310	C38500 , CuZn40Pb	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	

$$\frac{655}{200} = \frac{\text{Suggested cutting speed (inch)}}{\text{Suggested cutting speed (metric)}}$$

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a_e/D_c			SD6A a_e/D_c			SC6A a_e/D_c			IG6B a_e/D_c			SA4B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
		410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
	Spheroidal graphite cast iron	410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
		410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
	Malleable cast iron															
	Ausferritic spheroidal cast iron / ADI															
	Al-alloys	1475 450	2545 775	3610 1100										985 300	1970 600	2955 900
		1475 450	2545 775	3610 1100										985 300	1970 600	2955 900
	Al-cast-alloy	1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												
	Copper-alloys	1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

J

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	
O	Thermo plastics		O1.1				
	Thermosets		O1.2				

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	TA45 a_e/D_c			SD6A a_e/D_c			SC6A a_e/D_c			IG6B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Heat resistant alloy (Fe)	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Heat resistant alloy (Ni, Co)	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Titanium	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Titanium	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Titanium	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Thermoplastics												
	Thermosets												

655
200

=

Suggested cutting speed (inch)

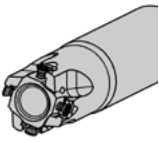
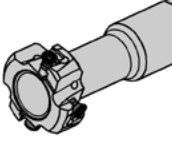
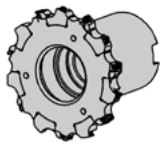
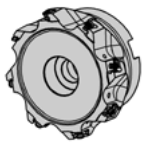
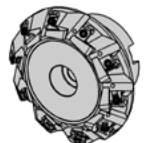
Suggested cutting speed (metric)



K

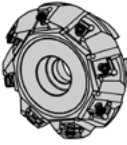
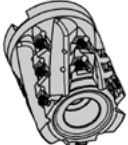
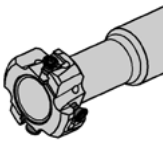
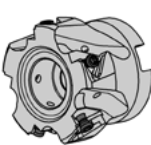
TANGENTIAL MILLING

SYSTEMS M406, M409, M610

Operation Type	M406			M409		
						
 Face Milling	•			•	•	
 Finishing	•			•	•	
 Corner Milling	•			•		
 Chamfer Milling					•	
 T-Nut Milling		• (See Chapter I)	•			
 Groove Milling	•			•		

D _c (diameter)	.630 - 1.575" 16 - 40mm	0.984" 25mm	3.937" 100mm	1.260 - 9.843" 32-250mm	1.575 - 9.843" 40-250mm	
a _{pmax} (max depth of cut)	.248" 6.3mm	CWN = .433" 11mm	CWN = .378-.508" 9.6-12.9mm	.366" 9.3mm	.244" 6.2mm	
Insert type	406			409		
Cutting edges	4			4		

P - General Steels	•	•	•	•	•	
M - Stainless Steels	•	•		•	•	
K - Cast Iron	•	•	•	•	•	
N - Non-Ferrous	•	•		•	•	
S - Superalloys	•	•		•	•	
H - Hardened Steels						

M409					M610		
							
	Face Milling	●				●	●
	Finishing						
	Corner Milling		●			●	●
	Chamfer Milling						
	T-Nut Milling			● (See Chapter I)			
	Groove Milling		●		●	●	●

	D _c (diameter)	1.575 - 9.843" 40-250mm	1.575 - 2.480" 40-63mm	1.260 - 1.969" 32-50mm	3.937 - 4.921" 100-125mm	4.921" 125mm	1.969 - 4.921" 50-125mm
	a _{pmax} (max doc)	.303" 7.7mm	1.701" 43.2mm	CWN = .551-.866" 14-22mm	CWN = .508-.740" 12.9-18.8mm	CWN = .630" 16mm	.390" 9.9mm
	Insert type	409				610	
	Cutting edges	4				6	

	P - Steels	●	●	●	●	●	●
	M - Stainless	●	●	●	●	●	●
	K - Cast Iron	●	●	●	●	●	●
	N - Non-Ferrous	●	●	●		●	●
	S - Superalloys	●	●	●	●	●	●
	H - Hardened				●		



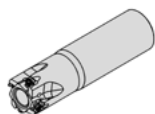
K

SYSTEM 406/409

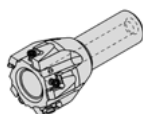
90° Mill, 90° Screw-in Cutter, Disc Milling Cutter, Arbor Mounted Cutter

HOLDERS

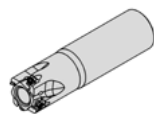
Round Shank



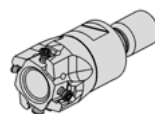
Page 541
M406 & M409
90° Tangential



Page 542
M406
90° Tangential



Page 543
M406 & M409
90° Tangential

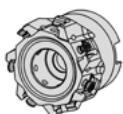


Page 544
M406 & M409
90° Tangential

Weldon

Screw-in

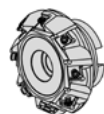
Arbor Mount



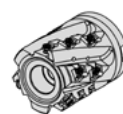
Page 545
M409
90° Tangential



Page 546
M409
45° Tangential



Page 547
M409
60° Tangential



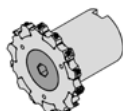
Page 548
M409
90° Tang. Shell

Arbor Mount

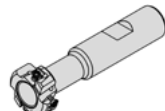
Weldon



Page 549
M409
Disc Groove Mill



Page 550
M406 & M409
Arbor Groove Mill



Page 551
M406 & M409
T-Nut Mill

INSERTS

Facing, Grooving, Side Milling

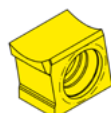
Fine Finishing



Page 552
406 & 409
Multi-Purpose



Page 553
409
Multi-Purpose



Page 554
406 & 409
Wiper Geometry

SYSTEM 610

Arbor Mount

Facing, Grooving, Side Milling



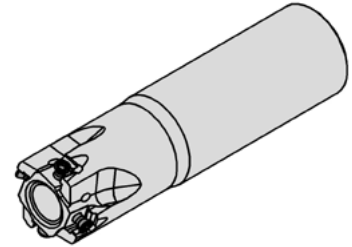
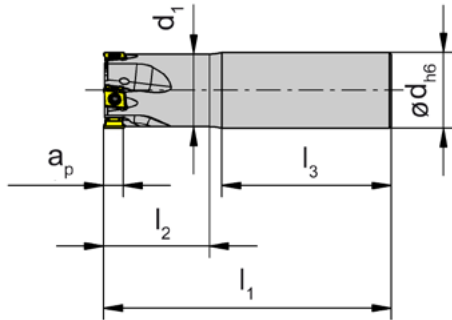
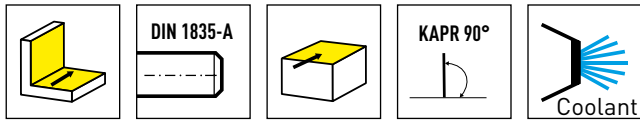
Page 557
M610
90° Tangential



Page 558
M610
Disc Groove Mill



Page 559
610
Multi-Purpose



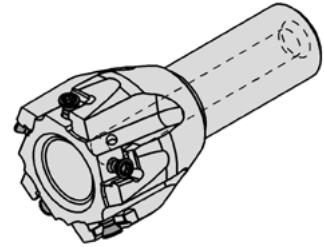
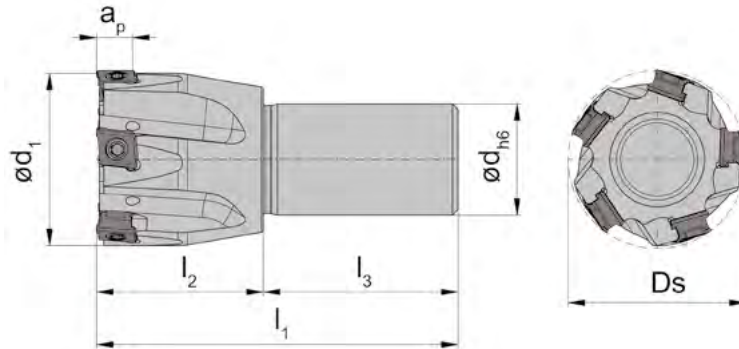
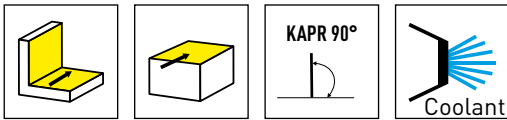
Picture = right hand cutting version

Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	Form	n _{max}	HWS
M406.016.D16.3.02A	2	16	16	75	25	15	48	6.3	A	23700	40600R
M406.020.D20.4.03A	3	20	20	85	33	19	50	6.3	A	21200	40600R
M406.025.D25.5.04A	4	25	25	95	37	24	56	6.3	A	19000	40600R
M406.032.D32.6.05A	5	32	32	111	47	31	60	6.3	A	16700	40600R
M406.040.D32.6.06A	6	40	32	111	49	39	60	6.3	A	15000	40600R
M409.032.D32.6.04A	4	32	32	111	47	31	60	9.3	A	15600	40900R
M409.040.D32.6.05A	5	40	32	111	47	39	60	9.3	A	13900	40900R

Dimensions in mm

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M406...02A, .03A	030.2669.T8P	T8PL	1.2 Nm
M406...04A, .05A, .06	030.2608.T8P	T8PL	1.2 Nm
M409....	030.3511.T10P	T10PL	3.5 Nm



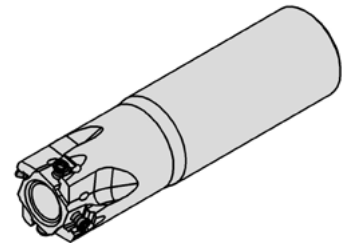
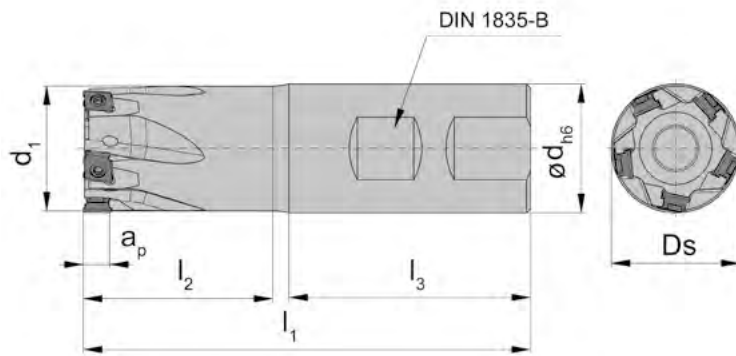
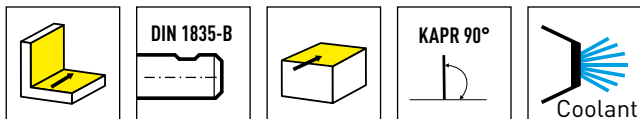
Picture = right hand cutting version

Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	n_{max}	HWS
M406.016.D12.1.02A	2	16	12	55	20	15	35	6.3	23700	40600R
M406.020.D16.1.03A	3	20	16	55	20	19	35	6.3	21200	40600R
M406.025.D16.2.04A	4	25	16	65	30	24	35	6.3	19000	40600R
M406.025.D20.2.04A	4	25	20	65	30	24	35	6.3	19000	40600R
M406.032.D16.2.05A	5	32	16	65	30	31	35	6.3	16700	40600R
M406.032.D20.2.05A	5	32	20	65	30	31	35	6.3	16700	40600R
M406.040.D16.2.06A	6	40	16	65	30	39	35	6.3	15000	40600R
M406.040.D20.2.06A	6	40	20	65	30	39	35	6.3	15000	40600R

Dimensions in mm

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M406...02A, .03A	030.2669.T8P	T8PL	1.2 Nm
M406...04A, .05A, .06A	030.2608.T8P	T8PL	1.2 Nm



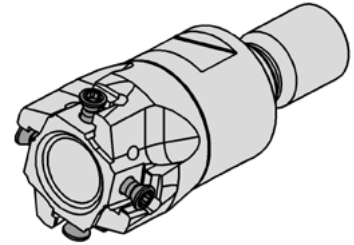
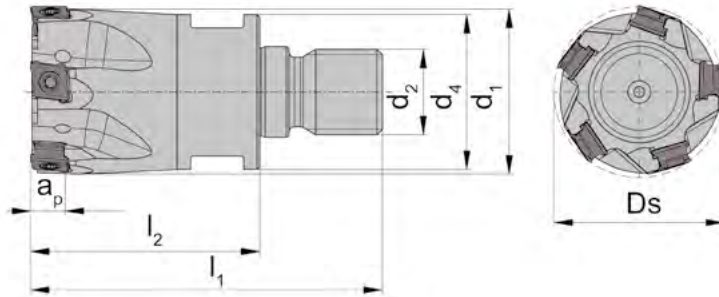
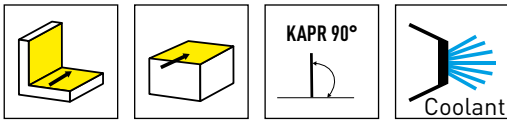
Picture = right hand cutting version

Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	Form	n _{max}	HWS
M406.016.D16.3.02B	2	16	16	75	25	15	48	6.3	B	23700	40600R
M406.020.D20.4.03B	3	20	20	85	33	19	50	6.3	B	21200	40600R
M406.025.D25.5.04B	4	25	25	95	37	24	56	6.3	B	19000	40600R
M406.032.D32.6.05B	5	32	32	111	47	31	60	6.3	B	16700	40600R
M409.032.D32.6.03B	3	32	32	111	47	31	60	9.3	B	15600	40900R
M409.032.D32.6.04B	4	32	32	111	47	31	60	9.3	B	15600	40900R
M409.040.D32.6.05B	5	40	32	111	47	39	60	9.3	B	13900	40900R

Dimensions in mm

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M406...02B, .03B	030.2669.T8P	T8PL	1.2 Nm
M406...04B, .05B	030.2608.T8P	T8PL	1.2 Nm
M409....	030.3511.T10P	T10PL	3.5 Nm



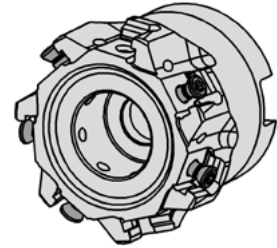
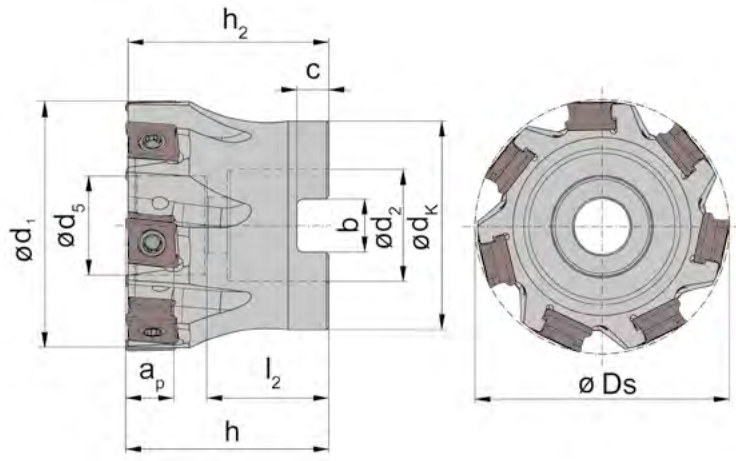
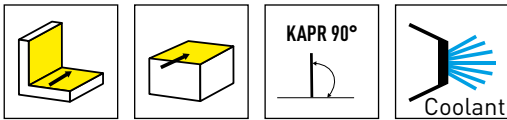
Picture = right hand cutting version

Part number	Z	Ds	l ₁	l ₂	d ₁	a _p	d ₂	d ₄	SW	n _{max}	HWS	HMS
M406.016.M08.3.02	2	16	41	23	15	6.3	M8	13	10	23700	40600R	08001
M406.020.M10.4.03	3	20	50	30	19	6.3	M10	18	15	21200	40600R	10001
M406.025.M12.5.04	4	25	57	35	24	6.3	M12	21	17	19000	40600R	12001
M406.032.M16.6.05	5	32	66	43	31	6.3	M16	29	24	16700	40600R	16001
M406.040.M16.6.06	6	40	66	43	39	6.3	M16	29	24	15000	40600R	16001
M409.032.M16.6.03	3	32	66	43	31	9.3	M16	29	24	15600	40900R	16001
M409.032.M16.6.04	4	32	66	43	31	9.3	M16	29	24	15600	40900R	16001
M409.040.M16.6.04	4	40	66	43	39	9.3	M16	29	24	13900	40900R	16001
M409.040.M16.6.05	5	40	66	43	39	9.3	M16	29	24	13900	40900R	16001

Dimensions in mm

Spare Parts

Screw-in cutter	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M406...02, .03	030.2669.T8P	T8PL	1.2 Nm
M406...04, 05, 06	030.2608.T8P	T8PL	1.2 Nm
M409...	030.3511.T10P	T10PL	3.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	a _p	h ₂	h	d ₅	d ₁	d ₂	l ₂	b	C	d _k	n _{max}	HWS
M409.0040.A16.05	5	40	9.3	34.5	35	16	39	16	22	8.4	5.6	33	13900	40900R
M409.0050.A22.07	7	50	9.3	39.5	40	19.5	49	22	24	10.4	6.3	41	12500	40900R
M409.0063.A22.08	8	63	9.3	39.5	40	19.5	62	22	25	10.4	6.3	49	11100	40900R
M409.0063.A27.08	8	63	9.3	39.5	40	23	62	27	27.5	12.4	7	49	11100	40900R
M409.0080.A27.10	10	80	9.3	49.5	50	21.5	79	27	28	12.4	7	59	9800	40900R
M409.0100.A32.12	12	100	9.3	49.5	50	30	99	32	33	14.4	8	80	8800	40900R
M409.0125.A40.16	16	125	9.3	62.5	63	56	124	40	35	16.4	9	89	7900	40900R
M409.0160.A40.20	20	160	9.3	62.5	63	90	159	40	29	16.4	9	110	6900	40900R
M409.0200.A60.24	24	200	9.3	62.5	63	135	199	60	42	25.7	14	130	6200	40900R
M409.0040.A16.04	4	40	9.3	34.5	35	16	39	16	22	8.4	5.6	33	13900	40900R
M409.0050.A22.05	5	50	9.3	39.5	40	19.5	49	22	24	10.4	6.3	41	12500	40900R
M409.0063.A22.06	6	63	9.3	39.5	40	19.5	62	22	25	10.4	6.3	49	11100	40900R
M409.0063.A27.06	6	63	9.3	39.5	40	23	62	27	27.5	12.4	7	49	11100	40900R
M409.0080.A27.07	7	80	9.3	49.5	50	21.5	79	27	28	12.4	7	59	9800	40900R
M409.0100.A32.08	8	100	9.3	49.5	50	30	99	32	33	14.4	8	80	8800	40900R
M409.0125.A40.10	10	125	9.3	62.5	63	56	124	40	35	16.4	9	89	7900	40900R
M409.0160.A40.14	14	160	9.3	62.5	63	90	159	40	29	16.4	9	110	6900	40900R

ø100+ mm arbor mounted cutter as per DIN 8030-A, ø125+ DIN8030-B, ø160+ mm DIN 8030-C

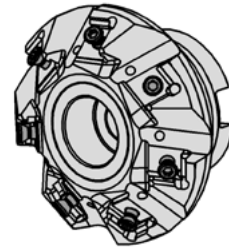
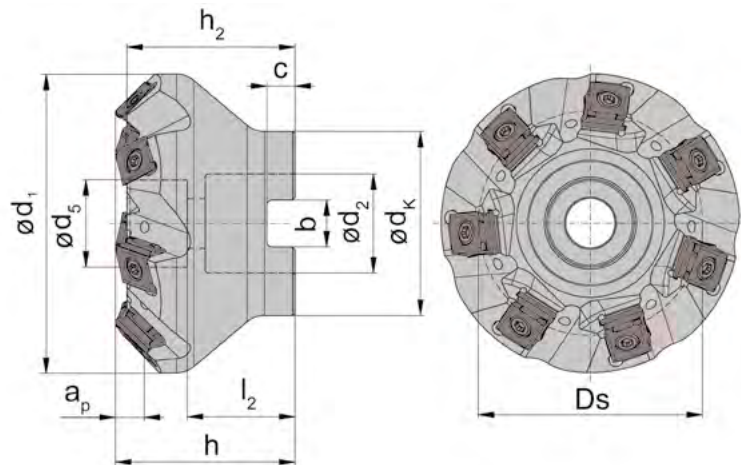
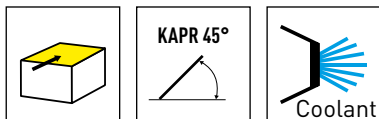
from ø160 mm: availability and internal coolant upon customers request

Dimensions in mm

K

Spare Parts

Shoulder Mill	Clamping Screw	TORX PLUS® Wrench	Arbor Mount Bolt	Insert Torque Value
M409...	030.3511.T10P	T10PL	20.30.6367	3.5 Nm
M409.0200.A60.24	030.3511.T10P	T10PL	30.45.6367	3.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	ap	h2	h	d5	d1	d2	l2	b	C	dk	nmax	HWS
M409.0040.A16.45.05	5	40	6.2	32.5	35	16	55	16	22	8.4	5.6	33	13900	40900R
M409.0050.A22.45.07	7	50	6.2	37.5	40	19.5	67	22	24	10.4	6.3	41	12500	40900R
M409.0063.A22.45.08	8	63	6.2	37.5	40	19.5	80	22	25	10.4	6.3	49	11100	40900R
M409.0063.A27.45.08	8	63	6.2	37.5	40	22	79	27	27.5	12.4	7	49	11100	40900R
M409.0080.A27.45.10	10	80	6.2	47.5	50	22	96	27	27.5	12.4	7	59	9800	40900R
M409.0125.A40.45.16	16	125	6.2	60.5	63	56	141	40	35	16.4	9	89	7900	40900R
M409.0160.A40.45.20	20	160	6.2	60.5	63	90	176	40	29	16.4	9	110	6900	40900R
M409.0040.A16.45.04	4	40	6.2	32.5	35	17	55	16	18	8.4	5.6	33	13900	40900R
M409.0050.A22.45.05	5	50	6.2	37.5	40	20	67	22	20	10.4	6.3	41	12500	40900R
M409.0063.A22.45.06	6	63	6.2	37.5	40	20	79	22	20	10.4	6.3	49	11100	40900R
M409.0080.A27.45.07	7	80	6.2	47.5	50	22	96	27	27.5	12.4	7	59	9800	40900R
M409.0100.A32.45.08	8	100	6.2	47.5	50	30	116	32	32.5	14.4	8	80	8800	40900R

ø100+ mm Arbor mounted cutter as per DIN 8030-A, ø125+ DIN8030-B, ø160+ mm DIN 8030-C

