FRÄSSYSTEME

MILLING SYSTEMS

2025/2026

ERLEBEN SIE HORN
EXPLORE HORN

Erleben Sie HORN

Herausragende Ergebnisse sind immer die Kombination aus optimalem Zerspanungsprozess und perfektem Werkzeug. HORN verbindet dafür Spitzentechnologie, Leistungsfähigkeit und Zuverlässigkeit. Von der Einzelteil- bis zur Serienfertigung, für Standard- oder Sonderanwendungen: Unsere Werkzeuge bieten Ihnen schnelle, wirtschaftliche und qualitativ hochwertige Lösungen. Bei der Auswahl der individuellen Schnittparameter unterstützen Sie unsere Tabellen mit praxiserprobten Erfahrungswerten im jeweiligen Katalog. Nutzen Sie darüber hinaus das Know-how unserer Mitarbeiterinnen und Mitarbeiter im Innen- und Außendienst.

Nachhaltigkeit ist ein zentraler Bestandteil unserer Unternehmensphilosophie. Deshalb stehen Qualitätssicherung, Umweltschutz, Energieeffizienz und Sicherheit bei unseren Produkten und in der Produktion seit jeher im Fokus. Als leistungsstarker und zuverlässiger Werkzeugpartner sorgen wir dafür, dass Sie mit uns gemeinsam in eine innovative und wirtschaftliche Zukunft gehen.

Besuchen Sie auch unseren eShop, der Ihnen rund um die Uhr zur Verfügung steht.

Markus Horn
Geschäftsführer
Paul Horn GmbH

Matthias Rommel
Geschäftsführer
Paul Horn GmbH

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

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C	**Nutfräsen** Groove Milling	**M275**
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Allgemeine Hinweise
General Information

- Alle Abmessungen sind in mm angegeben, sofern nicht anders vermerkt.
  All dimensions in mm, unless otherwise noted
- Weitere Abmessungen und Ausführungen sind auf Anfrage erhältlich.
  Further dimensions and versions are available on request.
- Das Anzugsmoment der Schrauben finden Sie im Kapitel "Technische Hinweise".
  For torque specification of the screw, please see "Technical Instructions".
- Alle Hartmetall-Fräserschäfte mit beschädigter Schneidplattenaufnahme können von unserem Reparaturservice instand gesetzt werden.
  All carbide milling shanks with damaged seating can be repaired by HORN.
- Lieferzeiten / delivery times
  - ▲ ab Lager / on stock
  - Δ 4 Wochen / 4 weeks
- Einsatz für Werkstoffgruppen / Use for material groups
  - ● empfohlen / recommended
  - o bedingt einsetzbar / alternative recommended
  - - nicht geeignet / not suitable

Die HORN-Trennstellencodierung - wofür wird sie benötigt?

Die Trennstellencodierung stellt sicher, dass Sie immer die zueinander passenden Werkzeuge finden und wird bei Werkzeughaltern und bei Schneidplatten ausgewiesen. Wenn die Codes übereinstimmen, kann die Schneidplatte im entsprechenden Werkzeughalter verwendet werden.
Das gilt auch für unser modulares Haltersystem, hier gibt die Trennstellencodierung die Schnittstelle zwischen Grundhalter und Kassette an.

The HORN connection interface code - what is it needed for?

The connection interface code ensures that you will always find the appropriate tools and is shown on toolholders and inserts. If the codes match, the insert can be used in the corresponding toolholder.
This also applies to our modular holder system, where the connection code indicates the interface between the holder and the cassette.

HORN-Trennstellencodes und mögliche Kombinationen:
HORN connection interface codes and possible combinations:

HIS = Plattensitzgröße / Insert seat
HWS = Trennstelle Werkstückseitig / Interface workpiece side
HMS = Trennstelle Maschinenseitig / Interface machine side

HIS	⟷	**HWS**
HMS	⟷	**HWS**

Beispiel Schneidplatte
Example insert

Bestellnummer Part number	Ds	Nw	w	s	s_1	t_{max}	Z	HIS	TA45
306.0050.10.00	9,7	0,5	0,57	3,4	3,2	0,85	3	306060R	▲

Beispiel Klemmhalter
Example toolholder

Bestellnummer Part number	d	l_1	Form	HWS
M306.0707.03A	7,5	100	A	306060R • 306060L

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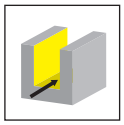
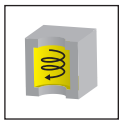
Übersicht Anwendungen
Overview Application



Nutfräsen
Groove milling

Vollradiusnut fräsen
Full radius groove milling

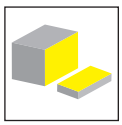


Zirkularnut
Circular groove

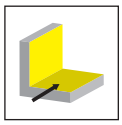
Innennut fräsen
Internal groove milling

Seegerringnut
Circlip groove

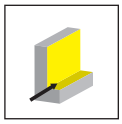
T-Nuten DIN650
T-Slots



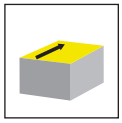
Trennfräsen
Slot milling



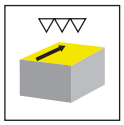
Eckfräsen
Corner milling



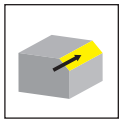
Besäumen
Trimming



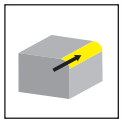
Planfräsen
Face milling



Schlichtfräsen
Finishing

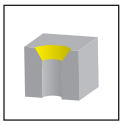


Fasen
Chamfering

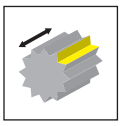


Radius fräsen
Radius milling

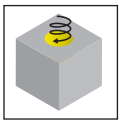
Bohrung fräsen
Bore milling



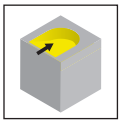
Fase fräsen
Chamfer milling



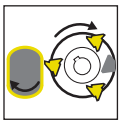
Verzahnung fräsen
Gear milling



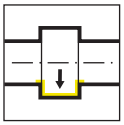
Bohrzirkularfräsen
Helical interpolation



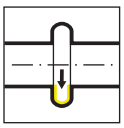
Rampe eintauchen
Ramping



Mehrkantschlagen
Polygon milling

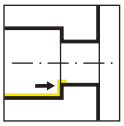


Einstechen innen
Internal grooving

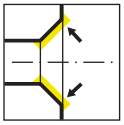


Einstechen innen Vollradius
Internal grooving full radius

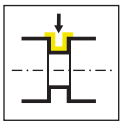
Ausdrehen und Fasen innen
Internal boring and grooving chamfer



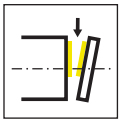
Rückwärtsdrehen innen
Internal back turning



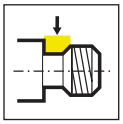
Fasen innen
Internal chamfering



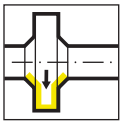
Einstechen außen
External grooving



Abstechen
Parting off

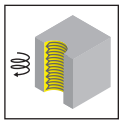


Gewindefreistich DIN76
Corner thread relief



Einstechen mit Fase innen
Internal grooving with chamfer

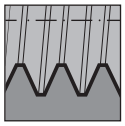
Übersicht Anwendungen
Overview Application



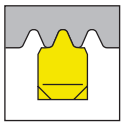
Gewinde fräsen innen
Thread milling internal

Gewinde Teilprofil
Partial profile thread

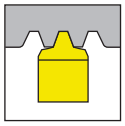
Gewinde Vollprofil
Full profile thread



Gewinde innen
Internal thread



Gewinde Whitworth
Whitworth thread



Trapezgewinde
Trapezoidal thread

UN

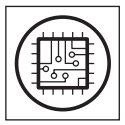
Unified-Gewinde
Unified thread

60°

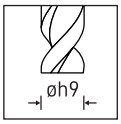
Gewinde metrisch
Metric ISO thread
Anstellwinkel 60° (Tangentialfräsen)
Approach angle 60° (Tangential Milling)

45°

Anstellwinkel 45°
Approach angle 45°

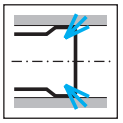


Bohrung Datenträger
DIN69973
Bore hole for data carrier



Toleranzen
Tolerances

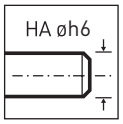
Innenkühlung
Internal coolant



Innenkühlung
Internal coolant

z3

Zähnezahlen
Numbers of teeth



Schaftformen HA, HB, HE
Shank forms

PSC

Schaftform
Shank form

HSK-T

Schaftform
Shank form

.3

Geometrie .3
Geometry

.40

Geometrie .40 für Aluminium
Geometry .40 for aluminium

.E

Geometrie .E
Geometry

.FY

Geometrie .FY
Geometry

PKD
PCD

PKD-bestückt
PCD tipped

CVD-D

CVD-bestückt
CVD tipped

DC

Vollhartmetall-Schaftfräser System DC

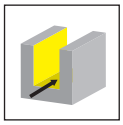
- Nutfräsen
- Fasfräsen

Solid Carbide End Mills System DC

- Groove milling
- Chamfer milling

Nutfräsen
Groove milling

Nutfräser
Groove milling cutter
DCR/DCN/DCX



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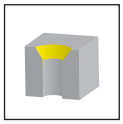
Fasfräser
Chamfer Milling Cutter
DCF



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Schnittdaten
Cutting data

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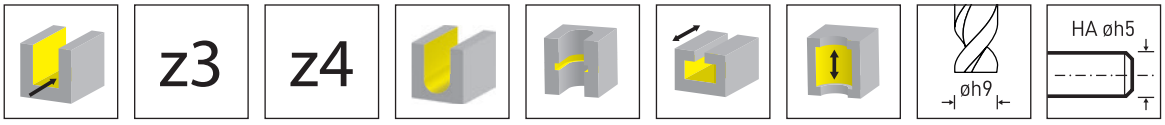
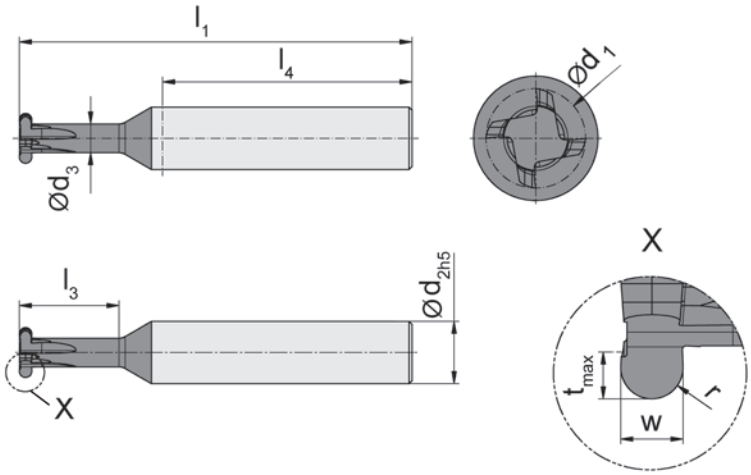
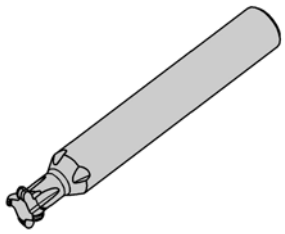
Nutfräser
Groove milling cutter

DCR







HM-Sorten
Carbide grades

▲ ab Lager
on stock

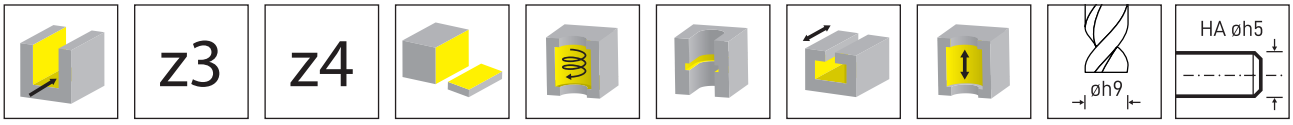
Δ 4 Wochen
4 weeks

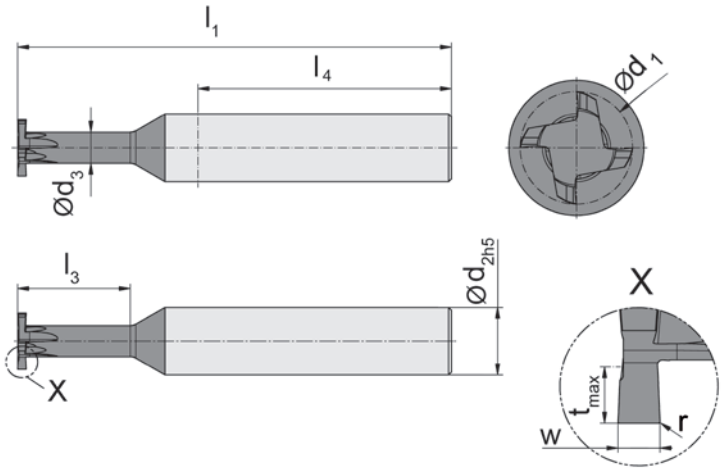
Bestellnummer Part number	Z	w	t_{max}	r	d_1	d_2	d_3	l_1	l_3	l_4	RC25	RC45
DCR.3.40.10.05.1.06	3	1	0,5	0,5	4	6	2,75	50	4	36	▲	
DCR.3.50.10.05.2.06	3	1	0,75	0,5	5	6	3,2	50	6	36		▲
DCR.3.60.10.05.1.06	3	1	1	0,5	6	6	3,7	50	4	36		▲
DCR.3.60.10.05.2.06	3	1	1	0,5	6	6	3,7	63	6	36		▲
DCR.3.60.15.75.2.06	3	1,5	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		▲

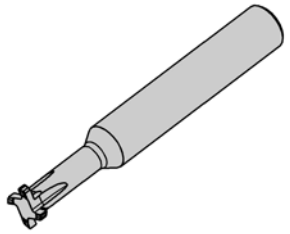
	RC25	RC45
P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-

Nutfräser
Groove milling cutter

DCN







HM-Sorten
Carbide grades

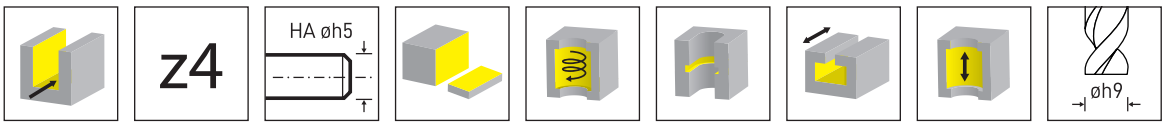
▲ ab Lager
on stock

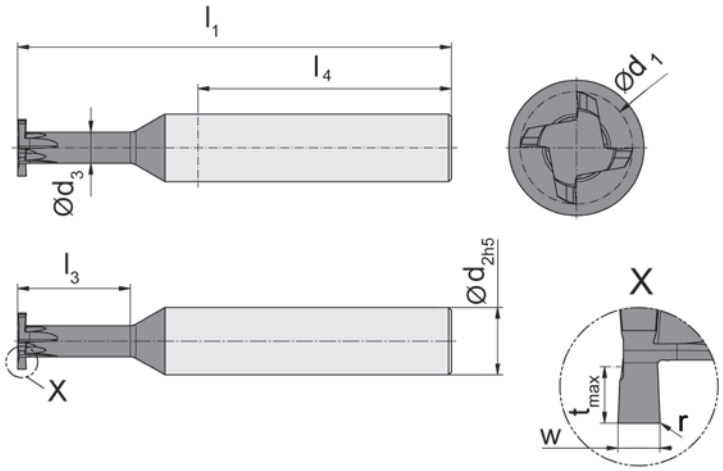
Δ 4 Wochen
4 weeks

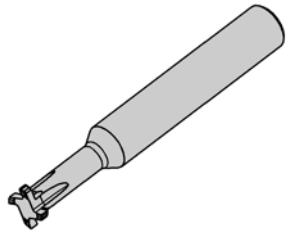
Bestellnummer Part number	Z	w	t_{max}	r	d_1	d_2	d_3	l_1	l_3	l_4		RC25	RC45
DCN.3.30.05.00.1.06	3	0,5	0,4	-	3	6	2	50	3	36		▲	
DCN.3.30.05.00.2.06	3	0,5	0,4	-	3	6	2	50	5	36		▲	
DCN.3.30.10.00.1.06	3	1	0,4	-	3	6	2	50	3	36		▲	
DCN.3.30.10.00.2.06	3	1	0,4	-	3	6	2	50	5	36		▲	
DCN.3.40.05.00.1.06	3	0,5	0,5	-	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			▲
											P	•	•
											M	•	•
											K	•	•
											N	•	•
											S	•	•
											H	-	-

Nutfräser
Groove milling cutter

DCN







HM-Sorten
Carbide grades

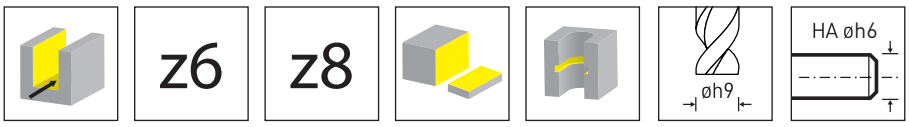
▲ ab Lager
on stock

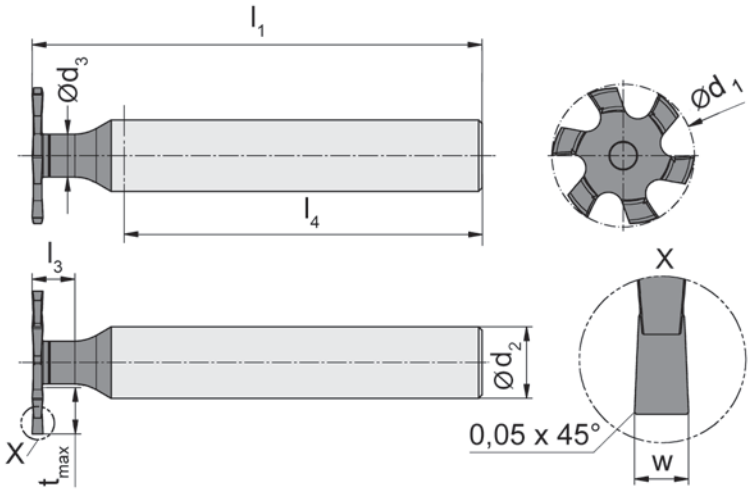
Δ 4 Wochen
4 weeks

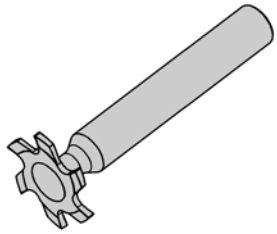
Bestellnummer Part number	Z	w	t_{max}	r	d_1	d_2	d_3	l_1	l_3	l_4		RC45
DCN.4.90.05.00.5.10	4	0,5	2	-	9	10	4,7	63	18	40		▲
DCN.4.90.10.00.5.10	4	1	2	-	9	10	4,7	63	18	40		▲
DCN.4.90.15.15.5.10	4	1,5	2	0,15	9	10	4,7	63	18	40		▲
DCN.4.90.20.15.5.10	4	2	2	0,15	9	10	4,7	63	18	40		▲
DCN.4.100.05.00.6.10	4	0,5	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		▲
											P	●
											M	●
											K	●
											N	●
											S	●
											H	-

Nutfräser
Groove milling cutter

DCX







HM-Sorten
Carbide grades

▲ ab Lager
on stock

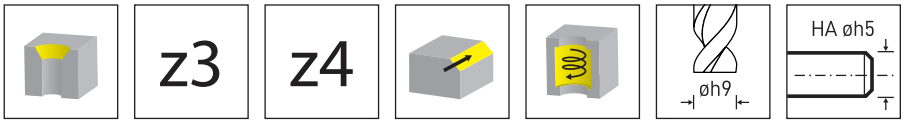
Δ 4 Wochen
4 weeks

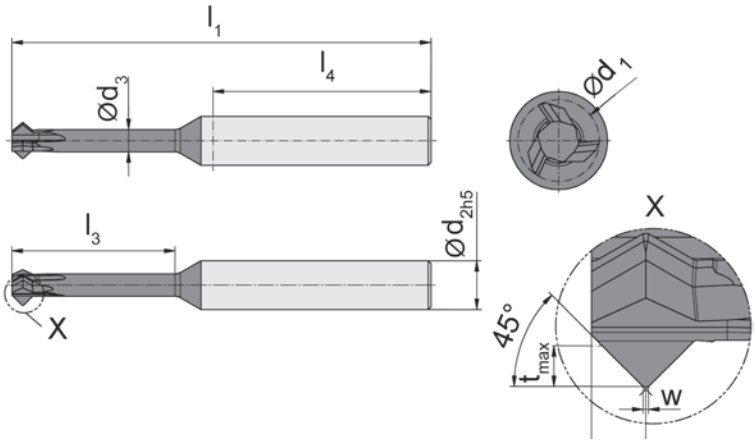
Bestellnummer Part number	Z	w	t_{max}	d_1	d_2	d_3	l_1	l_3	l_4		RC45
DCX.6.20.050.2.05.10	6	0,53	7	20	10	5	64	6	40		▲
DCX.6.20.100.2.05.10	6	1,03	7	20	10	5	64	6	40		▲
DCX.6.20.150.2.05.10	6	1,53	7	20	10	5	64	6	40		▲
DCX.6.20.200.2.05.10	6	2,03	7	20	10	5	64	6	40		▲
DCX.6.20.250.2.05.10	6	2,53	7	20	10	5	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		▲

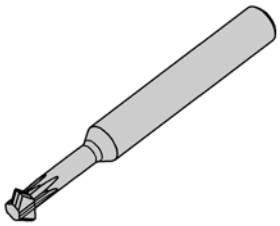
P	●
M	●
K	●
N	●
S	●
H	-

Fasfräser
Chamfer Milling Cutter

DCF







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Z	w	Fase 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		▲

	RC25	RC45
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	-	-

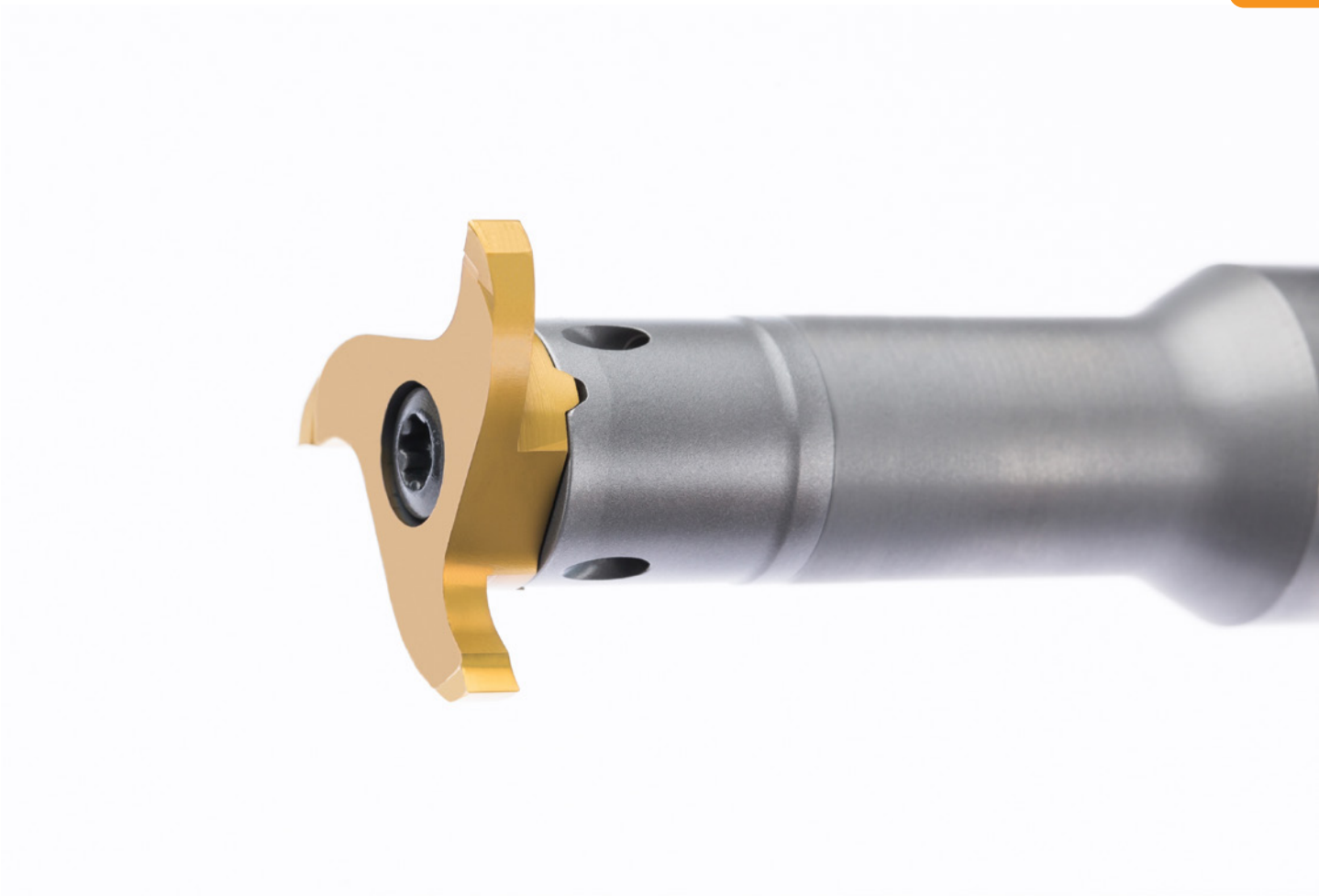
Schnittdaten
Cutting data

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values RC25 RC45	fz
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	250-180	0,01 -0,03
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	220-160	0,01 -0,03
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	200-140	0,01 -0,03
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	180-120	0,01 -0,03
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	150-90	0,01 -0,03
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	250-180	0,01 -0,03
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	200-140	0,01 -0,03
		vergütet quenched	P2.2	280	960	14NiCr10	150-90	0,01 -0,03
		vergütet quenched	P2.3	350	1250	34CrMo4	140-80	0,01 -0,03
		vergütet quenched	P2.4	430	1450	55Cr3	140-80	0,01 -0,03
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18	180-120	0,01 -0,03
		gehärtet hardened	P3.2	350	1200	X210Cr2	140-80	0,01 -0,03
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200	250-180	0,01 -0,03
		legiert alloyed	P4.2	220	750	GX40CrSi28	220-160	0,01 -0,03
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39		0,01 -0,03
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	150-90	0,01 -0,03
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	140-80	0,01 -0,03
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNi-MoN17-13-3	120-60	0,01 -0,03

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values	
							RC25 RC45	fz
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	230-190	0,01 -0,03
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	230-190	0,01 -0,03
	Kugelgraphit-guss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	220-160	0,01 -0,03
		perlitisch perlitic	K2.1	260	700	GGG-60	220-160	0,01 -0,03
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45	220-160	0,01 -0,03
		perlitisch perlitic	K3.2	260	700	GTS-55-04	220-160	0,01 -0,03
	Ausferritisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800			
		vergütet quenched	K4.2	350	1050			
		vergütet quenched	K4.3	450	1400			
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	bis 1000	0,02 - 0,04
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	600-200	0,02 - 0,04
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6	400-200	0,02 - 0,04
		6-10% Si	N2.2	100	320	AlSi7Mg		
		10-15 % Si	N2.3	130	450	AlSi12		
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu	400-200	0,02 - 0,04
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb	400-200	0,02 - 0,04
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40	400-200	0,02 - 0,04
		hochfest high strength	N3.4	300	1000	CuZn25Al-5Mn4Fe3	160-100	0,02 - 0,04
	Graphit Graphite		N4.1					

Schnittdaten
Cutting Data

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values	
							RC25 RC45	fz
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670		120-60	0,02 - 0,04
		gehärtet hardened	S1.2	275	930		120-60	0,02 - 0,04
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600	90-30	0,02 - 0,04
		gehärtet hardened	S2.2	350	1200	Inconel 713	90-30	0,02 - 0,04
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240		120-80	0,02 - 0,04
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200		120-80	0,02 - 0,04
		Titanlegierung β Titanium alloy β	S3.3	410	1400		120-80	0,02 - 0,04
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1	-	-			
		55-60 HRC	H1.2	-	-			
		60-63 HRC	H1.3	-	-			
		> 63HRC	H1.4	-	-			
O	Thermoplaste Thermoplastics		O1.1					
	Duroplaste Duro plaste		O1.2					
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3					
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4					

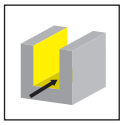


System/System	Seite/Page
M304	**22**
M306	**32**
M308	**62**
M311	**84**
M116	**106**
M313	**112**
M328	**148**
M332	**176**
M335	**200**
M620	**204**

Nutfräsen (zirkular)

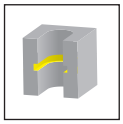
Groove Milling by circular interpolation

Fräserschaft
Milling shank
M304/M304.ST



Seite/Page
24-25

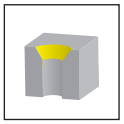
Schneidplatte
Insert
304



Seite/Page
26

Seite/Page
27

Seite/Page
28



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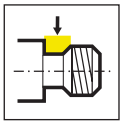


Seite/Page
30

M304

Fräser mit wechselbarer Schneidplatte

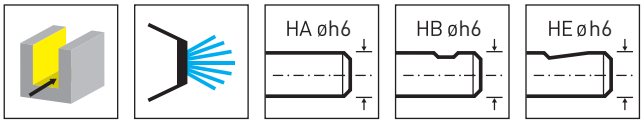
ab Bohrung Ø 7,7 mm

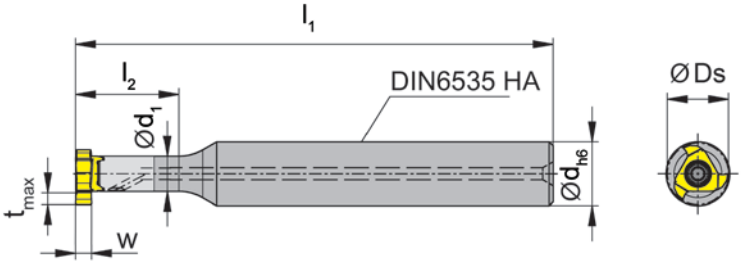
Milling shank with exchangeable insert

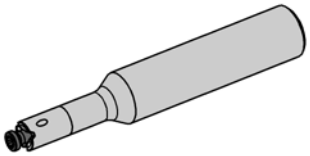
from bore Ø 7,7 mm

Fräserschaft
Milling shank

M304







Bestellnummer 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

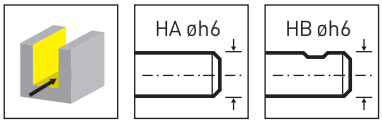
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

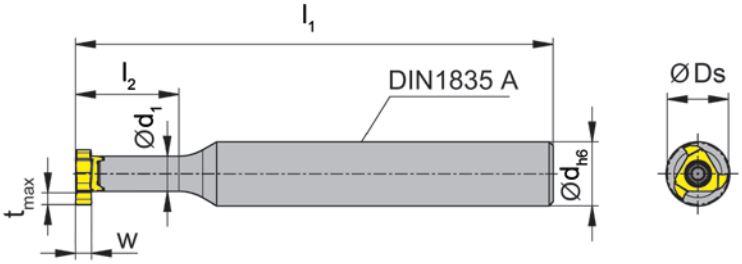
Ersatzteile
Spare Parts

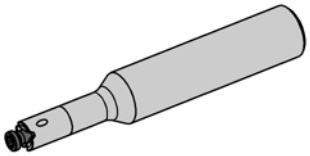
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M304...	**1.8.4T6EP**	**T6PL**

Fräserschaft
Milling shank

M304.ST







Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M304.ST08.01A	8	60	13	4,4	HA	304044R
M304.ST08.01B	8	60	13	4,4	HB	304044R

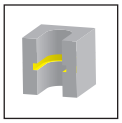
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

Ersatzteile
Spare Parts

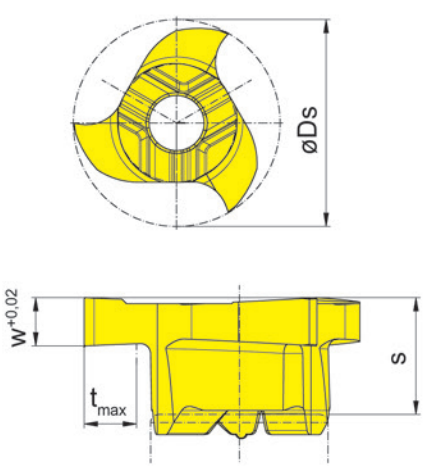
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M304...	**1.8.4T6EP**	**T6PL**

Schneidplatte
Insert

304



z3



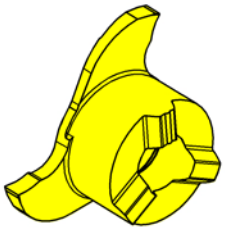


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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		▲		Δ
304.0030.20	7,7	0,3	2,6	1,3	3	304044R		▲		Δ
304.0040.20	7,7	0,4	2,6	1,3	3	304044R		▲		Δ
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		▲		Δ
304.0070.20	7,7	0,7	2,6	1,3	3	304044R		▲		Δ
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			▲	▲
							P	●	●	-
							M	●	o	●
							K	o	o	-
							N	-	-	-
							S	-	-	●
							H	-	-	-

Schneidplatte
Insert

304

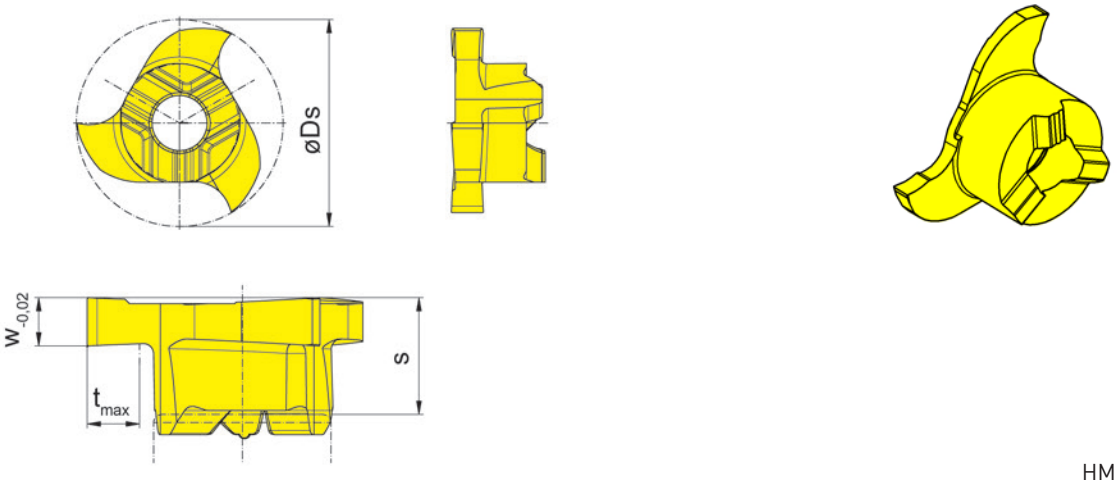


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

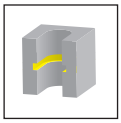
Δ 4 Wochen
4 weeks

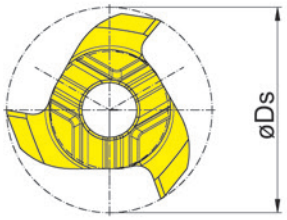
Bestellnummer Part number	Ds	Nw	w	s	t_{max}	Z	HIS		EG55	IG35
304.0080.20	7,7	0,8	0,87	2,6	1,3	3	304044R		▲	▲
304.0090.20	7,7	0,9	0,97	2,6	1,3	3	304044R		▲	▲
304.0110.20	7,7	1,1	1,21	2,9	1,3	3	304044R		▲	▲
304.0130.20	7,7	1,3	1,41	2,9	1,3	3	304044R		▲	▲
								P	●	-
								M	o	●
								K	o	-
								N	-	-
								S	-	●
								H	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

304





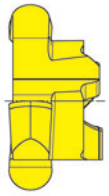
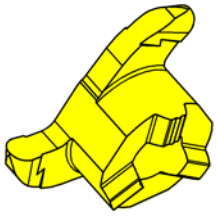
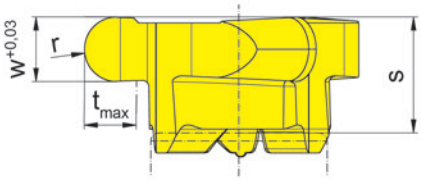




Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

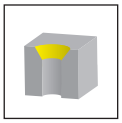
▲ ab Lager
on stock

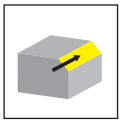
Δ 4 Wochen
4 weeks

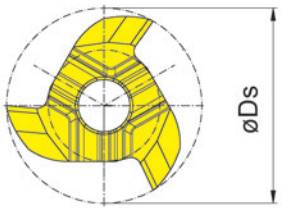
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		EG55	IG35
304.0004.08	7,7	0,8	2,6	0,4	1,3	3	304044R		▲	▲
304.0006.12	7,7	1,2	2,9	0,6	1,3	3	304044R		▲	▲
304.0008.16	7,7	1,6	2,9	0,8	1,3	3	304044R		▲	▲
								P	●	-
								M	o	●
								K	o	-
								N	-	-
								S	-	●
								H	-	-

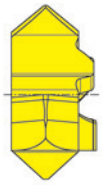
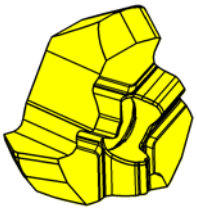
Schneidplatte
Insert

304







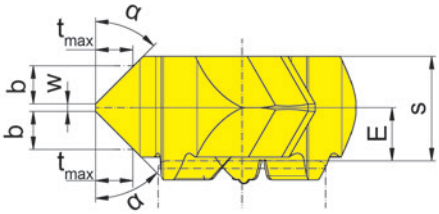


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

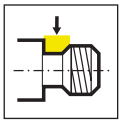
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

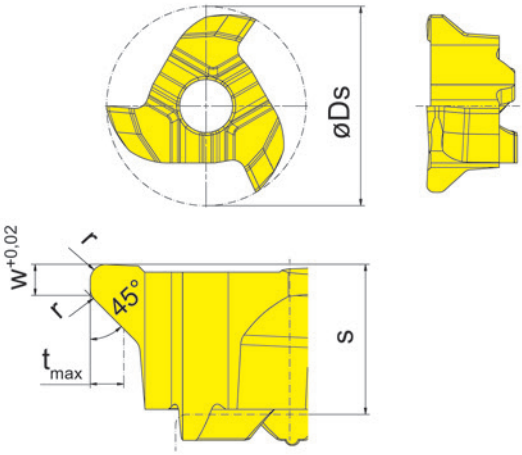
Bestellnummer Part number	Ds	E	s	w	α	b	t_{max}	Z	HIS		EG55	IG35
304.1515.20	7,7	1,4	2,75	0,2	15°	1	0,3	3	304044R		Δ	Δ
304.3030.20	7,7	1,4	2,75	0,2	30°	1	0,6	3	304044R		▲	▲
304.4545.20	7,7	1,4	2,75	0,2	45°	1	1	3	304044R		▲	▲
										P	●	-
										M	o	●
										K	o	-
										N	-	-
										S	-	●
										H	-	-

Schneidplatte
Insert

304



z3



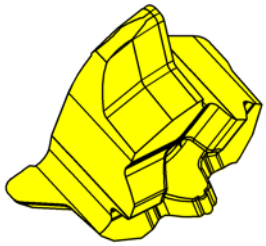


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

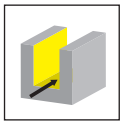
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		EG55
304.0508.29	7,7	0,6	2,9	0,3	0,65	3	304044R		▲
								P	●
								M	o
								K	o
								N	-
								S	-
								H	-

Gewindefreistiche DIN 76
Thread relief DIN 76

Nutfräsen (zirkular)

Groove Milling by circular interpolation

Fräserschaft
Milling shank
M306/M306.ER/M306.ST



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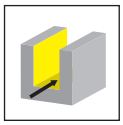
Grundaufnahme
Basic Holder
WFB



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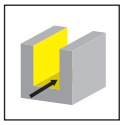
Einschraubfräser
Screw-in cutter
M306.M



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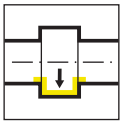
Schneidplatte
Insert
108/306/606

Seite/Page
40-41, 45-49,55



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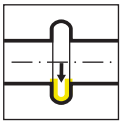

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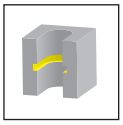
44



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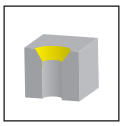
Seite/Page
53



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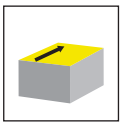

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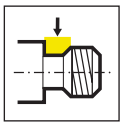


Seite/Page
61

M306

Fräser mit wechselbarer Schneidplatte

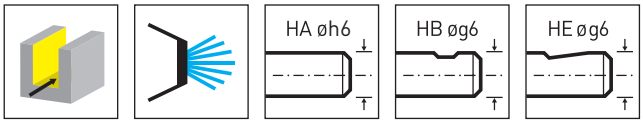
ab Bohrung Ø 10 mm

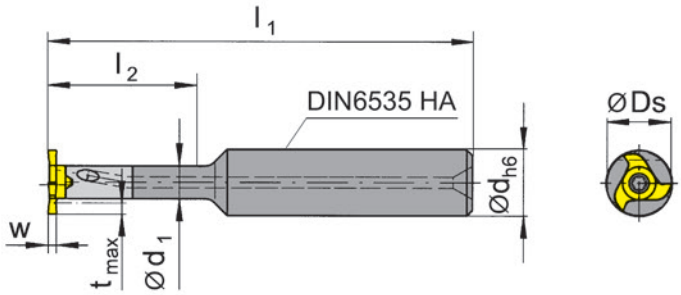
Milling shank with exchangeable insert

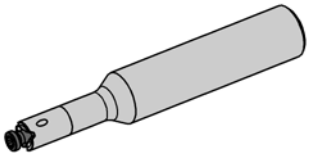
from bore Ø 10 mm

Fräserschaft
Milling shank

M306







Bestellnummer 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 siehe Schneidplatte
w, Ds, tmax see inserts

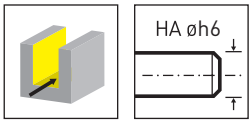
Ersatzteile
Spare Parts

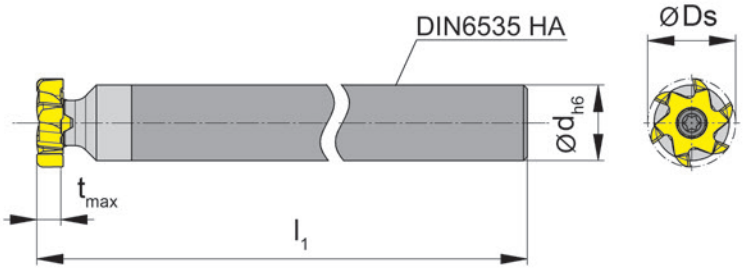
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M306...	**2.6.5T8EP**	**T8PL**

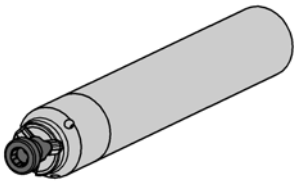
Fräserschaft
Milling shank

M306

B







Bestellnummer Part number	d	l_1	Form	HWS
M306.0707.03A	7,5	100	HA	306060R • 306060L
M306.1010.03A	10	120	HA	306060R • 306060L

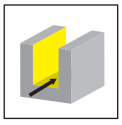
tmax und Ds siehe Schneidplatte
tmax and Ds see inserts

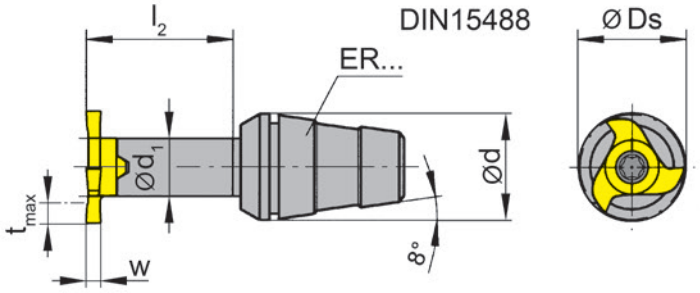
Ersatzteile
Spare Parts

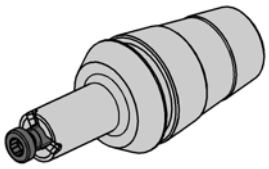
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M306...	**2.6.5T8EP**	**T8PL**

Fräserschaft
Milling shank

M306.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter Clamping nut	HWS
M306.ER11.02	11	16	6	ER11.6499	306060R • 306060L

w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

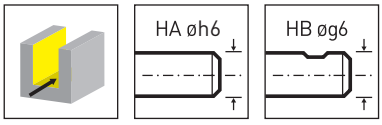
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

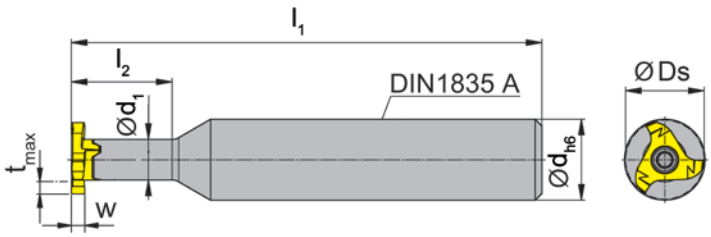
Ersatzteile
Spare Parts

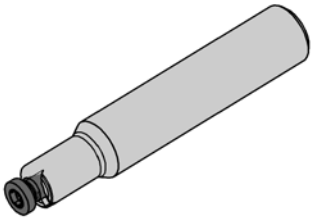
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M306.ER11.02	**2.6.5T8EP**	**T8PL**

Fräserschaft
Milling shank

M306.ST







Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M306.ST10.01A	10	60	15	6	HA	306060R • 306060L
M306.ST12.01A	12	70	15	6	HA	306060R • 306060L
M306.ST10.01B	10	60	15	6	HB	306060R • 306060L
M306.ST12.01B	12	70	15	6	HB	306060R • 306060L

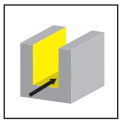
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

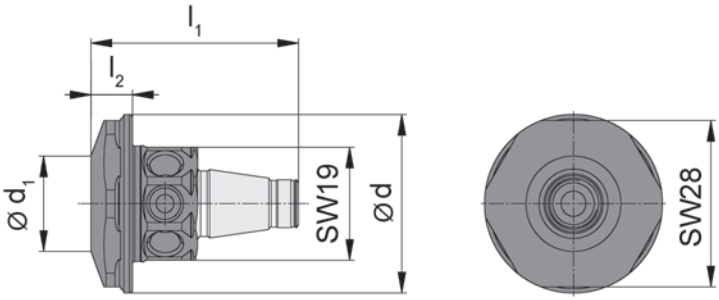
Ersatzteile
Spare Parts

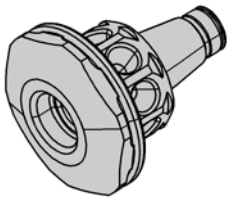
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M306...	**2.6.5T8EP**	**T8PL**

Grundaufnahme
Basic Holder

WFB





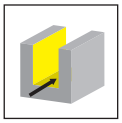


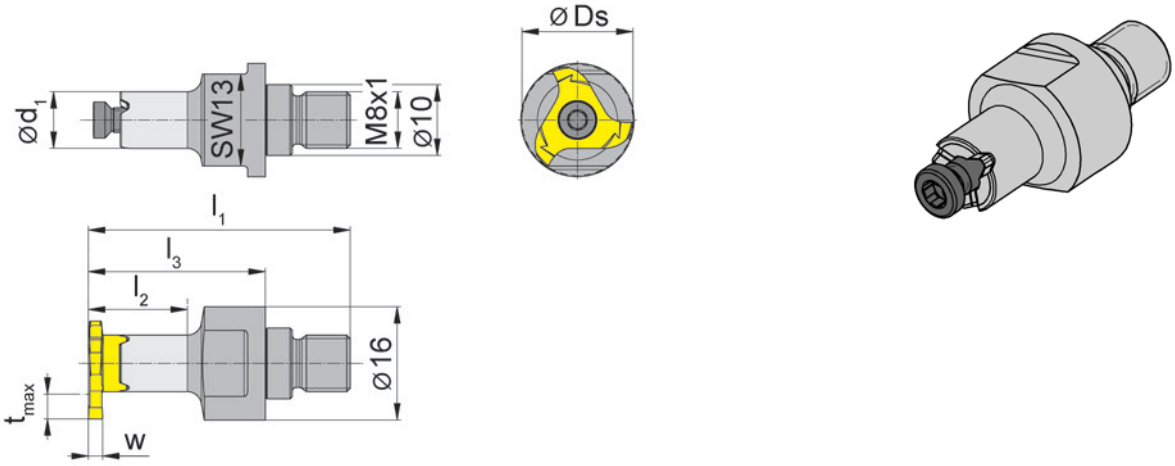
Bestellnummer Part number	l_1	l_2	d_1	d
WFB.2012.M081.01	35	7	16	30

für Einschraubfräser
for Screw-in cutter

Einschraubfräser
Screw-in cutter

M306.M





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

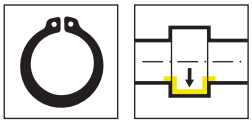
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

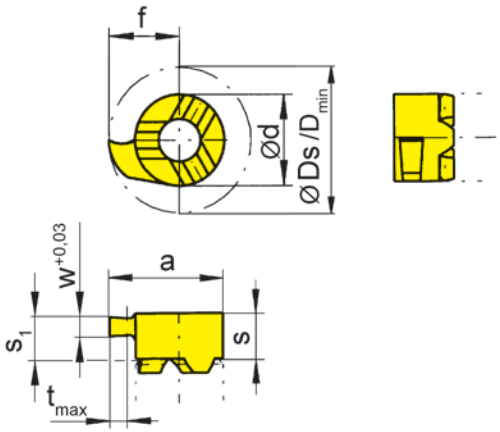
Ersatzteile
Spare Parts

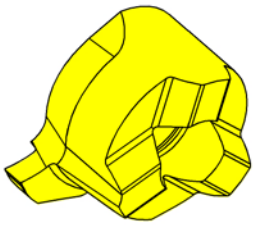
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M306.M081.01	**2.6.5T8EP**	**T8PL**

Schneidplatte
Insert

108







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades
Δ 4 Wochen
4 weeks

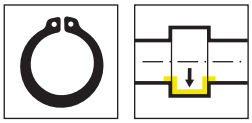
Bestellnummer Part number	w	Nw	f	Ds	d	s	s_1	a	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R108.0070.00	0,74	0,7	4,8	9,6	6	3,6	3,2	7,8	1	8	1	108060R		▲	▲	▲
R108.0080.00	0,84	0,8	4,8	9,6	6	3,6	3,2	7,8	1	8	1	108060R		▲	▲	▲
R108.0090.00	0,94	0,9	4,8	9,6	6	3,6	3,2	7,8	1	8	1	108060R		▲	▲	▲
L108.0070.00	0,74	0,7	4,8	9,6	6	3,6	3,2	7,8	1	8	1	108060L		Δ	▲	▲
L108.0080.00	0,84	0,8	4,8	9,6	6	3,6	3,2	7,8	1	8	1	108060L		Δ	Δ	▲
L108.0090.00	0,94	0,9	4,8	9,6	6	3,6	3,2	7,8	1	8	1	108060L		Δ	▲	▲
													P	●	●	●
													M	o	●	●
													K	o	●	●
													N	-	●	●
													S	-	●	●
													H	-	-	-

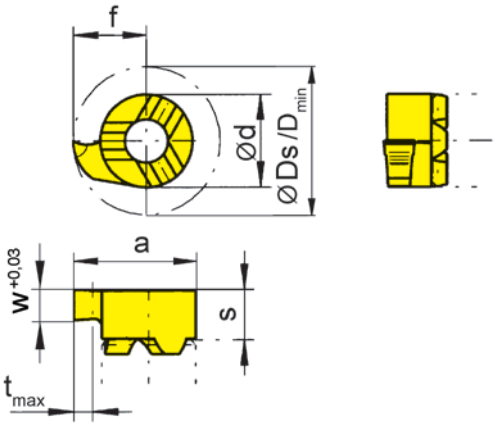
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

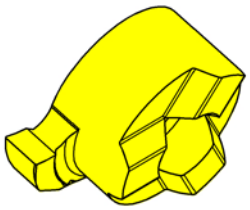
Zapfenausführung
not face cutting, limited depth of cut

Schneidplatte
Insert

108







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

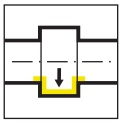
Δ 4 Wochen
4 weeks

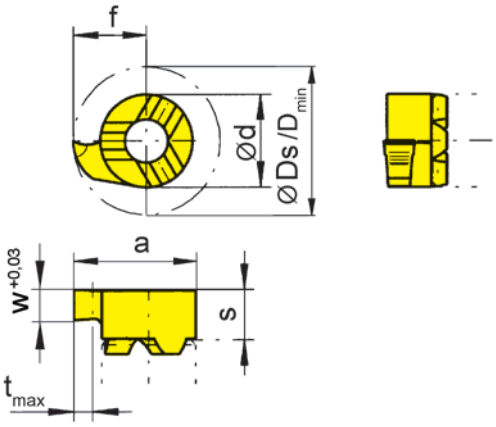
Bestellnummer Part number	w	Nw	s	f	Ds	a	d	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R108.0110.00	1,19	1,1	3,2	4,8	9,6	7,8	6	1	8	1	108060R		▲	▲	▲
R108.0130.00	1,39	1,3	3,2	4,8	9,6	7,8	6	1	8	1	108060R		▲	▲	▲
R108.0160.00	1,69	1,6	3,2	4,8	9,6	7,8	6	1	8	1	108060R		Δ	▲	▲
L108.0110.00	1,19	1,1	3,2	4,8	9,6	7,8	6	1	8	1	108060L		Δ	▲	▲
L108.0130.00	1,39	1,3	3,2	4,8	9,6	7,8	6	1	8	1	108060L			Δ	▲
L108.0160.00	1,69	1,6	3,2	4,8	9,6	7,8	6	1	8	1	108060L		▲	Δ	▲
												P	●	●	●
												M	o	●	●
												K	o	●	●
												N	-	●	●
												S	-	●	●
												H	-	-	-

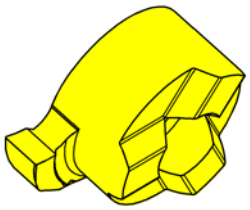
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

108







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

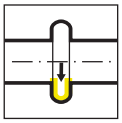
HM-Sorten
Carbide grades

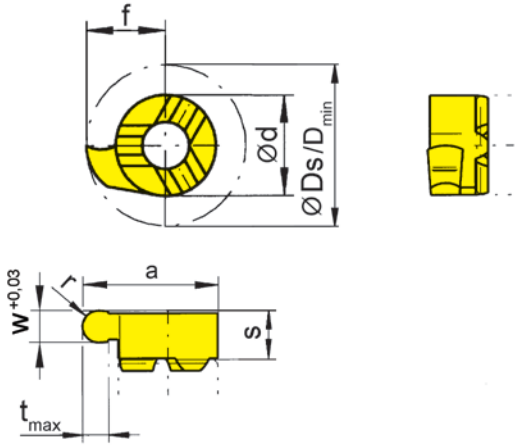
Δ 4 Wochen
4 weeks

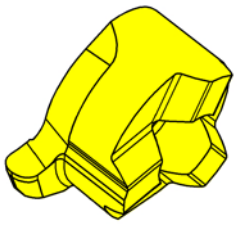
Bestellnummer Part number	w	s	f	Ds	a	d	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R108.0150.00	1,5	3,2	4,8	9,6	7,8	6	1	8	1	108060R		▲	▲	▲
R108.0200.00	2	3,2	4,8	9,6	7,8	6	1	8	1	108060R		▲	▲	▲
L108.0150.00	1,5	3,2	4,8	9,6	7,8	6	1	8	1	108060L			Δ	▲
L108.0200.00	2	3,2	4,8	9,6	7,8	6	1	8	1	108060L			▲	▲
											P	●	●	●
											M	o	●	●
											K	o	●	●
											N	-	●	●
											S	-	●	●
											H	-	-	-

Schneidplatte
Insert

108







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

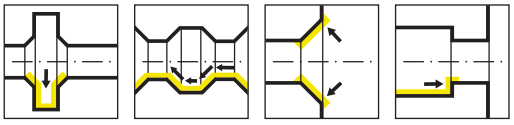
HM-Sorten
Carbide grades

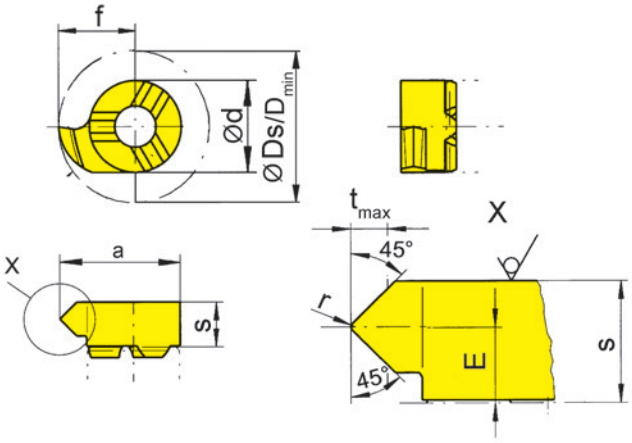
Δ 4 Wochen
4 weeks

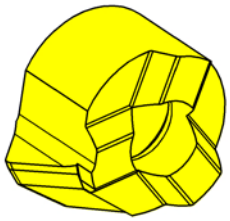
Bestellnummer Part number	w	s	f	Ds	a	r	d	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R108.0004.08	0,8	3,2	4,8	9,6	7,8	0,4	6	1	8	1	108060R		▲	▲	▲
R108.0006.12	1,2	3,2	4,8	9,6	7,8	0,6	6	1	8	1	108060R		▲	▲	▲
R108.0009.18	1,8	3,2	4,8	9,6	7,8	0,9	6	1	8	1	108060R		▲	▲	▲
L108.0004.08	0,8	3,2	4,8	9,6	7,8	0,4	6	1	8	1	108060L		▲	▲	▲
L108.0006.12	1,2	3,2	4,8	9,6	7,8	0,6	6	1	8	1	108060L		▲	▲	▲
L108.0009.18	1,8	3,2	4,8	9,6	7,8	0,9	6	1	8	1	108060L			▲	▲
												P	●	●	●
												M	o	●	●
												K	o	●	●
												N	-	●	●
												S	-	●	●
												H	-	-	-

Schneidplatte
Insert

108







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

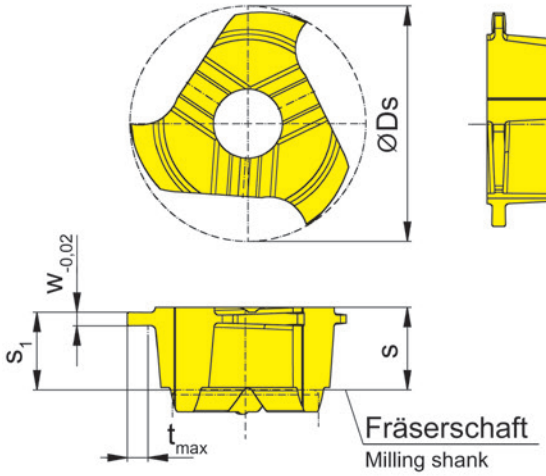
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

Bestellnummer Part number	E	f	Ds	r	d	s	a	D_{min}	α	t_{max}	Z	HIS	EG55	TA45	TI25	TN35
R108.4545.02	1,8	4,65	9,3	0,2	6	3,6	7,65	7,8	45°	1,4	1	108060R	▲	▲	▲	▲
L108.4545.02	1,8	4,65	9,3	0,2	6	3,6	7,65	7,8	45°	1,4	1	108060L	▲	Δ	Δ	▲
													P	●	●	●	●
													M	o	●	●	●
													K	o	●	●	●
													N	-	●	●	●
													S	-	●	●	●
													H	-	-	-	-

Schneidplatte
Insert

306



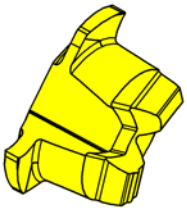


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

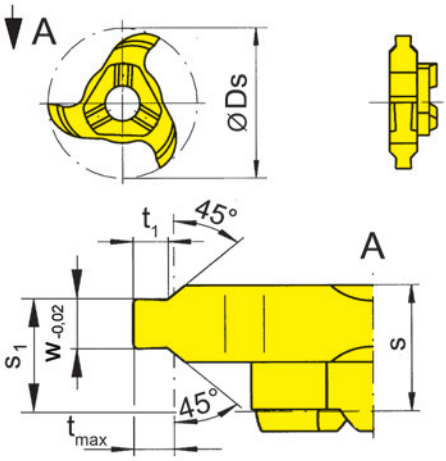
Bestellnummer Part number	Ds	Nw	w	s	s_1	t_{max}	Z	HIS		EG35	TA45
306.0050.10.00	9,7	0,5	0,57	3,4	3,2	0,85	3	306060R		▲	▲
306.0070.10.00	9,7	0,7	0,77	3,4	3,2	1,15	3	306060R			▲
									P	●	●
									M	●	●
									K	o	●
									N	-	●
									S	-	●
									H	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Zapfenausführung
not face cutting, limited depth of cut

Schneidplatte
Insert

306



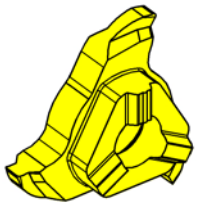


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

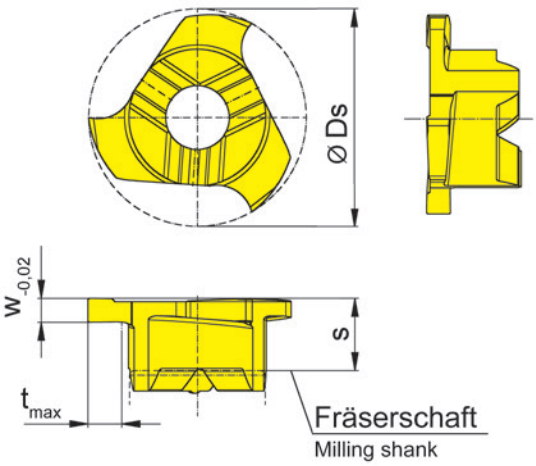
Δ 4 Wochen
4 weeks

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

Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

Schneidplatte
Insert

306



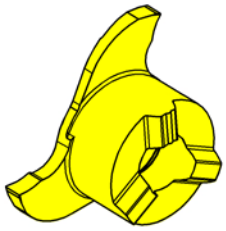


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Nw	w	s	t_{max}	Z	HIS		AS45	EG55	TA45
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		▲		▲
								P	●	●	●
								M	●	o	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

306

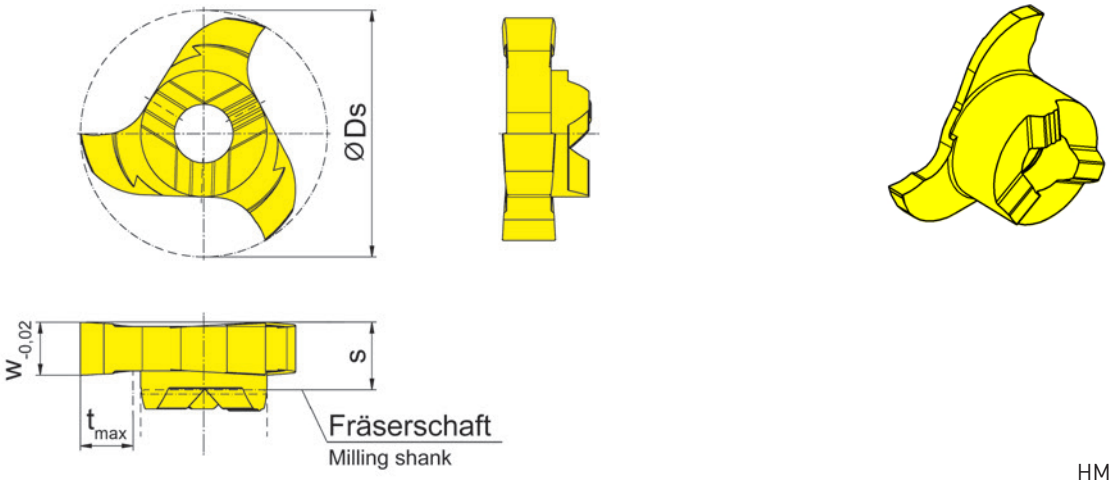


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Nw	w	s	t_{max}	Z	HIS		TF45	TN35
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		Δ	▲
306.0160.00	11,7	1,6	1,71	3,2	2,5	3	306060R		Δ	▲
								P	●	●
								M	●	●
								K	●	●
								N	●	●
								S	●	●
								H	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

306

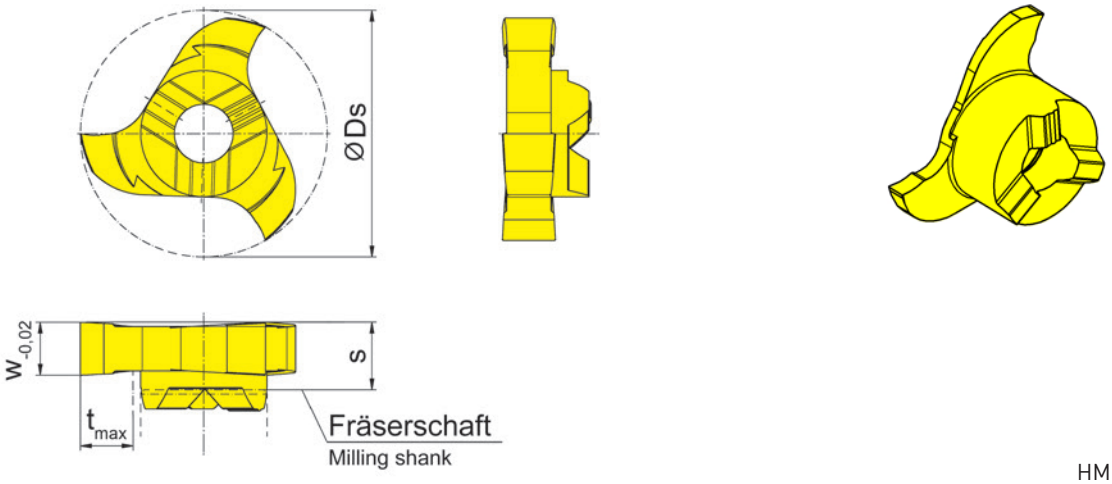


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

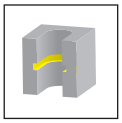
Δ 4 Wochen
4 weeks

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

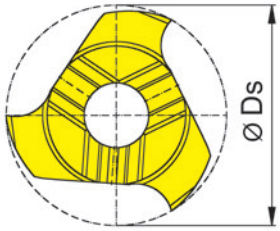
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

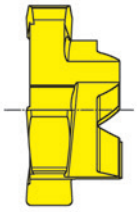
Schneidplatte
Insert

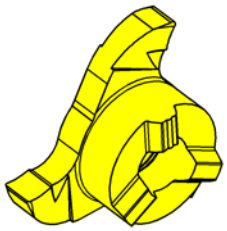
306



z3







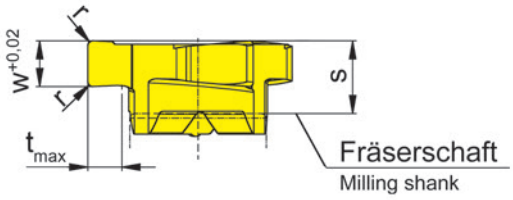


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

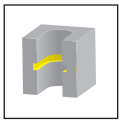
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

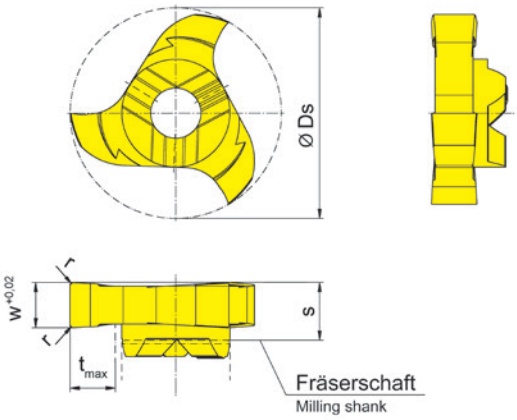
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG55	TA45
306.0150.10.00	9,7	1,5	3,2	-	1,5	3	306060R		▲	▲	▲
306.0200.10.00	9,7	2	3,2	0,2	1,5	3	306060R		▲	▲	▲
306.0250.10.00	9,7	2,5	3,2	0,2	1,5	3	306060R			▲	
306.0300.10.00	9,7	3	3,2	0,2	1,5	3	306060R			▲	
								P	●	●	●
								M	●	o	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

Schneidplatte
Insert

306



z3



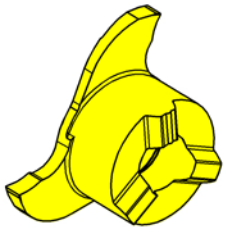


Abbildung = rechtsschneidend
Picture = right hand cutting version

▲ ab Lager
on stock

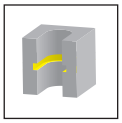
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

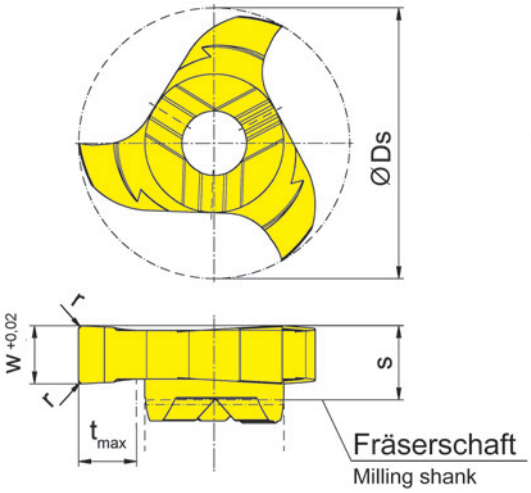
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	TF45	TN35
306.0100.1.00	11,7	1	3,2	-	2,5	3	306060R				▲
306.0150.00	11,7	1,5	3,2	-	2,5	3	306060R		▲	▲	▲
306.0150.02	11,7	1,5	3,2	0,2	2,5	3	306060R		▲		
306.0200.00	11,7	2	3,2	0,2	2,5	3	306060R		▲	▲	▲
306.0250.00	11,7	2,5	3,2	0,2	2,5	3	306060R		▲	▲	▲
306.0300.00	11,7	3	4,2	0,2	2,5	3	306060R		▲		▲
								P	●	●	●
								M	●	●	●
								K	●	●	●
								N	o	●	●
								S	●	●	●
								H	-	-	-

Schneidplatte
Insert

306



z3 | .40



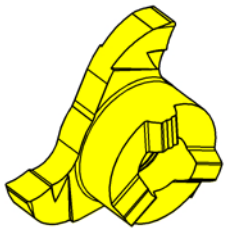


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

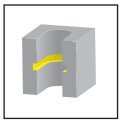
Δ 4 Wochen
4 weeks

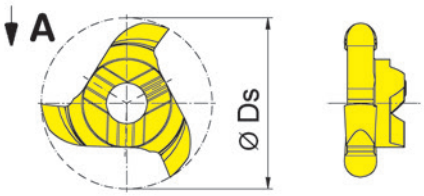
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		T125
306.0150.40	11,7	1,5	3,2	-	2,5	3	306060R		▲
306.0200.40	11,7	2	3,2	0,2	2,5	3	306060R		▲
306.0250.40	11,7	2,5	3,2	0,2	2,5	3	306060R		▲
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

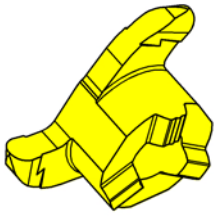
Schneidplatte
Insert

306

z3







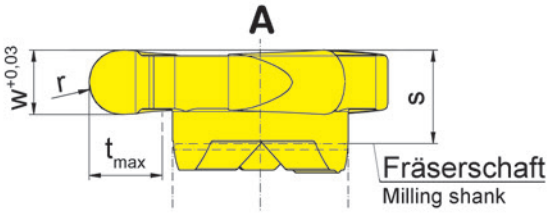


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

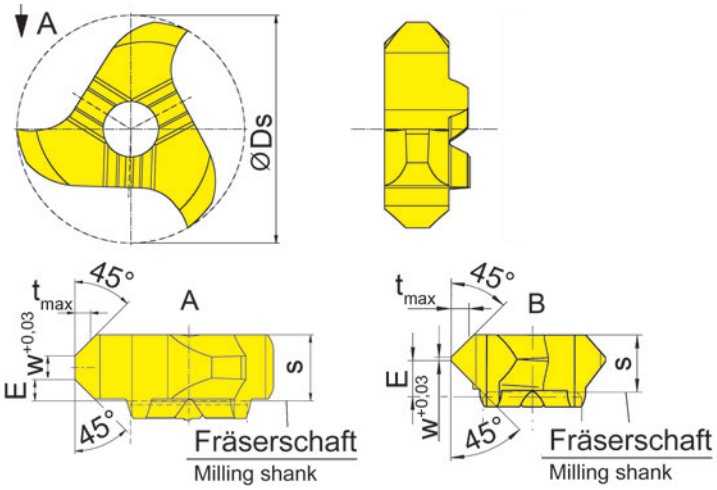
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	RC45	TI25	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		▲			
								P	●	●	●	●
								M	●	●	●	●
								K	●	●	●	●
								N	o	-	●	●
								S	●	-	●	●
								H	-	-	-	-

Schneidplatte
Insert

306



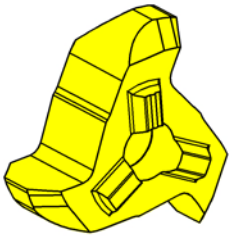


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

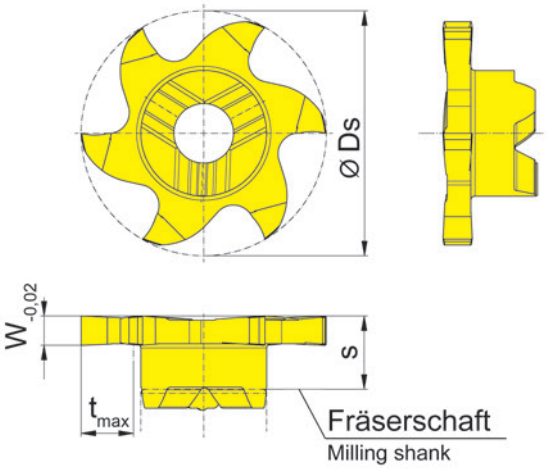
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	E	s	w	Form	t_{max}	Z	HIS		MG12	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				▲	
									P	o	●	●	●
									M	-	●	●	●
									K	-	●	●	●
									N	-	●	●	●
									S	-	●	●	●
									H	-	-	-	-

Schneidplatte
Insert

606



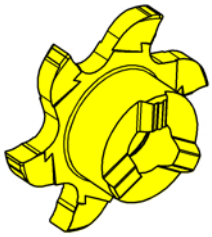


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

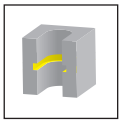
Δ 4 Wochen
4 weeks

Bestellnummer 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	o	●
								S	●	●
								H	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