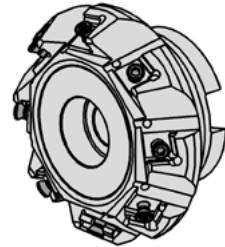
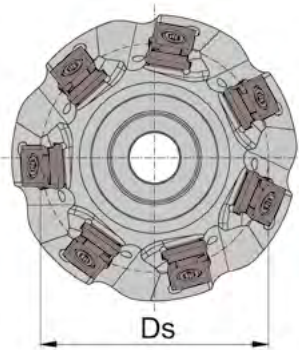
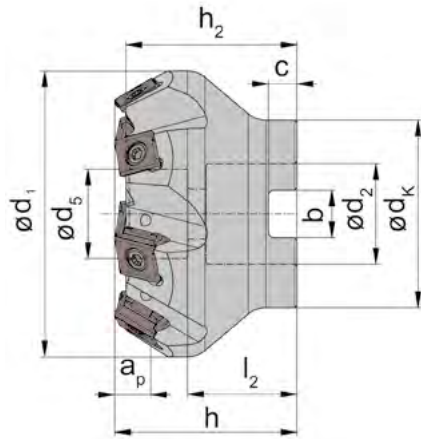
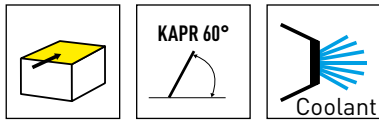
ap = 6.2 mm can be reached with rx = 0.8 mm

from ø160 mm: availability and internal coolant upon customers request

Dimensions in mm

Spare Parts

Face Mill	Clamping Screw	TORX PLUS® Wrench	Arbor Mount Bolt	Insert Torque Value
M409.0...	030.3511.T10P	T10PL	20.30.6367	3.5 Nm



Picture = right hand cutting version

Part number	Z	Ds	ap	h ₂	h	d ₅	d ₁	d ₂	b	C	d _K	n _{max}	HWS
M409.0040.A16.60.05	5	40	7.7	32.5	35	16	50	16	8.4	5.6	33	13900	40900R
M409.0050.A22.60.07	7	50	7.7	37.5	40	19.5	63	22	10.4	6.3	41	12500	40900R
M409.0063.A22.60.08	8	63	7.7	37.5	40	19.5	73	22	10.4	6.3	49	11100	40900R
M409.0063.A27.60.08	8	63	7.7	37.5	40	19.5	75	27	12.4	7	49	11100	40900R
M409.0100.A32.60.12	12	100	7.7	47.5	50	22	112	32	14.4	8	59	8800	40900R
M409.0160.A40.60.20	20	160	7.7	60.5	63	90	172	40	16.4	9	110	6900	40900R
M409.0040.A16.60.04	4	40	7.7	32.5	35	17	52	16	8.4	5.6	33	13900	40900R
M409.0050.A22.60.05	5	50	7.7	37.5	40	20	62	22	10.4	6.3	41	12500	40900R
M409.0100.A32.60.08	8	100	7.7	47.5	50	30	112	32	14.4	8	80	8800	40900R
M409.0125.A40.60.10	10	125	7.7	60.5	63	56	137	40	16.4	9	89	7900	40900R

ø100+ mm Arbor mounted cutter as per DIN 8030-A, ø125+ DIN8030-B, ø160+ mm DIN 8030-C

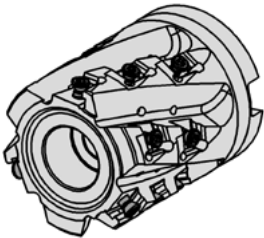
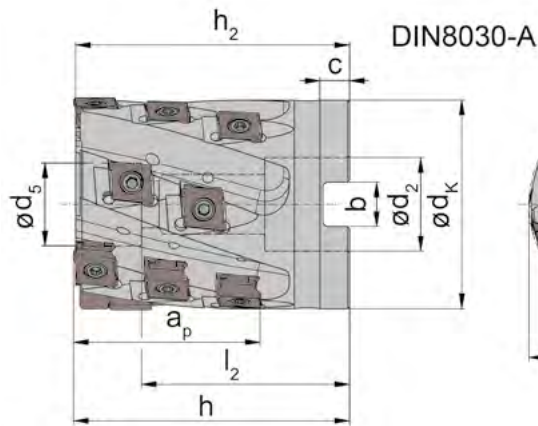
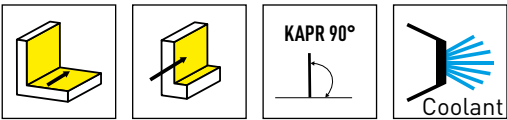
ap = 7.7 mm can be reached with rx = 0.8 mm

from ø160 mm: availability and internal coolant upon customers request

Dimensions in mm

Spare Parts

Face Mill	Clamping Screw	TORX PLUS® Wrench	Arbor Mount Bolt	Insert Torque Value
M409.0...	030.3511.T10P	T10PL	20.30.6367	3.5 Nm



Picture = right hand cutting version

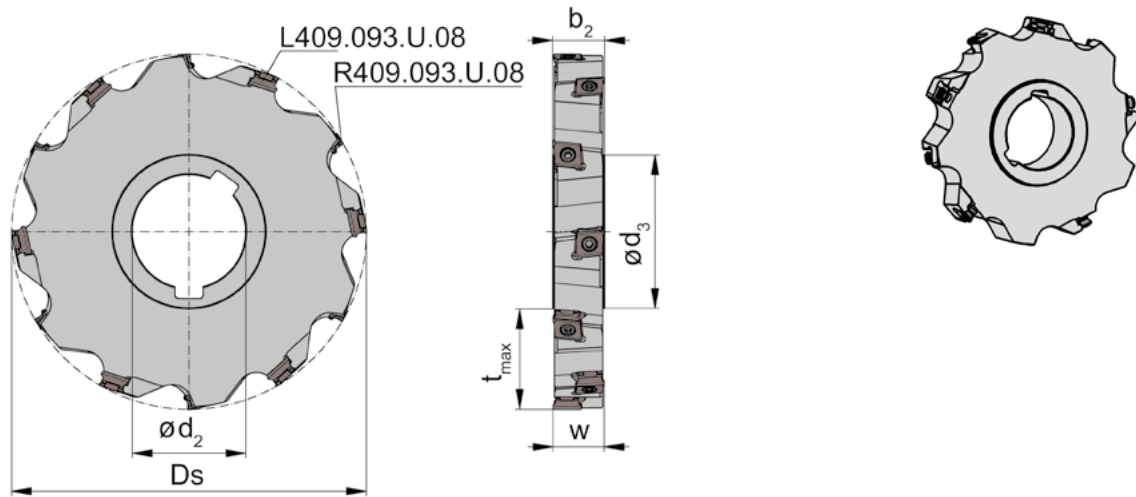
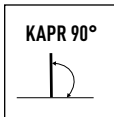
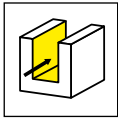
Part number	Z	Z _{eff}	Ds	a _p	h ₂	h	d _s	d ₂	l ₂	b	C	d _k	n _{max}	HWS
M409.0040.A16.W.10	10	2	40	43.2	64.5	65	16	16	53.4	8.4	5.6	39	13900	40900R
M409.0050.A22.W.15	15	3	50	43.2	64.5	65	19.5	22	49	10.4	6.3	49	12500	40900R
M409.0063.A27.W.20	20	4	63	43.2	64.5	65	21.5	27	48.8	12.4	7	62	11100	40900R

Use insert R409.093.U.08 for best results

Dimensions in mm

Spare Parts

Shell End Mill	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M409...	030.3511.T10P	T10PL	3.5 Nm



Picture = right hand cutting version

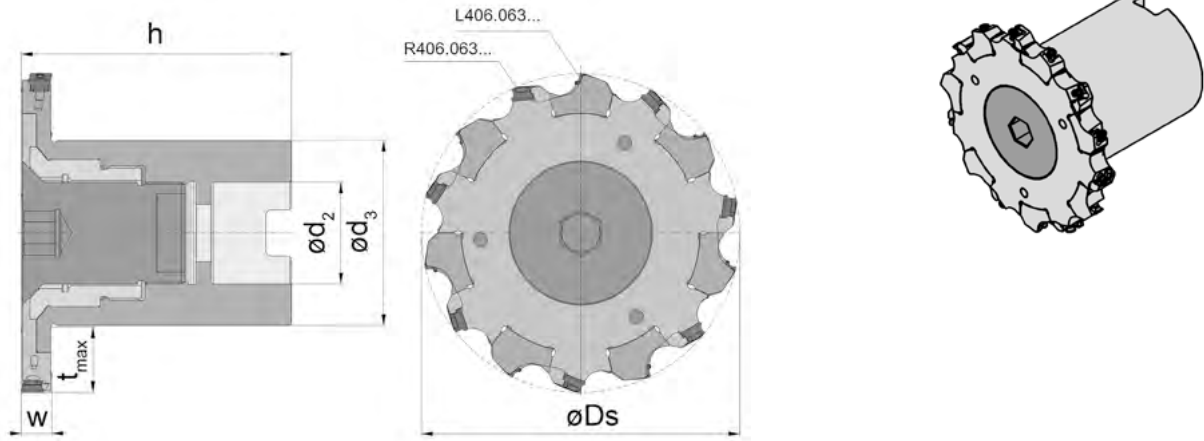
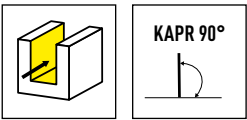
Part number	Z	Z _{eff}	Ds	t _{max}	d ₂	b ₂	d ₃	w	n _{max}	right hand insert	left hand insert	HWS
M409.0100.32.S.14	10	5	100	26	32	14.4	46	14	8800	5x R409.093.U.08	5x L409.093.U.08	40900R • 40900L
M409.0100.32.S.18	10	5	100	26	32	18.4	46	18	8800	5x R409.093.U.08	5x L409.093.U.08	40900R • 40900L
M409.0125.40.S.14	12	6	125	34.5	40	14.4	54	14	7900	6x R409.093...	6x L409.093...	40900R • 40900L
M409.0125.40.S.18	12	6	125	34.5	40	18.4	54	18	7900	6x R409.093...	6x L409.093...	40900R • 40900L

Dimensions in mm

Spare Parts

Disc milling cutter	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M409...	030.3511.T10P	T10PL	3.5 Nm

Arbor Mounted Cutter M406 / M409



Part number	Z	Z _{eff}	Ds	t _{max}	h _{min}	h _{max}	d ₃	d ₂	w _{min}	w _{max}	right hand insert	left hand insert	HWS
M406.0100.A32.ES.96	14	7	100	20	84.8	88.1	58	32	9.6	12.9	7x R406.063...	7x L406.063...	40600R • 40600L
M409.0125.A32.ES.129	12	6	125	32.5	102	107.9	58	32	12.9	18.8	6x R409.093...	6x L409.093...	40900R • 40900L

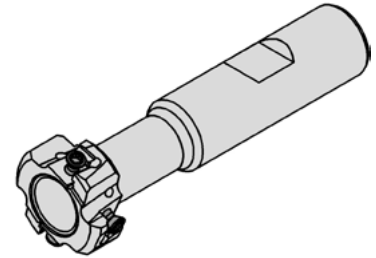
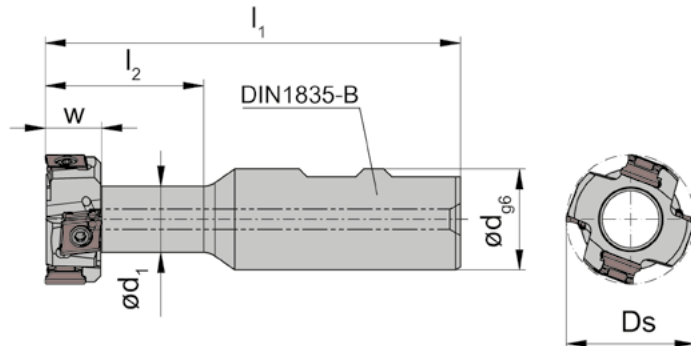
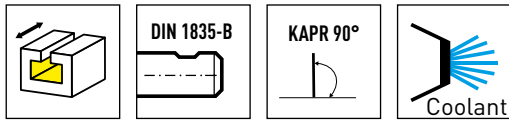
Arbor mounted cutter is adjustable!

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Center Bolt	Clamping Screw	TORX PLUS® Wrench	Adjustment Adapter	Torque Value
M406.0100.A32.ES.96	C406.0100.A32.ES.96	030.2608.T8P	T8PL	A406.0100.A32.ES.96	1.2 Nm
M409.0125.A32.ES.129	C409.0125.A32.ES.129	030.3511.T10P	T10PL	A409.0125.A32.ES.129	3.5 Nm





Picture = right hand cutting version

Part number	Z	Z _{eff}	Ds	d	l ₁	l ₂	d ₁	w	a	n _{max}	right hand insert	left hand insert	HWS
M406.025.11.D16.1.02.B	4	2	25	16	83	31	12.4	11	12.9	19000	2x R406.063.U...	2x L406.063.U...	40600R • 40600L
M409.032.14.D25.1.02.B	4	2	32	25	103	39	16.4	14	16.9	15600	2x R409.093.U...	2x L409.093.U...	40900R • 40900L
M409.040.18.D25.1.02.B	4	2	40	25	109	48	20.4	18	20.9	13900	2x R409.093.U...	2x L409.093.U...	40900R • 40900L
M409.050.22.D32.1.02.B	6	2	50	32	125	59	26.4	22	26.9	12500	4x R409.093.U...	2x L409.093.U...	40900R • 40900L

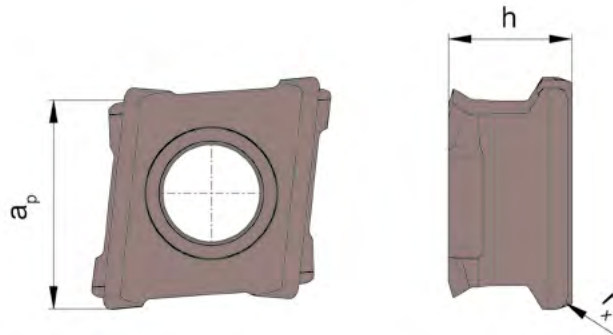
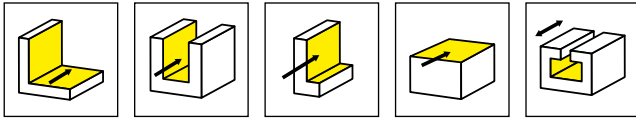
Tools with Ds >30mm have 2 clamping flats

Dimensions in mm

K

Spare Parts

End Mill	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M406.025.11.D16.1.02.B	030.2608.T8P	T8PL	1.2 Nm
M409...	030.3511.T10P	T10PL	3.5 Nm



Coating grades

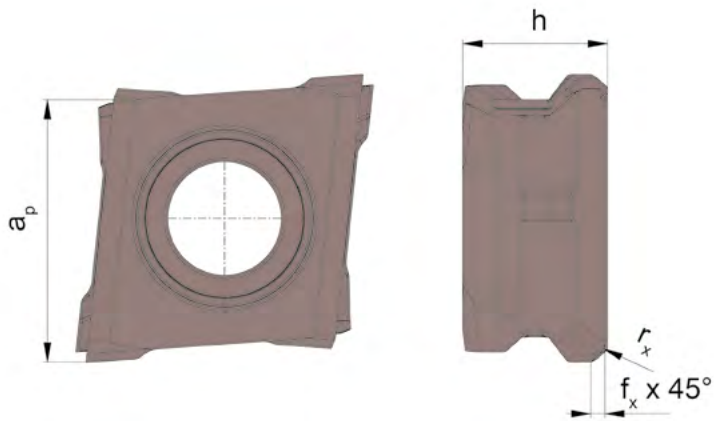
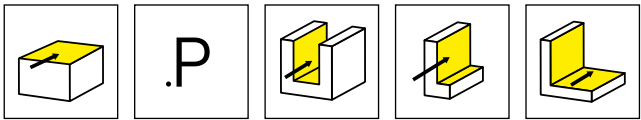
▲ In stock

△ 2 weeks

Part number	a_p	h	r_x	HIS	K10	AS46	AS4B	IG35	NE2B
R406.063.U.02	6.3	3.85	0.2	40600R		▲	▲		
R406.063.U.04	6.3	3.85	0.4	40600R		▲	▲		
R406.063.U.08	6.3	3.85	0.8	40600R		▲	▲		
R406.063.W.02	6.3	3.85	0.2	40600R	▲				
R406.063.W.04	6.3	3.85	0.4	40600R	▲			▲	▲
R406.063.W.08	6.3	3.85	0.8	40600R	▲			▲	▲
R409.093.U.02	9.3	5.2	0.2	40900R					
R409.093.U.04	9.3	5.2	0.4	40900R		▲	▲		
R409.093.U.08	9.3	5.2	0.8	40900R		▲	▲		
R409.093.U.12	9.3	5.2	1.2	40900R		▲	▲		
R409.093.W.02	9.3	5.2	0.2	40900R	▲			▲	
R409.093.W.04	9.3	5.2	0.4	40900R	▲			▲	▲
R409.093.W.08	9.3	5.2	0.8	40900R	▲			▲	▲
R409.093.W.12	9.3	5.2	1.2	40900R				▲	▲
L406.063.U.02	6.3	3.85	0.2	40600L					
L406.063.U.04	6.3	3.85	0.4	40600L		▲	▲		
L406.063.U.08	6.3	3.85	0.8	40600L		▲	▲		
L406.063.W.02	6.3	3.85	0.2	40600L	▲				
L406.063.W.04	6.3	3.85	0.4	40600L	▲			▲	▲
L406.063.W.08	6.3	3.85	0.8	40600L	▲			▲	▲
L409.093.U.02	9.3	5.2	0.2	40900L					
L409.093.U.04	9.3	5.2	0.4	40900L		▲	▲		
L409.093.U.08	9.3	5.2	0.8	40900L		▲	▲		
L409.093.U.12	9.3	5.2	1.2	40900L		▲	▲		
L409.093.W.02	9.3	5.2	0.2	40900L	▲				
L409.093.W.04	9.3	5.2	0.4	40900L	▲			▲	▲
L409.093.W.08	9.3	5.2	0.8	40900L	▲			▲	▲
L409.093.W.12	9.3	5.2	1.2	40900L				▲	▲
P	-	o	•	•	-				
M	-	o	•	•	-				
K	-	•	•	•	-				
N	•	o	o	-	•				
S	-	o	•	•	-				
H	-	-	-	-	-				

4 cutting edges

Dimensions in mm

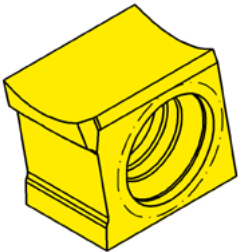
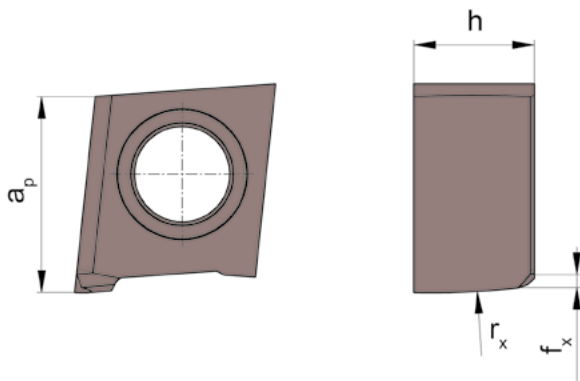
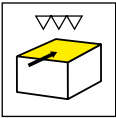


Coating grades

▲ In stock

Δ 2 weeks

Part number	a _p	h	r _x	fx	HIS		AS45	AS46
RS409.090.P.F05	9	5.2	0.6	0.5	40900R		▲	▲
LS409.090.P.F05	9	5.2	0.6	0.5	40900L		▲	▲
4 cutting edges						P	●	○
Dimensions in mm						M	●	○
						K	●	●
						N	-	○
						S	○	○
						H	-	-



Coating grades

▲ In stock

Δ 2 weeks

Part number	a _p	h	r _x	fx	HIS		AS46	AS4B
R406.063.S.F4	6	3.85	100	0.4	40600R		▲	▲
R409.093.S.F4	9.3	5.2	100	0.4	40900R		▲	▲
Wiper geometry, precision ground - excellent surface finish						P	o	●
1 cutting edge						M	o	●
Dimensions in mm						K	●	●
						N	o	o
						S	o	●
						H	-	-

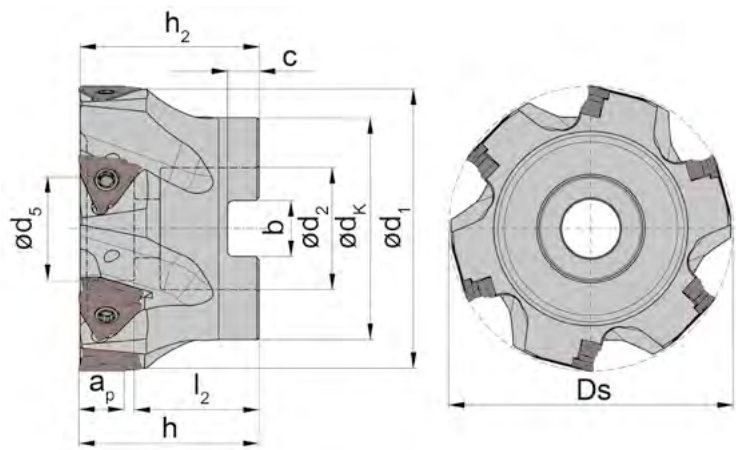
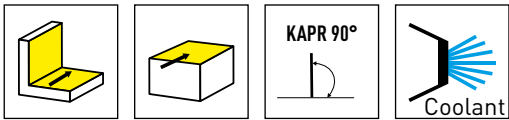


K

SYSTEM 610

90° Mill, Arbor Mounted Cutter

SYSTEM 610	Arbor Mount		Facing, Grooving, Side Milling
			
	Page 557 M610 90° Tangential	Page 558 M610 Disc Groove Mill	Page 559 610 Multi-Purpose
	Technical Instructions - Chapter M --- Cutting Data - Page 561		

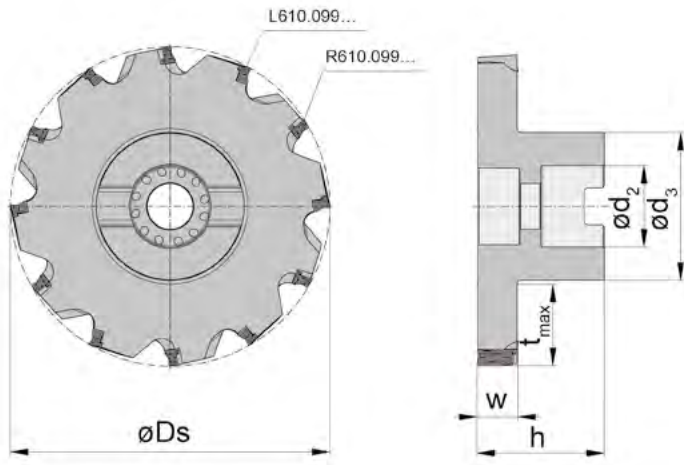
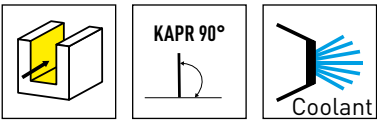


Part number	Z	Ds	ap	h2	h	d5	d1	d2	l2	b	C	dk	nmax	HWS
M610.0050.A22.05	5	50	9.9	39.7	40	19.5	49	22	24	10.4	6.3	41	10000	61000R
M610.0063.A22.06	6	63	9.9	39.7	40	19.5	62	22	25	10.4	6.3	49	9000	61000R
M610.0063.A27.06	6	63	9.9	39.7	40	23	62	27	27.5	12.4	7	49	9000	61000R
M610.0080.A27.08	8	80	9.9	49.7	50	21.5	79	27	28	12.4	7	59	8000	61000R
M610.0100.A32.10	10	100	9.9	49.7	50	30	99	32	33	14.4	8	80	7000	61000R
M610.0125.A40.12	12	125	9.9	62.7	63	56	124	40	35	16.4	9	89	6000	61000R

Dimensions in mm

Spare Parts

Shoulder Mill	Clamping Screw	TORX PLUS® Wrench	Arbor Mount Bolt	Insert Torque Value
M610.0125.A40.12	030.3513.T15P	T15PQ	20.30.6367	3.5 Nm

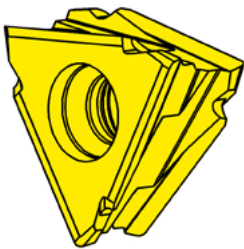
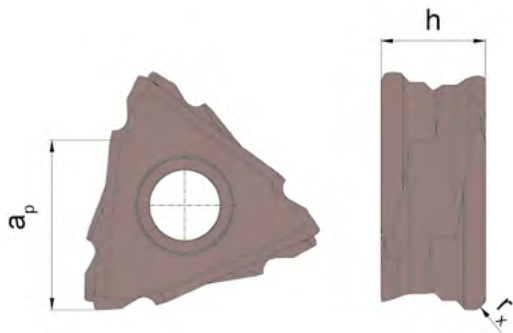
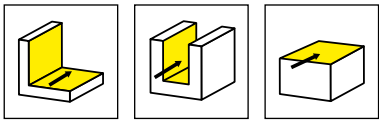


Part number	Z	Z _{eff}	D _s	t _{max}	h	d ₃	d ₂	n _{max}	w	right hand insert	left hand insert	HWS
M610.0125.A32.S.16	12	6	125	32.5	50	58	32	6000	16	6x R610.099.U....	6x L610.099.U....	61000L

Dimensions in mm

Spare Parts

Arbor Mounted Cutter	Clamping Screw	TORX PLUS® Wrench	Insert Torque Value
M610.0125.A32.S.16	030.3513.T15P	T15PQ	3.5 Nm



Coating grades

▲ In stock Δ 2 weeks

Part number	a _p	h	r _x	HIS		AS46	AS4B	IG35	NE2B
R610.099.U.04	9.9	6.2	0.4	61000R		▲	▲		
R610.099.W.04	9.9	6.2	0.4	61000R				▲	Δ
R610.099.W.08	9.9	6.2	0.8	61000R				▲	Δ
L610.099.U.04	9.9	6.2	0.4	61000L		Δ	▲		
L610.099.W.04	9.9	6.2	0.4	61000L				Δ	Δ
L610.099.W.08	9.9	6.2	0.8	61000L				Δ	Δ
Dimensions in mm					P	o	•	•	-
					M	o	•	•	-
					K	•	•	•	-
					N	o	o	-	•
					S	o	•	•	-
					H	-	-	-	-

Tangential Mill - Feed Rates



Material		Material group	M406 Shoulder Mill 90°				M409 Shoulder Mill 90°				M406 T-Slot Cutter 90°			
			Feed per tooth (Fz) @ % of radial engagement [a _e]				Feed per tooth (Fz) @ % of radial engagement [a _e]				Feed per tooth (Fz) @ % of radial engagement [a _e]			
			100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	
P	Carbon steel	P1.1 - P1.5	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.007 0.20	.009 0.23	.009 0.25	.012 0.33	.003 0.10	.004 0.12	.005 0.13	
	Alloyed steel (<5%)	P2.1 - P2.4	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.007 0.18	.008 0.21	.009 0.23	.011 0.30	.003 0.08	.003 0.09	.003 0.10	
	High alloyed steel (>5%)	P3.1 - P3.2												
	Cast steel	P4.1 - P4.2												
	Sintered steel	P5.1												
M	Stainless steel	M1.1-M1.3	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.004 0.12	.005 0.13	.006 0.17	.002 0.06	.002 0.07	.003 0.08	
K	Grey cast iron	K1.1-K1.2	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.007 0.18	.007 0.18	.007 0.20	.010 0.27	.004 0.12	.005 0.14	.005 0.15	
	Spheroidal graphite cast iron	K2.1-K2.2	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.006 0.16	.006 0.16	.007 0.18	.009 0.23	.003 0.10	.004 0.12	.005 0.13	
	Malleable cast iron	K3.1-K3.2	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.006 0.16	.006 0.16	.007 0.18	.009 0.23				
	Ausferritic spheroidal cast iron / ADI	K4.1-K4.3												
N	Al-alloys	N1.1-N1.2	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.005 0.14	.005 0.14	.005 0.15	.007 0.20				
	Al-cast-alloy	N2.1-N2.3	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.005 0.14	.006 0.17	.007 0.19	.009 0.25				
	Copper-alloys	N3.1-N3.4	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.004 0.12	.005 0.13	.006 0.17				
S	Heat resistant alloy (Fe)	S1.1-S1.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.003 0.09	.003 0.10	.005 0.13				
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.003 0.09	.003 0.10	.005 0.13				
	Titanium	S3.1-S3.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.003 0.09	.003 0.10	.005 0.13				

.002

0.07

=

Suggested feed rate (inch)

Suggested feed rate (metric)

Material		M409 T-Slot Cutter 90°				M409 Shell Mill 90°				M409 Face Mill 45°				M409 Face Mill 60°			
		Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)			
		100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
	Carbon steel	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.011 0.28	.012 0.32	.013 0.35	.018 0.47	.009 0.23	.010 0.26	.011 0.29	.014 0.38
	Alloyed steel (<5%)	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.009 0.25	.011 0.29	.012 0.31	.016 0.42	.008 0.21	.009 0.24	.010 0.26	.013 0.35
	High alloyed steel (>5%)																
	Cast steel																
	Sintered steel																
	Stainless steel	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.004 0.12	.005 0.13	.006 0.17	.006 0.17	.004 0.12	.005 0.13	.006 0.17	.005 0.14	.006 0.16	.007 0.18	.009 0.23
	Grey cast iron	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.009 0.25	.007 0.18	.007 0.20	.010 0.27	.008 0.21	.009 0.24	.010 0.26	.013 0.35
	Spheroidal graphite cast iron	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.006 0.16	.007 0.18	.009 0.23	.008 0.22	.006 0.16	.007 0.18	.009 0.23	.007 0.18	.008 0.21	.009 0.23	.011 0.30
	Malleable cast iron					.004 0.12	.006 0.16	.007 0.18	.009 0.23	.008 0.22	.006 0.16	.007 0.18	.009 0.23	.007 0.18	.008 0.21	.009 0.23	.011 0.30
	Ausferritic spheroidal cast iron / ADI																
	Al-alloys					.004 0.12	.005 0.14	.005 0.15	.007 0.20	.007 0.20	.005 0.14	.005 0.15	.007 0.20	.006 0.16	.007 0.18	.007 0.20	.010 0.27
	Al-cast-alloy					.003 0.10	.006 0.17	.007 0.19	.009 0.25	.007 0.20	.006 0.17	.007 0.19	.009 0.25	.006 0.16	.007 0.18	.007 0.20	.010 0.27
	Copper-alloys					.003 0.10	.004 0.12	.005 0.13	.006 0.17	.006 0.17	.004 0.12	.005 0.13	.006 0.17	.005 0.14	.006 0.16	.007 0.18	.009 0.23
	Heat resistant alloy (Fe)					.003 0.10	.003 0.09	.003 0.10	.005 0.13	.005 0.14	.003 0.09	.003 0.10	.005 0.13	.004 0.12	.005 0.14	.005 0.15	.007 0.20
	Heat resistant alloy (Ni, Co)					.003 0.10	.003 0.09	.003 0.10	.005 0.13	.005 0.14	.003 0.09	.003 0.10	.005 0.13	.004 0.12	.005 0.14	.005 0.15	.007 0.20
	Titanium					.003 0.10	.003 0.09	.003 0.10	.005 0.13	.005 0.14	.003 0.09	.003 0.10	.005 0.13	.004 0.12	.005 0.14	.005 0.15	.007 0.20

.002

0.07

=

Suggested feed rate (inch)

Suggested feed rate (metric)

Tangential Mill - Feed Rates



Material		Material group	M409 Disc Milling Cutter 90°				M610 Shoulder Mill 90°				
			Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				
			100%	50%	20%	10%	100%	50%	20%	10%	
P	Carbon steel	P1.1 - P1.5	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.006 0.16	.007 0.18	.007 0.20	.010 0.27	
	Alloyed steel (<5%)	P2.1 - P2.4	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.14	.006 0.16	.007 0.18	.009 0.23	
	High alloyed steel (>5%)	P3.1 - P3.2									
	Cast steel	P4.1 - P4.2									
	Sintered steel	P5.1									
M	Stainless steel	M1.1-M1.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.004 0.12	.005 0.13	.006 0.17	
K	Grey cast iron	K1.1-K.1.2	.007 0.18	.008 0.21	.009 0.23	.011 0.30	.006 0.16	.007 0.18	.007 0.20	.010 0.27	
	Spheroidal graphite cast iron	K2.1-K2.2	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.005 0.14	.006 0.16	.007 0.18	.009 0.23	
	Malleable cast iron	K3.1-K3.2	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.005 0.14	.006 0.16	.007 0.18	.009 0.23	
	Ausferritic spheroidal cast iron ADI	K4.1-K4.3									
N	Al-alloys	N1.1-N1.2	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.004 0.12	.005 0.14	.005 0.15	.007 0.20	
	Al-cast-alloy	N2.1-N2.3	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.15	.006 0.17	.007 0.19	.009 0.25	
	Copper-alloys	N3.1-N3.4	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.003 0.10	.004 0.12	.005 0.13	.006 0.17	
S	Heat resistant alloy (Fe)	S1.1-S1.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13	
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13	
	Titanium	S3.1-S3.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13	

K

.002
0.07

=

Suggested feed rate (inch)
Suggested feed rate (metric)

Material	M610 Disc Milling Cutter 90°	Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)			
		w = 3 + 4 mm				w = 6 + 8 mm							
		100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
Carbon steel		.005 0.15	.006 0.17	.007 0.19	.009 0.25	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
Alloyed steel (<5%)		.005 0.13	.005 0.15	.006 0.16	.008 0.22	.002 0.07	.003 0.08	.003 0.09	.004 0.12	.003 0.09	.003 0.10	.004 0.11	.005 0.15
High alloyed steel (>5%)													
Cast steel													
Sintered steel													
Stainless steel		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
Grey cast iron		.007 0.18	.008 0.21	.009 0.23	.011 0.30	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.005 0.14	.006 0.16	.007 0.18	.009 0.23
Spheroidal graphite cast iron		.005 0.15	.006 0.17	.007 0.19	.009 0.25	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
Malleable cast iron		.005 0.15	.006 0.17	.007 0.19	.009 0.25	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
Ausferritic spheroidal cast iron ADI													
Al-alloys		.004 0.12	.005 0.14	.005 0.15	.007 0.20	.002 0.07	.003 0.08	.003 0.09	.004 0.12	.003 0.09	.003 0.10	.004 0.11	.005 0.15
Al-cast-alloy		.003 0.10	.004 0.12	.005 0.13	.006 0.17	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.003 0.09	.003 0.10	.005 0.13
Copper-alloys		.003 0.10	.004 0.12	.005 0.13	.006 0.17								
Heat resistant alloy (Fe)		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
Heat resistant alloy (Ni, Co)		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
Titanium		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10

.002
0.07

=

Suggested feed rate (inch)
Suggested feed rate (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

K

$$\begin{array}{c} 655 \\ 200 \end{array} = \begin{array}{c} \text{Suggested cutting speed (inch)} \\ \text{Suggested cutting speed (metric)} \end{array}$$

	Material	AS46 a_e/D_c			AS4B a_e/D_c			IG35 a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%
	Carbon steel	525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240
	Alloyed steel (<5%)	590 180	655 200	720 220	590 180	655 200	720 220	590 180	655 200	720 220
		590 180	655 200	720 220	590 180	655 200	720 220	590 180	655 200	720 220
		590 180	655 200	720 220	590 180	655 200	720 220	590 180	655 200	720 220
		590 180	655 200	720 220	590 180	655 200	720 220			
	High alloyed steel (>5%)									
	Cast steel									
	Sintered steel									
	Stainless steel	260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130
		260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130
		260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

K

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45	
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04	
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800		
		quenched	K4.2	350	1050		
		quenched	K4.3	450	1400		
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1	
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12	
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu	
		brass	N3.2	90	310	C38500 , CuZn40Pb	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

	Material	AS46 a_e/D_c			AS4B a_e/D_c			IG35 a_e/D_c			NE2B a_e/D_c			K10 a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	720 220	855 260	985 300	720 220	855 260	985 300	525 160	560 170	590 180						
		720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180						
	Spheroidal graphite cast iron	720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180						
		720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180						
	Malleable cast iron															
	Ausferritic spheroidal cast iron / ADI															
	Al-alloys	1150 350	2215 675	3280 1000	1150 350	2215 675	3280 1000									
		1150 350	2215 675	3280 1000	1150 350	2215 675	3280 1000									
	Al-cast-alloy								1640 500	5740 1750	9845 3000		1150 350	1560 475	1970 600	
									1640 500	4100 1250	6560 2000		1150 350	1560 475	1970 600	
									1150 350	3035 925	4920 1500					
	Copper-alloys								720 220	855 260	985 300		590 180	675 205	755 230	
									590 180	675 205	755 230		590 180	675 205	755 230	
									590 180	690 210	785 240		590 180	675 205	755 230	
									525 160	675 205	820 250		590 180	675 205	755 230	

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R_m [N/mm ²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α - β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	
O	Thermo plastics		O1.1				
	Thermosets		O1.2				

$$\frac{655}{200} = \frac{\text{Suggested cutting speed (inch)}}{\text{Suggested cutting speed (metric)}}$$

	Material	IG35 a_e/D_c			NE2B a_e/D_c			K10 a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)	100	180	260						
		30	55	80						
	Heat resistant alloy (Fe)	100	180	260						
		30	55	80						
	Heat resistant alloy (Ni, Co)	100	180	260						
		30	55	80						
	Heat resistant alloy (Ni, Co)	100	180	260						
		30	55	80						
	Titanium	100	180	260						
		30	55	80						
	Titanium	100	180	260						
		30	55	80						
	Titanium	100	180	260						
		30	55	80						
	Thermo plastics				1640	3280	4920	1640	3280	4920
					500	1000	1500	500	1000	1500
	Thermosets				1640	3280	4920	1640	3280	4920
					500	1000	1500	500	1000	1500

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

K

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)

	Material	AS46 a _e /D _c			AS4B a _e /D _c			IG35 a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%
	Carbon steel	425	525	625	425	525	625	475	560	640
		130	160	190	130	160	190	145	170	195
		425	525	625	425	525	625	475	560	640
		130	160	190	130	160	190	145	170	195
		425	525	625	425	525	625	475	560	640
		130	160	190	130	160	190	145	170	195
		425	525	625	425	525	625	475	560	640
		130	160	190	130	160	190	145	170	195
	Alloyed steel <5%	475	525	575	475	525	575	475	525	575
		145	160	175	145	160	175	145	160	175
		475	525	575	475	525	575	475	525	575
		145	160	175	145	160	175	145	160	175
		475	525	575	475	525	575	475	525	575
		145	160	175	145	160	175	145	160	175
	High alloyed steel >5%									
	Cast steel									
	Sintered steel									
	Stainless steel	215	280	345	215	280	345	215	280	345
		65	85	105	65	85	105	65	85	105
		215	280	345	215	280	345	215	280	345
		65	85	105	65	85	105	65	85	105

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)

K

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45	
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04	
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800		
		quenched	K4.2	350	1050		
		quenched	K4.3	450	1400		
N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1	
		heat treatable	N1.2	100	340	6061, 7075 , AlMgSi1	
	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12	
	Copper-alloys	pure copper	N3.1	100	340	C11000 , Cu	
		brass	N3.2	90	310	C38500 , CuZn40Pb	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

	Material	AS46 a_e/D_c			AS4B a_e/D_c			IG35 a_e/D_c			NE2B a_e/D_c			K10 a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150						
		590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150						
	Spheroidal graphite cast iron	590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150						
		590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150						
	Malleable cast iron															
	Ausferritic spheroidal cast iron / ADI															
	Al-alloys	920 280	1770 540	2625 800	920 280	1770 540	2625 800									
		920 280	1770 540	2625 800	920 280	1770 540	2625 800									
	Al-cast-alloy										1310 400	4595 1400	7875 2400	920 280	1245 380	1575 480
											1310 400	3280 1000	5250 1600	920 280	1245 380	1575 480
											920 280	2430 740	3935 1200			
	Copper-alloys										590 180	690 210	785 240	475 145	540 165	605 185
											475 145	540 165	605 185	475 145	540 165	605 185
											475 145	540 165	605 185	590 180	675 205	755 230
											425 130	540 165	655 200	590 180	675 205	755 230

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	
O	Thermo plastics		01.1				
	Thermosets		01.2				

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

	Material	AS46 a _e /D _c			AS4B a _e /D _c			IG35 a _e /D _c			NE2B a _e /D _c			K10 a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)							100	180	260						
								30	55	80						
	Heat resistant alloy (Ni, Co)							100	180	260						
								30	55	80						
	Titanium							100	180	260						
								30	55	80						
								100	180	260						
								30	55	80						
	Thermo plastics										1310	2625	3935	1310	2625	3935
											400	800	1200	400	800	1200
	Thermosets										1310	2625	3935	1310	2625	3935
											400	800	1200	400	800	1200

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

K

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

M406, M409, M610

Disc Milling Cutter



	Material	AS46 a_e/D_c		AS4B a_e/D_c		IG35 a_e/D_c		RC4G a_e/D_c	
		25%	10%	25%	10%	25%	10%	25%	10%
	Carbon steel	425	625	425	625	475	625	525	785
		130	190	130	190	145	190	160	240
		425	625	425	625	475	625	525	785
		130	190	130	190	145	190	160	240
		425	625	425	625	475	625	525	785
		130	190	130	190	145	190	160	240
		425	625	425	625	475	625	525	785
		130	190	130	190	145	190	160	240
	Alloyed steel (<5%)	475	575	475	575	475	575	590	720
		145	175	145	175	145	175	180	220
		475	575	475	575	475	575	590	720
		145	175	145	175	145	175	180	220
		475	575	475	575	475	575	590	720
		145	175	145	175	145	175	180	220
	High alloyed steel (>5%)							260	395
								80	120
	Cast steel							260	330
								80	100
	Sintered steel							525	720
								160	220
	Stainless steel							260	460
								80	140
	Stainless steel	215	345	195	345	215	345	260	460
		65	105	60	105	65	105	80	140
		215	345	195	345	215	345	230	395
		65	105	60	105	65	105	70	120
	Stainless steel	215	345	195	345	215	345	230	395
		65	105	60	105	65	105	70	120

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)

K

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45	
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04	
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800		
		quenched	K4.2	350	1050		
		quenched	K4.3	450	1400		
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1	
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12	
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu	
		brass	N3.2	90	310	C38500 , CuZn40Pb	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

M406, M409, M610

Disc Milling Cutter



	Material	K10 a_e/D_c		AS46 a_e/D_c		AS4B a_e/D_c		IG35 a_e/D_c		NE2B		RC4G a_e/D_c	
		25%	10%	25%	10%	25%	10%	25%	10%	25%	10%	25%	10%
	Grey cast iron			575 175	785 240	575 175	785 240	425 130	475 145			590 180	820 250
				575 175	785 240	575 175	785 240	425 130	475 145			395 120	590 180
	Spheroidal graphite cast iron			575 175	785 240	575 175	785 240	425 130	475 145			395 120	525 160
				575 175	785 240	575 175	785 240	425 130	475 145			395 120	525 160
	Malleable cast iron											195 60	395 120
												195 60	460 140
	Ausferritic spheroidal cast iron / ADI												
	Al-alloys			920 280	2625 800	920 280	2625 800						
				920 280	2625 800	920 280	2625 800						
	Al-cast-alloy	920 280	1575 480							1310 400	7875 2400		
		920 280	1575 480							1310 400	5250 1600		
										920 280	3935 1200		
	Copper-alloys	475 145	605 185							575 175	785 240		
		475 145	605 185							475 145	605 185		
		475 145	605 185							475 145	625 190		
		475 145	605 185							425 130	655 200		

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)

K



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	
O	Thermo plastics		01.1				
	Thermosets		01.2				

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

M406, M409, M610

Disc Milling Cutter



	Material	K10 a_e/D_c		IG35 a_e/D_c		NE2B	
		25%	10%	25%	10%	25%	10%
	Heat resistant alloy (Fe)			80 25	215 65		
				80 25	215 65		
	Heat resistant alloy (Ni, Co)			80 25	215 65		
				80 25	215 65		
	Titanium			80 25	215 65		
				80 25	215 65		
				80 25	215 65		
				80 25	215 65		
	Thermo plastics	1310 400	3935 1200			1310 400	3935 1200
	Thermosets	1310 400	3935 1200			1310 400	3935 1200

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)



POLYGON MILLING

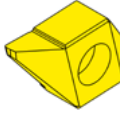
SYSTEMS M275, 381

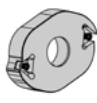


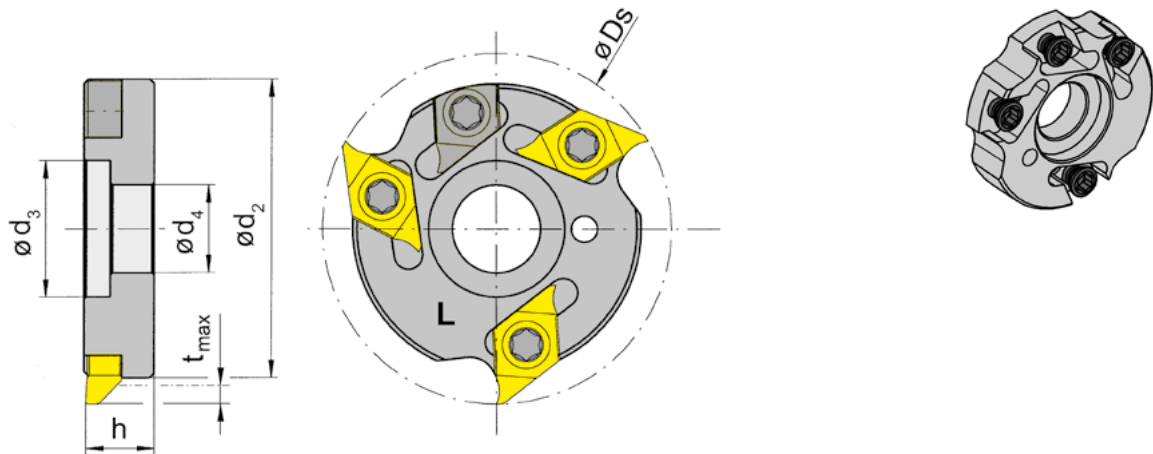
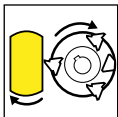
SYSTEM M275

FOR TORNOS MACHINES

L

SYSTEM M275	For Tornos Machines		Inserts
	 Page 587 Max DOC .118" (3mm)	 Page 588 Max DOC .118" (3mm)	 Page 589 .051" (1.3mm) Width

SYSTEM 381	Star Machines	Gildemeister Machines			
	 Page 592 Max DOC .177" (4.5mm)	 Page 593 Max DOC .196" (5mm)	 Page 594 Max DOC .196" (5mm)	 Page 595 Max DOC .196" (5mm)	
	Index Machines		Nakamura Machines	A.H. Schutte Machines	
	 Page 596 Max DOC .196" (5mm)	 Page 597 Max DOC .196" (5mm)	 Page 598 Max DOC .196" (5mm)	 Page 599 Max DOC .196" (5mm)	 Page 600 Max DOC .196" (5mm)
	Tornos Machines		Traub Machines		Inserts
	 Page 601 Max DOC .196" (5mm)	 Page 602 Max DOC .196" (5mm)	 Page 603 Max DOC .196" (5mm)	 Page 604 Max DOC .196" (5mm)	 Page 605-611 .157"-.275" (4-7mm) Widths