606



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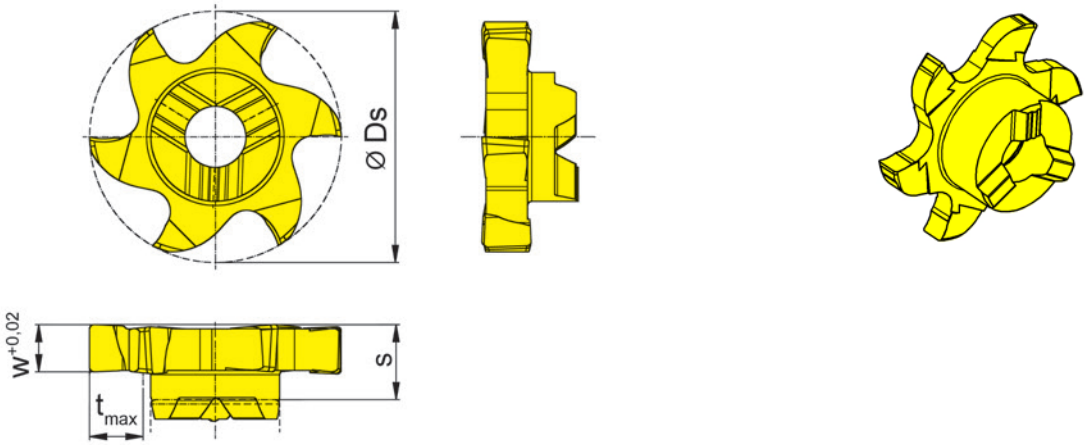


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

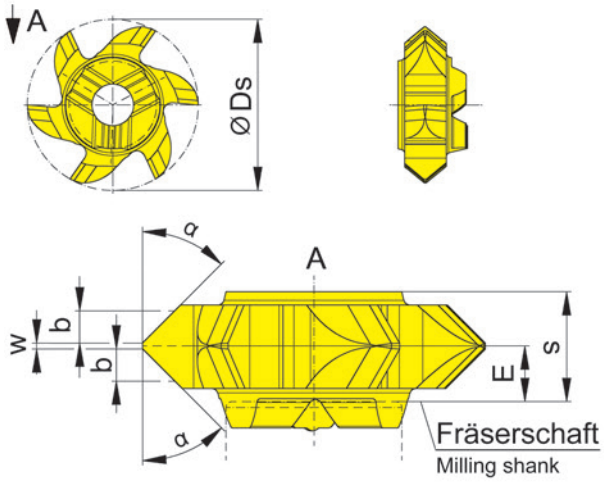
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	t_{max}	Z	HIS		AS45	EG35	IG35	TA45
606.0025.00	11,7	0,25	3,5	2,5	6	306060R			▲	Δ	
606.0030.00	11,7	0,3	3,5	2,5	6	306060R			▲	Δ	
606.0040.00	11,7	0,4	3,5	2,5	6	306060R			▲	Δ	
606.0050.00	11,7	0,5	3,5	2,5	6	306060R			▲	Δ	
606.0060.00	11,7	0,6	3,5	2,5	6	306060R			▲	Δ	
606.0070.00	11,7	0,7	3,5	2,5	6	306060R			▲	Δ	
606.0080.00	11,7	0,8	3,5	2,5	6	306060R			▲	Δ	
606.0090.00	11,7	0,9	3,5	2,5	6	306060R			▲	Δ	
606.0100.00	11,7	1	3,5	2,5	6	306060R			▲	Δ	
606.0150.00	11,7	1,5	3,5	2,5	6	306060R		▲			▲
606.0200.00	11,7	2	3,5	2,5	6	306060R		▲			▲
606.0250.00	11,7	2,5	3,5	2,5	6	306060R		▲			▲
							P	●	●	-	●
							M	●	●	●	●
							K	●	o	-	●
							N	o	-	-	●
							S	●	-	●	●
							H	-	-	-	-

Schneidplatte
Insert

606



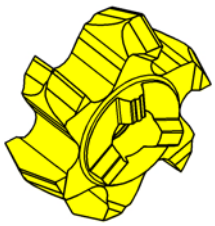


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

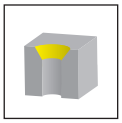
▲ ab Lager
on stock

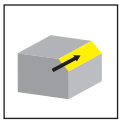
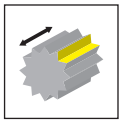
Δ 4 Wochen
4 weeks

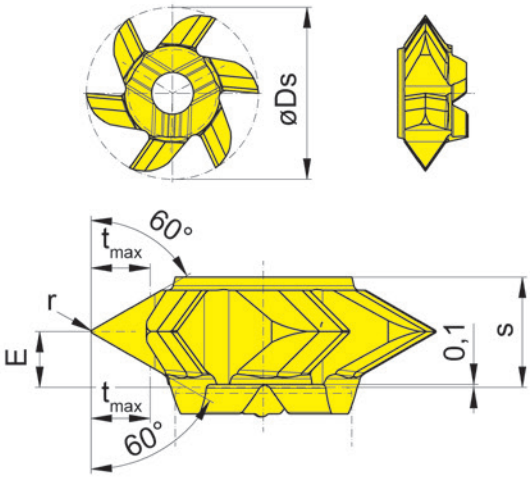
Bestellnummer Part number	Ds	E	s	w	α	b	Z	HIS		TA45
606.1515.20	11,7	1,9	3,7	0,2	15°	1,5	6	306060R		Δ
606.2020.20	11,7	1,9	3,7	0,2	20°	1,5	6	306060R		▲
606.3030.20	11,7	1,9	3,7	0,2	30°	1,5	6	306060R		▲
606.4545.20	11,7	1,9	3,7	0,2	45°	1,1	6	306060R		▲
									P	●
									M	●
									K	●
									N	●
									S	●
									H	-

Schneidplatte
Insert

606





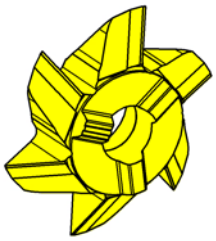


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

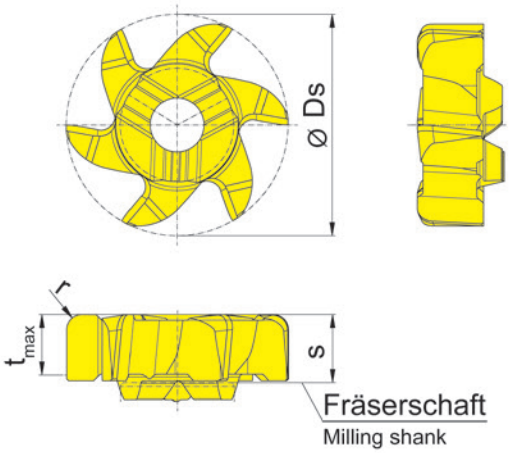
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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	o
								S	●
								H	-

Schneidplatte
Insert

606



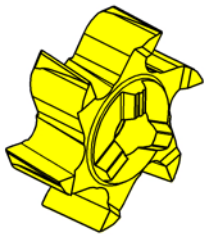


Abbildung = rechtsschneidend
Picture = right hand cutting version

▲ ab Lager
on stock

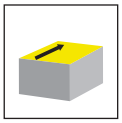
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Z	r	t_{max}	s	HIS		AS45	TI25
606.PLT6.08	11,7	6	0,8	3,2	3,6	306060R		▲	▲
							P	●	●
							M	●	●
							K	●	●
							N	o	●
							S	●	●
							H	-	-

Schneidplatte
Insert

606



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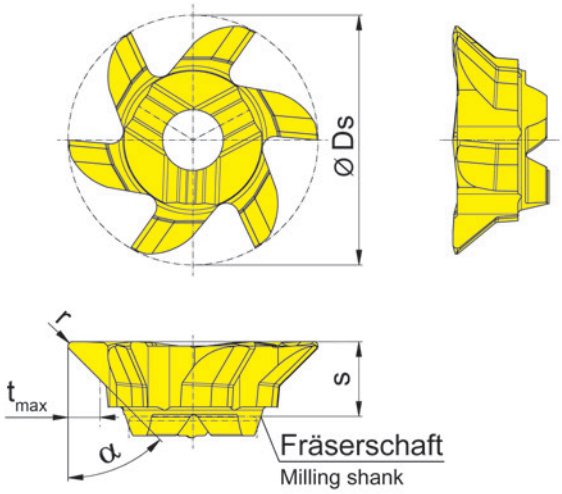


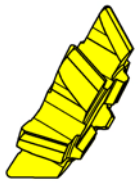


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

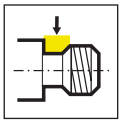
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

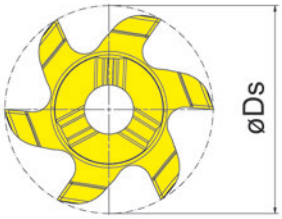
Bestellnummer Part number	Ds	Z	r	α	t_{max}	s	HIS		AS45
606.0015.22	11,7	6	0,2	15°	0,7	3,5	306060R		▲
606.0030.22	11,7	6	0,2	30°	1,4	3,5	306060R		▲
606.0045.22	11,7	6	0,2	45°	1,5	3,5	306060R		▲
								P	●
								M	●
								K	●
								N	o
								S	●
								H	-

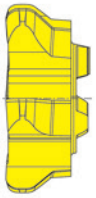
Schneidplatte
Insert

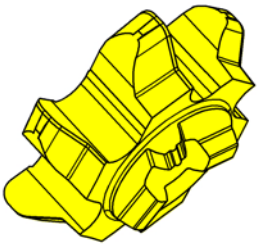
606



z6







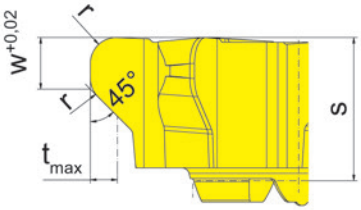


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

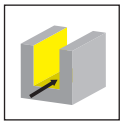
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		EG55
606.1015.35	11,7	1,2	3,5	0,7	1,15	6	306060R		▲
								P	●
								M	o
								K	o
								N	-
								S	-
								H	-

Gewindefreistiche DIN 76
Thread relief DIN 76

Nutfräsen (zirkular)

Groove Milling by circular interpolation

Fräserschaft
Milling shank
M308/M308.ST/M308.ER



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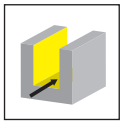
64-66

Grundaufnahme
Basic Holder
WFB



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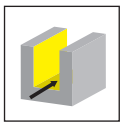
67

Einschraubfräser
Screw-in cutter
M308.M



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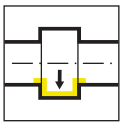
68

Schneidplatte
Insert
111/308/608

Seite/Page
69-70, 74-76



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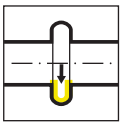
71



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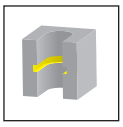
72

Seite/Page
73



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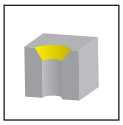
77-78, 81

Seite/Page
79



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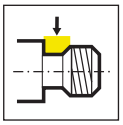

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M308

Fräser mit wechselbarer Schneidplatte

ab Bohrung Ø 13,7 mm

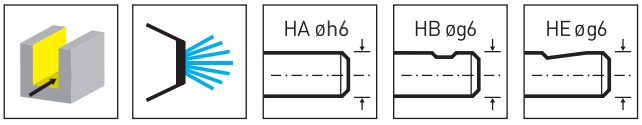
Milling shank with exchangeable insert

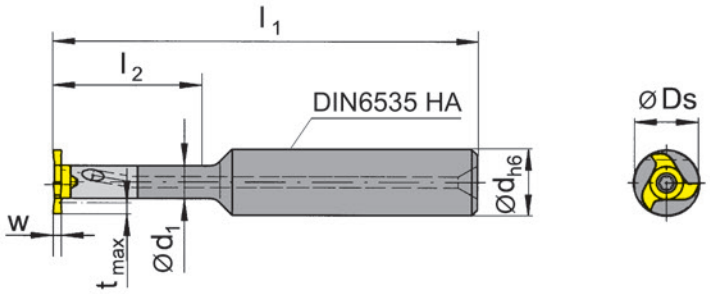
from bore Ø 13,7 mm

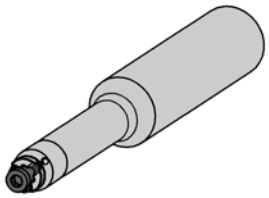
Fräserschaft
Milling shank

M308

B







Bestellnummer 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

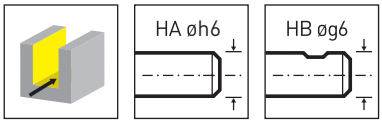
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

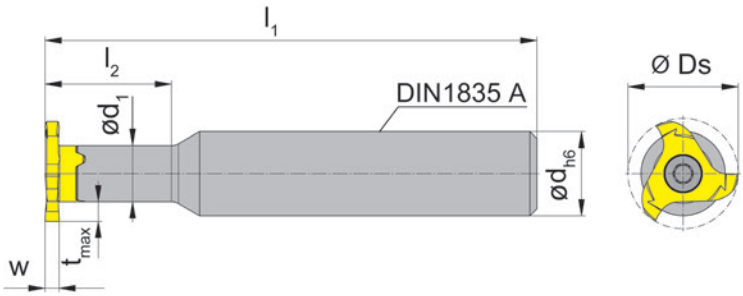
Ersatzteile
Spare Parts

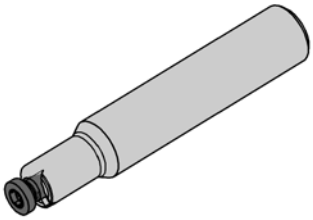
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M308...	**3.5.12T10EP**	**T10PL**

Fräserschaft
Milling shank

M308.ST







Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
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M308.ST12.01A	12	70	18	8	HA	308080R • 308080L
M308.ST13.01A	13	70	26	8	HA	308080R • 308080L
M308.ST10.01B	10	60	18	8	HB	308080R • 308080L
M308.ST12.01B	12	70	18	8	HB	308080R • 308080L

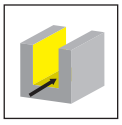
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

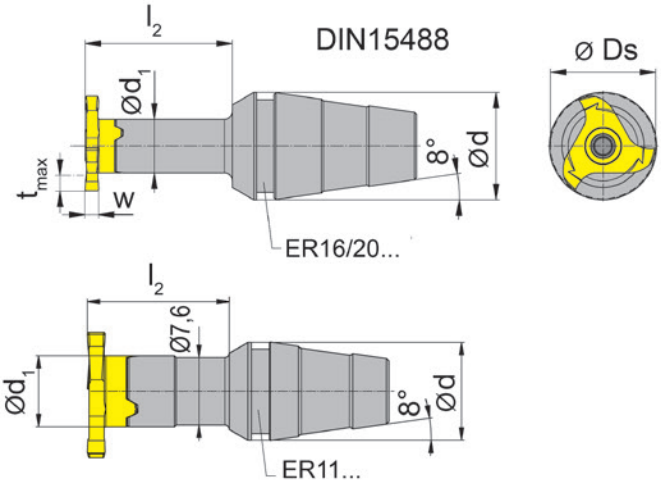
Ersatzteile
Spare Parts

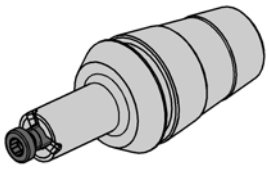
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M308...	**3.5.12T10EP**	**T10PL**

Fräserschaft
Milling shank

M308.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter 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 siehe Schneidplatte
w, Ds, tmax see inserts

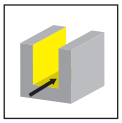
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

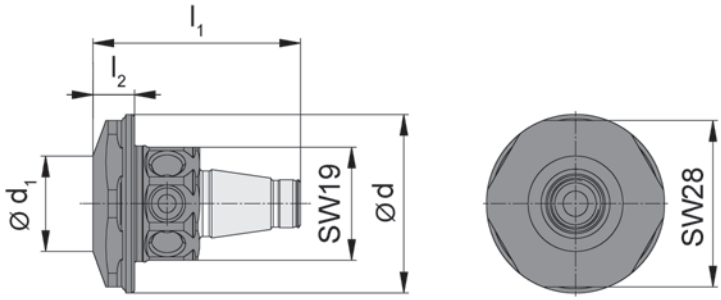
Ersatzteile
Spare Parts

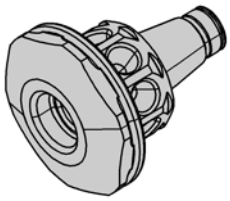
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M308...	**3.5.12T10EP**	**T10PL**

Grundaufnahme
Basic Holder

WFB





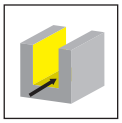


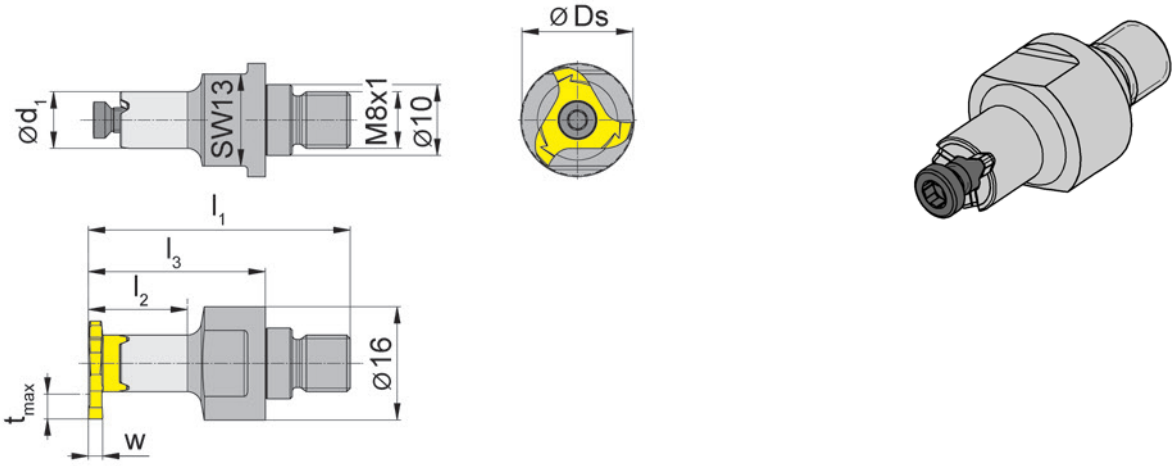
Bestellnummer Part number	l_1	l_2	d_1	d
WFB.2012.M081.01	35	7	16	30

für Einschraubfräser
for Screw-in cutter

Einschraubfräser
Screw-in cutter

M308.M





Bestellnummer Part number	l_1	l_2	l_3	d_1	SW	HWS	HMS
M308.M081.01	37	14	25	8	13	308080R • 308080L	8201

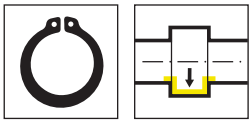
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

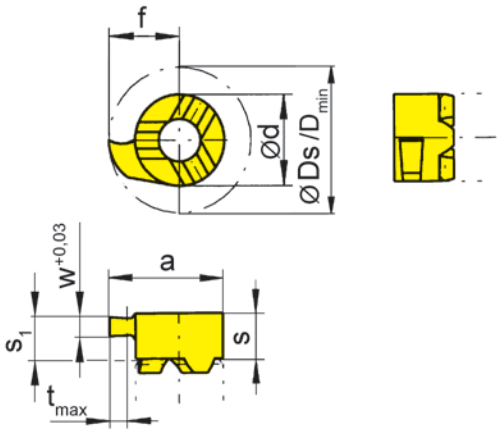
Ersatzteile
Spare Parts

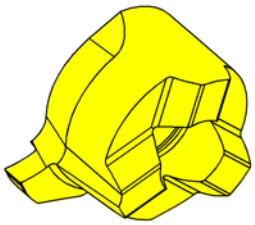
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M308.M081.01	**3.5.12T10EP**	**T10PL**

Schneidplatte
Insert

111







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

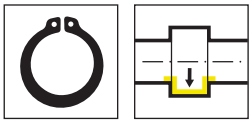
Bestellnummer Part number	w	Nw	f	Ds	d	s	s_1	a	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R111.0070.00	0,74	0,7	6,7	13,4	8	4,15	3,95	10,7	1,2	11	1	111080R		▲	▲	▲
R111.0080.00	0,84	0,8	6,7	13,4	8	4,15	3,95	10,7	1,3	11	1	111080R		▲	▲	▲
R111.0090.00	0,94	0,9	6,7	13,4	8	4,15	3,95	10,7	1,5	11	1	111080R		▲	▲	▲
L111.0070.00	0,74	0,7	6,7	13,4	8	4,15	3,95	10,7	1,2	11	1	111080L			Δ	▲
L111.0080.00	0,84	0,8	6,7	13,4	8	4,15	3,95	10,7	1,3	11	1	111080L			Δ	▲
L111.0090.00	0,94	0,9	6,7	13,4	8	4,15	3,95	10,7	1,5	11	1	111080L			▲	▲
													P	●	●	●
													M	o	●	●
													K	o	●	●
													N	-	●	●
													S	-	●	●
													H	-	-	-

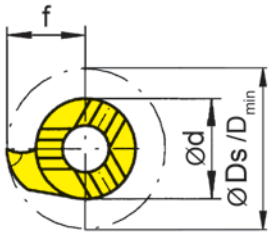
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

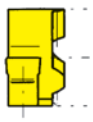
Zapfenausführung
not face cutting, limited depth of cut

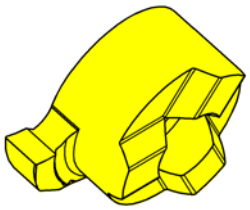
Schneidplatte
Insert

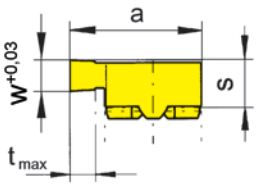
111











R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

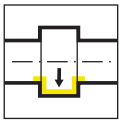
Δ 4 Wochen
4 weeks

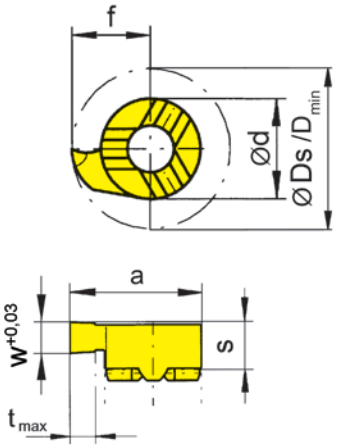
Bestellnummer Part number	w	Nw	s	f	Ds	d	a	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R111.0110.00	1,19	1,1	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0130.00	1,39	1,3	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0160.00	1,69	1,6	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
L111.0110.00	1,19	1,1	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L		▲	▲	▲
L111.0130.00	1,39	1,3	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L		Δ	▲	▲
L111.0160.00	1,69	1,6	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L		▲	▲	▲
												P	●	●	●
												M	o	●	●
												K	o	●	●
												N	-	●	●
												S	-	●	●
												H	-	-	-

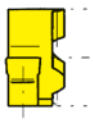
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

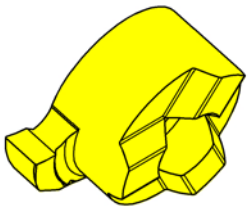
Schneidplatte
Insert

111









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

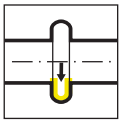
HM-Sorten
Carbide grades

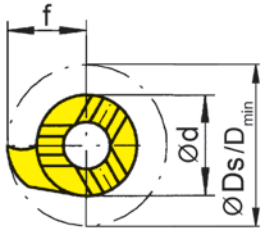
Δ 4 Wochen
4 weeks

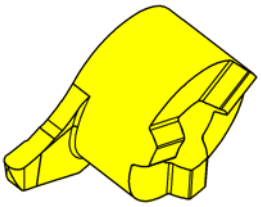
Bestellnummer Part number	w	s	f	Ds	d	a	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R111.0150.00	1,5	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0200.00	2	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0250.00	2,5	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0300.00	3	3,95	6,7	13,4	8	10,7	2,3	11	1	111080R		▲	▲	▲
L111.0150.00	1,5	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L		▲	▲	▲
L111.0200.00	2	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L		▲	▲	▲
L111.0250.00	2,5	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L			▲	▲
L111.0300.00	3	3,95	6,7	13,4	8	10,7	2,3	11	1	111080L		▲	▲	▲
											P	●	●	●
											M	o	●	●
											K	o	●	●
											N	-	●	●
											S	-	●	●
											H	-	-	-

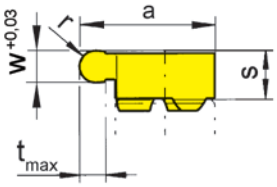
Schneidplatte
Insert

111









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

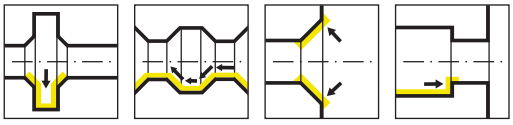
HM-Sorten
Carbide grades

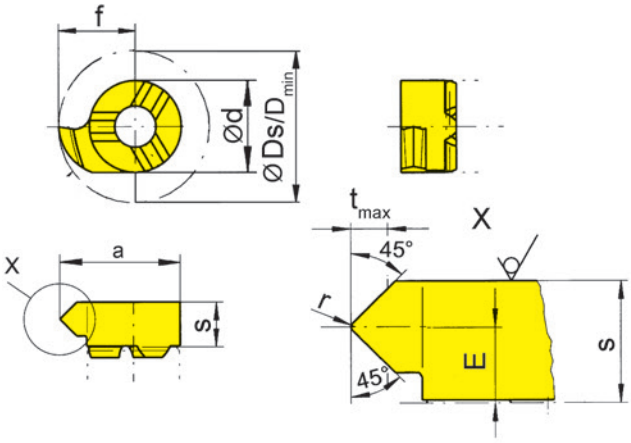
Δ 4 Wochen
4 weeks

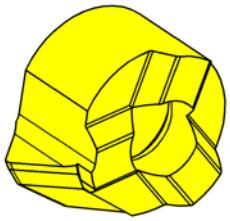
Bestellnummer Part number	w	f	Ds	r	d	s	a	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R111.0004.08	0,8	6,7	13,4	0,4	8	3,95	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0006.12	1,2	6,7	13,4	0,6	8	3,95	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0009.18	1,8	6,7	13,4	0,9	8	3,95	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0010.20	2	6,7	13,4	1	8	3,95	10,7	2,3	11	1	111080R		▲	▲	▲
R111.0015.30	3	6,7	13,4	1,5	8	3,95	10,7	2,3	11	1	111080R		▲	▲	▲
L111.0004.08	0,8	6,7	13,4	0,4	8	3,95	10,7	2,3	11	1	111080L		▲	▲	▲
L111.0006.12	1,2	6,7	13,4	0,6	8	3,95	10,7	2,3	11	1	111080L		▲	▲	▲
L111.0009.18	1,8	6,7	13,4	0,9	8	3,95	10,7	2,3	11	1	111080L			▲	▲
L111.0010.20	2	6,7	13,4	1	8	3,95	10,7	2,3	11	1	111080L			▲	▲
L111.0015.30	3	6,7	13,4	1,5	8	3,95	10,7	2,3	11	1	111080L			▲	▲
												P	●	●	●
												M	o	●	●
												K	o	●	●
												N	-	●	●
												S	-	●	●
												H	-	-	-

Schneidplatte
Insert

111







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

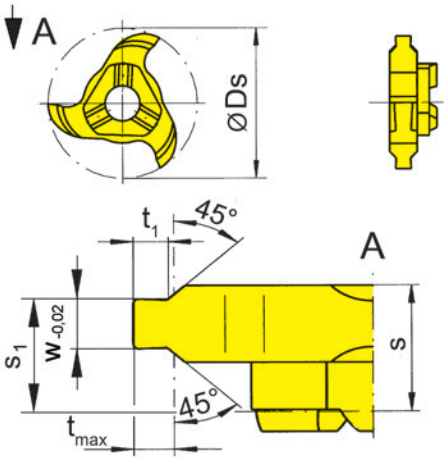
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	E	f	Ds	r	d	s	a	t_{max}	D_{min}	Z	HIS		EG55	TN35
R111.4545.02	2,4	6,7	13,4	0,2	8	4,15	10,7	1,5	11	1	111080R		▲	▲
L111.4545.02	2,4	6,7	13,4	0,2	8	4,15	10,7	1,5	11	1	111080L		▲	▲
												P	●	●
												M	o	●
												K	o	●
												N	-	●
												S	-	●
												H	-	-

Schneidplatte
Insert

308



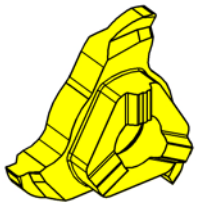


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

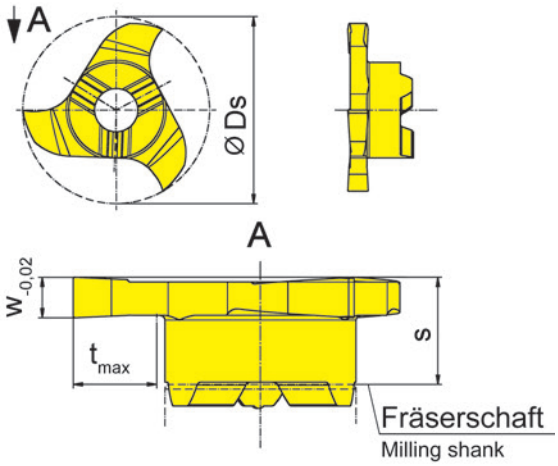
Δ 4 Wochen
4 weeks

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

Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

Schneidplatte
Insert

308



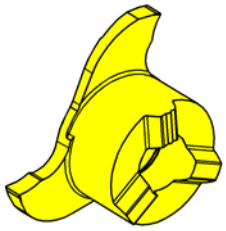


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

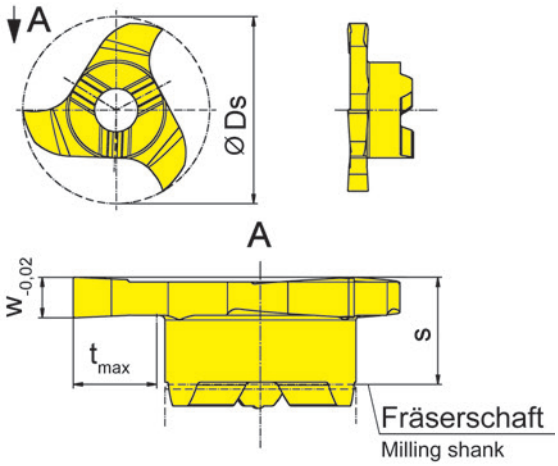
Δ 4 Wochen
4 weeks

Bestellnummer 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	Δ	▲
308.0160.00	15,7	1,6	1,71	4,5	3,5	3	308080R		Δ	Δ	▲
								P	●	●	●
								M	●	●	●
								K	●	●	●
								N	o	●	●
								S	●	●	●
								H	-	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

308



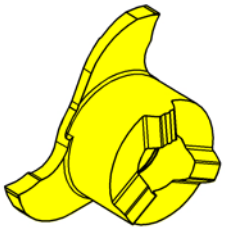


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

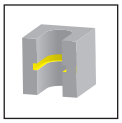
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Nw	w	s	t_{max}	Z	HIS		T125
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		▲
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

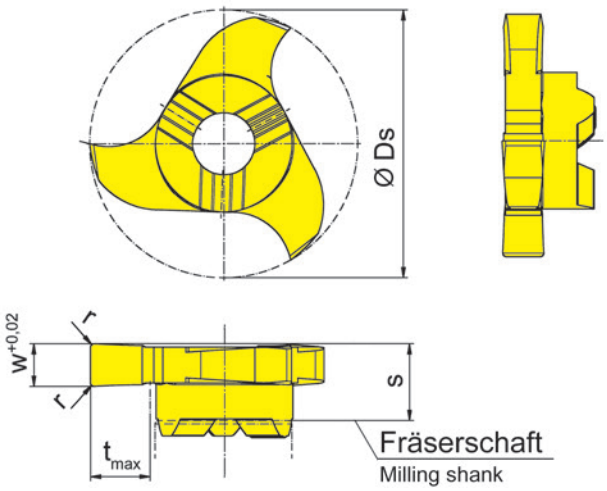
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

308



z3



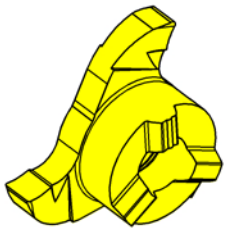


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

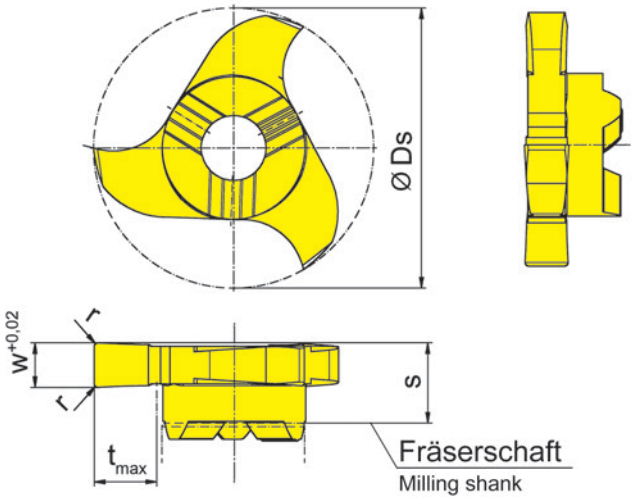
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	TF45	TN35
308.0150.00	15,7	1,5	4,5	-	3,5	3	308080R		▲	▲	▲
308.0200.00	15,7	2	4,5	0,2	3,5	3	308080R		▲	Δ	▲
308.0250.00	15,7	2,5	4,5	0,2	3,5	3	308080R		▲	▲	▲
								P	●	●	●
								M	●	●	●
								K	●	●	●
								N	o	●	●
								S	●	●	●
								H	-	-	-

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatte
Insert

308

z3 | .40



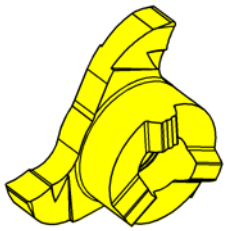


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

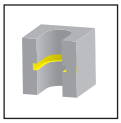
Δ 4 Wochen
4 weeks

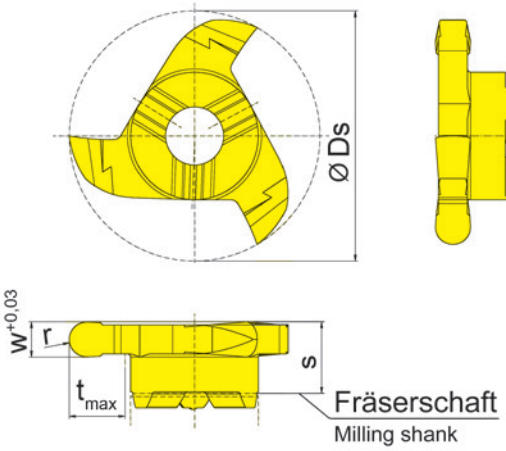
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		T125
308.0150.40	15,7	1,5	4,5	-	3,5	3	308080R		▲
308.0200.40	15,7	2	4,5	0,2	3,5	3	308080R		▲
308.0250.40	15,7	2,5	4,5	0,2	3,5	3	308080R		▲
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatte
Insert

308

z3




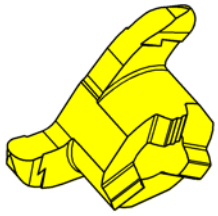


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

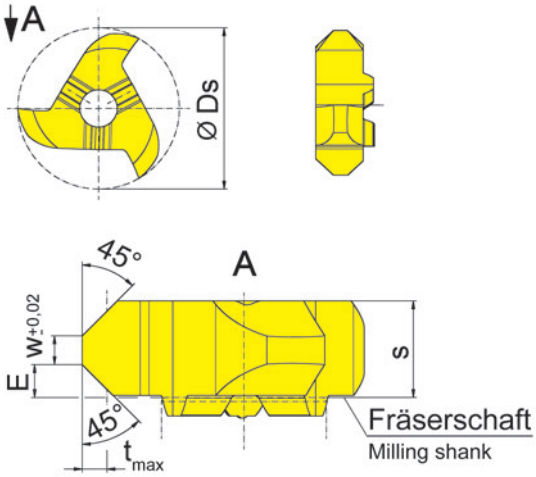
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AN25	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			▲			
								P	●	●	●	●	●
								M	o	●	●	●	●
								K	-	●	●	●	●
								N	-	o	-	●	●
								S	-	●	-	●	●
								H	-	-	-	-	-

Schneidplatte
Insert

308



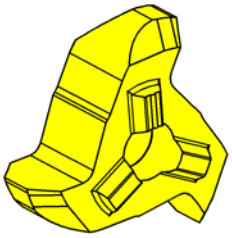


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

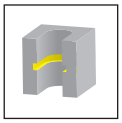
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

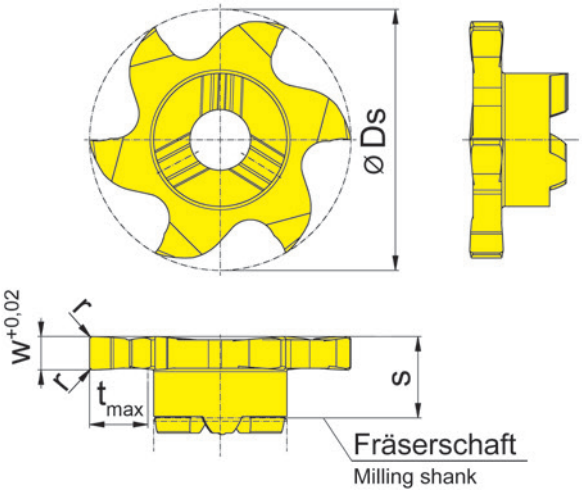
Bestellnummer Part number	Ds	E	s	w	t_{max}	Z	HIS		TF45	TN35
308.4545.00	15,7	1,6	4,7	1,4	1,2	3	308080R		Δ	▲
								P	●	●
								M	●	●
								K	●	●
								N	●	●
								S	●	●
								H	-	-

Schneidplatte
Insert

608



z6



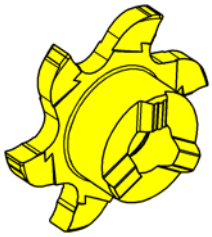


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

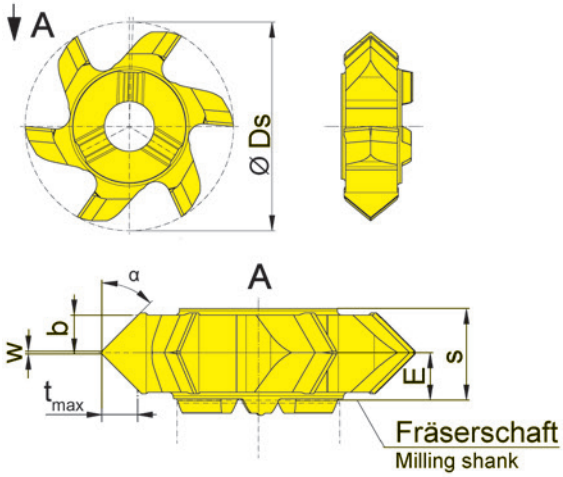
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG35	IG35	TI25
608.0025.00	15,7	0,25	4,9	-	3,5	6	308080R			▲	Δ	
608.0030.00	15,7	0,3	4,9	-	3,5	6	308080R			▲	Δ	
608.0040.00	15,7	0,4	4,9	-	3,5	6	308080R			▲	Δ	
608.0050.00	15,7	0,5	4,9	-	3,5	6	308080R			▲	Δ	
608.0060.00	15,7	0,6	4,9	-	3,5	6	308080R			▲	Δ	
608.0070.00	15,7	0,7	4,9	-	3,5	6	308080R			▲	Δ	
608.0080.00	15,7	0,8	4,9	-	3,5	6	308080R			▲	Δ	
608.0090.00	15,7	0,9	4,9	-	3,5	6	308080R			▲	Δ	
608.0100.00	15,7	1	4,9	-	3,5	6	308080R			▲	Δ	
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		▲			▲
								P	●	●	-	●
								M	●	●	●	●
								K	●	o	-	●
								N	o	-	-	●
								S	●	-	●	●
								H	-	-	-	-

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatte
Insert

608



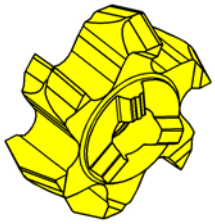


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

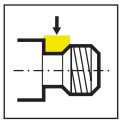
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

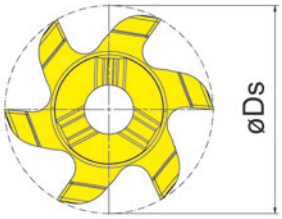
Bestellnummer Part number	Ds	E	s	w	α	b	t_{max}	Z	HIS		TA45	TI25
608.1515.20	15,7	2,6	5,1	0,2	15°	2,2	0,6	6	308080R		▲	
608.2020.20	15,7	2,6	5,1	0,2	20°	2,2	0,8	6	308080R		▲	
608.3030.20	15,7	2,6	5,1	0,2	30°	2,2	1,3	6	308080R		▲	
608.4545.20	15,7	2,6	5,1	0,2	45°	1,7	1,7	6	308080R			▲
										P	●	●
										M	●	●
										K	●	●
										N	●	●
										S	●	●
										H	-	-

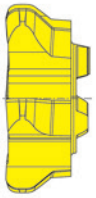
Schneidplatte
Insert

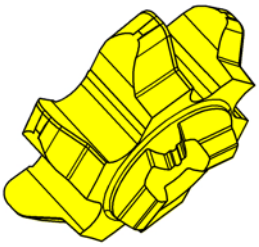
608



z6







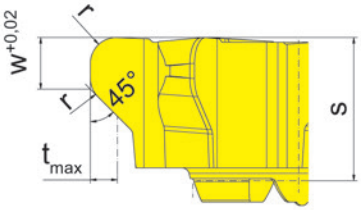


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

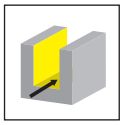
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		EG55
608.1015.49	15,7	1,8	4,8	0,7	1,15	6	308080R		▲
								P	●
								M	o
								K	o
								N	-
								S	-
								H	-

Gewindefreistiche DIN 76
Thread relief DIN 76

Fräserschaft
Milling shank
M311/M311.ST/M311.ER



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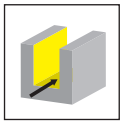
Grundaufnahme
Basic Holder
WFB



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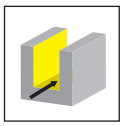
Einschraubfräser
Screw-in cutter
M311.M



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Schneidplatte
Insert
311/611/911

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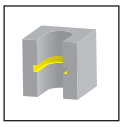
92-94, 99



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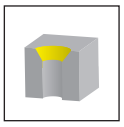
95-96, 100, 104

Seite/Page
97



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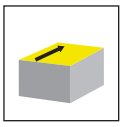
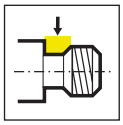
98, 102



Seite/Page
101



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M311

Fräser mit wechselbarer Schneidplatte

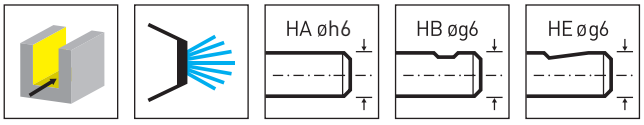
ab Bohrung Ø 18 mm

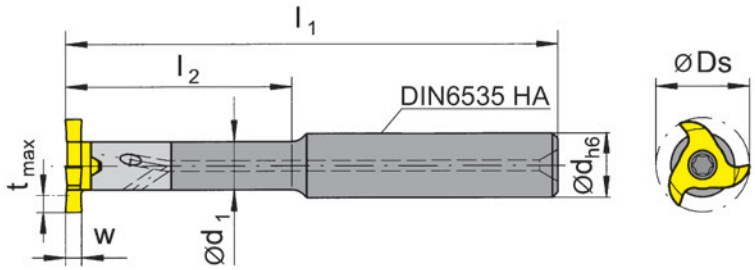
Milling shank with exchangeable insert

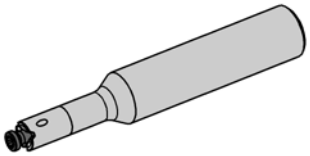
from bore Ø 18 mm

Fräserschaft
Milling shank

M311







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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

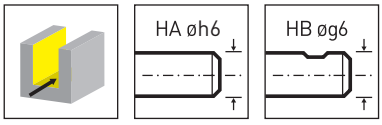
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

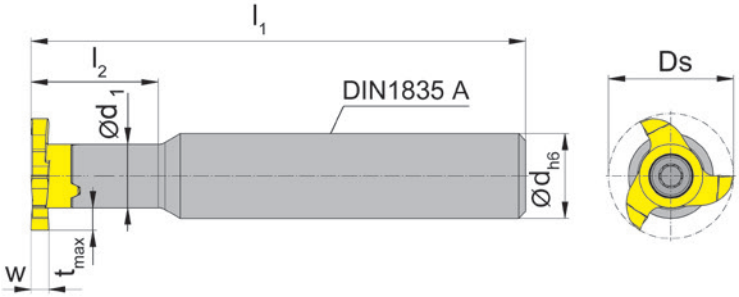
Ersatzteile
Spare Parts

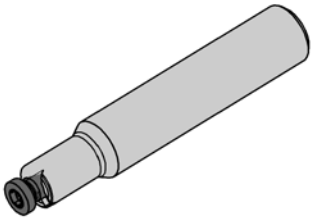
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311...	**4.14T15P**	**T15PQ**

Fräserschaft
Milling shank

M311.ST







Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M311.ST10.01A	10	60	18	9	HA	311090R
M311.ST12.01A	12	70	18	9	HA	311090R
M311.ST13.01A	13	70	26	9	HA	311090R
M311.ST16.01A	16	80	26	9	HA	311090R
M311.ST10.01B	10	60	18	9	HB	311090R
M311.ST12.01B	12	70	18	9	HB	311090R
M311.ST16.01B	16	80	26	9	HB	311090R

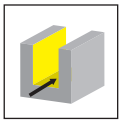
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

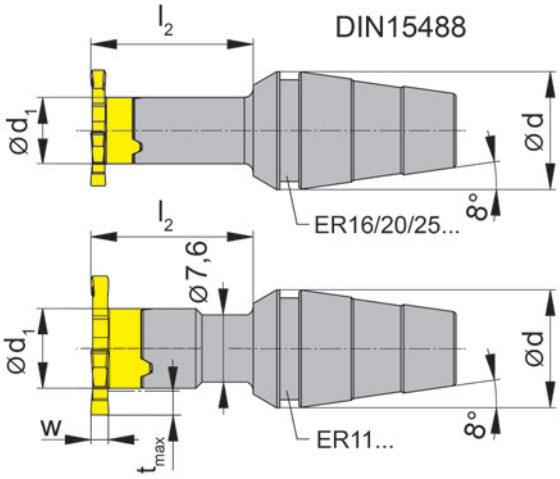
Ersatzteile
Spare Parts

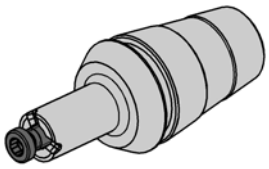
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311...	**4.14T15P**	**T15PQ**

Fräserschaft
Milling shank

M311.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter 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 siehe Schneidplatte
w, Ds, tmax see inserts

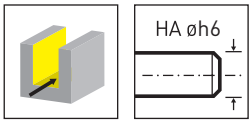
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

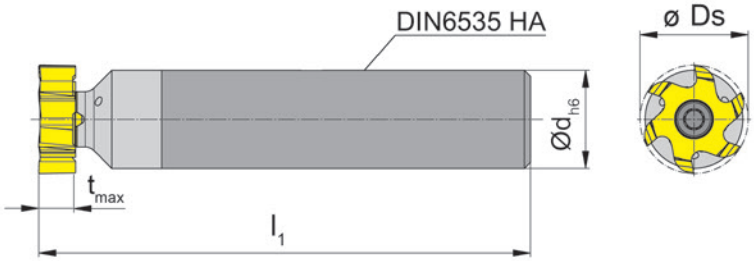
Ersatzteile
Spare Parts

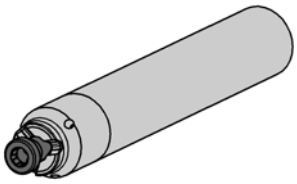
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311.E...	**4.14T15P**	**T15PQ**
M311.ER25.14.01	**4.14T15P**	**T15PL**

Fräserschaft
Milling shank

M311







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

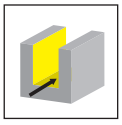
tmax und Ds siehe Schneidplatte
tmax and Ds see inserts

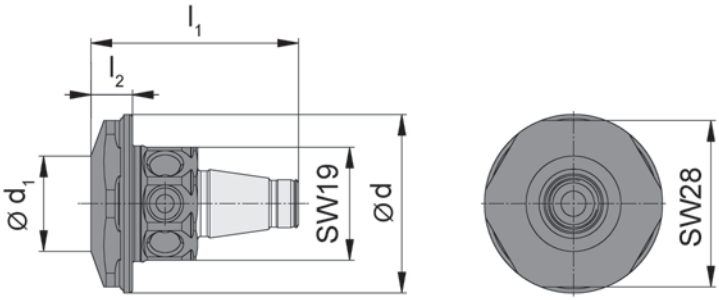
Ersatzteile
Spare Parts

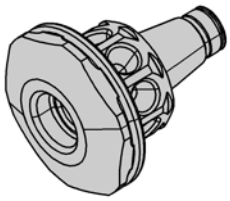
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311...	**4.14T15P**	**T15PQ**

Grundaufnahme
Basic Holder

WFB





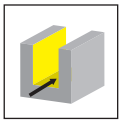


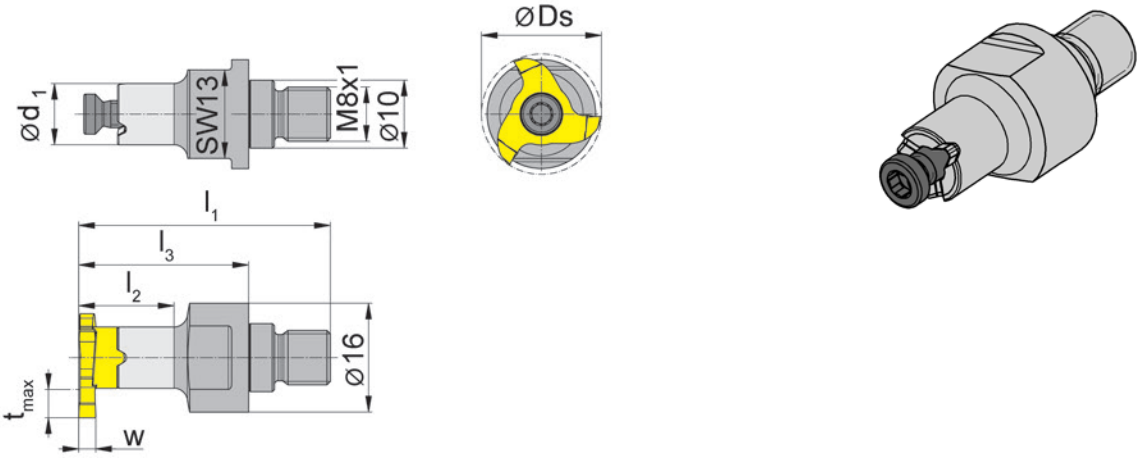
Bestellnummer Part number	l_1	l_2	d_1	d
WFB.2012.M081.01	35	7	16	30

für Einschraubfräser
for Screw-in cutter

Einschraubfräser
Screw-in cutter

M311.M





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

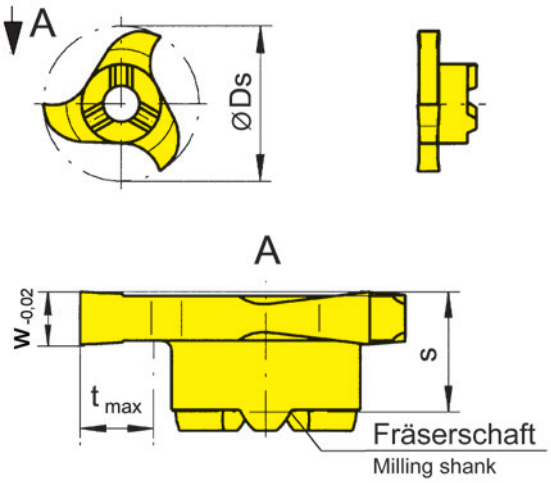
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311.M081.01	**4.14T15P**	**T15PQ**

Schneidplatte
Insert

311



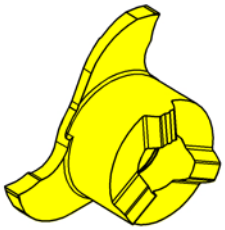


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

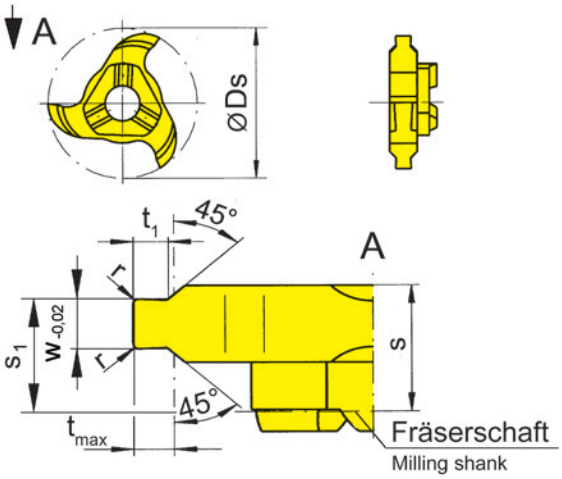
Δ 4 Wochen
4 weeks

Bestellnummer 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		Δ	▲
311.0160.00	17,7	1,6	1,71	5,75	3,5	3	311090R		Δ	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

311



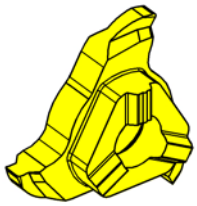


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

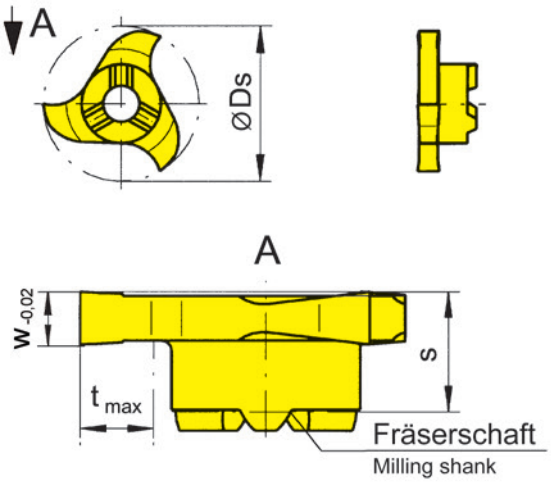
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	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		▲
											P	●
											M	●
											K	●
											N	o
											S	●
											H	-

Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

Schneidplatte
Insert

311



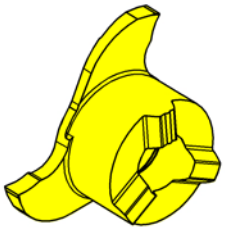


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

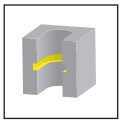
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Nw	w	s	t_{max}	Z	HIS		T125
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
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

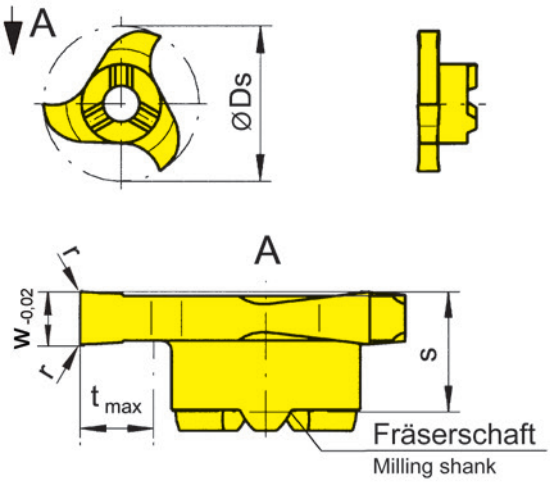
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

311



z3



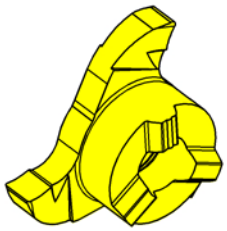


Abbildung = rechtsschneidend
Picture = right hand cutting version

▲ ab Lager
on stock

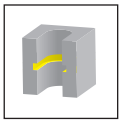
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

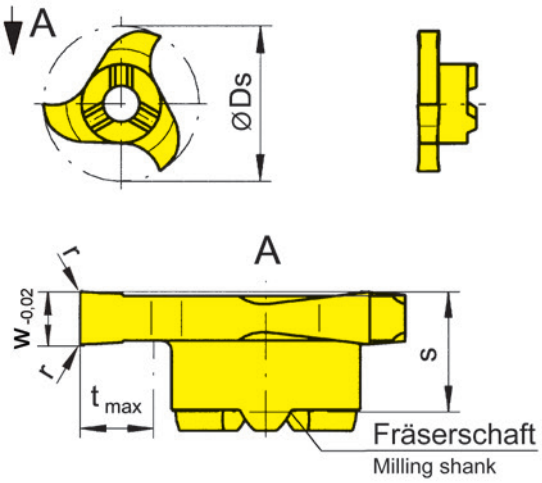
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG55	TN35
311.0100.00	17,7	1	5,75	-	3,5	3	311090R			Δ	
311.0150.00	17,7	1,5	5,75	-	3,5	3	311090R		▲		▲
311.0200.00	17,7	2	5,75	0,2	3,5	3	311090R		▲		▲
311.0250.00	17,7	2,5	5,75	0,2	3,5	3	311090R		▲		▲
311.0300.00	17,7	3	5,75	0,2	3,5	3	311090R		▲		▲
311.0400.00	17,7	4	5,75	0,2	3,5	3	311090R		▲		
								P	●	●	●
								M	●	o	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

Schneidplatte
Insert

311



z3 | .40



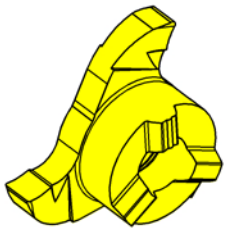


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

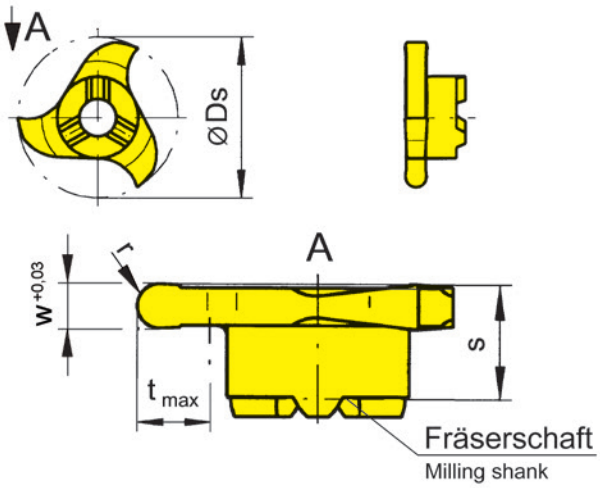
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

311



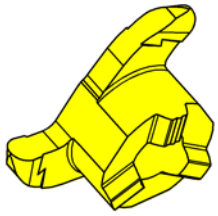


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

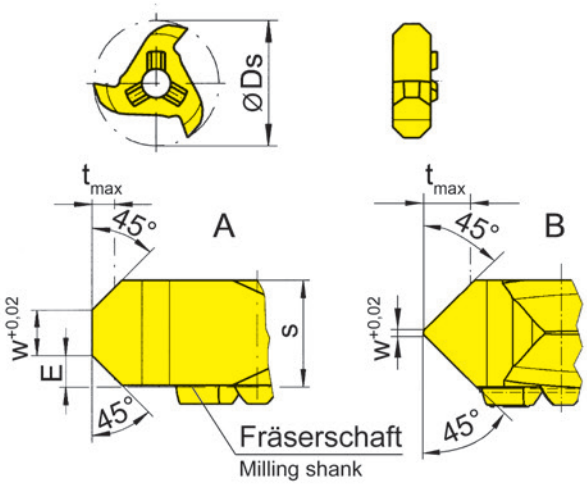
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	RC45	TN35
311.0005.10	17,7	1	5,75	0,5	3,5	3	311090R			▲	
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		▲		
								P	●	●	●
								M	●	●	●
								K	●	●	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

Schneidplatte
Insert

311



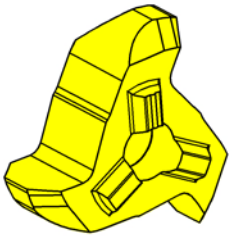


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

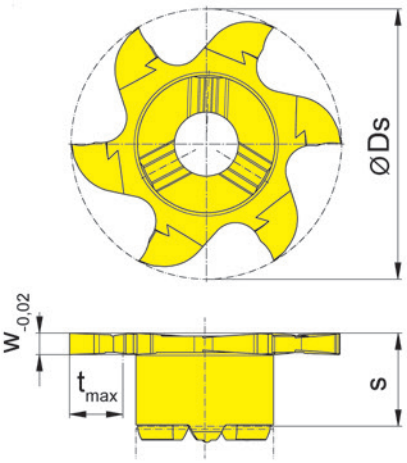
▲ ab Lager
on stock

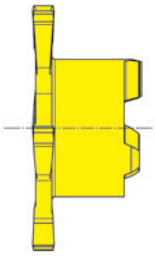
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	E	s	w	Form	t_{max}	Z	HIS		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		▲	▲
									P	●	●
									M	●	●
									K	●	●
									N	●	●
									S	●	●
									H	-	-

Schneidplatte
Insert

611





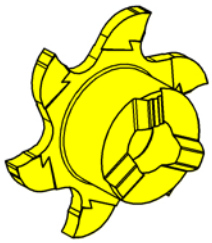


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

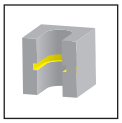
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Nw	w	s	t_{max}	Z	HIS		AS45	T125
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		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

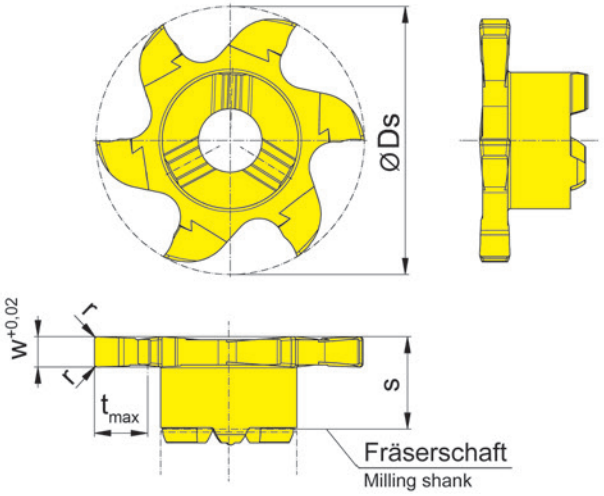
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

611



z6



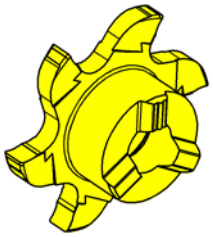


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

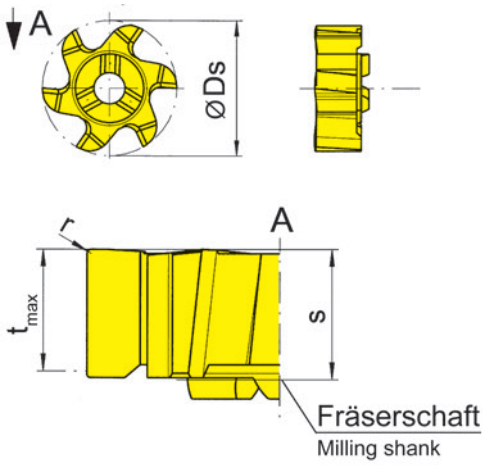
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS	AS45	EG35	EG55	TI25
611.0050.00	17,7	0,5	6,1	-	3,5	6	311090R		▲		
611.0100.00	17,7	1	6,1	-	3,5	6	311090R			▲	
611.0150.00	17,7	1,5	6,1	-	3,5	6	311090R	▲			▲
611.0200.00	17,7	2	6,1	0,2	3,5	6	311090R	▲			▲
611.0250.00	17,7	2,5	6,1	0,2	3,5	6	311090R	▲			▲
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	▲			

	AS45	EG35	EG55	TI25
P	●	●	●	●
M	●	●	o	●
K	●	o	o	●
N	o	-	-	●
S	●	-	-	●
H	-	-	-	-

ab Schneidbreite 2,5 mm Kreuzverzahnung
from width of groove 2,5 mm toothing with cross-cut

Schneidplatte
Insert

611



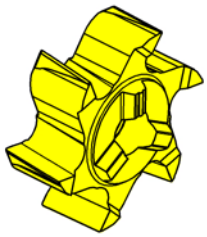


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

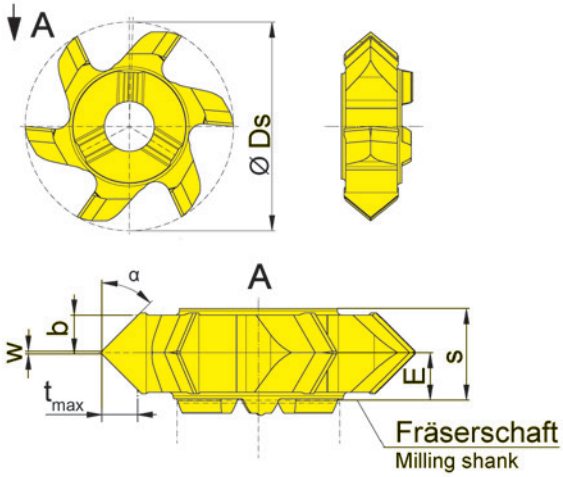
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

611



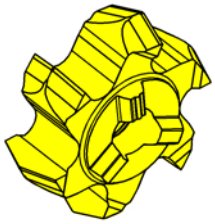


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

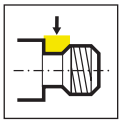
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

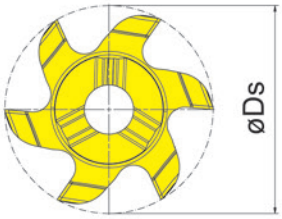
Bestellnummer Part number	Ds	E	s	w	α	b	t_{max}	Z	HIS		AS45	TA45	TI25
611.1515.20	17,7	3,2	6,3	0,2	15°	2,8	0,75	6	311090R		▲	▲	
611.2020.20	17,7	3,2	6,3	0,2	20°	2,8	1	6	311090R		▲	▲	
611.3030.20	17,7	3,2	6,3	0,2	30°	2,8	1,6	6	311090R		▲	▲	
611.4545.20	17,7	3,2	6,3	0,2	45°	2,3	2,3	6	311090R		▲		▲
										P	●	●	●
										M	●	●	●
										K	●	●	●
										N	o	●	●
										S	●	●	●
										H	-	-	-

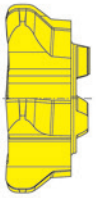
Schneidplatte
Insert

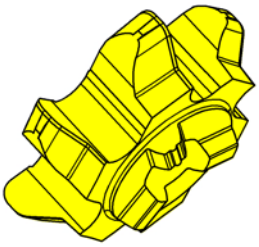
611



z6







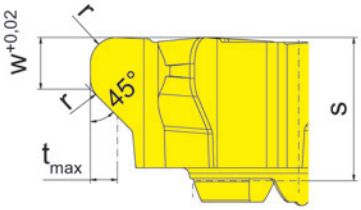


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

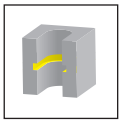
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		EG55
611.1725.61	17,7	2,2	6,1	1,1	1,3	6	311090R		▲
								P	●
								M	o
								K	o
								N	-
								S	-
								H	-

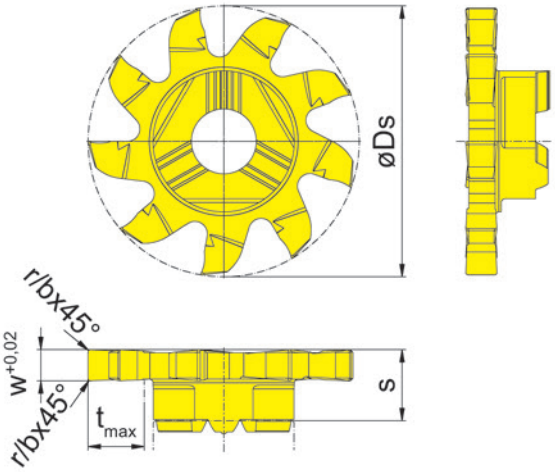
Gewindefreistiche DIN 76
Thread relief DIN 76

Schneidplatte
Insert

911



z9



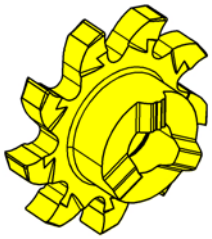


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

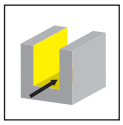
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	b x 45°	r	t_{max}	Z	HIS		EG55	IG65
911.0150.00	17,7	1,5	6,1	0,05	-	3,5	9	311090R		▲	Δ
911.0200.00	17,7	2	6,1	-	0,2	3,5	9	311090R		▲	Δ
911.0250.00	17,7	2,5	6,1	-	0,2	3,5	9	311090R		▲	Δ
911.0300.00	17,7	3	6,1	-	0,2	3,5	9	311090R		▲	Δ
									P	●	●
									M	o	●
									K	o	-
									N	-	-
									S	-	o
									H	-	-

Nutfräsen (zirkular)

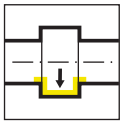
Groove Milling by circular interpolation

Fräserschaft
Milling shank
M116

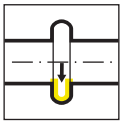


Seite/Page
108

Schneidplatte
Insert
116



Seite/Page
109-110



Seite/Page
111

M116

Fräser mit wechselbarer Schneidplatte

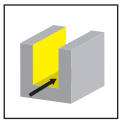
ab Bohrung
stehend Ø 16 mm
rotierend Ø 20,4 mm

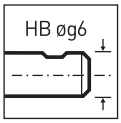
Milling shank with exchangeable insert

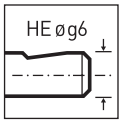
from bore
non rotating Ø 16 mm
rotating Ø 20,4 mm

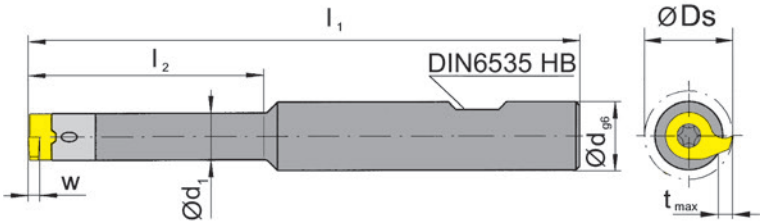
Fräserschaft
Milling shank

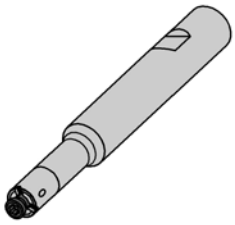
M116











Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M116.0012.01B	12	130	40	11	HB	116110R • 116110L
M116.0012.02B	12	130	56	11	HB	116110R • 116110L
M116.0016.01B	16	130	40	11	HB	116110R • 116110L
M116.0016.02B	16	130	56	11	HB	116110R • 116110L
M116.0016.03B	16	150	80	11	HB	116110R • 116110L
M116.0016.01E	16	130	40	11	HE	116110R • 116110L
M116.0016.03E	16	150	80	11	HE	116110R • 116110L

w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

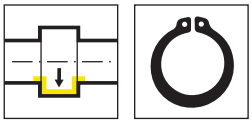
Bearbeitungshinweis ab Ø 16 mm:
Nur Anspiegeln bei außermittigem Ein- und Ausfahren mit definiertem Spindelstop.
Note from Ø 16 mm:
Only back face milling with oriented spindlestop offset of centerline.