R = right hand version

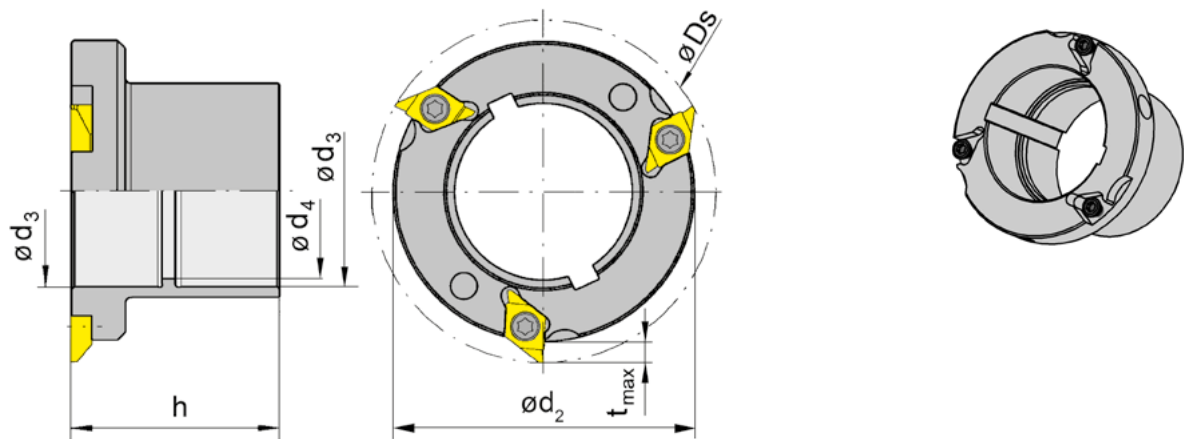
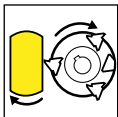
Part number	Ds	d ₂	h	t _{max}	d ₄	d ₃	Machine type	HWS
RM275.D040.10.04	40	33	7.9	3	10	15.5	EvoDECO 10	275041R
LM275.D040.10.04	40	33	7.9	3	10	15.5	EvoDECO 10	275041L

Tool for Tornos

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Left hand balancing insert	Right hand balancing insert	Torque Value
RM275.D040.10.04	030.357P.0315	T10PL		RS275.AT41.HM	3 Nm
LM275.D040.10.04	030.357P.0315	T10PL	LS275.AT41.HM		3 Nm



R = right hand version

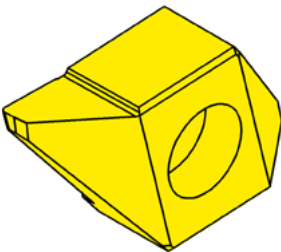
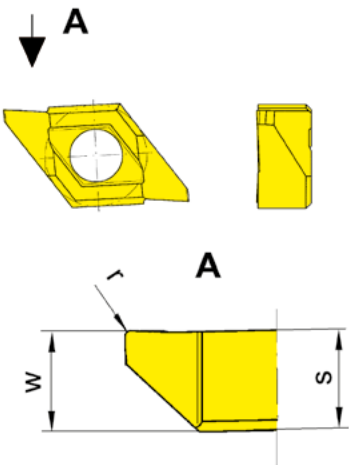
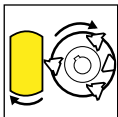
Part number	Ds	d ₂	h	t _{max}	d ₄	d ₃	Machine type	HWS
RM275.T064.3325.03	64	56	36	3	10	15.5	EvoDECO 10	275041R

Tool for Tornos

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
RM275.T064.3325.03	3.5.10T10P	T10PL	3 Nm



Grades

▲ In stock

Δ 2 weeks

Part number	w	r	s	HIS	AS45	TI25
RS275.MK13.M0	1.3	0.2	3.9	275041R	▲	▲
LS275.MK13.M0	1.3	0.2	3.9	275041L	▲	▲
Dimensions in mm					P	●
					M	●
					K	●
					N	-
					S	O
					H	-



SYSTEM 381

FOR VARIOUS MACHINE TYPES

L

SYSTEM 381

Star Machines



Page 592
Max DOC
.177" (4.5mm)



Page 593
Max DOC
.196" (5mm)



Page 594
Max DOC
.196" (5mm)



Page 595
Max DOC
.196" (5mm)

Gildemeister Machines

Index Machines



Page 596
Max DOC
.196" (5mm)



Page 597
Max DOC
.196" (5mm)

Nakamura Machines



Page 598
Max DOC
.196" (5mm)



Page 599
Max DOC
.196" (5mm)



Page 600
Max DOC
.196" (5mm)

A.H. Schutte Machines

Tornos Machines



Page 601
Max DOC
.196" (5mm)



Page 602
Max DOC
.196" (5mm)

Traub Machines



Page 603
Max DOC
.196" (5mm)



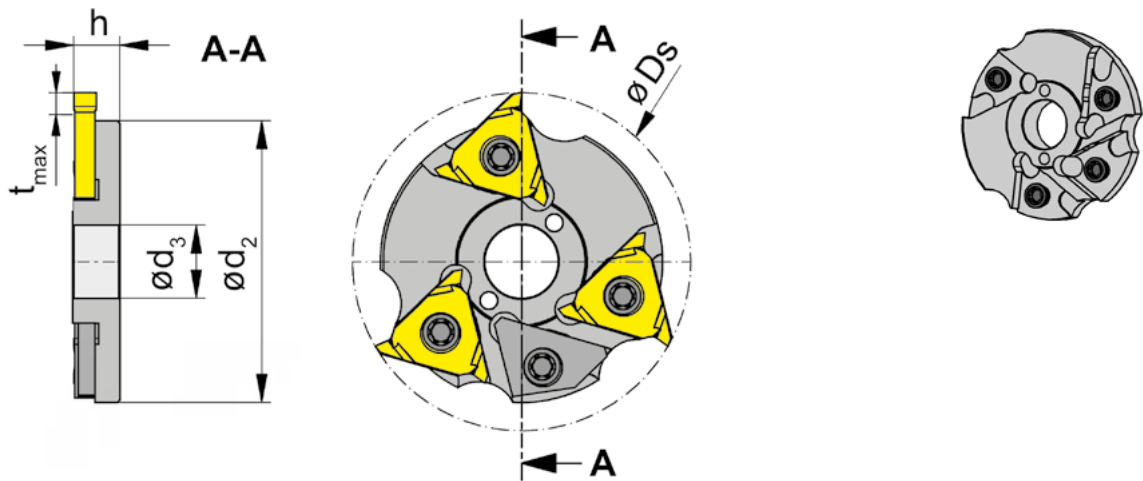
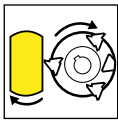
Page 604
Max DOC
.196" (5mm)

Inserts



Page 605-611
.157" -.275"
(4-7mm) Widths

Cutting Data and Technical Instructions - Page 612



Picture = left hand cutting version

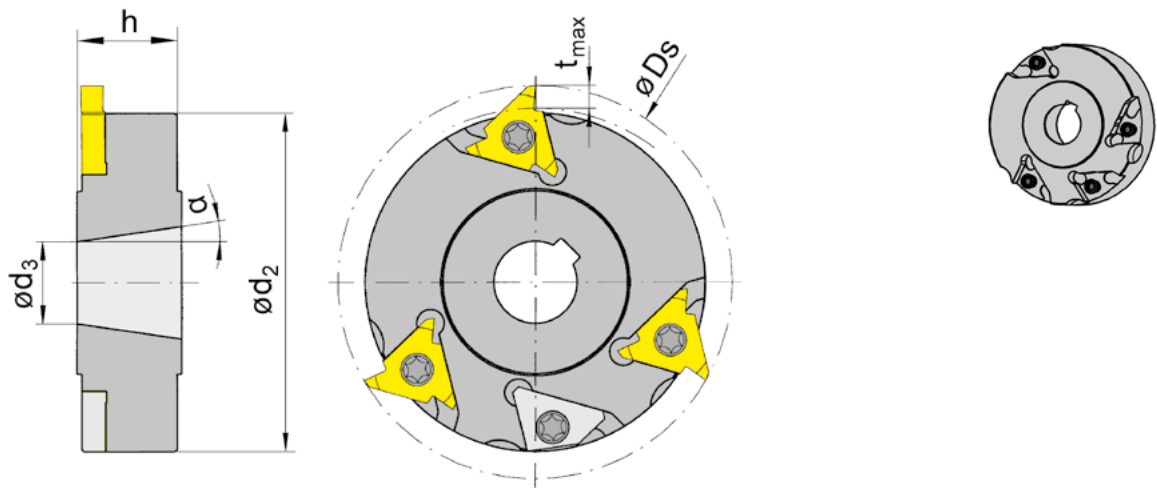
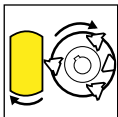
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
L381.A060.13.04	60	50	8.2	4.5	13	Star SR-20J	314027N

for machine: **Star**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Left hand balancing element	Torque Value
L381.A060.13.04	5F.08T20P	T20PQ	L314.AT30.HM	5.5 Nm



Picture = left hand cutting version

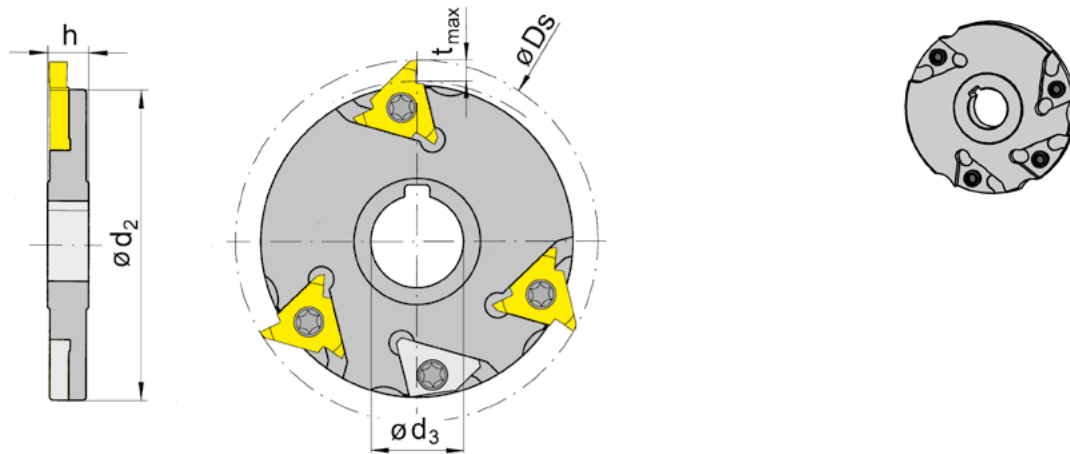
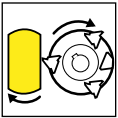
Part number	Ds	d ₂	h	α	t _{max}	d ₃	Machine type	HWS
L381.G070.15.04	70	58	15	8.16°	5	11.5	GLD25/GD32	314041L
L381.G086.25.04	86	74	23	8.16°	5	18	GM20-6,-35-8/GMC35	314041L
L381.G098.26.04	98	86	23	8.32°	5	20	GM35-6,-35-8,-42-6/GMC35	314041L

for machine: **Gildemeister**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Balancing element	Torque Value
L381.G070.15.04	5.10T20P	T20PQ	N314.AT40.HM	6.5 Nm
L381.G...	5.12T20P	T20PQ	N314.AT40.HM	6.5 Nm



Picture = left hand cutting version

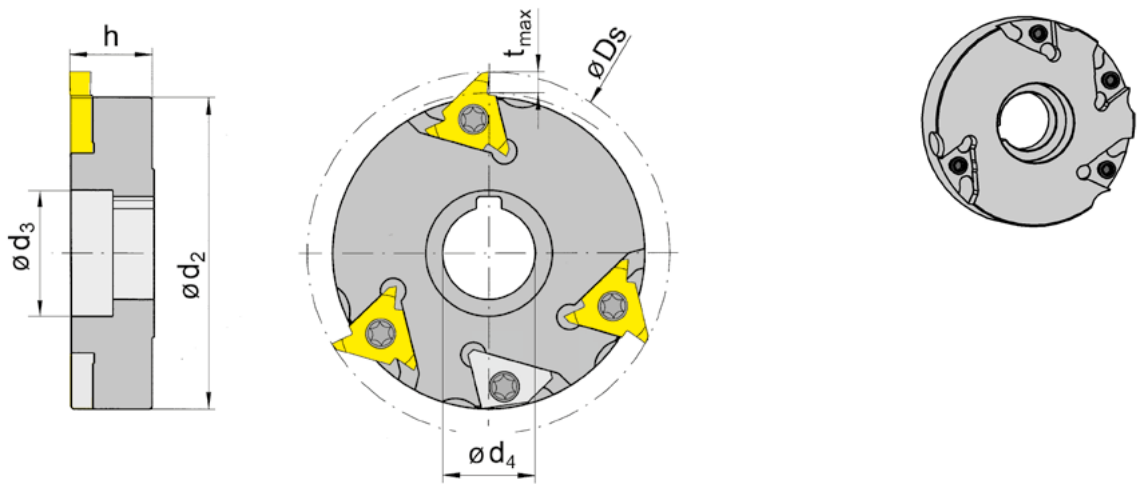
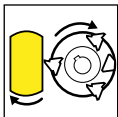
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
L381.G080.16.04	80	68	9	5	16	SPRINT 20/32	314027N

for machine: **Gildemeister**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Left hand balancing element	Torque Value
L381.G080.16.04	5F.08T20P	T20PQ	L314.AT30.HM	5.5 Nm



Picture = left hand cutting version

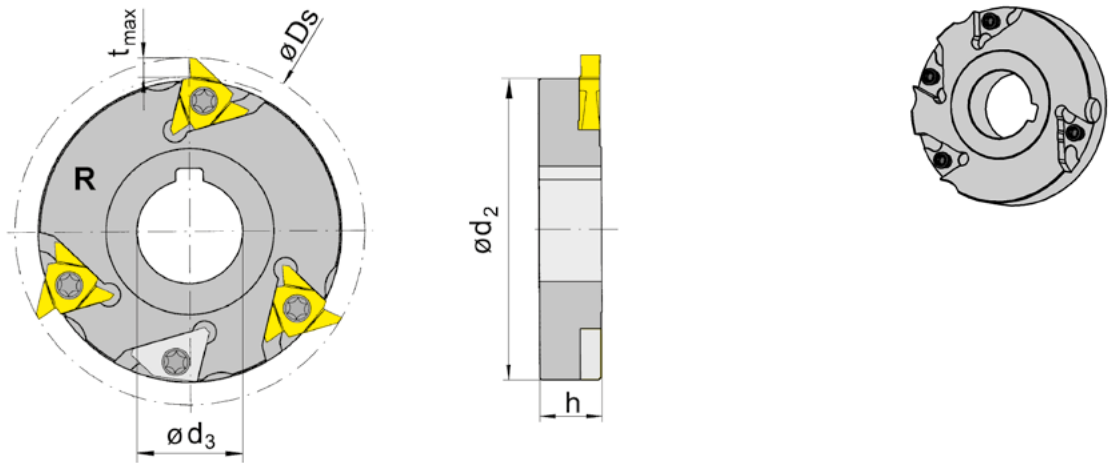
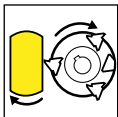
Part number	Ds	d ₂	h	t _{max}	d ₄	d ₃	Machine type	HWS
L381.G090.22.04	90	78	20	5	22	30	SPRINT 32L/-42L	314041L

for machine: **Gildemeister**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Balancing element	Torque Value
L381.G090.22.04	5.12T20P	T20PQ	N314.AT40.HM	6.5 Nm



Picture = right hand cutting version

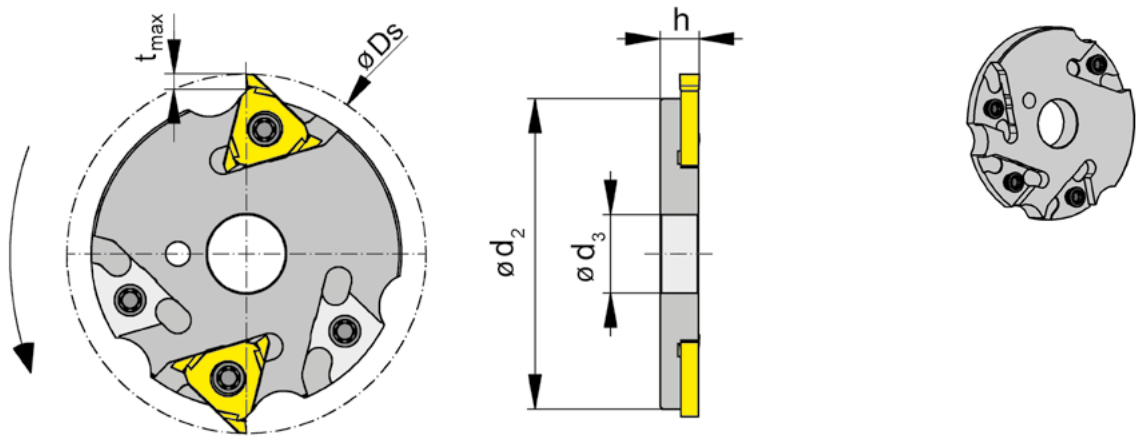
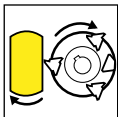
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
R381.X090.27.04	90	78	16.2	5	27	Index ABC	314041R
L381.X090.27.04	90	78	16.2	5	27	Index ABC	314041L

for machine: INDEX

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Balancing element	Torque Value
R/L381.X090.27.04	5.12T20P	T20PQ	020.0314.1531	6.5 Nm



Picture = right hand cutting version

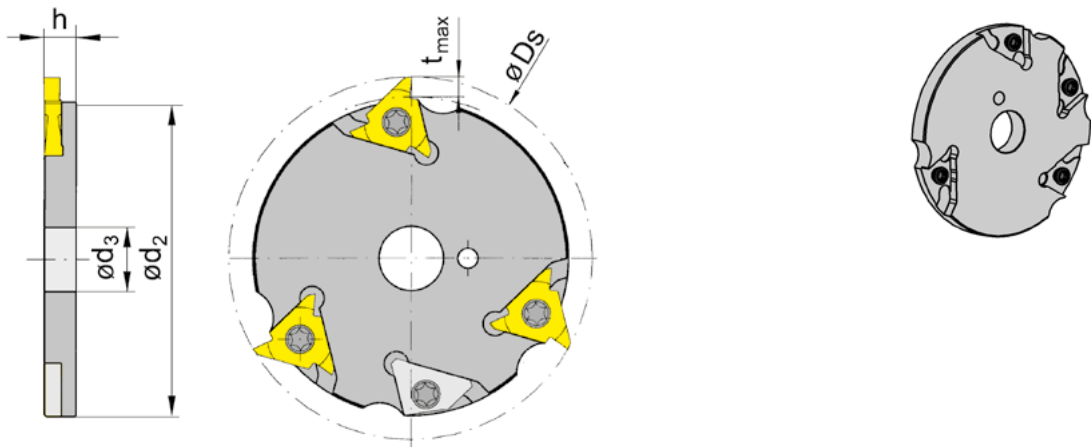
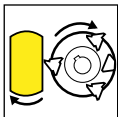
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
R381.X073.16.04	73.5	63.5	8	5	16	Index MS25	314027N

for machine: **INDEX**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Right hand balancing element	Torque Value
R381.X073.16.04	5F.08T20P	T20PQ	R314.AT30.HM	5.5 Nm



Picture = left hand cutting version

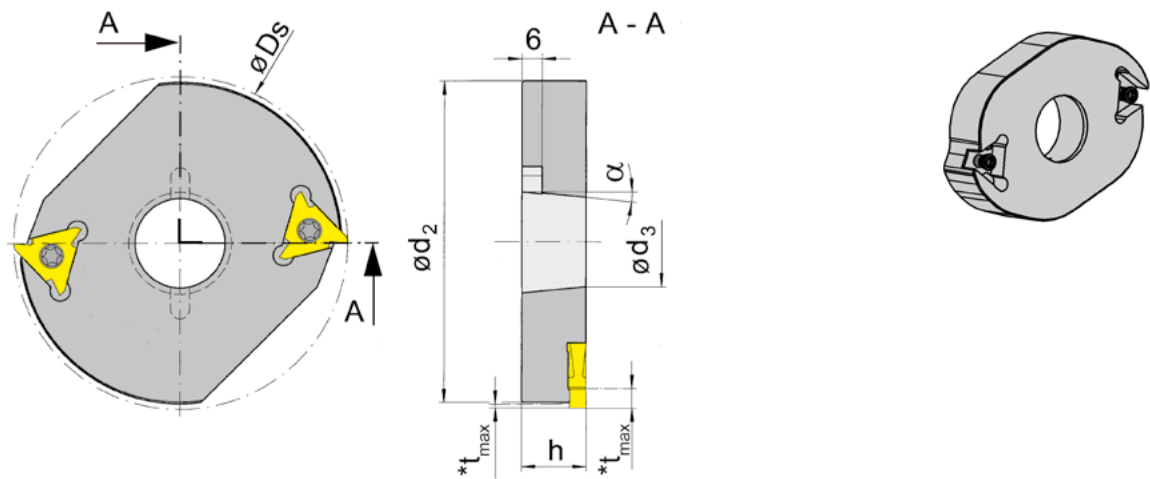
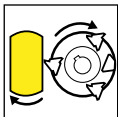
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
L381.N090.16.04	90	80	7.8	5	16	WT250	314027N

for machine: Nakamura

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Left hand balancing element	Torque Value
L381.N090.16.04	5F.08T20P	T20PQ	L314.AT30.HM	5.5 Nm



Picture = left hand cutting version

Part number	D _s	d ₂	h	α	t _{max}	d ₃	Machine type	HWS
L381.S078.30.02	78	66	19	5.42°	5	26.8	SG18, SG20, AG18	314052L
L381.S098.30.02	98	94.6	19	5.42°	5	26.8	SG20/SF26,-S,-L/SE18/AF26,32	314052L
L381.S118.30.02	118	115	19	5.42°	5	26.8	SF32,42,51,67/AF42	314052L

for machine: **A.H. Schütte**

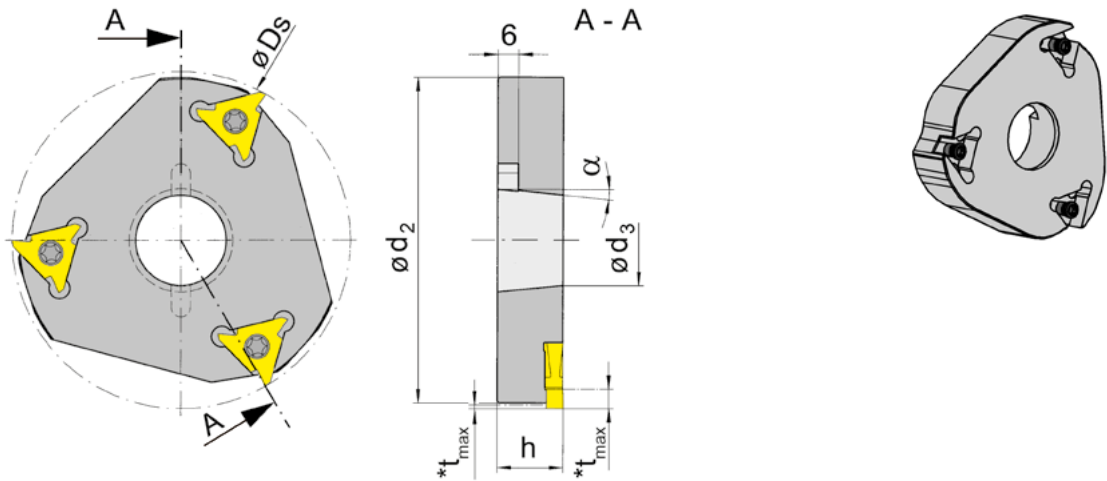
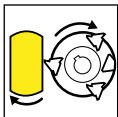
Reinforced pocket, allows feed in axial direction