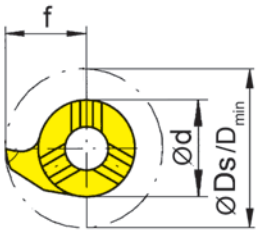
Ersatzteile
Spare Parts

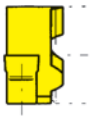
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M116...	**5.13T20EP**	**T20PQ**

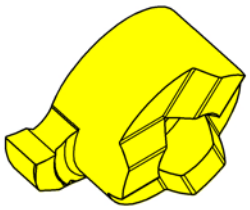
Schneidplatte
Insert

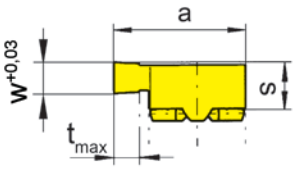
116











R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

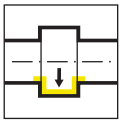
Δ 4 Wochen
4 weeks

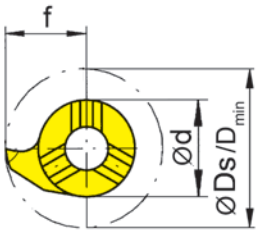
Bestellnummer Part number	w	Nw	s	f	Ds	a	d	t_{max}	D_{min}	Z	HIS		MG12	EG55	TH35	TN35
R116.0110.00	1,19	1,1	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
R116.0130.00	1,39	1,3	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
R116.0160.00	1,69	1,6	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
L116.0110.00	1,19	1,1	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲		▲	▲
L116.0130.00	1,39	1,3	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲	▲	▲	▲
L116.0160.00	1,69	1,6	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲	▲	▲	▲
												P	o	●	●	●
												M	-	o	●	●
												K	-	o	●	●
												N	-	-	●	●
												S	-	-	●	●
												H	-	-	-	-

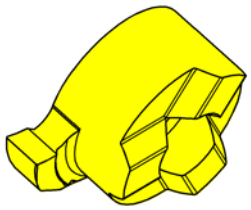
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

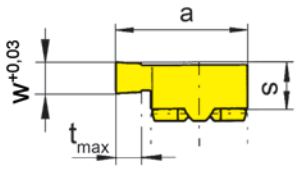
Schneidplatte
Insert

116









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

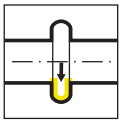
▲ ab Lager
on stock

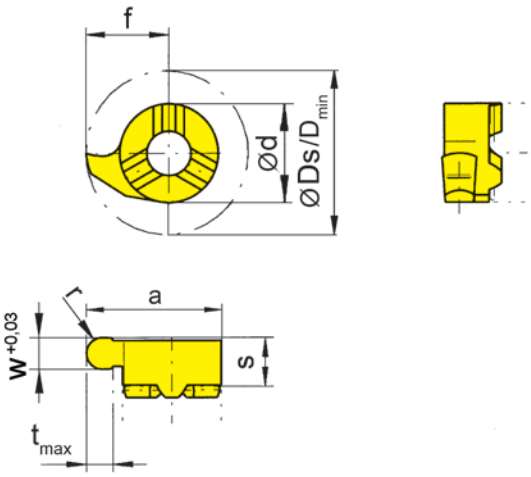
Δ 4 Wochen
4 weeks

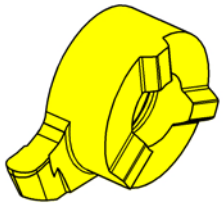
Bestellnummer Part number	w	s	f	Ds	a	d	t_{max}	D_{min}	Z	HIS		MG12	EG55	TH35	TN35
R116.0200.00	2	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
R116.0250.00	2,5	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
R116.0300.00	3	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
R116.0350.00	3,5	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
R116.0400.00	4	5,3	10,2	20,4	15,7	11	4,3	16	1	116110R		▲	▲	▲	▲
L116.0200.00	2	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲	▲	▲	▲
L116.0250.00	2,5	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲		▲	▲
L116.0300.00	3	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲	▲	▲	▲
L116.0350.00	3,5	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲		▲	▲
L116.0400.00	4	5,3	10,2	20,4	15,7	11	4,3	16	1	116110L		▲		▲	▲
											P	o	●	●	●
											M	-	o	●	●
											K	-	o	●	●
											N	-	-	●	●
											S	-	-	●	●
											H	-	-	-	-

Schneidplatte
Insert

116







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

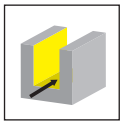
Δ 4 Wochen
4 weeks

Bestellnummer Part number	w	s	f	Ds	a	r	d	t_{max}	D_{min}	Z	HIS		EG55	TH35	TN35
R116.0009.18	1,8	5,3	10,2	20,4	15,7	0,9	11	4,3	16	1	116110R		▲	▲	▲
R116.0011.22	2,2	5,3	10,2	20,4	15,7	1,1	11	4,3	16	1	116110R		▲	▲	▲
R116.0015.30	3	5,3	10,2	20,4	15,7	1,1	11	4,3	16	1	116110R		▲	▲	▲
R116.0020.40	4	5,3	10,2	20,4	15,7	2	11	4,3	16	1	116110R		▲	▲	▲
L116.0009.18	1,8	5,3	10,2	20,4	15,7	0,9	11	4,3	16	1	116110L		▲	▲	▲
L116.0011.22	2,2	5,3	10,2	20,4	15,7	1,1	11	4,3	16	1	116110L		▲	▲	▲
L116.0015.30	3	5,3	10,2	20,4	15,7	1,1	11	4,3	16	1	116110L		▲	▲	▲
L116.0020.40	4	5,3	10,2	20,4	15,7	2	11	4,3	16	1	116110L			▲	▲
												P	●	●	●
												M	o	●	●
												K	o	●	●
												N	-	●	●
												S	-	●	●
												H	-	-	-

Nutfräsen (zirkular)

Groove Milling by circular interpolation

Fräserschaft
Milling shank
M313/M313.ST/M313.ER



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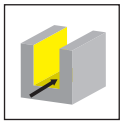
114-119

Grundaufnahme
Basic Holder
WFB



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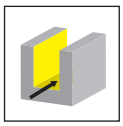
120

Einschraubfräser
Screw-in cutter
M313.M



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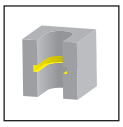
121

Schneidplatte
Insert
313/L313/613/713
913

Seite/Page
122-126, 134-135



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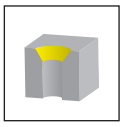
127-130, 133, 136, 144, 146

Seite/Page
131



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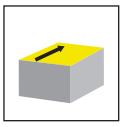
132, 141-142



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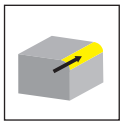
137-139, 145



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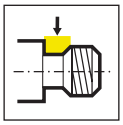
140



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M313

Fräser mit wechselbarer Schneidplatte

ab Bohrung Ø 22 mm

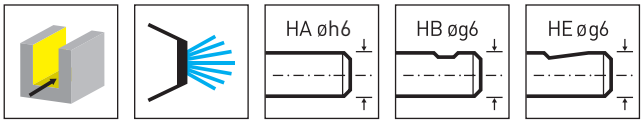
Milling shank with exchangeable insert

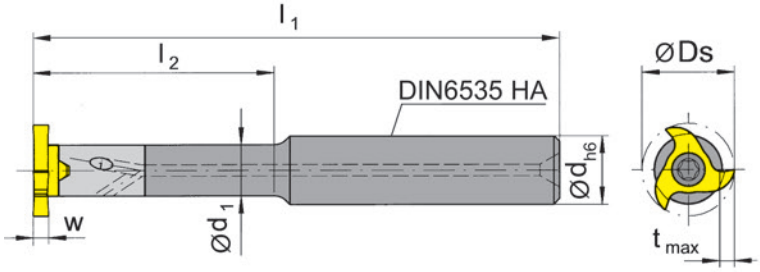
from bore Ø 22 mm

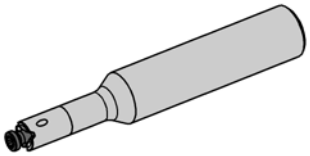
Fräserschaft
Milling shank

M313

B







Bestellnummer 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

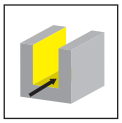
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

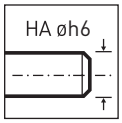
Ersatzteile
Spare Parts

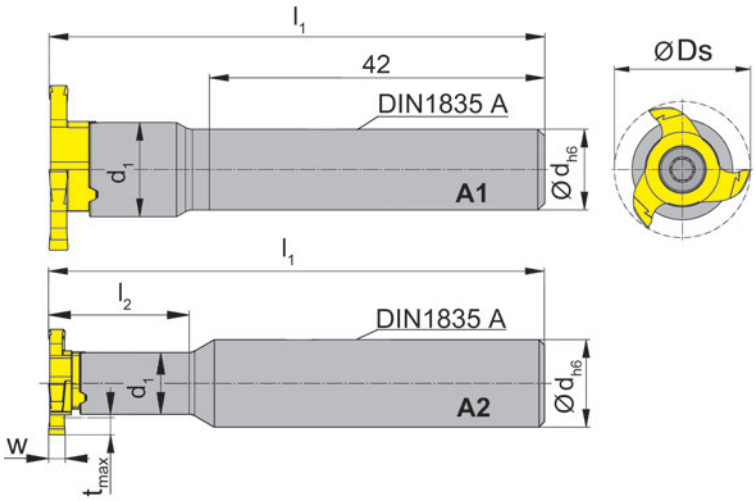
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

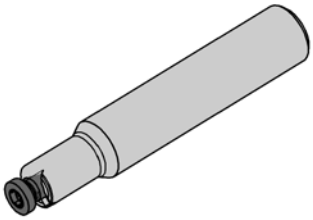
Fräserschaft
Milling shank

M313.ST









Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M313.ST10.01A	10	60	-	11,3	A1	313113R • 313113L
M313.ST12.01A	12	70	18	11,3	A2	313113R • 313113L
M313.ST13.01A	13	70	26	11,3	A2	313113R • 313113L
M313.ST16.01A	16	80	26	11,3	A2	313113R • 313113L

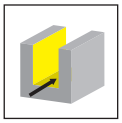
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

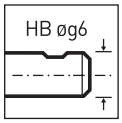
Ersatzteile
Spare Parts

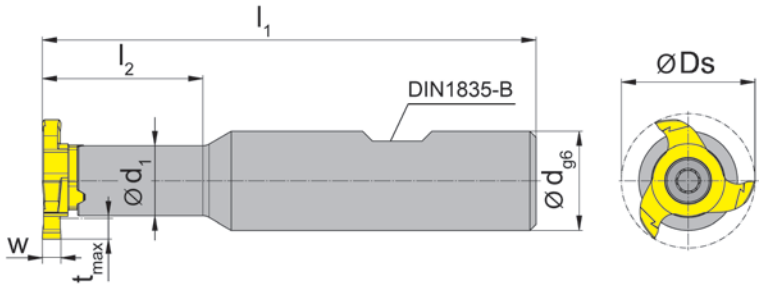
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

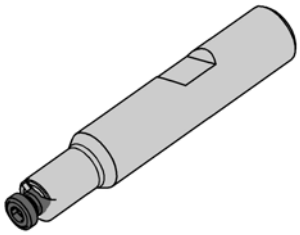
Fräserschaft
Milling shank

M313.ST









Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M313.ST12.01B	12	70	18	11,3	HB	313113R • 313113L
M313.ST16.01B	16	80	26	11,3	HB	313113R • 313113L

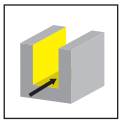
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

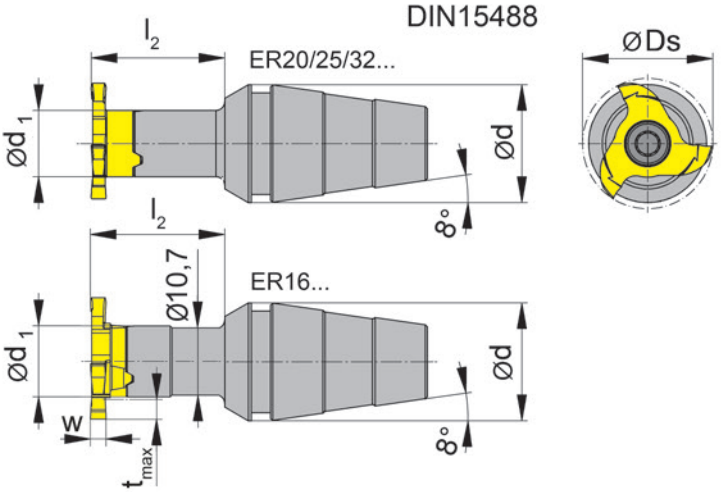
Ersatzteile
Spare Parts

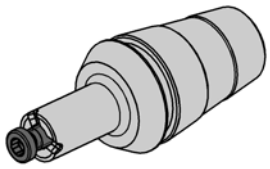
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M313.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter 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 siehe Schneidplatte
w, Ds, tmax see inserts

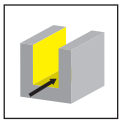
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

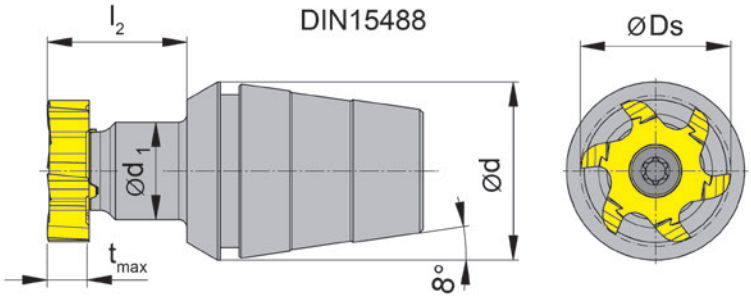
Ersatzteile
Spare Parts

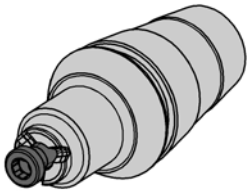
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M313.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter 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 und Ds siehe Schneidplatte
tmax and Ds see inserts

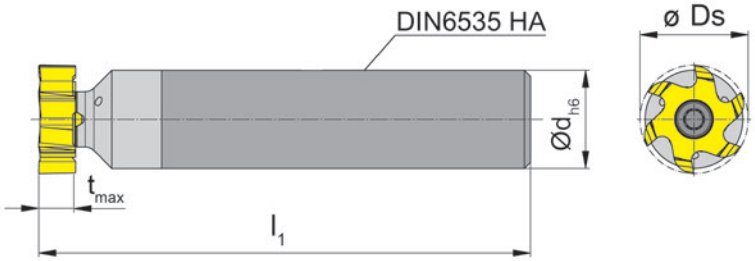
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

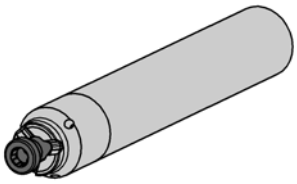
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M313





Bestellnummer 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

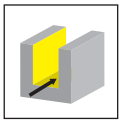
tmax und Ds siehe Schneidplatte
tmax and Ds see inserts

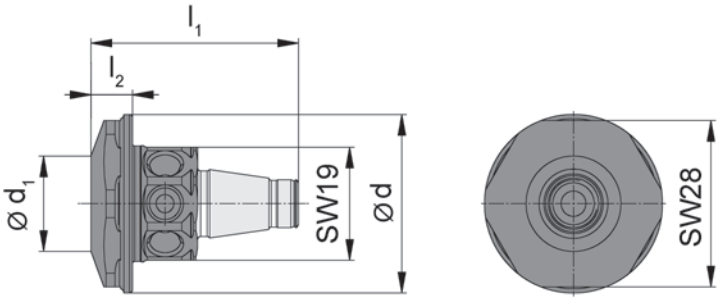
Ersatzteile
Spare Parts

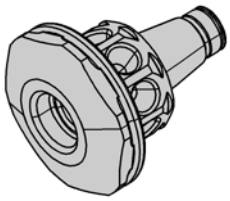
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

Grundaufnahme
Basic Holder

WFB





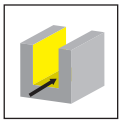


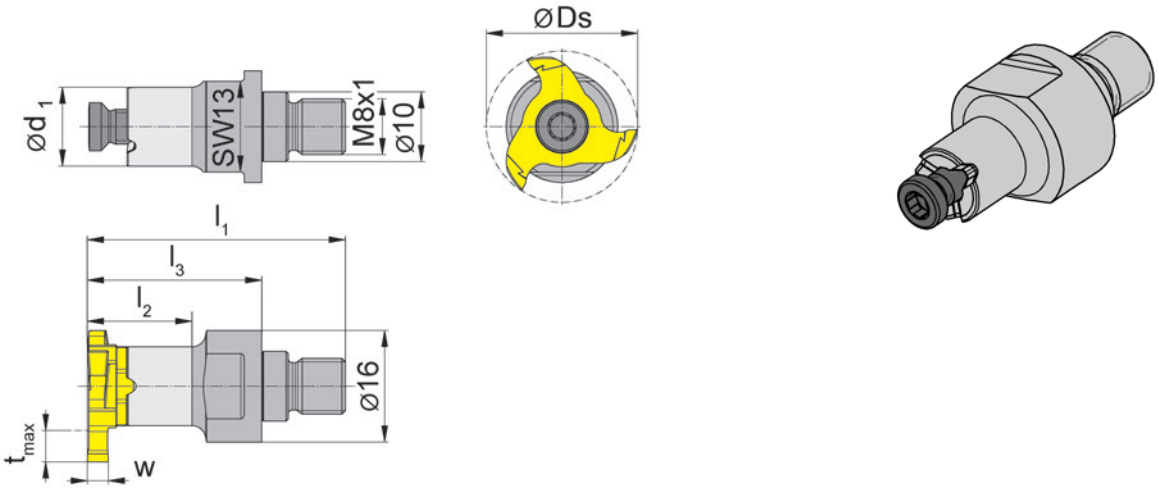
Bestellnummer Part number	l_1	l_2	d_1	d
WFB.2012.M081.01	35	7	16	30

für Einschraubfräser
for Screw-in cutter

Einschraubfräser
Screw-in cutter

M313.M





Bestellnummer 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

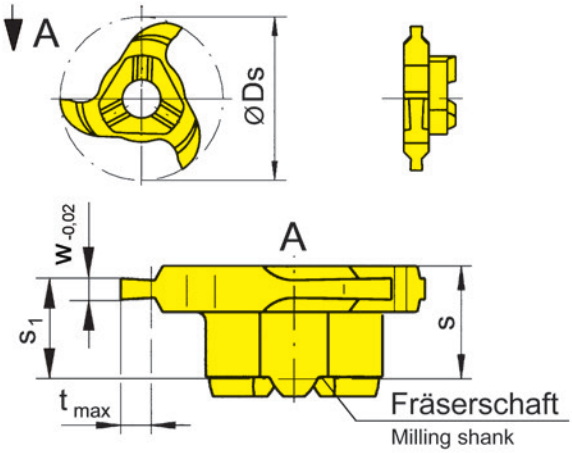
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313.M081.01	**5.14T20P**	**T20PQ**

Schneidplatte
Insert

313



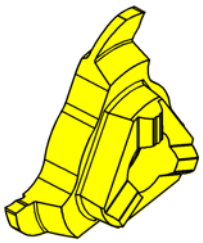


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

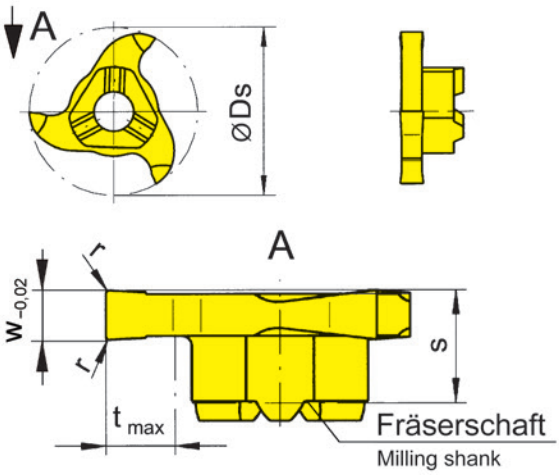
Δ 4 Wochen
4 weeks

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

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

313



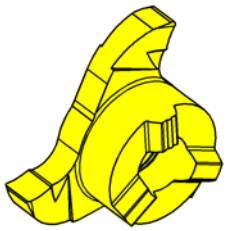


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Nw	w	s	r	t_{max}	Z	HIS		AS45	EG55	TI25	TN35
313.0130.00	21,7	1,3	1,41	5,7	-	4,5	3	313113R		▲	▲	▲	▲
313.0160.00	21,7	1,6	1,71	5,7	-	4,5	3	313113R		▲	▲	▲	▲
313.0185.00	21,7	1,85	1,96	5,7	0,2	4,5	3	313113R		▲	▲	▲	▲
313.0215.00	21,7	2,15	2,26	5,7	0,2	4,5	3	313113R		▲	▲	▲	▲
313.0265.00	21,7	2,65	2,76	5,7	0,2	4,5	3	313113R		▲	▲	▲	▲
313.0315.00	21,7	3,15	3,26	5,7	0,2	4,5	3	313113R		▲	▲	▲	▲
313.0415.00	21,7	4,15	4,26	5,7	0,2	4,5	3	313113R		▲	▲	▲	▲
313.0515.00	21,7	5,15	5,26	5,7	0,2	4,5	3	313113R		▲	▲	▲	▲
									P	●	●	●	●
									M	●	o	●	●
									K	●	o	●	●
									N	o	-	●	●
									S	●	-	●	●
									H	-	-	-	-

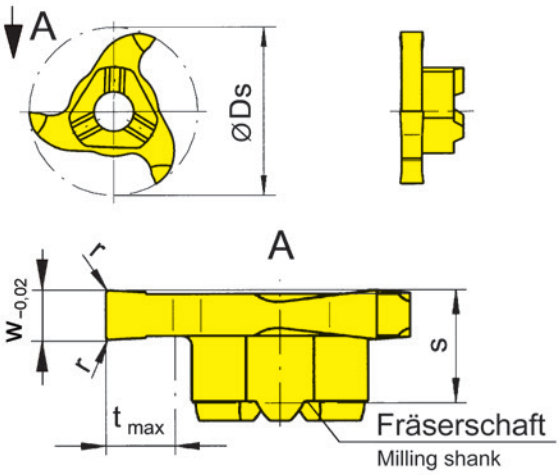
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatten 313.0415.00 und 313.0515.00
nur in Verbindung mit Fräserschaftabmessung l2= max. 42 mm
Inserts 313.0415.00 and 313.0515.00
only with toolholder dimension l2 = max. 42 mm

Schneidplatte
Insert

313



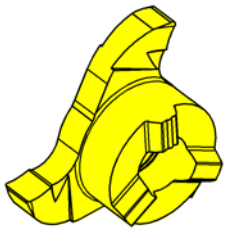


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

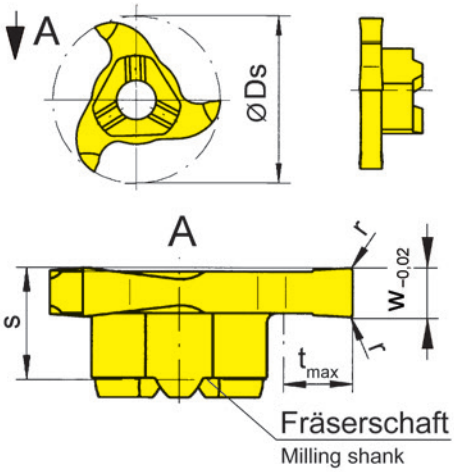
Bestellnummer Part number	Ds	Nw	w	s	r	t_{max}	Z	HIS		T125
313.0130.40	21,7	1,3	1,41	5,7	-	4,5	3	313113R		▲
313.0160.40	21,7	1,6	1,71	5,7	-	4,5	3	313113R		▲
313.0185.40	21,7	1,85	1,96	5,7	0,2	4,5	3	313113R		▲
313.0215.40	21,7	2,15	2,26	5,7	0,2	4,5	3	313113R		▲
313.0265.40	21,7	2,65	2,76	5,7	0,2	4,5	3	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		▲
									P	●
									M	●
									K	●
									N	●
									S	●
									H	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatten 313.0415.40 und 313.0515.40
nur in Verbindung mit Fräserschaftabmessung l2= max. 42 mm
Inserts 313.0415.40 and 313.0515.40
only with toolholder dimension l2 = max. 42 mm

Schneidplatte
Insert

L313



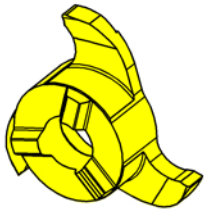


Abbildung = linksschneidend
Picture = left hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

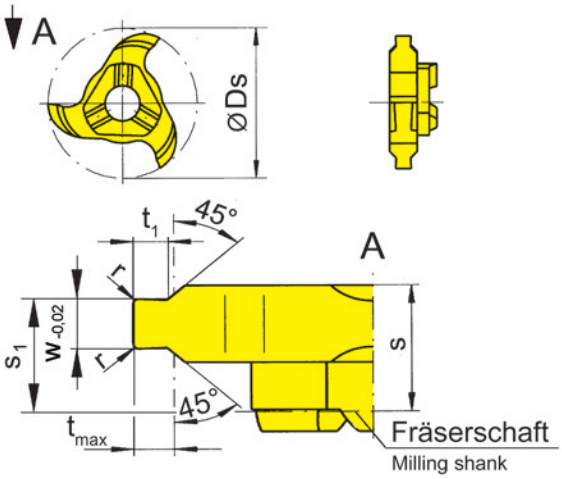
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatten L313.0415.00 und L313.0515.00
nur in Verbindung mit Fräserschaftabmessung l2= max. 42 mm
Inserts L313.0415.00 and L313.0515.00
only with toolholder dimension l2 = max. 42 mm

Schneidplatte
Insert

313



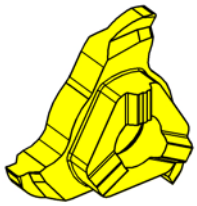


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

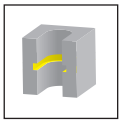
Bestellnummer Part number	Ds	Nw	w	t_1	s	s_1	r	t_{max}	Z	HIS		AS45	EG55	TA45	TN35
313.1105.30	21,7	1,1	1,21	0,47	5,9	5,07	-	0,5	3	313113R			▲		▲
313.1307.30	21,7	1,3	1,41	0,65	5,9	5,17	-	0,7	3	313113R		Δ	▲		▲
313.1308.30	21,7	1,3	1,41	0,81	5,9	5,17	-	0,85	3	313113R			▲		▲
313.1609.35	21,7	1,6	1,71	0,81	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		▲	▲		▲
313.2115.35	21,7	2,15	2,26	1,45	5,9	5,34	0,2	1,5	3	313113R		Δ	▲	Δ	▲
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			▲		▲
											P	●	●	●	●
											M	●	o	●	●
											K	●	o	●	●
											N	o	-	●	●
											S	●	-	●	●
											H	-	-	-	-

Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

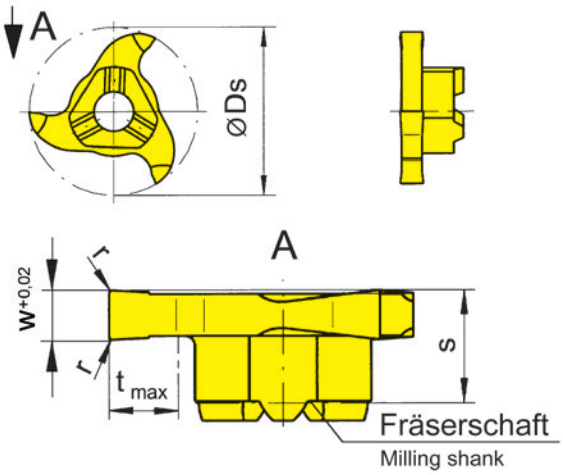
Schneidplatten 313.4120.55 und 313.4125.55
nur in Verbindung mit Fräserschaftabmessung l2= max. 42 mm
Inserts 313.4120.55 and 313.4125.55
only with toolholder dimension l2 = max. 42 mm

Schneidplatte
Insert

313



z3



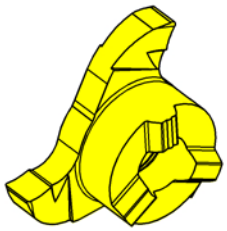


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS	AS45	EG55	TI25	TN35
313.0150.00	21,7	1,5	5,7	-	4,5	3	313113R	▲	▲		▲
313.0150.01	21,7	1,5	5,7	0,1	4,5	3	313113R	▲	▲		
313.0200.00	21,7	2	5,7	0,2	4,5	3	313113R	▲	▲		▲
313.0250.00	21,7	2,5	5,7	0,2	4,5	3	313113R	▲	▲	▲	▲
313.0300.00	21,7	3	5,7	0,2	4,5	3	313113R	▲	▲		▲
313.0350.00	21,7	3,5	5,7	0,2	4,5	3	313113R	▲	▲	▲	
313.0400.00	21,7	4	5,7	0,2	4,5	3	313113R	▲	▲		▲
313.0500.00	21,7	5	5,7	0,2	4,5	3	313113R	▲	▲		▲
313.0600.00	21,7	6	6,9	0,2	4,5	3	313113R	▲	▲		▲

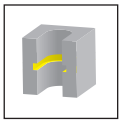
	AS45	EG55	TI25	TN35
P	●	●	●	●
M	●	o	●	●
K	●	o	●	●
N	o	-	●	●
S	●	-	●	●
H	-	-	-	-

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

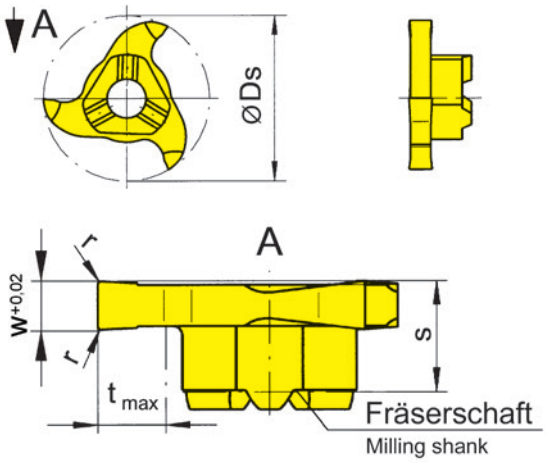
Schneidplatte **313.0600.00** mit Spanteilern!
Insert 313.0600.00 with chip divider!

Schneidplatte
Insert

313



z3 | .40



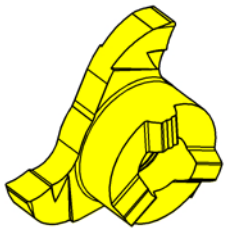


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

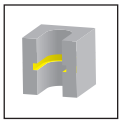
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

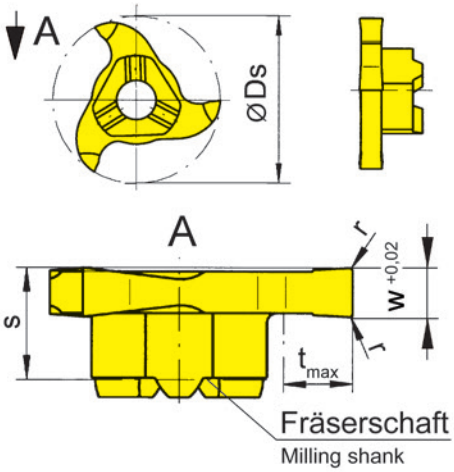
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		T125
313.0150.40	21,7	1,5	5,7	-	4,5	3	313113R		▲
313.0200.40	21,7	2	5,7	0,2	4,5	3	313113R		▲
313.0250.40	21,7	2,5	5,7	0,2	4,5	3	313113R		▲
313.0300.40	21,7	3	5,7	0,2	4,5	3	313113R		▲
313.0400.40	21,7	4	5,7	0,2	4,5	3	313113R		▲
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

Schneidplatte
Insert

L313



z3



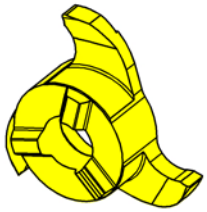


Abbildung = linksschneidend
Picture = left hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

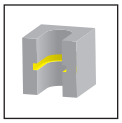
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG55	TI25
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	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	
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	
								P	●	●	●
								M	●	o	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

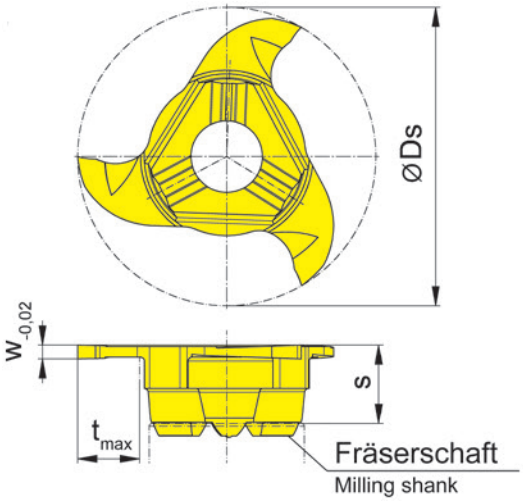
Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

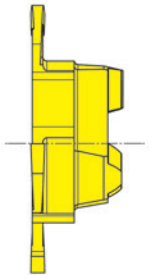
Schneidplatte
Insert

313



z3





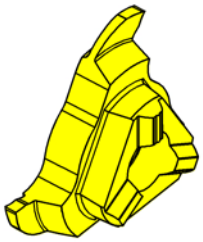


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

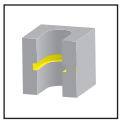
Bestellnummer Part number	Ds	w	s	t_{max}	Z	HIS		EG55	TI25	TN35
313.0100.1.00	21,7	1	5,7	4,5	3	313113R		▲	▲	▲
							P	●	●	●
							M	o	●	●
							K	o	●	●
							N	-	●	●
							S	-	●	●
							H	-	-	-

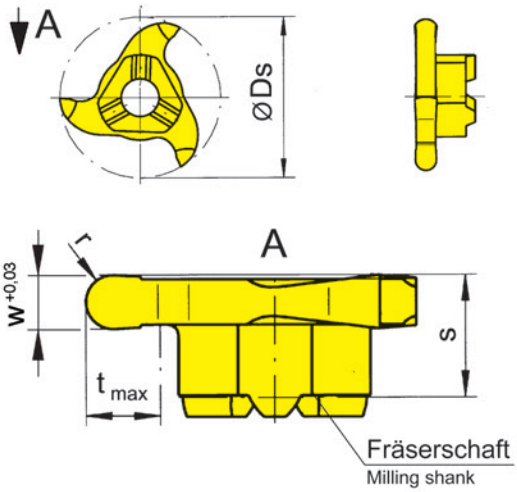
Schneidplatte
Insert

313

B

z3





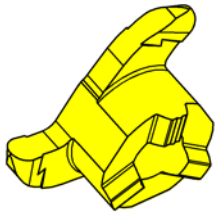


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

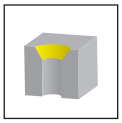
▲ ab Lager
on stock

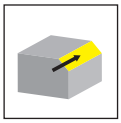
Δ 4 Wochen
4 weeks

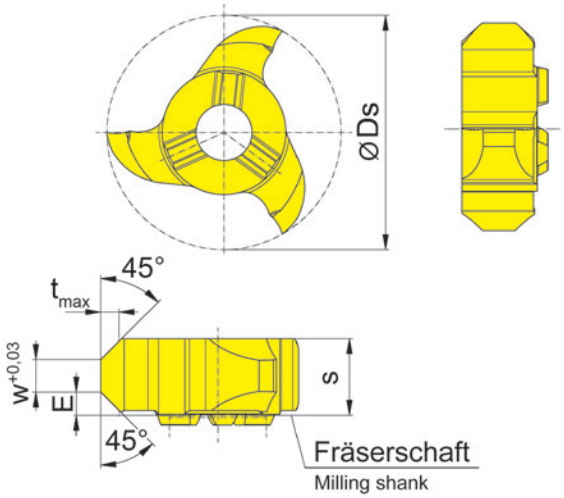
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG55	TN35
313.0005.10	21,7	1	5,7	0,5	4,5	3	313113R			▲	▲
313.0007.15	21,7	1,5	5,7	0,75	4,5	3	313113R		▲	▲	
313.0010.20	21,7	2	5,7	1	4,5	3	313113R		▲	▲	▲
313.0014.28	21,7	2,8	5,7	1,4	4,5	3	313113R		▲	▲	▲
313.0015.30	21,7	3	5,7	1,5	4,5	3	313113R		▲	▲	▲
313.0020.40	21,7	4	5,7	2	4,5	3	313113R		▲	▲	▲
313.0025.50	21,7	5	5,7	2,5	4,5	3	313113R		▲	▲	▲
								P	●	●	●
								M	●	o	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

Schneidplatte
Insert

313







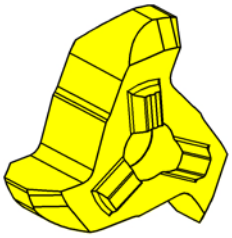


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

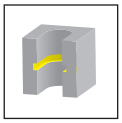
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	E	s	w	t_{max}	Z	HIS		EG55	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		▲	▲	
								P	●	●	●
								M	o	●	●
								K	o	●	●
								N	-	●	●
								S	-	●	●
								H	-	-	-

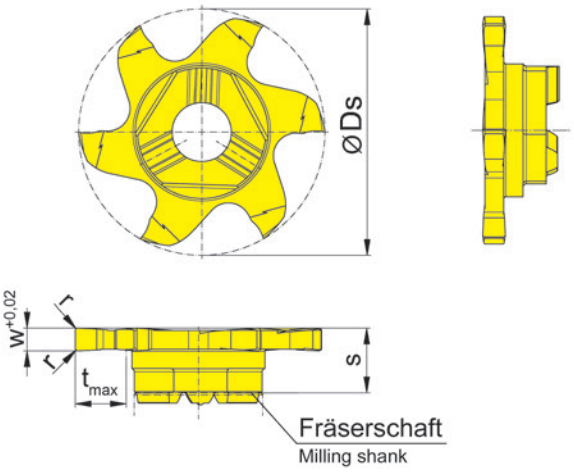
Für Schneidplatte s = 7,1 mm Schraube 5.17T20P verwenden
Für Schneidplatte s = 9,4 mm Schraube 5.13T20P verwenden
For Insert s = 7,1 mm use screw 5.17T20P
For Insert s = 9,4 mm use screw 5.13T20P

Schneidplatte
Insert

613



z6



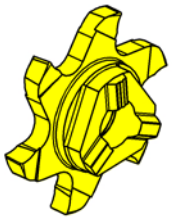


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

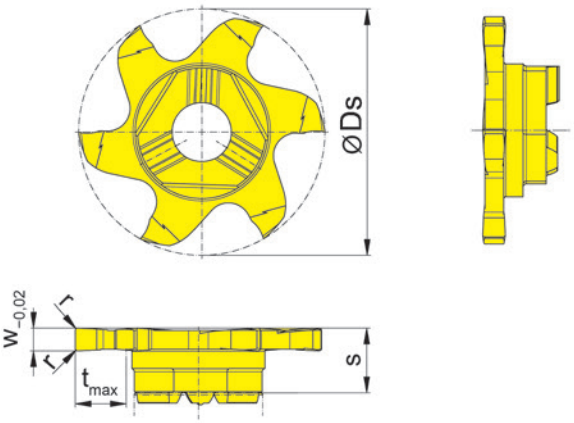
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG55	TI25
613.0150.00	21,7	1,5	5,7	-	4,5	6	313113R		▲	▲	▲
613.0200.00	21,7	2	5,7	0,2	4,5	6	313113R		▲	▲	▲
613.0250.00	21,7	2,5	5,7	0,2	4,5	6	313113R		▲	▲	▲
613.0300.00	21,7	3	5,7	0,2	4,5	6	313113R		▲	▲	▲
613.0400.00	21,7	4	5,7	0,2	4,5	6	313113R		▲	▲	▲
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			▲	
								P	●	●	●
								M	●	o	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

ab Schneidbreite 2,5 mm Kreuzverzahnung
from width of groove 2,5 mm toothing with cross-cut

Schneidplatte w ≥ 4 mm
nur in Verbindung mit Fräserschaftabmessung l2= max. 42 mm
Insert w ≥ 4 mm
only with toolholder dimension l2 = max. 42 mm

Schneidplatte
Insert

613



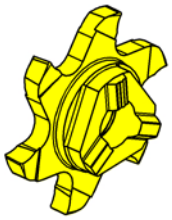


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

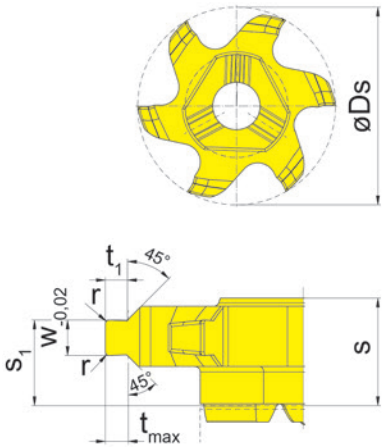
Bestellnummer Part number	Ds	Nw	w	s	r	t_{max}	Z	HIS		AS45	EG55
613.0130.00	21,7	1,3	1,41	5,7	-	4,5	6	313113R		▲	▲
613.0215.00	21,7	2,15	2,26	5,7	0,2	4,5	6	313113R		▲	▲
613.0315.00	21,7	3,15	3,26	5,7	0,2	4,5	6	313113R		▲	▲
613.0415.00	21,7	4,15	4,26	5,7	0,2	4,5	6	313113R		▲	▲
613.0515.00	21,7	5,15	5,26	5,7	0,2	4,5	6	313113R		▲	▲
									P	●	●
									M	●	o
									K	●	o
									N	o	-
									S	●	-
									H	-	-

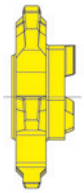
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatte
Insert

613





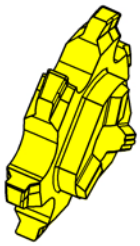


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

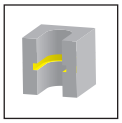
Bestellnummer Part number	Ds	Nw	w	t_1	s	s_1	r	t_{max}	Z	HIS	AS45	EG55
613.1812.35	21,7	1,85	1,96	1,21	5,9	4,7	0,2	1,25	6	313113R		▲
613.2115.35	21,7	2,15	2,26	1,45	5,9	4,9	0,2	1,5	6	313113R	Δ	▲

Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

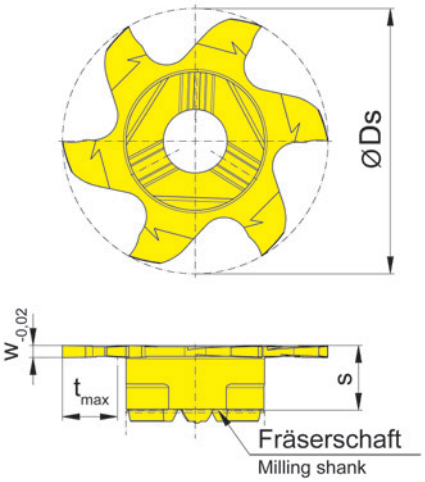
	AS45	EG55
P	●	●
M	●	o
K	●	o
N	o	-
S	●	-
H	-	-

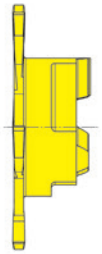
Schneidplatte
Insert

613



z6





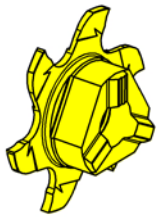


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

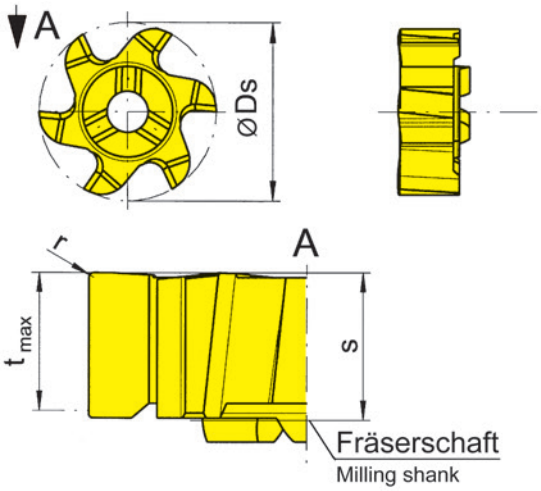
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	t_{max}	Z	HIS		EG55	TI25
613.0100.1.00	21,7	1	5,7	4,5	6	313113R		▲	▲
							P	●	●
							M	o	●
							K	o	●
							N	-	●
							S	-	●
							H	-	-

Schneidplatte
Insert

613



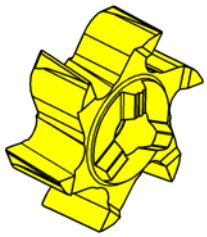


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

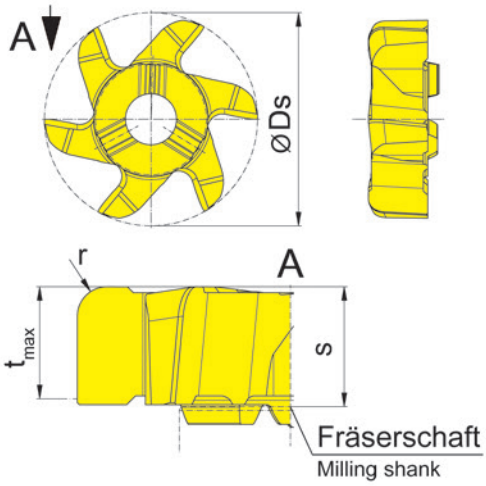
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

613



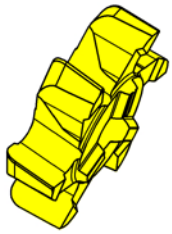


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

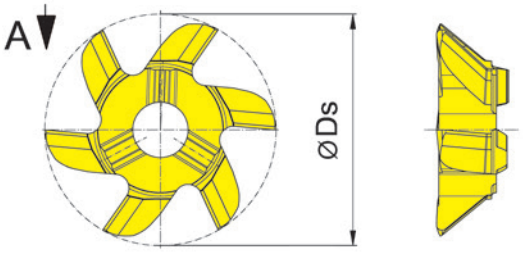
Δ 4 Wochen
4 weeks

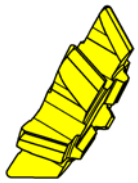
Bestellnummer Part number	Ds	Z	r	t_{max}	s	HIS		AS45	EG55	TI25
613.PLT6.15	21,7	6	1,5	5,7	6,1	313113R		▲	▲	▲
							P	●	●	●
							M	●	o	●
							K	●	o	●
							N	o	-	●
							S	●	-	●
							H	-	-	-

Schneidplatte
Insert

613

z6





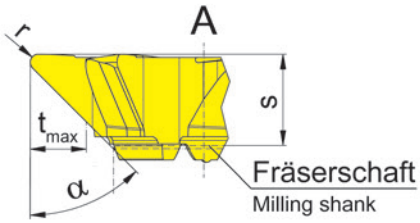


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

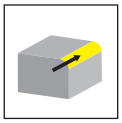
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

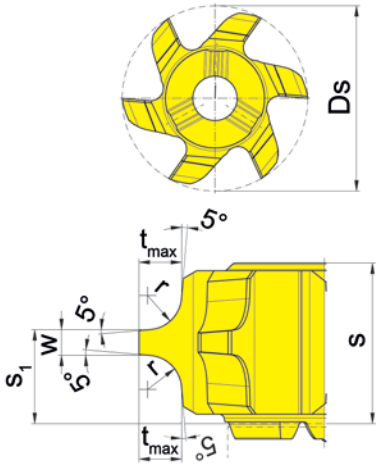
Bestellnummer Part number	Ds	Z	r	α	t_{max}	s	HIS		AS45	EG55
613.0015.25	21,7	6	0,5	15°	1,1	5,7	313113R		▲	▲
613.0030.25	21,7	6	0,5	30°	2,3	5,7	313113R		▲	▲
613.0045.25	21,7	6	0,5	45°	3,5	5,7	313113R		▲	▲
								P	●	●
								M	●	o
								K	●	o
								N	o	-
								S	●	-
								H	-	-

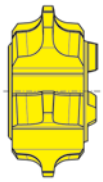
Schneidplatte
Insert

613



z6





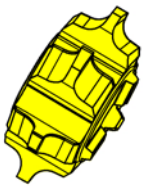


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

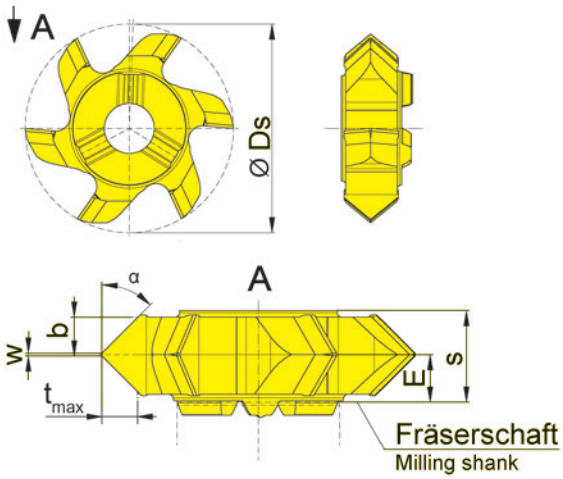
Δ 4 Wochen
4 weeks

Bestellnummer 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		▲
613.R150.00	21,7	7,6	4,6	1,5	1,5	2	6	313113R		▲
613.R200.00	21,7	9,4	5,5	2	1,5	2,5	6	313113R		▲
613.R250.00	21,7	9,9	5,75	2,5	1,5	3	6	313113R		▲
613.R300.00	21,7	9,9	5,75	3	1,5	3,5	6	313113R		▲
									P	●
									M	●
									K	●
									N	o
									S	●
									H	-

Für Schneidplatte s = 6,3 mm Schraube 5.14T20P verwenden
Für Schneidplatte s = 7,6 mm Schraube 5.17T20P verwenden
Für Schneidplatte s = 9,4-9,9 mm Schraube 5.13T20P verwenden
For Insert s = 6,3 mm use screw 5.14T20P
For Insert s = 7,6 mm use screw 5.17T20P
For Insert s = 9,4-9,9 mm use screw 5.13T20P

Schneidplatte
Insert

613



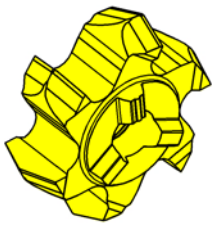


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

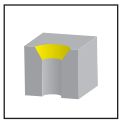
▲ ab Lager
on stock

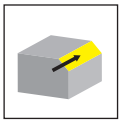
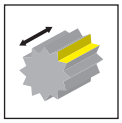
Δ 4 Wochen
4 weeks

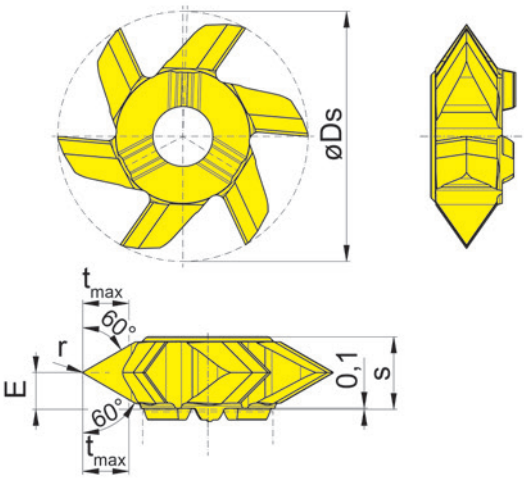
Bestellnummer Part number	Ds	E	s	w	α	b	t_{max}	Z	HIS		EG55	TA45	TI25
613.1515.20	21,7	3,3	6,3	0,2	15°	2,7	0,75	6	313113R		▲	▲	
613.2020.20	21,7	3,3	6,3	0,2	20°	2,7	1	6	313113R		▲	▲	
613.3030.20	21,7	3,3	6,3	0,2	30°	2,7	1,6	6	313113R		▲	▲	
613.4545.20	21,7	3,3	6,3	0,2	45°	2,5	2,5	6	313113R		▲		▲
										P	●	●	●
										M	o	●	●
										K	o	●	●
										N	-	●	●
										S	-	●	●
										H	-	-	-

Schneidplatte
Insert

613





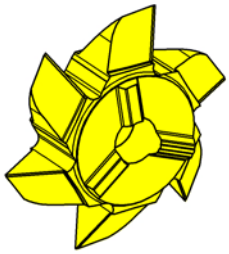


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

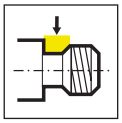
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

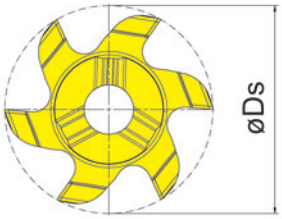
Bestellnummer Part number	Ds	E	s	r	t_{max}	Z	HIS		AS45
613.6060.05	21,7	3,2	6,3	0,05	4	6	313113R		▲
								P	●
								M	●
								K	●
								N	o
								S	●
								H	-

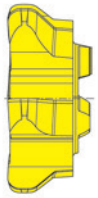
Schneidplatte
Insert

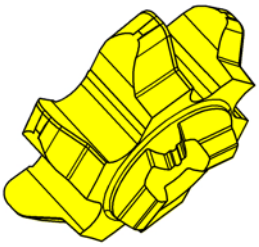
613



z6







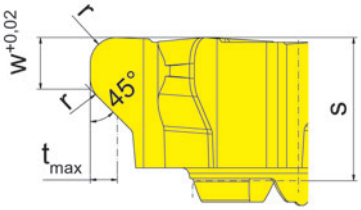


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

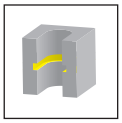
Δ 4 Wochen
4 weeks

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

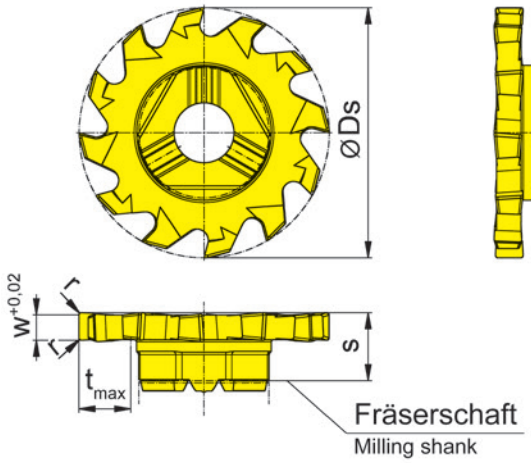
Gewindefreistiche DIN 76
Thread relief DIN 76

Schneidplatte
Insert

713



z12



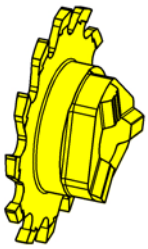


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

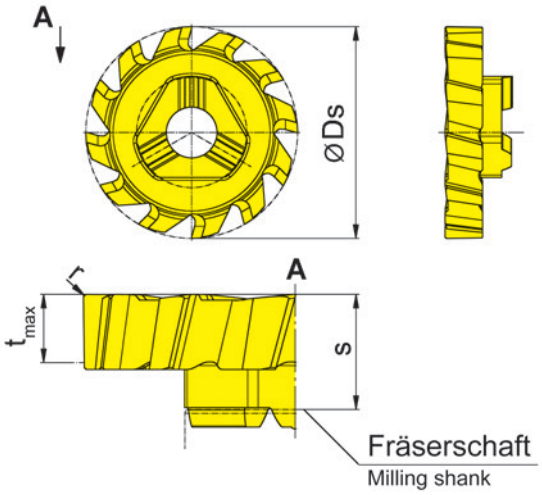
Δ 4 Wochen
4 weeks

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

ab Schneidbreite 2 mm Kreuzverzahnung
from width of groove 2 mm toothing with cross-cut

Schneidplatte
Insert

713



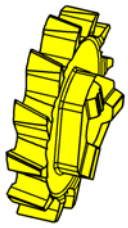


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

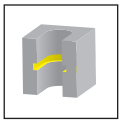
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Z	r	t_{max}	s	HIS		EG55	TI25
713.PL35.15.02	21,7	12	0,2	3,5	5,9	313113R		▲	▲
							P	●	●
							M	o	●
							K	o	●
							N	-	●
							S	-	●
							H	-	-

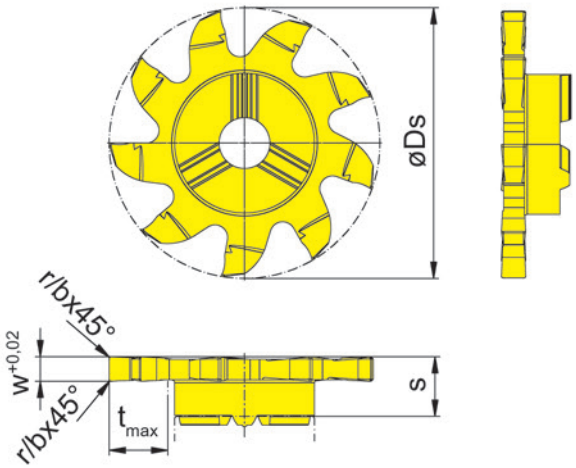
Schrägverzahnung
Helical teeth

Schneidplatte
Insert

913



z9



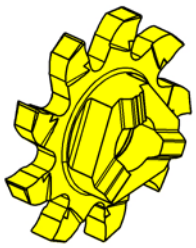


Abbildung = rechtsschneidend
Picture = right hand cutting version

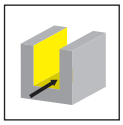
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	b x 45°	r	t_{max}	Z	HIS		EG55	IG65
913.0150.00	21,7	1,5	5,7	0,05	-	4,5	9	313113R		▲	Δ
913.0200.00	21,7	2	5,7	-	0,2	4,5	9	313113R		▲	Δ
913.0250.00	21,7	2,5	5,7	-	0,2	4,5	9	313113R		▲	Δ
913.0300.00	21,7	3	5,7	-	0,2	4,5	9	313113R		▲	Δ
									P	●	●
									M	o	●
									K	o	-
									N	-	-
									S	-	o
									H	-	-

Fräserschaft
Milling shank
M328/M328.ST/M328.ER



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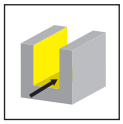
150-155

Grundaufnahme
Basic Holder
WFB



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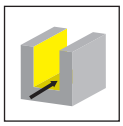
156

Einschraubfräser
Screw-in cutter
M328.M



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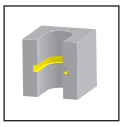
Schneidplatte
Insert
325/328/628/928

Seite/Page
158



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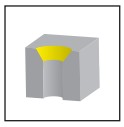
159, 161-163,
168-170, 175

Seite/Page
160, 167



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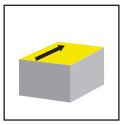
164, 173-174

Seite/Page
165-166, 171



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M328

Fräser mit wechselbarer Schneidplatte

ab Bohrung Ø 28 mm

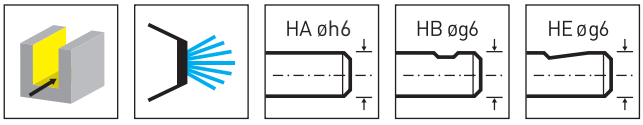
Milling shank with exchangeable insert

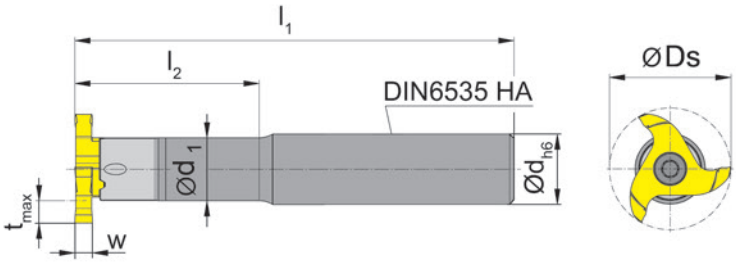
frome bore Ø 28 mm

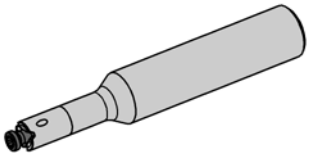
Fräserschaft
Milling shank

M328

B







Bestellnummer 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

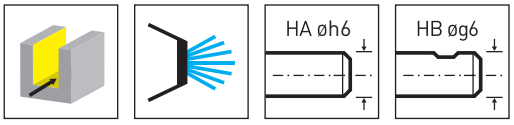
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

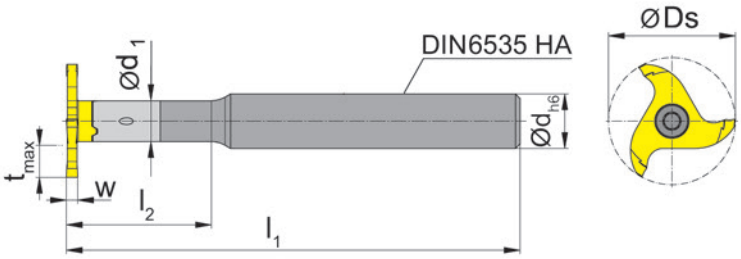
Ersatzteile
Spare Parts

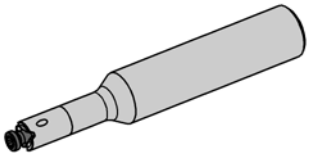
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M328







Bestellnummer 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 siehe Schneidplatte
w, Ds, tmax see inserts

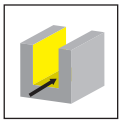
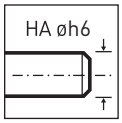
Halter M328.0909.01A = ohne Kühlmittelzufuhr!
Toolholder M328.0909.01A = no through coolant supply!

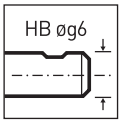
Ersatzteile
Spare Parts

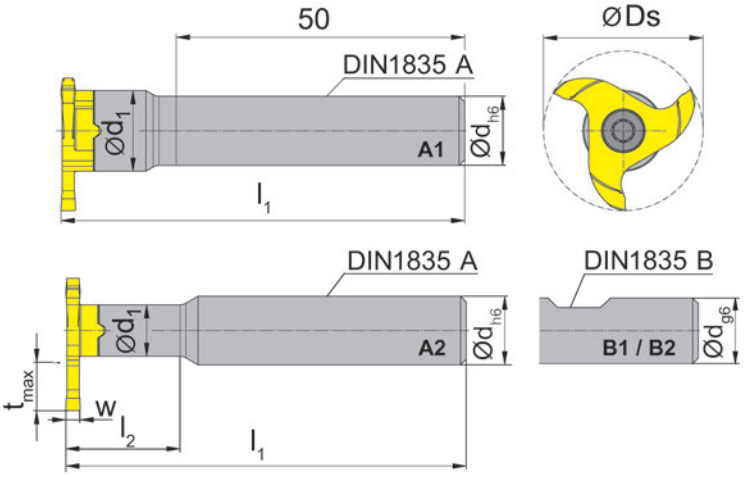
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.14T20P**	**T20PQ**

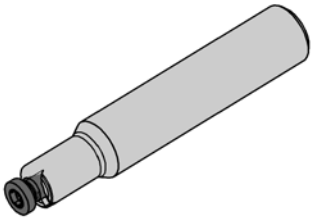
Fräserschaft
Milling shank

M328.ST







Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M328.ST12.01A	12	70	-	14	A1	328143R
M328.ST13.01A	13	70	-	14	A1	328143R
M328.ST12.2.01A	12	70	20	9	A2	328090R
M328.ST16.01A	16	90	36	14	A2	328143R
M328.ST20.01A	20	100	36	14	A2	328143R
M328.ST12.01B	12	70	-	14	B1	328143R
M328.ST12.2.01B	12	70	20	9	B2	328090R
M328.ST16.01B	16	90	36	14	B2	328143R
M328.ST20.01B	20	100	36	14	B2	328143R

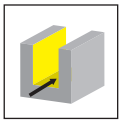
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

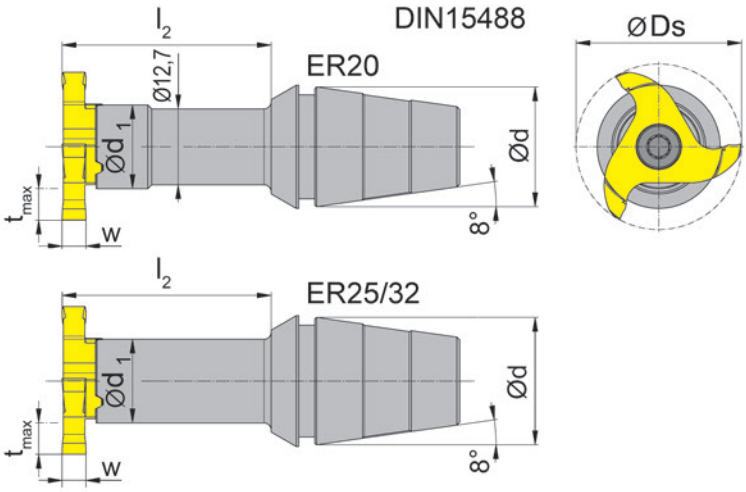
Ersatzteile
Spare Parts

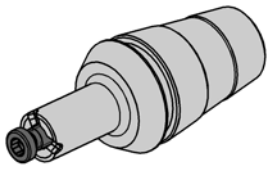
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M328.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter 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 siehe Schneidplatte
w, Ds, tmax see inserts

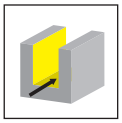
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

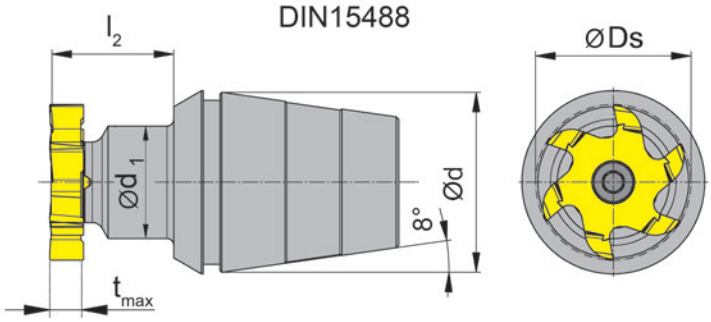
Ersatzteile
Spare Parts

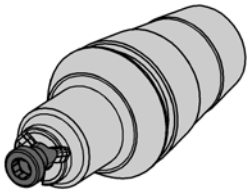
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M328.ER







Bestellnummer Part number	d	l_2	d_1	Spannmutter 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 und Ds siehe Schneidplatte
tmax and Ds see inserts

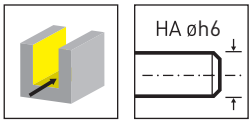
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

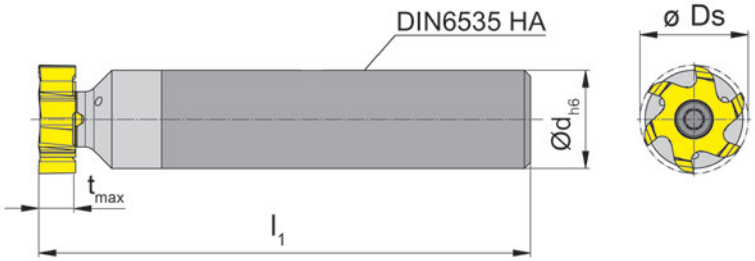
Ersatzteile
Spare Parts

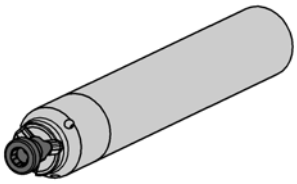
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M328







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

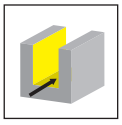
tmax und Ds siehe Schneidplatte
tmax and Ds see inserts

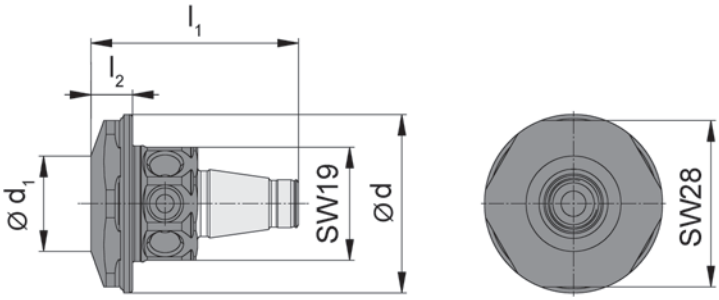
Ersatzteile
Spare Parts

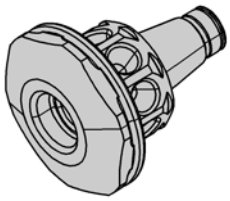
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.14T20P**	**T20PQ**

Grundaufnahme
Basic Holder

WFB





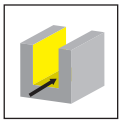


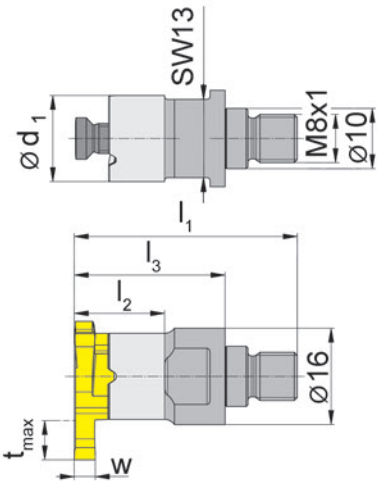
Bestellnummer Part number	l_1	l_2	d_1	d
WFB.2012.M081.01	35	7	16	30

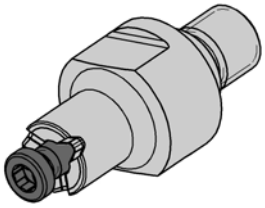
für Einschraubfräser
for Screw-in cutter

Einschraubfräser
Screw-in cutter

M328.M







Bestellnummer Part number	l_1	l_2	l_3	d_1	SW	HWS
M328.M081.01	37	15	25	14,3	13	328143R

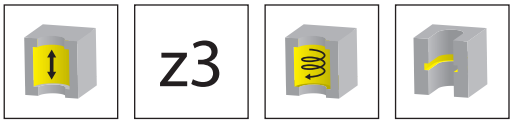
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

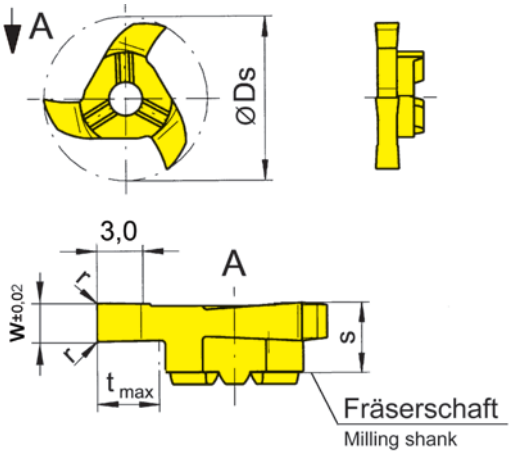
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328.M081.01	**5.14T20P**	**T20PQ**

Schneidplatte
Insert

325





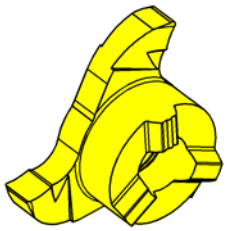


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

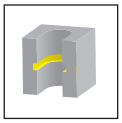
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

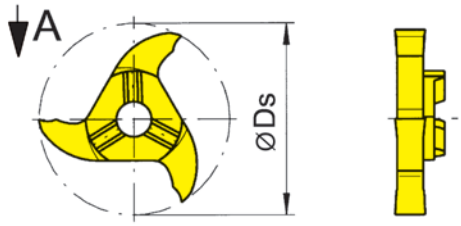
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	TN35
325.0350.52	24,8	3,5	5,7	0,2	5	3	328143R		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

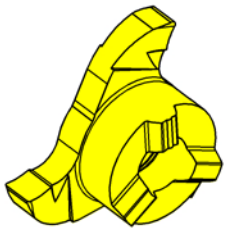
Schneidplatte
Insert

328



z3





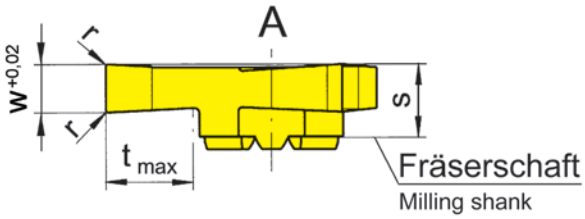


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS	AS45	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	▲	▲

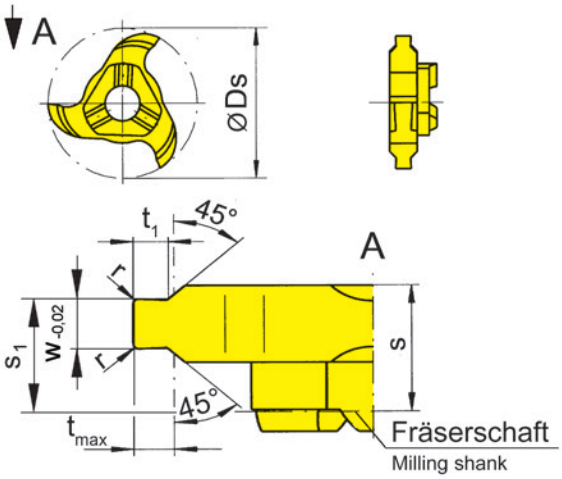
	AS45	TN35
P	●	●
M	●	●
K	●	●
N	o	●
S	●	●
H	-	-

Schneidplatte **328.1000.00** mit Schnittaufteilung (Z=1) und Schneidplatte **328.0600.00** mit Spanteilern (Z=3)!
Insert 328.1000.00 with staggered tooth (Z=1) and insert 328.0600.00 with chip divider (Z=3)!

Für Schneidplatte s = 5,7 mm Schraube 5.14T20P verwenden
Für Schneidplatte s = 7 mm Schraube 5.17T20P verwenden
Für Schneidplatte s = 10 mm Schraube 5.13T20P verwenden
For Insert s = 5,7 mm use screw 5.14T20P
For Insert s = 7 mm use screw 5.17T20P
For Insert s = 10 mm use screw 5.13T20P

Schneidplatte
Insert

328



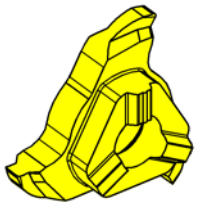


Abbildung = linksschneidend
Picture = left hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

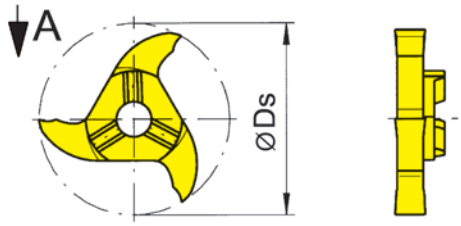
Bestellnummer Part number	Ds	Nw	w	t_1	s	s_1	r	t_{max}	Z	HIS		AS45
328.1307.30	27,7	1,3	1,41	0,65	5,95	4,9	-	0,7	3	328143R		▲
328.1812.35	27,7	1,85	1,96	1,21	5,95	5,1	0,2	1,25	3	328143R		▲
											P	●
											M	●
											K	●
											N	o
											S	●
											H	-

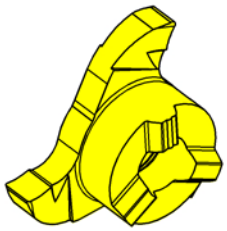
Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

Schneidplatte
Insert

328

z3 | .40





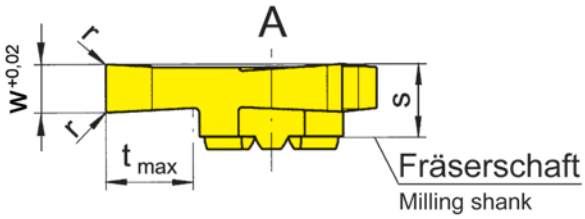


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

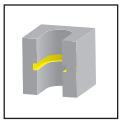
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		T125
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		▲
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

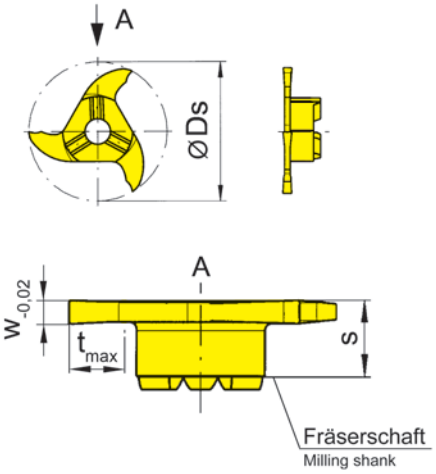
Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

Schneidplatte
Insert

328



z3



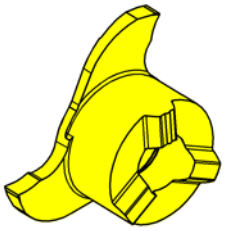


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

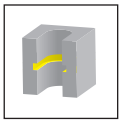
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

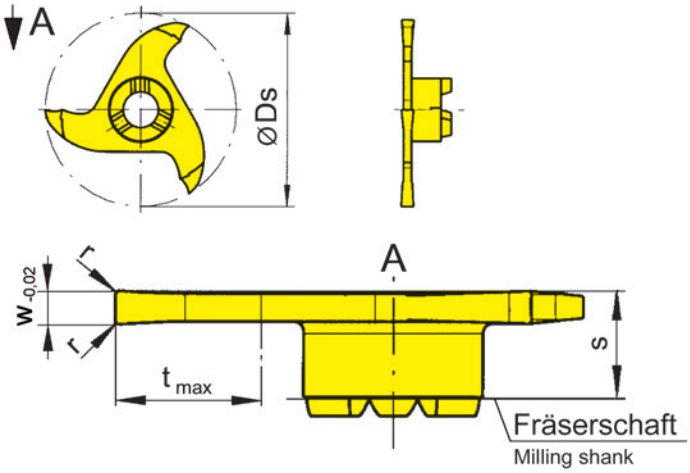
Bestellnummer Part number	Ds	w	s	t_{max}	Z	HIS		TI25	TN35
328.0082.1.00	27,7	0,82	5,7	5	3	328143R		▲	▲
							P	●	●
							M	●	●
							K	●	●
							N	●	●
							S	●	●
							H	-	-

Schneidplatte
Insert

328



z3



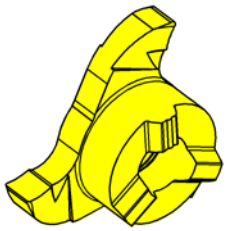


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

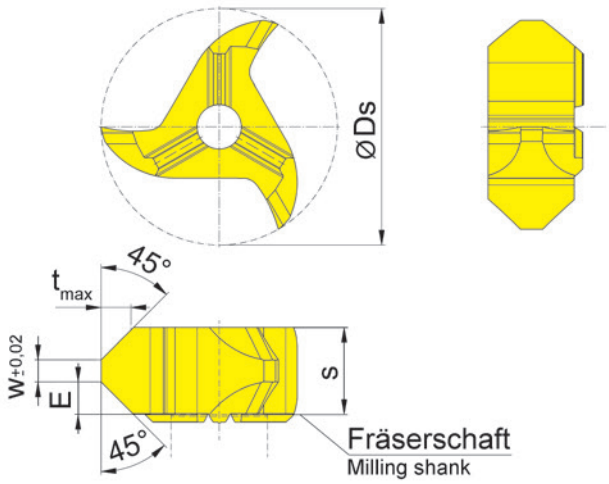
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	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		▲	▲	▲
								P	●	●	●
								M	●	●	●
								K	●	●	●
								N	o	●	●
								S	●	●	●
								H	-	-	-

Schneidplatte
Insert

328



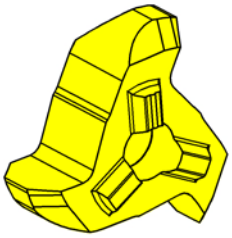


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

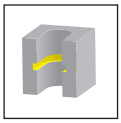
Für die Schneidplatte **328.4545.35.00** bitte nur die längere Schraube 5.13T20P verwenden.
For insert 328.4545.35.00 please use only the longer screw 5.13T20P.