* t_{max} Side Milling = 5.0 mm / Groove Milling = 1.2 mm

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
L381...	5.15T20P	T20PQ	6.5 Nm



Picture = left hand cutting version

Part number	Ds	d ₂	h	α	t _{max}	d ₃	Machine type	HWS
L381.S098.30.03	98	94.6	19	5.42°	5	26.8	SG20/SF26,-S,-L/SE18/AF26,32	314052L
L381.S118.30.03	118	115	19	5.42°	5	26.8	SF32,42,51,67/AF42	314052L

for machine: **A.H. Schütte**

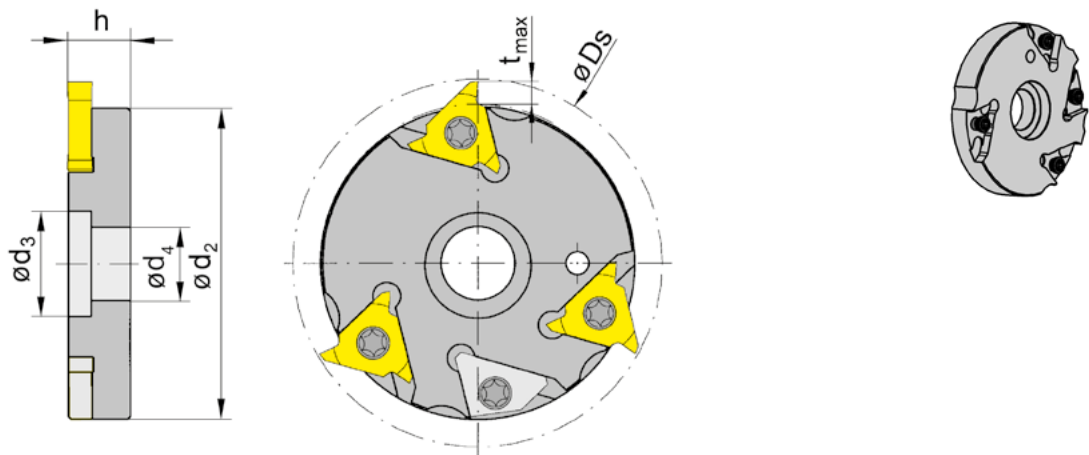
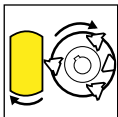
Reinforced insert pocket, allows feed in axial direction

* t_{max} Side Milling = 5.0 mm / Groove Milling = 1.2 mm

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Torque Value
L381...	5.15T20P	T20PQ	6.5 Nm



Picture = left hand cutting version

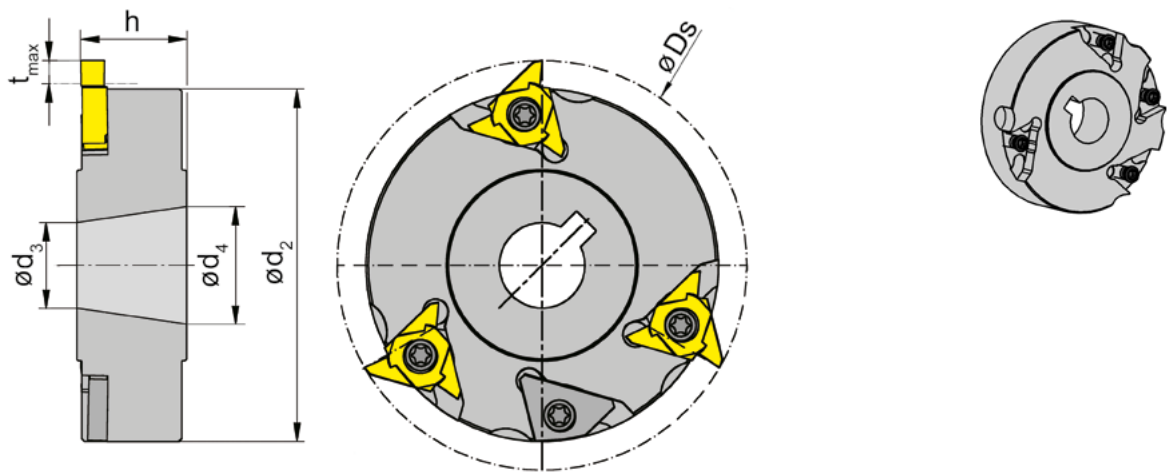
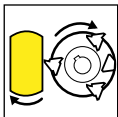
Part number	Ds	d ₂	h	t _{max}	d ₄	d ₃	Machine type	HWS
L381.D080.16.04	80	57.5	13.6	5	16	23	DECO 2000/DECO 13/20/26	314027N

for machine: **Tornos**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Left hand balancing element	Torque Value
L381.D080.16.04	5F.08T20P	T20PQ	L314.AT30.HM	5.5 Nm



Picture = left hand cutting version

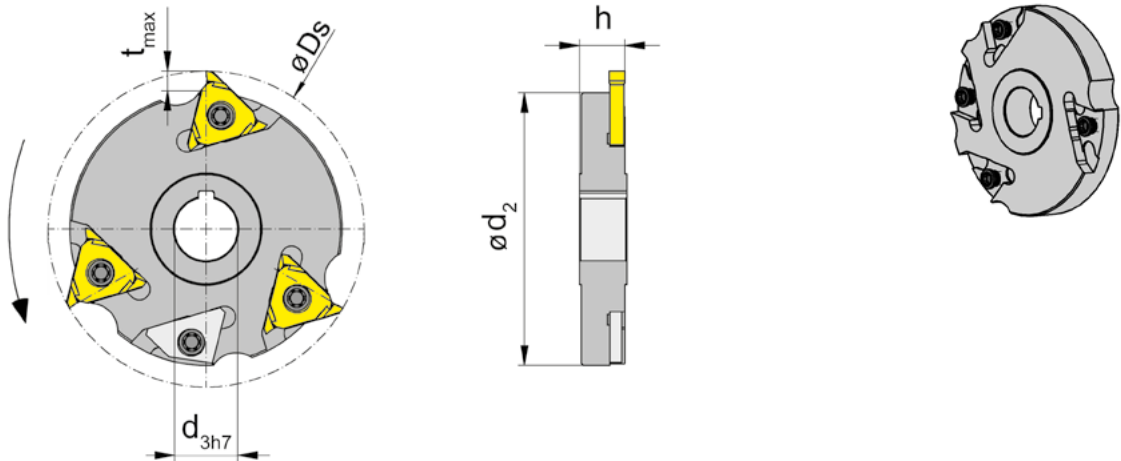
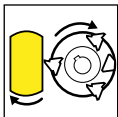
Part number	Ds	d ₂	h	t _{max}	d ₄	d ₃	Machine type	HWS
L381.D086.25.04	86	74	23	5	24.7	18	Tornos Multi-Deco	314041L

for machine: **Tornos**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Balancing element	Torque Value
L381.D086.25.04	5.12T20P	T20PQ	N314.AT40.HM	6.5 Nm



Picture = right hand cutting version

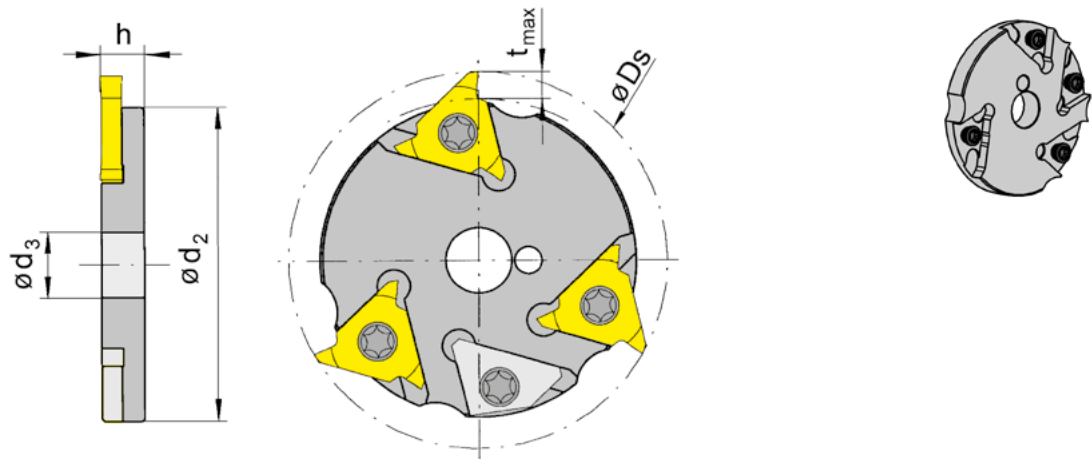
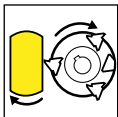
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
R381.T080.16.04	80	69	12	5	16	TRAUB TNL18	314027N

for machine: **Traub**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Right hand balancing element	Torque Value
R381.T080.16.04	5F.08T20P	T20PQ	R314.AT30.HM	5.5 Nm



Picture = left hand cutting version

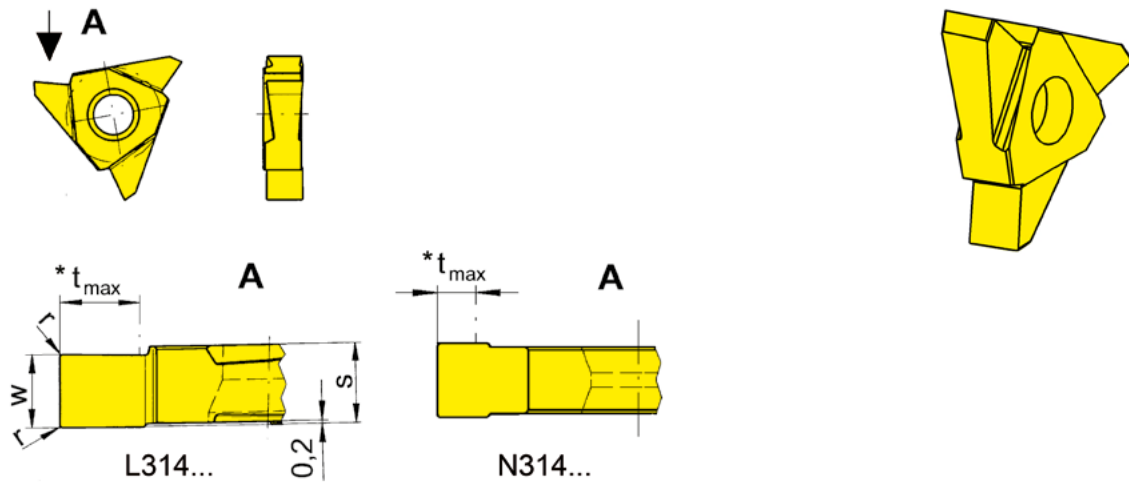
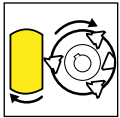
Part number	Ds	d ₂	h	t _{max}	d ₃	Machine type	HWS
L381.T069.12.04	69	57.5	8	5	12	TNL12-7/TNL26/TNK36	314027N

for machine: **Traub**

Dimensions in mm

Spare Parts

Cutter	Clamping Screw	TORX PLUS® Wrench	Left hand balancing element	Torque Value
L381.T069.12.04	5F.08T20P	T20PQ	L314.AT30.HM	5.5 Nm

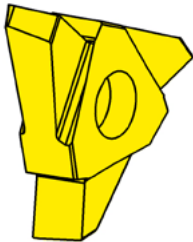
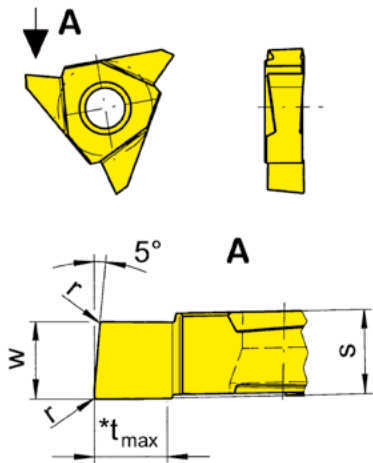
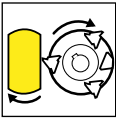


Grades

▲ In stock

Δ 2 weeks

Part number	w	r	s	t _{max}	HIS		MG12	AS45	TI25	TN35
R314.MK50.20	5	0.15	5.2	5	314041R			▲	▲	
L314.MK50.20	5	0.15	5.2	5	314041L			▲	▲	
L314.MK70.M0	7	0.15	7.4	-	314052L			▲	▲	Δ
N314.MK40.20	4	-	3.6	-	314027N		▲	▲	▲	
Dimensions in mm						P	-	●	●	●
						M	-	●	●	-
						K	-	●	-	●
						N	●	-	●	-
						S	-	○	○	-
						H	-	-	-	-

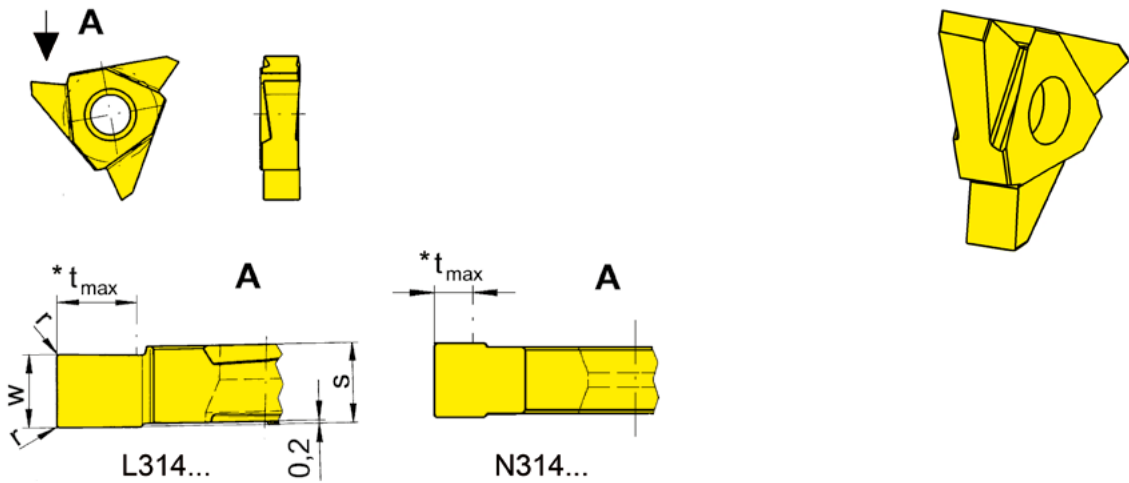
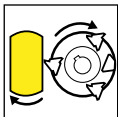


L = left hand version shown

R = right hand version

Grades
▲ In stock Δ 2 weeks

Part number	w	r	s	t _{max}	HIS		AS45	Ti25
R314.MK50.5.20	5	0.15	5.4	5	314041R		▲	▲
R314.MK50.20.L	5.4	0.6	5.4	5	314041R		▲	▲
L314.MK50.5.20	5	0.15	5.4	5	314041L		▲	▲
L314.MK50.20.L	5.4	0.6	5.4	5	314041L		▲	▲
Dimensions in mm						P	●	●
						M	●	●
						K	●	-
						N	-	●
						S	o	o
						H	-	-



Grades

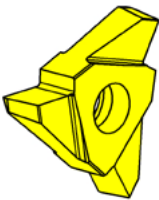
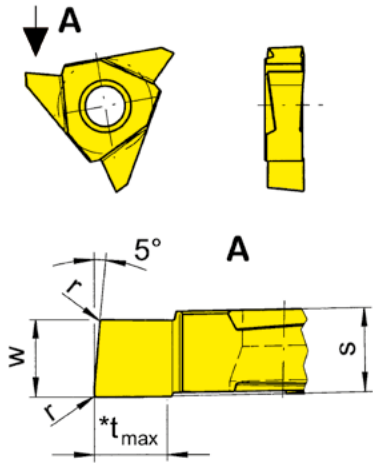
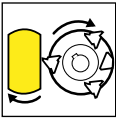
▲ In stock

Δ 2 weeks

Part number	w	r	s	t _{max}	HIS		
						AS45	Ti25
R314.MK50.20	5	0.15	5.2	5	314052R	▲	▲
R314.MK50.20	5	0.15	5.2	5	314041R	▲	▲
L314.MK50.20	5	0.15	5.2	5	314052L	▲	▲
L314.MK50.20	5	0.15	5.2	5	314041L	▲	▲

Dimensions in mm

P	●	●
M	●	●
K	●	-
N	-	●
S	o	o
H	-	-

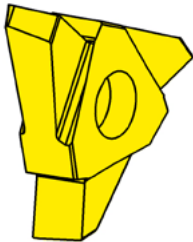
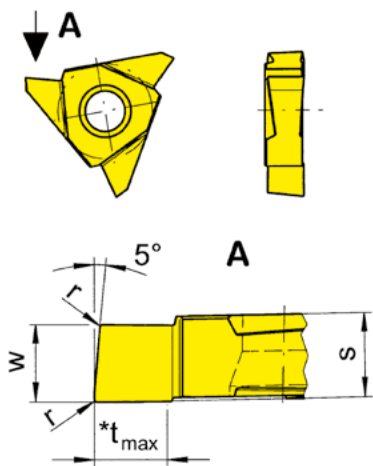
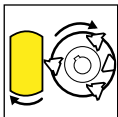


Grades

▲ In stock

Δ 2 weeks

Part number	w	r	s	t _{max}	HIS		AS45	Ti25
R314.MK50.20.L	5.4	0.6	5.4	5	314041R		▲	▲
L314.MK50.20.L	5.4	0.6	5.4	5	314041L		▲	▲
Dimensions in mm							P	●
							M	●
							K	●
							N	-
							S	o
							H	-

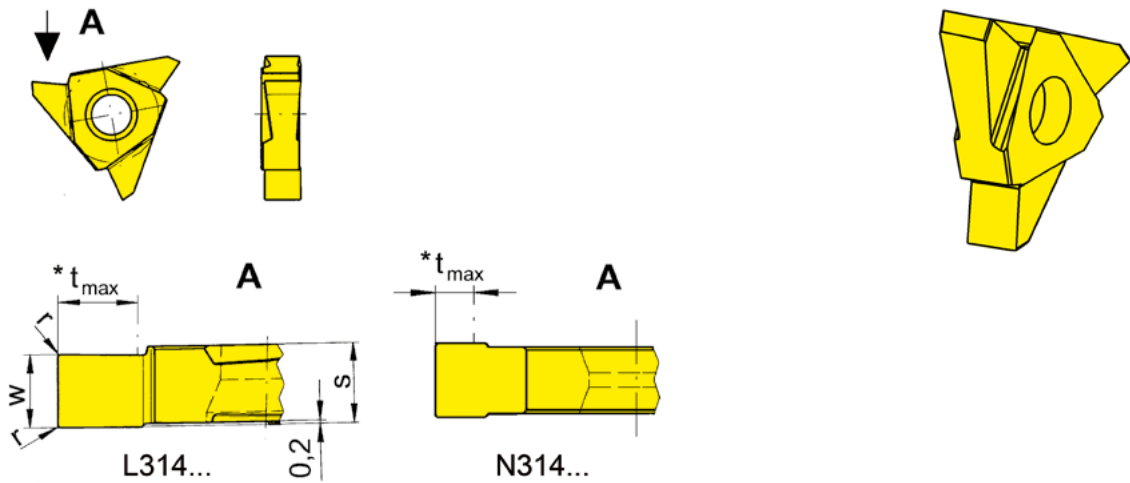
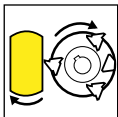


Grades

▲ In stock

Δ 2 weeks

Part number	w	r	s	t _{max}	HIS		AS45	TI25
R314.MK50.5.20	5	0.15	5.4	5	314041R		▲	▲
L314.MK50.5.20	5	0.15	5.4	5	314041L		▲	▲
Dimensions in mm						P	●	●
						M	●	●
						K	●	-
						N	-	●
						S	o	o
						H	-	-

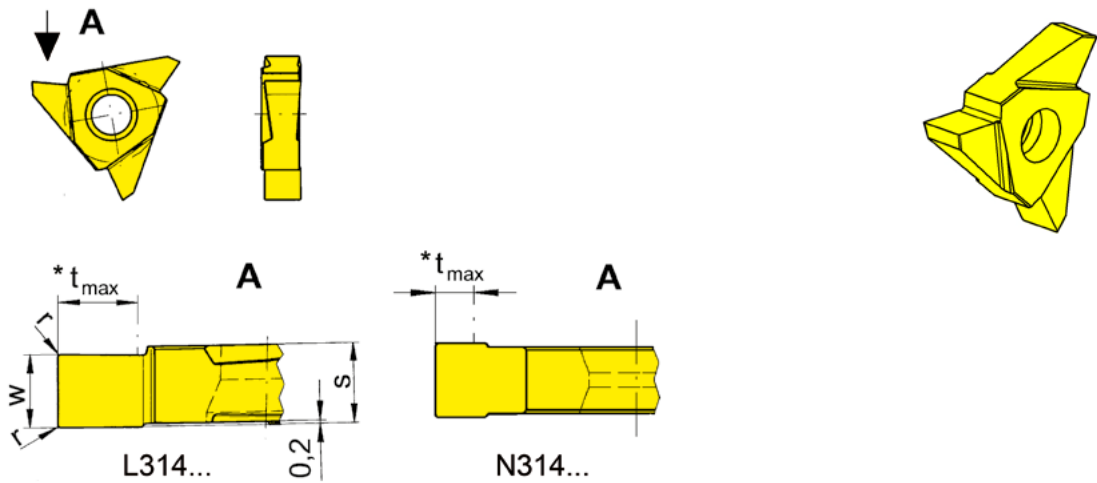
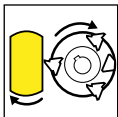


Grades

▲ In stock

Δ 2 weeks

Part number	w	r	s	HIS		AS45	TI25	TN35
L314.MK70.M0	7	0.15	7.4	314052L		▲	▲	Δ
Dimensions in mm						P	●	●
						M	●	-
						K	●	●
						N	-	-
						S	○	○
						H	-	-



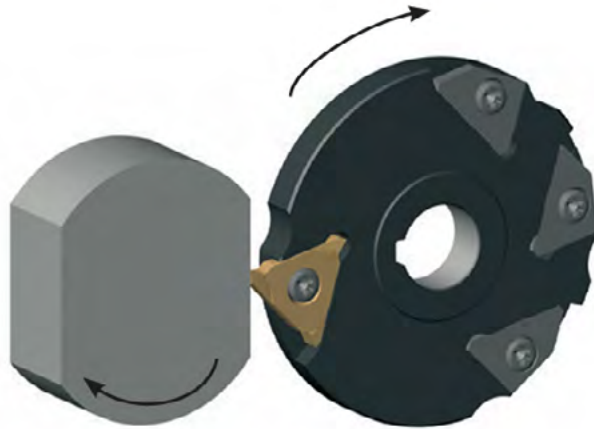
Grades

▲ In stock

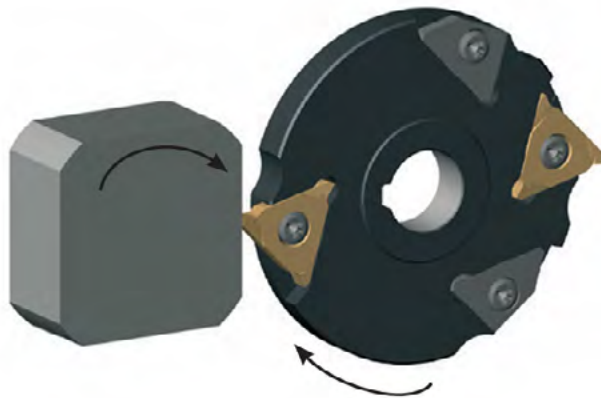
Δ 2 weeks

Part number	w	s	HIS		MG12	AS45	Ti25
N314.MK40.20	4	3.6	314027N		▲	▲	▲
Dimensions in mm				P	-	●	●
				M	-	●	●
				K	-	●	-
				N	●	-	●
				S	-	○	○
				H	-	-	-

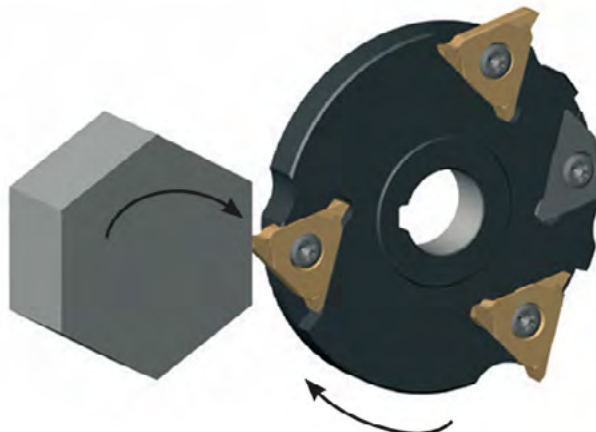
Two flats produced with one cutting edge at a 2:1 rotational ratio to the main spindle.