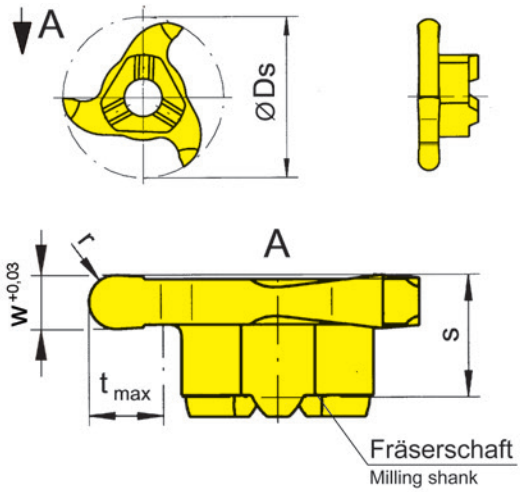
Schneidplatte
Insert

328

B

z3





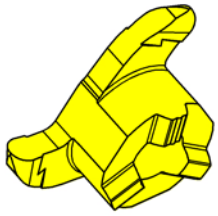


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

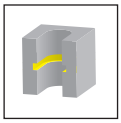
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45
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	o
								S	●
								H	-

Schneidplatte
Insert

628



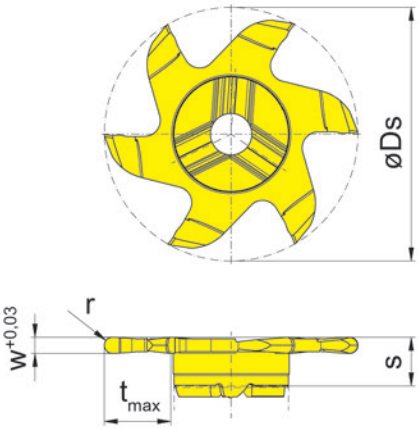


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

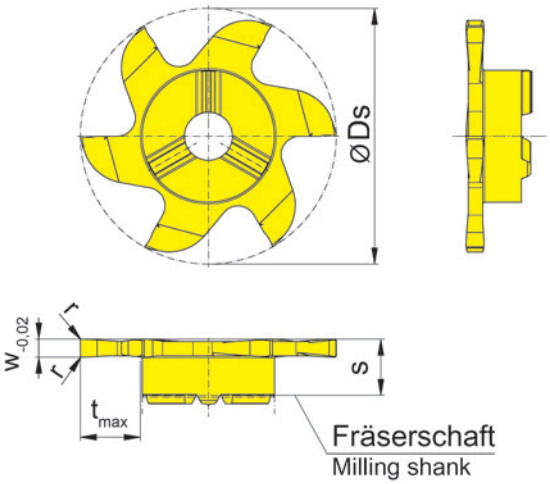
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

628



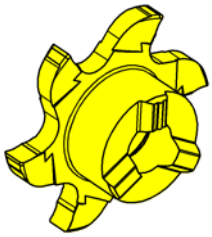


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

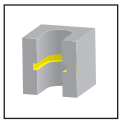
Δ 4 Wochen
4 weeks

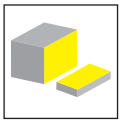
Bestellnummer Part number	Ds	Nw	w	s	r	t_{max}	Z	HIS		AS45	RC25	TI25
628.0080.00	27,7	0,8	0,8	6,1	-	6,5	6	328143R			▲	
628.0130.00	27,7	1,3	1,41	6,1	-	6,5	6	328143R		▲		▲
628.0160.00	27,7	1,6	1,71	6,1	-	6,5	6	328143R		▲		▲
628.0185.00	27,7	1,85	1,96	6,1	0,2	6,5	6	328143R		▲		▲
628.0215.00	27,7	2,15	2,26	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		▲		▲
									P	●	●	●
									M	●	●	●
									K	●	●	●
									N	o	-	●
									S	●	-	●
									H	-	-	-

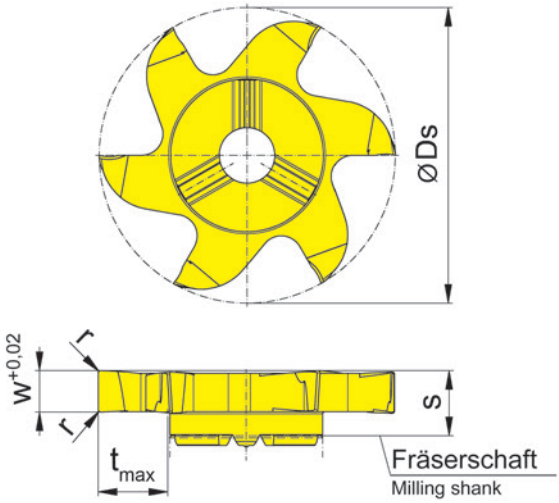
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Schneidplatte
Insert

628







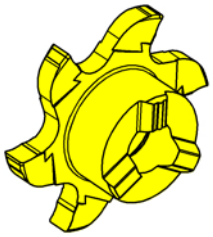


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS	AS45	EG55	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	▲		▲	▲

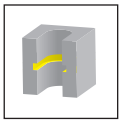
	AS45	EG55	TH35	TI25
P	●	●	●	●
M	●	o	●	●
K	●	o	●	●
N	o	-	●	●
S	●	-	●	●
H	-	-	-	-

Bei Reduzierung der Frästiefe tmax ist eine Schneidbreite w bis 0,5 mm auf Anfrage möglich.
Inserts for widths of groove tmax down to 0,5 mm can be delivered with reduced depth upon request.

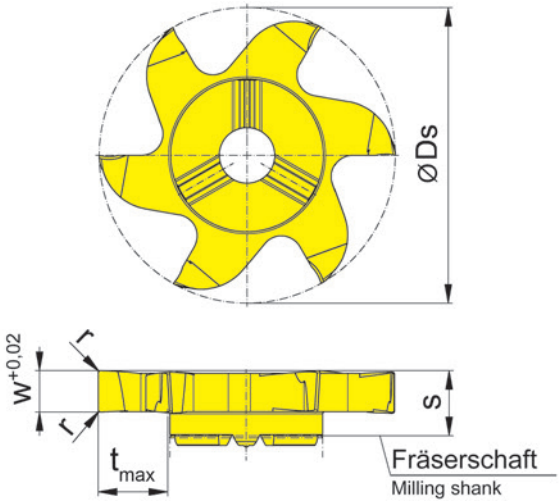
Schneidplatte 628.0400.00
nur in Verbindung mit Fräserschaftabmessung l2= max. 42 mm
Insert 628.0400.00
only with toolholder dimension l2 = max. 42 mm

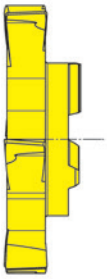
Schneidplatte
Insert

628



z6





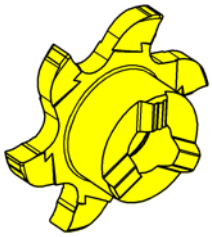


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

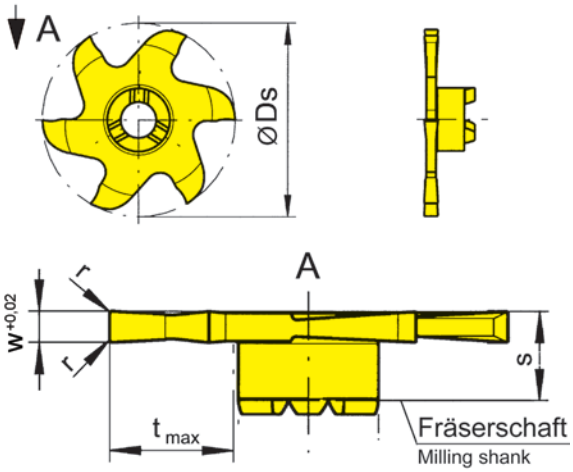
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

628



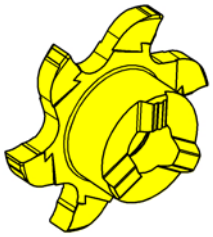


Abbildung = rechtsschneidend
Picture = right hand cutting version

▲ ab Lager
on stock

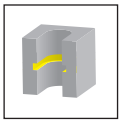
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG35	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		▲		▲
								P	●	●	●
								M	●	●	●
								K	●	o	●
								N	o	-	●
								S	●	-	●
								H	-	-	-

Schneidplatte
Insert

628

z6


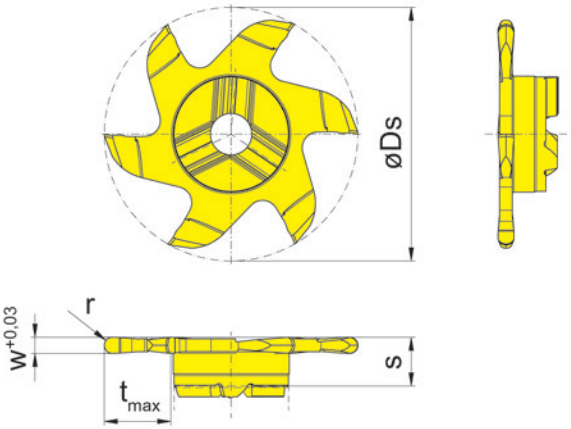


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

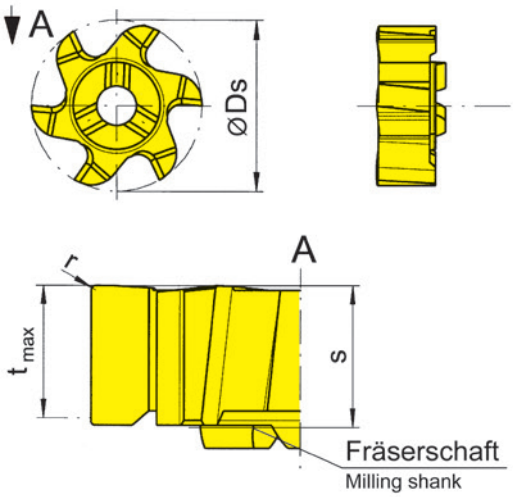
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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	o
								S	●
								H	-

Schneidplatte
Insert

628



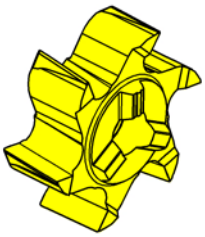


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

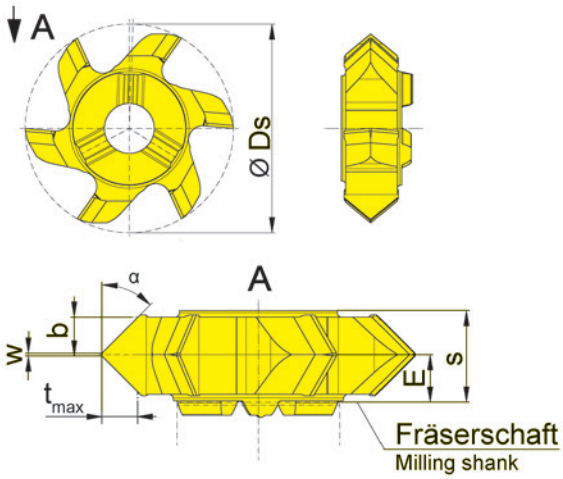
Δ 4 Wochen
4 weeks

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

Schrägverzahnung
Helical teeth

Schneidplatte
Insert

628



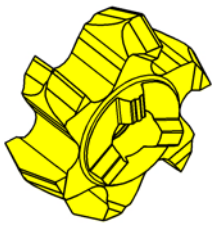


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

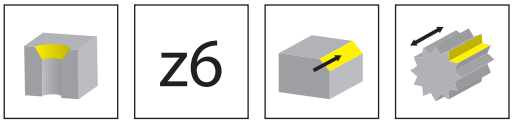
▲ ab Lager
on stock

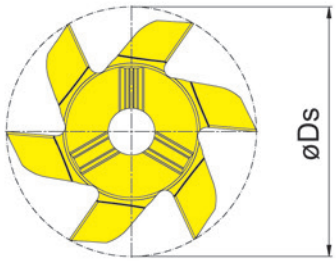
Δ 4 Wochen
4 weeks

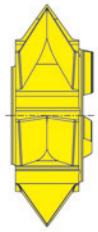
Bestellnummer Part number	Ds	E	s	w	α	b	t_{max}	Z	HIS		AS45	TA45
628.1515.20	27,7	3,2	6,3	0,2	15°	2,8	0,75	6	328143R		▲	
628.2020.20	27,7	3,2	6,3	0,2	20°	2,8	1	6	328143R		▲	
628.3030.20	27,7	3,2	6,3	0,2	30°	2,8	1,6	6	328143R		▲	▲
628.4545.20	27,7	3,2	6,3	0,2	45°	2,8	2,8	6	328143R		▲	▲
										P	●	●
										M	●	●
										K	●	●
										N	o	●
										S	●	●
										H	-	-

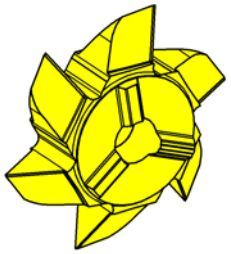
Schneidplatte
Insert

628









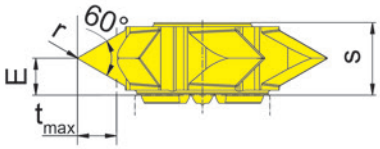


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

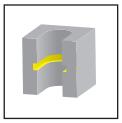
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

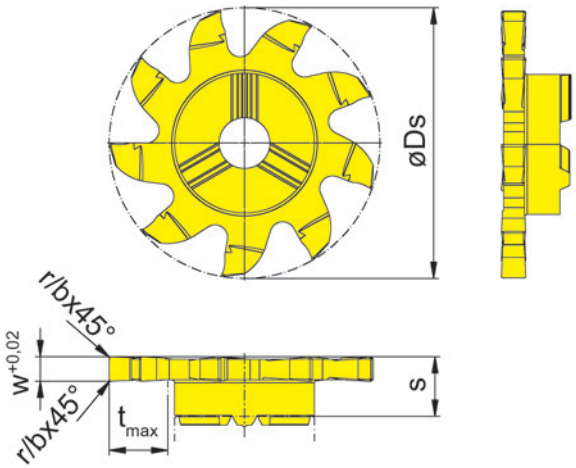
Bestellnummer Part number	Ds	E	s	r	t_{max}	Z	HIS		EG55
628.6060.05	27,7	4,1	8,05	0,05	5	6	328143R		▲
								P	●
								M	o
								K	o
								N	-
								S	-
								H	-

Schneidplatte
Insert

928



z9



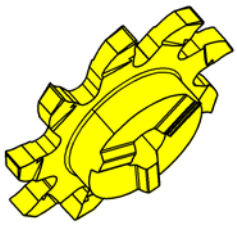


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

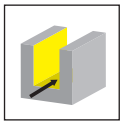
Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	b x 45°	r	t_{max}	Z	HIS		EG55	IG65
928.0150.00	27,7	1,5	6,1	0,05	-	6,5	9	328143R		▲	Δ
928.0200.00	27,7	2	6,1	-	0,2	6,5	9	328143R		▲	Δ
928.0250.00	27,7	2,5	6,1	-	0,2	6,5	9	328143R		▲	Δ
928.0300.00	27,7	3	6,1	-	0,2	6,5	9	328143R		▲	Δ
									P	●	●
									M	o	●
									K	o	-
									N	-	-
									S	-	o
									H	-	-

Nutfräsen (zirkular)

Groove Milling by circular interpolation

Fräserschaft
Milling shank
M332/M332.ST/M332.ER



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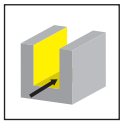
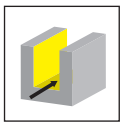
178-181

Grundaufnahme
Basic Holder
WFB



Seite/Page
182

Einschraubfräser
Screw-in cutter
M332.M



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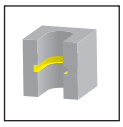
183

Schneidplatte
Insert
332/632/636/932
939



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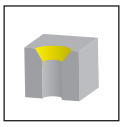
184-185, 189-190, 193-197



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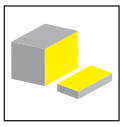
186

Seite/Page
187-188, 199



Seite/Page
191-192, 198

M332

Fräser mit wechselbarer Schneidplatte

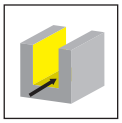
ab Bohrung Ø 32 mm

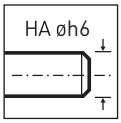
Milling shank with exchangeable insert

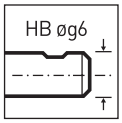
from bore Ø 32 mm

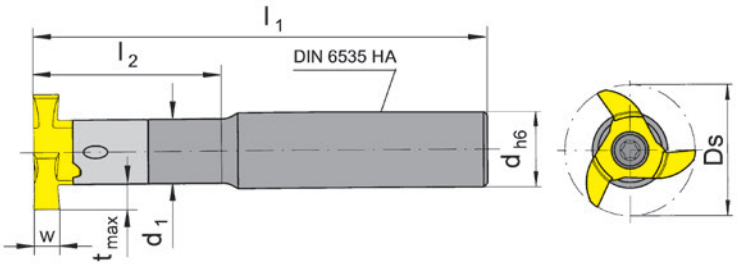
Fräserschaft
Milling shank

M332









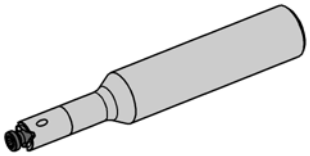


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

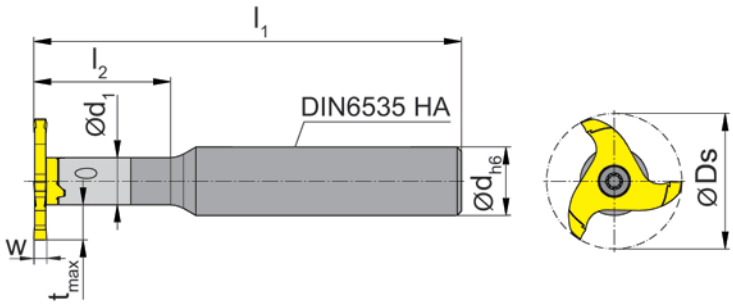
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M332...	**5.17T20P**	**T20PQ**

Fräserschaft
Milling shank

M332



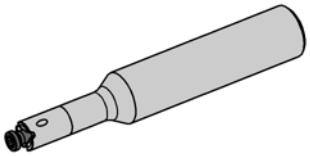


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

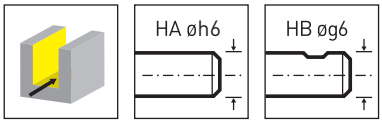
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

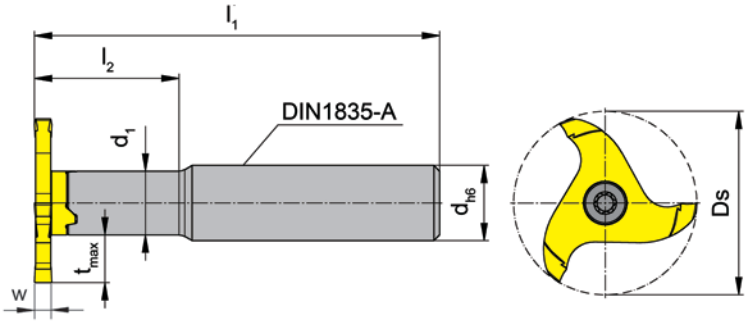
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M332...	**5.17T20P**	**T20PQ**

Fräserschaft
Milling shank

M332.ST





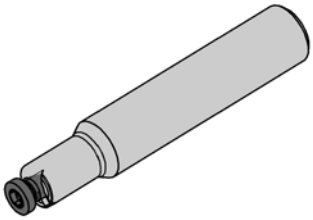


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M332.ST10.2.01A	10	70	25	11	HA	332110R
M332.ST12.2.01A	12	70	25	11	HA	332110R
M332.ST13.2.01A	13	70	25	11	HA	332110R
M332.ST16.01A	16	90	36	14,3	HA	332143R
M332.ST20.01A	20	100	36	14,3	HA	332143R
M332.ST12.2.01B	12	70	25	11	HB	332110R
M332.ST16.01B	16	90	36	14,3	HB	332143R

w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

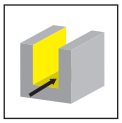
Fräserschäfte **M332.ST12.2.01A, M332.ST12.2.01B** und **M332.ST13.2.01A** sind für Schneidplatten mit erhöhter Frästiefe!
Milling shanks M332.ST12.2.01A, M332.ST12.2.01B and M332.ST13.2.01A are usable for inserts with increased milling depth!

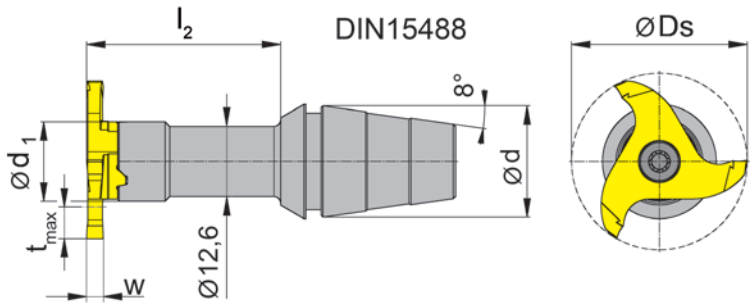
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M332...	**5.17T20P**	**T20PQ**

Fräserschaft
Milling shank

M332.ER





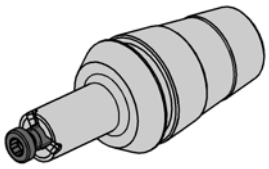


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	d	l_2	d_1	Spannmutter Clamping nut	HWS
M332.ER20.02	20	35	14,3	ER20.6499/ERM20.6499	332143R

w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

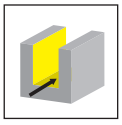
Spannmutter ist nicht im Lieferumfang enthalten - bitte separat bestellen!
Clamping nut is not combined with milling shank - separate order required!

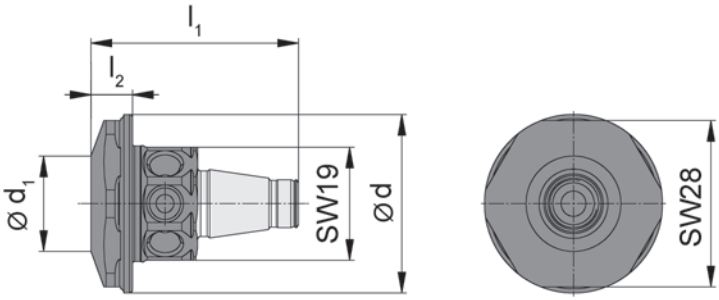
Ersatzteile
Spare Parts

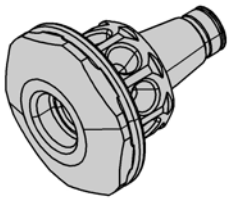
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M332.ER20.02	**5.17T20P**	**T20PQ**

Grundaufnahme
Basic Holder

WFB







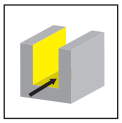
Bestellnummer Part number	l_1	l_2	d_1	d
WFB.2012.M081.01	35	7	16	30

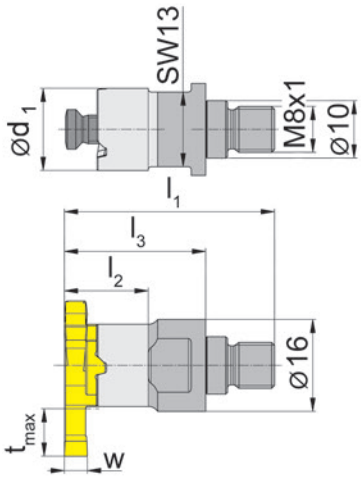
für Einschraubfräser
for Screw-in cutter

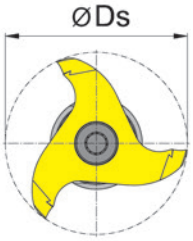
Einschraubfräser
Screw-in cutter

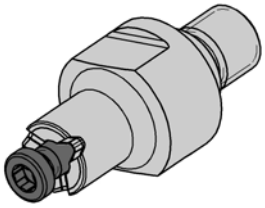
M332.M

B









Bestellnummer Part number	l_1	l_2	l_3	d_1	SW	HWS	HMS
M332.M081.01	37	15	25	14,3	13	332143R	08001

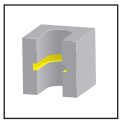
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

Ersatzteile
Spare Parts

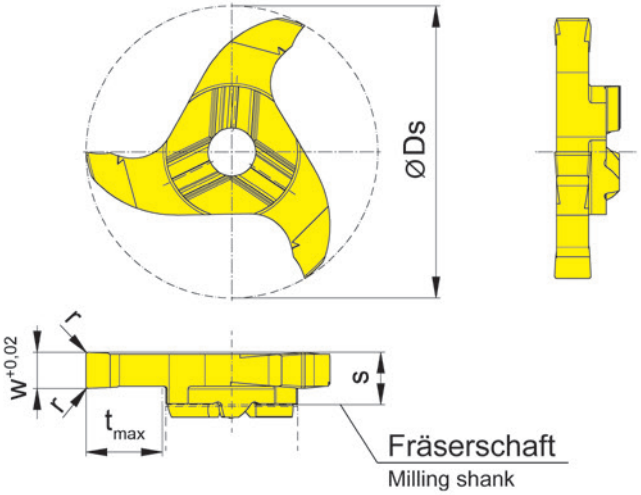
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M332.M081.01	**5.17T20P**	**T20PQ**

Schneidplatte
Insert

332



z3



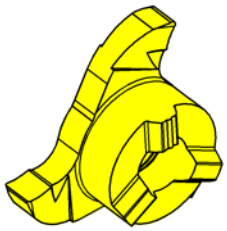


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

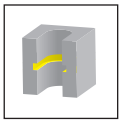
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

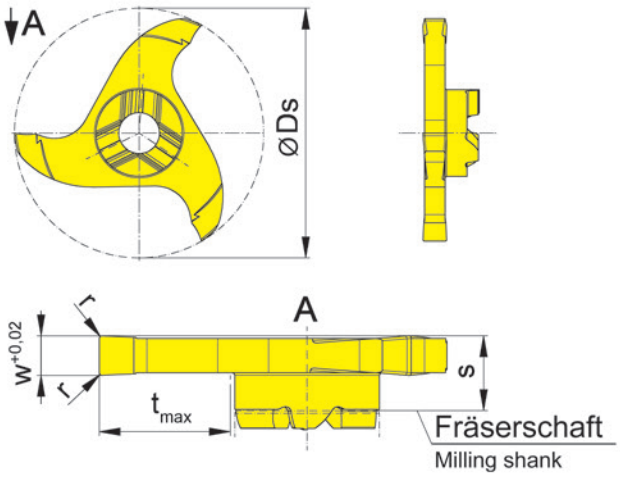
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	T125
332.0200.00	31,7	2	5,7	0,2	8,3	3	332143R		Δ	▲
332.0250.00	31,7	2,5	5,7	0,2	8,3	3	332143R		Δ	▲
332.0300.00	31,7	3	5,7	0,2	8,3	3	332143R		▲	▲
332.0350.00	31,7	3,5	5,7	0,2	8,3	3	332143R		▲	
332.0400.00	31,7	4	5,7	0,2	8,3	3	332143R		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Schneidplatte
Insert

332



z3



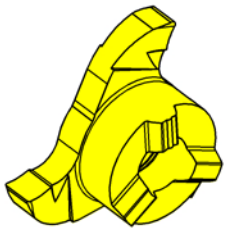


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

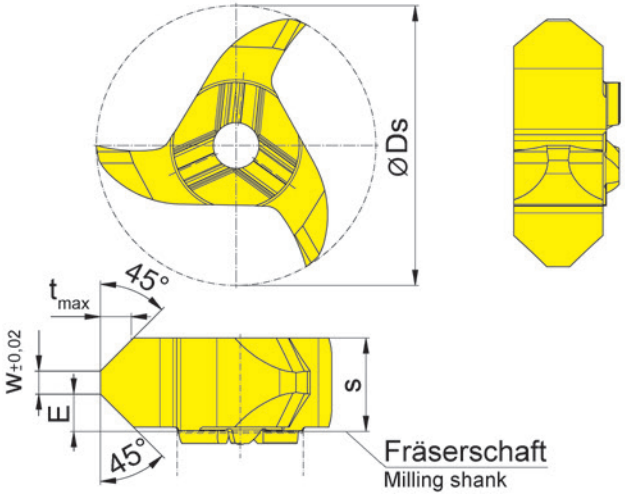
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	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		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Schneidplatte
Insert

332



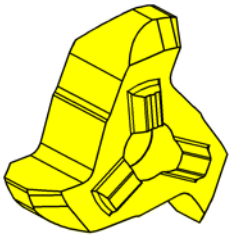


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

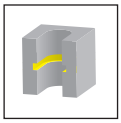
Δ 4 Wochen
4 weeks

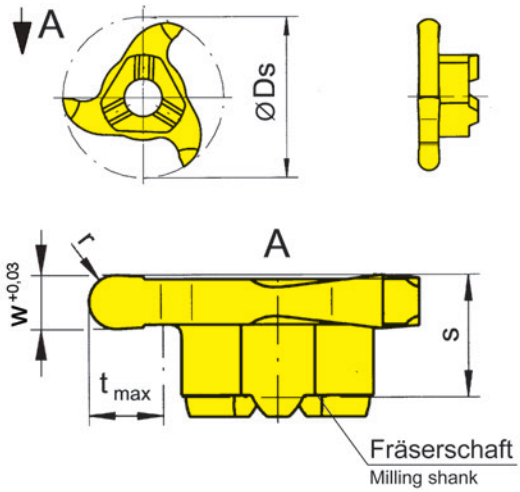
Bestellnummer Part number	Ds	E	s	w	t_{max}	Z	HIS		TA45
332.4545.35.00	31,7	4,25	10,6	2,6	3,5	3	332143R		▲
								P	●
								M	●
								K	●
								N	●
								S	●
								H	-

Für Schneidplatte s = 10,6 mm Schraube 5.13T20P verwenden
For Insert s = 10,6 mm use screw 5.13T20P

Schneidplatte
Insert

332





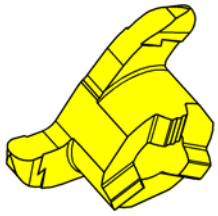


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

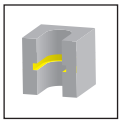
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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	o
								S	●
								H	-

Schneidplatte
Insert

632

z6


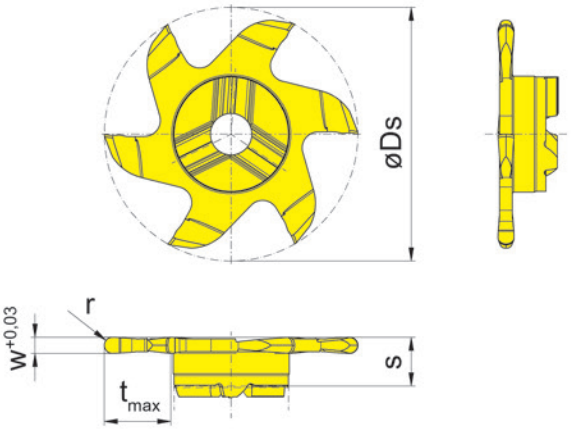


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

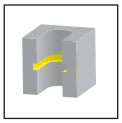
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

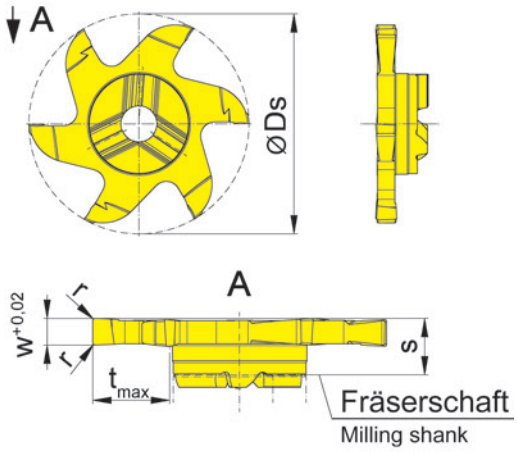
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45
632.0010.20	31,7	2	6,1	1	8,3	6	332143R		▲
632.0015.30	31,7	3	6,1	1,5	8,3	6	332143R		▲
632.0020.40	31,7	4	6,1	2	8,3	6	332143R		▲
								P	●
								M	●
								K	●
								N	o
								S	●
								H	-

Schneidplatte
Insert

632



z6



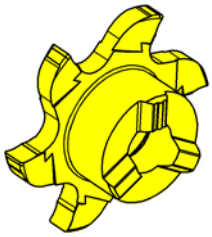


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

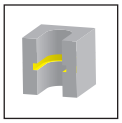
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

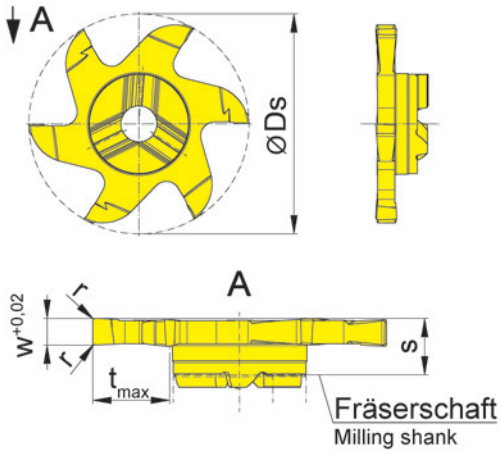
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	TA45
632.0200.00	31,7	2	6,1	0,2	8,3	6	332143R		▲	▲
632.0250.00	31,7	2,5	6,1	0,2	8,3	6	332143R		▲	▲
632.0300.00	31,7	3	6,1	0,2	8,3	6	332143R		▲	▲
632.0400.00	31,7	4	6,1	0,2	8,3	6	332143R		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Schneidplatte
Insert

632



z6



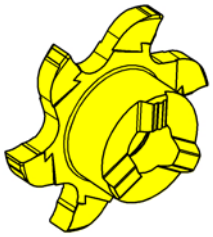


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	TA45
632.0100.2.00	31,7	1	6,1	-	10	6	332110R		▲	
632.0120.2.00	31,7	1,2	6,1	0,1	10	6	332110R		▲	
632.0150.2.00	31,7	1,5	6,1	0,2	10	6	332110R		▲	▲
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		▲	▲
632.0250.2.00	31,7	2,5	6,1	0,2	10	6	332110R		▲	▲
632.0300.2.00	31,7	3	6,1	0,2	10	6	332110R		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Schneidplatte
Insert

632

z6

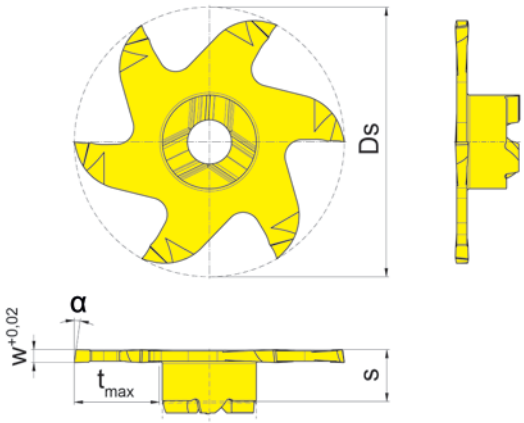


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

636

z6

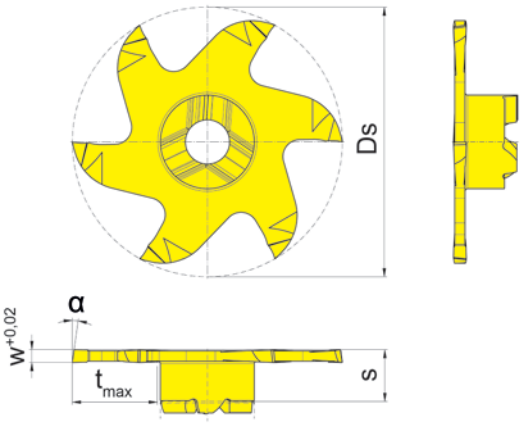


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

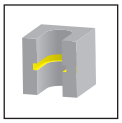
Δ 4 Wochen
4 weeks

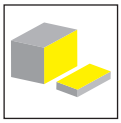
Bestellnummer Part number	Ds	w	s	α	t_{max}	Z	HIS		RC25
636.L810.2.00	35,7	1	6,1	8°	12	6	332110R		▲
636.L815.2.00	35,7	1,5	6,1	8°	12	6	332110R		▲
636.L820.2.00	35,7	2	6,1	8°	12	6	332110R		▲
								P	●
								M	●
								K	●
								N	-
								S	-
								H	-

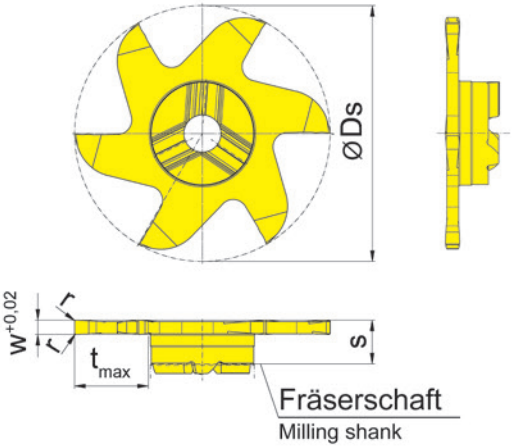
ab Schneidbreite 2,5 mm Kreuzverzahnung
from width of groove 2,5 mm toothing with cross-cut

Schneidplatte
Insert

636







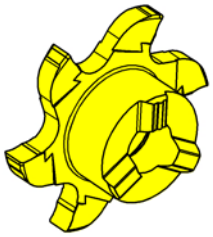


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

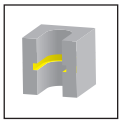
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	TA45
636.0150.00	35,7	1,5	6,1	0,1	10,2	6	332143R		▲	▲
636.0200.00	35,7	2	6,1	0,2	10,2	6	332143R		▲	▲
636.0250.00	35,7	2,5	6,1	0,2	10,2	6	332143R		▲	▲
636.0300.00	35,7	3	6,1	0,2	10,2	6	332143R		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Bitte Verzahnungs-Ø d1 von Fräserschaft beachten!
Please consider pocket seat Ø d1 of the miling shank!

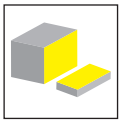
Schneidplatte
Insert

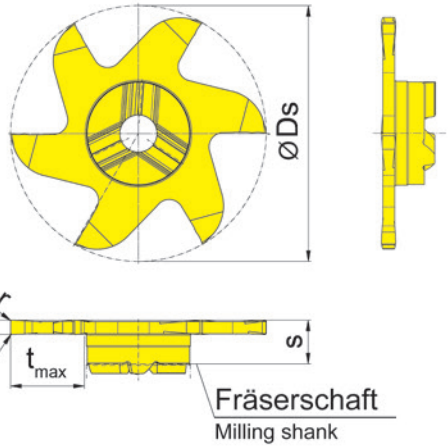
636

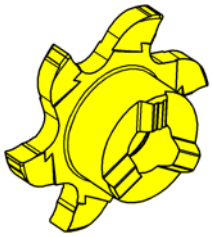
B



z6







HM-Sorten
Carbide grades

Abbildung = rechtsschneidend
Picture = right hand cutting version

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

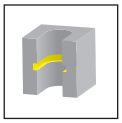
Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	EG35	EG55	TA45
636.0050.00	35,7	0,5	6,1	-	10,2	6	332143R			▲		
636.0100.00	35,7	1	6,1	-	10,2	6	332143R				▲	
636.0110.2.00	35,7	1,1	6,1	0,1	12	6	332110R		▲			
636.0130.2.00	35,7	1,3	6,1	0,1	12	6	332110R		▲			
636.0150.2.00	35,7	1,5	6,1	0,1	12	6	332110R		▲			▲
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		▲			▲
								P	●	●	●	●
								M	●	●	o	●
								K	●	o	o	●
								N	o	-	-	●
								S	●	-	-	●
								H	-	-	-	-

ab Schneidbreite 2,5 mm Kreuzverzahnung
from width of groove 2,5 mm toothing with cross-cut

Bitte Verzahnungs-Ø d1 von Fräserschaft beachten!
Please consider pocket seat Ø d1 of the miling shank!

Schneidplatte
Insert

932



z9

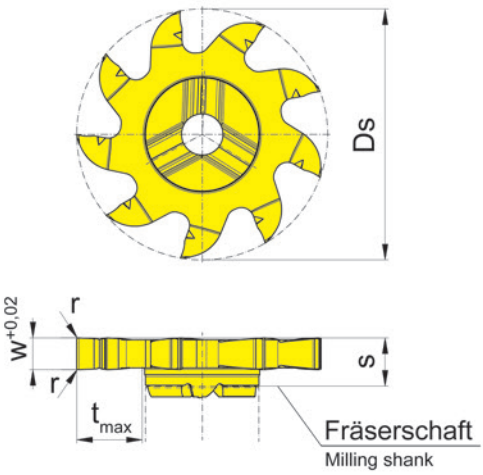


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

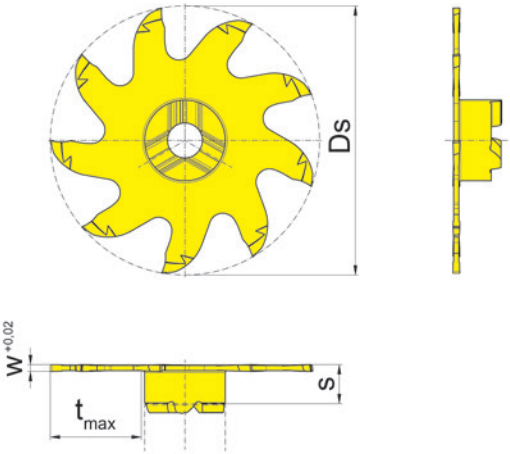
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

939



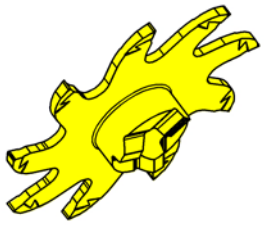


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

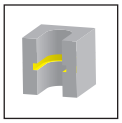
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

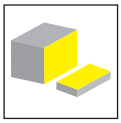
Bestellnummer Part number	Ds	w	s	t_{max}	Z	HIS		RC25
939.0100.3.00	40	1	5,8	13,5	9	332120R		▲
939.0150.3.00	40	1,5	5,8	13,5	9	332120R		▲
939.0200.3.00	40	2	5,8	13,5	9	332120R		▲
939.0250.3.00	40	2,5	5,8	13,5	9	332120R		▲
							P	●
							M	●
							K	●
							N	-
							S	-
							H	-

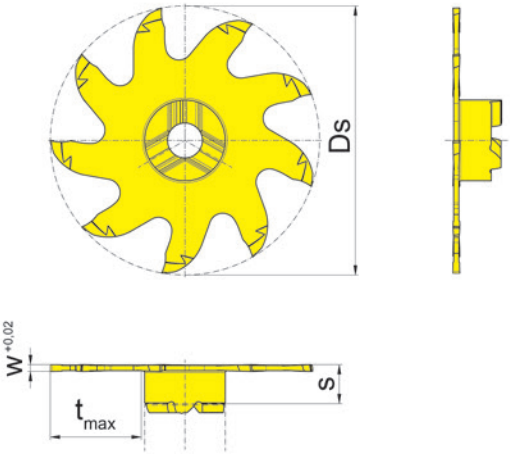
Schneidplatte
Insert

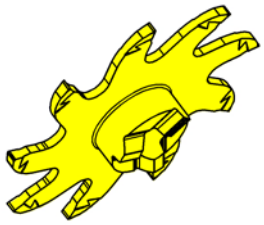
939



z9







HM-Sorten
Carbide grades

Abbildung = rechtsschneidend
Picture = right hand cutting version

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Schneidplatte
Insert

939

z9

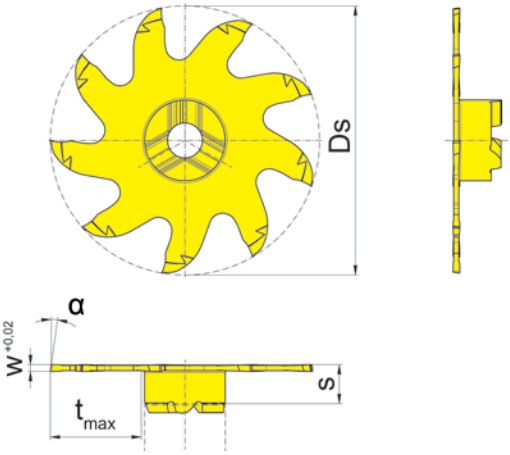


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

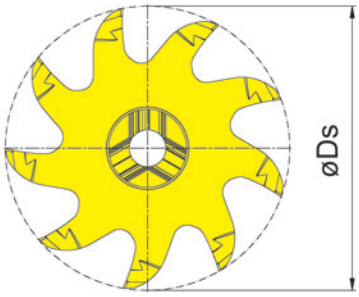
Bestellnummer Part number	Ds	w	s	α	t_{max}	Z	HIS	RC25
939.L810.3.00	40	1	5,8	8°	13,5	9	332120R	▲
939.L810.4.00	40	1	5,8	8°	14	9	332110R	Δ
939.L815.4.00	40	1,5	5,8	8°	14	9	332110R	Δ

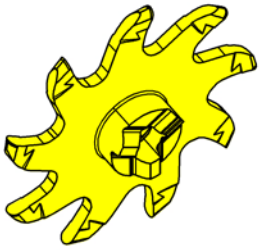
P	●
M	●
K	●
N	-
S	-
H	-

Schneidplatte
Insert

939

z9





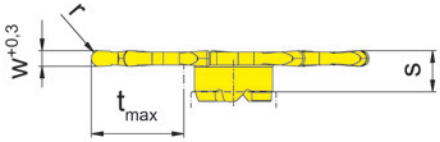


Abbildung = rechtsschneidend
Picture = right hand cutting version

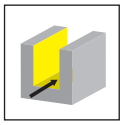
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Fräserschaft
Milling shank
M335



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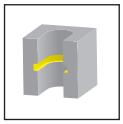
Schneidplatte
Insert
335



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M335

Fräser mit wechselbarer Schneidplatte

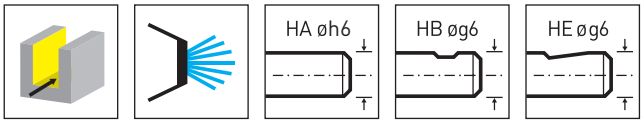
ab Bohrung Ø 35 mm

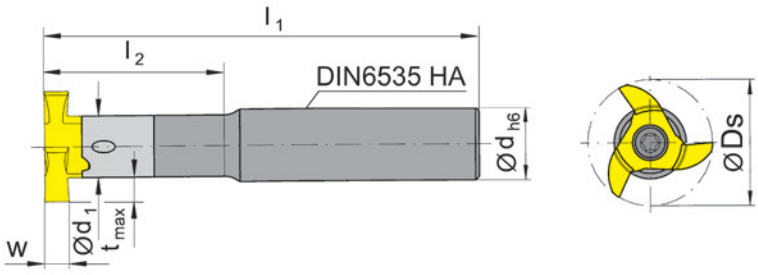
Milling shank with exchangeable insert

from bore Ø 35 mm

Fräserschaft
Milling shank

M335





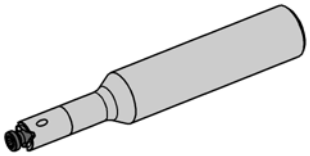


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

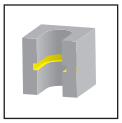
w, Ds, tmax siehe Schneidplatte
w, Ds, tmax see inserts

Ersatzteile
Spare Parts

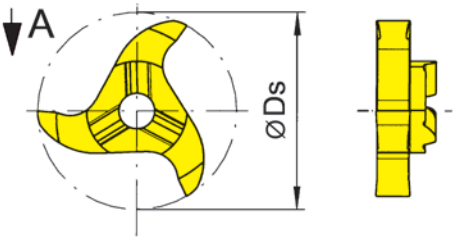
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M335...	**6.17T25P**	**T25PQ**

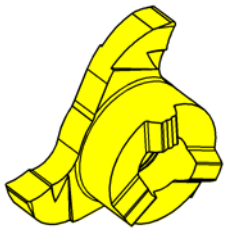
Schneidplatte
Insert

335



z3





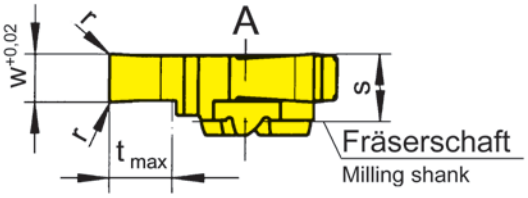


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

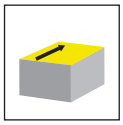
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	w	s	r	t_{max}	Z	HIS		AS45	T125
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		▲	▲
								P	●	●
								M	●	●
								K	●	●
								N	o	●
								S	●	●
								H	-	-

Auf Anfrage:
Schneidplatten mit 8,0 - 15,0 mm Breite nur als Formplatten, abhängig vom zu zerspanenden Werkstoff, lieferbar!
Upon request:
Insert widths of 8,0 - 15,0 mm are only available as special profiled inserts.Use of these widths depend from the workpiece material to be machined.

Fräserschaft
Milling shank
M620



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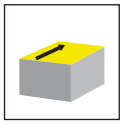
Schneidplatte
Insert
620



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M620

Fräser mit wechselbarer Schneidplatte

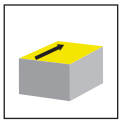
Schneidkreis Ø 21,7 mm

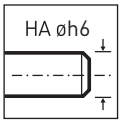
Milling shank with exchangeable insert

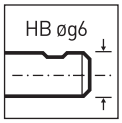
Cutting edge Ø 21,7 mm

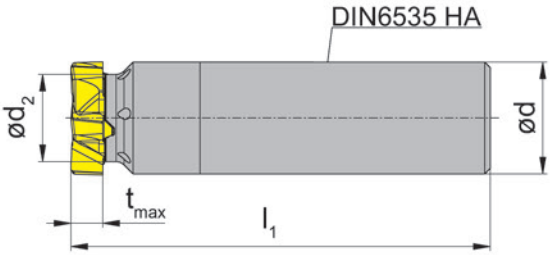
Fräserschaft
Milling shank

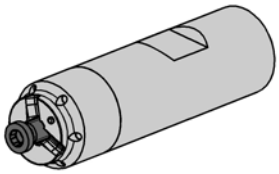
M620











Bestellnummer 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

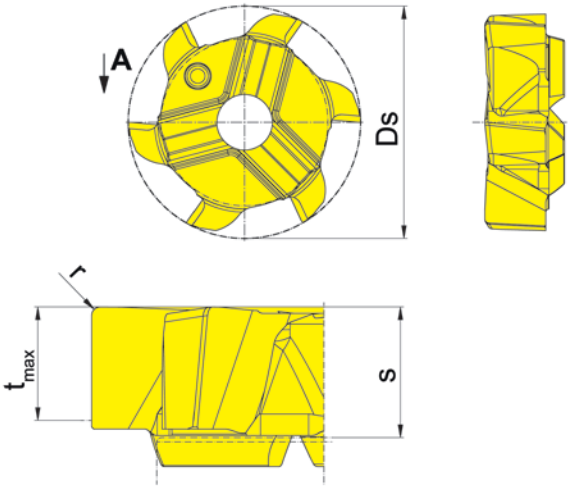
tmax siehe Schneidplatten
tmax see inserts

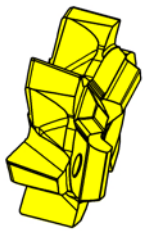
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M620...	**5.14T20P**	**T20PQ**

Schneidplatte
Insert

620





HM-Sorten
Carbide grades

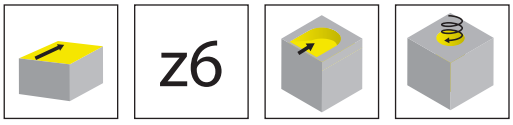
▲ ab Lager
on stock

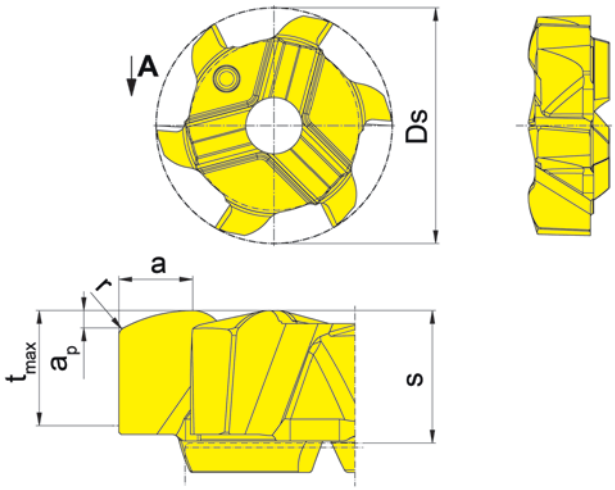
Δ 4 Wochen
4 weeks

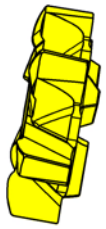
Bestellnummer Part number	Ds	Z	r	t_{max}	s	HIS		AS45
620.PL53.64	21,7	6	0,4	5,3	6,1	620156R		▲
							P	●
							M	●
							K	●
							N	o
							S	●
							H	-

Schneidplatte
Insert

620







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

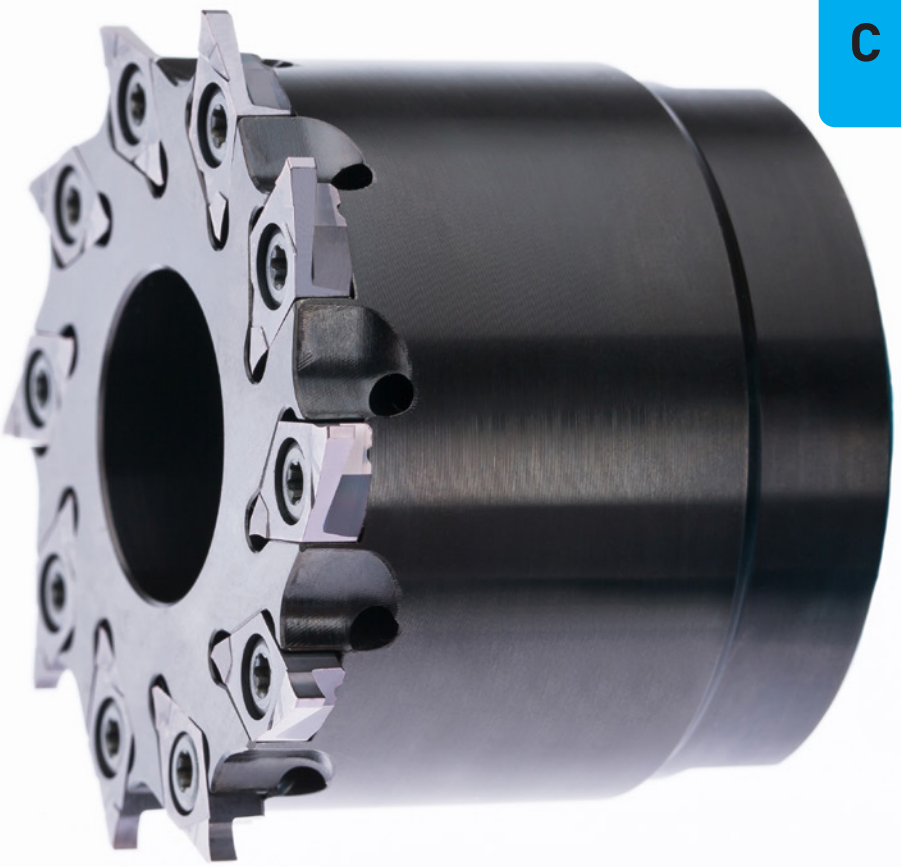
Bestellnummer Part number	Ds	a	Z	r	t_{max}	a_p	s	HIS		AS45
620.HV08.04	21,7	4,4	6	0,4	5,3	0,8	6,1	620156R		▲
									P	●
									M	●
									K	●
									N	o
									S	●
									H	-

Hochvorschubfräsen
High Feed Milling

Eintauchwinkel Diving angle	theorethischer Eckenradius rth = Programmierradius theoretical corner radius rth= programming radius	max. Abweichung max. difference
1°	1,15 mm	0,43 mm

C

M275



Schaftfräser
Einschraubfräser
Aufsteckfräser
Scheibenfräser

ab Schneidkreis Ø 31 mm

End Mill
Screw-in Cutter
Arbour Mounted Cutter
Disc Milling Cutter

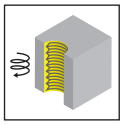
from cutting edge Ø 31 mm

Nutfräsen (zirkular)

Groove Milling by circular interpolation

C

Schaftfräser
End Mill
M275



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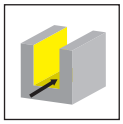
Einschraubfräser
Screw-in cutter
M275



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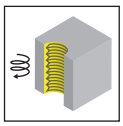
Aufsteckfräser
Arbour Mounted Cutter
M275



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Wendeschneidplatte
Indexable insert
S275/RS275

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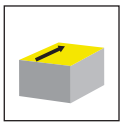

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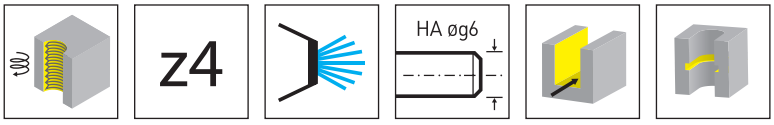
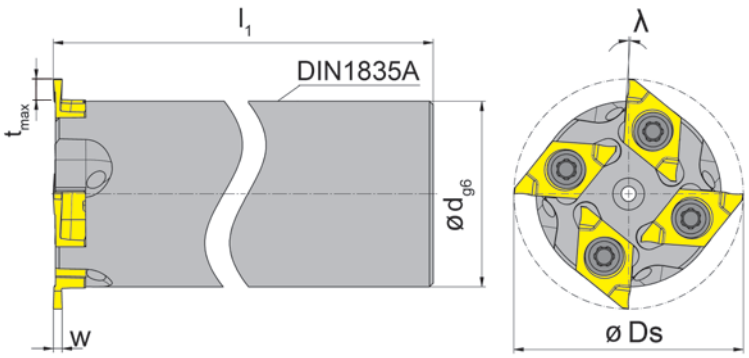
Schaftfräser
End Mill

M275





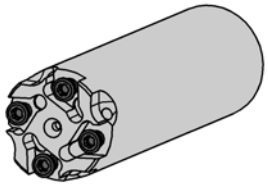


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Ds	d	l_1	λ	HWS
M275.031.D25.3.04A	31	25	125	4°	275041R • 275043R

w und tmax siehe WSP
w and tmax see inserts

Schaftmaterial: Stahl (nicht schrumpfbar)
Material of shank: Steel (not recommended for shrink fitting)

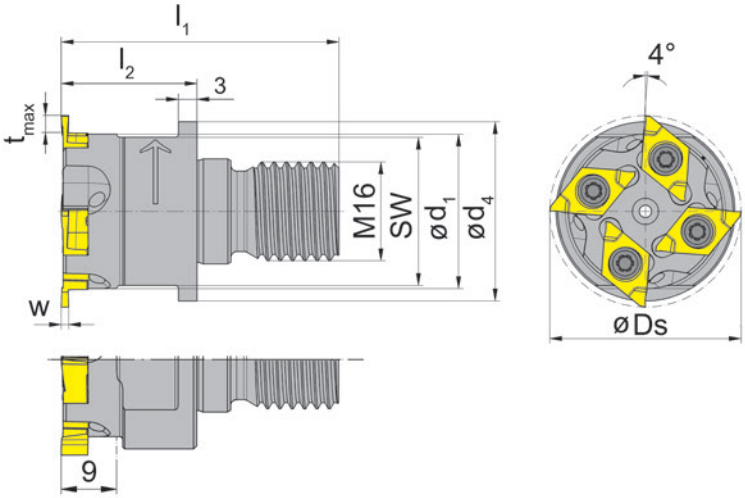
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M275.031.D25.3.04A	**3.5.10T10P**	**T10PL**

Einschraubfräser
Screw-in cutter

M275

C



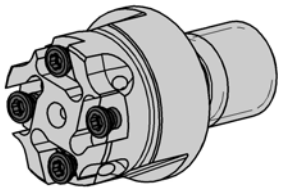


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

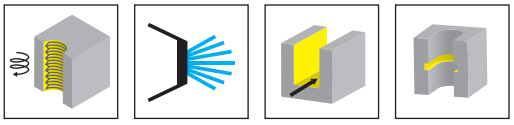
w und tmax siehe WSP
w and tmax see inserts

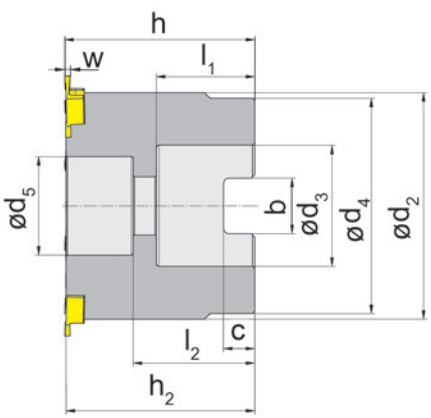
Ersatzteile
Spare Parts

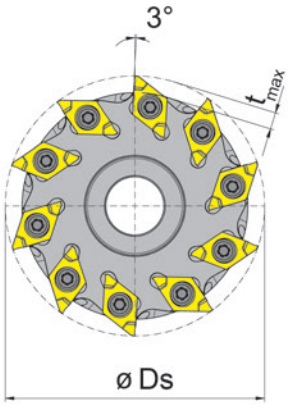
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M275...	**3.5.10T10P**	**T10PL**

Aufsteckfräser
Arbour Mounted Cutter

M275







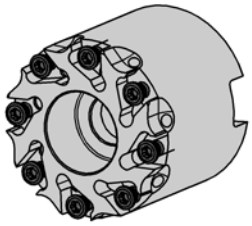


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 und tmax siehe WSP
w and tmax see inserts

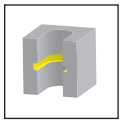
Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

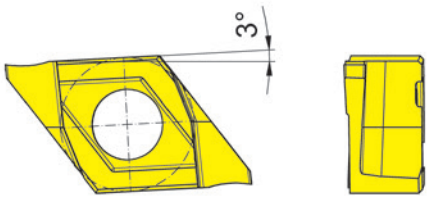
Ersatzteile
Spare Parts

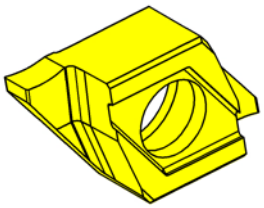
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M275...	**3.5.10T10P**	**T10PL**

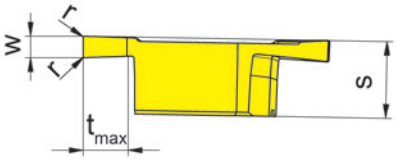
Wendeschneidplatte
Indexable insert

S275









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

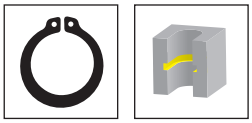
Δ 4 Wochen
4 weeks

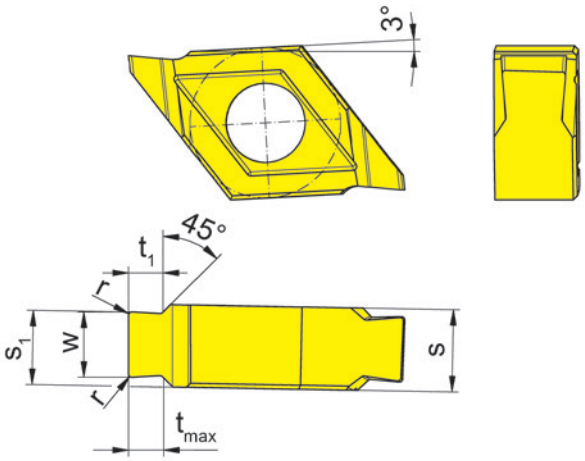
Bestellnummer Part number	Nw	w	s	r	t_{max}	HIS		AS45
RS275.0110.00	1,1	1,2	4,3	0,1	2,5	275043R		Δ
RS275.0130.00	1,3	1,4	4,3	0,1	2,5	275043R		▲
RS275.0185.00	1,85	1,95	4,3	0,15	2,5	275043R		▲
RS275.0215.00	2,15	2,25	4,3	0,15	2,5	275043R		▲
RS275.0265.00	2,65	2,75	4,3	0,15	2,5	275043R		▲
RS275.0315.00	3,15	3,25	4,3	0,15	2,5	275043R		▲
LS275.0130.00	1,3	1,4	4,3	0,1	2,5	275043L		Δ
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		Δ
							P	●
							M	●
							K	●
							N	o
							S	●
							H	-

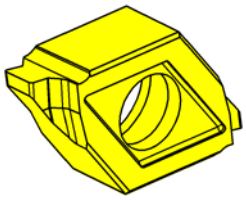
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Wendeschneidplatte
Indexable insert

S275







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

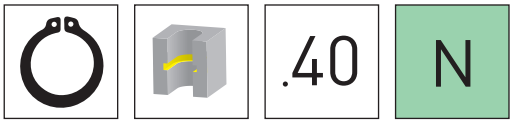
Δ 4 Wochen
4 weeks

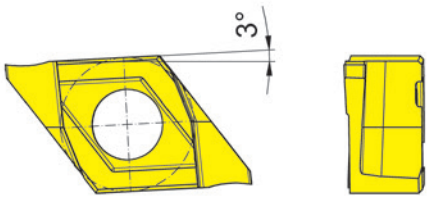
Bestellnummer Part number	Nw	w	t_1	s	s_1	r	t_{max}	HIS		AS45
RS275.1610.41	1,6	1,7	0,95	4,1	3,17	0,1	1	275041R		▲
RS275.1812.41	1,85	1,95	1,21	4,1	3,29	0,15	1,25	275041R		▲
RS275.2115.41	2,15	2,25	1,45	4,1	3,44	0,15	1,5	275041R		▲
RS275.2617.41	2,65	2,75	1,7	4,1	3,39	0,15	1,75	275041R		▲
RS275.3118.41	3,15	3,25	1,7	4,1	3,7	0,15	1,75	275041R		▲
									P	●
									M	●
									K	●
									N	o
									S	●
									H	-

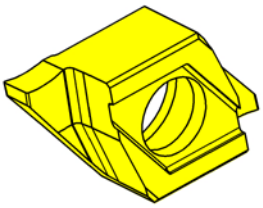
Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

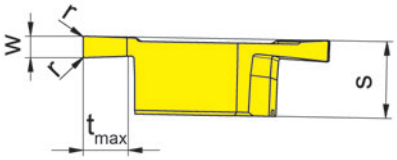
Wendeschneidplatte
Indexable insert

S275









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

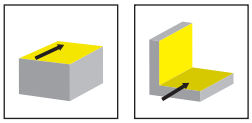
Δ 4 Wochen
4 weeks

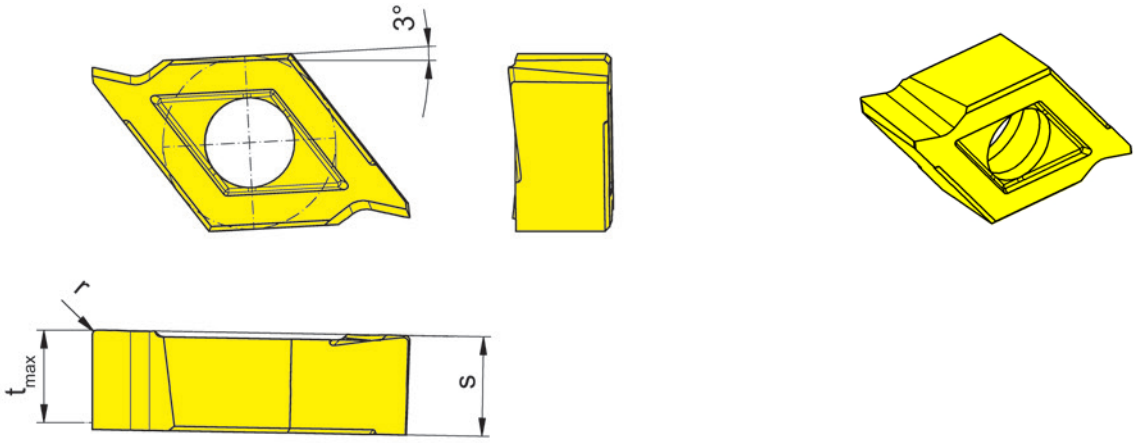
Bestellnummer Part number	Nw	w	s	r	t_{max}	HIS		TA45
RS275.0130.40	1,3	1,4	4,3	0,1	2,5	275043R		▲
RS275.0215.40	2,15	2,25	4,3	0,15	2,5	275043R		Δ
RS275.0265.40	2,65	2,75	4,3	0,15	2,5	275043R		Δ
RS275.0315.40	3,15	3,25	4,3	0,15	2,5	275043R		Δ
LS275.0315.40	3,15	3,25	4,3	0,15	2,5	275043L		Δ
							P	-
							M	-
							K	-
							N	●
							S	-
							H	-

Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

Wendeschneidplatte
Indexable insert

RS275





R = rechts wie gezeichnet
R = right hand version shown

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

M380/M381

D

Schaftfräser
Aufsteckfräser
Monoblockfräser
Scheibenfräser

ab Bohrung Ø 45 mm

End Mill
Arbour Mounted Cutter
Mono Milling Cutter
Disc Milling Cutter

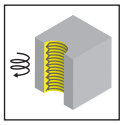
from bore Ø 45 mm

Nutfräsen (zirkular)

Groove Milling by circular interpolation

D

Schaftfräser
End Mill
380



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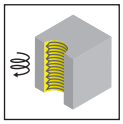
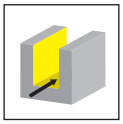
221

Aufsteckfräser
Arbour Mounted Cutter
380/380...IK



Seite/Page
222



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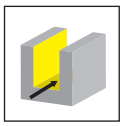
223-225

Monoblockfräser
Mono Milling Cutter
ABS..380



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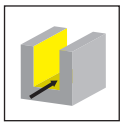
226

Scheibenfräser
Disc Milling Cutter
381



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Wendeschneidplatte
Indexable insert
314

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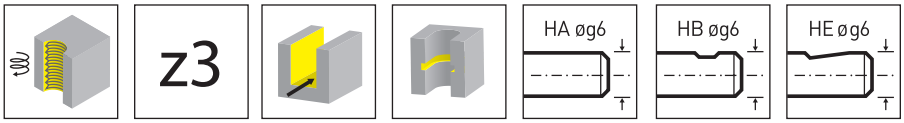
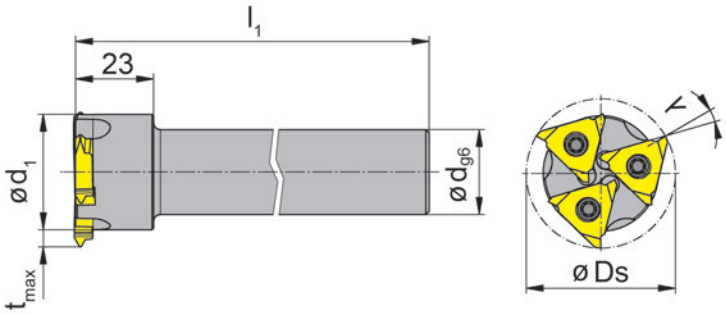
228-229





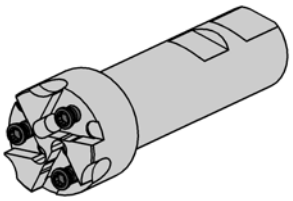


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

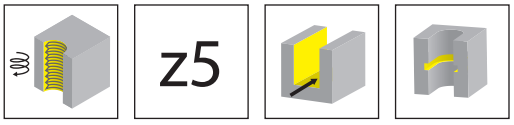
tmax siehe Schneidplatten
tmax see inserts

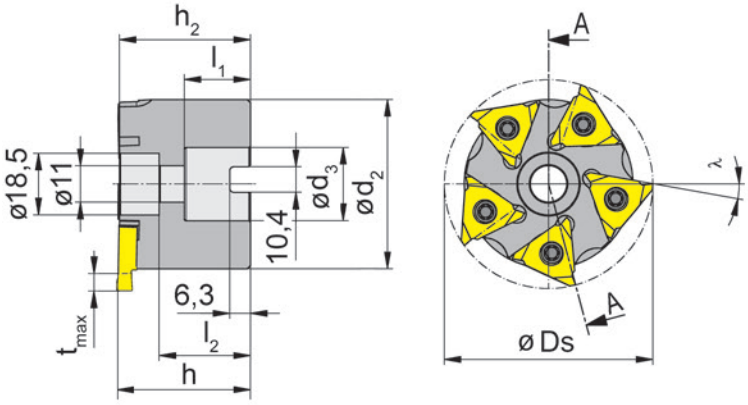
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380...	**5.12T20P**	**T20PQ**

Aufsteckfräser
Arbour Mounted Cutter

380





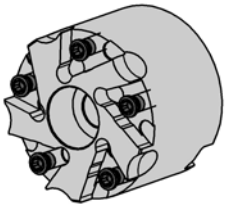


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

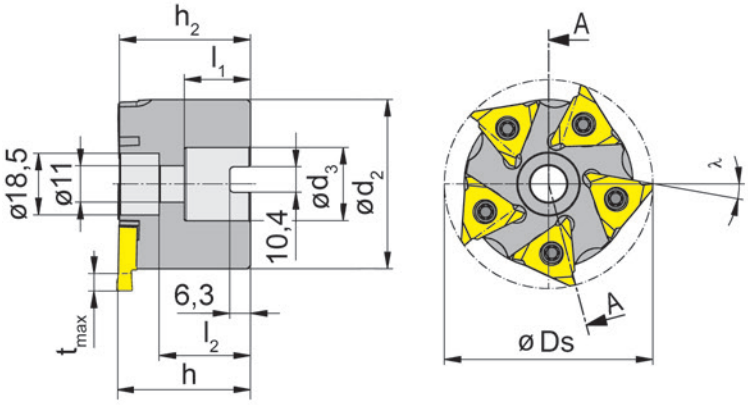
tmax siehe Schneidplatten
tmax see inserts

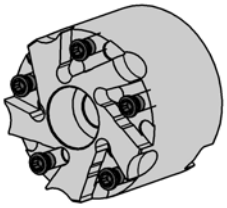
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380.0063.05	**5.12T20P**	**T20PQ**

Aufsteckfräser
Arbour Mounted Cutter

380...IK





D

Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

tmax siehe Schneidplatten
tmax see inserts

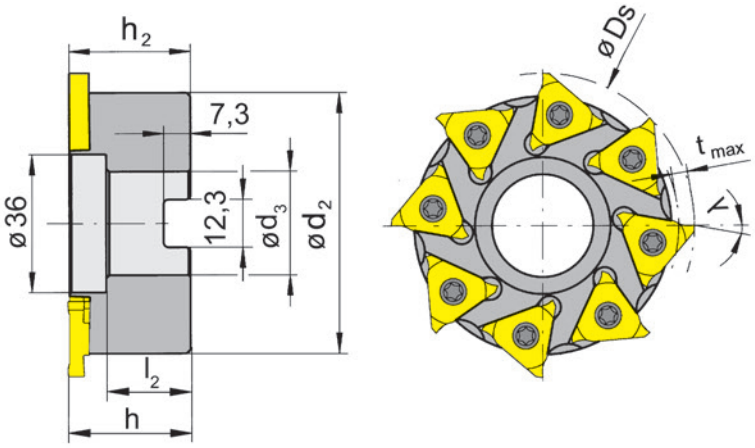
Fräsdorn gehört nicht zum Lieferumfang. Bitte separat bestellen!
Milling arbour is not combined with milling cutter - seperate order required!

Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380.0063.05IK	**5.12T20P**	**T20PQ**

Aufsteckfräser
Arbour Mounted Cutter

380



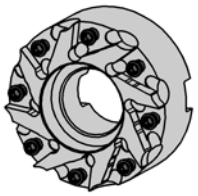


Abbildung = rechtsschneidend
Picture = right hand cutting version

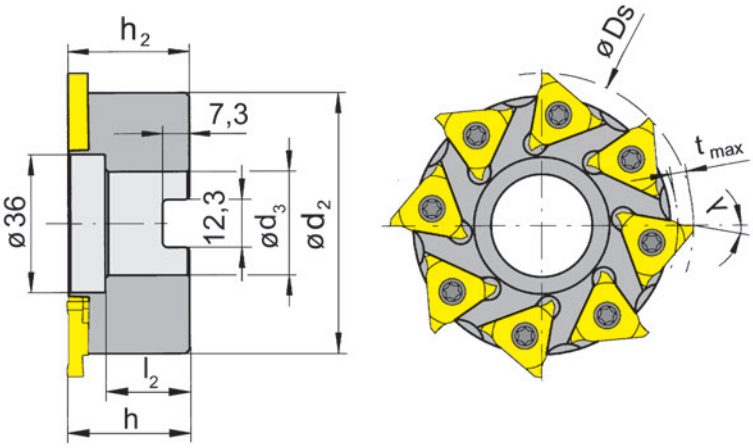
Bestellnummer Part number	Z	Ds	t_{max}	h_2	h	d_3	l_2	λ	d_2	HWS
380.0080.08	8	80	5	31,6	32	27	21,6	10°	68	314027R • 314041R • 314052R

Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

Fräseranzugsschraube **030.0012.0726** gehört zum Lieferumfang.
Bolt screw 030.0012.0726 is combined with the milling cutter.

Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380.0080.08	**5.12T20P**	**T20PQ**



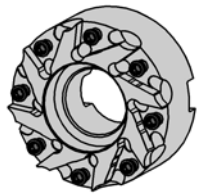


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	h_2	h	d_3	l_2	λ	d_2	HWS
380.0080.08IK	8	80	5	39,8	40	27	21,6	10°	68	314027R • 314041R • 314052R

Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

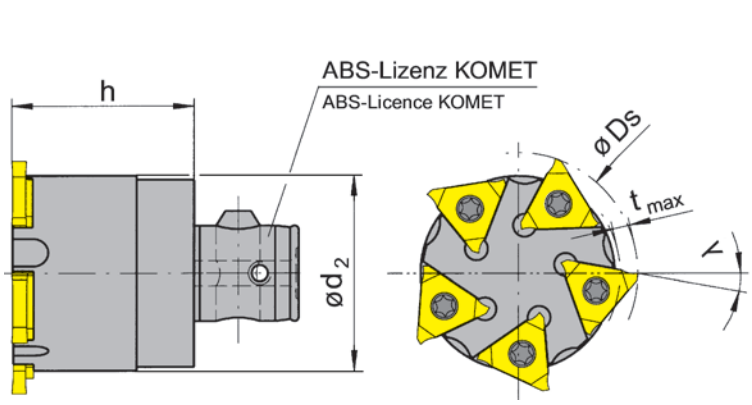
Fräseranzugsschraube **030.0012.0726** gehört zum Lieferumfang.
Bolt screw 030.0012.0726 is combined with the milling cutter.

Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380.0080.08IK	**5.12T20P**	**T20PQ**

Monoblockfräser
Mono Milling Cutter

ABS..380



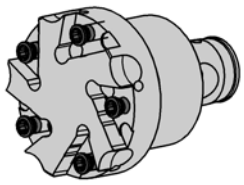


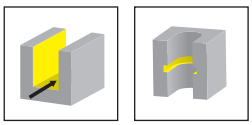
Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 siehe Schneidplatten
tmax see inserts

Ersatzteile
Spare Parts

Monoblockfräser Mono Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
ABS32...	**5.12T20P**	**T20PQ**



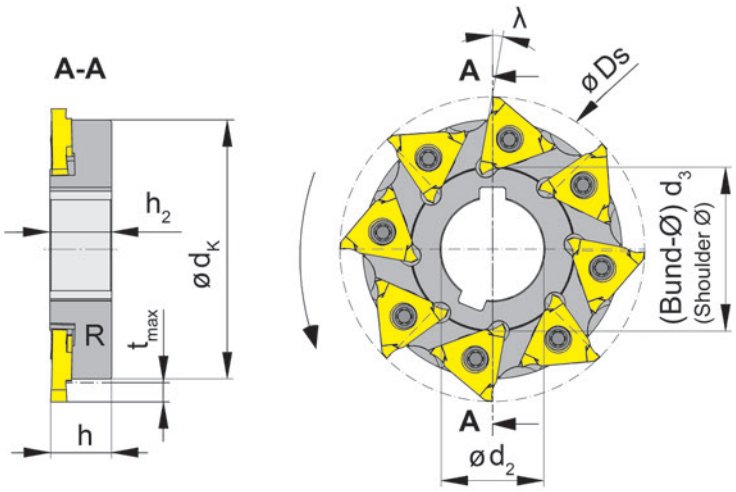


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

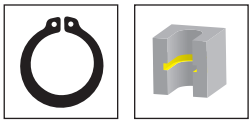
Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

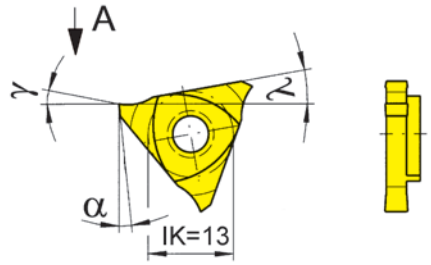
tmax siehe Schneidplatten
tmax see inserts

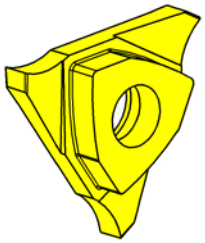
Ersatzteile
Spare Parts

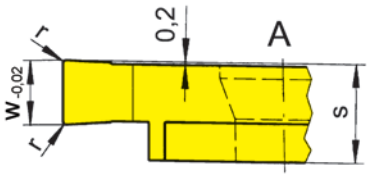
Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
R/L381...	**5.12T20P**	**T20PQ**

Wendeschneidplatte 314
Indexable insert









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

Bestellnummer 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	▲		▲
R314.0215.00	2,15	2,26	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	▲		
L314.0215.00	2,15	2,26	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	Δ		▲
L314.0515.00	5,15	5,26	0,15	5,4	314052L	▲		▲

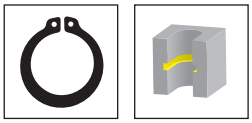
	AS45	TI25	TN35
P	●	●	●
M	●	●	●
K	●	●	●
N	o	●	●
S	●	●	●
H	-	-	-

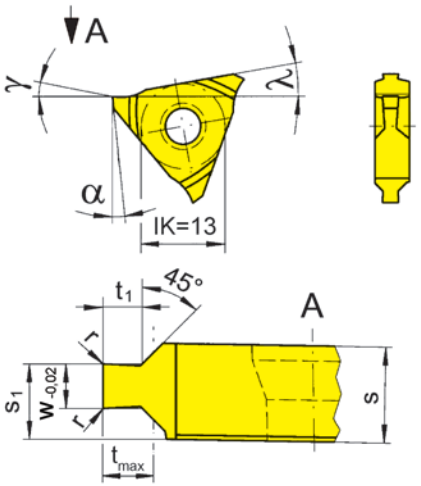
Abmessungen für Seegerringnuten DIN 471/472
Widths for circlip grooves DIN 471/472

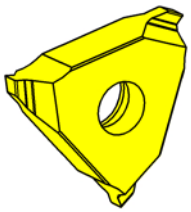
Geometrie in Abhängigkeit des Einlegewinkel λ
Geometrie depending on angle of seating λ

λ	γ	α
10°	15°	6°
14°	11°	10°

Wendeschneidplatte 314
Indexable insert







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Nw	w	r	s_1	s	t_{max}	t_1	HIS	AS45	TN35
R314.1307.54	1,3	1,41	0,1	4,62	5,45	0,75	0,67	314041R	Δ	Δ
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	▲	▲
R314.4120.54	4,15	4,26	0,15	4,99	5,45	2	1,97	314041R	▲	▲
R314.4125.54	4,15	4,26	0,15	4,99	5,45	2,5	2,47	314041R	▲	▲
R314.5130.61	5,15	5,26	0,15	5,85	6,1	3	2,97	314052R	▲	▲
L314.1307.54	1,3	1,41	0,1	4,62	5,45	0,75	0,67	314041L		Δ
L314.1609.54	1,6	1,71	0,1	4,52	5,45	0,85	0,83	314041L	▲	▲
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		▲
L314.3118.54	3,15	3,26	0,15	4,54	5,45	1,75	1,72	314041L	Δ	
L314.4120.54	4,15	4,26	0,15	4,99	5,45	2	1,97	314041L	Δ	Δ
L314.4125.54	4,15	4,26	0,15	4,99	5,45	2,5	2,47	314041L		Δ
L314.5130.61	5,15	5,26	0,15	5,85	6,1	3	2,97	314052L		Δ

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

Abmessungen für Seegerringnuten DIN 471/472 mit Nutaußenkantenfasung
Widths for circlip grooves DIN 471/472 with chamfer

Geometrie in Abhängigkeit des Einlegewinkel λ
Geometrie depending on angle of seating λ

λ	γ	α
10°	15°	6°
14°	11°	10°

D

M101

E

Nutfräser

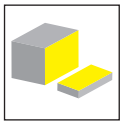
ab Schneidkreis Ø 63 mm
Nutbreite 1,2 - 4,6 mm

Groove milling cutter

from cutting edge Ø 63 mm
Width of groove 1,2 - 4,6 mm

E

Nutfräser
Groove milling cutter
M101



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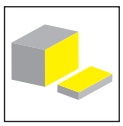
Scheibenfräser
Disc Milling Cutter
M101



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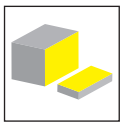
Aufsteckfräser
Arbour Mounted Cutter
M101



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Schneidplatte
Insert
S101

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Technische Hinweise
Technical Instructions

Seite/Page
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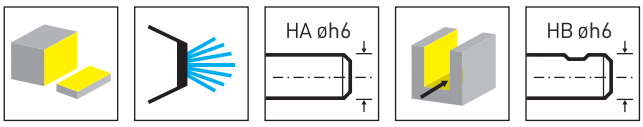
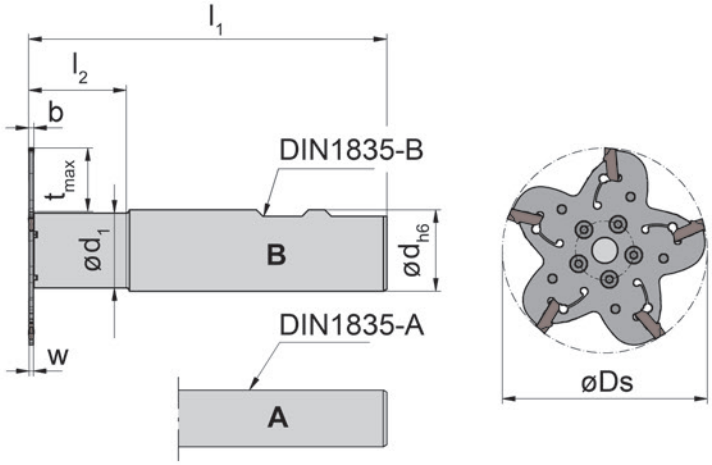
Nutfräser
Groove milling cutter

M101





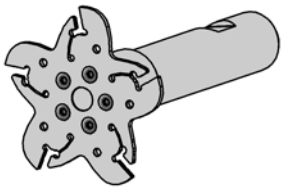


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	b	t_{max}	Form	Schneidbreite Width of groove	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

w siehe Schneidplatten
w see inserts

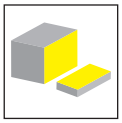
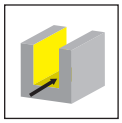
Der Schlüssel **P101.01** gehört nicht zum Lieferumfang des Fräsers. Bitte separat bestellen!
Wrench P101.01 is not combined with slotting cutter - separate order required!

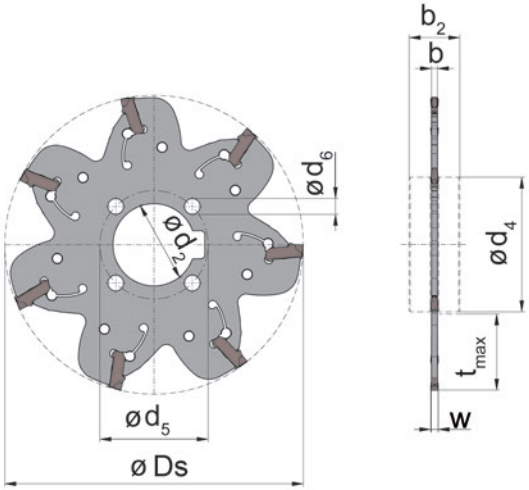
Ersatzteile
Spare Parts

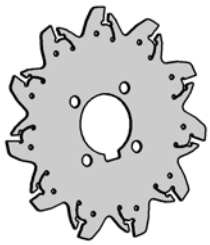
Nutfräser Groove milling cutter	**Schaft** Shank	**Stammblatt** Blade	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Spannschraube** Clamping Screw
M101.063.D16.23.2.12A	**020.D16.23.2.12 A**	**M101.0063.28.23.12**	**T8PL**	
M101.063.D16.23.2.14A	**020.D16.23.2.12 A**	**M101.0063.28.23.14**	**T8PL**	
M101.063.D16.23.2.16A	**020.D16.23.2.16A**	**M101.0063.28.23.16**	**T8PL**	
M101.063.D16.23.2.20A	**020.D16.23.2.16A**	**M101.0063.28.23.20**	**T8PL**	
M101.063.D20.23.2.12B	**020.D20.23.2.12B**	**M101.0063.28.23.12**	**T8PL**	
M101.063.D20.23.2.14B	**020.D20.23.2.12B**	**M101.0063.28.23.14**	**T8PL**	
M101.063.D20.23.2.16B	**020.D20.23.2.16B**	**M101.0063.28.23.16**	**T8PL**	
M101.063.D20.23.2.20B	**020.D20.23.2.16B**	**M101.0063.28.23.20**	**T8PL**	
M101.063.D25.23.2.12B	**020.D25.23.2.12B**	**M101.0063.28.23.12**	**T8PL**	**030.3543.T8P**
M101.063.D25.23.2.16B	**020.D25.23.2.16B**	**M101.0063.28.23.16**	**T8PL**	**030.3543.T8P**
M101.063.D25.23.2.20B	**020.D25.23.2.20B**	**M101.0063.28.23.20**	**T8PL**	**030.3543.T8P**

Scheibenfräser
Disc Milling Cutter

M101





E

Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	b	d_2	b_2	d_4	d_6	d_5	Schneidbreite Width of groove	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	10120
M101.0100.22.25	9	100	20	2	22	14	36	4,25	29	2,5-2,5	5000	10120
M101.0125.32.25	11	125	33	2	32	22	55	4,25	45	2,5-2,5	4000	10120

w siehe Schneidplatten
w see inserts

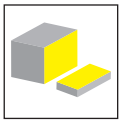
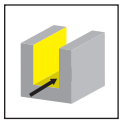
Der Schlüssel **P101.01** gehört nicht zum Lieferumfang des Fräsers. Bitte separat bestellen!
Wrench P101.01 is not combined with slotting cutter - separate order required!

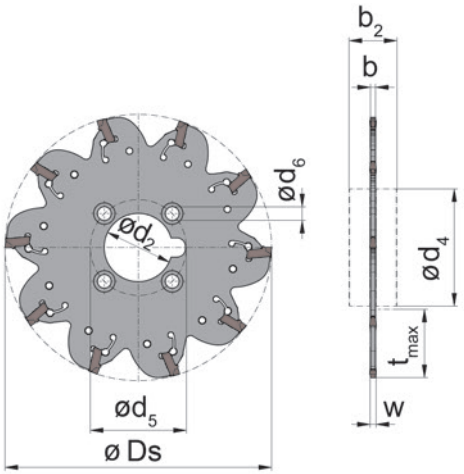
Ersatzteile
Spare Parts

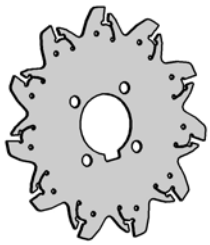
Scheibenfräser Disc Milling Cutter	**Mitnehmerringsatz** Driving hole ringset
M101....	**020.22.06.36**
M101.0125.32...	**020.32.10.55**

Scheibenfräser
Disc Milling Cutter

M101





E

Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	b	d_2	b_2	d_4	d_6	d_5	Schneidbreite Width of groove	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

w siehe Schneidplatten
w see inserts

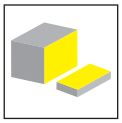
Der Schlüssel **P101.02** gehört nicht zum Lieferumfang des Fräsers. Bitte separat bestellen!
Wrench P101.01 is not combined with slotting cutter - separate order required!

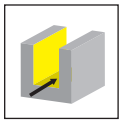
Ersatzteile
Spare Parts

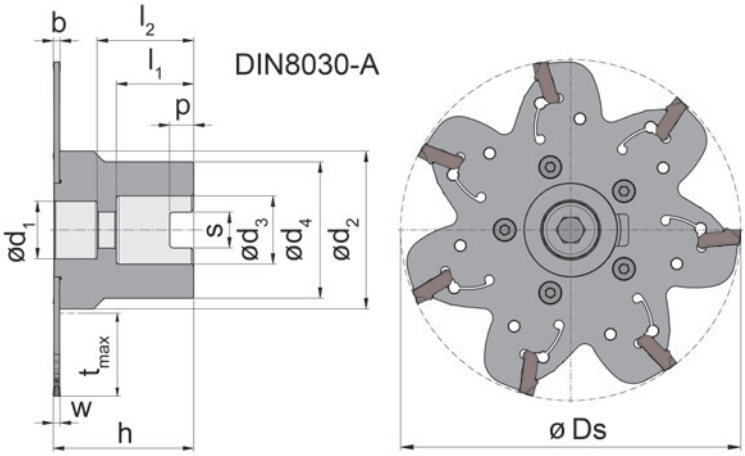
Scheibenfräser Disc Milling Cutter	**Mitnehmerringsatz** Driving hole ringset
M101.0080.22...	**020.22.06.36**
M101.0100.22...	**020.22.10.46**
M101.0125.32...	**020.32.10.55**
M101....	**020.40.12.80**

Aufsteckfräser
Arbour Mounted Cutter

M101







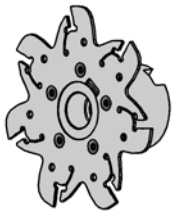


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	h	b	d_1	d_4	l_1	l_2	s	P	d_2	d_3	n_{max}	Schneidbreite Width of groove	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

w siehe Schneidplatten
w see inserts

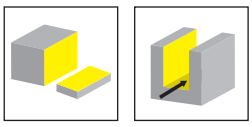
Der Schlüssel **P101.01** gehört nicht zum Lieferumfang des Fräsers. Bitte separat bestellen!
Wrench P101.01 is not combined with slotting cutter - separate order required!

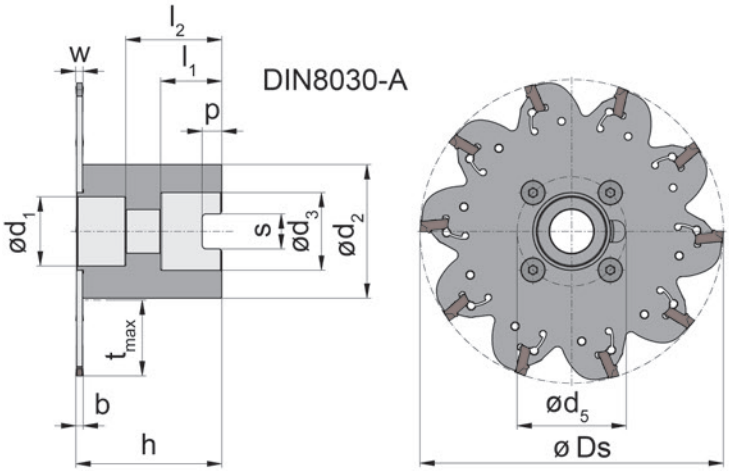
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**Stammblatt** Blade	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M101.0080.A16.12	**030.3543.T8P**	**M101.0080.28.12**	**T8PL**
M101.0080.A16.14	**030.3543.T8P**	**M101.0080.28.14**	**T8PL**
M101.0080.A16.16	**030.3543.T8P**	**M101.0080.28.16**	**T8PL**
M101.0100.A22.16	**030.3543.T8P**	**M101.0100.28.16**	**T8PL**
M101.0125.A32.16	**030.3543.T8P**	**M101.0125.28.16**	**T8PL**
M101.0080.A16.20	**030.3543.T8P**	**M101.0080.28.20**	**T8PL**
M101.0100.A22.20	**030.3543.T8P**	**M101.0100.28.20**	**T8PL**
M101.0125.A32.20	**030.3543.T8P**	**M101.0125.28.20**	**T8PL**

Aufsteckfräser
Arbour Mounted Cutter

M101





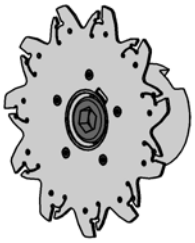


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	h	b	d_1	l_1	l_2	s	P	d_2	d_3	n_{max}	Schneidbreite Width of groove	HWS
M101.0080.A22.30	6	80	19	37	2,4	18,5	20	24,7	10,4	6,3	22	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	22	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

w siehe Schneidplatten
w see inserts

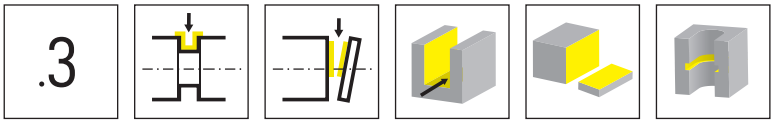
Der Schlüssel **P101.02** gehört nicht zum Lieferumfang des Fräsers. Bitte separat bestellen!
Wrench P101.01 is not combined with slotting cutter - separate order required!

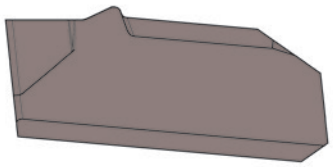
Ersatzteile
Spare Parts

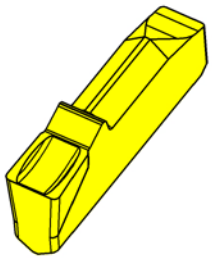
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**Stammblatt** Blade	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M101.0080.A22.30	**030.0520.0912**	**M101.0080.28.30**	**T15PQ**
M101.0100.A22.30	**030.0520.0912**	**M101.0100.22.30**	**T15PQ**
M101.0125.A32.30	**030.0620.0913**	**M101.0125.32.30**	**T20PQ**
M101.0160.A40.30	**030.1030.0911**	**M101.0160.40.30**	
M101.0080.A22.40	**030.0520.0912**	**M101.0080.28.40**	**T15PQ**
M101.0100.A22.30	**030.0520.0912**	**M101.0100.22.40**	**T15PQ**
M101.0125.A32.30	**030.0620.0913**	**M101.0125.32.40**	**T20PQ**
M101.0160.A40.30	**030.1030.0911**	**M101.0160.40.40**	
M101.0200.A40.40	**030.1030.0911**	**M101.0080.28.40**	

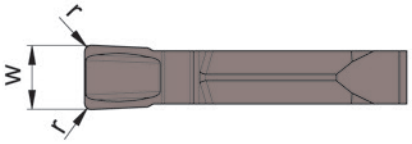
Schneidplatte
Insert

S101









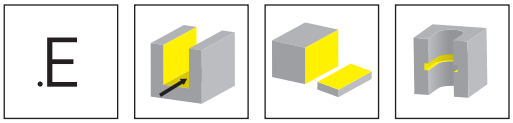
E

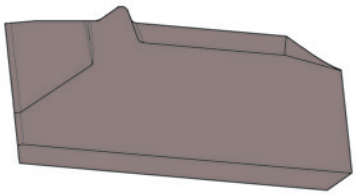
HM-Sorten
Carbide grades

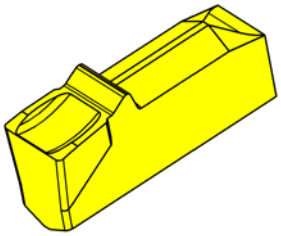
▲ ab Lager
on stock

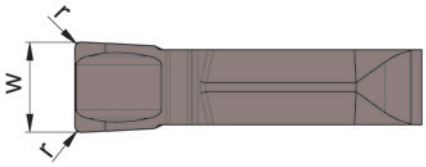
Δ 4 Wochen
4 weeks

Bestellnummer 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	10120		▲	Δ
				P	●	-
				M	●	●
				K	●	-
				N	o	-
				S	●	●
				H	-	-







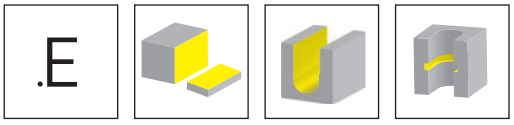


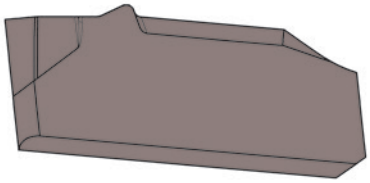
HM-Sorten
Carbide grades

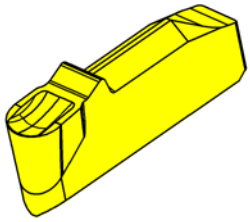
▲ ab Lager
on stock

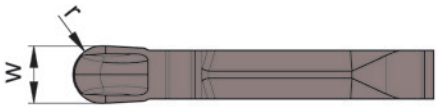
Δ 4 Wochen
4 weeks

Bestellnummer Part number	w	r	HIS		AS45
S101.0300.E32	3	0,2	10130		▲
S101.0400.E33	4	0,3	10140		▲
				P	●
				M	●
				K	●
				N	o
				S	●
				H	-









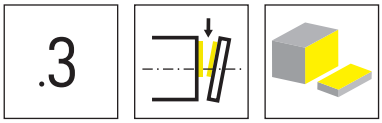
E

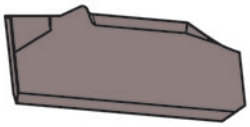
HM-Sorten
Carbide grades

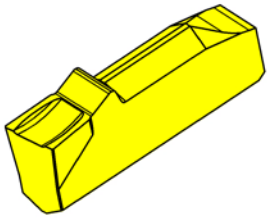
▲ ab Lager
on stock

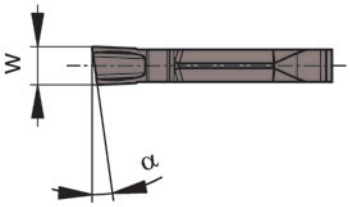
Δ 4 Wochen
4 weeks

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









R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

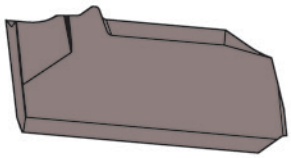
HM-Sorten
Carbide grades

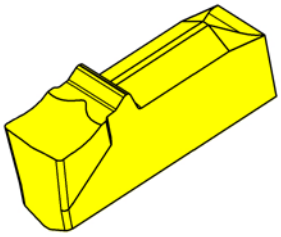
Δ 4 Wochen
4 weeks

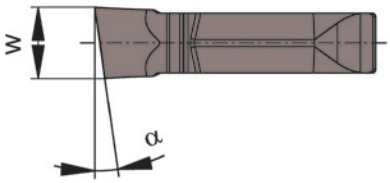
Bestellnummer Part number	w	α	HIS	AS45	EG55	IG35
RS101.0812.30	1,2	8°	10112		▲	▲
RS101.0816.30	1,6	8°	10116	▲		▲
RS101.0820.30	2	8°	10120	▲		▲
RS101.0825.30	2,5	8°	10120	▲		▲
LS101.0812.30	1,2	8°	10112		▲	▲
LS101.0816.30	1,6	8°	10116	▲		▲
LS101.0820.30	2	8°	10120	▲		▲
LS101.0825.30	2,5	8°	10120	▲		▲

	AS45	EG55	IG35
P	●	●	-
M	●	o	●
K	●	o	-
N	o	-	-
S	●	-	●
H	-	-	-

.FY







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

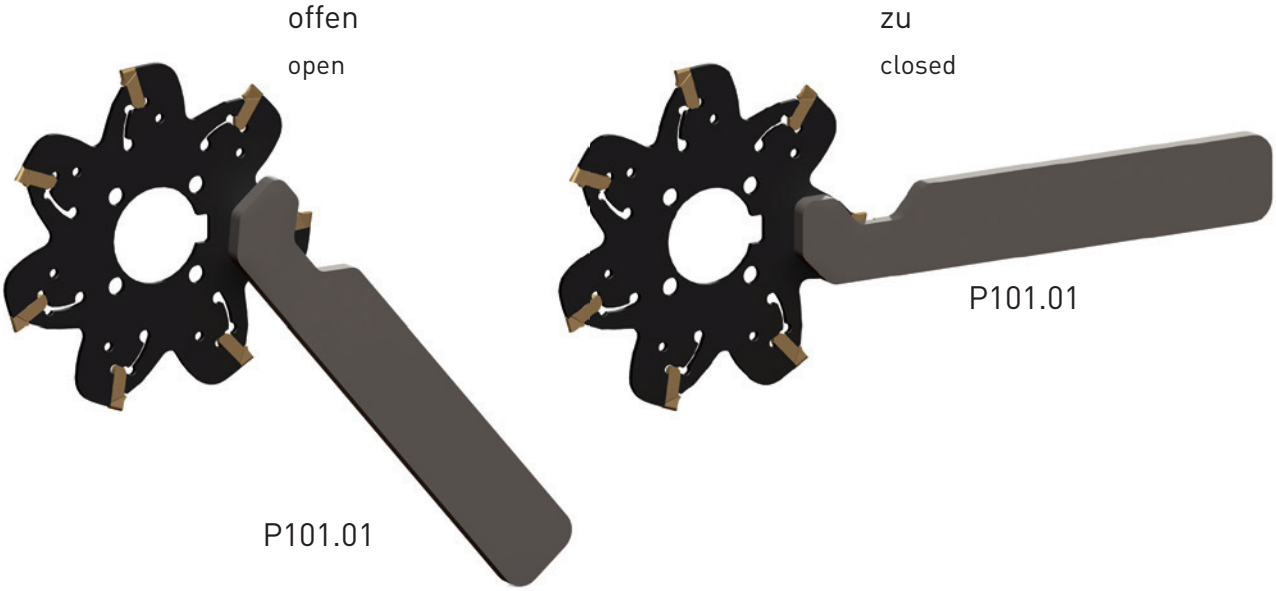
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

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

Spannsituation Schlüssel P101.01

Setting position clamping wrench P101.01



Nach Möglichkeit nur Gegenlauffräsen um Späneklemmer zu vermeiden.
Nach dem Wechseln der Platten, Vorschub bis zum Erreichen einer Anschnitttiefe von 0,5 -1 mm um 50% reduzieren

Use only conventional milling to avoid chip jamming.
After changing inserts, reduce the feed rate by 50% until an initial depth of cut of 0.5 - 1 mm is reached

Maximale Drehzahlen beachten!

Please note the max. revolutions!

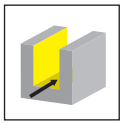
Ø Scheibenfräser Ø Disc milling cutter	max. Drehzahl n_{max} max. Revolutions n_{max}
Ø 63 mm	7.500 min^{-1}
Ø 80 mm	6.000 min^{-1}
Ø 100 mm	5.000 min^{-1}
Ø 125 mm	4.000 min^{-1}
Ø 160 mm	3.000 min^{-1}
Ø 200 mm	2.500 min^{-1}

E

F

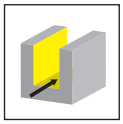
System/System	Seite/Page
382/383	**246**
M310	**260**
M475	**272**

Scheibenfräser
Disc Milling Cutter
382



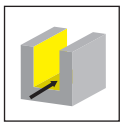
Seite/Page
248-251

Aufsteckfräser
Arbour Mounted Cutter
383



Seite/Page
252-254

Wendeschneidplatte
Indexable insert
314



Seite/Page
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Seite/Page
256-258

F

382/383

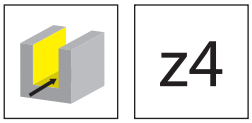
F

Scheibenfräser
Aufsteckfräser

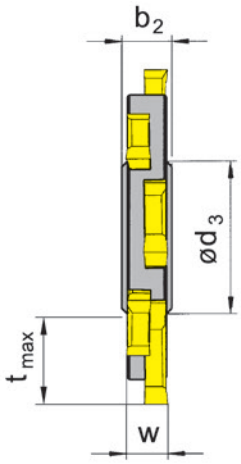
Nutbreite 6 - 10 mm
Schneidkreis-Ø 80 - 200 mm

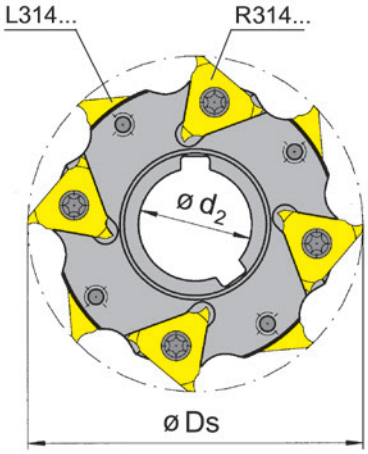
Disc Milling Cutter
Arbour Mounted Cutter

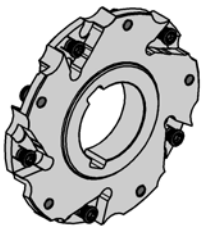
Width of groove 6 - 10 mm
Cutting edge Ø 80 - 200 mm



z4







F

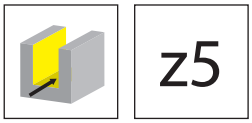
Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	d_2	b_2	d_3	w	rechte WSP right hand insert	linke WSP 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

Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

Ersatzteile
Spare Parts

Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
382.0080.27.06	**5F.06T15P**	**T15PQ**
382.0080.27.08	**5F.08T20P**	**T20PQ**
382.0080.27.10	**5.10T20P**	**T20PQ**



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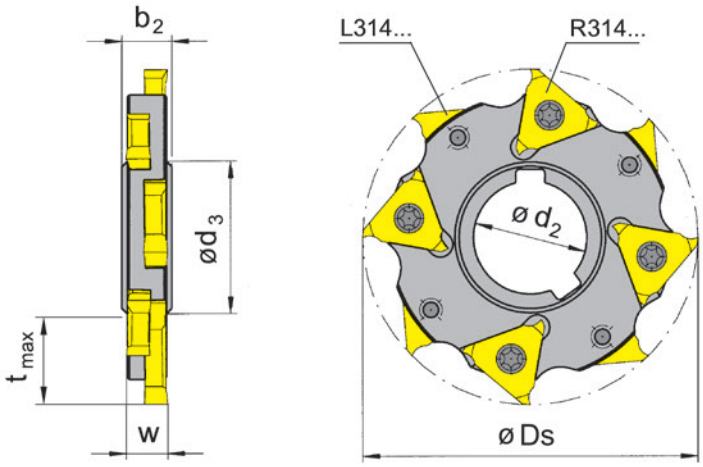


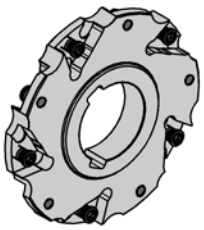


Abbildung = rechtsschneidend
Picture = right hand cutting version

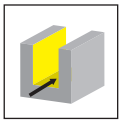
Bestellnummer Part number	Z	Ds	t_{max}	d_2	b_2	d_3	w	rechte WSP right hand insert	linke WSP left hand insert	HWS
382.0100.32.06	5	100	25,5	32	10	47	6	5x R314...	5x L314...	314027R • 314027L
382.0100.32.08	5	100	25,5	32	12	47	8	5x R314...	5x L314...	314041R • 314041L
382.0100.32.10	5	100	25,5	32	12	47	10	5x R314...	5x L314...	314052R • 314052L

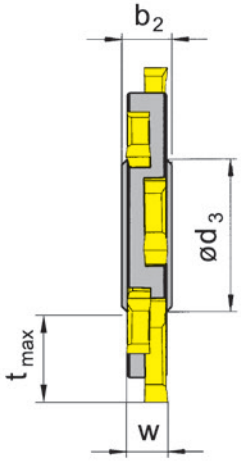
Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

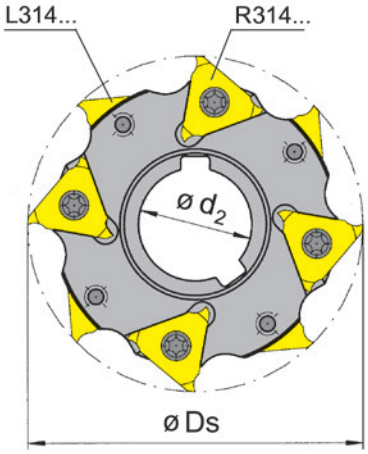
F

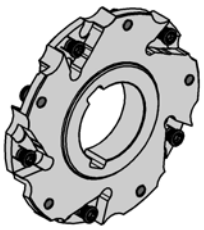
Ersatzteile
Spare Parts

Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
382.0100.32.06	**5F.06T15P**	**T15PQ**
382.0100.32.08	**5F.08T20P**	**T20PQ**
382.0100.32.10	**5.10T20P**	**T20PQ**









F

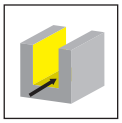
Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	d_2	b_2	d_3	w	rechte WSP right hand insert	linke WSP 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

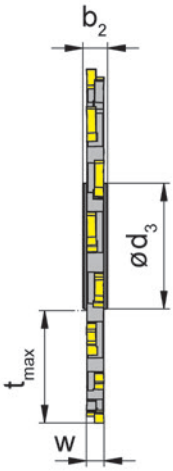
Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

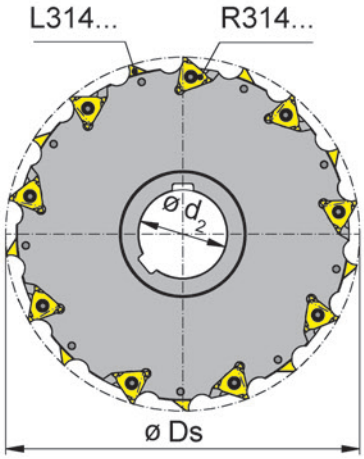
Ersatzteile
Spare Parts

Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
382...06	**5F.06T15P**	**T15PQ**
382...08	**5F.08T20P**	**T20PQ**
382...10/12	**5.10T20P**	**T20PQ**



z9





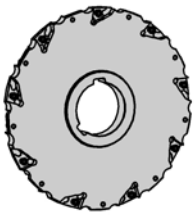


Abbildung = rechtsschneidend
Picture = right hand cutting version

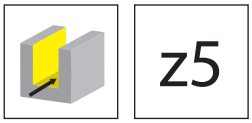
Bestellnummer Part number	Z	Ds	t_{max}	d_2	b_2	d_3	w	rechte WSP right hand insert	linke WSP left hand insert	HWS
382.0200.50.06	9	200	63,5	50	10	71	6	9x R314...	9x L314...	314027R • 314027L
382.0200.50.08	9	200	63,5	50	12	71	8	9x R314...	9x L314...	314041R • 314041L
382.0200.50.10	9	200	63,5	50	14	71	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

Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

F

Ersatzteile
Spare Parts

Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
382.0200.50.06	**5F.06T15P**	**T15PQ**
382.0200.50.08	**5F.08T20P**	**T20PQ**
382.0200.50....	**5.10T20P**	**T20PQ**



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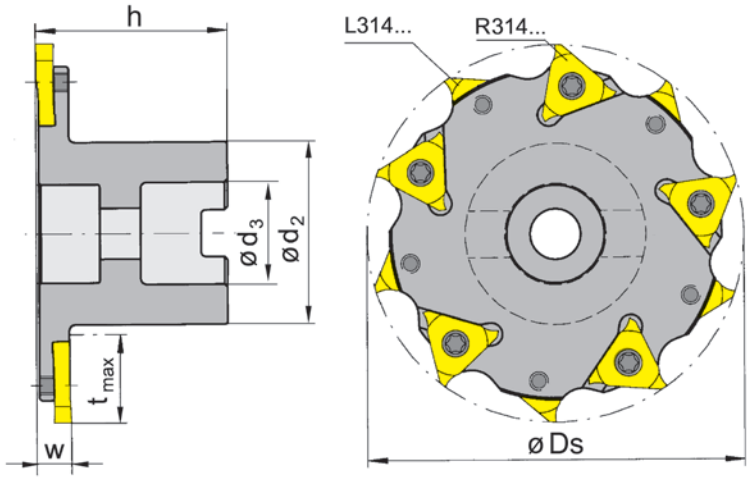


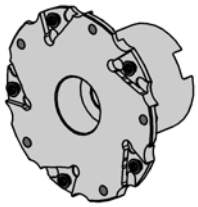


Abbildung = rechtsschneidend
Picture = right hand cutting version

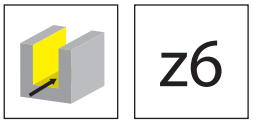
F

Bestellnummer Part number	Z	Ds	t_{max}	h	d_2	d_3	w	rechte WSP right hand insert	linke WSP 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

Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
383.0100.27.06	**5F.06T15P**	**T15PQ**
383.0100.27.08	**5F.08T20P**	**T20PQ**
383.0100.27.10	**5.10T20P**	**T20PQ**



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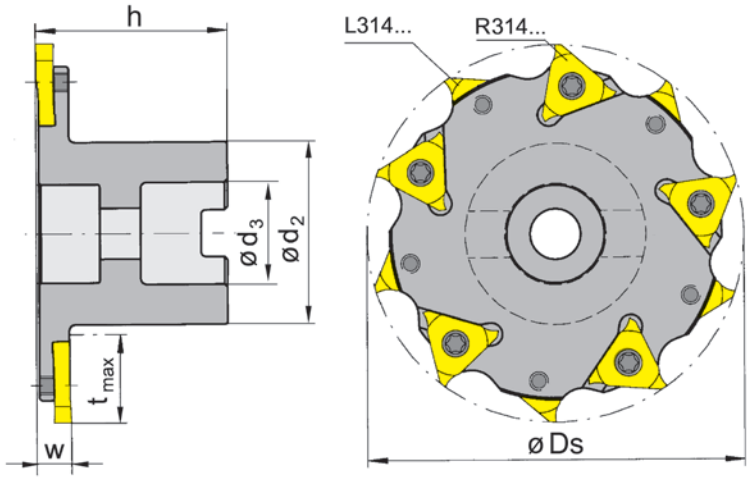


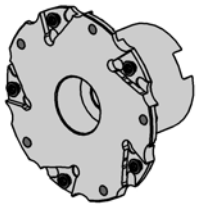


Abbildung = rechtsschneidend
Picture = right hand cutting version

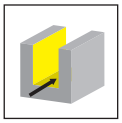
Bestellnummer Part number	Z	Ds	t_{max}	h	d_2	d_3	w	rechte WSP right hand insert	linke WSP left hand insert	HWS
383.0125.32.06	12	125	32	50	56	32	6	6x R314...	6x L314...	314027R • 314027L
383.0125.32.08	12	125	32	50	56	32	8	6x R314...	6x L314...	314041R • 314041L

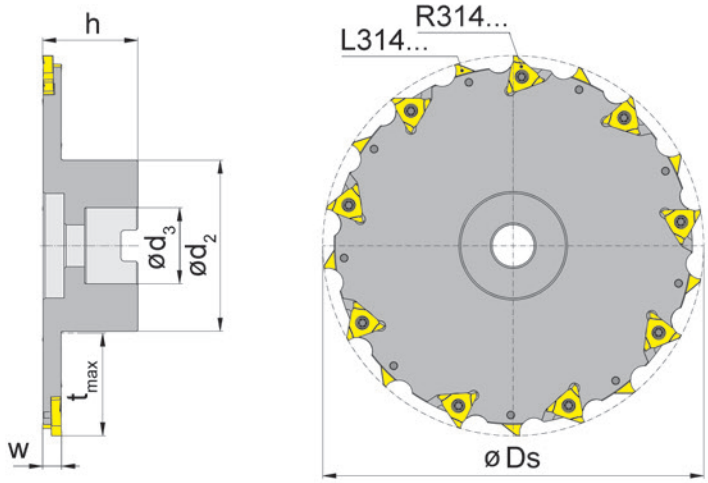
Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

F

Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
383.0125.32.06	**5F.06T15P**	**T15PQ**
383.0125.32.08	**5F.08T20P**	**T20PQ**





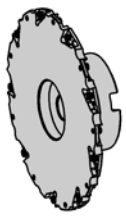


Abbildung = rechtsschneidend
Picture = right hand cutting version

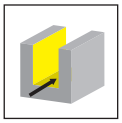
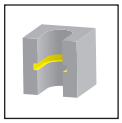
Bestellnummer Part number	Z	Ds	t_{max}	h	d_2	d_3	w	rechte WSP right hand insert	linke WSP left hand insert	HWS
383.0160.40.06	8	160	44	60	70	40	6	8x R314...	8x L314...	314027R • 314027L
383.0160.40.08	8	160	44	60	70	40	8	8x R314...	8x L314...	314041R • 314041L
383.0200.40.06	9	200	54	50	90	40	6	9x R314...	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

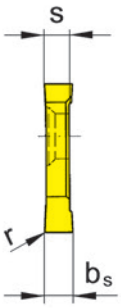
Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

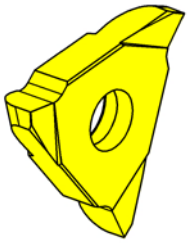
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
383.160...06	**5F.06T15P**	**T15PQ**
383.160...08	**5F.08T20P**	**T20PQ**
383.0200.40.10/.12	**5.10T20P**	**T20PQ**

Wendeschneidplatte 314
Indexable insert





R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

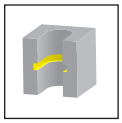
Δ 4 Wochen
4 weeks

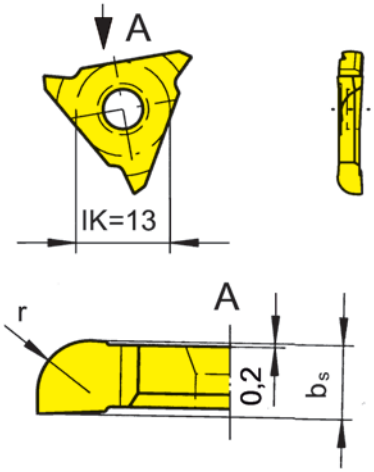
Bestellnummer Part number	b_s	r	s	HIS		AS45	TI25	TN35
R314.6032.00	3,2	0,2	2,7	314027R		▲	▲	▲
R314.8043.00	4,3	0,2	4,1	314041R		▲	▲	▲
R314.0054.00	5,4	0,2	5,2	314052R		▲	▲	▲
L314.6032.00	3,2	0,2	2,7	314027L		▲	▲	▲
L314.8043.00	4,3	0,2	4,1	314041L		▲	▲	▲
L314.0054.00	5,4	0,2	5,2	314052L		▲	▲	▲
N314.0056.00	5,6	0,2	5,2	314052N		▲		▲
					P	●	●	●
					M	●	●	●
					K	●	●	●
					N	o	●	●
					S	●	●	●
					H	-	-	-

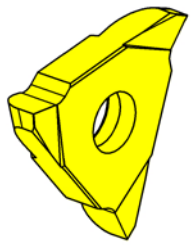
Hinweis:
Standard-WSP **N314.0056.00** für Verwendung in Sonderbauformen.
Note:
Standard insert N314.0056.00 for use with special cutters.

F

Wendeschneidplatte 314
Indexable insert







F

R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

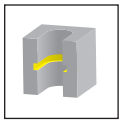
▲ ab Lager
on stock

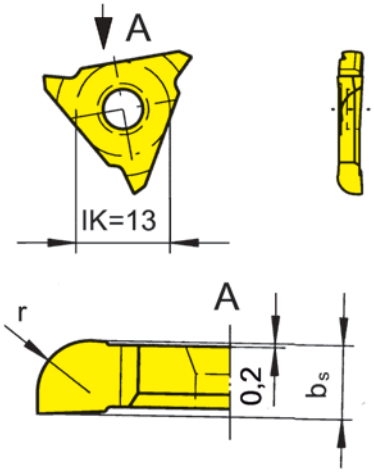
HM-Sorten
Carbide grades

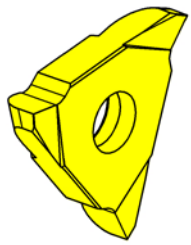
Δ 4 Wochen
4 weeks

Bestellnummer Part number	b_s	r	HIS		AS45	T125
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	o	●
				S	●	●
				H	-	-

Wendeschneidplatte 314
Indexable insert







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

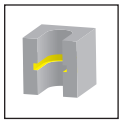
HM-Sorten
Carbide grades

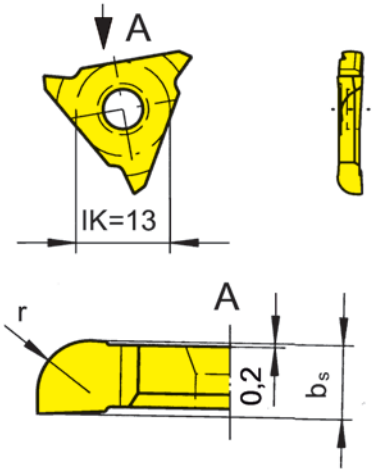
Δ 4 Wochen
4 weeks

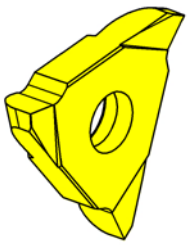
Bestellnummer Part number	b_s	r	HIS	AS45	T125
R314.0320.04	3,2	0,4	314027R	Δ	
R314.0320.05	3,2	0,5	314027R	▲	
R314.0320.10	3,2	1	314027R	▲	
R314.0320.15	3,2	1,5	314027R	▲	
R314.0320.16	3,2	1,6	314027R	Δ	
R314.0320.20	3,2	2	314027R	▲	▲
R314.0430.04	4,3	0,4	314041R	▲	
R314.0430.05	4,3	0,5	314041R	▲	
R314.0430.10	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	Δ	
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	Δ	
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	▲	▲
P				●	●
M				●	●
K				●	●
N				o	●
S				●	●
H				-	-

F

Wendeschneidplatte 314
Indexable insert







F

R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

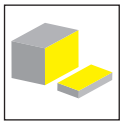
HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

Bestellnummer Part number	b_s	r	HIS	AS45	T125
R314.0540.04	5,43	0,4	314052R	▲	
R314.0540.05	5,43	0,5	314052R	▲	
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	▲	▲

P	●	●
M	●	●
K	●	●
N	o	●
S	●	●
H	-	-

Scheibenfräser
Disc Milling Cutter
M310



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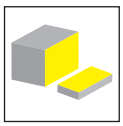
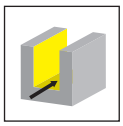
262

Einschraubfräser
Screw-in cutter
M310



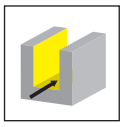
Seite/Page
263-264

Aufsteckfräser
Arbour Mounted Cutter
M310



Seite/Page
265-267

Wendeschneidplatte
Indexable insert
S310



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268-270

M310

F

Scheibenfräser
Einschraubfräser
Aufsteckfräser

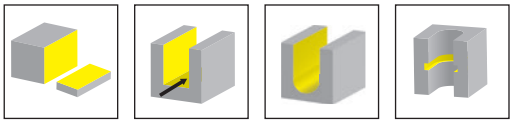
Trennbreite 3 - 5 mm
Schneidkreis-Ø 50 - 200 mm

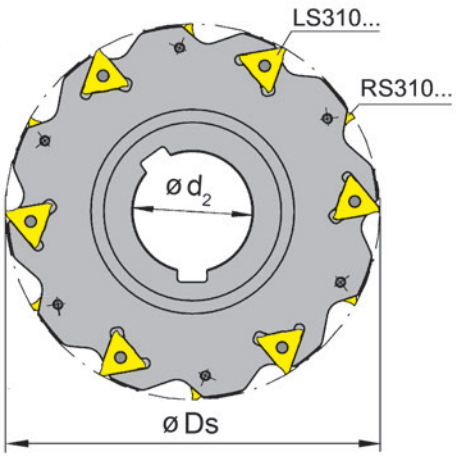
Disc Milling Cutter
Screw-in Cutter
Arbour Mounted Cutter

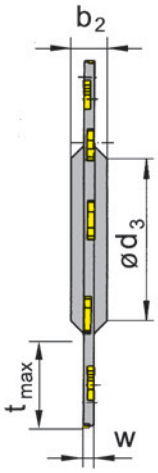
Width of slot 3 - 5 mm
Cutting edge Ø 50 - 200 mm

Scheibenfräser
Disc Milling Cutter

M310







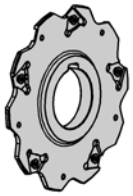


Abbildung = rechtsschneidend
Picture = right hand cutting version

F

Bestellnummer Part number	Z	Ds	t_{max}	d_2	b_2	d_3	w	rechte WSP right hand insert	linke WSP 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...	5x LS310.4023...	310023R • 310023L
M310.0100.32.05	5	100	25	32	8	46	5	5x RS310.5028...	5x LS310.5028...	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

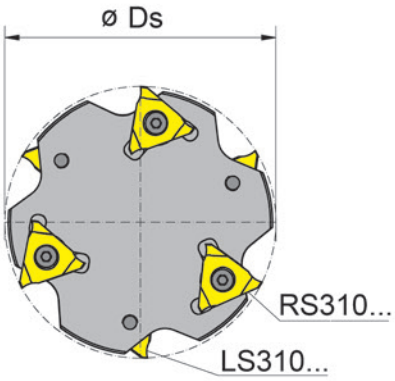
Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

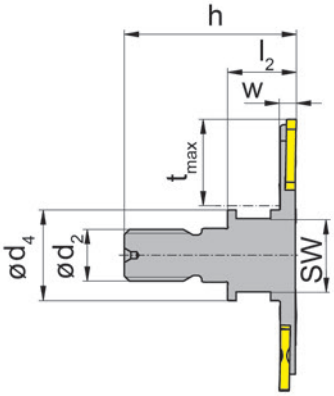
Ersatzteile
Spare Parts

Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M310....03	**030.0324.T7P**	**T7PL**
M310....04	**030.3535.T8P**	**T8PL**
M310....05	**030.3543.T8P**	**T8PL**

Einschraubfräser
Screw-in cutter

M310





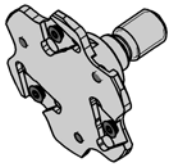


Abbildung = rechtsschneidend
Picture = right hand cutting version

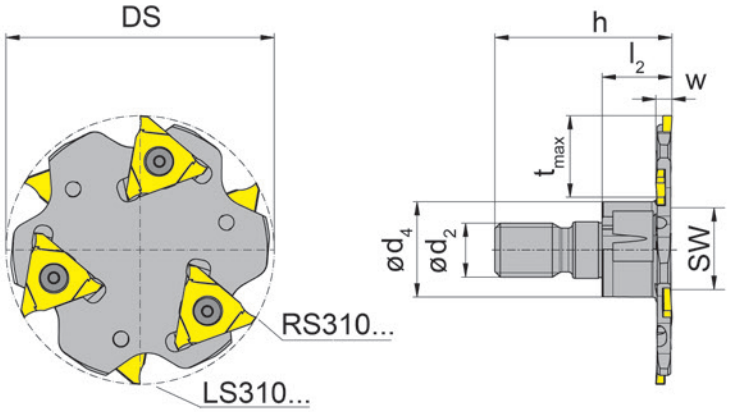
Bestellnummer Part number	Z	Ds	h	l_2	d_2	d_4	SW	w	t_{max}	rechte WSP right hand insert	linke WSP left hand insert	HWS	HMS
M310.0050.M10.03	3	50	33	13	M10	18	15	3	15	3x RS310.3017...	3x LS310.3017...	310017R • 310017L	10001
M310.0050.M10.04	3	50	34	14	M10	18	15	4	15	3x RS310.4023...	3x LS310.4023...	310023R • 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

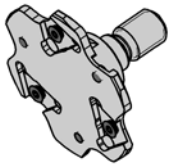
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M310....03	**030.0324.T7P**	**T7PL**
M310....04	**030.3535.T8P**	**T8PL**
M310....05	**030.3543.T8P**	**T8PL**

Einschraubfräser
Screw-in cutter

M310





F

Abbildung = rechtsschneidend
Picture = right hand cutting version

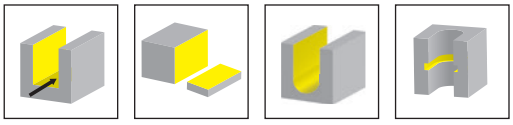
Bestellnummer Part number	Z	Ds	h	l_2	d_2	d_4	SW	w	t_{max}	rechte WSP right hand insert	linke WSP left hand insert	HWS	HMS
M310.0050.M10.03.IK	3	50	33	13	M10	18	15	3	15	3xRS310.3017..	3xLS310.3017..	310017R • 310017L	10001
M310.0050.M10.04.IK	3	50	34	14	M10	18	15	4	15	3xRS310.4023..	3xLS310.4023..	310023R • 310023L	10001
M310.0050.M10.05.IK	3	50	35	15	M10	18	15	5	15	3xRS310.5028..	3xLS310.5028..	310028R • 310028L	10001
M310.0063.M12.03.IK	3	63	39	15	M12	21	17	3	20	3xRS310.3017..	3xLS310.3017..	310017R • 310017L	12001
M310.0063.M12.04.IK	3	63	40	16	M12	21	17	4	20	3xRS310.4023..	3xLS310.4023..	310023R • 310023L	12001
M310.0063.M12.05.IK	3	63	41	17	M12	21	17	5	20	3xRS310.5028..	3xLS310.5028..	310028R • 310028L	12001

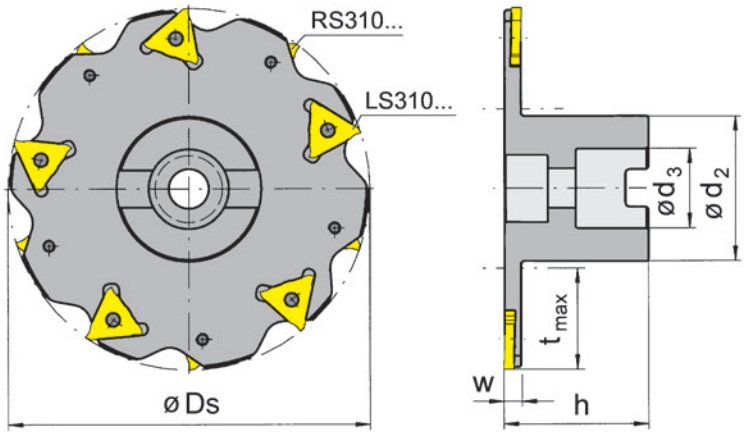
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M310....03	**030.0324.T7P**	**T7PL**
M310....04	**030.3535.T8P**	**T8PL**
M310....05	**030.3543.T8P**	**T8PL**

Aufsteckfräser
Arbour Mounted Cutter

M310





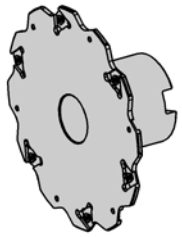


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	h	d_2	d_3	w	rechte WSP right hand insert	linke WSP left hand insert	HWS
M310.0080.22.03	4	80	23	40	33	22	3	4x RS310.3017...	4x LS310.3017...	310017R • 310017L
M310.1100.27.03	4	100	25	50	48	27	3	5x RS310.3017...	5x LS310.3017...	310017R • 310017L
M310.1125.27.03	4	125	35,7	50	48	27	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.32.03	5	125	32,5	50	58	32	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1125.40.03	5	125	26,5	50	70	40	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.1160.40.03	5	160	44	50	70	40	3	6x RS310.3017...	6x LS310.3017...	310017R • 310017L
M310.0080.22.04	6	80	23	40	33	22	4	4x RS310.4023...	4x LS310.4023...	310023R • 310023L
M310.0080.22.05	6	80	23	40	33	22	5	4x RS310.5028...	4x LS310.5028...	310028R • 310028L
M310.1100.27.04	6	100	25	50	48	27	4	5x RS310.4023...	5x LS310.4023...	310023R • 310023L
M310.1100.27.05	6	100	25	50	48	27	5	5x RS310.5028...	5x LS310.5028...	310028R • 310028L
M310.1125.27.04	6	125	37,5	50	48	27	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.1125.32.04	6	125	32	50	56	32	4	6x RS310.4023...	6x LS310.4023...	310023R • 310023L
M310.1125.40.04	6	125	26,5	50	70	40	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
M310.1125.32.05	6	125	32,5	50	56	32	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
M310.1125.40.05	8	125	26,5	50	70	40	5	6x RS310.5028...	6x LS310.5028...	310028R • 310028L
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

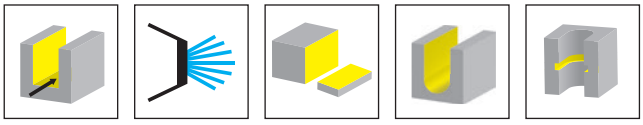
Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

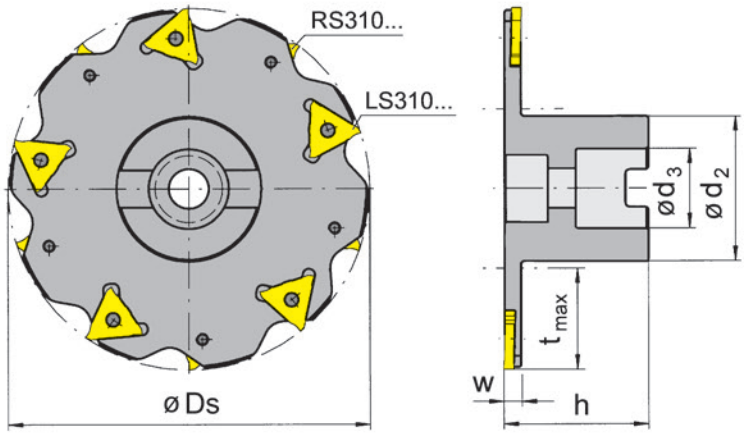
Ersatzteile
Spare Parts

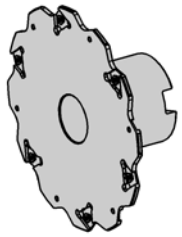
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M310....03	**030.0324.T7P**	**T7PL**
M310....04	**030.3535.T8P**	**T8PL**
M310....05	**030.3543.T8P**	**T8PL**

Aufsteckfräser
Arbour Mounted Cutter

M310







F

Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	h	d_2	d_3	w	rechte WSP right hand insert	linke WSP 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...	5x LS310.4023...	310023R • 310023L

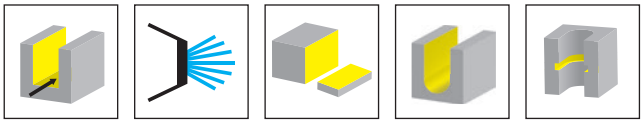
Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

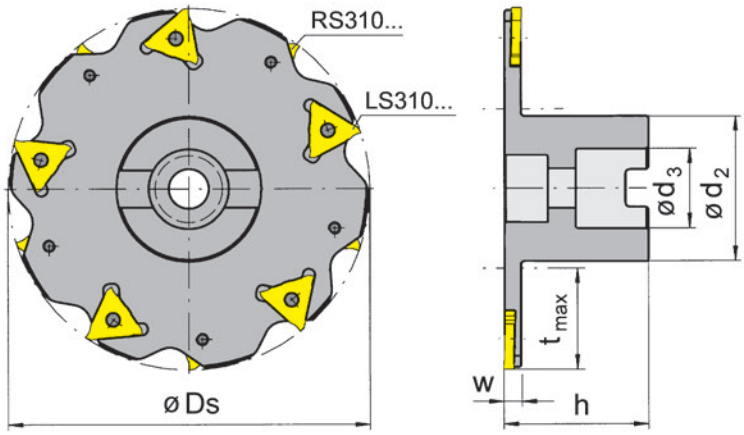
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M310....03	**030.0324.T7P**	**T7PL**
M310....04	**030.3535.T8P**	**T8PL**
M310....05	**030.3543.T8P**	**T8PL**

Aufsteckfräser
Arbour Mounted Cutter

M310





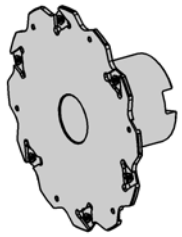


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	t_{max}	h	d_2	d_3	w	rechte WSP right hand insert	linke WSP 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...	3x 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

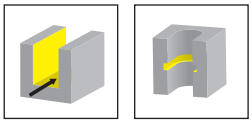
Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

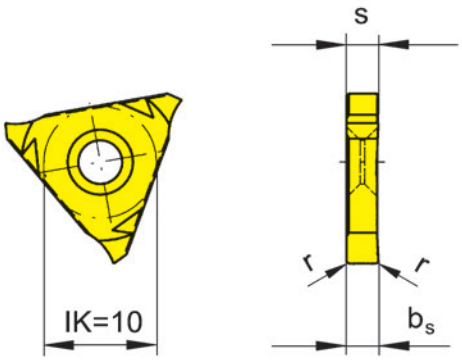
Ersatzteile
Spare Parts

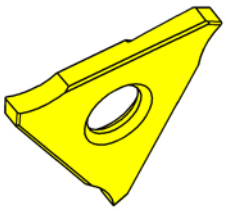
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M310....03	**030.0324.T7P**	**T7PL**
M310....04	**030.3535.T8P**	**T8PL**
M310....05	**030.3543.T8P**	**T8PL**

Wendeschneidplatte
Indexable insert

S310







F

R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

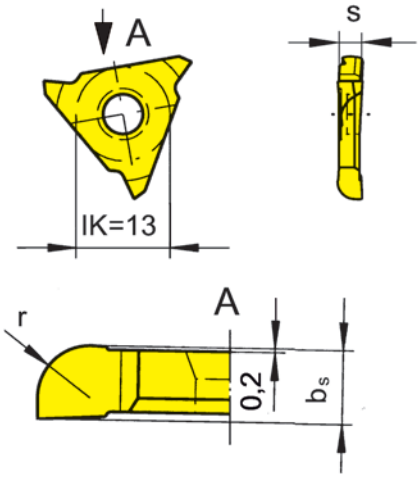
▲ ab Lager
on stock

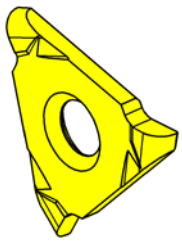
Δ 4 Wochen
4 weeks

HM-Sorten
Carbide grades

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

Wendeschneidplatte
Indexable insert





R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

HM-Sorten
Carbide grades

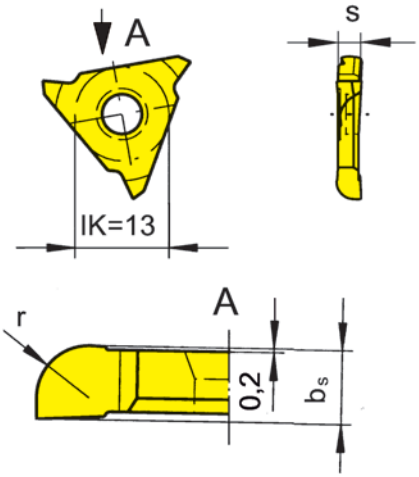
▲ ab Lager
on stock

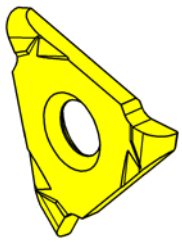
Δ 4 Wochen
4 weeks

Bestellnummer Part number	r	b_s	s	HIS		AS45
RS310.3017.04	0,4	1,7	1,57	310017R		▲
RS310.3017.05	0,5	1,7	1,57	310017R		▲
RS310.3017.10	1	1,7	1,57	310017R		▲
RS310.3017.15	1,5	1,7	1,57	310017R		▲
RS310.4023.04	0,4	2,3	2,17	310023R		▲
RS310.4023.05	0,5	2,3	2,17	310023R		Δ
RS310.4023.10	1	2,3	2,17	310023R		▲
RS310.4023.15	1,5	2,3	2,17	310023R		▲
RS310.4023.16	1,6	2,3	2,17	310023R		▲
RS310.4023.20	2	2,3	2,17	310023R		▲
LS310.3017.04	0,4	1,7	1,57	310017L		▲
LS310.3017.05	0,5	1,7	1,57	310017L		▲
LS310.3017.10	1	1,7	1,57	310017L		▲
LS310.3017.15	1,5	1,7	1,57	310017L		▲
LS310.4023.04	0,4	2,3	2,17	310023L		▲
LS310.4023.05	0,5	2,3	2,17	310023L		Δ
LS310.4023.10	1	2,3	2,17	310023L		▲
LS310.4023.15	1,5	2,3	2,17	310023L		▲
LS310.4023.16	1,6	2,3	2,17	310023L		▲
LS310.4023.20	2	2,3	2,17	310023L		▲
					P	●
					M	●
					K	●
					N	o
					S	●
					H	-

F

Wendeschneidplatte
Indexable insert





F

R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

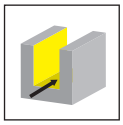
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

HM-Sorten
Carbide grades

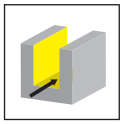
Bestellnummer Part number	r	b_s	s	HIS		AS45
RS310.5028.04	0,4	2,68	2,62	310028R		Δ
RS310.5028.05	0,5	2,68	2,62	310028R		▲
RS310.5028.10	1	2,68	2,62	310028R		▲
RS310.5028.15	1,5	2,68	2,62	310028R		▲
RS310.5028.16	1,6	2,68	2,62	310028R		▲
RS310.5028.20	2	2,68	2,62	310028R		▲
LS310.5028.04	0,4	2,68	2,62	310028L		Δ
LS310.5028.05	0,5	2,68	2,62	310028L		▲
LS310.5028.10	1	2,68	2,62	310028L		▲
LS310.5028.15	1,5	2,68	2,62	310028L		▲
LS310.5028.16	1,6	2,68	2,62	310028L		▲
LS310.5028.20	2	2,68	2,62	310028L		▲
					P	●
					M	●
					K	●
					N	o
					S	●
					H	-

Scheibenfräser
Disc Milling Cutter
M475



Seite/Page
274-275

Einschraubfräser
Screw-in cutter
M475



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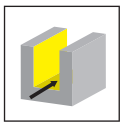
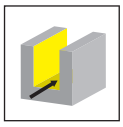
276

Aufsteckfräser
Arbour Mounted Cutter
M475



Seite/Page
277-278

Wendeschneidplatte
Indexable insert
S475



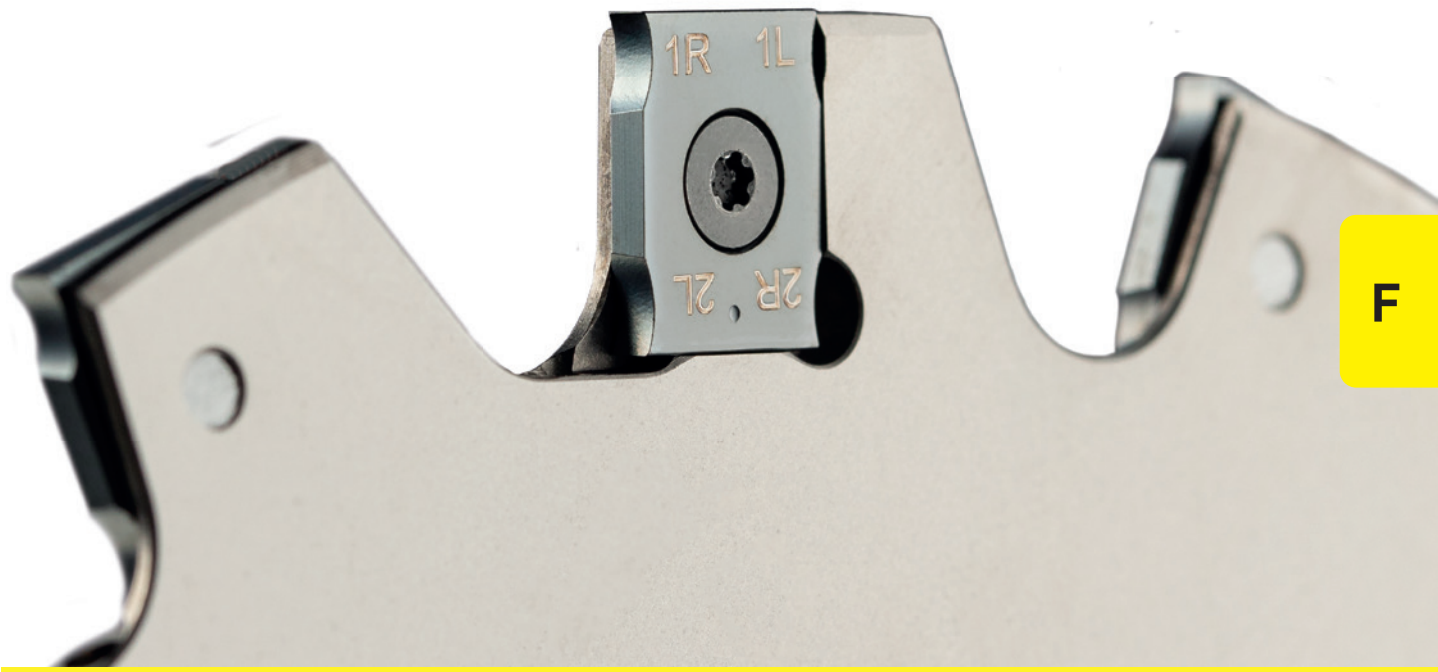
Seite/Page
279-280

Schnittdaten
Cutting data

Seite/Page
281

F

M475



F

Scheibenfräser
Einschraubfräser
Aufsteckfräser

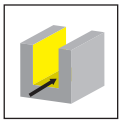
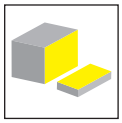
Nutbreite 3 - 8 mm
Schneidkreis-Ø 40 - 200 mm

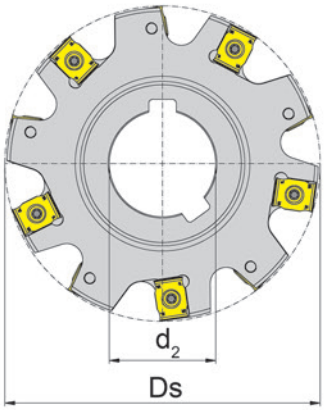
Disc Milling Cutter
Screw-in Cutter
Arbour Mounted Cutter

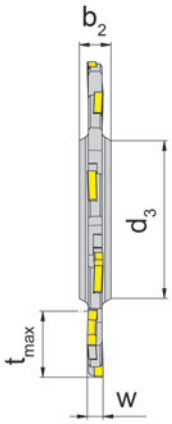
Width of groove 3 - 8 mm
Cutting edge Ø 40 - 200 mm

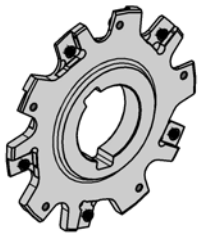
Scheibenfräser
Disc Milling Cutter

M475







F

Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

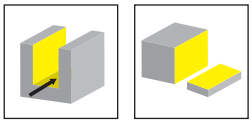
Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

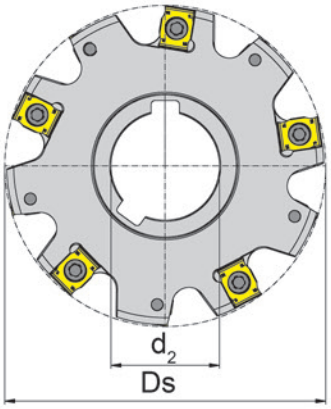
Ersatzteile
Spare Parts

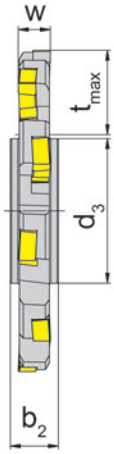
Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M475....03	**030.2523.T6P**	**T6PL**
M475....04	**030.0330.1217**	**T7PL**

Scheibenfräser
Disc Milling Cutter

M475







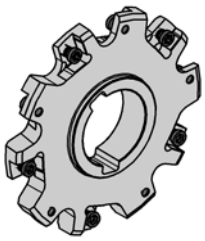


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

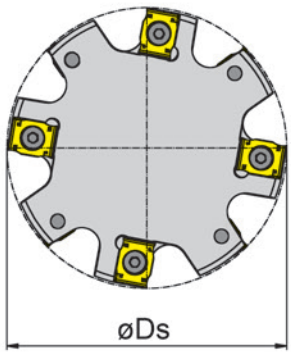
Bohrung (d2) mit Längsnut nach DIN 138
Bore (d2) with longitudinal keyway to DIN 138

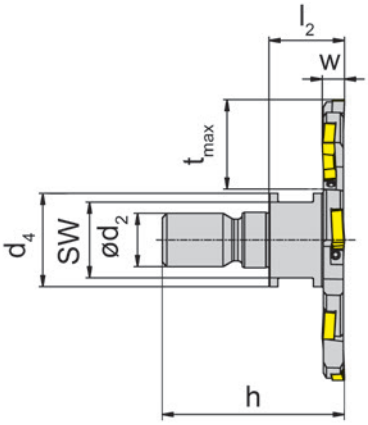
Ersatzteile
Spare Parts

Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M475....05	**030.3541.T8P**	**T8PL**
M475....06	**030.3550.T10P**	**T10PL**
M475....08	**030.350P.1110**	**T15PQ**

Einschraubfräser
Screw-in cutter

M475





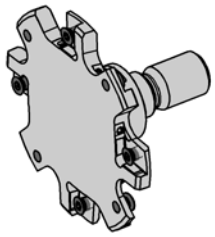


Abbildung = rechtsschneidend
Picture = right hand cutting version

F

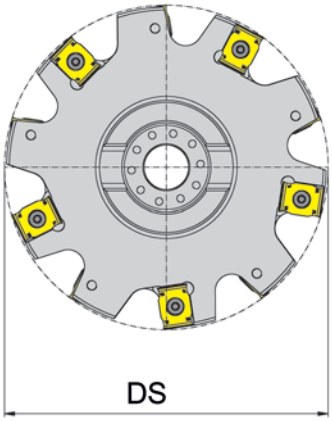
Bestellnummer Part number	Z	Ds	h	l_2	d_4	d_2	SW	w	t_{max}	n_{max}	HWS
M475.0040.M8.03.IK	2	40	33	15	13	M8	10	3	13	32000	475016N
M475.0040.M8.04.IK	2	40	33	15	13	M8	10	4	13	33000	475022N
M475.0040.M8.05.IK	2	40	33	15	13	M8	10	5	13	35000	475027N
M475.0050.M10.03.IK	3	50	35	15	18	M10	15	3	15	28000	475016N
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

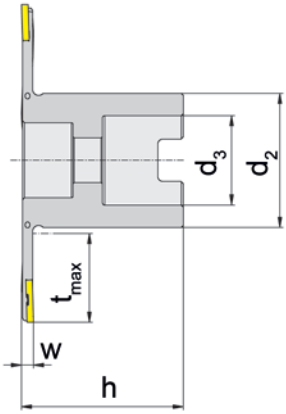
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M475.0...03	**030.2523.T6P**	**T6PL**
M475.0...04	**030.0330.1217**	**T7PL**
M475.0...05	**030.3541.T8P**	**T8PL**

Aufsteckfräser
Arbour Mounted Cutter

M475





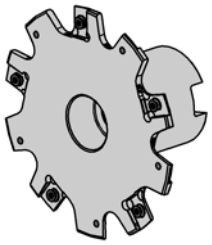


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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	23,5	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

Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

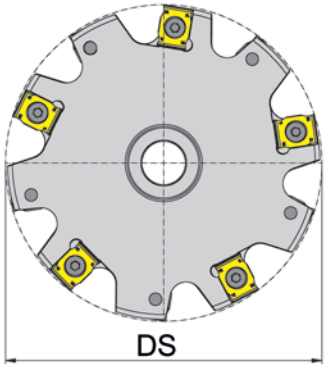
F

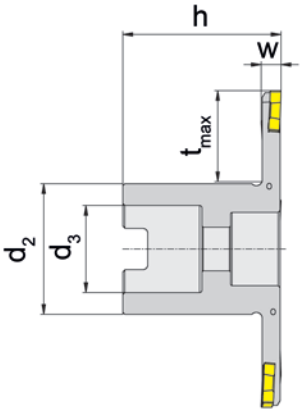
Ersatzteile
Spare Parts

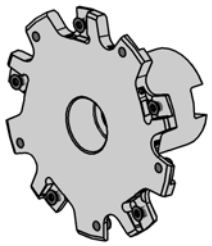
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M475....03	**030.2523.T6P**	**T6PL**
M475....04	**030.0330.1217**	**T7PL**

Aufsteckfräser
Arbour Mounted Cutter

M475







F

Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

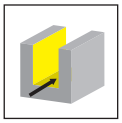
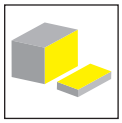
Bohrung (d3) mit Quernut nach DIN 138
Bore (d3) with cross keyway to DIN 138

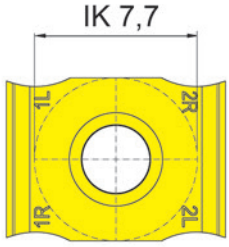
Ersatzteile
Spare Parts

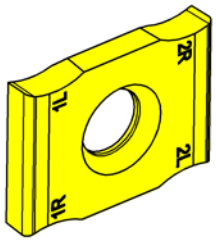
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M475....05	**030.3541.T8P**	**T8PL**
M475....06	**030.3550.T10P**	**T10PL**
M475....08	**030.350P.1110**	**T15PQ**

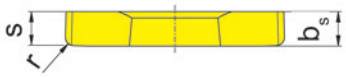
Wendeschneidplatte
Indexable insert

S475







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

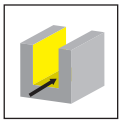
F

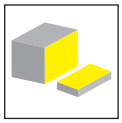
Bestellnummer Part number	b_s	r	s	HIS		RC4G
S475.0162.10.02	1,6	0,2	1,62	475016N		▲
S475.0163.10.04	1,61	0,4	1,63	475016N		Δ
S475.0163.10.05	1,61	0,5	1,63	475016N		Δ
S475.0222.10.02	2,2	0,2	2,22	475022N		▲
S475.0223.10.04	2,21	0,4	2,23	475022N		Δ
S475.0223.10.05	2,21	0,5	2,23	475022N		Δ
S475.0222.10.08	2,22	0,8	2,22	475022N		Δ
					P	●
					M	●
					K	●
					N	-
					S	-
					H	-

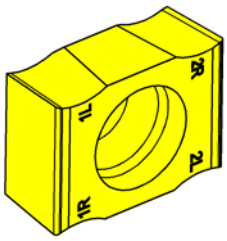
mittlere Spandicke h_m medium thickness of chip		
sehr stabil 0,05 very rigid	stabil 0,03 rigid	nicht stabil 0,01 not rigid

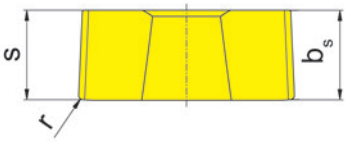
Wendeschneidplatte
Indexable insert

S475









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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		Δ
S475.0275.10.05	2,72	0,5	2,75	475027N		Δ
S475.0275.10.08	2,74	0,8	2,74	475027N		Δ
S475.0275.10.10	2,75	1	2,75	475027N		Δ
S475.0276.10.12	2,76	1,2	2,76	475027N		Δ
S475.0323.10.02	3,2	0,2	3,23	475032N		▲
S475.0324.10.04	3,21	0,4	3,24	475032N		Δ
S475.0325.10.05	3,22	0,5	3,25	475032N		Δ
S475.0325.10.08	3,24	0,8	3,24	475032N		Δ
S475.0325.10.10	3,25	1	3,25	475032N		Δ
S475.0326.10.12	3,26	1,2	3,26	475032N		Δ
S475.0327.10.15	3,27	1,5	3,27	475032N		Δ
S475.0433.10.02	4,3	0,2	4,33	475043N		▲
S475.0434.10.04	4,31	0,4	4,34	475043N		Δ
S475.0435.10.05	4,32	0,5	4,35	475043N		Δ
S475.0435.10.08	4,34	0,8	4,34	475043N		Δ
S475.0435.10.10	4,35	1	4,35	475043N		Δ
S475.0436.10.12	4,36	1,2	4,36	475043N		Δ
S475.0437.10.15	4,37	1,5	4,37	475043N		Δ
S475.0439.10.20	4,39	2	4,39	475043N		Δ
					P	●
					M	●
					K	●
					N	-
					S	-
					H	-

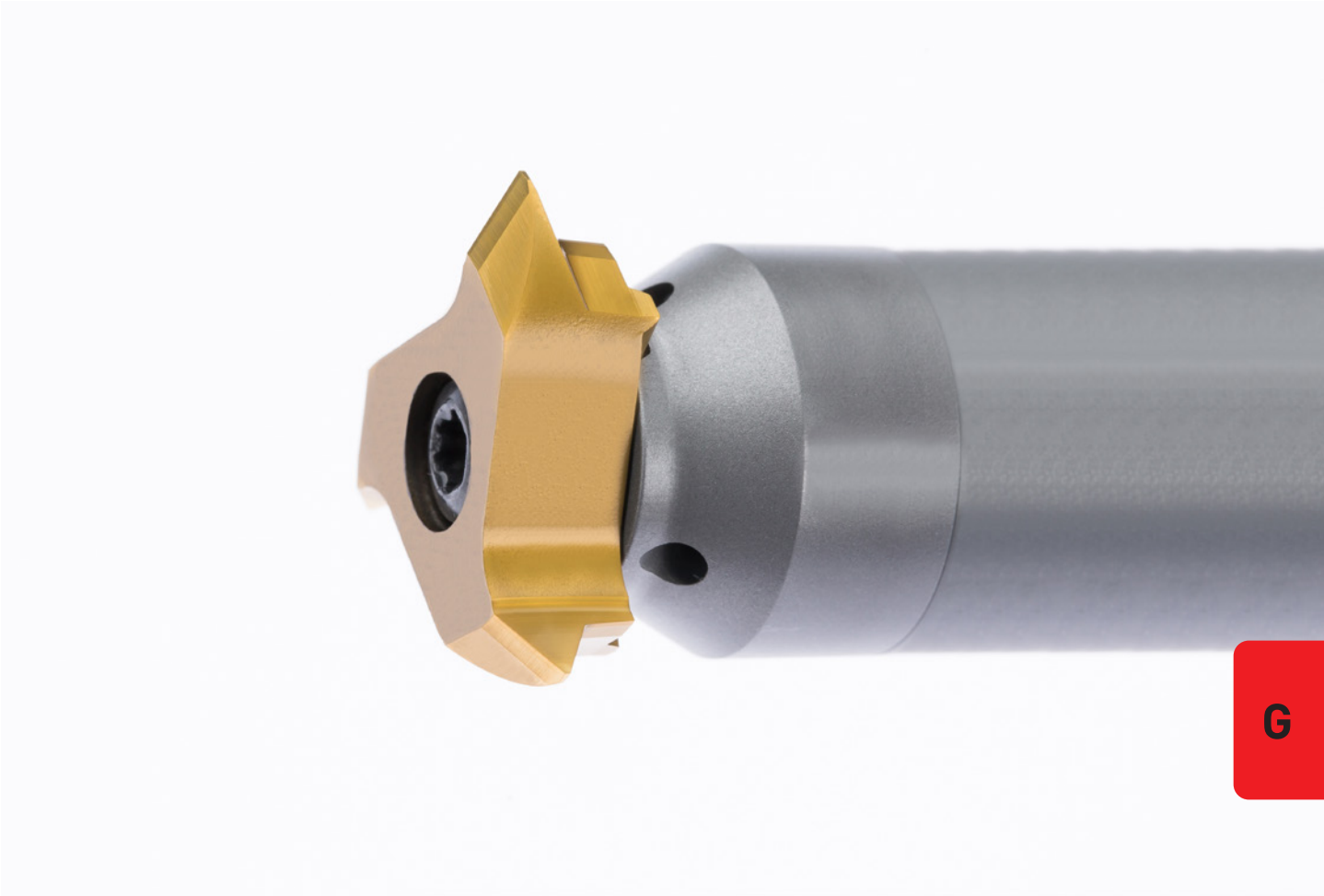
mittlere Spandicke h_m medium thickness of chip		
sehr stabil 0,05 very rigid	stabil 0,03 rigid	nicht stabil 0,01 not rigid

F

Schnittdaten
Cutting data

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	Schnittgeschwindigkeit Cutting speed vc (m/min) RC4G
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	160-240
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	160-240
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	160-240
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	160-240
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	160-240
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	160-240
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	180-220
		vergütet quenched	P2.2	280	960	14NiCr10	180-220
		vergütet quenched	P2.3	350	1250	34CrMo4	180-220
		vergütet quenched	P2.4	430	1450	55Cr3	180-220
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18	80-120
		gehärtet hardened	P3.2	350	1200	X210Cr2	80-100
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200	160-220
		legiert alloyed	P4.2	220	750	GX40CrSi28	80-140
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39	
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	80-140
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	70-120
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3	70-120
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	180-250
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	120-180
	Kugelgraphit-guss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	120-160
		perlitisch perlitic	K2.1	260	700	GGG-60	120-160
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45	60-120
		perlitisch perlitic	K3.2	260	700	GTS-55-04	80-140

F



G

System/System	Seite/Page
DCG	**284**
M304	**294**
M306	**302**
M308	**314**
M311	**324**
M313	**334**
M328	**344**
M332	**354**
M275	**360**
380	**366**

Gewindefräser
Thread Milling Cutter
DCG

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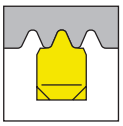
Seite/Page
288



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290

Schnittdaten
Cutting data

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291-292

G

DC

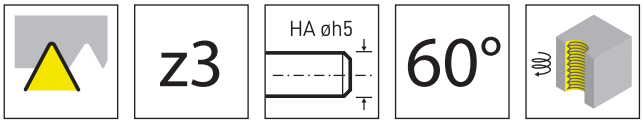
G

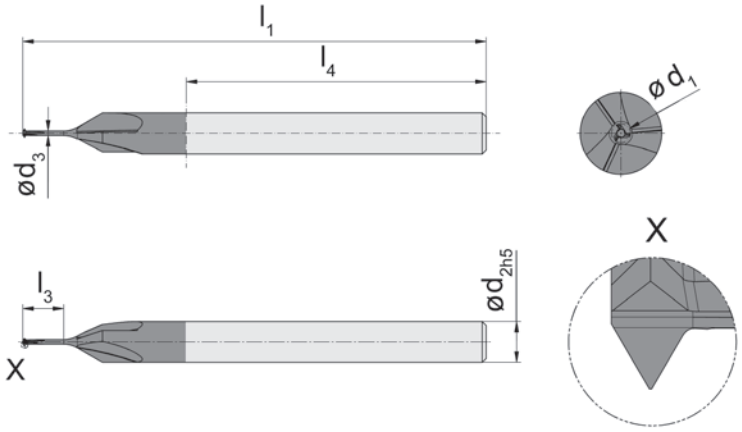
Gewindefräser (zirkular)

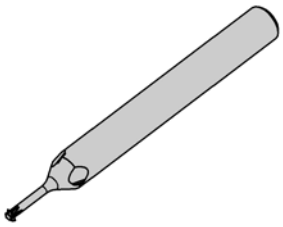
Thread Milling Cutter (by circular interpolation)

Gewindefräser
Thread Milling Cutter

DCG







HM-Sorten
Carbide grades

▲ ab Lager
on stock

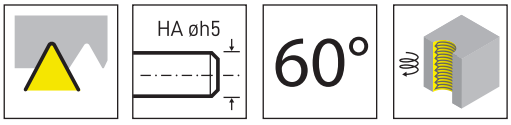
Δ 4 Wochen
4 weeks

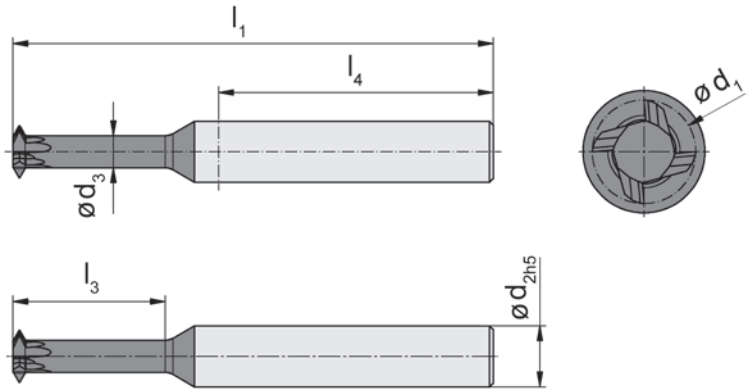
Bestellnummer Part number	Gewinde Thread	Z	P	d_1	d_2	d_3	l_1	l_3	l_4		ES15
DCG.3.M1.025.2.1.03	M1	3	0,25	0,7	3	0,33	34	2,5	22		▲
DCG.3.M11.025.2.1.03	M1,1	3	0,25	0,75	3	0,4	34	2,75	22		▲
DCG.3.M12.025.2.1.03	M1,2	3	0,25	0,8	3	0,43	34	3	22		▲
DCG.3.M14.030.2.1.03	M1,4	3	0,3	1	3	0,55	34	4	22		▲
DCG.3.M16.035.2.1.03	M1,6	3	0,35	1,18	3	0,64	34	4	22		▲
DCG.3.M18.035.2.1.03	M1,8	3	0,35	1,38	3	0,84	34	4	22		▲
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		▲
										P	●
										M	●
										K	o
										N	-
										S	-
										H	-

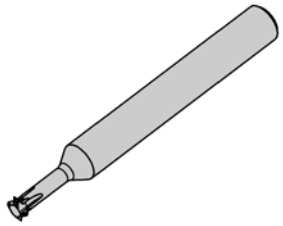
G

Gewindefräser
Thread Milling Cutter

DCG







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

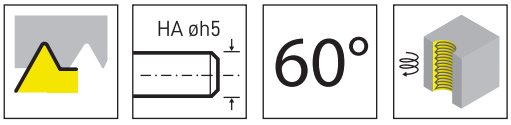
Bestellnummer Part number	Gewinde Thread	Z	P	P_{max}	d_1	d_2	d_3	l_1	l_3	l_4	RC25	RC45
DCG.3.M3.025.2.1.04	M3	3	0,25	-	2	4	1,45	39	8	22	▲	
DCG.3.M3.035.2.1.04	M3	3	0,35	-	2	4	1,35	39	8	22	▲	
DCG.3.M3.050.2.1.04	M3	3	0,5	-	2	4	1,2	39	9	22	▲	
DCG.3.M35.050.2.1.04	M3,5	3	0,5	0,6	2,3	4	1,35	39	9	22	▲	
DCG.3.M4.070.3.1.06	M4	3	0,7	0,75	2,8	6	1,7	50	10	36	▲	
DCG.3.M5.050.3.1.06	M5	3	0,5	0,75	3,6	6	2,5	50	10	36	▲	
DCG.3.M5.080.3.1.06	M5	3	0,8	1	3,6	6	2,2	50	10	36	▲	
DCG.4.M6.100.3.1.06	M6	4	1	1,25	4,2	6	2,4	63	10	36		▲
DCG.4.M6.100.5.1.06	M6	4	1	1,25	4,2	6	2,4	63	16	36		▲
DCG.4.M8.075.5.1.08	M8-M10	4	0,75	1	5,5	8	3,85	63	16	36		▲
DCG.4.M8.075.6.1.08	M8-M10	4	0,75	1	5,5	8	3,85	63	20	36		▲
DCG.4.M8.075.7.1.08	M8-M10	4	0,75	1	5,5	8	3,85	77	25	36		▲
DCG.4.M8.125.6.1.08	M8-M10	4	1,25	1,5	5,5	8	3,4	63	20	36		▲
DCG.4.M8.125.8.1.08	M8-M10	4	1,25	1,5	5,5	8	3,4	77	30	36		▲
DCG.4.M10.150.6.1.08	M10-M12	4	1,5	1,75	6,8	8	4,1	63	20	36		▲
DCG.4.M10.150.8.1.08	M10-M12	4	1,5	1,75	6,8	8	4,1	77	30	36		▲

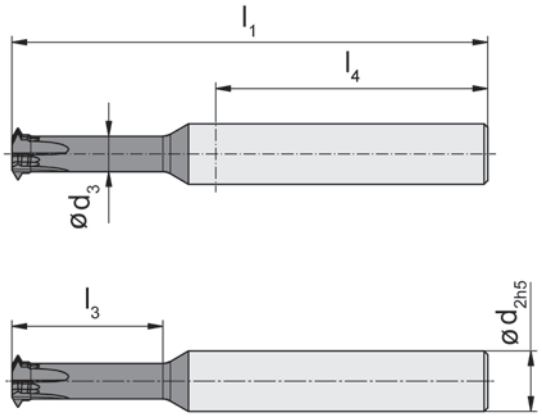
	RC25	RC45
P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-

G

Gewindefräser
Thread Milling Cutter

DCG





HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

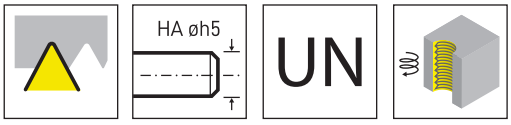
Bestellnummer Part number	Gewinde Thread	Z	P	d_1	d_2	d_3	l_1	l_3	l_4	RC25	RC45
DCG.3.M3.035.2.2.04	M3	3	0,35	2	4	1,4	39	8	22	▲	
DCG.3.M3.050.2.2.04	M3	3	0,5	2	4	1,25	39	8	22	▲	
DCG.3.M35.060.2.2.04	M3,5	3	0,6	2,3	4	1,45	39	9	22	▲	
DCG.3.M4.070.3.2.06	M4	3	0,7	2,8	6	1,9	50	10	36	▲	
DCG.3.M5.050.3.2.06	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		▲

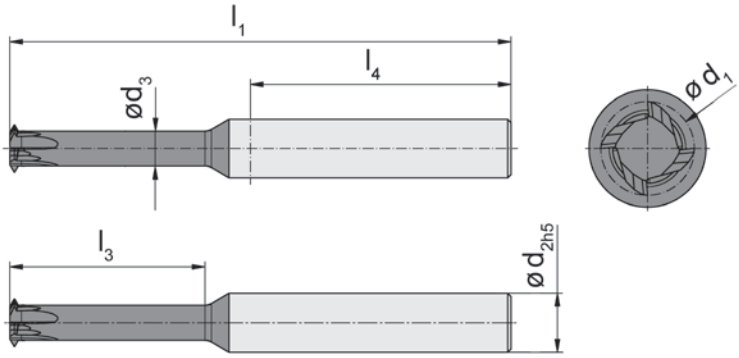
	RC25	RC45
P	●	●
M	●	●
K	●	●
N	-	-
S	-	-
H	-	-

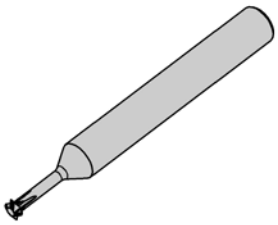
G

Gewindefräser
Thread Milling Cutter

DCG







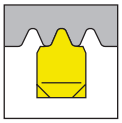
HM-Sorten
Carbide grades

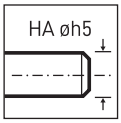
▲ ab Lager
on stock

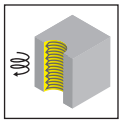
Δ 4 Wochen
4 weeks

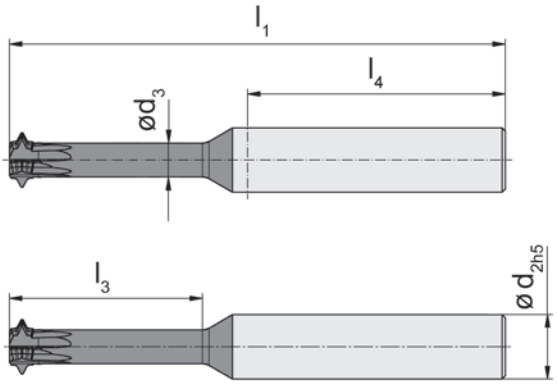
Bestellnummer Part number	Gewinde Thread	Z	P	d_1	d_2	d_3	l_1	l_3	l_4		RC25	RC45
DCG.3.60.1024.3.06	#10 - 24UNC #12 - 24UNC	3	1,058	2	4	1,1	39	8	22		▲	
DCG.3.60.540.2.04	#5 - 40 UNC	3	0,635	2	4	1,1	39	8	22		▲	
DCG.3.60.632.2.04	#6 - 32UNC #8 - 32UNC	3	0,794	2,2	4	1,05	39	8	22		▲	
DCG.4.60.1213.7.08	1/2" - 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			▲
										P	●	●
										M	●	●
										K	●	●
										N	-	-
										S	-	-
										H	-	-

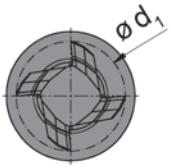
G

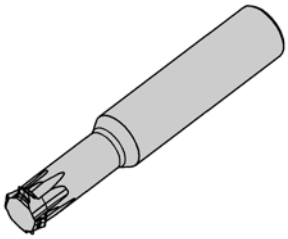












HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Gewinde 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		▲
										P	●
										M	●
										K	●
										N	-
										S	-
										H	-

G

Schnittdaten DCG
Cutting Data DCG

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values RC25 RC45	fz
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	250-180	0,01 -0,03
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	220-160	0,01 -0,03
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	200-140	0,01 -0,03
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	180-120	0,01 -0,03
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	150-90	0,01 -0,03
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	250-180	0,01 -0,03
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	200-140	0,01 -0,03
		vergütet quenched	P2.2	280	960	14NiCr10	150-90	0,01 -0,03
		vergütet quenched	P2.3	350	1250	34CrMo4	140-80	0,01 -0,03
		vergütet quenched	P2.4	430	1450	55Cr3	140-80	0,01 -0,03
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18	180-120	0,01 -0,03
		gehärtet hardened	P3.2	350	1200	X210Cr2	140-80	0,01 -0,03
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200	250-180	0,01 -0,03
		legiert alloyed	P4.2	220	750	GX40CrSi28	220-160	0,01 -0,03
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39		0,01 -0,03
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	150-90	0,01 -0,03
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	140-80	0,01 -0,03
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNi-MoN17-13-3	120-60	0,01 -0,03

G

Schnittdaten DCG
Cutting Data DCG

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values	
							E15 RC25 RC45	fz
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	230-190	0,01 -0,03
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	230-190	0,01 -0,03
	Kugelgraphit-guss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	220-160	0,01 -0,03
		perlitisch perlitic	K2.1	260	700	GGG-60	220-160	0,01 -0,03
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45	220-160	0,01 -0,03
		perlitisch perlitic	K3.2	260	700	GTS-55-04	220-160	0,01 -0,03
	Ausferritisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800			
		vergütet quenched	K4.2	350	1050			
		vergütet quenched	K4.3	450	1400			
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	bis 1000	0,02 - 0,04
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	600-200	0,02 - 0,04
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6	400-200	0,02 - 0,04
		6-10% Si	N2.2	100	320	AlSi7Mg		
		10-15 % Si	N2.3	130	450	AlSi12		
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu	400-200	0,02 - 0,04
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb	400-200	0,02 - 0,04
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40	400-200	0,02 - 0,04
		hochfest high strength	N3.4	300	1000	CuZn25Al-5Mn4Fe3	160-100	0,02 - 0,04
	Graphit Graphite		N4.1					
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670		120-60	0,02 - 0,04
		gehärtet hardened	S1.2	275	930		120-60	0,02 - 0,04
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600	90-30	0,02 - 0,04
		gehärtet hardened	S2.2	350	1200	Inconel 713	90-30	0,02 - 0,04

G

Gewindefräsen (innen)
Thread Milling (internal)

Übersicht
Overview
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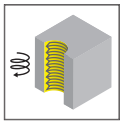
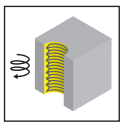
Fräserschaft
Milling shank
M304



Seite/Page
297

Schneidplatte
Insert
304



Seite/Page
298-300

G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M304

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 7,7 mm

Thread Milling Cutter (by circular interpolation)

from Cutting edge Ø 7,7 mm

Teilprofil, 60°, metrisch, Typ 304
Partial profile, 60°, metric, type 304

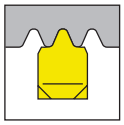
Steigung/ Pitch P	0,5	0,75	1,0	1,25	1,5
	Nenndurchmesser / Nominal diameter				
Typ / type **304** / Ds 7,7					
304.0515.01	⩾ 9	⩾ 9	⩾ 9	⩾ 10	⩾ 10

Vollprofil, 60°, metrisch, Typ 304
Full profile, 60°, metric, type 304

Steigung/ Pitch P	1,5
	Nenndurchmesser Nominal diameter
Typ / type **304** / Ds 7,7	
304.0815.02	⩾ 12

G

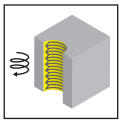
Vollprofil, 55°, Whitworth, Typ 304
Full profile, 55°, Whitworth, type 304

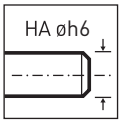


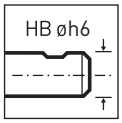
Gg/" / tpi	19	14	11
	Gewinde / Thread		
Typ / type **304** / Ds 7,7			
304.05519.02	G¼"		

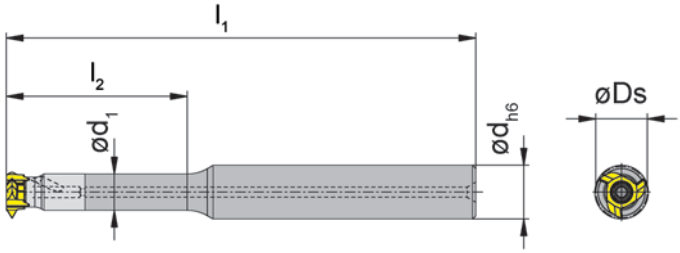
Fräserschaft
Milling shank

M304









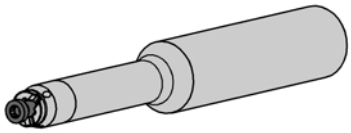


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 siehe Schneidplatten
Ds see inserts

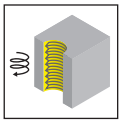
G

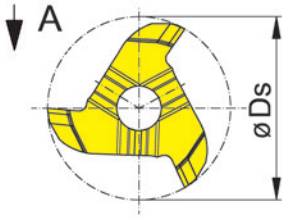
Ersatzteile
Spare Parts

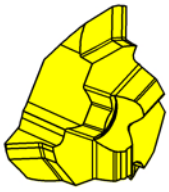
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M304...	**1.8.4T6EP**	**T6PL**

Schneidplatte
Insert

304







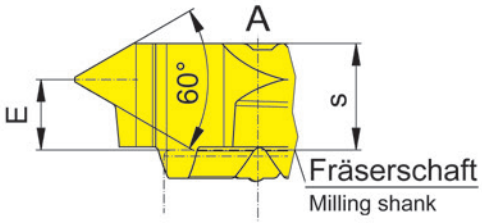


Abbildung = rechtsschneidend
Picture = right hand cutting version

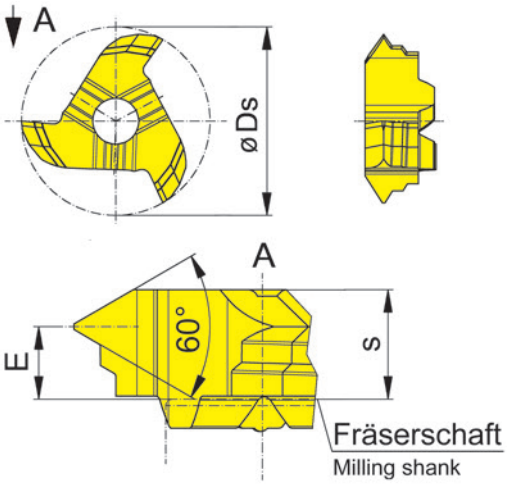
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45
304.0515.01	0,5	1,5	1,9	2,75	7,7	304044R		▲
							P	●
							M	●
							K	●
							N	o
							S	●
							H	-

G



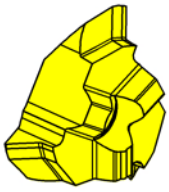


Abbildung = rechtsschneidend
Picture = right hand cutting version

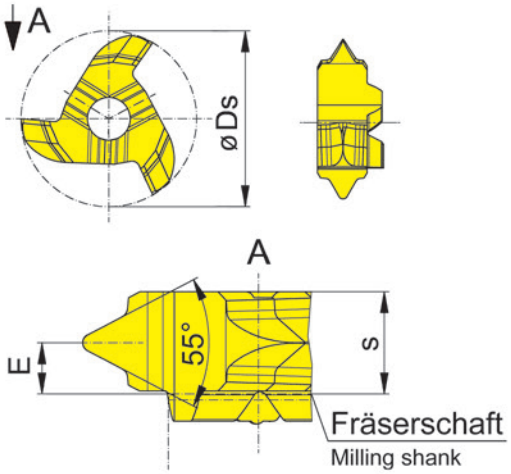
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	E	s	Ds	HIS		AS45
304.0815.02	1,5	2	2,75	7,7	304044R		▲
						P	●
						M	●
						K	●
						N	o
						S	●
						H	-

G



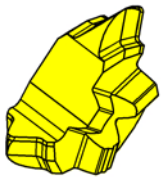


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45
304.5519.02	19	1,5	2,75	7,7	304044R		▲
						P	●
						M	●
						K	●
						N	o
						S	●
						H	-

G

Übersicht
Overview
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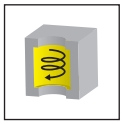
Fräserschaft
Milling shank
M306



Seite/Page
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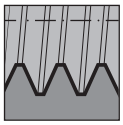
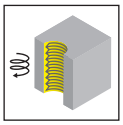
Schneidplatte
Insert
108/306/606



Seite/Page
306



Seite/Page
307-313

G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M306

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 9,6 mm

Thread Milling Cutter (by circular interpolation)

from Cutting edge Ø 9,6 mm

Teilprofil, 60°, metrisch, Typ 108, 306, 606
Partial, 60°, profile, metric, type 108, 306, 606

Steigung/ Pitch P	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0
	Nenndurchmesser / Nominal diameter								
Typ / type **108** / Ds 9,6									
R/L 108.0205.01	⩾ 12	⩾ 12							
R/L108.0510.01			⩾ 14	⩾ 14					
R/L108.0815.01					⩾ 16	⩾ 16			
Typ / type **306** / Ds 10,0									
306.0515.01	⩾ 12	⩾ 12	⩾ 13	⩾ 13	⩾ 14				
306.1020.01							⩾ 16		
Typ / type **306** / Ds 11,7									
306.0815.01					⩾ 18				
306.0720.01			⩾ 16	⩾ 16	⩾ 16	⩾ 16	⩾ 16		
306.2530.01								⩾ 20	⩾ 20
Typ / type **606** / Ds 10,0									
606.0515.01	⩾ 12	⩾ 12	⩾13	⩾ 13	⩾ 14				
Typ / type **606** / Ds 11,7									
606.0720.01			⩾ 16	⩾ 16	⩾ 16	⩾ 16	⩾ 16		

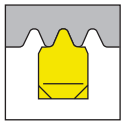
G

Vollprofil, 60°, metrisch, Typ 306, 606
Full profile, 60°, metric, type 306, 606

Steigung/ Pitch P	1,5	2,0
	Nenndurchmesser Nominal diameter	
Typ / type **306** / Ds 11,7		
306.0815.02	⩾ 22	
Typ / type **306** / Ds 10,0		
306.1020.02		⩾ 24

Steigung/ Pitch P	1,5
	Nenndurchmesser Nominal diameter
Typ / type **606** / Ds 11,7	
606.0815.02	⩾ 22

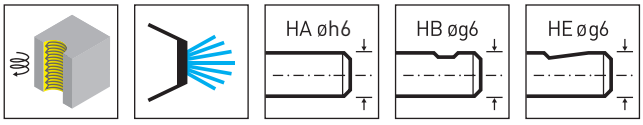
Vollprofil, 55°, Whitworth, Typ 306, 606
Full profile, 55°, Whitworth, type 306, 606



Gg/'' / tpi	19	14	11
	Gewinde / Thread		
Typ / type **306** / Ds 9,7			
306.5519.10.02	G¼''		
Typ / type **306** / Ds 11,7			
306.5519.02	G⅜''		
306.5514.02		G½"	
306.5511.02			G1''
Typ / type **606** / Ds 9,7			
606.5519.10.02	G¼''		
Typ / type **606** / Ds 11,7			
606.5519.02	G⅜''		
606.5514.02		G½"	

Fräserschaft
Milling shank

M306



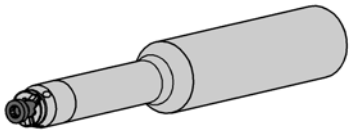


Abbildung = rechtsschneidend
Picture = right hand cutting version

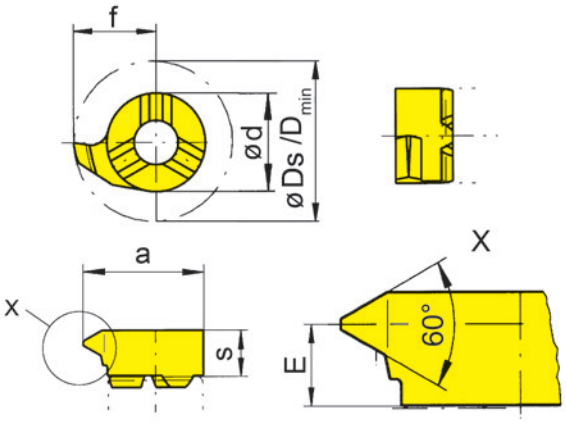
Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M306.0712.02A	12	90	30	7,3	HA	306060R • 306060L
M306.0716.01A	16	100	25	7,3	HA	306060R • 306060L
M306.0716.02A	16	110	35	7,3	HA	306060R • 306060L
M306.0712.02B	12	90	30	7,3	HB	306060R • 306060L
M306.0716.01B	16	100	25	7,3	HB	306060R • 306060L
M306.0716.02B	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
M306.0716.02E	16	110	35	7,3	HE	306060R • 306060L

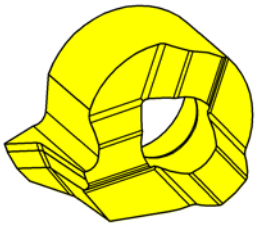
Ds siehe Schneidplatten
Ds see inserts

G

Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M306...	**2.6.5T8EP**	**T8PL**





R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

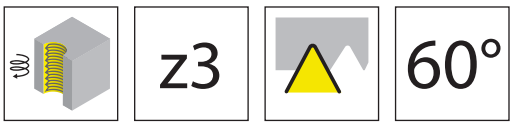
HM-Sorten
Carbide grades

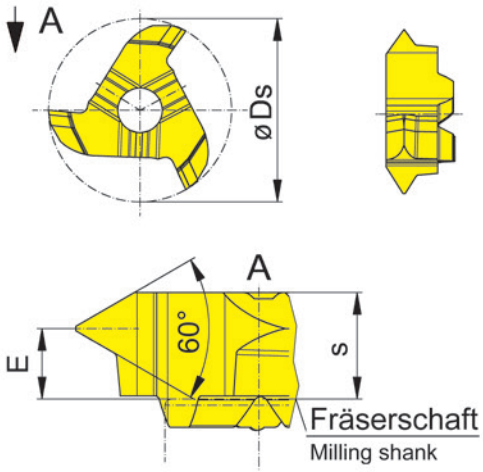
Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	f	a	d	s	D_{min}	Ds	HIS	EG55	TH35	TI25	TN35
R108.0205.01	0,5	0,75	2,8	4,8	7,8	6	3,6	8	9,6	108060R	▲	▲		▲
R108.0815.01	1,5	1,75	2,6	4,8	7,8	6	3,6	8	9,6	108060R	▲	▲		▲
R108.0510.01	1	1,25	2,8	4,8	7,8	6	3,6	8	9,6	108060R	▲	▲	▲	▲
L108.0205.01	0,5	0,75	2,8	4,8	7,8	6	3,6	8	9,6	108060L	▲	▲		▲
L108.0815.01	1,5	1,75	2,6	4,8	7,8	6	3,6	8	9,6	108060L	▲	▲		▲
L108.0510.01	1	1,25	2,8	4,8	7,8	6	3,6	8	9,6	108060L	▲	▲	▲	▲

	EG55	TH35	TI25	TN35
P	●	●	●	●
M	o	●	●	●
K	o	●	●	●
N	-	●	●	●
S	-	●	●	●
H	-	-	-	-

G





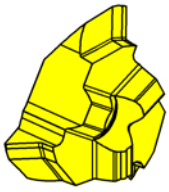


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

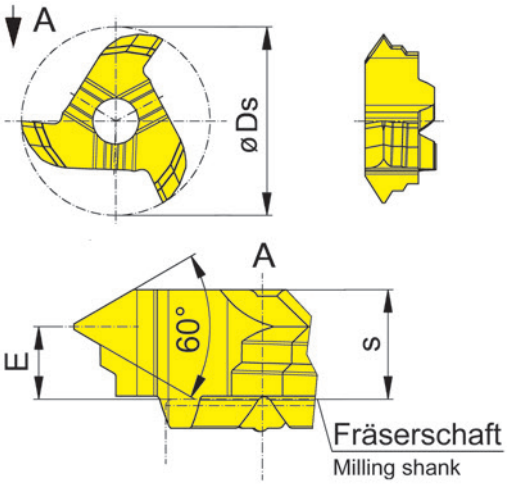
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS	AS45	TA45	TI25	TN35
306.0515.01	0,5	1,5	2,3	3,4	10	306060R	▲	▲		
306.0720.01	1	2	1,95	3,4	11,7	306060R	▲		▲	▲
306.0815.01	1,5	1,5	2,25	3,4	11,7	306060R	▲		▲	▲
306.1020.01	2	2	2,2	3,4	10	306060R	▲		▲	
306.2530.01	2,5	3	1,7	3,4	11,7	306060R	▲		▲	▲

	AS45	TA45	TI25	TN35
P	●	●	●	●
M	●	●	●	●
K	●	●	●	●
N	o	●	●	●
S	●	●	●	●
H	-	-	-	-

G



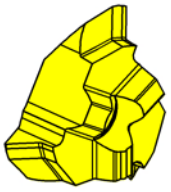


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

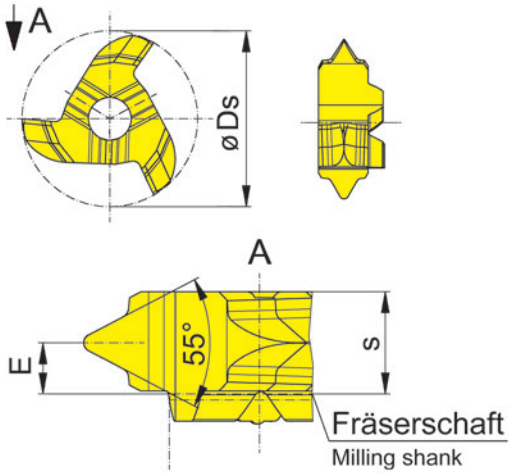
Δ 4 Wochen
4 weeks

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

G

Schneidplatte
Insert

306



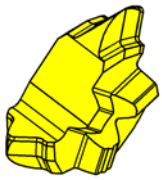


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

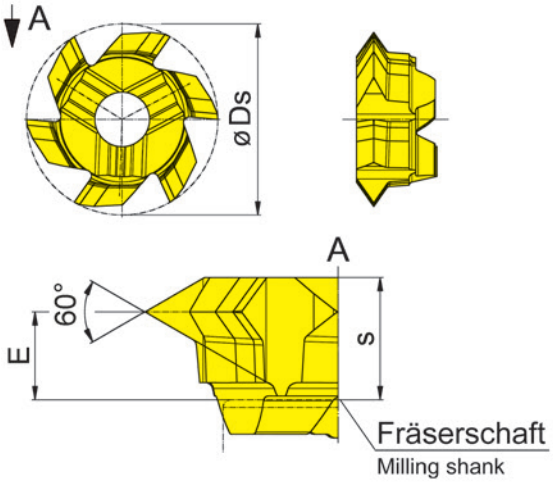
Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45	TA45	TI25	TN35
306.5511.02	11	1,7	3,4	11,7	306060R		▲	▲	Δ	
306.5514.02	14	2	3,4	11,7	306060R		▲	▲		Δ
306.5519.02	19	2,2	3,4	11,7	306060R		▲	▲		
306.5519.10.02	19	2,2	3,4	9,7	306060R		▲	▲		
						P	●	●	●	●
						M	●	●	●	●
						K	●	●	●	●
						N	o	●	●	●
						S	●	●	●	●
						H	-	-	-	-

G

Schneidplatte
Insert

606



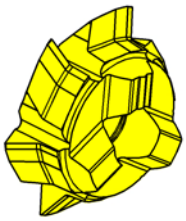


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

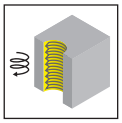
Δ 4 Wochen
4 weeks

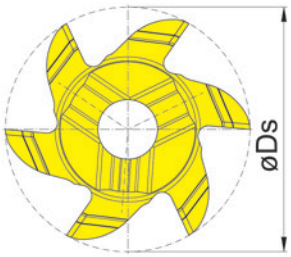
Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	TA45
606.0515.01	0,5	1,5	2,3	3,15	10	306060R		▲	▲
606.0720.01	1	2	1,95	3,15	11,7	306060R		▲	▲
							P	●	●
							M	●	●
							K	●	●
							N	o	●
							S	●	●
							H	-	-

G

Schneidplatte
Insert

606





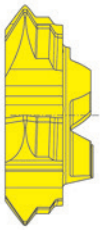
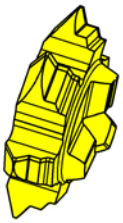
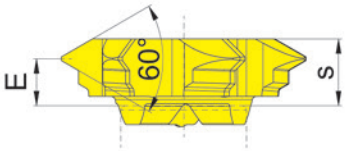




Abbildung = rechtsschneidend
Picture = right hand cutting version

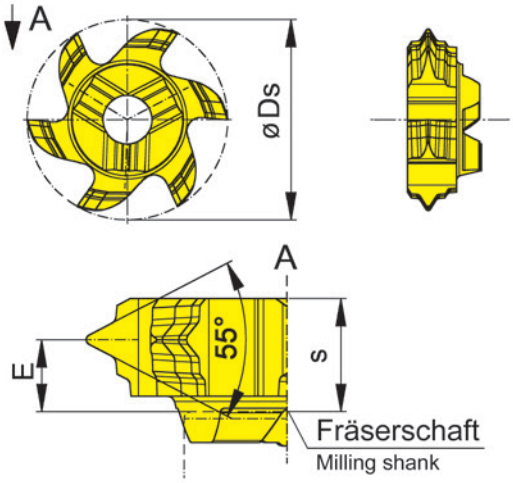
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

G



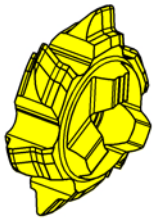


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

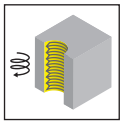
Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45	TA45	TI25
606.5519.10.02	19	2,1	3,3	9,7	306060R		▲	▲	Δ
606.5514.02	14	2	3,3	11,7	306060R		▲	▲	
606.5519.02	19	2,1	3,3	11,7	306060R		▲	▲	Δ
						P	●	●	●
						M	●	●	●
						K	●	●	●
						N	o	●	●
						S	●	●	●
						H	-	-	-

G

Gewindefräsen (innen)
Thread Milling (internal)

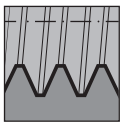
Übersicht
Overview
Seite/Page
316

Fräserschaft
Milling shank
M308

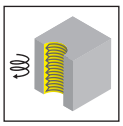


Seite/Page
317

Schneidplatte
Insert
111/308/608



Seite/Page
318-319



Seite/Page
320-323

G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M308

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 13,4 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 13,4 mm

Teilprofil, 60°, metrisch, Typ 111, 308
Partial profile60°, metric, type 111, 308

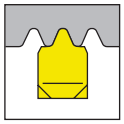
Steigung/Pitch P	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0
			Nenndurchmesser / Nominal diameter						
Typ / type **111** / Ds 13,4									
R/L111.0205.01	⩾ 18	⩾16							
R/L111.0510.01			⩾18	⩾18					
R/L111.0815.01					⩾ 20	⩾ 20			
R/L111.1020.01							⩾ 22		
R/L111.1325.01								⩾ 24	
Typ / type 308 / Ds 13,2									
308.1325.01								⩾ 18	
Typ / type 308 / Ds 15,7									
308.0815.01					⩾ 22				
308.0720.01			⩾ 20	⩾ 20	⩾ 20	⩾ 20	⩾ 20		
308.2530.01								⩾ 24	⩾24

Teilprofil, 60°, metrisch, Typ 608
Partial profile, 60°, metric, type 608

Steigung/Pitch P	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0
			Nenndurchmesser / Nominal diameter						
Typ / type **608** / Ds 13,2									
608.1325.01								⩾ 18	
Typ / type **608** / Ds 15,7									
608.0720.01			⩾ 20	⩾ 20	⩾ 20	⩾ 20	⩾ 20		
608.2530.01								⩾ 24	⩾24

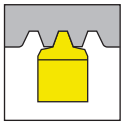
G

Vollprofil, 55°, Whitworth, Typ 111, 608
Full profile, 55°, Whitworth, type 111, 608



Gg/'' / tpi	19	14
	Nenndurchmesser Nominal diameter	
Typ / type **111** / Ds 13,4		
111.5519.02	⩾ 18	
111.5514.02		⩾ 21
	Gewinde/ Thread	
Typ / type **608** / Ds 13,5		
608.5514.02		G½''/G¾''

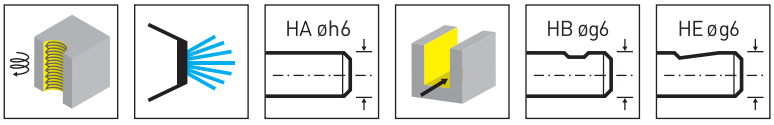
Trapezgewinde, 30°, metrisch, Typ 608
Trapezoidal thread, 30°, metric, type 608

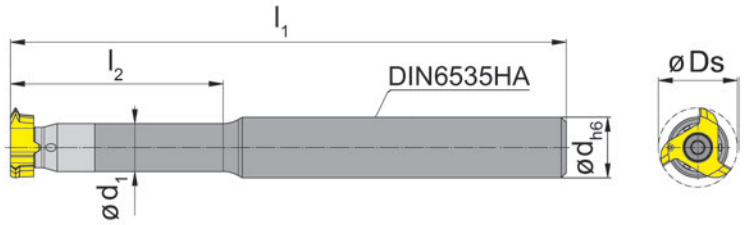


608.1525.01	Tr24x2,5
608.1730.01	Tr24x3
608.2240.01	Tr24x4

Fräserschaft
Milling shank

M308





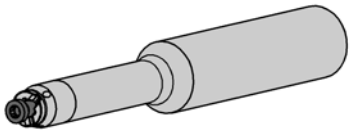


Abbildung = rechtsschneidend
Picture = right hand cutting version

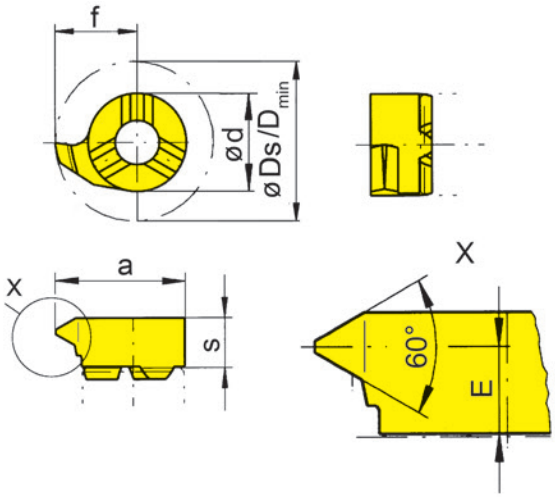
Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M308.0012.07A	12	160	-	8	HA	308080R • 308080L
M308.1012.02A	12	110	42	9,5	HA	308080R • 308080L
M308.1016.01A	16	110	33	9,5	HA	308080R • 308080L
M308.1016.02A	16	110	45	9,5	HA	308080R • 308080L
M308.1016.03A	16	130	64	9,5	HA	308080R • 308080L
M308.1012.02B	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

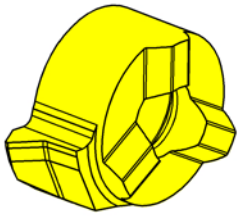
Ds siehe Schneidplatten
Ds see inserts

G

Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M308...	**3.5.12T10EP**	**T10PL**





R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

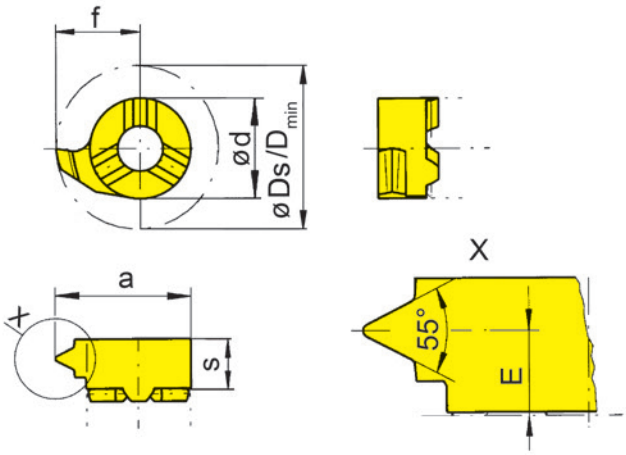
HM-Sorten
Carbide grades

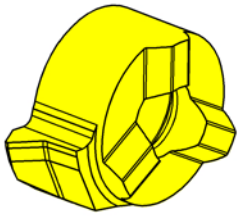
Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	f	a	d	Ds	D_{min}	HIS	EG55	TH35	TN35
R111.0205.01	0,5	0,75	3,5	4,15	6,7	10,7	8	13,4	11	111080R	▲	▲	▲
R111.0510.01	1	1,25	3,3	4,15	6,7	10,7	8	13,4	11	111080R	▲	▲	▲
R111.0815.01	1,5	1,75	3,3	4,15	6,7	10,7	8	13,4	11	111080R	▲	▲	▲
R111.1020.01	2	2	3	4,15	6,7	10,7	8	13,4	11	111080R	▲	▲	▲
L111.0205.01	0,5	0,75	3,5	4,15	6,7	10,7	8	13,4	11	111080L	Δ	Δ	▲
L111.0510.01	1	1,25	3,3	4,15	6,7	10,7	8	13,4	11	111080L	▲	Δ	▲
L111.0815.01	1,5	1,75	3,3	4,15	6,7	10,7	8	13,4	11	111080L	▲	Δ	▲
L111.1020.01	2	2	3	4,15	6,7	10,7	8	13,4	11	111080L	Δ	Δ	▲

	EG55	TH35	TN35
P	●	●	●
M	o	●	●
K	o	●	●
N	-	●	●
S	-	●	●
H	-	-	-

G





R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

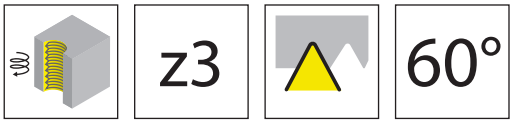
Δ 4 Wochen
4 weeks

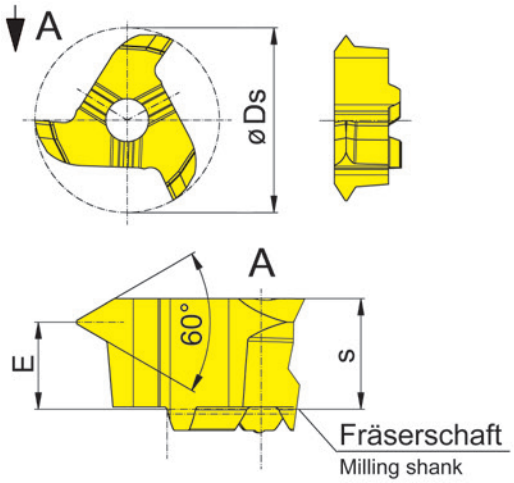
Bestellnummer Part number	TPI	E	s	f	a	d	Ds	D_{min}	HIS		EG55	TA45	TN35
R111.5514.02	14	2,5	4,15	6,7	10,7	8	13,4	11	111080R		▲		▲
R111.5519.02	19	2,9	4,15	6,7	10,7	8	13,4	11	111080R		▲	Δ	▲
L111.5514.02	14	2,5	4,15	6,7	10,7	8	13,4	11	111080L		Δ		▲
L111.5519.02	19	2,9	4,15	6,7	10,7	8	13,4	11	111080L			Δ	▲
										P	●	●	●
										M	o	●	●
										K	o	●	●
										N	-	●	●
										S	-	●	●
										H	-	-	-

G

Schneidplatte
Insert

308





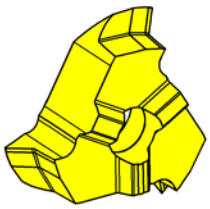


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

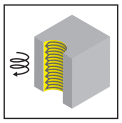
Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS	AS45	TA45	TN35
308.1325.01	2,5	2,5	3,3	4,7	13,2	308080R	▲	▲	
308.0720.01	1	2	3,3	4,7	15,7	308080R	▲		▲
308.0815.01	1,5	1,5	3,7	4,7	15,7	308080R	▲		▲
308.2530.01	2,5	3	2,7	4,7	15,7	308080R	▲		▲

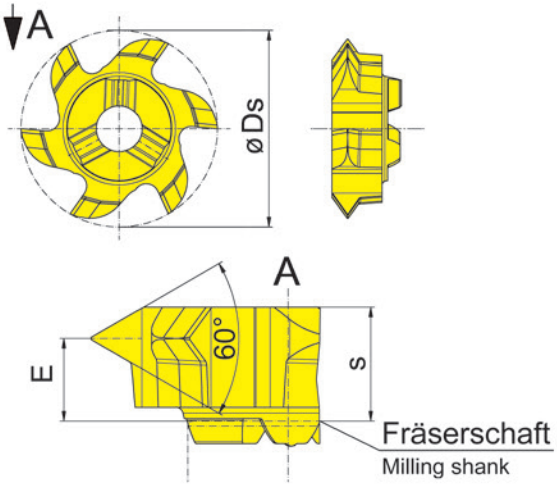
	AS45	TA45	TN35
P	●	●	●
M	●	●	●
K	●	●	●
N	o	●	●
S	●	●	●
H	-	-	-

Hinweis:
308.0815.01 auch zur Herstellung von Gewinde UNF 7/8''-14 geeignet
Note:
308.0815.01 also suitable for production of thread UNF 7/8''-14

Schneidplatte
Insert

608





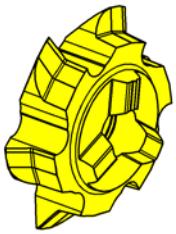


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

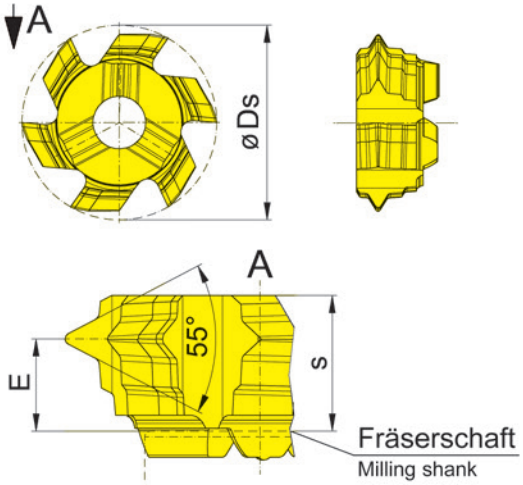
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	TA45	TI25
608.0720.01	1	2	3,3	4,55	15,7	308080R		▲		▲
608.1325.01	2,5	2,5	3,3	4,55	13,2	308080R		▲	▲	
608.2530.01	2,5	3	2,9	4,55	15,7	308080R		▲		▲
							P	●	●	●
							M	●	●	●
							K	●	●	●
							N	o	●	●
							S	●	●	●
							H	-	-	-

Hinweis:
608.1325.01 auch zur Herstellung von Gewinde UNF 7/8''-14 geeignet
Note:
608.1325.01 also suitable for production of thread UNF 7/8''-14

G



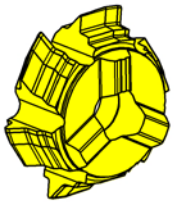


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

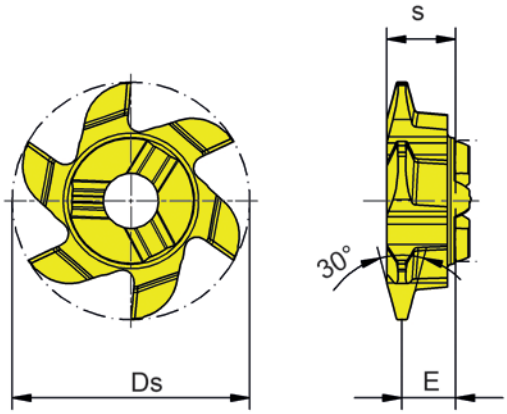
Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45	TA45	TI25
608.5514.02	14	3,2	4,7	13,5	308080R		▲	▲	Δ
						P	●	●	●
						M	●	●	●
						K	●	●	●
						N	o	●	●
						S	●	●	●
						H	-	-	-

G

Schneidplatte
Insert

608



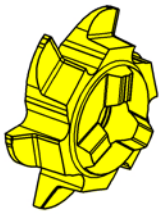


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

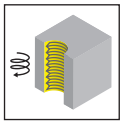
Δ 4 Wochen
4 weeks

Bestellnummer 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	o
						K	o
						N	-
						S	-
						H	-

G

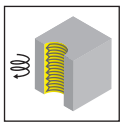
Übersicht
Overview — Seite/Page 326

Fräserschaft
Milling shank
M311



Seite/Page 327

Schneidplatte
Insert
311/611



Seite/Page 328-332

G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M311

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 17,7 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 17,7 mm

Teilprofil, 60°, metrisch, Typ 311, 611
Partial profile, 60°, metric, type 311, 611

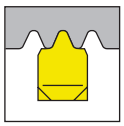
Steigung/Pitch P	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5
	Nenndurchmesser / Nominal diameter									
Typ / type **311** / Ds 17,7										
311.0515.01	⩾ 20	⩾ 20	⩾ 20	⩾ 20	⩾ 22					
311.0510.01			⩾ 22							
311.0720.01			⩾ 22	⩾ 22	⩾ 22	⩾ 22	⩾ 22			
311.0815.01					⩾ 24					
311.1020.01							⩾ 28			
311.1325.01								⩾ 34		
311.1630.01									⩾ 34	
311.1835.01										⩾ 34
311.2535.01								⩾ 28	⩾ 24	⩾ 26
Typ / type **611** / Ds 17,7										
611.0515.01	⩾ 20	⩾ 20	⩾ 20	⩾ 20	⩾ 22					
611.0720.01			⩾ 22	⩾ 22	⩾ 22	⩾ 22	⩾ 22			
611.2535.01								⩾ 28	⩾ 24	⩾ 26

G

Vollprofil, 60°, metrisch, Typ 311, 611
Full profile, 60°, metric type 311, 611

Steigung/Pitch P	1,5	1,75	2,0	2,5	3,0	3,5
	Nenndurchmesser / Nominal diameter					
Typ / type **311** / Ds 17,7						
311.0815.02	⩾ 23					
311.0917.02		⩾ 24,5				
311.1020.02			⩾ 25,5			
311.1325.02				⩾ 28,5		
311.1630.02					⩾ 32	
311.1835.02						⩾ 35
Typ / type **611** / Ds 17,7						
611.0815	⩾ 23					

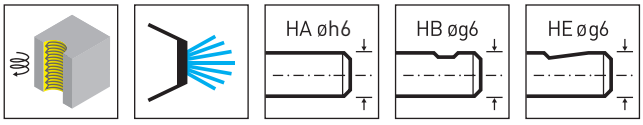
Vollprofil, 55°, Whitworth, Typ 311
Full profile, 55°, Whitworth, type 311



Gg/'' / tpi	14	11
	Gewinde / Thread	
Typ / type **311** / Ds 17,7		
311.5514.02	G¾''	
311.5511.02		G1''

Fräserschaft
Milling shank

M311



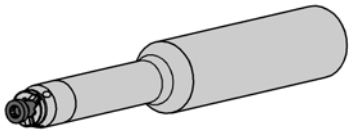


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M311.0012.05A	12	130	20	9	HA	311090R
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 siehe Schneidplatten
Ds see inserts

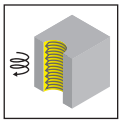
G

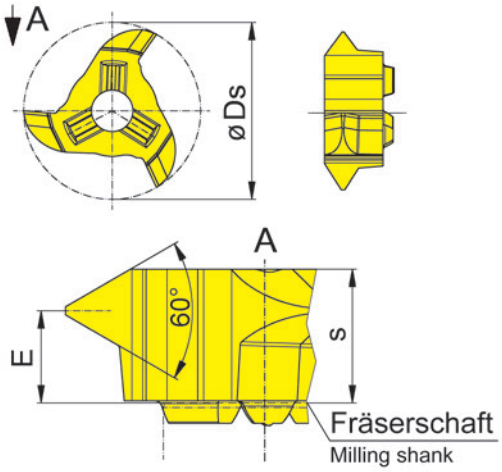
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311...	**4.14T15P**	**T15PQ**

Schneidplatte
Insert

311





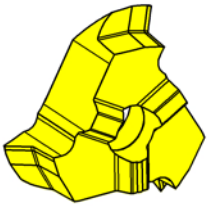


Abbildung = rechtsschneidend
Picture = right hand cutting version

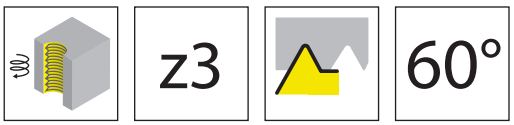
HM-Sorten
Carbide grades

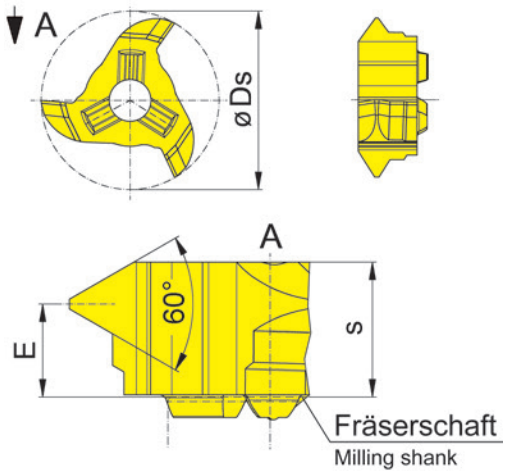
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	TA45	TN35
311.0515.01	0,5	1,5	4,8	5,95	17,7	311090R		▲	▲	
311.0510.01	1	1	5	5,95	17,7	311090R		▲		▲
311.0720.01	1	2	4,6	5,95	17,7	311090R		▲		▲
311.0815.01	1,5	1,5	4,8	5,95	17,7	311090R		▲		▲
311.1020.01	2	2	4,6	5,95	17,7	311090R		▲		▲
311.1325.01	2,5	2,5	4,4	5,95	17,7	311090R		▲		▲
311.2535.01	2,5	3,5	3,7	5,95	17,7	311090R		▲		▲
311.1630.01	3	3	4,3	5,95	17,7	311090R		▲		▲
311.1835.01	3,5	3,5	4,1	5,95	17,7	311090R		▲		▲
							P	●	●	●
							M	●	●	●
							K	●	●	●
							N	o	●	●
							S	●	●	●
							H	-	-	-

G





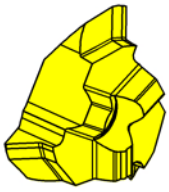


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

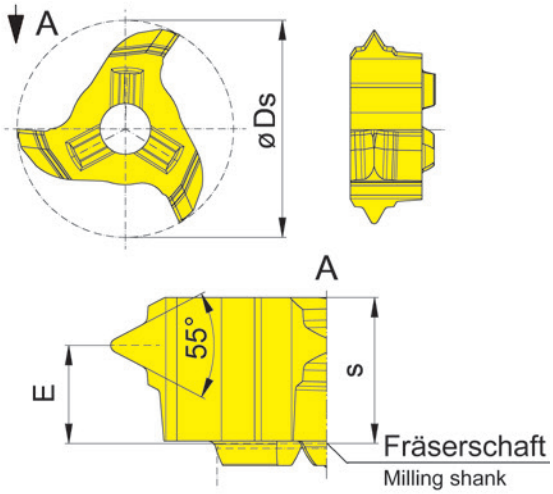
Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	E	s	Ds	HIS		AS45	EG35	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		▲		▲
						P	●	●	●
						M	●	●	●
						K	●	o	●
						N	o	-	●
						S	●	-	●
						H	-	-	-

G

Schneidplatte
Insert

311



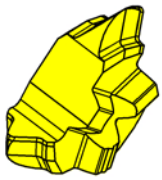


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

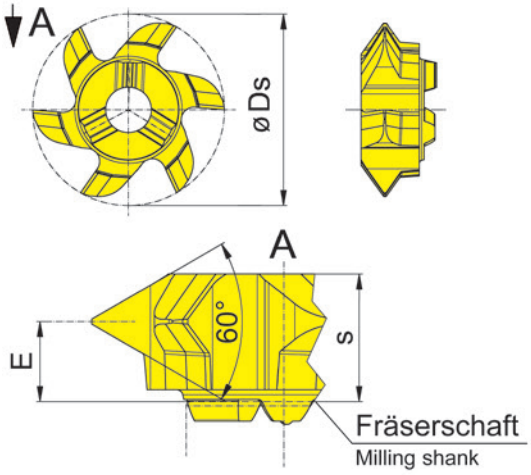
Δ 4 Wochen
4 weeks

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

G

Schneidplatte
Insert

611



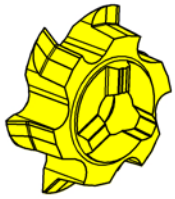


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

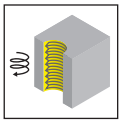
Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	TA45	TI25
611.0515.01	0,5	1,5	4,8	5,75	17,7	311090R		▲	▲	
611.0720.01	1	2	4,6	5,75	17,7	311090R		▲		▲
611.2535.01	2,5	3,5	3,7	5,75	17,7	311090R		▲		▲
							P	●	●	●
							M	●	●	●
							K	●	●	●
							N	o	●	●
							S	●	●	●
							H	-	-	-

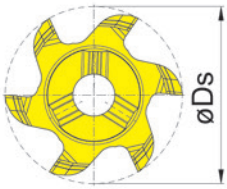
Hinweis:
611.2535.01 auch zur Herstellung von Gewinde UNF 1 1/4"-12, 1 1/8"-12 und 1 5/8"-12 geeignet
Note:
611.2535.01 also suitable for production of thread UNF 1 1/4"-12, 1 1/8"-12 and 1 5/8"-12

G

Schneidplatte
Insert

611





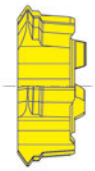
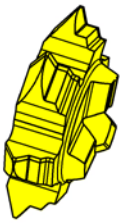
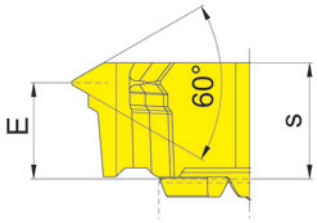




Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	E	s	Ds	HIS		AS45
611.0815.02	1,5	4,8	5,95	17,7	311090R		▲
						P	●
						M	●
						K	●
						N	o
						S	●
						H	-

G

Gewindefräsen (innen)
Thread Milling (internal)

Übersicht
Overview
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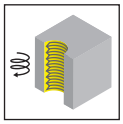
Fräserschaft
Milling shank
M313



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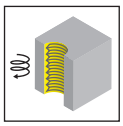
337-338

Schneidplatte
Insert
313/613



Seite/Page
339-343

G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M313

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 21,7 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 21,7 mm

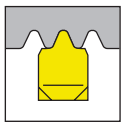
Teilprofil, 60°, metrisch, Typ 313, 613
Partial profile, 60°, metric, type 313, 613

Steigung/Pitch P	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5
	Nenndurchmesser / Nominal diameter									
Typ / type **313** / Ds 21,7										
313.0720.01	≥ 27	≥ 26	≥ 26	≥ 26	≥ 26					
313.0815.01			≥ 30							
313.1020.01					≥ 32					
313.1630.01							≥ 36			
313.1835.01								≥ 36		
313.2140.01									≥ 36	
313.2445.01										≥ 38
313.2545.01						≥ 33	≥ 32	≥ 30	≥ 30	≥ 30
Typ / type **613** / Ds 21,7										
613.0720.01	≥ 27	≥ 26	≥ 26	≥ 26	≥ 26					
613.2545.01						≥ 33	≥ 32	≥ 30	≥ 30	≥ 30

Vollprofil, 60°, metrisch, Typ 313
Full profile, 60°, metric, type 313

Steigung/Pitch P	1,5	2,0	3,0	3,5	4,0	4,5
	Nenndurchmesser / Nominal diameter					
Typ / type **313** / Ds 21,7						
313.0815.02	≥ 27					
313.1020.02		≥ 30				
313.1630.02			≥ 37			
313.1835.02				≥ 40		
313.2140.02					≥ 44	
313.2445.02						≥ 48

Vollprofil, 55°, Whitworth, Typ 313, 613
Full profile, 55°, Whitworth, type 313, 613