Four flats produced with two cutting edges at a 2:1 rotational ratio to the main spindle.



Six flats produced with three cutting edges at a 2:1 rotational ratio to the main spindle.



The Concept of Polygon Milling

Polygon milling is a machining process used to produce flats on rotating components using polygon milling cutters on CNC lathes, Swiss-type automatic lathes, or multi-spindle machines.

The workpiece (main spindle) and the milling cutter (live tool) must rotate at a synchronized speed ratio.

This operation only works with conventional milling.

The number and shape of the flats depend on the rotational ratio between the workpiece and the milling cutter, as well as the number of inserts on the milling cutter.

At a rotational ratio of 2:1, the produced flats are slightly convex. The resulting form error is acceptable for most applications, such as across-flats machining.

At a rotational ratio of 1:1, the produced flats are highly convex. This shape is not suitable for across-flats applications.

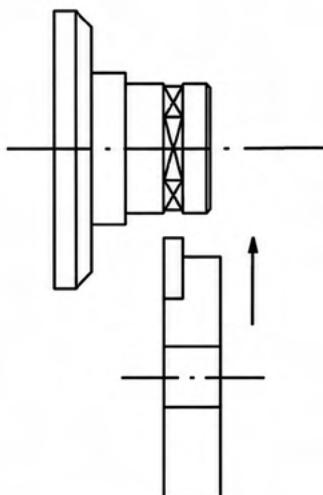
At a rotational ratio of 3:1, the produced flats are highly concave. This shape is also not suitable for across-flats applications.

Accordingly, at a 2:1 rotational ratio, the number of flats produced on the component is twice the number of cutting inserts on the milling cutter.

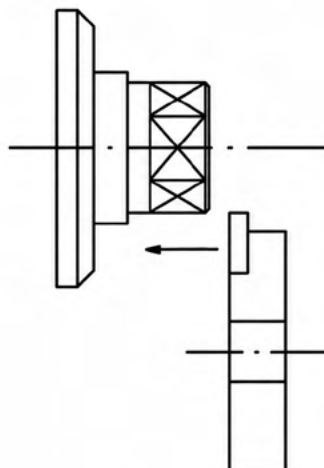
To calculate the shape of the flats, the following parameters are required:

- Cutting diameter of the polygon milling cutter
- Across-flats dimension
- Pre-machined diameter of the component
- Number of flats
- Rotational ratio between the component and the milling cutter

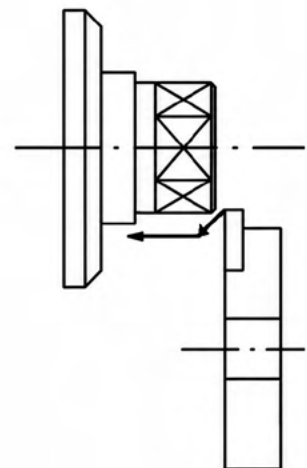
Groove milling



Side milling



Copymilling and side milling



Form	No. of inserts in the cutter	Ratio = Tool : Spindle	Flats
	1	1 : 1	not suitable, highly convex
	2 1	1 : 1 2 : 1	not suitable, convex very suitable, slightly convex
	3 2 1	1 : 1 1.5 : 1 3 : 1	not suitable, convex suitable, convex very suitable, slightly concave
	2 1	2 : 1 4 : 1	very suitable, slightly convex not suitable, concave
	3 2 1	1.66 : 1 2.5 : 1 5 : 1	suitable, convex very suitable, slightly concave not suitable, concave
	3 2	2 : 1 3 : 1	very suitable, slightly convex not suitable, concave
	4 2	2 : 1 4 : 1	very suitable, slightly convex not suitable, concave

Cutting data

Material	Grades	v_c m/min	Feed rate f_z mm	
			Side milling	Groove milling
Al	TI25, MG12	19.685 - 39.370 500 - 1000	.003 - .007 0.1 - 0.2	.001 - .003 0.05 - 0.1
C38500	TI25, MG12	19.685 - 39.370 500 - 1000	.003 - .007 0.1 - 0.2	.001 - .003 0.05 - 0.1
12L13	TH35, TI25, AS45	7.874 - 19.685 200 - 500	.003 - .005 0.08 - 0.15	.001 - .003 0.04 - 0.08
5115/8620	TH35, TI25, AS45	5.905 - 9.842 150 - 250	.001 - .003 0.05 - 0.1	.001 - .001 0.03 - 0.05

Feed rate values are valid for side milling only.

For groove milling, reduce the feed rate by 30–50%, depending on the insert width.

Example:

Side milling

Material: Steel

Cutter Ø 90 mm

SW 24 mm (Ø 27.7 mm)

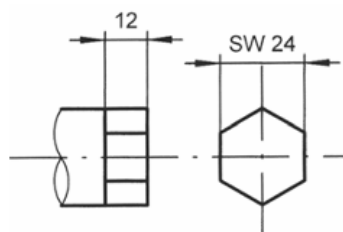
$v_{c\text{ eff}} = 448$ m/min

$f_z = 0.08$ mm

3 Cutting edges, $l = 2:1$

Flat length: 12 mm

Cycle time: ~ 2.19 s



Tool:

$n_{WZ} = 1372$ mm⁻¹

$v_{cWZ} = 388$ m/min

Workpiece:

$n_{WS} = 686$ mm⁻¹

$v_{cWS} = 59$ m/min

Manufacturer	Machine	Cutter	Indexable inserts	Z	n _{max} Milling cutter
Gildemeister	GD32	L381.G070.15.04	L314.MK50.20 TN35	2/3	13.000 min-1
Gildemeister	GLD25	L381.G070.15.04	L314.MK50.20 TN35	2/3	13.000 min-1
Gildemeister	GM20-6	L381.G086.25.04	L314.MK50.20 TN35	2/3	11.000 min-1
Gildemeister	GM26-6	L381.G080.16.04	L314.MK40.20 TN35	2/3	12.000 min-1
Gildemeister	GM35-6	L381.G098.26.04	L314.MK50.20 TN35	2/3	10.000 min-1
Gildemeister	GM35-8	L381.G086.25.04	L314.MK50.20 TN35	2/3	11.000 min-1
Gildemeister	GM35-8	L381.G098.26.04	L314.MK50.20 TN35	2/3	10.000 min-1
Gildemeister	GM42-6	L381.G098.26.04	L314.MK50.20 TN35	2/3	10.000 min-1
Gildemeister	GMC35	L381.G086.25.04	L314.MK50.20 TN35	2/3	11.000 min-1
Gildemeister	GMC35	L381.G098.26.04	L314.MK50.20 TN35	2/3	10.000 min-1
Gildemeister	SPRINT20/32	L381.G080.16.04	L314.MK40.20 TN35	2/3	12.000 min-1
Gildemeister	SPRINT32L	L381.G090.22.04	L314.MK50.20 TN35	2/3	13.000 min-1
Gildemeister	SPRINT44L	L381.G090.22.04	L314.MK50.20 TN35	2/3	13.000 min-1
INDEX	ABC	R381.X090.27.04	R314.MK50.20 TN35	2/3	11.000 min-1
INDEX	ABC	L381.X090.27.04	L314.MK50.20 TN35	2/3	11.000 min-1
INDEX	MS25	L381.X073.16.04	N314.MK40.20 TN35	2/3	13.000 min-1
NAKAMURA	WT250	L381.N090.16.04	N314.MK40.20 TN35	2/3	11.000 min-1
Alfred H. Schütte	AF26	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	AF26	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	AF32	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	AF32	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	AF42	L381.S118.30.03	L314.MK70.M0 TN35	3	12.000 min-1*
Alfred H. Schütte	AF42	L381.S118.30.02	L314.MK70.M0 TN35	2	12.000 min-1*
Alfred H. Schütte	AG18	L381.S078.30.03	L314.MK70.M0 TN35	3	20.000 min-1*
Alfred H. Schütte	AG18	L381.S078.30.02	L314.MK70.M0 TN35	2	20.000 min-1*
Alfred H. Schütte	SE18	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	SE18	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	SF20	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	SF20	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	SF26L	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	SF26L	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	SF26	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	SF26S	L381.S098.30.03	L314.MK70.M0 TN35	3	15.000 min-1*
Alfred H. Schütte	SF26S	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	SF26	L381.S098.30.02	L314.MK70.M0 TN35	2	15.000 min-1*
Alfred H. Schütte	SF32	L381.S118.30.03	L314.MK70.M0 TN35	3	12.000 min-1*
Alfred H. Schütte	SF32	L381.S118.30.02	L314.MK70.M0 TN35	2	12.000 min-1*
Alfred H. Schütte	SF42	L381.S118.30.03	L314.MK70.M0 TN35	3	12.000 min-1*
Alfred H. Schütte	SF42	L381.S118.30.02	L314.MK70.M0 TN35	2	12.000 min-1*
Alfred H. Schütte	SF51	L381.S118.30.03	L314.MK70.M0 TN35	3	12.000 min-1*
Alfred H. Schütte	SF51	L381.S118.30.02	L314.MK70.M0 TN35	2	12.000 min-1*
Alfred H. Schütte	SF67	L381.S118.30.03	L314.MK70.M0 TN35	3	12.000 min-1*
Alfred H. Schütte	SF67	L381.S118.30.02	L314.MK70.M0 TN35	2	12.000 min-1*

Manufacturer	Machine	Cutter	Indexable inserts	Z	n _{max} Milling cutter
Alfred H. Schütte	SG18	L381.S078.30.03	L314.MK70.M0 TN35	3	20.000 min-1*
Alfred H. Schütte	SG18	L381.S078.30.02	L314.MK70.M0 TN35	2	20.000 min-1*
Alfred H. Schütte	SG20	L381.S078.30.03	L314.MK70.M0 TN35	3	20.000 min-1*
Alfred H. Schütte	SG20	L381.S078.30.02	L314.MK70.M0 TN35	2	20.000 min-1*
Star	SR-20J	L381.A060.12.04	314.MK40.20	1/3	12.000 min-1
TORNOS	Deco7/10	R/LM275.D040.10.04	R/LS275.MK13.M0 TN35	2/3	15.000 min-1
TORNOS	Deco13	L381.D080.16.04	N314.MK40.20 TN35	2/3	12.000 min-1
TORNOS	Deco20	L381.D080.16.04	N314.MK40.20 TN35	2/3	12.000 min-1
TORNOS	Deco26	L381.D080.16.04	N314.MK40.20 TN35	2/3	12.000 min-1
TORNOS	Deco2000	L381.D080.16.04	N314.MK40.20 TN35	2/3	12.000 min-1
TORNOS	Multi Deco	L381.D086.25.04	L314.MK50.20 TN35	3	15.000 min-1
TRAUB	TNL12-7	RM275.T064.33.03	RS275.MK13.M0TN35	3	13.000 min-1
TRAUB	TNL12-7	L381.T069.12.04	N314.MK40.20 TN35	2/3	13.000 min-1
TRAUB	TNL26	L381.T069.12.04	N314.MK40.20 TN35	2/3	13.000 min-1
TRAUB	TNK36	L381.T069.12.04	N314.MK40.20 TN35	2/3	13.000 min-1

Polygon cutter for further machines upon request.

* = reinforced insert seat



Section	Page
Torque Values	619
General Technical Instructions	621
Calculations	623
Cutting Data	624
Grade Overview	665
Torque Wrenches and Drivers	667

Torque values are now laser-etched on the holder body for quick reference.

Holders made before 2025 did not include torque markings.

The use of lubricant, such as copper paste or similar products, is not recommended due to altering the torque required to fully secure the screw/clamping mechanism.

System	Screw	M _d Nm	Wrench	Blade
380	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
381	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
382...06	5F.06T15P	5.5	T15PQ	DT15PK
382...08	5F.08T20P	5.5	T20PQ	DT20PK
382...10/12/14	5.10T20P	6.5	T20PQ	DT20PK / DT20PQ
383...06	5F.06T15P	5.5	T15PQ	DT15PK
383...08	5F.08T20P	5.5	T20PQ	DT20PK
383...10/12	5.10T20P	6.5	T20PQ	DT20PK / DT20PQ
ABS	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
DAH.M.25.012...	030.2547.T8P	1.3	T8PL	DT8PK
DAH.M.25	030.2553.T8P	1.3	T8PL	DT8PK
DAH.M.37.../.82...	030.3070.T10P	3.4	T10PL	DT10PK
DAH.M.62	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
DAH.M.84	030.0412.T15P	4.5	T15PQ	DT15PK
DAM31...02B	030.2541.T8P	1.1	T8PL	DT8PK
DAM31...03A/B	030.2547.T8P	1.1	T8PL	DT8PK
DAM31...04A/B	030.2553.T8P	1.1	T8PL	DT8PK
DAM31...05A/B	030.2557.T8P	1.1	T8PL	DT8PK
DAM32...A...	030.3576.T10P	3.5	T10PL	DT10PK
DAM32...02A/B	030.3562.T10P	3.5	T10PL	DT10PK
DAM32.025.D...03A/B	030.3569.T10P	3.5	T10PL	DT10PK
DAM32.032.D...03A/B	030.3576.T10P	3.5	T10PL	DT10PK
DAM32.417...03B	030.3569.T10P	3.5	T10PL	DT10PK
DAM62	030.3070.T10P	3.0	T10PL	DT10PK
L381.A060...	5F.08T20P	5.5	T20PQ	DT20PK
L381.D080...	5F.08T20P	5.5	T20PQ	DT20PK
L381.D086...	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
L381.G070...	5.10T20P	6.5	T20PQ	DT20PK / DT20PQ
L381.G080...	5F.08T20P	5.5	T20PQ	DT20PK
L381.G086/090/098	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
L381.N090...	5F.08T20P	5.5	T20PQ	DT20PK
L381.S...	5.15T20P	6.5	T20PQ	DT20PK / DT20PQ
L381.T...	5F.08T20P	5.5	T20PQ	DT20PK
L381.X090...	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ

System	Screw	M _d Nm	Wrench	Blade
M101	030.3543.T8P	2.0	T8PL	DT8PK
M101...A22...30/...40	030.0520.0912	6.5	T15PQ	DT15PK
M101...A32...30/...40	030.0620.0913	8.0	T20PQ	DT20PK / DT20PQ
M101...A40...30/...40	030.1030.0911	15.0	SW6,0 DIN911	
M116	5.13T20EP	6.5	T20PQ	DT20PK / DT20PQ
M275	3.5.10T10P	3.0	T10PL	DT10PK
M275.D	030.357P.0315	3.0	T10PL	DT10PK
M275.T	3.5.10T10P	3.0	T10PL	DT10PK
M279	030.0516.T20P	6.5	T20PQ	DT20PK / DT20PQ
M304	1.8.4T6EP	0.9	T6PL	DT6K
M306	2.6.5T8EP	1.2	T8PL	DT8PK
M308	3.5.12T10EP	3.0	T10PL	DT10PK
M310...03	030.0324.T7P	1.2	T7PL	DT7PK
M310...04	030.3535.T8P	2.0	T8PL	DT8PK
M310...05	030.3543.T8P	2.0	T8PL	DT8PK
M311	4.14T15P	5.0	T15PQ	DT15PK
M311.0016.00.B/E	4.16T15KP	5.0	T15PQ	DT15PK
M313	5.14T20P	6.5	T20PQ	DT20PK / DT20PQ
M313.0016.00.A/B/E	5.13T20KP	6.5	T20PQ	DT20PK / DT20PQ
M328	5.14T20P	6.5	T20PQ	DT20PK / DT20PQ
M328.0020.00.A/B/E	5.13T20KP	6.5	T20PQ	DT20PK / DT20PQ
M328.0020.D...	5.17T20P	6.5	T20PQ	DT20PK / DT20PQ
M332	5.17T20P	14.0	T20PQ	DT20PK / DT20PQ
M335	6.17T25P	12.0	T25PQ	DT25PQ
M406...02/.03	030.2669.T8P	1.2	T8PL	DT8PK
M406...04/.05/.06/.96	030.2608.T8P	1.2	T8PL	DT8PK
M406.025.11.D16.1.02.B	030.2608.T8P	1.2	T8PL	DT8PK
M409	030.3511.T10P	3.5	T10PL	DT10PK
M475...03	030.2523.T6P	0.7	T6PL	DT6PK
M475...04	030.0330.1217	1.2	T7PL	DT7PK
M475...05	030.3541.T8P	2.0	T8PL	DT8PK
M475...06	030.3350.T10P	3.0	T10PQ	DT10PK
M475...08	030.350P.1110	3.5	T15PQ	DT15PK
M610	030.3513.T15P	3.5	T15Q	DT15K
M620	5.14T20P	6.5	T20PQ	DT20PK / DT20PQ
R381.T...	5F.08T20P	6.5	T20PQ	DT20PK / DT20PQ
R381.X073...	5F.08T20P	6.5	T20PQ	DT20PK / DT20PQ
R381.X090...	5.12T20P	6.5	T20PQ	DT20PK / DT20PQ
SM328	5.17T20P	6.5	T20PQ	DT20PK / DT20PQ

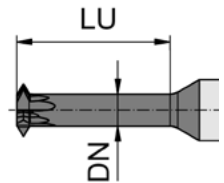
Additional Information

Additional information can be requested from our Technical Services team located in Franklin, TN.

info@us.horn-group.com
+1 (615) 771-4100

Tool Overhang

Use the shortest possible toolholder and milling shank to maximize rigidity and minimize tool runout. Applications combining large cutting widths with extended tool overhang may require the cutting width to be divided into multiple passes. This reduces cutting forces and helps achieve improved process stability, dimensional accuracy, and surface quality.



Milling Cutter Diameter

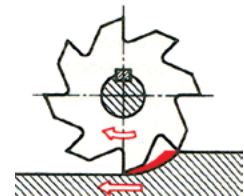
Selecting a cutter diameter close to the bore diameter can reduce machining time due to the smaller tool-center path and the potential for higher feed rates. In many applications, however, cutter diameter is determined by workpiece geometry, machine conditions, tool accessibility, and overall process requirements.

Thread Milling

HORN thread milling inserts generate the complete thread profile to the required thread depth in a single pass. This produces threads with minimal taper and is particularly advantageous when machining high-alloy steels and other demanding materials.

For blind-hole applications, milling from the bottom of the hole toward the opening is recommended whenever possible. This minimizes the risk of recutting chips accumulated at the bottom of the hole and reduces the potential for tool damage.

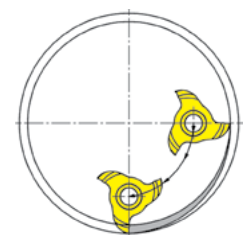
The milling cutter diameter should not exceed approximately 70% of the thread minor diameter. Larger cutter-to-thread diameter ratios increase profile distortion and recutting effects, which may result in thread geometry exceeding the specified tolerance.



Milling Direction

Most HORN milling tools are designed for right-hand cutting. Climb milling is recommended wherever machine and application conditions permit, as this generally provides the most favorable cutting conditions for carbide tooling.

Ramp angle $> 45^\circ$



Entry into the Workpiece

Direct radial entry produces a long engagement arc, which can lead to increased cutting forces, vibration, and reduced process stability during the remainder of the milling operation. It may also leave a visible witness mark at the groove bottom.

For improved process stability, enter the groove using a ramp angle from 45° up to 180° , depending on the maximum depth of cut and application conditions.

Published cutting data applies to machining with the insert at full engagement. The same cutting data may also be used for the entry movement when application conditions permit.