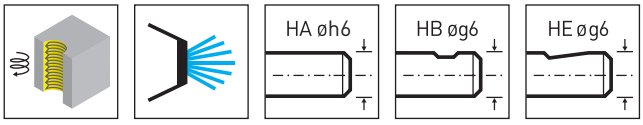


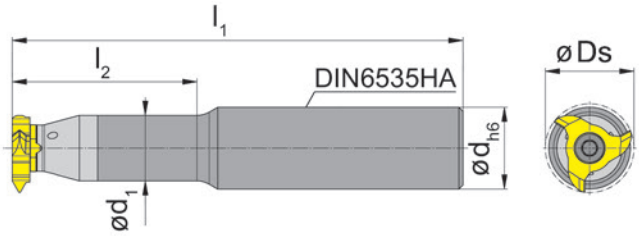
Gg/'' / tpi	11	8	6
	Nenndurchmesser Nominal diameter		
Typ / type **313** / Ds 21,7			
313.5508.02		≥ 40	
313.5506.02			≥ 48
	Gewinde/ Thread		
Typ / type **313** / Ds 21,7			
313.5511.02	G1''		
Typ / type **613** / Ds 21,7			
613.5511.02	G1''		

G

Fräserschaft
Milling shank

M313





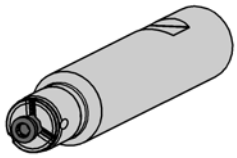


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 siehe Schneidplatten
Ds see inserts

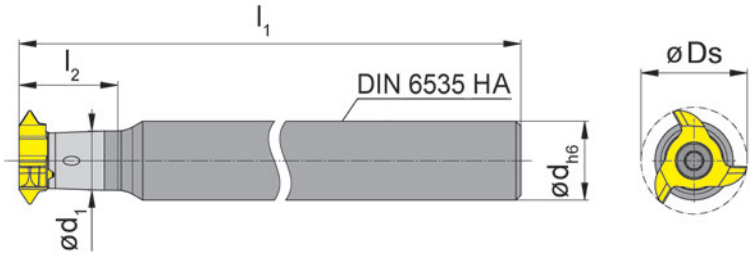
G

Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.14T20P**	**T20PQ**

Fräserschaft
Milling shank

M313



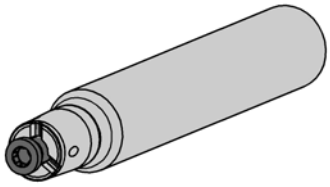


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M313.0016.07A	16	160	20	12	HA	313113R • 313113L

Ds siehe Schneidplatten
Ds see inserts

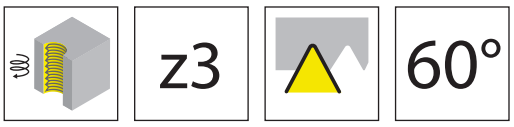
G

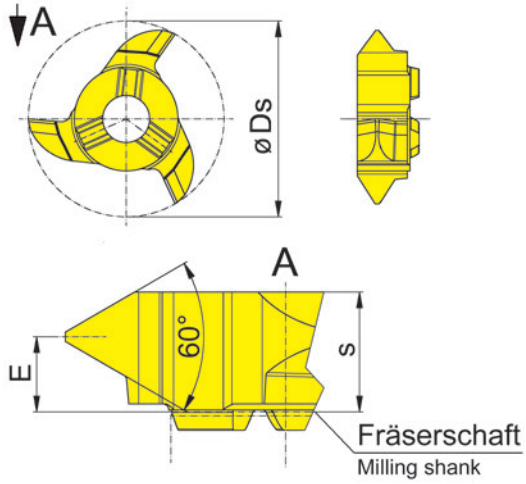
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313.0016.07A	**5.14T20P**	**T20PQ**

Schneidplatte
Insert

313





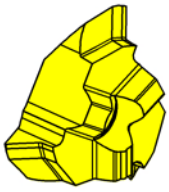


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS	AS45	EG55	TN35
313.0720.01	1	2	4,6	5,9	21,7	313113R	▲	▲	▲
313.0815.01	1,5	1,5	4,8	5,9	21,7	313113R	▲	▲	▲
313.1020.01	2	2	4,6	5,9	21,7	313113R	▲	▲	▲
313.1630.01	3	3	4,3	5,9	21,7	313113R	▲	▲	▲
313.1835.01	3,5	3,5	4,1	5,9	21,7	313113R	▲	▲	Δ
313.2140.01	4	4	3,9	5,9	21,7	313113R	▲	▲	▲
313.2445.01	4,5	4,5	3,7	5,9	21,7	313113R	▲	▲	▲
313.2545.01	2,5	4,5	3,7	5,9	21,7	313113R	▲	▲	▲

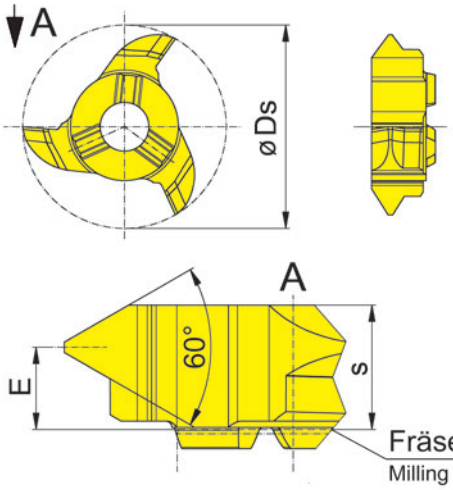
	AS45	EG55	TN35
P	●	●	●
M	●	o	●
K	●	o	●
N	o	-	●
S	●	-	●
H	-	-	-

Hinweis:
313.1020.01 auch zur Herstellung von Gewinde UNF 1 1/4''-12, 1 1/8''-12 und 1 5/8''-12 geeignet
Note:
313.1020.01 also suitable for production of thread UNF 1 1/4''-12, 1 1/8''-12 and 1 5/8''-12

G

Schneidplatte
Insert

313



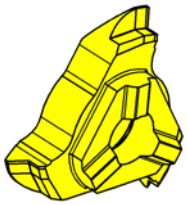


Abbildung = rechtsschneidend
Picture = right hand cutting version

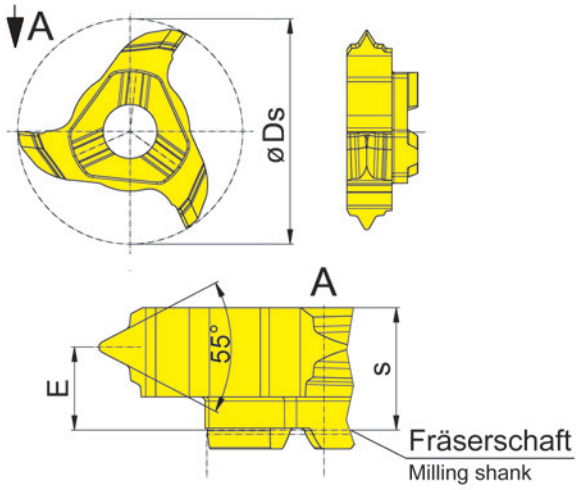
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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	▲	▲	▲

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



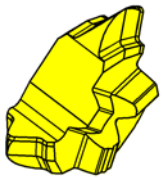


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

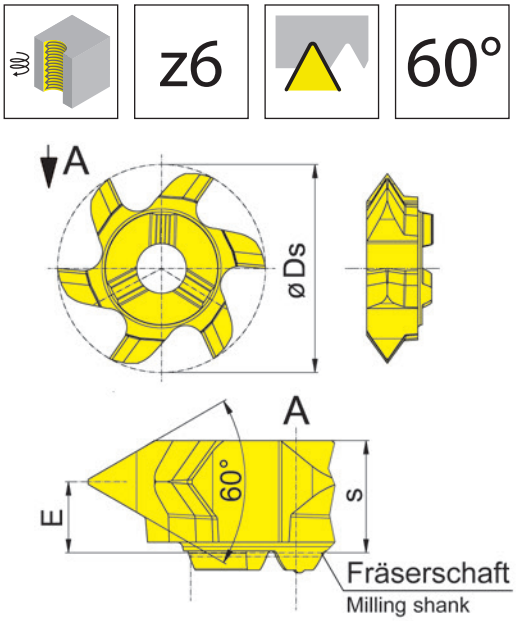
Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		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		▲	▲	▲
						P	●	●	●
						M	●	o	●
						K	●	o	●
						N	o	-	●
						S	●	-	●
						H	-	-	-

G

Schneidplatte
Insert

613



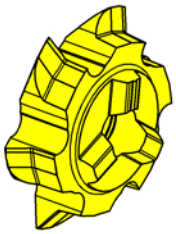


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

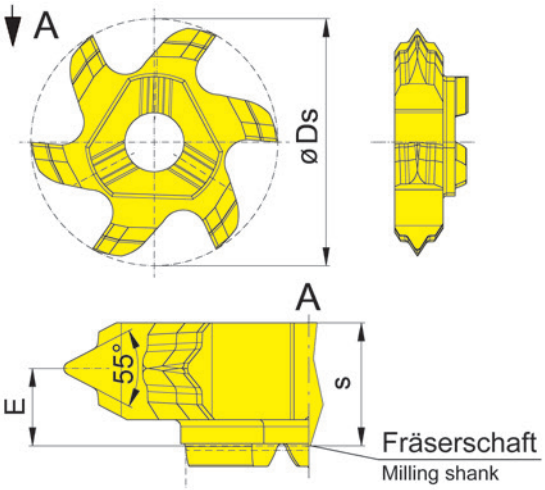
Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS	AS45	EG55	TI25
613.0720.01	1	2	4,6	5,6	21,7	313113R	▲	▲	▲
613.2545.01	2,5	4,5	3,7	5,75	21,7	313113R	▲	▲	▲
							P ●	●	●
							M ●	o	●
							K ●	o	●
							N o	-	●
							S ●	-	●
							H -	-	-

G

Schneidplatte
Insert

613



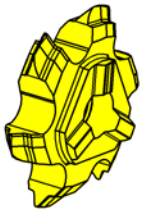


Abbildung = rechtsschneidend
Picture = right hand cutting version

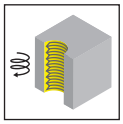
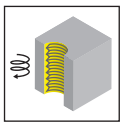
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45	EG55	TA45	TI25
613.5511.02	11	3,4	5,4	21,7	313113R		▲	▲	▲	▲
						P	●	●	●	●
						M	●	o	●	●
						K	●	o	●	●
						N	o	-	●	●
						S	●	-	●	●
						H	-	-	-	-

G

Übersicht Overview	Seite/Page 346
Fräserschaft Milling shank M328/SM328	 Seite/Page 347-348
Schneidplatte Insert 328/628	 Seite/Page 349-352

G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M328

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 27,7 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 27,7 mm

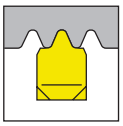
Teilprofil, 60°, metrisch, Typ 328, 628
Partial profile, 60°, metric, type 328, 628

Steigung/Pitch P	1,0	1,25	1,5	1,75	2,0	2,5
	Nenndurchmesser / Nominal diameter					
Typ / type **328** / Ds 27,7						
328.0720.01	≥ 32	≥ 32	≥ 32	≥ 32	≥ 32	
328.1525.01			≥ 34	≥ 34	≥ 34	≥ 34
Typ / type **628** / Ds 27,7						
628.1525.01			≥ 34	≥ 34	≥ 34	≥ 34

Steigung/Pitch P	3,0	3,5	4,0	4,5	5,0	5,5	6,0
	Nenndurchmesser / Nominal diameter						
Typ / type **328** / Ds 27,7							
328.3050.01	≥ 40	≥ 38	≥ 38	≥ 38	≥ 38		
328.5060.01					≥ 48	≥ 46	≥ 44
Typ / type **628** / Ds 27,7							
628.3050.01	≥ 40	≥ 38	≥ 38	≥ 38	≥ 38		
628.5060.01					≥ 48	≥ 46	≥ 44

G

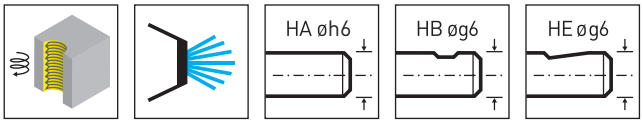
Vollprofil, 55°, Whitworth, Typ 328, 628
Full profile, 55°, Whitworth, type 328, 628

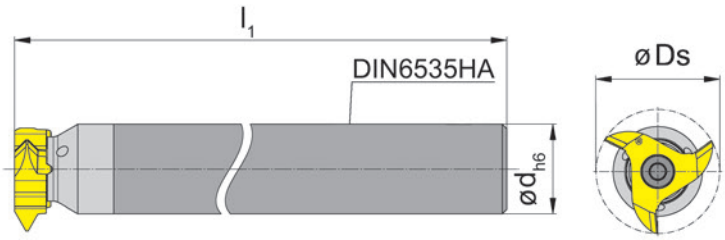


Gg/'' / tpi	11
	Gewinde / Thread
Typ / type **328** / Ds 27,7	
328.5511.02	G1½''
Typ / type **628** / Ds 27,7	
628.5511.02	G1½''

Fräserschaft
Milling shank

M328





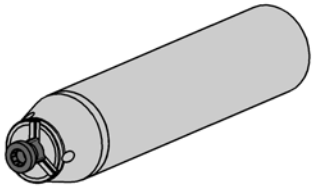


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 siehe Schneidplatten
Ds see inserts

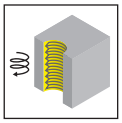
G

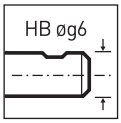
Ersatzteile
Spare Parts

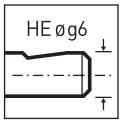
Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328.0020.10A	**5.14T20P**	**T20PQ**
M328.0020.D....	**5.17T20P**	**T20PQ**

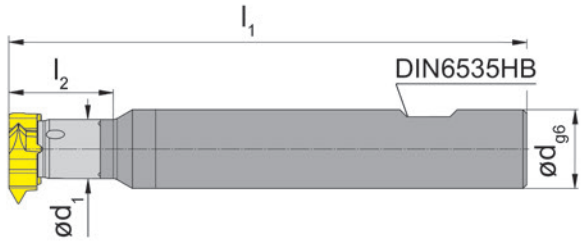
Fräserschaft
Milling shank

SM328









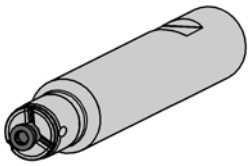


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

Schaftmaterial: Schwermetall (schwingungsarm)
Material of shank: tungsten alloy (giving good vibration resistance)

Ds siehe Schneidplatten
Ds see inserts

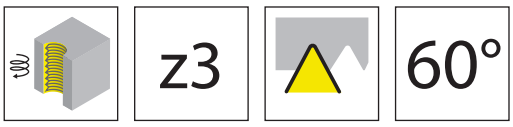
G

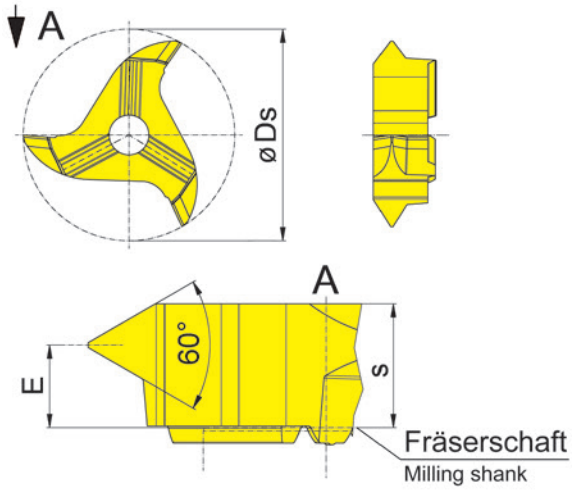
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
SM328...	**5.17T20P**	**T20PQ**

Schneidplatte
Insert

328





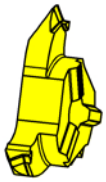


Abbildung = rechtsschneidend
Picture = right hand cutting version

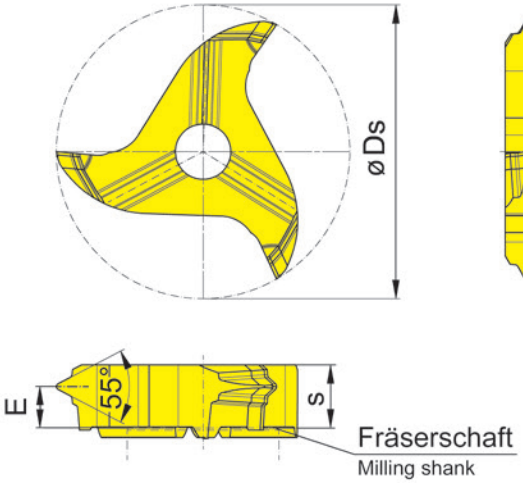
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	TI25	TN35
328.0720.01	1	2	4,6	5,95	27,7	328143R		▲		▲
328.1525.01	1,5	2,5	4,3	5,95	27,7	328143R		▲		▲
328.3050.01	3	5	4,8	7,2	27,7	328143R		▲	▲	▲
328.5060.01	5	6	4,4	7,2	27,7	328143R		▲		▲
							P	●	●	●
							M	●	●	●
							K	●	●	●
							N	o	●	●
							S	●	●	●
							H	-	-	-

G



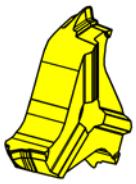


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

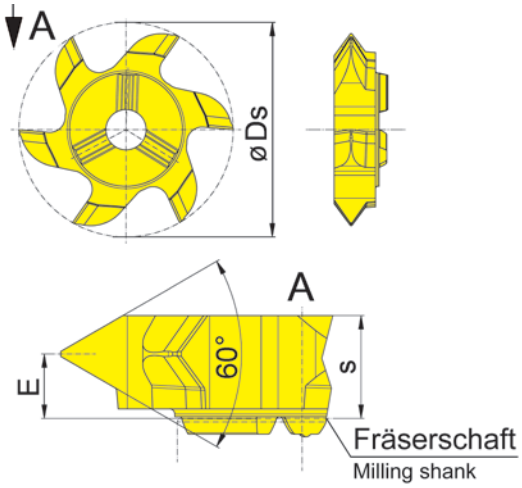
Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45
328.5511.02	11	3,9	5,95	27,7	328143R		▲
						P	●
						M	●
						K	●
						N	o
						S	●
						H	-

G

Schneidplatte
Insert

628



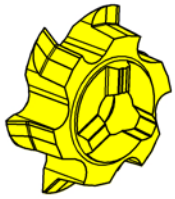


Abbildung = rechtsschneidend
Picture = right hand cutting version

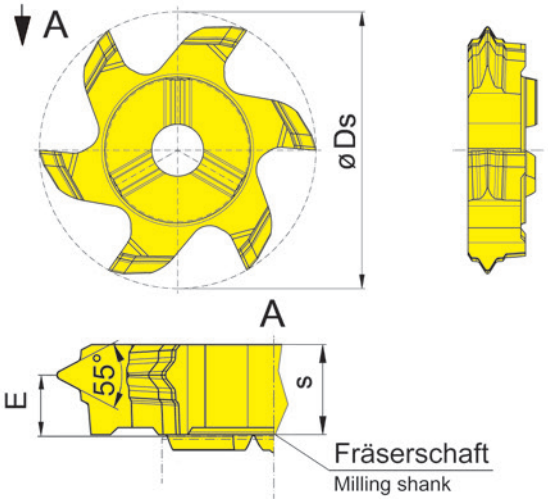
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	T125
628.1525.01	1,5	2,5	4,8	6	27,7	328143R		▲	▲
628.3050.01	3	5	3,7	5,75	27,7	328143R		▲	▲
628.5060.01	5	6	3,2	5,75	27,7	328143R		▲	▲
							P	●	●
							M	●	●
							K	●	●
							N	o	●
							S	●	●
							H	-	-

G



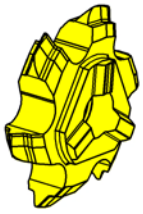


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	TPI	E	s	Ds	HIS		AS45
628.5511.02	11	3,9	5,85	27,7	328143R		▲
						P	●
						M	●
						K	●
						N	o
						S	●
						H	-

G

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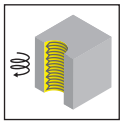
Fräserschaft
Milling shank
M332



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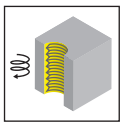
Schneidplatte
Insert
632



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G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M332

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 31,7 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 31,7 mm

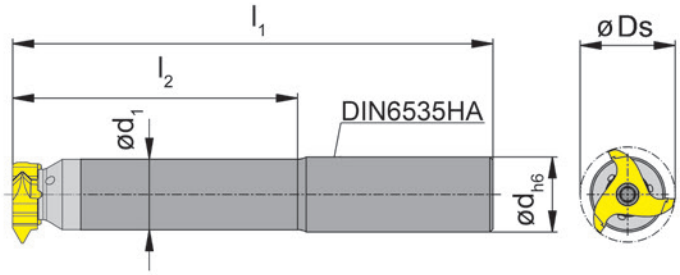
Teilprofil, 60°, metrisch, Typ 632
Partial profile, 60°, metric, type 632

Steigung/Pitch P	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0
	Nenndurchmesser / Nominal diameter							
Typ / type **632** / Ds 31,7								
632.2545.01	≥ 42	≥ 42	≥ 46	≥ 42	≥ 42			
632.4060.01				≥ 46	≥ 46	≥ 46	≥ 46	≥ 46

G

Fräserschaft
Milling shank

M332



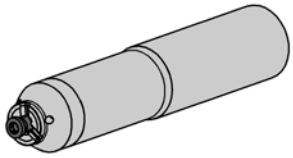


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 siehe Schneidplatten
Ds see inserts

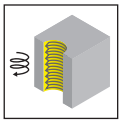
G

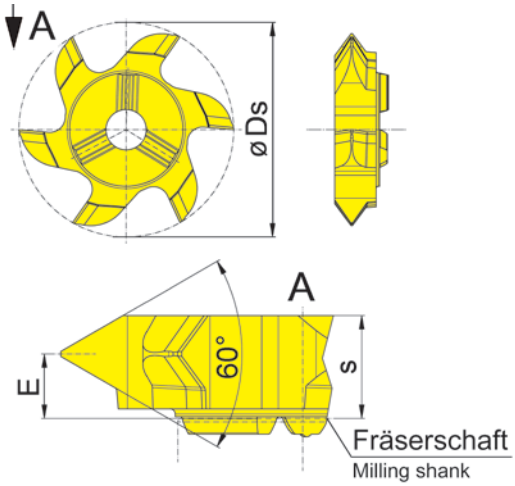
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M332...	**5.17T20P**	**T20PQ**

Schneidplatte
Insert

632





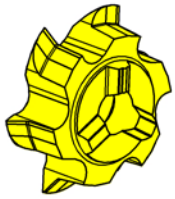


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	Ds	HIS		AS45	TI25
632.2545.01	2,5	4,5	3,7	5,8	31,7	332143R		▲	▲
632.4060.01	4	6	3,2	5,8	31,7	332143R		▲	▲
							P	●	●
							M	●	●
							K	●	●
							N	o	●
							S	●	●
							H	-	-

G

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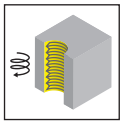
Schaftfräser
End Mill
M275



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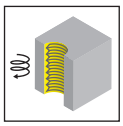
Aufsteckfräser
Arbour Mounted Cutter
M275



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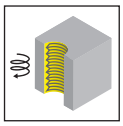
Wendeschneidplatte
Indexable insert
RS275



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G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

M275

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 31 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 31 mm

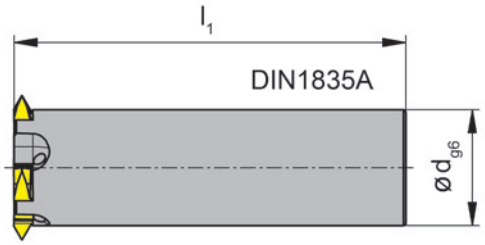
Teilprofil, 60°, metrisch, Typ S275
Partial profile, 60°, metric, type S275

Steigung/Pitch P	1,5	2,0	2,5	3,0	3,5
	Nenndurchmesser / Nominal diameter				
Typ / type **S275** / Ds 31					
RS275.1535.01	≥ 45				
Typ / type **S275** / Ds 38					
RS275.1535.01	≥ 54				
Typ / type **S275** / Ds 48					
RS275.1535.01	≥ 70				
Typ / type **S275** / Ds 58					
RS275.1535.01	≥ 83				

G

Schaftfräser
End Mill

M275



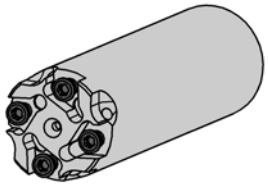


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Ds	d	l_1	λ	HWS
M275.031.D25.3.04A	31	25	125	4°	275041R • 275043R

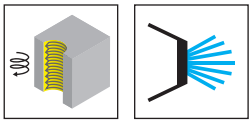
G

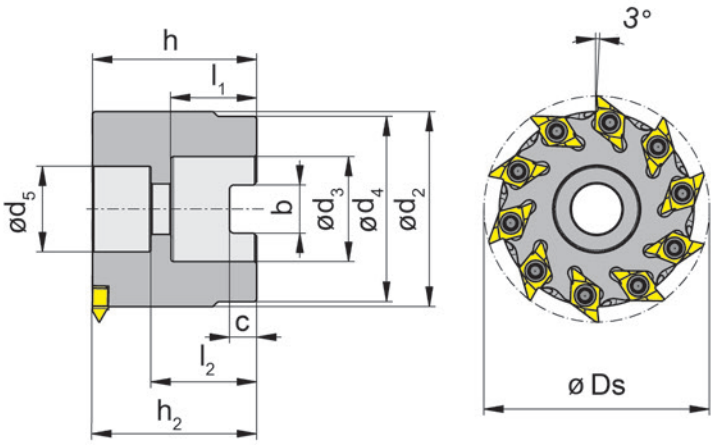
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M275.031.D25.3.04A	**3.5.10T10P**	**T10PL**

Aufsteckfräser
Arbour Mounted Cutter

M275





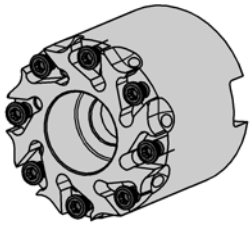


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

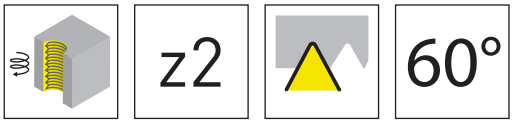
G

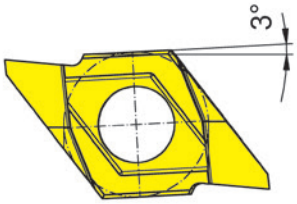
Ersatzteile
Spare Parts

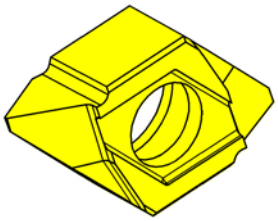
Aufsteckfräser Arbor Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M275...	**3.5.10T10P**	**T10PL**

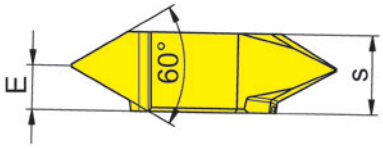
Wendeschneidplatte
Indexable insert

RS275









R = rechts wie gezeichnet
R = right hand version shown

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	HIS		TA45
RS275.1535.01	1,5	3,5	2,3	4,1	275041R		▲
						P	●
						M	●
						K	●
						N	●
						S	●
						H	-

G

Gewindefräsen (innen)
Thread Milling (internal)

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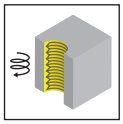
Schaftfräser
End Mill
380



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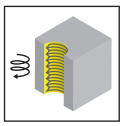
Messerkopf
Milling cutter
380



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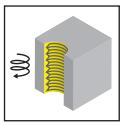
Wendeschneidplatte
Indexable insert
314



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G

Achtung:
Beim Nenndurchmesser handelt es sich immer um den größten Ø am Gewinde. In der Regel richtet sich die Bezeichnung nach der Größe des Gewindes.
Bsp: M12 x 1 -> Nenndurchmesser 12

Bei Unterschreitung des angegebenen Nenndurchmessers wird durch den Nachschnitt des Werkzeugs kein lehrenhaltiges Gewinde mehr erreicht.

Attention:
The nominal diameter is always the largest Ø on the thread. As a rule, the designation is based on the size of the thread.
Example: M12 x 1 -> nominal diameter 12

Recutting of the milling tool will create profile errors if the nominal diameter of the component will be smaller than recommended.

380

G

Gewindefräser (zirkular)

ab Schneidkreis Ø 44 mm

Thread Milling Cutter (by circular interpolation)

from cutting edge Ø 44 mm

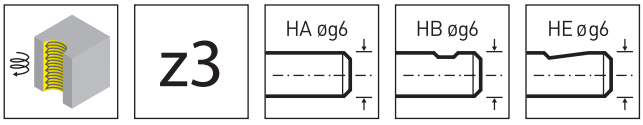
Teilprofil, 60°, metrisch, Typ 314
Partial profile, 60°, metric, type 314

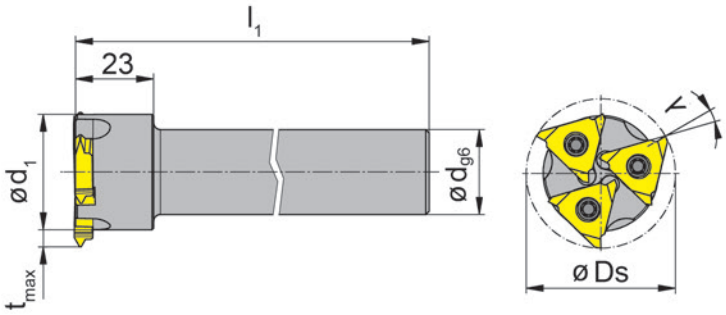
Steigung/Pitch P	1,5	2,0	2,5	3,0	4,0	5,0	5,5	6,0
	Nenndurchmesser / Nominal diameter							
Typ / type **314** / Ds 44								
R314.1535.01	⩾ 52	⩾ 50	⩾ 50	⩾ 50				
R314.2140.01					⩾ 72			
R314.3260.01								⩾ 85
R314.4060.01					⩾ 65		⩾ 56	⩾ 64
Typ / type **314** / Ds 63								
R314.1535.01	⩾ 72	⩾ 70	⩾ 70	⩾ 70				
R314.2140.01					⩾ 95			
R314.3260.01								⩾ 110
R314.4060.01					⩾ 88			⩾ 80

G

Schaftfräser
End Mill

380





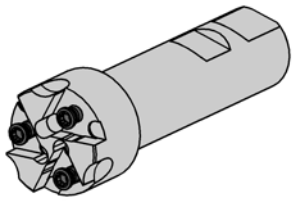


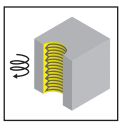
Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

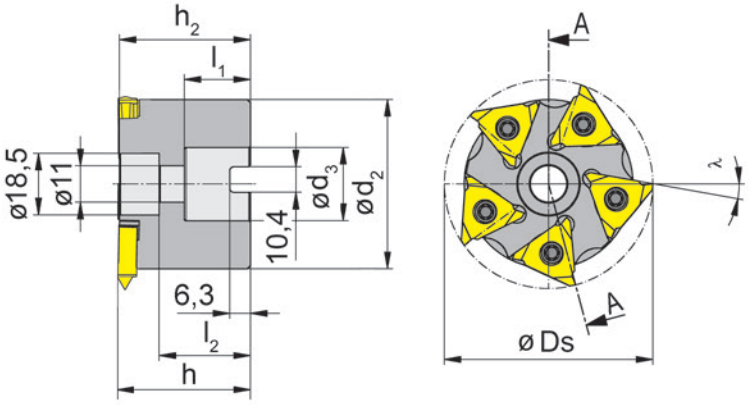
G

Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380...	**5.12T20P**	**T20PQ**



z5



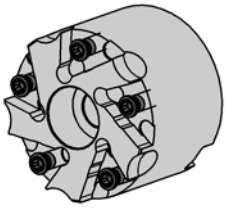


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

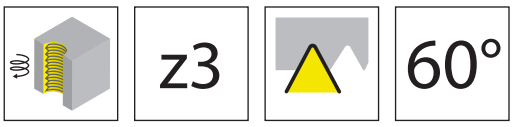
Aufnahmebohrung und Mitnahme nach DIN 138
Cutterhole and cross keyway as per DIN 138

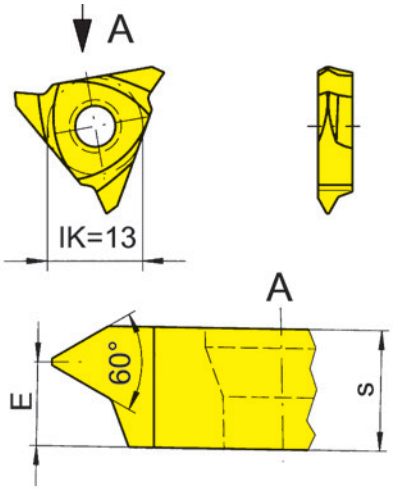
G

Ersatzteile
Spare Parts

Messerkopf Milling cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
380.0063.05	**5.12T20P**	**T20PQ**

Wendeschneidplatte 314
Indexable insert





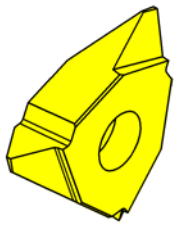


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	P	P_{max}	E	s	HIS	TN35
R314.1535.01	1,5	3,5	3,3	5,45	314052R	▲
R314.2140.01	4	4	3	5,45	314052R	▲
R314.4060.01	4	6	2,7	5,45	314052R	▲
R314.3260.01	6	6	2,7	5,45	314052R	▲

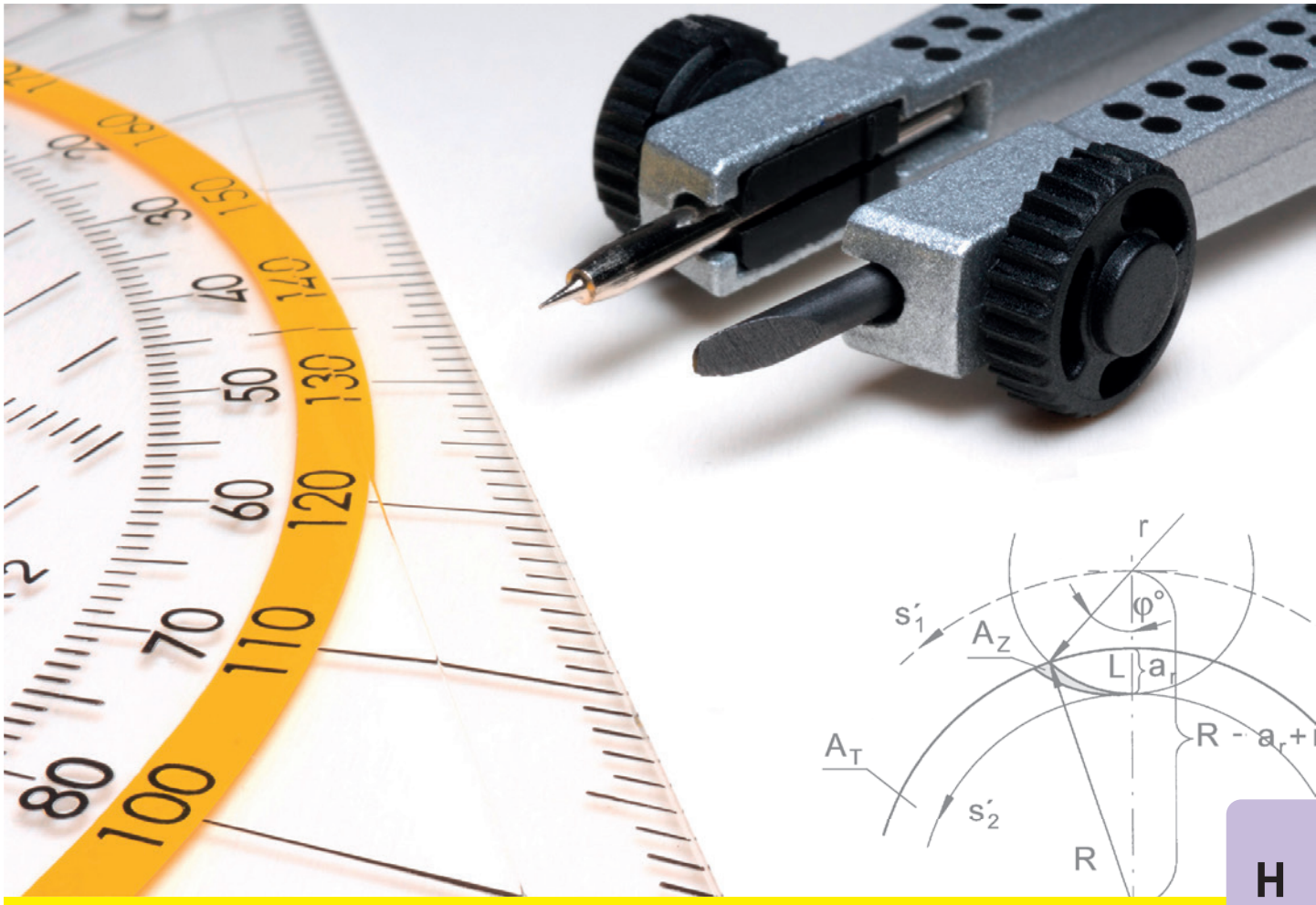
P	●
M	●
K	●
N	●
S	●
H	-

Hinweis:
R314.3260.01 ausschließlich für Messerkopf 380.0063.05
Note:
R314.3260.01 only for milling cutter 380.0063.05

G

Technische Hinweise Nut- und Zirkularfräsen

Technical Instructions Groove and Circular Milling



H

Inhalt/Summary | Seite/Page

Ermittlung des Vorschubs Calculating the Feed Rate	374
Formelzeichen Symbols	375
Formeln Formulas	376 - 377
Schnittdaten Cutting Data	378 - 383

Mittlere Spandicke h_m zur Ermittlung des Vorschubs
Medium chip thickness h_m for calculating the feed rate

ISO	108,111,116, 306-336, 606-636,911-939	S310 / 314 / S275 / S475	S101
	h_m (mm)	h_m (mm)	h_m (mm)
P	0,01 - 0,05	0,01 - 0,05	0,01 - 0,04
M	0,01 - 0,04	0,01 - 0,04	0,01 - 0,03
K	0,01 - 0,05	0,01 - 0,05	0,01 - 0,03
N	0,01 - 0,05	0,01 - 0,05	0,01 - 0,06
S	0,01 - 0,04	0,01 - 0,04	0,01 - 0,02

$f_z = (h_m \times \pi \times d_e \times \phi s) / (360° \times a_e)$ [vereinfacht $f_z = h_m \times \sqrt{(d_e/a_e)}$ bei $a_e/d_e < 0,3$]

$f_z = (h_m \times \pi \times d_e \times \phi s) / (360° \times a_e)$ [simplified $f_z = h_m \times \sqrt{(d_e/a_e)}$ with $a_e/d_e < 0,3$]

Formelzeichen
Symbols

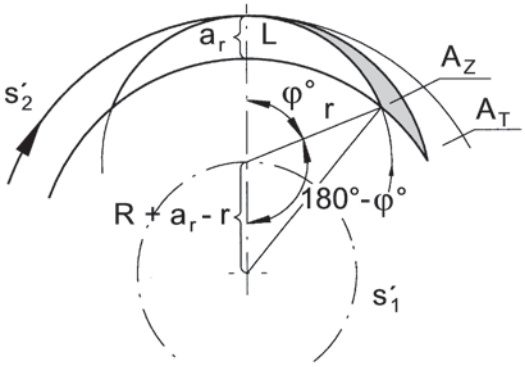
ISO

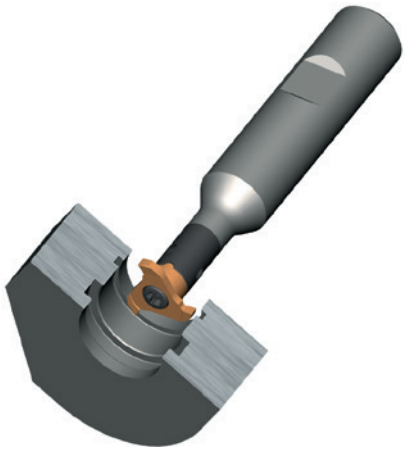
a_r	a_e	radiale Schnitttiefe radial depth of cut
d	d_e	Schneidkreis-Ø [mm] Cutting edge Ø [mm]
f		Vorschub pro Umdrehung $f = f_z \cdot Z$ [mm/U] [mm/rev] Feed per revolutions
f_z	s_z	Vorschub/Zahn $f_z = \frac{v_f}{Z \cdot n}$ [mm] Feed/tooth
h_m		mittlere Spandicke Medium thickness of chip
n		Drehzahl $n = \frac{v_c \cdot 1000}{d \cdot \pi}$ [1/min] Revolutions
r		Radius Fräser Radius of cutter
R		Radius Werkstück Radius of workpiece
v_c		Schnittgeschwindigkeit $v_c = \frac{d \cdot \pi \cdot n}{1000}$ [m/min] Cutting speed
v_f	s'	Vorschubgeschwindigkeit $v_f = f_z \cdot Z \cdot n$ [mm/min] Feed rate
v_{f2}	s'_2	Vorschubgeschwindigkeit der Schneide (Nutgrund-Ø) Feed rate of tool tip
v_{f3}	s'_1	Vorschubgeschwindigkeit der Fräsmittelpunktsbahn Feed rate of tool centre
Z		Zähnezahl Number of teeth
ϕs		Eingriffswinkel Pressure angle

H

Innennutfräsen

Milling of an internal groove





$$\cos[180° - \varphi°] = \frac{r^2 + [R + a_r - r]^2 - R^2}{2r\,[R + a_r - r]} \longrightarrow 180° - \varphi° \longrightarrow \varphi°$$

Eingriffslänge $L = \frac{\pi \cdot 2r \cdot \varphi°}{360°}$ mm
Length of cut

Spandicke $A_Z = L \cdot h_m$ mm²
Area of chip

Insgesamt zu zerspanende Fläche $A_T = \pi\,[(R + a_r)^2 - R^2]$ mm²
Area of groove section

Gesamt-Zerspanzeit (für AT) $t = \frac{A_T}{n \cdot z \cdot A_z}$ min
Time for cut (for AT)

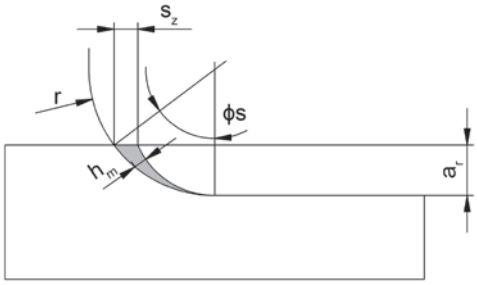
Vorschubgeschwindigkeit der Fräsmittelpunktsbahn $s'_1 = \frac{\pi \cdot 2\,(R - r + a_r)}{t}$ mm/min
Feed rate of tool centre

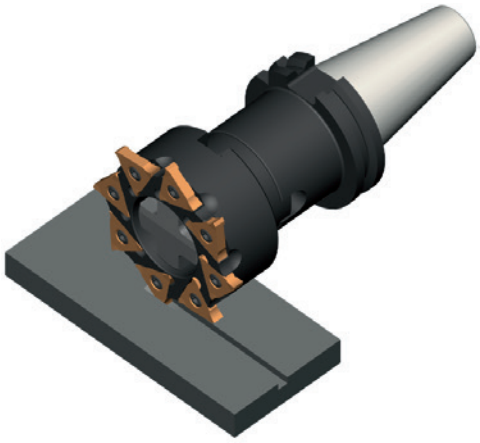
Vorschubgeschwindigkeit der Schneide (Nutgrund-Ø) $s'_2 = s'_1 \frac{R + a_r}{R - r + a_r}$ mm/min
Feed rate of tool tip

H

Fräsen gerader Nuten - außen

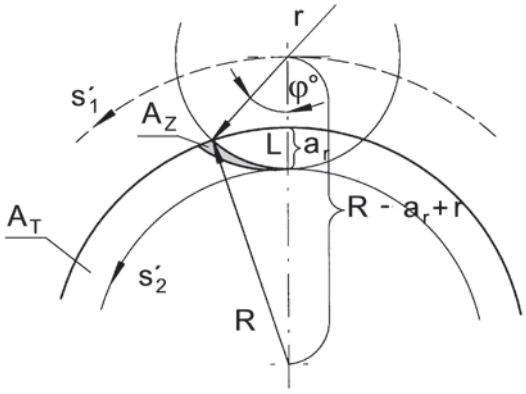
Milling of a linear groove - external





$$s_z = h_m \sqrt{\frac{2r}{a_r}}$$

$$s = n \cdot z \cdot s_z \text{ mm/min}$$



$$\cos \varphi° = \frac{r^2 + [R + r - a_r]^2 - R^2}{2r\,[R + r - a_r]} \longrightarrow \varphi°$$

Eingriffslänge $L = \dfrac{\pi \cdot 2r \cdot \varphi°}{360°}$ mm
Length of cut

Spandicke $A_Z = L \cdot h_m$ mm²
Area of chip

Insgesamt zu zerspanende Fläche $A_T = \pi\,[R^2 - (R - a_r)^2]$ mm²
Area of groove section

Gesamt-Zerspanzeit (für AT) $t = \dfrac{A_T}{n \cdot z \cdot A_z}$ min
Time for cut (for AT)

Vorschubgeschwindigkeit der Fräsmittelpunktsbahn $s'_1 = \dfrac{\pi \cdot 2\,(R + r - a_r)}{t}$ mm/min
Feed rate of tool centre

Vorschubgeschwindigkeit der Schneide (Nutgrund-Ø) $s'_2 = s'_1 \dfrac{R - a_r}{R + r - a_r}$ mm/min
Feed rate of tool tip

H

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	MG12	TI2_ TN3_
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15		300-160
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6		250-170
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5		230-170
		~ 0,6% C geglüht annealed	P1.4	190	610	C55		190-120
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60		170-120
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28		190-120
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6		180-110
		vergütet quenched	P2.2	280	960	14NiCr10		160-100
		vergütet quenched	P2.3	350	1250	34CrMo4		130-70
		vergütet quenched	P2.4	430	1450	55Cr3		120-70
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18		140-80
		gehärtet hardened	P3.2	350	1200	X210Cr2		
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200		220-160
		legiert alloyed	P4.2	220	750	GX40CrSi28		140-80
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39		140-80
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13		
		austenitisch austenitic	M1.2	300	1000	X6CrNiMo-Ti17-12-2		
		austenitisch ferritisch austenitic ferritic	M1.3	230	780	X2CrNiMo-N17-13-3		

Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values									
AS4_ TH3_ TA4_	RC2_ RC4_	EG5_	IG3_	SG3_	DD2_				
300-160	300-180	280-140							
250-170	280-170	230-150	280-170						
230-170	260-160	210-150	260-160						
190-120	200-120	180-110	200-120						
170-120	200-120	160-110	200-120						
190-120	200-120	180-110	200-120						
180-110	180-110	170-100	180-110						
160-100	180-110	160-100	180-110						
130-70	140-80	140-80	140-80						
120-70	100-60	120-80	100-60						
140-80	140-80	130-70	140-80						
	-		-						
220-160	230-140	200-140	230-140						
140-80	150-90	140-80	150-90						
140-80	160-100	140-80	160-100						
120-60	150-90		150-90						
110-60	140-80		140-80						
90-50	120-70		120-70						

Schnittdaten Nut- und Zirkularfräsen
Cutting Data Groove and Circular Milling

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	MG12	TI2_ TN3_	
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25		150-90	
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40		100-70	
	Kugelgraphit-guss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40		130-90	
		perlitisch perlitic	K2.1	260	700	GGG-60		100-50	
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45		120-60	
		perlitisch perlitic	K3.2	260	700	GTS-55-04		140-80	
	Ausferritisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800				
		vergütet quenched	K4.2	350	1050				
		vergütet quenched	K4.3	450	1400				
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	550-300		
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	220-180		
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6	220-180		
		6-10% Si	N2.2	100	320	AlSi7Mg	100-80		
		10-15 % Si	N2.3	130	450	AlSi12	120-100		
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu	120-100		
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb			
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40			
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3			
	Graphit Graphite		N4.1						

H

Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values									
AS4_ TH3_ TA4_	RC2_ RC4_	EG5_	IG3_	SG3_	DD2_				
150-90	170-100	120-60	170-100						
100-70	120-70	100-70	120-70						
130-90	150-90	110-70	150-90						
100-50	110-70	100-50	110-70						
120-60	140-80	120-60	140-80						
140-80	150-90	140-80	150-90						
					850-650				
					350-200				
					350-200				
					230-90				
					100-70				
					100-70				

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Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zug-festigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	MG12	TI2_ TN3_	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670				
		gehärtet hardened	S1.2	275	930				
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600			
		gehärtet hardened	S2.2	350	1200	Inconel 713			
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240				
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200				
		Titanlegierung β Titanium alloy β	S3.3	410	1400				
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1	-	-				
		55-60 HRC	H1.2	-	-				
		60-63 HRC	H1.3	-	-				
		> 63HRC	H1.4	-	-				
O	Thermoplaste Thermoplastics		O1.1				150 - 50		
	Duroplaste Duro plaste		O1.2				150 - 50		
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3				150 - 50		
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4				300 - 150		

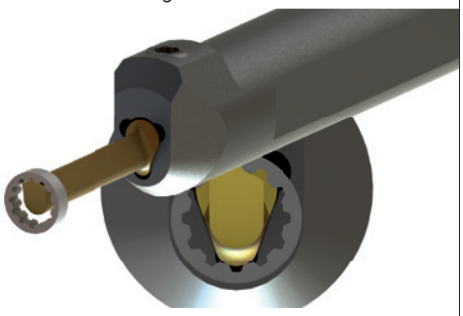
Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values									
	AS4_ TH3_ TA4_	RC2_ RC4_	EG5_	IG3_	SG3_	DD2_				
					110-80					
					60-25					
					60-25					
					60-25					
					100-70					
					80-50					
					70-40					

H

System	Seite/Page
Verzahnungsfräsen / Gear Milling	**389**
Fräsen von Zahnwellen / Spline Milling	**405**
Verzahnungsstoßen / Gear Broaching	**411**
Wälzschälen / Gear Skiving	**415**
Entgraten / Deburing	**421**
Abwälzstoßen / Gear Shaping	**423**
Schlagzahnfräsen / Single-Point Gear Milling	**425**
Kegelradfräsen / Bevel Gear Milling	**427**
5-Achs-Fräsen / 5-Axis Milling of Gear Teeth	**431**

Übersicht Verzahnungsverfahren

Overview Gear Processes

Technologie Technology	Kleinserie Small series	Mittlere Losgrößen Medium batch sizes	Großserie Large series
Verzahnungsfräsen (außen) Gear milling (external) 	+++	++	-
Verzahnungsstoßen (außen und innen) Gear broching (external and internal) 	+++	++	+
Wälzschälen (außen und innen) Gear skiving (external and internal) 	-	+	+++
Abwälzstoßen (außen) Gear shaping (external) 	-	+	+++

Übersicht Verzahnungsverfahren

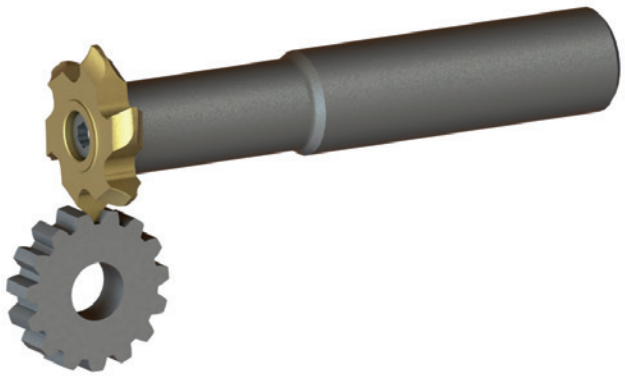
Overview Gear Processes

Technologie Technology	Kleinserie Small series	Mittlere Losgrößen Medium batch sizes	Großserie Large series
Schlagzahnfräsen (außen) Single-point gear milling (external) 	-	+++	+
Kegelradfräsen (außen) Bevel gear milling (external) 	+	+	+++
5-Achsfräsen von Verzahnungen (außen) 5-Axis milling of gears (external) 	+++	-	-
Entgraten von Verzahnungen Deburring of gears 	+++	+++	+++

I

Fräsplatten für Stirnräder und Zahnwellen

Milling inserts for spur gears and gear shafts



Stirnräder, Zahnstangen Bezugsprofil 1 nach DIN 3972 Cylindrical gears, Tooth bars Basic profile 1 according to DIN 3972	Zahnwellen, Welle-Nabe, Kerbverzahnung DIN 5480/ANSI B92.1 Gear shafts, Shaft-hub, Serration DIN 5480/ANSI B92.1	Schneidplatte Insert Typ type	Ds [mm]
mn ≤ 0,8	mn ≤ 1 / dB ≥ 40	606	11,7
mn ≤ 1	mn ≤ 1,5 / dB ≥ 40	608	15,7
mn ≤ 1,25	mn ≤ 2 / dB ≥ 40	611	17,7
mn ≤ 1,5	mn ≤ 3 / dB ≥ 22	613	21,7
mn ≤ 2	mn ≤ 2,5 / dB ≥ 40	628	27,7
mn ≤ 2,5 / Nr. 5 - 8	mn ≤ 2,5 / dB ≥ 30	632	31,7
mn ≤ 2,25 / Nr. 2 - 8	mn ≤ 2,5 / dB ≥ 30	632	31,7
mn ≤ 2 Nr. 1 - 8	mn ≤ 2,5 / dB ≥ 30	632	31,7
mn ≤ 3	mn ≤ 3 / dB ≥ 50	635	34,7
mn ≤ 1,5	mn ≤ 2 / dB ≥ 60	636	35,7

Verzahnungsfräsen

Modulgrößen
von 0,5 bis 4 mm

Gear Milling

Module sizes
from 0.5 up to 4 mm

Bestellbeispiel
Ordering Example

Fräser-Nr. Milling cutter N°	*z (Zähnezahl Stirnrad) *z (N° of teeth cylindrical gear)
1	12 - 13
2	14 - 16
3	17 - 20
4	21 - 25
5	26 - 34
6	35 - 54
7	55 - 134
8	≥ 135...Zahnstange/Tooth bar

613.3972.100.8

- Fräser-Nr./Milling cutter N° 8
- Modul/Module 1
- DIN 3972
- Fräser Typ/Milling cutter type 613

I

HTC - Horn Tool Configurator

Die heutigen Anforderungen an die Verzahnungen werden immer komplexer. Wir haben mit unserem HTC (Horn Tool Configurator) das richtige Instrument und mit einer Vielzahl von Rohlingen die perfekte Lösung, wenn es um Schnelligkeit und Flexibilität geht.

Verzahnungsbearbeitungen erfordern oft schnelle Lieferzeiten. Mit nur wenigen Angaben zur Verzahnung erhalten Sie mit dem HTC (Horn Tool Configurator) in kürzester Zeit ein Angebot inklusive Ausführungszeichnung des Werkzeugs. Sind alle Details geklärt, beginnt die Produktion und Sie erhalten nach nur einer Woche Ihre Werkzeuge. Unabhängig ob es sich um klassische Verzahnungen nach DIN 867, Profile nach DIN 5480 oder Sonderlösungen handelt.

In der Tabelle auf Seite 390 und 391 finden Sie verfügbare Durchmesser und Zähnezahl der Schneidplatten in Abhängigkeit vom Modul.

www.horn-group.com/de/kontakt/technical-request-gear-cutting

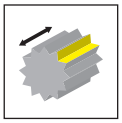
Today's gears are becoming increasingly complex. We have the right tool with our HTC (Horn Tool Configurator) and the perfect solution for machining a variety of blanks when speed and flexibility are required.

Gear machining requires having the right tools available and the gears often need to be delivered quickly. With just a few details about the gear teeth, the configurator will provide you with a quotation including a detailed drawing of the tool in the shortest possible time. Once all details have been clarified, production begins and you receive your tools after just one week, irrespective of whether it involves classic gears according to DIN 867, profiles according to DIN 5480 or special solutions.

In the table on page 390 and 391 you will find available diameters and number of teeth according to the module.

www.horn-group.com/contact/technical-request-gear-cutting

Auswahl der Schneidplatte
Selection of the insert



Typ / Type	304								X06								X08								X11							
Schneidkreis-Ø Ds / Cutting edge Ø Ds	Ø 7,7								Ø 11,7								Ø 15,7								Ø 17,7							
Modul / Module	Zähnezahl / Number of teeth								Zähnezahl / Number of teeth								Zähnezahl / Number of teeth								Zähnezahl / Number of teeth							
	3		6		9		12		3		6		9		12		3		6		9		12		3		6		9		12	
	Eingriffswinkel / Pressure angle								Eingriffswinkel / Pressure angle								Eingriffswinkel / Pressure angle								Eingriffswinkel / 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°	20°	30°
0,2	□	●							□	●	□	●					□	●	□	●	□	●			□	●	□	●	□	●		
0,3	□	●							□	●	□	●					□	●	□	●		●			□	●	□	●	□	●		
0,4	□	●							□	●	□	●					□	●	□	●		●			□	●	□	●		●		
0,5	□	●							□	●	□	●					□	●	□	●		●			□	●	□	●		●		
0,6	□	●							□	●	□	●					□	●	□	●		●			□	●	□	●		●		
0,7									□	●		●					□	●	□	●		●			□	●	□	●		●		
0,8									□	●		●					□	●	□	●		●			□	●	□	●		●		
0,9									□	●							□	●	□	●		●			□	●	□	●		●		
1									□	●							□	●	□	●		●			□	●	□	●		●		
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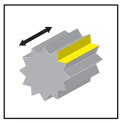
2,8																																
2,9																																
3																																
Fräserschaft Typ / Milling Shank Type	M304								M306								M308								M311							

- Weitere Modulgrößen auf Anfrage
- Schneidkreis- und Plattensitzdurchmesser können verändert werden
- Bei der Angabe des Typs ist **X** der Platzhalter für die Zähnezahl, z.B. **9**13

- Other module sizes on request
- Cutting edge and seating diameter can be changed
- When specifying the type, **X** is the placeholder for the number of teeth, e.g. **9**13

Auswahl der Schneidplatte
Selection of the insert



X13								X28								X32								X35								636							
Ø 21,7								Ø 27,7								Ø 31,7								Ø 34,7								Ø 35,7							
Zähnezahl / Number of teeth								Zähnezahl / Number of teeth								Zähnezahl / Number of teeth								Zähnezahl / Number of teeth								Zähnezahl / Number of teeth							
3		6		9		12		3		6		9		12		3		6		9		12		3		6		9		12		3		6		9		12	
Eingriffswinkel / Pressure angle								Eingriffswinkel / Pressure angle								Eingriffswinkel / Pressure angle								Eingriffswinkel / Pressure angle								Eingriffswinkel / 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°	20°	30°	20°	30°	20°	30°	20°	30°	20°	30°
□	●	□	●	□	●	Auf Anfrage / Upon Request		□	●	□	●	□	●			□	●	□	●	□	●			□	●	□	●							□	●				
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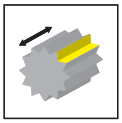
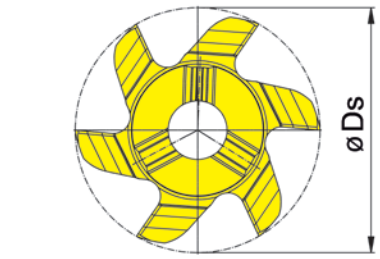
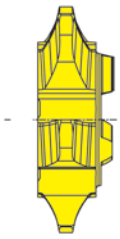
M313								M328								M332								M335								M332							

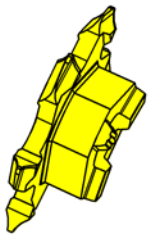


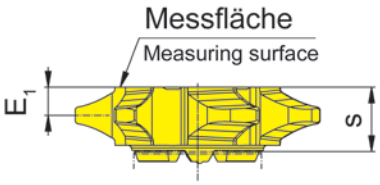
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	HIS	AS45
613.3972.050.1	0,5	12	13	1,1	5,7	1,1	21,7	313113R	Δ
613.3972.050.2	0,5	14	16	1,1	5,7	1,1	21,7	313113R	Δ
613.3972.050.3	0,5	17	20	1,1	5,7	1,1	21,7	313113R	▲
613.3972.050.4	0,5	21	25	1,1	5,7	1,1	21,7	313113R	Δ
613.3972.050.5	0,5	26	34	1,1	5,7	1,1	21,7	313113R	▲
613.3972.050.6	0,5	35	55	1,1	5,7	1,1	21,7	313113R	Δ
613.3972.050.7	0,5	55	134	1,1	5,7	1,1	21,7	313113R	Δ
613.3972.050.8	0,5	135	999	1,1	5,7	1,1	21,7	313113R	Δ
613.3972.070.1	0,7	12	13	1,6	5,3	1,5	21,7	313113R	Δ
613.3972.070.2	0,7	14	16	1,6	5,3	1,5	21,7	313113R	Δ
613.3972.070.3	0,7	17	20	1,6	5,3	1,5	21,7	313113R	Δ
613.3972.070.4	0,7	21	25	1,6	5,3	1,5	21,7	313113R	Δ
613.3972.070.5	0,7	26	34	1,6	5,3	1,6	21,7	313113R	Δ
613.3972.070.6	0,7	35	55	1,6	5,3	1,6	21,7	313113R	Δ
613.3972.070.7	0,7	55	134	1,6	5,3	1,6	21,7	313113R	Δ
613.3972.070.8	0,7	135	999	1,6	5,3	1,6	21,7	313113R	Δ

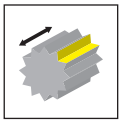
P	●
M	●
K	●
N	o
S	●
H	-

Eingriffswinkel 20°
Pressure angle 20°

Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
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

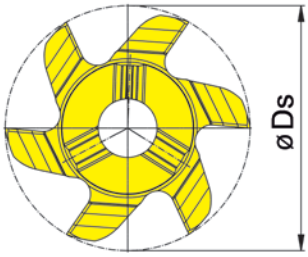
Schneidplatte
Insert

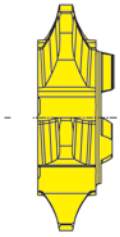
613

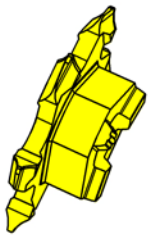


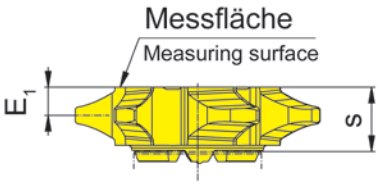
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	HIS		AS45
613.3972.080.1	0,8	12	13	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.2	0,8	14	16	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.3	0,8	17	20	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.4	0,8	21	25	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.5	0,8	26	34	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.6	0,8	35	55	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.7	0,8	55	134	1,6	5,3	1,8	21,7	313113R		▲
613.3972.080.8	0,8	135	999	1,6	5,3	1,8	21,7	313113R		▲
613.3972.090.1	0,9	12	13	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.2	0,9	14	16	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.3	0,9	17	20	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.4	0,9	21	25	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.5	0,9	26	34	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.6	0,9	35	55	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.7	0,9	55	134	2,5	5,7	2,1	21,7	313113R		Δ
613.3972.090.8	0,9	135	999	2,5	5,7	2,1	21,7	313113R		Δ

Eingriffswinkel 20°
Pressure angle 20°

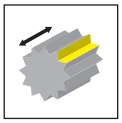
Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

P	●
M	●
K	●
N	o
S	●
H	-

I

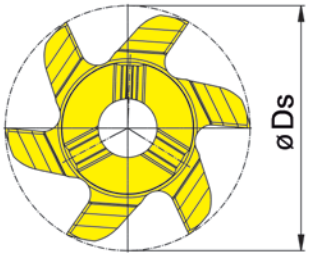
Schneidplatte
Insert

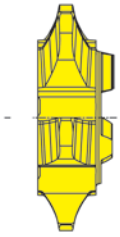
613

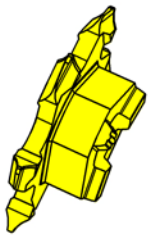


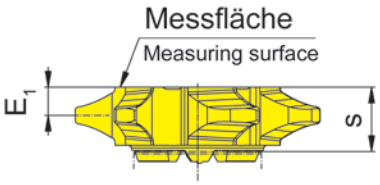
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

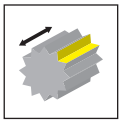
Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	HIS	AS45
613.3972.100.1	1	12	13	2,5	5,7	2,2	21,7	313113R	▲
613.3972.100.2	1	14	16	2,5	5,7	2,2	21,7	313113R	▲
613.3972.100.3	1	17	20	2,5	5,7	2,2	21,7	313113R	▲
613.3972.100.4	1	21	25	2,5	5,7	2,2	21,7	313113R	▲
613.3972.100.5	1	26	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	Δ
613.3972.125.4	1,25	21	25	2,5	5,7	2,7	21,7	313113R	Δ
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	Δ
613.3972.125.8	1,25	135	999	2,5	5,7	2,8	21,7	313113R	▲

P	●
M	●
K	●
N	o
S	●
H	-

Eingriffswinkel 20°
Pressure angle 20°

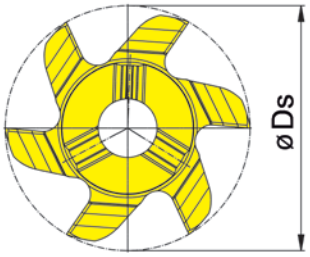
Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

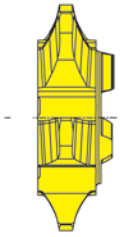
I

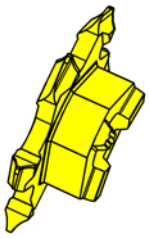


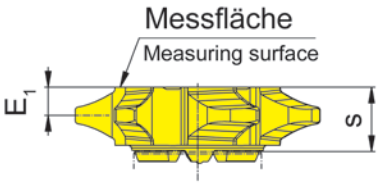
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

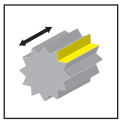
Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	HIS		AS45
613.3972.150.1	1,5	12	13	2,5	5,7	3,1	21,7	313113R		▲
613.3972.150.2	1,5	14	16	2,5	5,7	3,2	21,7	313113R		▲
613.3972.150.3	1,5	17	20	2,5	5,7	3,2	21,7	313113R		▲
613.3972.150.4	1,5	21	25	2,5	5,7	3,3	21,7	313113R		▲
613.3972.150.5	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		▲
613.3972.150.8	1,5	135	999	2,5	5,7	3,3	21,7	313113R		▲

P	●
M	●
K	●
N	o
S	●
H	-

Eingriffswinkel 20°
Pressure angle 20°

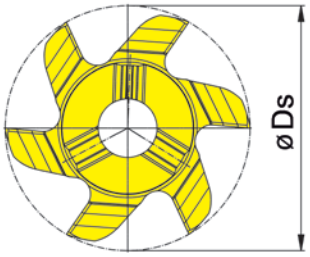
Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

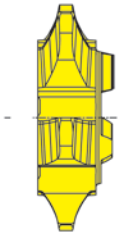
I

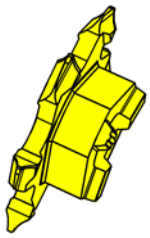


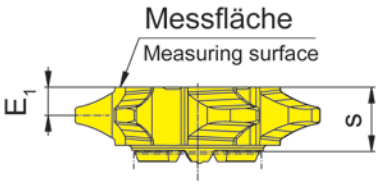
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	HIS		AS45
628.3972.175.1	1,75	12	13	3,4	7,45	3,8	27,7	328143R		Δ
628.3972.175.2	1,75	14	16	3,4	7,45	3,8	27,7	328143R		Δ
628.3972.175.3	1,75	17	20	3,4	7,45	3,8	27,7	328143R		Δ
628.3972.175.4	1,75	21	25	3,4	7,45	3,9	27,7	328143R		Δ
628.3972.175.5	1,75	26	34	3,4	7,45	3,9	27,7	328143R		Δ
628.3972.175.6	1,75	35	54	3,4	7,45	3,9	27,7	328143R		Δ
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		Δ
628.3972.200.1	2	12	13	3,4	7,45	4,2	27,7	328143R		Δ
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		▲

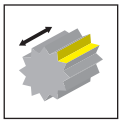
Eingriffswinkel 20°
Pressure angle 20°

Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
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

P	●
M	●
K	●
N	o
S	●
H	-

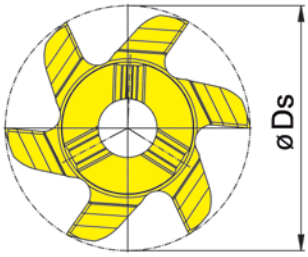
Schneidplatte
Insert

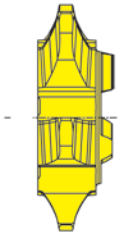
632

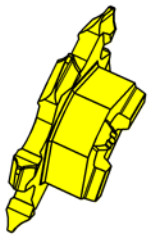


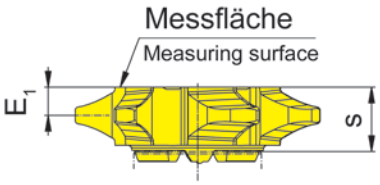
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

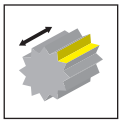
Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	HIS		AS45
632.3972.225.2	2,25	14	16	3,45	7,5	4,7	31,7	332143R		Δ
632.3972.225.3	2,25	17	20	3,45	7,5	4,8	31,7	332143R		Δ
632.3972.225.4	2,25	21	25	3,45	7,5	4,9	31,7	332143R		Δ
632.3972.225.5	2,25	26	34	3,45	7,5	4,9	31,7	332143R		Δ
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

P	●
M	●
K	●
N	o
S	●
H	-

Eingriffswinkel 20°
Pressure angle 20°

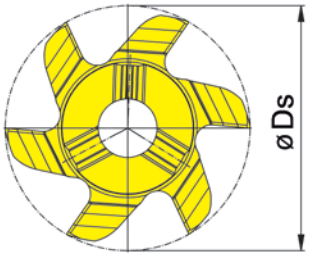
Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

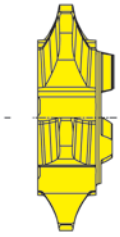
I

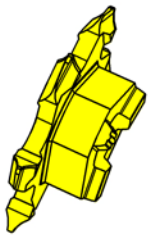


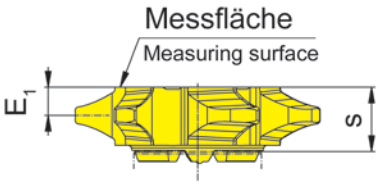
z6

DIN 3972









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Modul Module	z_{min}	z_{max}	E_1	s	t_{max}	Ds	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		▲
635.3972.250.5	2,5	26	34	5,5	11,9	5,5	34,7	335175R		▲
635.3972.250.6	2,5	35	54	5,5	11,9	5,5	34,7	335175R		▲
635.3972.250.7	2,5	55	134	5,5	11,9	5,7	34,7	335175R		▲
635.3972.250.8	2,5	135	999	5,5	11,9	5,7	34,7	335175R		▲
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		▲
635.3972.300.1	3	12	13	5,5	11,9	6,2	34,7	335175R		▲
635.3972.300.2	3	14	16	5,5	11,9	6,4	34,7	335175R		▲
635.3972.300.3	3	17	20	5,5	11,9	6,4	34,7	335175R		▲
635.3972.300.4	3	21	25	5,5	11,9	6,4	34,7	335175R		▲
635.3972.300.5	3	26	34	5,5	11,9	6,5	34,7	335175R		▲
635.3972.300.6	3	35	54	5,5	11,9	6,5	34,7	335175R		▲
635.3972.300.7	3	55	134	5,5	11,9	6,6	34,7	335175R		▲
635.3972.300.8	3	135	999	5,5	11,9	6,6	34,7	335175R		▲

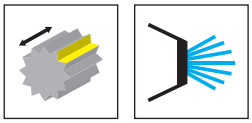
P	●
M	●
K	●
N	o
S	●
H	-

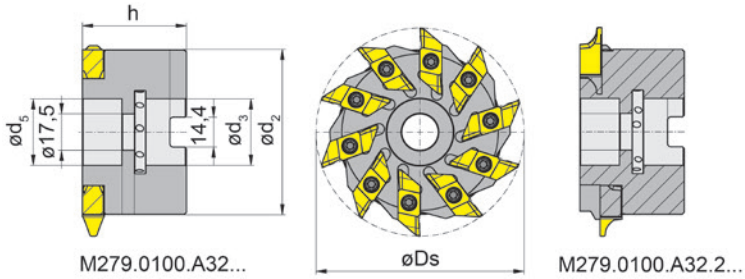
Eingriffswinkel 20°
Pressure angle 20°

Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
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

Aufsteckfräser
Arbour Mounted Cutter

M279





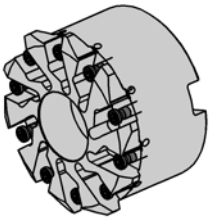


Abbildung = rechtsschneidend
Picture = right hand cutting version

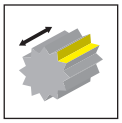
Bestellnummer Part number	Z	Ds	h	d_5	d_2	d_3	HWS
M279.0100.A32.10.10.IK	10	100	50	17,5	79	32	279105R
M279.0100.A32.2.10.05.IK	10	100	50	17,5	79	32	279105R • 279105L

Ersatzteile
Spare Parts

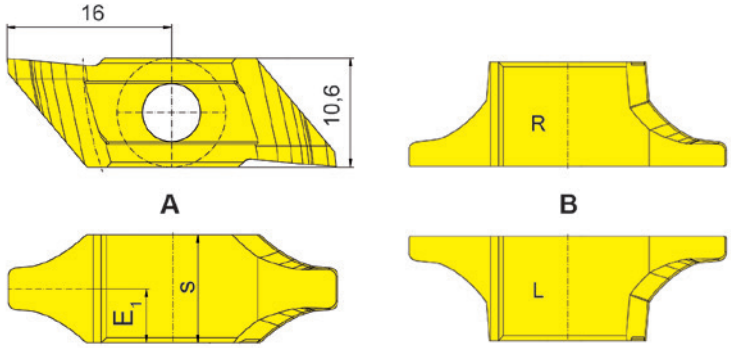
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M279...	**030.0516.T20P**	**T20PQ**

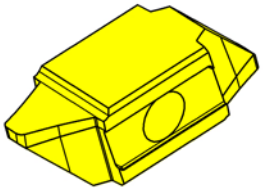
Schneidplatte
Insert

RS279



DIN 3972





Form A = einreihig
Form A = single row

Form B = zweireihig
Form A = two row

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Modul 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	24	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

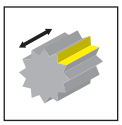
P	●
M	●
K	●
N	o
S	●
H	-

Eingriffswinkel 20°
Pressure angle 20°

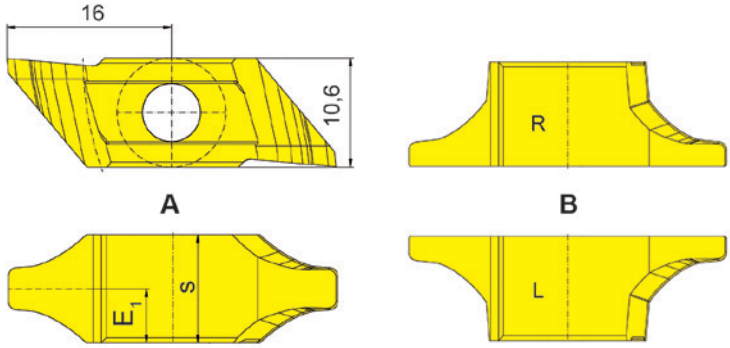
Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
Gear milling cutter for cylindrical gears with involuted flanks according to DIN 867 Basic profile 1 according to DIN 3972 for finishing, addendum shift 0

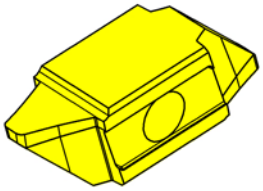
Schneidplatte
Insert

RS279



DIN 3972





Form A = einreihig
Form A = single row

Form B = zweireihig
Form A = two row

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Modul 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		▲
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		▲
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	2	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

Eingriffswinkel 20°
Pressure angle 20°

Zahnformfräser für Stirnräder mit Evolventenverzahnung nach DIN 867 Bezugsprofil 1 nach DIN 3972 für Fertigbearbeitung, Profilverschiebungsfaktor 0
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

P	●
M	●
K	●
N	o
S	●
H	-

I

Fräsen von Zahnwellen

Lösungen für Zapfwellen
nach DIN 9611 / 5003

Spline Milling

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

Fräsen von Zapfwellenprofilen mit HORN

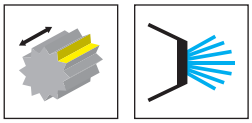
Komplettbearbeitungen auf Dreh-Fräszentren rücken immer mehr in den Fokus. Mit Blick auf Zapfwellenverbindungen hat HORN diesbezüglich ein darauf ausgelegtes Fräsprogramm standardisiert. Die Fräser decken dabei die meistverwendeten Profile 1 3/8" und 1 3/4" ab. Das Programm umfasst auch spezielle Fräser für eingeschränkte Ausläufe der Wellen. Die optimale Abstimmung von Substrat, Geometrie und Beschichtung sorgen für eine hohe Leistungsfähigkeit der Fräswerkzeuge.