ISO

a_r / a_e radial depth of cut/engagement

d Cutting edge Ø [mm]

f Feed per revolution $f = f_z \cdot Z$ [mm/U] [mm/rev]

F_z / f_z Feed/tooth $f_z = \frac{v_f}{Z \cdot n}$ [mm]

h_m mean chip thickness

n Revolutions $n = \frac{v_c \cdot 1000}{d \cdot \pi}$ [1/min]

r Radius of cutter

R Radius of workpiece

v_c Cutting speed $v_c = \frac{d \cdot \pi \cdot n}{1000}$ [m/min]

v_f / s' Feed rate $v_f = f_z \cdot Z \cdot n$ [mm/min]

v_{f2} / s'_2 Feed rate of tool tip

v_{f3} / s'_1 Feed rate of the center of the tool

Z Number of teeth

Material		Material group	DAM31 Shoulder mill 90°				DAM32 Shoulder mill 90°				DAM62 Shoulder mill 90°			
			Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)			
			100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
P	Carbon steel	P1.1 - P1.5	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.005 0.15	.006 0.17	.007 0.19	.009 0.25
	Alloyed steel (<5%)	P2.1 - P2.4	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	High alloyed steel (>5%)	P3.1 - P3.2												
	Cast steel	P4.1 - P4.2												
	Sintered steel	P5.1												
M	Stainless steel	M1.1-M1.3	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13
K	Grey cast iron	K1.1-K1.2	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.007 0.19	.008 0.22	.009 0.24	.012 0.32
	Spheroidal graphite cast iron	K2.1-K2.2	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.15	.006 0.17	.007 0.19	.009 0.25
	Malleable cast iron	K3.1-K3.2	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.15	.006 0.17	.007 0.19	.009 0.25
	Ausferritic spheroidal cast iron	K4.1-K4.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.004 0.11	.005 0.13	.005 0.14	.007 0.18
N	Al-alloys	N1.1-N1.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.004 0.11	.005 0.13	.005 0.14	.007 0.18
	Al-cast-alloy	N2.1-N2.3	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.13	.005 0.15	.006 0.16	.008 0.22
	Copper-alloys	N3.1-N3.4	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.004 0.11	.005 0.13	.005 0.14	.007 0.18

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

Tangential Mill - Feed Rates



Material		Material group	M406 Shoulder Mill 90°				M409 Shoulder Mill 90°				M406 T-Slot Cutter 90°			
			Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)			
			100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	
P	Carbon steel	P1.1 - P1.5	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.007 0.20	.009 0.23	.009 0.25	.012 0.33	.003 0.10	.004 0.12	.005 0.13	
	Alloyed steel (<5%)	P2.1 - P2.4	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.007 0.18	.008 0.21	.009 0.23	.011 0.30	.003 0.08	.003 0.09	.003 0.10	
	High alloyed steel (>5%)	P3.1 - P3.2												
	Cast steel	P4.1 - P4.2												
	Sintered steel	P5.1												
M	Stainless steel	M1.1-M1.3	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.004 0.12	.005 0.13	.006 0.17	.002 0.06	.002 0.07	.003 0.08	
K	Grey cast iron	K1.1-K1.2	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.007 0.18	.007 0.18	.007 0.20	.010 0.27	.004 0.12	.005 0.14	.005 0.15	
	Spheroidal graphite cast iron	K2.1-K2.2	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.006 0.16	.006 0.16	.007 0.18	.009 0.23	.003 0.10	.004 0.12	.005 0.13	
	Malleable cast iron	K3.1-K3.2	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.006 0.16	.006 0.16	.007 0.18	.009 0.23				
	Ausferritic spheroidal cast iron / ADI	K4.1-K4.3												
N	Al-alloys	N1.1-N1.2	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.005 0.14	.005 0.14	.005 0.15	.007 0.20				
	Al-cast-alloy	N2.1-N2.3	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.005 0.14	.006 0.17	.007 0.19	.009 0.25				
	Copper-alloys	N3.1-N3.4	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.004 0.12	.005 0.13	.006 0.17				
S	Heat resistant alloy (Fe)	S1.1-S1.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.003 0.09	.003 0.10	.005 0.13				
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.003 0.09	.003 0.10	.005 0.13				
	Titanium	S3.1-S3.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.003 0.09	.003 0.10	.005 0.13				

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

Material		M409 T-Slot Cutter 90°				M409 Shell Mill 90°				M409 Face Mill 45°				M409 Face Mill 60°			
		Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)			
		100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
	Carbon steel	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.011 0.28	.012 0.32	.013 0.35	.018 0.47	.009 0.23	.010 0.26	.011 0.29	.014 0.38
	Alloyed steel (<5%)	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.009 0.25	.011 0.29	.012 0.31	.016 0.42	.008 0.21	.009 0.24	.010 0.26	.013 0.35
	High alloyed steel (>5%)																
	Cast steel																
	Sintered steel																
	Stainless steel	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.004 0.12	.005 0.13	.006 0.17	.006 0.17	.004 0.12	.005 0.13	.006 0.17	.005 0.14	.006 0.16	.007 0.18	.009 0.23
	Grey cast iron	.005 0.14	.006 0.16	.007 0.18	.009 0.23	.006 0.16	.007 0.18	.007 0.20	.010 0.27	.009 0.25	.007 0.18	.007 0.20	.010 0.27	.008 0.21	.009 0.24	.010 0.26	.013 0.35
	Spheroidal graphite cast iron	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.004 0.12	.006 0.16	.007 0.18	.009 0.23	.008 0.22	.006 0.16	.007 0.18	.009 0.23	.007 0.18	.008 0.21	.009 0.23	.011 0.30
	Malleable cast iron					.004 0.12	.006 0.16	.007 0.18	.009 0.23	.008 0.22	.006 0.16	.007 0.18	.009 0.23	.007 0.18	.008 0.21	.009 0.23	.011 0.30
	Ausferritic spheroidal cast iron / ADI																
	Al-alloys					.004 0.12	.005 0.14	.005 0.15	.007 0.20	.007 0.20	.005 0.14	.005 0.15	.007 0.20	.006 0.16	.007 0.18	.007 0.20	.010 0.27
	Al-cast-alloy					.003 0.10	.006 0.17	.007 0.19	.009 0.25	.007 0.20	.006 0.17	.007 0.19	.009 0.25	.006 0.16	.007 0.18	.007 0.20	.010 0.27
	Copper-alloys					.003 0.10	.004 0.12	.005 0.13	.006 0.17	.006 0.17	.004 0.12	.005 0.13	.006 0.17	.005 0.14	.006 0.16	.007 0.18	.009 0.23
	Heat resistant alloy (Fe)					.003 0.10	.003 0.09	.003 0.10	.005 0.13	.005 0.14	.003 0.09	.003 0.10	.005 0.13	.004 0.12	.005 0.14	.005 0.15	.007 0.20
	Heat resistant alloy (Ni, Co)					.003 0.10	.003 0.09	.003 0.10	.005 0.13	.005 0.14	.003 0.09	.003 0.10	.005 0.13	.004 0.12	.005 0.14	.005 0.15	.007 0.20
	Titanium					.003 0.10	.003 0.09	.003 0.10	.005 0.13	.005 0.14	.003 0.09	.003 0.10	.005 0.13	.004 0.12	.005 0.14	.005 0.15	.007 0.20

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

Material		Material group	M409 Disc Milling Cutter 90°				M610 Shoulder Mill 90°				
			Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)				
			100%	50%	20%	10%	100%	50%	20%	10%	
P	Carbon steel	P1.1 - P1.5	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.006 0.16	.007 0.18	.007 0.20	.010 0.27	
	Alloyed steel (<5%)	P2.1 - P2.4	.005 0.13	.005 0.15	.006 0.16	.008 0.22	.005 0.14	.006 0.16	.007 0.18	.009 0.23	
	High alloyed steel (>5%)	P3.1 - P3.2									
	Cast steel	P4.1 - P4.2									
	Sintered steel	P5.1									
M	Stainless steel	M1.1-M1.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.10	.004 0.12	.005 0.13	.006 0.17	
K	Grey cast iron	K1.1-K1.2	.007 0.18	.008 0.21	.009 0.23	.011 0.30	.006 0.16	.007 0.18	.007 0.20	.010 0.27	
	Spheroidal graphite cast iron	K2.1-K2.2	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.005 0.14	.006 0.16	.007 0.18	.009 0.23	
	Malleable cast iron	K3.1-K3.2	.005 0.15	.006 0.17	.007 0.19	.009 0.25	.005 0.14	.006 0.16	.007 0.18	.009 0.23	
	Ausferritic spheroidal cast iron ADI	K4.1-K4.3									
N	Al-alloys	N1.1-N1.2	.004 0.12	.005 0.14	.005 0.15	.007 0.20	.004 0.12	.005 0.14	.005 0.15	.007 0.20	
	Al-cast-alloy	N2.1-N2.3	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.005 0.15	.006 0.17	.007 0.19	.009 0.25	
	Copper-alloys	N3.1-N3.4	.003 0.10	.004 0.12	.005 0.13	.006 0.17	.003 0.10	.004 0.12	.005 0.13	.006 0.17	
S	Heat resistant alloy (Fe)	S1.1-S1.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13	
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13	
	Titanium	S3.1-S3.3	.003 0.08	.003 0.09	.003 0.10	.005 0.13	.003 0.08	.003 0.09	.003 0.10	.005 0.13	

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

Material	M610 Disc Milling Cutter 90°	Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)				Feed per tooth (Fz) @ % of radial engagement (a _r)			
		w = 3 + 4 mm				w = 6 + 8 mm							
		100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
Carbon steel		.005 0.15	.006 0.17	.007 0.19	.009 0.25	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
Alloyed steel (<5%)		.005 0.13	.005 0.15	.006 0.16	.008 0.22	.002 0.07	.003 0.08	.003 0.09	.004 0.12	.003 0.09	.003 0.10	.004 0.11	.005 0.15
High alloyed steel (>5%)													
Cast steel													
Sintered steel													
Stainless steel		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
Grey cast iron		.007 0.18	.008 0.21	.009 0.23	.011 0.30	.004 0.11	.005 0.13	.005 0.14	.007 0.18	.005 0.14	.006 0.16	.007 0.18	.009 0.23
Spheroidal graphite cast iron		.005 0.15	.006 0.17	.007 0.19	.009 0.25	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
Malleable cast iron		.005 0.15	.006 0.17	.007 0.19	.009 0.25	.003 0.09	.003 0.10	.004 0.11	.005 0.15	.004 0.11	.005 0.13	.005 0.14	.007 0.18
Ausferritic spheroidal cast iron ADI													
Al-alloys		.004 0.12	.005 0.14	.005 0.15	.007 0.20	.002 0.07	.003 0.08	.003 0.09	.004 0.12	.003 0.09	.003 0.10	.004 0.11	.005 0.15
Al-cast-alloy		.003 0.10	.004 0.12	.005 0.13	.006 0.17	.002 0.06	.002 0.07	.003 0.08	.003 0.10	.003 0.08	.003 0.09	.003 0.10	.005 0.13
Copper-alloys		.003 0.10	.004 0.12	.005 0.13	.006 0.17								
Heat resistant alloy (Fe)		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
Heat resistant alloy (Ni, Co)		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10
Titanium		.003 0.08	.003 0.09	.003 0.10	.005 0.13	.001 0.05	.002 0.06	.002 0.06	.003 0.08	.002 0.06	.002 0.07	.003 0.08	.003 0.10

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

High Feed Mill - Feed Rates



Material		Material group	DAHM25 High Feed Mill 24°				DAHM37 High Feed Mill 19°				
			Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				
			100%	50%	20%	10%	100%	50%	20%	10%	
P	Carbon steel	P1.1 - P1.5	.035 0.90	.040 1.04	.044 1.13	.059 1.50	.047 1.20	.054 1.38	.059 1.50	.078 2.00	
	Alloyed steel (<5%)	P2.1 - P2.4	.031 0.80	.036 0.92	.039 1.00	.052 1.34	.039 1.00	.054 1.38	.059 1.50	.078 2.00	
	High alloyed steel (>5%)	P3.1 - P3.2									
	Cast steel	P4.1 - P4.2									
	Sintered steel	P5.1									
M	Stainless steel	M1.1-M1.3	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.054 1.38	.059 1.50	.078 2.00	
K	Grey cast iron	K1.1-K1.2	.043 1.10	.050 1.27	.054 1.38	.072 1.84	.047 1.20	.054 1.38	.059 1.50	.078 2.00	
	Spheroidal graphite cast iron	K2.1-K2.2	.035 0.90	.040 1.04	.044 1.13	.059 1.50	.039 1.00	.054 1.38	.059 1.50	.078 2.00	
	Malleable cast iron	K3.1-K3.2	.035 0.90	.040 1.04	.044 1.13	.059 1.50	.039 1.00	.054 1.38	.059 1.50	.078 2.00	
	Ausferritic spheroidal cast iron ADI	K4.1-K4.3									
N	Al-alloys	N1.1-N1.2									
	Al-cast-alloy	N2.1-N2.3									
	Copper-alloys	N3.1-N3.4									
S	Heat resistant alloy (Fe)	S1.1-S1.2	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.022 0.58	.024 0.63	.033 0.84	
	Heat resistant alloy (Ni, Co)	S2.1-S2.2	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.022 0.58	.024 0.63	.033 0.84	
	Titanium	S3.1-S3.3	.015 0.40	.018 0.46	.019 0.50	.026 0.67	.019 0.50	.022 0.58	.024 0.63	.033 0.84	

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

Material	DAH25 High Feed Mill 10°				DAH37 High Feed Mill 10°				DAH82 High Feed Mill 10°				DAH84 High Feed Mill 10°			
	Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)				Feed per tooth (Fz) @ % of radial engagement (a _e)			
	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
Carbon steel	.047 1.20	.054 1.38	.059 1.50	.078 2.00	.051 1.30	.059 1.50	.064 1.63	.085 2.17	.047 1.20	.054 1.38	.059 1.50	.078 2.00	.051 1.30	.059 1.50	.064 1.63	.085 2.17
Alloyed steel (<5%)	.039 1.00	.054 1.38	.059 1.50	.078 2.00	.043 1.10	.050 1.27	.054 1.38	.072 1.84	.039 1.00	.054 1.38	.059 1.50	.078 2.00	.043 1.10	.050 1.27	.054 1.38	.072 1.84
High alloyed steel (>5%)																
Cast steel																
Sintered steel																
Stainless steel	.019 0.50	.022 0.58	.024 0.63	.033 0.84	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.019 0.50	.022 0.58	.024 0.63	.033 0.84	.023 0.60	.027 0.69	.029 0.75	.039 1.00
Grey cast iron	.047 1.20	.054 1.38	.059 1.50	.078 2.00	.051 1.30	.059 1.50	.064 1.63	.085 2.17	.047 1.20	.054 1.38	.059 1.50	.078 2.00	.051 1.30	.059 1.50	.064 1.63	.085 2.17
Spheroidal graphite cast iron	.039 1.00	.045 1.15	.049 1.25	.065 1.67	.043 1.10	.050 1.27	.054 1.38	.072 1.84	.039 1.00	.045 1.15	.049 1.25	.065 1.67	.043 1.10	.050 1.27	.054 1.38	.072 1.84
Malleable cast iron	.039 1.00	.045 1.15	.049 1.25	.065 1.67	.043 1.10	.050 1.27	.054 1.38	.072 1.84	.039 1.00	.045 1.15	.049 1.25	.065 1.67	.043 1.10	.050 1.27	.054 1.38	.072 1.84
Ausferritic spheroidal cast iron																
Al-alloys																
Al-cast-alloy																
Copper-alloys																
Heat resistant alloy (Fe)	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17
Heat resistant alloy (Ni, Co)	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17
Titanium	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17	.023 0.60	.027 0.69	.029 0.75	.039 1.00	.027 0.70	.031 0.81	.034 0.88	.046 1.17

TABLE FORMAT

.002	=	Suggested feed rate (inch)
0.07		Suggested feed rate (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX-40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a_e/D_c			SD6A a_e/D_c			SC6A a_e/D_c			IG6B a_e/D_c			SA4B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
Carbon steel		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
		460 140	525 160	590 180	460 140	525 160	590 180				590 180	690 210	785 240	525 160	655 200	785 240
Alloyed steel (<5%)											590 180	655 200	720 220	590 180	655 200	720 220
											590 180	655 200	720 220	590 180	655 200	720 220
											590 180	655 200	720 220	590 180	655 200	720 220
														590 180	655 200	720 220
High alloyed steel (>5%)																
Cast steel																
Sintered steel																
Stainless steel								260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130
								260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130
								260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	SA4B a _e /D _c			
							100%	50%	20%	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	720 220	855 260	985 300	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	720 220	785 240	855 260	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	720 220	785 240	855 260	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	720 220	785 240	855 260	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1	1150 350	2215 675	3280 1000
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1	1150 350	2215 675	3280 1000	
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6				
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg				
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12				
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu				
		brass	N3.2	90	310	C38500 , CuZn40Pb				
		lead-free brass	N3.3	110	430	C28000 , CuZn40				
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3				

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a _e /D _c			HD05 a _e /D _c			PD75 a _e /D _c			SD6A a _e /D _c			SC6A a _e /D _c			IG6B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	460 140	490 150	525 160							720 220	855 260	985 300	720 220	855 260	985 300	525 160	560 170	590 180
		460 140	490 150	525 160							720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180
	Spheroidal graphite cast iron	460 140	490 150	525 160							720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180
		460 140	490 150	525 160							720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180
	Malleable cast iron																		
	Ausferritic spheroidal cast iron / ADI																		
	Al-alloys	1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
	Al-cast-alloy	1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
	Copper-alloys	1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									
		1640 500	2790 850	3935 1200	1640 500	5740 1750	9845 3000	1640 500	5740 1750	9845 3000									

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	

TABLE FORMAT

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a _e /D _c			SD6A a _e /D _c			SC6A a _e /D _c			IG6B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)	80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
	Heat resistant alloy (Ni, Co)	80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
	Titanium	80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80
		80	90	100				100	180	260	100	180	260
		25	28	30				30	55	80	30	55	80

TABLE FORMAT

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	K10 a _e /D _c			
							100%	50%	20%	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15				
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6				
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5				
		~ 0,6% C annealed	P1.4	190	610	1055 , C55				
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60				
		free cutting steel	P1.6	220	750	1213 , 9SMn28				
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6				
		quenched	P2.2	280	960	3415 , 14NiCr10				
		quenched	P2.3	350	1250	4135 , 34CrMo4				
		quenched	P2.4	430	1450	5155 , 55Cr3				
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18				
		hardened	P3.2	350	1200	D3 , X210Cr2				
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200				
		alloyed	P4.2	220	750	10295 , GX-40CrSi28				
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39				
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13				
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2				
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3				

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	AS46 a _e /D _c			AS4B a _e /D _c			IG35 a _e /D _c			NE2B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Carbon steel	525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
		525 160	655 200	785 240	525 160	655 200	785 240	590 180	690 210	785 240			
	Alloyed steel (<5%)	590 180	655 200	720 220	590 180	655 200	720 220	590 180	655 200	720 220			
		590 180	655 200	720 220	590 180	655 200	720 220	590 180	655 200	720 220			
		590 180	655 200	720 220	590 180	655 200	720 220	590 180	655 200	720 220			
		590 180	655 200	720 220	590 180	655 200	720 220						
	High alloyed steel (>5%)												
	Cast steel												
	Sintered steel												
	Stainless steel	260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130			
		260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130			
		260 80	345 105	425 130	260 80	345 105	425 130	260 80	345 105	425 130			

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	K10 a _e /D _c			
							100%	50%	20%	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25				
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40				
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40				
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60				
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1				
		heat treatable	N1.2	100	340	6061, 7075 , AlMgSi1				
	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	1150 350	1560 475	1970 600	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	1150 350	1560 475	1970 600	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12				
	Copper-alloys	pure copper	N3.1	100	340	C11000 , Cu	590 180	675 205	755 230	
		brass	N3.2	90	310	C38500 , CuZn40Pb	590 180	675 205	755 230	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	590 180	675 205	755 230	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	590 180	675 205	755 230	

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	AS46 a_e/D_c			AS4B a_e/D_c			IG35 a_e/D_c			NE2B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	720 220	855 260	985 300	720 220	855 260	985 300	525 160	560 170	590 180			
		720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180			
	Spheroidal graphite cast iron	720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180			
		720 220	785 240	855 260	720 220	785 240	855 260	525 160	560 170	590 180			
	Malleable cast iron												
	Ausferritic spheroidal cast iron / ADI												
	Al-alloys	1150 350	2215 675	3280 1000	1150 350	2215 675	3280 1000						
		1150 350	2215 675	3280 1000	1150 350	2215 675	3280 1000						
	Al-cast-alloy									1640 500	5740 1750	9845 3000	
										1640 500	4100 1250	6560 2000	
										1150 350	3035 925	4920 1500	
	Copper-alloys									720 220	855 260	985 300	
										590 180	675 205	755 230	
										590 180	690 210	785 240	
										525 160	675 205	820 250	

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	K10 a _e /D _c			
							100%	50%	20%	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670					
		hardened	S1.2	275	930					
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600				
		hardened	S2.2	350	1200	Inconel 713				
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7				
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V				
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al				
O	Thermo plastics		O1.1				1640 500	3280 1000	4920 1500	
	Thermosets		O1.2				1640 500	3280 1000	4920 1500	

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

	Material	AS46 a _e /D _c			AS4B a _e /D _c			IG35 a _e /D _c			NE2B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)							100	180	260			
								30	55	80			
	Heat resistant alloy (Ni, Co)							100	180	260			
								30	55	80			
	Titanium							100	180	260			
								30	55	80			
								100	180	260			
	Thermo plastics										1640	3280	4920
											500	1000	1500
	Thermosets										1640	3280	4920
											500	1000	1500

TABLE FORMAT

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R_m [N/mm ²]	Example Material SAE, DIN	K10 a_e/D_c			
							100%	50%	20%	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15				
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6				
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5				
		~ 0,6% C annealed	P1.4	190	610	1055 , C55				
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60				
		free cutting steel	P1.6	220	750	1213 , 9SMn28				
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6				
		quenched	P2.2	280	960	3415 , 14NiCr10				
		quenched	P2.3	350	1250	4135 , 34CrMo4				
		quenched	P2.4	430	1450	5155 , 55Cr3				
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18				
		hardened	P3.2	350	1200	D3 , X210Cr2				
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200				
		alloyed	P4.2	220	750	10295 , GX-40CrSi28				
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39				
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13				
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2				
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3				

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	AS46 a_e/D_c			AS4B a_e/D_c			IG35 a_e/D_c			NE2B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Carbon steel	425	525	625	425	525	625	475	560	640			
		130	160	190	130	160	190	145	170	195			
		425	525	625	425	525	625	475	560	640			
		130	160	190	130	160	190	145	170	195			
		425	525	625	425	525	625	475	560	640			
		130	160	190	130	160	190	145	170	195			
		425	525	625	425	525	625	475	560	640			
		130	160	190	130	160	190	145	170	195			
	Alloyed steel (<5%)	475	525	575	475	525	575	475	525	575			
		145	160	175	145	160	175	145	160	175			
		475	525	575	475	525	575	475	525	575			
		145	160	175	145	160	175	145	160	175			
		475	525	575	475	525	575	475	525	575			
		145	160	175	145	160	175	145	160	175			
	High alloyed steel (>5%)												
	Cast steel												
	Sintered steel												
	Stainless steel	215	280	345	215	280	345	215	280	345			
		65	85	105	65	85	105	65	85	105			
		215	280	345	215	280	345	215	280	345			
		65	85	105	65	85	105	65	85	105			

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	K10 a _e /D _c			
							100%	50%	20%	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25				
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40				
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40				
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60				
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1			
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1				
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	920 280	1245 380	1575 480	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	920 280	1245 380	1575 480	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12				
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu	475 145	540 165	605 185	
		brass	N3.2	90	310	C38500 , CuZn40Pb	475 145	540 165	605 185	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	590 180	675 205	755 230	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	590 180	675 205	755 230	

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	AS46 a_e/D_c			AS4B a_e/D_c			IG35 a_e/D_c			NE2B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150			
		590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150			
	Spheroidal graphite cast iron	590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150			
		590 180	690 210	785 240	590 180	690 210	785 240	425 130	460 140	490 150			
	Malleable cast iron												
	Ausferritic spheroidal cast iron / ADI												
	Al-alloys	920 280	1770 540	2625 800	920 280	1770 540	2625 800						
		920 280	1770 540	2625 800	920 280	1770 540	2625 800						
	Al-cast-alloy										1310 400	4595 1400	7875 2400
											1310 400	3280 1000	5250 1600
											920 280	2430 740	3935 1200
	Copper-alloys										590 180	690 210	785 240
											475 145	540 165	605 185
											475 145	540 165	605 185
											425 130	540 165	655 200

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	K10 a _e /D _c			
							100%	50%	20%	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670					
		hardened	S1.2	275	930					
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600				
		hardened	S2.2	350	1200	Inconel 713				
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7				
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V				
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al				
O	Thermo plastics		01.1				1310 400	2625 800	3935 1200	
	Thermosets		01.2				1310 400	2625 800	3935 1200	

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

	Material	AS46 a _e /D _c			AS4B a _e /D _c			IG35 a _e /D _c			NE2B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)							100 30	180 55	260 80			
								100 30	180 55	260 80			
	Heat resistant alloy (Ni, Co)							100 30	180 55	260 80			
								100 30	180 55	260 80			
	Titanium							100 30	180 55	260 80			
								100 30	180 55	260 80			
								100 30	180 55	260 80			
	Thermo plastics										1310 400	2625 800	3935 1200
	Thermosets										1310 400	2625 800	3935 1200

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R_m [N/mm ²]	Example Material SAE, DIN	RC4G a_e/D_c		
							25%	10%	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	525 160	785 240	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	525 160	785 240	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	525 160	785 240	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	525 160	785 240	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	525 160	785 240	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	525 160	785 240	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	590 180	720 220	
		quenched	P2.2	280	960	3415 , 14NiCr10	590 180	720 220	
		quenched	P2.3	350	1250	4135 , 34CrMo4	590 180	720 220	
		quenched	P2.4	430	1450	5155 , 55Cr3	590 180	720 220	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	260 80	395 120	
		hardened	P3.2	350	1200	D3 , X210Cr2	260 80	330 100	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	525 160	720 220	
		alloyed	P4.2	220	750	10295 , GX-40CrSi28	260 80	460 140	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39			
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	260 80	460 140	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	230 70	395 120	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	230 70	395 120	

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

M406, M409, M475, M610

Disc Milling Cutter



	Material	K10 a_e/D_c		AS46 a_e/D_c		AS4B a_e/D_c		IG35 a_e/D_c		NE2B	
		25%	10%	25%	10%	25%	10%	25%	10%	25%	10%
	Carbon steel			425 130	625 190	425 130	625 190	475 145	625 190		
				425 130	625 190	425 130	625 190	475 145	625 190		
				425 130	625 190	425 130	625 190	475 145	625 190		
				425 130	625 190	425 130	625 190	475 145	625 190		
				425 130	625 190	425 130	625 190	475 145	625 190		
				425 130	625 190	425 130	625 190	475 145	625 190		
	Alloyed steel (<5%)			475 145	575 175	475 145	575 175	475 145	575 175		
				475 145	575 175	475 145	575 175	475 145	575 175		
				475 145	575 175	475 145	575 175	475 145	575 175		
				475 145	575 175	475 145	575 175				
	High alloyed steel (>5%)										
	Cast steel										
	Sintered steel										
	Stainless steel			215 65	345 105	195 60	345 105	215 65	345 105		
				215 65	345 105	195 60	345 105	215 65	345 105		
				215 65	345 105	195 60	345 105	215 65	345 105		

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	RC4G a _e /D _c		
							25%	10%	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	590 180	820 250	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	395 120	590 180	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	395 120	525 160	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	395 120	525 160	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45	195 60	395 120	
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04	195 60	460 140	
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800				
		quenched	K4.2	350	1050				
		quenched	K4.3	450	1400				
	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1			
		heat treatable	N1.2	100	340	6061, 7075 , AlMgSi1			
N	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441 , AlMgSi6			
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg			
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12			
	Copper-alloys	pure copper	N3.1	100	340	C11000 , Cu			
		brass	N3.2	90	310	C38500 , CuZn40Pb			
		lead-free brass	N3.3	110	430	C28000 , CuZn40			
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3			

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

M406, M409, M475, M610

Disc Milling Cutter



	Material	K10 a_e/D_c		AS46 a_e/D_c		AS4B a_e/D_c		IG35 a_e/D_c		NE2B	
		25%	10%	25%	10%	25%	10%	25%	10%	25%	10%
	Grey cast iron			575 175	785 240	575 175	785 240	425 130	475 145		
				575 175	785 240	575 175	785 240	425 130	475 145		
	Spheroidal graphite cast iron			575 175	785 240	575 175	785 240	425 130	475 145		
				575 175	785 240	575 175	785 240	425 130	475 145		
	Malleable cast iron										
	Ausferritic spheroidal cast iron / ADI										
	Al-alloys			920 280	2625 800	920 280	2625 800				
				920 280	2625 800	920 280	2625 800				
	Al-cast-alloy	920 280	1575 480							1310 400	7875 2400
		920 280	1575 480							1310 400	5250 1600
										920 280	3935 1200
	Copper-alloys	475 145	605 185							575 175	785 240
		475 145	605 185							475 145	605 185
		475 145	605 185							475 145	625 190
		475 145	605 185							425 130	655 200

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	RC4G a _e /D _c		
							25%	10%	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670				
		hardened	S1.2	275	930				
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600			
		hardened	S2.2	350	1200	Inconel 713			
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7			
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V			
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al			
O	Thermo plastics		O1.1						
	Thermosets		O1.2						

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

M406, M409, M475, M610

Disc Milling Cutter



	Material	K10 a _e /D _c		AS46 a _e /D _c		AS4B a _e /D _c		IG35 a _e /D _c		NE2B	
		25%	10%	25%	10%	25%	10%	25%	10%	25%	10%
	Heat resistant alloy (Fe)							80 25	215 65		
								80 25	215 65		
	Heat resistant alloy (Ni, Co)							80 25	215 65		
								80 25	215 65		
	Titanium							80 25	215 65		
								80 25	215 65		
								80 25	215 65		
								80 25	215 65		
	Thermo plastics	1310 400	3935 1200							1310 400	3935 1200
	Thermosets	1310 400	3935 1200							1310 400	3935 1200

TABLE FORMAT

655

200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	SA4B a _e / D _c		TA45 a _e / D _c	
							20%	10%	20%	10%
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	785 240	950 290	590 180	705 215
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	785 240	950 290	590 180	705 215
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	785 240	950 290	590 180	705 215
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	785 240	950 290	590 180	705 215
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	785 240	950 290	590 180	705 215
		free cutting steel	P1.6	220	750	1213 , 9SMn28	785 240	950 290		
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	720 220	870 265		
		quenched	P2.2	280	960	3415 , 14NiCr10	720 220	870 265		
		quenched	P2.3	350	1250	4135 , 34CrMo4	720 220	870 265		
		quenched	P2.4	430	1450	5155 , 55Cr3	720 220	870 265		
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18				
		hardened	P3.2	350	1200	D3 , X210Cr2				
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200				
		alloyed	P4.2	220	750	10295 , GX-40CrSi28				
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39				
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	425 130	510 155		
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	425 130	510 155		
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	425 130	510 155		

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	SA4B a _e / D _c		TA45 a _e / D _c	
							20%	10%	20%	10%
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B, GG-25	985 300	1180 360	525 160	640 195
		high tensile strength	K1.2	250	350	A48 Class 60, GG-40	855 260	1180 360	525 160	640 195
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18, GGG-40	855 260	1180 360	525 160	640 195
		pearlitic	K2.1	260	700	A536 80-60-03, GGG-60	855 260	1180 360	525 160	640 195
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018, GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004, GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	Al-alloys	not heat treatable	N1.1	30		5005, AlMg1	3280 1000	3935 1200	3935 1200	4755 1450
		heat treatable	N1.2	100	340	6061, 7075, AlMgSi1	3280 1000	3935 1200	3935 1200	4755 1450
N	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441, AlMgSi6			3935 1200	4755 1450
		6-10% Si	N2.2	100	320	AA 356, AlSi7Mg			3935 1200	4755 1450
		10-15 % Si	N2.3	130	450	AA 413, AlSi12				
	Copper-alloys	pure copper	N3.1	100	340	C11000, Cu			3935 1200	4755 1450
		brass	N3.2	90	310	C38500, CuZn40Pb			3935 1200	4755 1450
		lead-free brass	N3.3	110	430	C28000, CuZn40			3935 1200	4755 1450
		high strength	N3.4	300	1000	C67800, CuZn25Al5-Mn4Fe3			3935 1200	4755 1450

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	AS46 a _e /D _c		AS4B a _e /D _c	
							100%	50%	100%	50%
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	425 130	525 160	425 130	525 160
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	425 130	525 160	425 130	525 160
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	425 130	525 160	425 130	525 160
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	425 130	525 160	425 130	525 160
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	425 130	525 160	425 130	525 160
		free cutting steel	P1.6	220	750	1213 , 9SMn28	425 130	525 160	425 130	525 160
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	475 145	525 160	475 145	525 160
		quenched	P2.2	280	960	3415 , 14NiCr10	475 145	525 160	475 145	525 160
		quenched	P2.3	350	1250	4135 , 34CrMo4	475 145	525 160	475 145	525 160
		quenched	P2.4	430	1450	5155 , 55Cr3	475 145	525 160	475 145	525 160
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18				
		hardened	P3.2	350	1200	D3 , X210Cr2				
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200				
		alloyed	P4.2	220	750	10295 , GX- 40CrSi28				
	Sintered steel	soft	P5.1	220	570	P3082 , Sint- D39				
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	215 65	280 85	215 65	280 85
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo- Ti17-12-2	215 65	280 85	215 65	280 85
		austenitic	M1.3	230	780	316LN , X2CrNiMo- N17-13-3	215 65	280 85	215 65	280 85

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	AS46 a _e /D _c		AS4B a _e /D _c	
							100%	50%	100%	50%
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	590 180	690 210	590 180	690 210
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	590 180	690 210	590 180	690 210
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	590 180	690 210	590 180	690 210
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	590 180	690 210	590 180	690 210
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45				
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04				
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800					
		quenched	K4.2	350	1050					
		quenched	K4.3	450	1400					
	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1	920 280	1770 540	920 280	1770 540
		heat treatable	N1.2	100	340	6061, 7075 , AlMgSi1	920 280	1770 540	920 280	1770 540
N	Al-cast-alloy	< 6% Si	N2.1	80	300	AA 441 , AlMgSi6				
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg				
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12				
	Copper-alloys	pure copper	N3.1	100	340	C11000 , Cu				
		brass	N3.2	90	310	C38500 , CuZn40Pb				
		lead-free brass	N3.3	110	430	C28000 , CuZn40				
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3				

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm ²]	Example Material SAE, DIN	
P	Carbon steel	~ 0,2 % C	P1.1	125	430	1015 , CK15	
		~ 0,4% C annealed	P1.2	190	610	A515 , 19Mn6	
		~ 0,4% C quenched	P1.3	210	640	1335 , 36Mn5	
		~ 0,6% C annealed	P1.4	190	610	1055 , C55	
		~ 0,6% C quenched	P1.5	300	1000	1060 , CK60	
		free cutting steel	P1.6	220	750	1213 , 9SMn28	
	Alloyed steel (<5%)	annealed	P2.1	180	590	52100 , 100Cr6	
		quenched	P2.2	280	960	3415 , 14NiCr10	
		quenched	P2.3	350	1250	4135 , 34CrMo4	
		quenched	P2.4	430	1450	5155 , 55Cr3	
	High alloyed steel (>5%)	annealed	P3.1	200	680	442 , X10CrAl18	
		hardened	P3.2	350	1200	D3 , X210Cr2	
	Cast steel	unalloyed	P4.1	180	590	A27 , GE200	
		alloyed	P4.2	220	750	10295 , GX-40CrSi28	
	Sintered steel	soft	P5.1	220	570	P3082 , Sint-D39	
M	Stainless steel	martensitic ferritic	M1.1	200	680	17-4 PH , 455 , 465 , X16Cr13	
		austenitic ferritic	M1.2	300	1000	316Ti , X6CrNiMo-Ti17-12-2	
		austenitic	M1.3	230	780	316LN , X2CrNiMo-N17-13-3	

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

	Material	TA45 a_e/D_c			SD6A a_e/D_c			SC6A a_e/D_c			IG6B a_e/D_c			SA4B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
Carbon steel		410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
		410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
		410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
Alloyed steel (<5%)		410	475	540	410	475	540				525	625	690	475	590	705
		125	145	165	125	145	165				160	190	210	145	180	215
											525	590	655	475	590	705
											160	180	200	145	180	215
High alloyed steel (>5%)											525	590	655	525	590	655
											160	180	200	160	180	200
											525	590	655	525	590	655
											160	180	200	160	180	200
Cast steel																
Sintered steel																
Stainless steel								230	310	395	230	310	395	230	310	395
								70	95	120	70	95	120	70	95	120
								230	310	395	230	310	395	230	310	395
								70	95	120	70	95	120	70	95	120

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
K	Grey cast iron	low tensile strength	K1.1	180	250	A48 Class 35B , GG-25	
		high tensile strength	K1.2	250	350	A48 Class 60 , GG-40	
	Spheroidal graphite cast iron	ferritic	K2.1	160	400	A536 60-40-18 , GGG-40	
		pearlitic	K2.1	260	700	A536 80-60-03 , GGG-60	
	Malleable cast iron	ferritic	K3.1	200	400	A47 Grade 35018 , GTW-45	
		pearlitic	K3.2	260	700	A47 Grade 55004 , GTS-55-04	
	Ausferritic spheroidal cast iron / ADI	quenched	K4.1	260	800		
		quenched	K4.2	350	1050		
		quenched	K4.3	450	1400		
	N	Al-alloys	not heat treatable	N1.1	30		5005 , AlMg1
heat treatable			N1.2	100	340	6061, 7075 , AlMgSi1	
Al-cast-alloy		< 6% Si	N2.1	80	300	AA 441 , AlMgSi6	
		6-10% Si	N2.2	100	320	AA 356 , AlSi7Mg	
		10-15 % Si	N2.3	130	450	AA 413 , AlSi12	
Copper-alloys		pure copper	N3.1	100	340	C11000 , Cu	
		brass	N3.2	90	310	C38500 , CuZn40Pb	
		lead-free brass	N3.3	110	430	C28000 , CuZn40	
		high strength	N3.4	300	1000	C67800 , CuZn25Al5-Mn4Fe3	

TABLE FORMAT

655	=	Suggested cutting speed (inch)
200		Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a_e/D_c			SD6A a_e/D_c			SC6A a_e/D_c			IG6B a_e/D_c			SA4B a_e/D_c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Grey cast iron	410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
		410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
	Spheroidal graphite cast iron	410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
		410 125	445 135	475 145	655 200	770 235	885 270	655 200	770 235	885 270	475 145	510 155	540 165	655 200	770 235	885 270
	Malleable cast iron															
	Ausferritic spheroidal cast iron / ADI															
	Al-alloys	1475 450	2545 775	3610 1100										985 300	1970 600	2955 900
		1475 450	2545 775	3610 1100										985 300	1970 600	2955 900
	Al-cast-alloy	1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												
	Copper-alloys	1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												
		1475 450	2545 775	3610 1100												

TABLE FORMAT

655 200	=	Suggested cutting speed (inch) Suggested cutting speed (metric)
-------------------	---	---



Material			Material group	Brinell Hardness (HB)	Tensile Strength R _m [N/mm²]	Example Material SAE, DIN	
S	Heat resistant alloy (Fe)	annealed	S1.1	200	670		
		hardened	S1.2	275	930		
	Heat resistant alloy (Ni, Co)	annealed	S2.1	250	840	Inconel 600	
		hardened	S2.2	350	1200	Inconel 713	
	Titanium	Titanium alloy α	S3.1	120	240	Grade 1-2 Ti, Ti99,7	
		Titanium alloy α- β	S3.2	360	1200	Grade 5 Ti, Ti6Al4V	
		Titanium alloy β	S3.3	410	1400	Ti-10-2-3, Ti-10V-2Fe-3Al	
O	Thermo plastics		O1.1				
	Thermosets		O1.2				

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)

Suggested cutting speed (metric)

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84



	Material	TA45 a _e /D _c			SD6A a _e /D _c			SC6A a _e /D _c			IG6B a _e /D _c		
		100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%
	Heat resistant alloy (Fe)	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Heat resistant alloy (Fe)	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Heat resistant alloy (Ni, Co)	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Titanium	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Titanium	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Titanium	75	80	90				80	165	245	80	165	245
		23	25	27				25	50	75	25	50	75
	Thermoplastics												
	Thermosets												

TABLE FORMAT

655
200

=

Suggested cutting speed (inch)
Suggested cutting speed (metric)



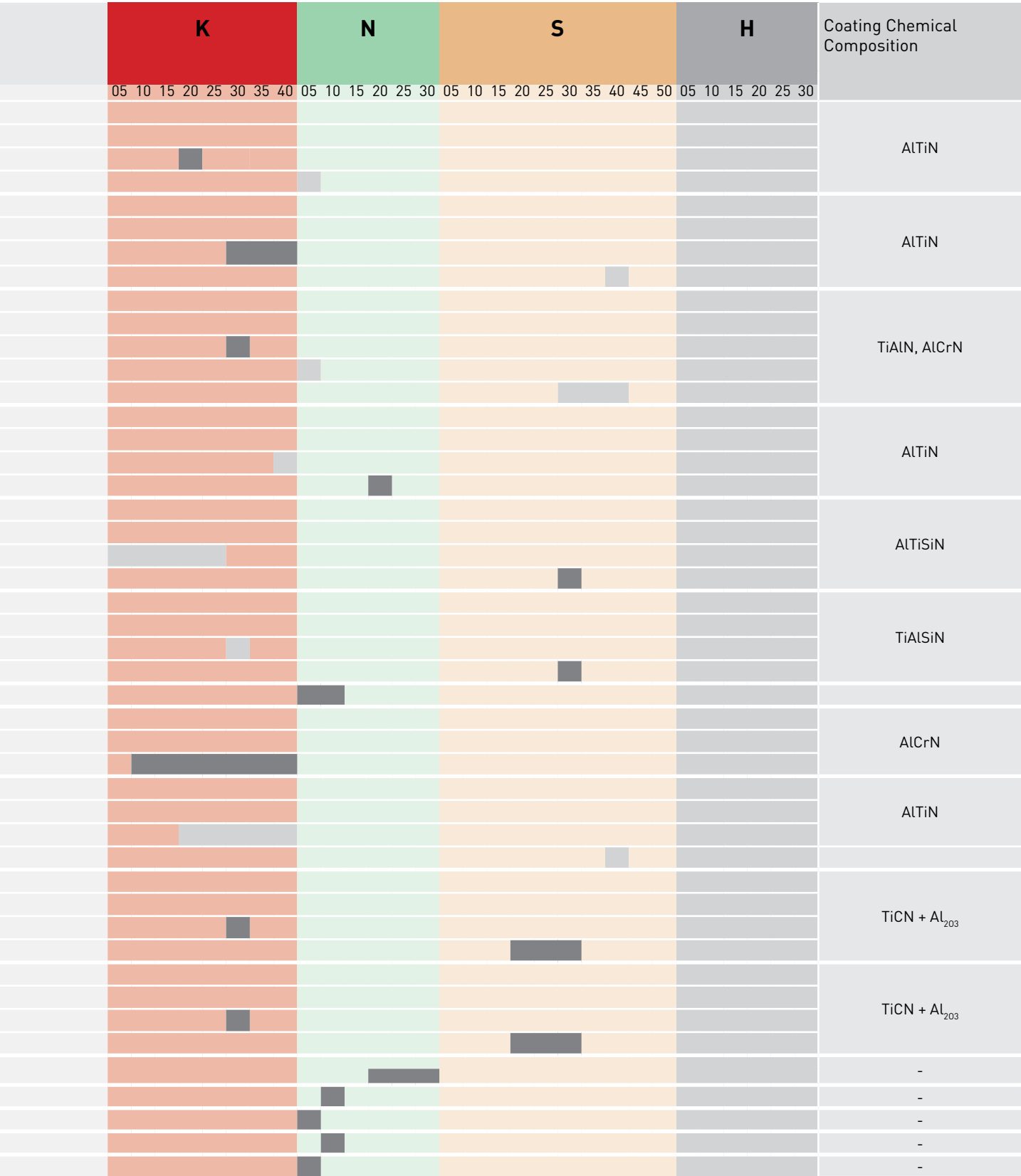
Coating process	Grade designation		Application	P										M										
	Name	Classification		05	10	15	20	25	30	35	40	45	50	05	10	15	20	25	30	35	40	45	50	
PVD	AS46	HC - P 20-40	○																					
		HC - M 30-50	○																					
		HC - K 20	●																					
		HC - N 05	○																					
	AS4B	HC - P 20-50	●																					
		HC - M 30-50	●																					
		HC - K 30-40	●																					
		HC - S 40	○																					
	SA4B	HC - P 10-40	●																					
		HC - M 20-30	●																					
		HC - K 30	●																					
		HC - N 10	○																					
	TA45	HC - S 30-40	○																					
		HC - P 40	○																					
		HC - M 40	●																					
		HC - K 40	○																					
	IG6B	HC - N 20	●																					
		HC - P 05-30	●																					
		HC - M 10-30	○																					
		HC - K 05-20	○																					
	IG35	HC - S 30	●																					
		HC - P 20-40	●																					
		HC - M 20-40	●																					
		HC - K 30	○																					
	RC4G	HC - S 30	●																					
		HC - N 05-10	●																					
		HC - P 05-30	●																					
		HC - M 20-30	●																					
	AS45	HC - K 10-40	●																					
		HC - P 30-50	●																					
		HC - M 30-50	●																					
		HC - K 20-40	○																					
CVD	SD6A	HC - S 40	○																					
		HC - P 10-30	○																					
		HC - M 05-30	○																					
		HC - K 30	●																					
	SC6A	HC - S 20-30	●																					
		HC - P 10-30	○																					
		HC - M 05-30	○																					
		HC - K 30	●																					
uncoated	K10	HW - N 15-30	●																					
CVD-D	HD05	N - 10	●																					
	HD08	N - 05	●																					
PKD	PD70	PD - N 10	●																					
	PD75	PD - N 05	●																					

● Best application



○ Secondary application





- Best application
- Secondary application

Torque Wrenches and Drivers



D 041 VL
0.4-1 Nm



D 15 VL
1-5 Nm

Variable Torque Drivers

Torque setting is adjusted with the included wrench.
Torque value is shown in display window.

Standard: EN ISO 6798, BS EN 26789,
ASME B107.14.M.

Accuracy: $\pm 6\%$



D 28 VL
2-7 Nm



ED 28 VL
for
D041VL / D15VL / D28VL

Adjustment Wrench

Adjusts the torque setting on the drivers shown above.

Torque Wrenches and Drivers



D515QL
5-14 Nm

Variable Torque Driver

Torque setting is adjusted with the included wrench.
Torque value is shown in display window.

Standard: EN ISO 6798, BS EN 26789, ASME B107.14.M.

Accuracy: $\pm 6\%$,



ED515QL
for
D515QL

Adjustment Wrench

Adjusts the torque setting on the driver shown above.



Driver for Torx-Plus® Screws

DT6PK
DT7PK
DT8PK
DT9PK
DT10PK
DT15PK
DT20PK
DT25PK

for
D041VL / D15VL / D28VL



Plus

Controlled torque setting when used with a Wiha torque driver.



Driver for Torx Screws

DT6K
DT8K
DT15K

for
D041VL / D15VL / D28VL



Controlled torque setting when used with a Wiha torque driver.



Driver for Torx-Plus® Screws

DT15PQ
DT20PQ
DT25PQ
DT27PQ
DT30PQ

for
D515QL



Plus

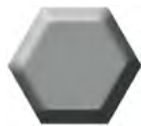
Controlled torque setting when used with a Wiha torque driver.



Driver for Hex Screws

DSW15K
DSW20K
DSW25K
DSW30K
DSW40K

for
D041VL / D15VL / D28VL



Controlled torque setting when used with a Wiha torque driver.

DSW50K
DSW60K

for
D515QL



Universal Bitholder for C6.3 und E6.3 (1/4'') Bits

D14ZBK

for
D041VL / D15VL / D28VL

Controlled torque setting when used with a Wiha torque driver.



Universal Bitholder for C6.3 und E6.3 (1/4'') Bits

D14ZBQ

for
D515QL

Controlled torque setting when used with a Wiha torque driver.



14ZQK

Universal Bitholder for C6.3 und E6.3 (1/4") Bits

Hex bit handle.



T6PW
T7PW
T8PW
T9PW
T10PW
T15PW
T20PW
T25PW
T30PW



Plus

Hex Key for Torx Plus® Screws

For all Torx Plus® screws.

Note: Torx Plus® does NOT fit regular Torx.





FIND YOUR TOOLING SOLUTION

horn-eshop.us

horn-group.com/us

FRANKLIN, TENNESSEE

USA

—

Horn USA Inc.

1870 General George Patton Dr,
37067 Franklin, TN

Tel +1 (615) 771-4100

Fax +1 (615) 771-4101

info@us.horn-group.com

horn-group.com/us