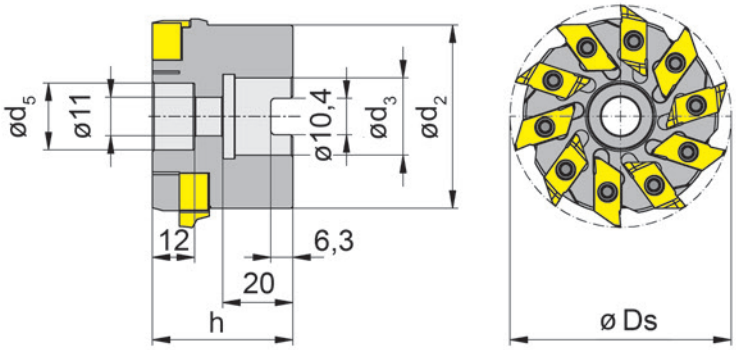
PTO profile milling with HORN

Complete machining on turn-mill centres is becoming increasingly popular. With regard to power take-off shaft connections, HORN has a standard milling program for this purpose. The milling cutters cover the most commonly used profiles 1 3/8" and 1 3/4". The program also includes special milling cutters for restricted shaft outlets. The optimal matching of substrate, geometry and coating ensure high performance of the milling tools.

Aufsteckfräser
Arbour Mounted Cutter

M274





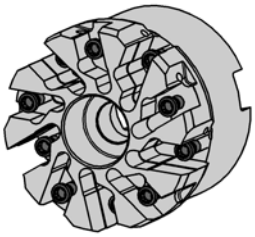


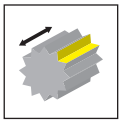
Abbildung = rechtsschneidend
Picture = right hand cutting version

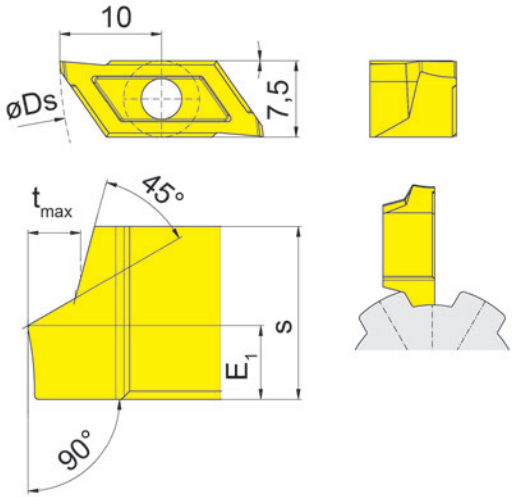
Bestellnummer Part number	Z	Ds	h	d_5	d_3	d_2
M274.0063.A22.7.5.IK	10	63	40	22	19	52

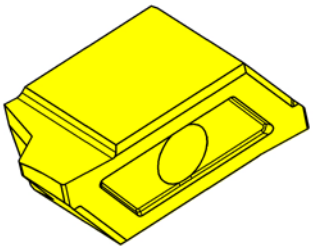
I

Schneidplatte
Insert

RS274







HM-Sorten
Carbide grades

▲ ab Lager
on stock

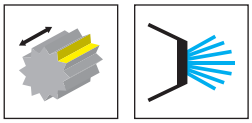
Δ 4 Wochen
4 weeks

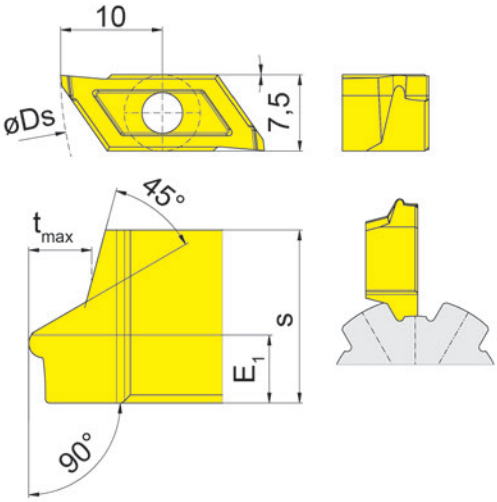
Bestellnummer Part number	z_{min}	z_{max}	E_1	s	t_{max}	Ds	Z	Ausführung Type		RC45
RS274.5003.134.0.L	5	10	4,3	8,5	3,7	63	2	1 3/4''		▲
RS274.5003.134.0.R	5	10	4,3	8,5	3,7	63	2	1 3/4''		▲
RS274.5003.138.0.L	5	10	3,6	8,5	2,6	63	2	1 3/8''		▲
RS274.5003.138.0.R	5	10	3,6	8,5	2,6	63	2	1 3/8''		▲
									P	●
									M	●
									K	●
									N	-
									S	-
									H	-

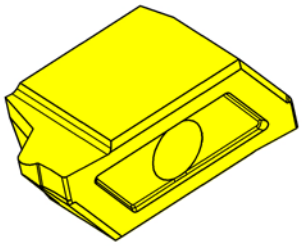
I

Schneidplatte
Insert

RS274







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	z_{min}	z_{max}	E_1	s	t_{max}	Ds	Z	Ausführung 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"		▲
									P	●
									M	●
									K	●
									N	-
									S	-
									H	-

I

Verzahnungsstoßen

Bis Modul 5

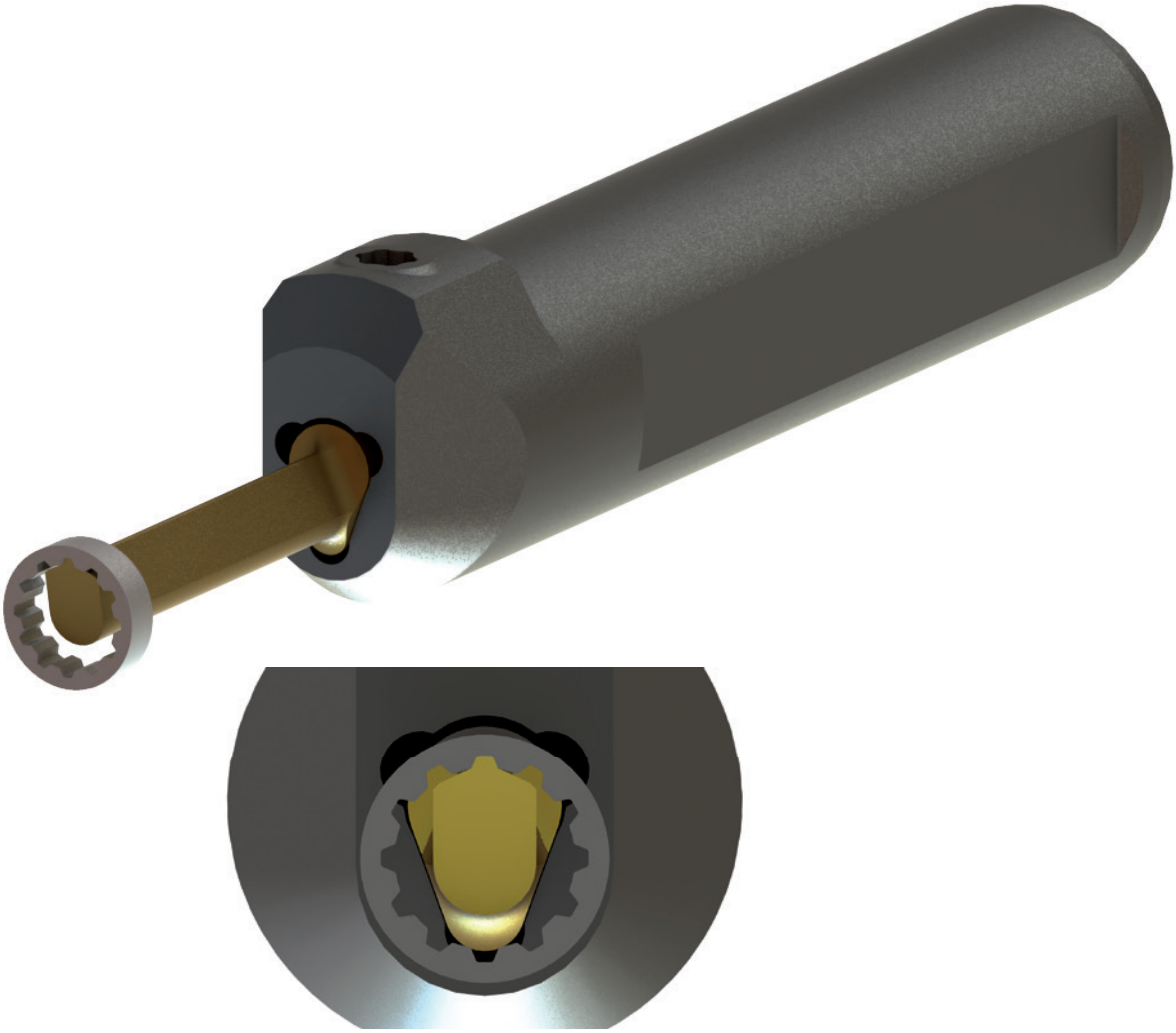
Gear Broaching

Up to module 5

I

Beispiel: Supermini

Example:



Schneidplatte
Insert

N105
N110
S117

Typ Type	max. Modulgröße m_n max. Module size m_n	min. Kopfkreis bei Hohlrad min. tip circle for ring gear	max. Flankenlänge max. length of flank
N105	1,5	4	20
N110	1,5	5	40
S117	5	14	-

Vorteile:
- Sonderwerkzeuge, abgestimmt auf Ihren Anwendungsfall
- Hohe Produktivität in Kombination mit Nutstoßgeräten
- Fertigbearbeitung auf einer Maschine
- Bis Modul 5 mm
- Kurze Lieferzeiten

Advantages:
- Special tools designed for your application
- High productivity in combination with broaching devices
- Finishing on one machine
- Up to module 5 mm
- Short delivery times

Wälzschälen

Verzahnungsbereich
Modul 0,2 - 8 mm

Gear Skiving

Gear teeth from
module 0,2 - 8 mm

Produktgruppe WSA:

- Ab Modul m = 0,2 mm mit Treppenschliff
- Ab d = 7 mm
- Bis Modul m = 1 mm
- Bis d = 30 mm
- Vollhartmetallausführung
- Nachschärfbar
- Bei Bedarf Kopfschneidend (patentiert)

Product range WSA:

- From module mn = 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)

Produktgruppe WSR:

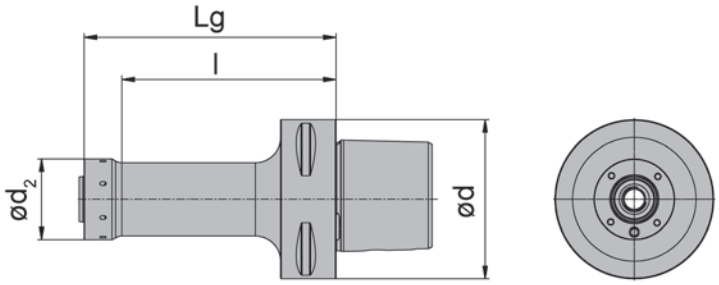
- Präzisionsschnittstelle für höchste Rundlaufgenauigkeit (patentiert)
- Wechselplattensystem bis Modul m_n = 4 mm
- Ab d= 25 mm
- Unterschiedliche Kühlmittelzuführungen einstellbar
- Standardschäfte unterschiedlicher Länge ab Lager

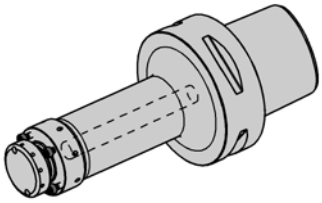
Product range WSR:

- 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

Wälzschälschaft
Gear Skiving Holder

MDR





Bestellnummer Part number	l	Lg	d	d_2	Kühlung Coolant	Größe 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

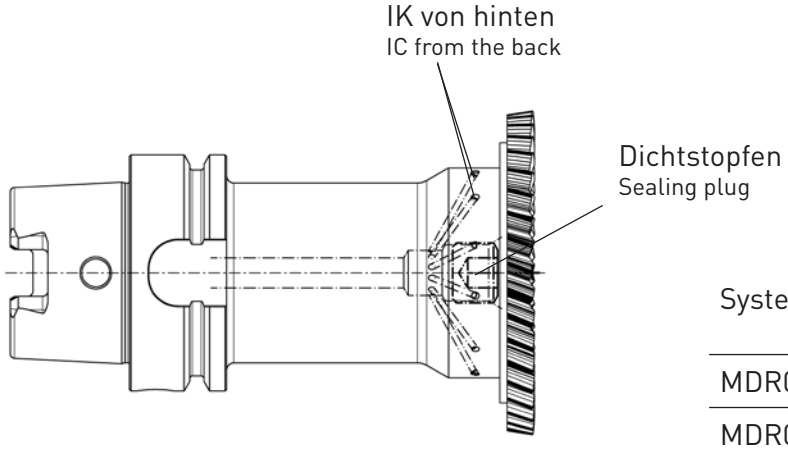
Die Schäfte sind für das Wälzschälsystem WSR konzipiert und mit DR-Reibschneiden kompatibel. Standardmäßige Ausführung mit innerer Kühlmittelzufuhr „D". Mittels Austausch des Kühlmittel-Verschlussstopfens durch den optional erhältlichen Kühlmittelverteiler, können die Schäfte auf Kühlmittelzufuhr Variante „A" umgebaut werden.
The shanks are designed for the WSR Gear Skiving System and are compatible with DR reaming inserts. Standard version with internal coolant supply „D". By replacing the coolant plug with the optionally available coolant distributor, the shanks can be converted to coolant supply version „A".

Ersatzteile
Spare Parts

Wälzschälschaft Gear Skiving Holder	**Schraube** Screw	**Torx-Schlüssel** Torx Wrench
MDR....	**C009002**	**T8L**
MDR.081...	**C00 90 04**	**T15Q**

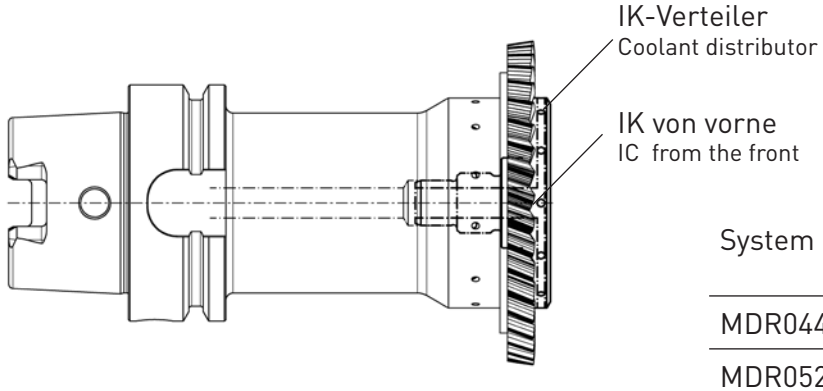
Ausführung innere Kühlmittelzufuhr
Internal coolant supply design

Ausführung "D" - mit Dichtstopfen
Version "D" - with Sealing plug



System	Dichtstopfen Sealing plug
MDR044	10.1.08.913
MDR052	12.1.12.913
MDR081	16.1.12.913

Ausführung "A" - mit IK-Verteiler
Version "A" - with Coolant distributor



System	IK-Verteiler Coolant distributor
MDR044	020.2510.6506
MDR052	020.3212.6505
MDR081	020.5616.6246

Kühlmittelrohr Coolant tube	für System-Aufnahme for 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

Produktgruppe M117:

- Wechselplattensystem bis Modul 8
- Wechselplatte mit selbstzentrierendem Plattensitz
- Als Aufsteckversion für unterschiedliche Aufnahmen
- Mit integrierter Kühlmittelzuführung je nach Bearbeitungssituation

Product range M117:

- Interchangeable insert system up to module 8
- Interchangeable insert with self-centring insert seat
- Arbour version with different adapters
- With integrated coolant supply depending on the machining application

Entgraten von Verzahnungen

Deburring of Gears

I

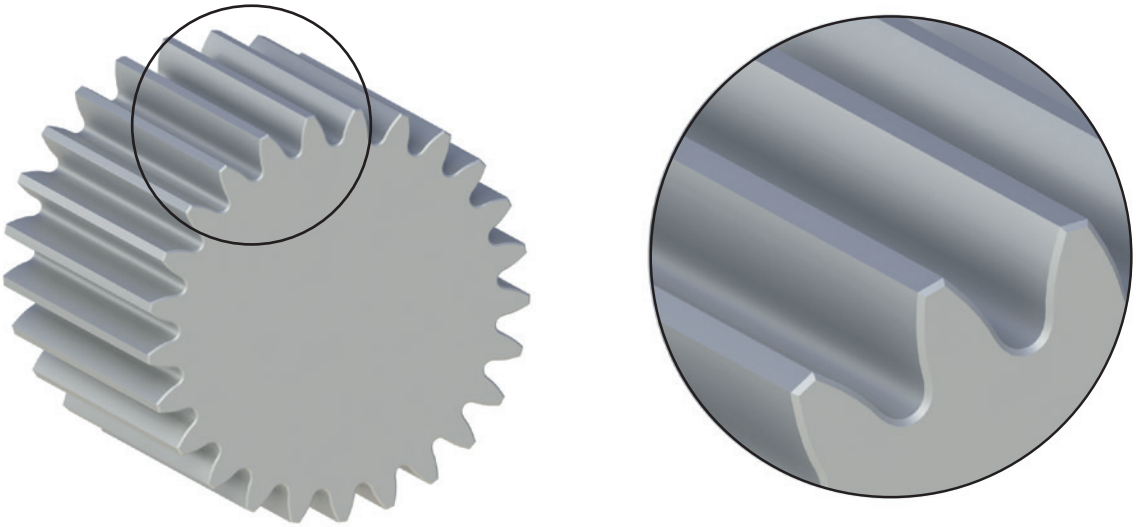
Prozess
Process

Das Anfasen von Stirnrädern erlaubt die Komplettbearbeitung auf einer Maschine mit exakten Geometrien. Gekoppelte Achsen von Werkstück und Werkzeug ermöglichen kurze Bearbeitungszeiten auch für Verzahnungen mit Schultern. Für jede Verzahnung wird das Werkzeug exakt ausgelegt und die Prozessdaten ermittelt.

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.

Anwendungsbeispiel
Material: 1.7137 / 16MnCr5
Zähnezahl: 25
Modul: 1,25
Taktzeit: 8 s
Vc: 200 m/min
f: 150 mm/min

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



Abwälzstoßen

Für Außen- und
Innenverzahung

Gear Shaping

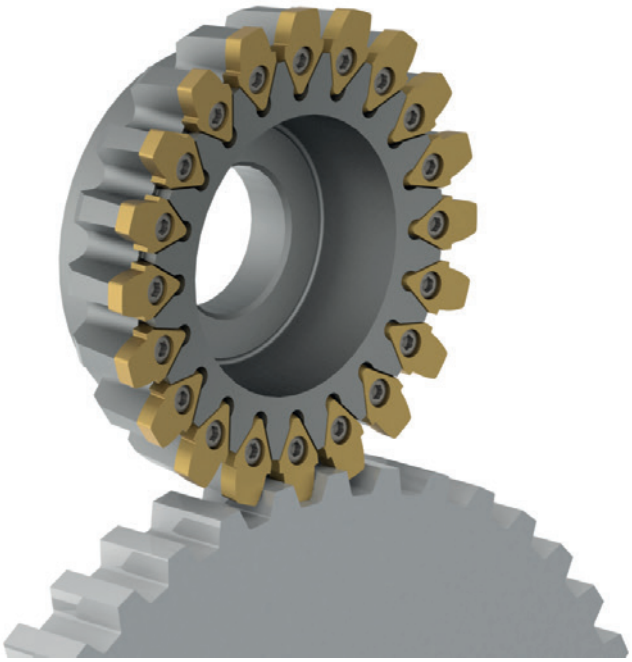
For external and
internal gears

I

Abwälzstoßen
Gear Shaping

- Sonderwerkzeuge, abgestimmt auf Ihren Anwendungsfall
- Für Außen- und Innenverzahnungen
- Für Evolventen- und Passverzahnungen
- Für Sonderprofile
- Vom Modulgröße 0,2 mm bis 5 mm
- Werkzeug inklusive Prozessauslegung

- Special tools designed for your application
- For external and internal gears
- For involute and parallel splines
- For special profiles
- From module size 0.2 mm to 5 mm
- Tool incl. process design



Schlagzahnfräsen

Verfahren mit reduzierten Werkzeugbewegungen

Single-Point Gear Milling

Process with fewer tool movements

I

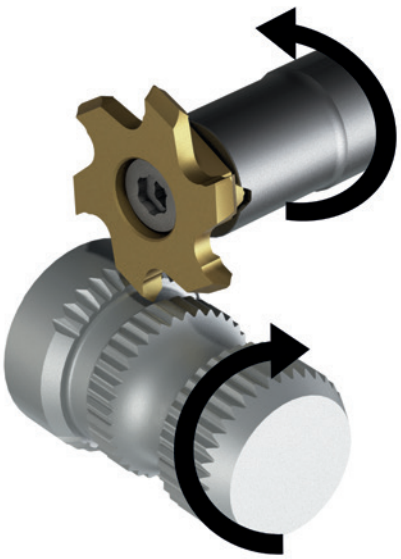
Schlagzahnfräsen
Single-point Gear Milling

Das Schlagzahnfräsen ist ein spanendes Fertigungsverfahren, bei dem das Werkstück und das Werkzeug in einem bestimmten Drehzahlverhältnis rotiert. Das Werkzeug wird hierbei in einem bestimmten Winkel gegenüber dem Werkstück angestellt. Wichtig ist, dass Werkstückspindel und Werkzeug gekoppelt zueinander laufen.
Mit dem Verfahren lassen sich neben Plan- und Stirnverzahnungen auch Evolventen oder Spline-Verzahnungen effizient herstellen. Hierzu lassen sich fast alle Frässysteme von HORN einsetzen.
Die Vorteile des Verfahrens sind reduzierte Werkzeugbewegungen, da alle Zahnlücken in einem Durchgang hergestellt werden. Das Verfahren lässt sich auf so gut wie allen Drehfräszentren umsetzen und ist somit sehr universell einsetzbar.

Single-point gear milling 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 centres and is therefore universally applicable.

Steckverzahnung
Material: 1.7137 / 16MnCr5
Zähnezahl: 36
Modul: 0,5
Takzeit: 15 s
Vc: 150 m/min
f_z: 0,1 mm / Z

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



Kegelradfräsen

Modul 0,6 - 4 mm

Bevel Gear Milling

Module 0.6 - 4 mm

I

Das Produktprogramm umfasst Werkzeuge zur Herstellung spiralförmiger Kegelräder mit epizykloidischer Zahnlängsform und konstantem Zahnhöhenverlauf. Andere Verzahnungsformen bedürfen einer besonderen Prüfung.
Die Auslegung des Verzahnungsprozesses inklusive aller Bearbeitungsparameter erfolgt in Kooperation mit Index anhand des Kundenbauteils. Die Definition der Werkzeuggeometrie und Abstimmung der Werkzeugparameter ist abhängig vom Werkstückstoff und erfolgt mit dem Ziel hoher Werkstückgenauigkeiten und wirtschaftlicher Bearbeitungszeit.
Die Vor- und Rückseitenbearbeitung in einer Maschine ermöglicht die Komplettbearbeitung, dabei werden alle funktionsrelevanten Elemente in einer Aufspannung bearbeitet, mit dem Ziel höchster Präzision. Kegelräder von der Stange auf Universalmaschinen.

Produktprogramm:
Unser Produktprogramm umfasst Fräser für Systemschnittstellen in HSK-T40 und HSK-T63 in verschiedenen Flugkreisen und Zahnreihen/Gängigkeiten. Ein Fräsersatz kann für verschiedene Module und Kegelradabmessungen eingesetzt werden.
Zwei unterschiedliche Schneidplattengrößen decken Verzahnungsgrößen von Modul m = 0,6 mm bis Modul m = 4 mm ab.

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 mm to module m = 4 mm.

Das Werkzeugprogramm wurde auf Index-Maschinen abgestimmt und beinhaltet folgenden Umfang:

- Fräskörper mit HSK-T40 oder HSK-T63 Schnittstelle
- Separater Messerkopf für Innen und Außenschneider –1-Flankenbearbeitung für höhere Präzision und Flexibilität bei Korrekturen
- Identische Grundkörper für die Innen- und Außenschneider
- Systemschneidplatten in 2 Größen für unterschiedliche Modulgrößen
- Systeme für Drehrichtung links oder rechts
- Adapterscheiben zur Anpassung der Werkzeuge an unterschiedliche Durchmesser/Flugkreisradien
- Flexible Korrektur der Zahnlängsform durch Einstellen der Exzentrizität von Außen- und Innenradius durch verschiedene Distanzplatten
- Abgestimmte Substrate für unterschiedliche Werkstoffe

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

5-Achs-Fräsen von Verzahnungen

B5-Axis Milling of Gear Teeth

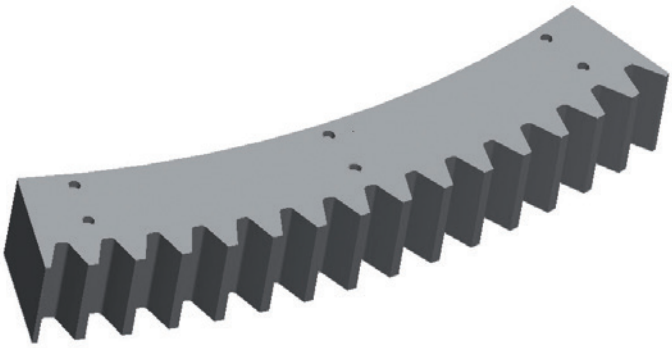
I

Modul 30 gerade verzahnt, bis Ø 4000 mm

Module 30 straight fluted, up to Ø 4000 mm

Schruppen Hochvorschubfräsen / Schlichten Abzeilen

Roughing high feed milling / Finishing copy milling

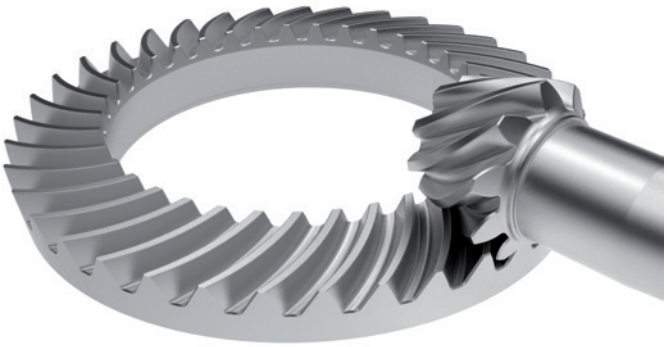


DAHM.37

DGH

Modul 13,56
Module 13,56

Schruppen Hochvorschubfräsen / Schlichten Abzeilen
Roughing high feed milling / Finishing copy milling



DGH

DSDS

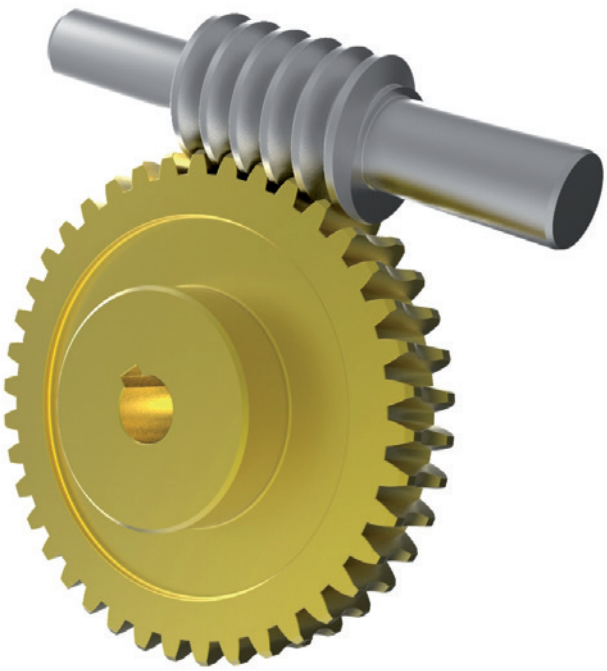
Werkstoff Material	Werkzeuge Tools	Ds [mm]	v_c [m/min]	Bearbeitungszentrum Machining centre
C45	DGH	12/16	300	5-Achs 5-axis
C45	DSDS	8	200	5-Achs 5-axis
C45	DSK	10	190	5-Achs 5-axis
C45	DSM	12	260	5-Achs 5-axis

Axialmodul 7,9 / Ø 420 mm

Axial module 7,9 / Ø 420 mm

Schruppen konventionell / Schlichten Abzeilen

Roughing conventionally / Finishing copy milling



DPTP DSK DPTR

Werkstoff Material	Werkzeuge Tools	Ds [mm]	v_c [m/min]	Q [cm³/min]	Bearbeitungszentrum Machining centre
CuSn12Ni	DPTP	8	200	145	5-Achs 5-axis
CuSn12Ni	DSK	8	225	80	5-Achs 5-axis
CuSn12Ni	DPTR	6	225		5-Achs 5-axis

Technische Anfrage Verzahnen
Technical Enquiry Gear Machining

Bearbeitungstechnologie / Machining technology

o Wälzschälen Gear Skiving	o Verzahungsfräsen Gear milling	o Verzahnungssstoßen Gear broaching

Werkstückdaten / Workpiece data

Werkstückzeichnungsnr. Workpiece drawing no.		
Werkstoff Material		gehärtet hardened
Bezugsprofil bitte eintragen Basic rack		
Normalmodul / DP Normal module / diametral pitch		
Normaleingriffswinkel Normal pressure angle		
Zähnezahl Number of teeth		
Schrägungswinkel ß (°) Helix angle		
Flankenrichtung Helix direction		
Kopfkreis-Ø Tip diameter	min	max
Fußkreis-Ø d_f (mm) Root diameter	min	max
Fußformkreis-Ø d_Ff (mm) Root form diameter oder/or	min	max
Fußrundungsradius ǫ_f (mm) Tooth root radius	min	max
Radialbetrag Kopfkantenbruch h_k (mm) Height of semi topping		
Kopfformkreis-Ø d_Fa (mm) Tip form diameter		
Kopfrundungsradius ǫaP0 (mm) Tool tip radius		

Prüfmaß Verzahnung / Measuring type

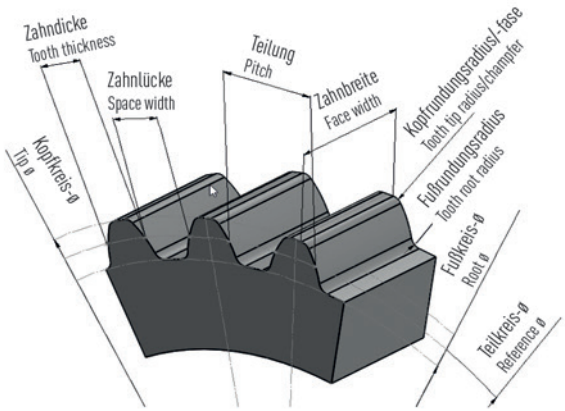
Bitte wählen! Please choose!		
2-Kugelmaß M_dK (mm) Measurement between 2 balls	min	max
2-Rollenmaß M_dr Measurement between 2 rolls	min	max
Zahnweite über ___ Zähne Base tangent lenght	min	max
Zahndicke Tooth thickness	min	max
Zahnlückenweite Gap width	min	max
Messkörper-Ø (mm) Measuring body Ø		

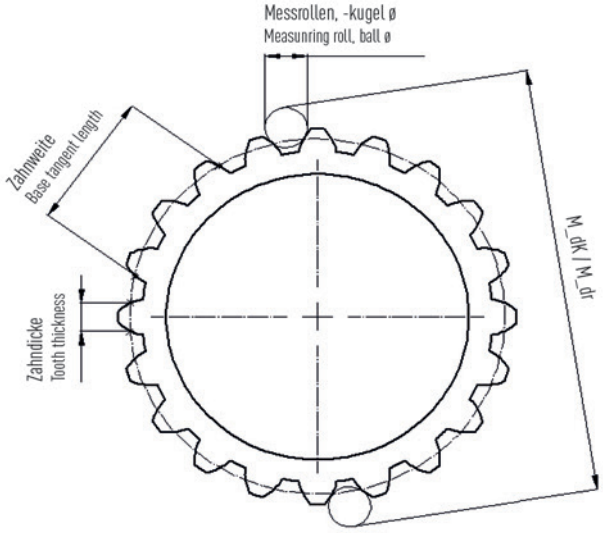
Zusätzliche Zahnradparameter / Additional gear parameters

Vor- / Fertigbearbeitung (Aufmaß) Roughing / finishing (stock)		
Kopf- / Fußrücknahme / K-Profil Tip relief / root relief / K-chart	ja yes	nein no
Protuberanz Protuberance	ja yes	nein no
Höhenballigkeit / Längsballigkeit Profile crowning / length crowning	ja yes	nein no

Firma
Company

Vertretung
Distributor





Maschinendaten / Machine data

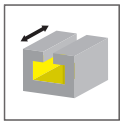
Spindelaufnahme Spindle connection		
Schwenkwinkel Fräsachse Swivel angle of milling spindle	+	-
Maximale Drehzahl (synchronisiert) Maximum revolution (synchronized)		

Bemerkungen / Notes

System/System	Seite/Page
M311	**438**
M313	**444**
M328	**448**
M406/M409	**454**

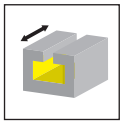
J

Fräserschaft
Milling shank
M311



Seite/Page
440

Schneidplatte
Insert
311



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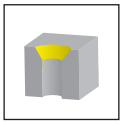

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442

J

M311

T-Nuten-Fräser mit wechselbarer Schneidplatte

ab Schneidkreis Ø 17 mm

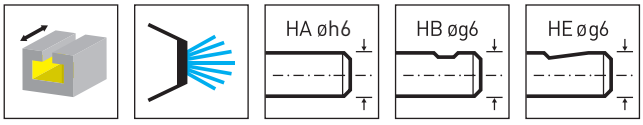
T-Slot Cutter with exchangeable inserts

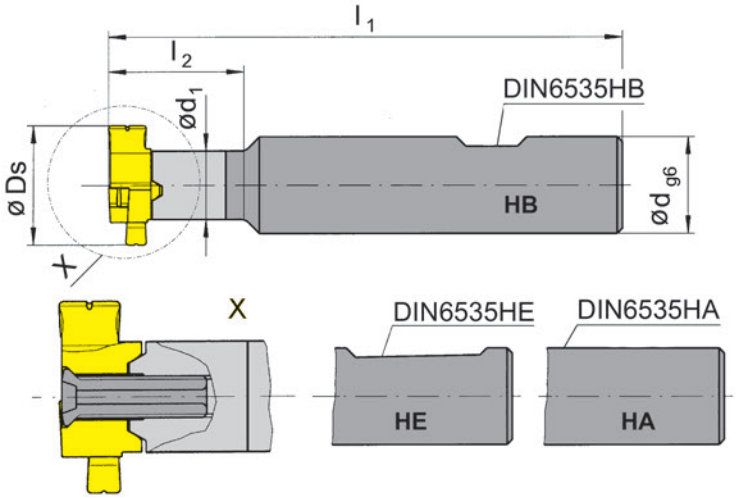
from cutting edge Ø 17 mm

J

Fräserschaft
Milling shank

M311





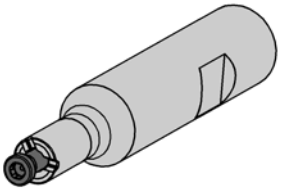


Abbildung = rechtsschneidend
Picture = right hand cutting version

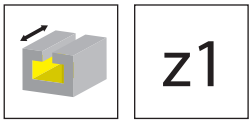
Bestellnummer Part number	d	l_1	l_2	d_1	Form	HWS
M311.0016.00A	16	90	25	9	HA	311090R
M311.0016.00B	16	90	25	9	HB	311090R
M311.0016.00E	16	90	25	9	HE	311090R

Ds siehe Schneidplatten
Ds see inserts

J

Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M311...	**4.16T15KP**	**T15PQ**



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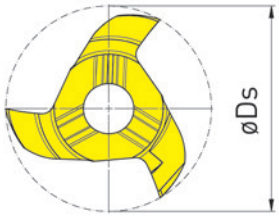

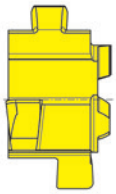

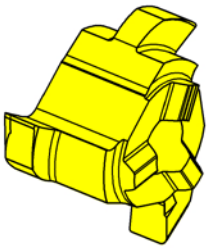

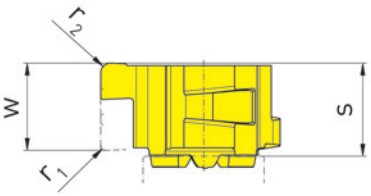

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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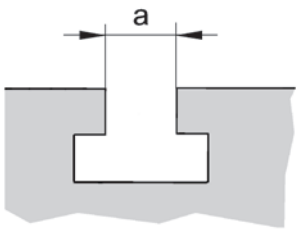
311.1016.1.00	17	1	7,7	7,2	0,5	0,8	10	311090R		▲
									P	●
									M	●
									K	●
									N	-
									S	-
									H	-

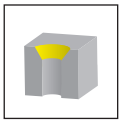
T-Nuten DIN 650
T-Slots DIN 650

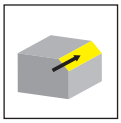


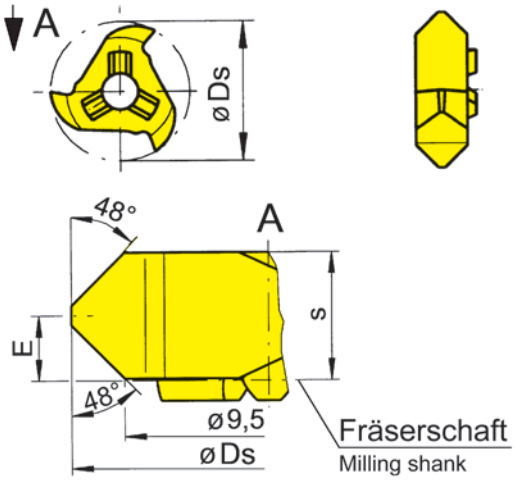
J

Schneidplatte
Insert

311







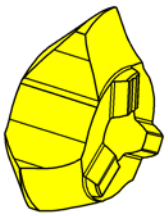


Abbildung = rechtsschneidend
Picture = right hand cutting version

HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	E	s	a	HIS		T125
311.4216.00	15,8	3	5,95	10	311090R		▲
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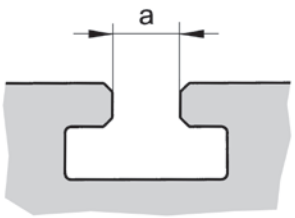
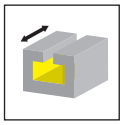
						K	●
						N	●
						S	●
						H	-

T-Nuten DIN 650
T-Slots DIN 650



J

Fräserschaft
Milling shank
M313



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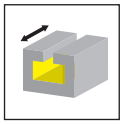
Schneidplatte
Insert
313



Seite/Page
447

M313

T-Nuten-Fräser mit wechselbarer Schneidplatte

ab Schneidkreis Ø 20 mm

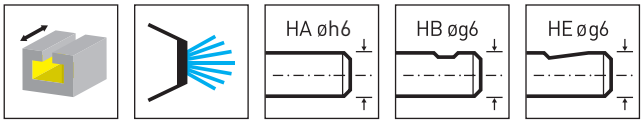
T-Slot Cutter with exchangeable inserts

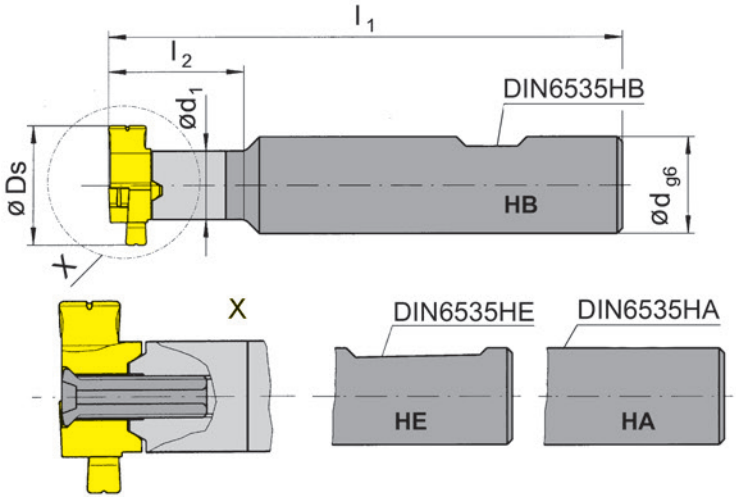
from cutting edge Ø 20 mm

J

Fräserschaft
Milling shank

M313





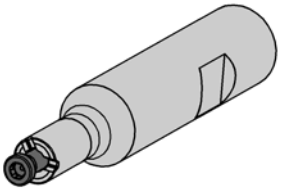


Abbildung = rechtsschneidend
Picture = right hand cutting version

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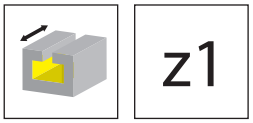
M313.0016.00B	16	93	30	11,5	HB	313113R • 313113L
M313.0016.00E	16	93	30	11,5	HE	313113R • 313113L

Ds siehe Schneidplatten
Ds see inserts

J

Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M313...	**5.13T20KP**	**T20PQ**



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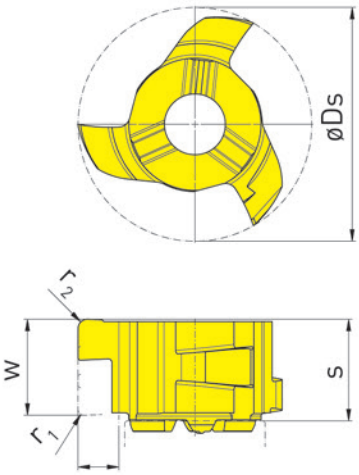
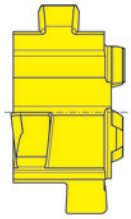
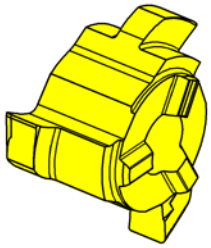






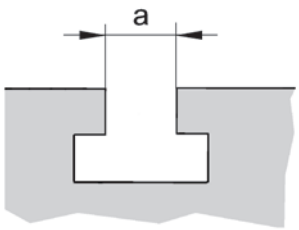
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

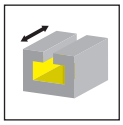
Bestellnummer Part number	Ds	Z	s	w	r_1	r_2	a	HIS		RC45
313.1219.1.00	20	1	8,7	8,2	0,5	0,8	12	313113R		▲
									P	●
									M	●
									K	●
									N	-
									S	-
									H	-

T-Nuten DIN 650
T-Slots DIN 650



J

Fräserschaft
Milling shank
M328



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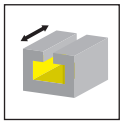
450

Schneidplatte
Insert
328



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Technische Hinweise
Technical Instructions

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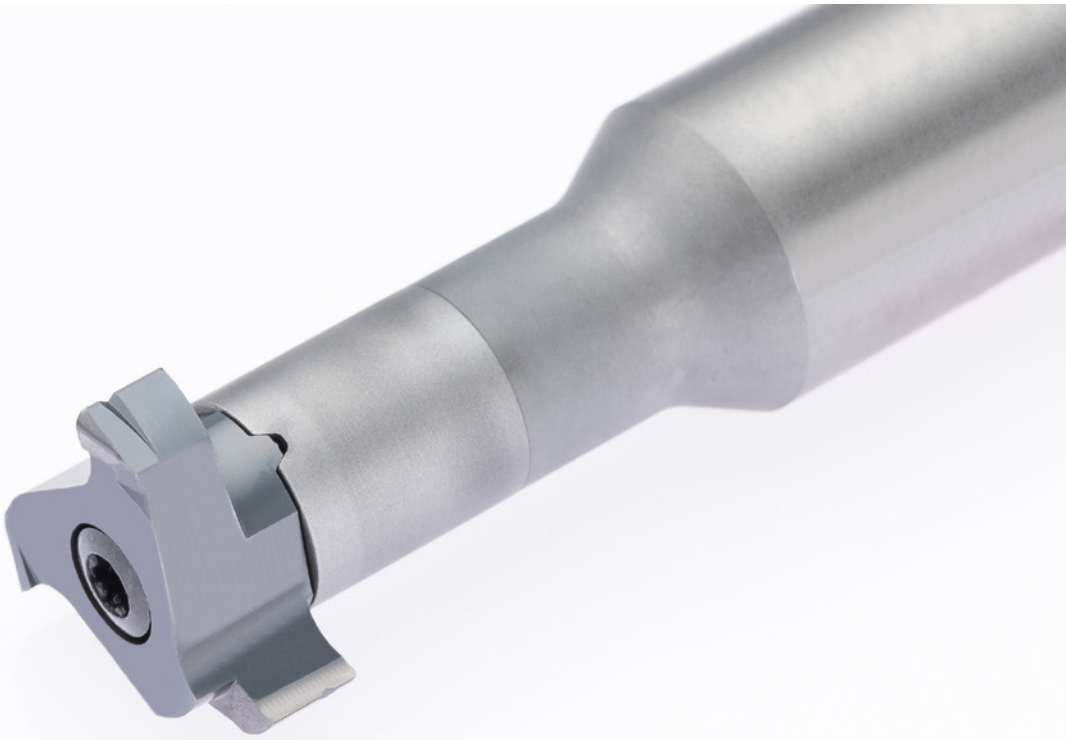
J

M328



T-Nuten-Fräser mit wechselbarer Schneidplatte

ab Schneidkreis Ø 24 mm

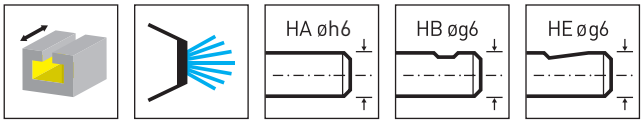
T-Slot Cutter with exchangeable inserts

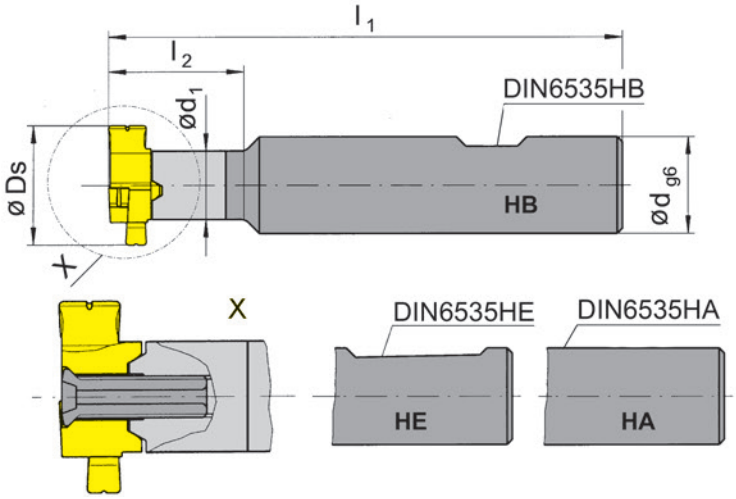
from cutting edge Ø 24 mm

J

Fräserschaft
Milling shank

M328





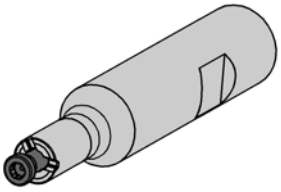


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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 siehe Schneidplatten
Ds see inserts

J

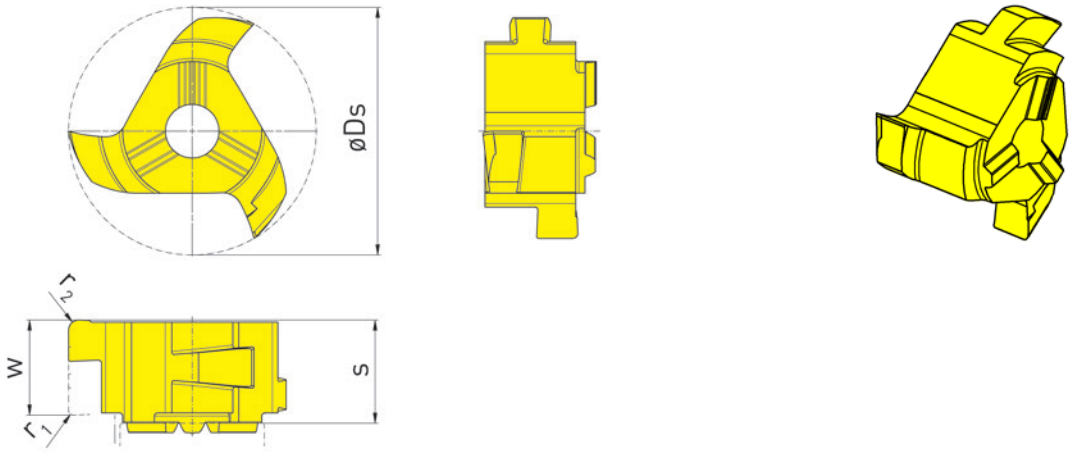
Ersatzteile
Spare Parts

Fräserschaft Milling shank	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M328...	**5.13T20KP**	**T20PQ**

Schneidplatte
Insert

328

z1



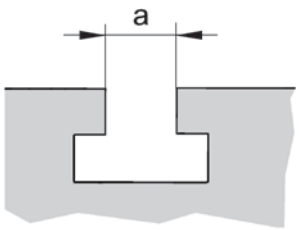
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	Z	s	w	r_1	r_2	a	HIS		RC45
328.1423.1.00	24	1	10	9,2	0,5	1	14	328143R		▲
									P	●
									M	●
									K	●
									N	-
									S	-
									H	-

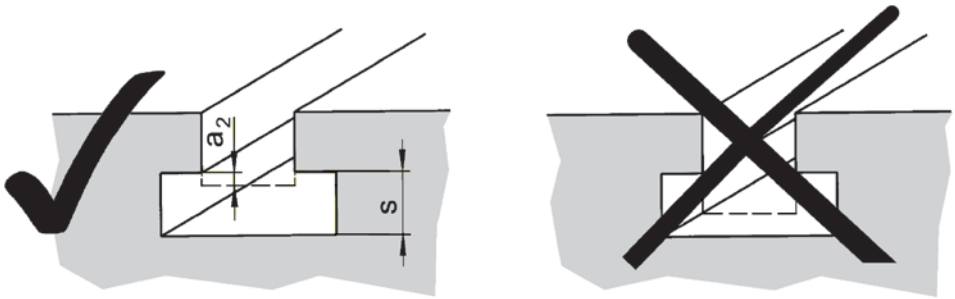
T-Nuten DIN 650
T-Slots DIN 650



J

Anwendungstechnologie
Application Technology

$a_2 \approx 0{,}2 \times s$



sehr empfehlenswert
recommended

weniger empfehlenswert
not recommended

Schnittdaten
Cutting data

T-Nuten-Fräsen
Milling of T-slots

bearbeitbare Werkstoffe Workpiece material	Schneidstoff Cutting material	v_c (m/min)	f_z (mm), Z=1 Ds 17 mm	f_z (mm), Z=1 Ds 20-24 mm
Kohlenstoffstahl Carbon steel	TI25 / RC45	200 - 300	0,03 - 0,06	0,05 - 0,08
Legierter Stahl Alloyed steel	TI25 / RC45	140 - 220	0,02 - 0,04	0,03 - 0,05
Grauguss Grey cast iron	TI25 / RC45	100 - 160	0,03 - 0,06	0,05 - 0,10

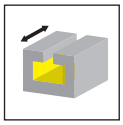
T-Nuten-Fasen
Chamfering of T-slots

bearbeitbare Werkstoffe Workpiece material	Schneidstoff Cutting material	v_c (m/min)	f_z (mm), Z=3
Kohlenstoffstahl Carbon steel	TI25 / RC45	300 - 400	0,10 - 0,13
Legierter Stahl Alloyed steel	TI25 / RC45	180 - 300	0,13 - 0,21
Grauguss Grey cast iron	TI25 / RC45	140 - 240	0,16 - 0,27

Diese Werte sind nur gültig mit dem zur Verfügung stehenden schwingungsdämpfenden Standard-Vollhartmetallschäften.

The cutting data is only valid for standard carbide toolholders (shanks) listed in this chapter.

Schaftfräser
End Mill
M406/M409



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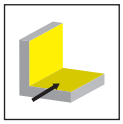
Wendeschneidplatte
Indexable insert
406/409



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Technische Hinweise
Technical Instructions

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J

M406/M409

T-Nuten-Fräser mit Wendeschneidplatten

Schneidkreis-Ø 25-50 mm

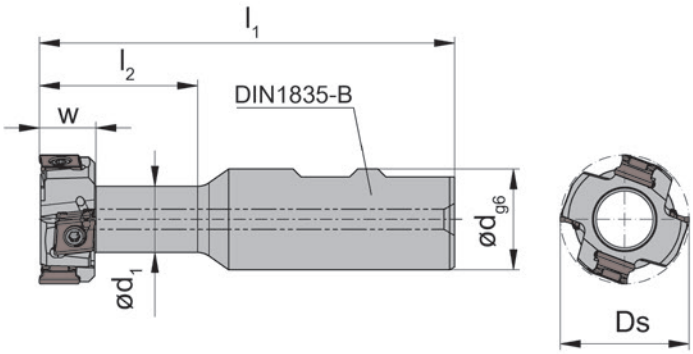
T-slots Cutter with exchangeable inserts

cutting edge Ø 25-50 mm

J

Schaftfräser
End Mill

M406



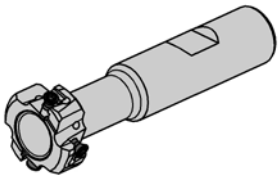
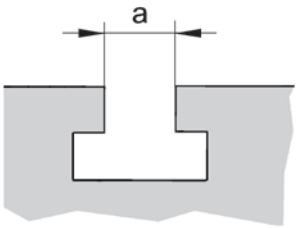


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Z_{eff}	Ds	d	l_1	l_2	d_1	w	a	n_{max}	rechte WSP right hand insert	linke WSP 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

ab Ø 25 mm 2 Spannflächen
from Ø 25 mm 2 clamping flats



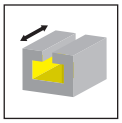
J

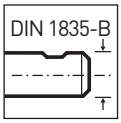
Ersatzteile
Spare Parts

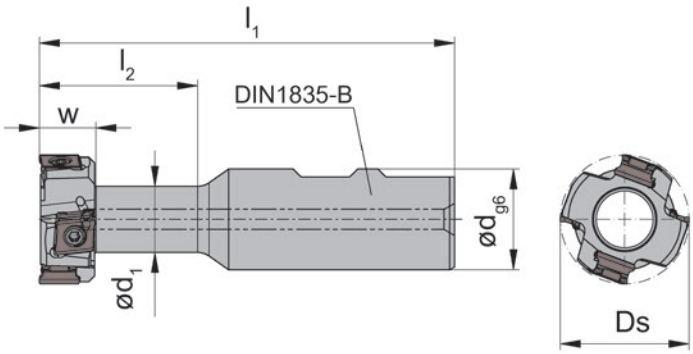
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M406.025.11.D16.1.02.B	**030.2608.T8P**	**T8PL**

Schaftfräser
End Mill

M409







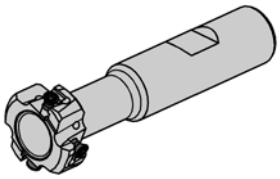
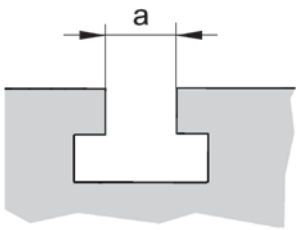


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Z_{eff}	Ds	d	l_1	l_2	d_1	w	a	n_{max}	rechte WSP right hand insert	linke WSP 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

ab Ø 25 mm 2 Spannflächen
from Ø 25 mm 2 clamping flats

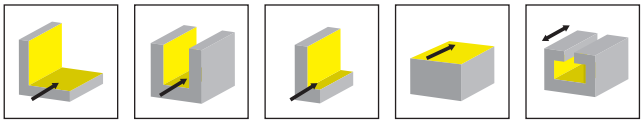


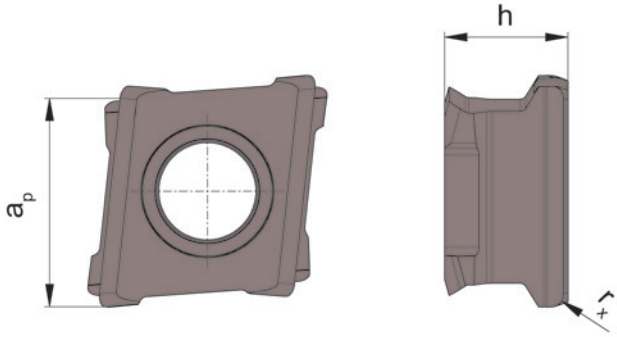
J

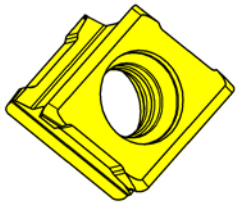
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

Wendeschneidplatte 406
Indexable insert







HM-Sorten
Carbide grades

▲ ab Lager
on stock

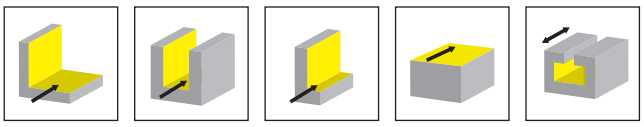
Δ 4 Wochen
4 weeks

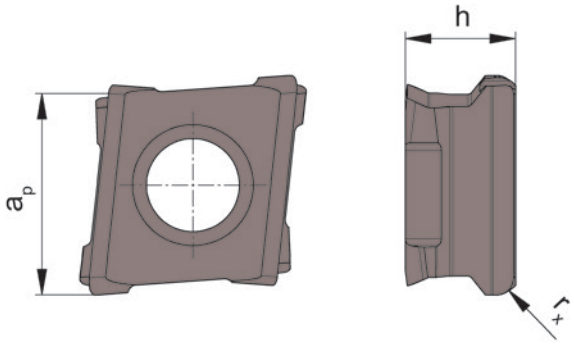
Bestellnummer Part number	a_p	h	r_x	HIS		AS46	AS4B
R406.063.U.02	6,3	3,85	0,2	40600R		Δ	▲
R406.063.U.04	6,3	3,85	0,4	40600R		▲	▲
R406.063.U.08	6,3	3,85	0,8	40600R		▲	▲
L406.063.U.02	6,3	3,85	0,2	40600L		Δ	▲
L406.063.U.04	6,3	3,85	0,4	40600L		▲	▲
L406.063.U.08	6,3	3,85	0,8	40600L		▲	▲
					P	o	●
					M	o	●
					K	●	●
					N	o	o
					S	o	●
					H	-	-

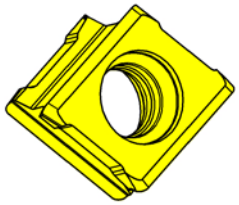
mit 4 nutzbaren Schneidkanten
with 4 usable cutting edges

J

Wendeschneidplatte 409
Indexable insert







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

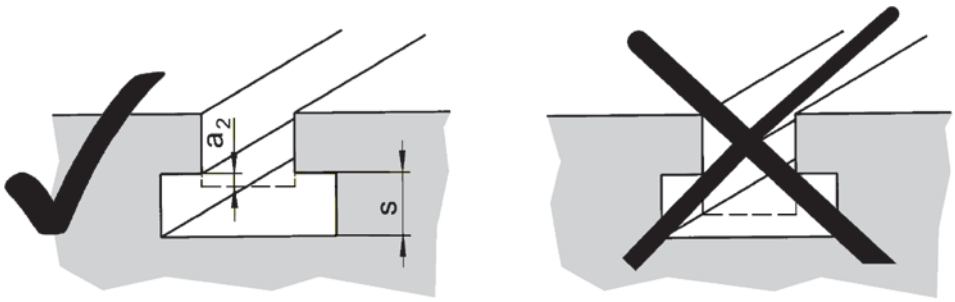
mit 4 nutzbaren Schneidkanten
with 4 usable cutting edges

J

Anwendungstechnologie

Application Technology

$a_2 \approx 0{,}2 \times s$



sehr empfehlenswert
recommended

weniger empfehlenswert
not recommended

Schnittdaten

Cutting Data

T-Nuten-Fräsen Ø25 / Ø32 mm

Milling of T-Slots

bearbeitbare Werkstoffe Workpiece material	Schneidstoff Cutting material	v_c (m/min)	f_z (mm)
Vergütungsstahl heat-treatable steel	AS4B/AS46	120 - 160	0,07 - 0,14
Grauguss Grey cast iron	AS4B/AS46	100 - 160	0,07 - 0,14

T-Nuten-Fräsen Ø40 / Ø50 mm

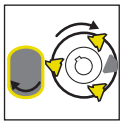
Milling of T-Slots

bearbeitbare Werkstoffe Workpiece material	Schneidstoff Cutting material	v_c (m/min)	f_z (mm)
Vergütungsstahl heat-treatable steel	AS4B/AS46	60 - 90	0,06 - 0,08
Grauguss Grey cast iron	AS4B/AS46	90 - 140	0,06 - 0,08

System/System	Seite/Page
M275	**462**
381	**468**

K

Schlagmesser
Cutter
M275



Seite/Page
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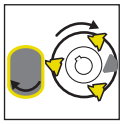
Wendeschneidplatte
Indexable insert
S275



Seite/Page
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M275

Schlagmesser

ab Schneidkreis Ø 40 mm

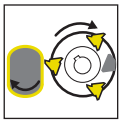
Cutter

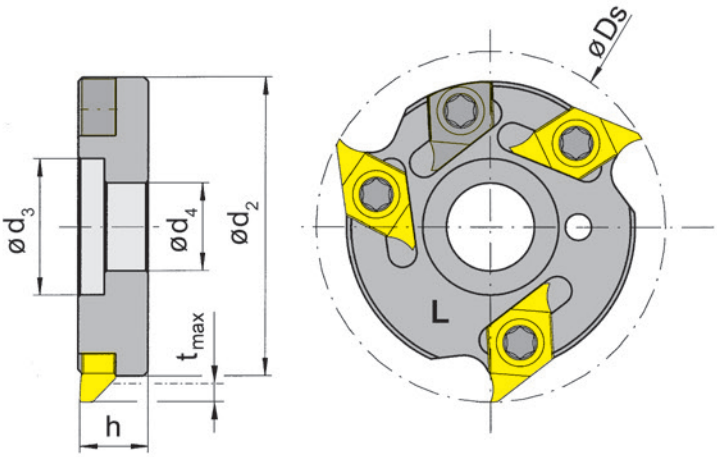
from cutting edge Ø 40 mm

K

Schlagmesser
Cutter

M275





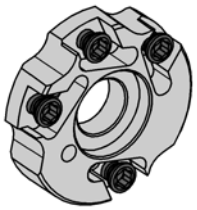


Abbildung = linksschneidend
Picture = left hand cutting version

Bestellnummer Part number	Ds	d_2	h	t_{max}	d_4	d_3	Maschinentyp 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

für Maschine: **Tornos**
for machine: Tornos

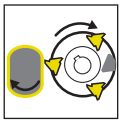
K

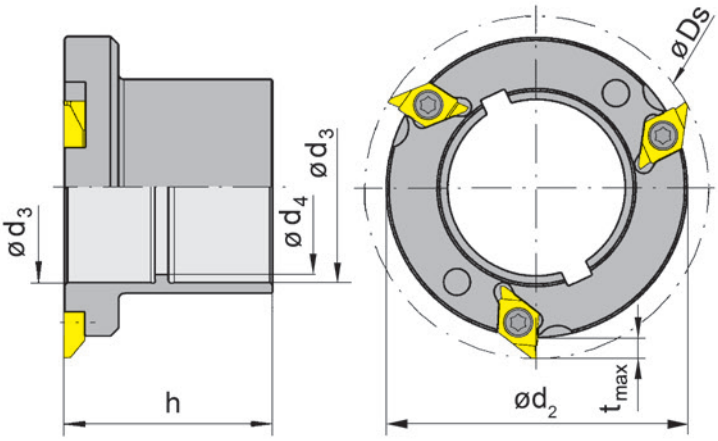
Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement links** Left hand balancing element	**Wuchtelement rechts** Right hand balancing element
LM275.D040.10.04	**030.357P.0315**	**T10PL**	**LS275.AT41.HM**	
RM275.D040.10.04	**030.357P.0315**	**T10PL**		**RS275.AT41.HM**

Schlagmesser
Cutter

M275





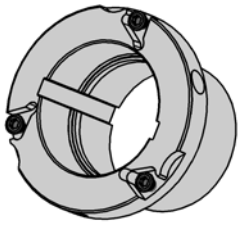


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Ds	d_2	h	t_{max}	d_4	d_3	Maschinentyp Machine type	HWS
RM275.T064.3325.03	64	56	36	3	10	15,5	EvoDECO 10	275041R

für Maschine: **Tornos**
for machine: Tornos

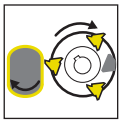
K

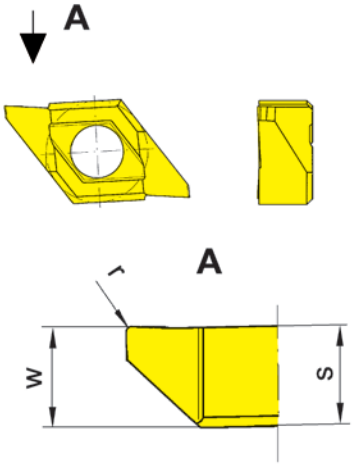
Ersatzteile
Spare Parts

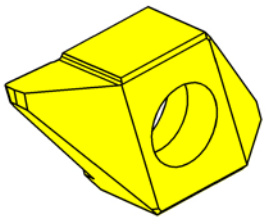
Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
RM275.T064.3325.03	**3.5.10T10P**	**T10PL**

Wendeschneidplatte
Indexable insert

S275







R = rechts wie gezeichnet
R = right hand version shown

L = links spiegelbildlich
L = left hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

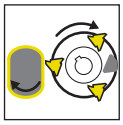
Δ 4 Wochen
4 weeks

Bestellnummer Part number	w	r	s	HIS		AS45	T125
RS275.MK13.M0	1,3	0,2	3,9	275041R		▲	▲
LS275.MK13.M0	1,3	0,2	3,9	275041L		▲	▲
					P	●	●
					M	●	●
					K	●	●
					N	o	●
					S	●	●
					H	-	-

K

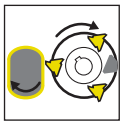
K

Schlagmesser
Cutter
381



Seite/Page
470-482

Wendeschneidplatte
Indexable insert
N314/314



Seite/Page
483-484

Technische Hinweise
Technical Instructions

Seite/Page
485-487

Übersicht
Overview

Seite/Page
489-490

K

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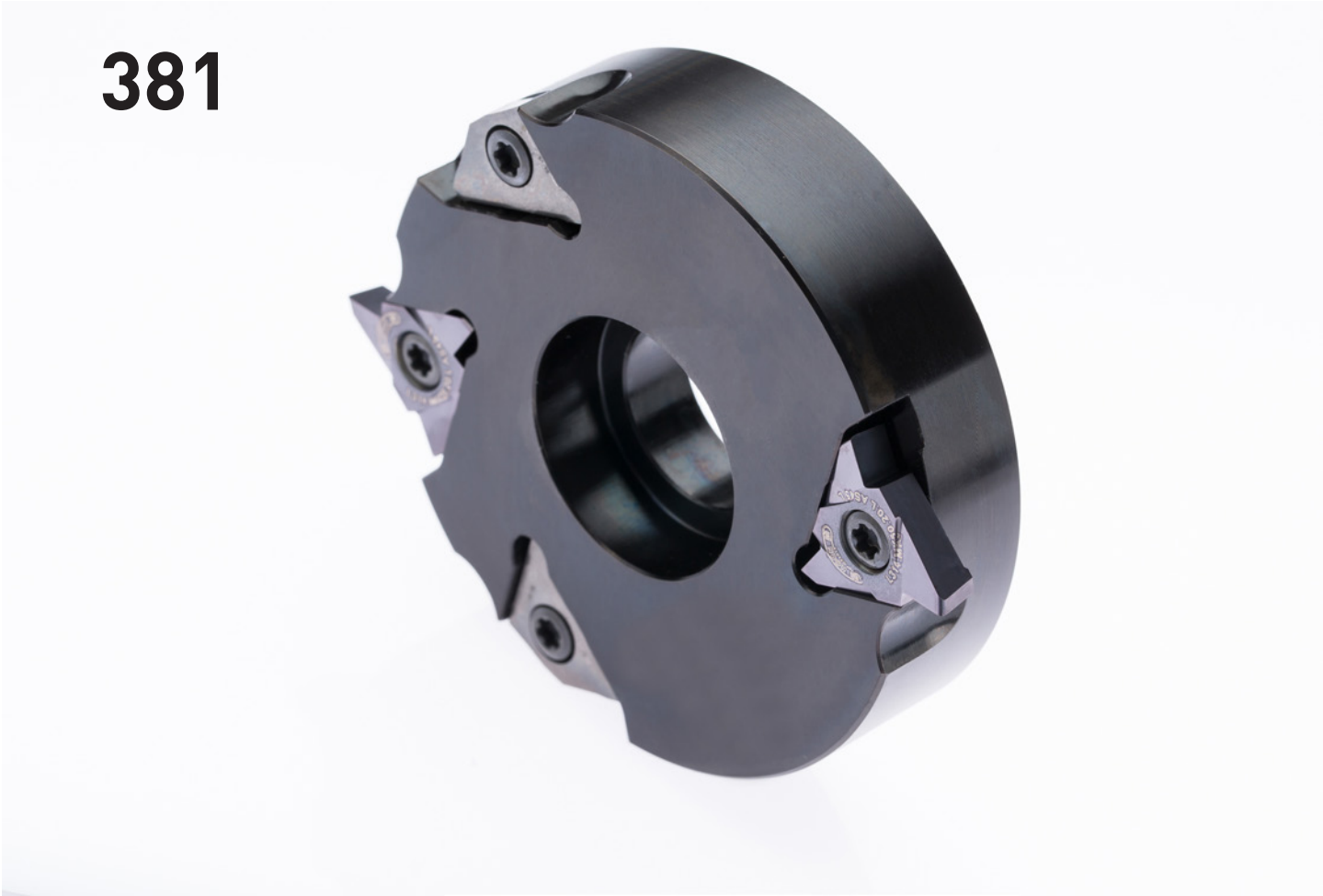


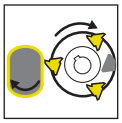
Schlagmesser

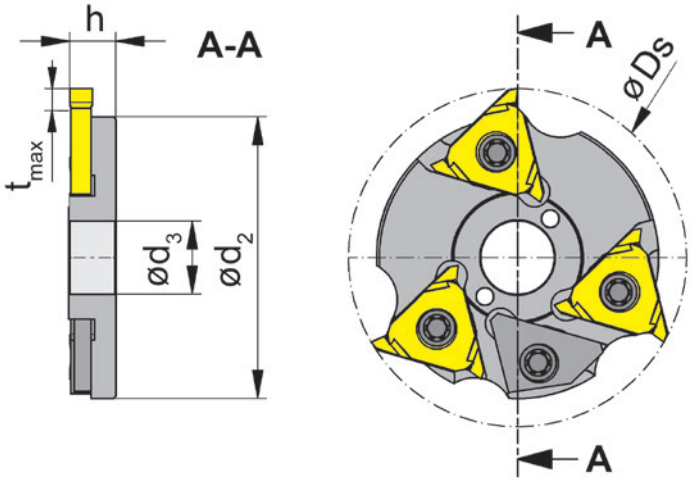
ab Schneidkreis Ø 60 mm

Cutter

from cutting edge Ø 60 mm

K





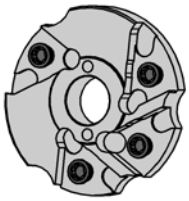


Abbildung = linksschneidend
Picture = left hand cutting version

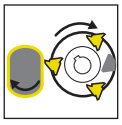
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
L381.A060.13.04	60	50	8,2	4,5	13	Star SR-20J	314027N

für Maschine: **Star**
for machine: Star

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement links** Left hand balancing element
L381.A060.13.04	**5F.08T20P**	**T20PQ**	**L314.AT30.HM**



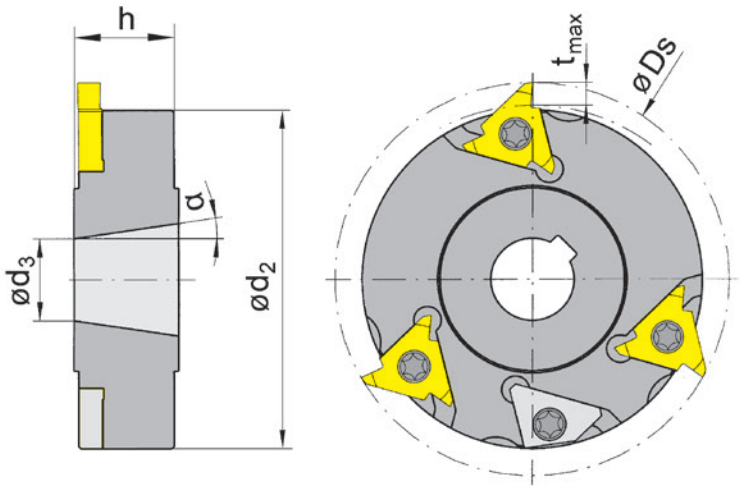


Abbildung = linksschneidend
Picture = left hand cutting version

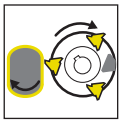
Bestellnummer Part number	Ds	d_2	h	α	t_{max}	d_3	Maschinentyp Machine type	HWS
L381.G070.15.04	70	58	15	8,16°	5	11,5	GLD25/GD32	314041L
L381.G086.25.04	86	74	23	8,16°	5	18	GM20-6,-35-8/GMC35	314041L
L381.G098.26.04	98	86	23	8,32°	5	20	GM35-6,-35-8,-42-6/GMC35	314041L

für Maschine: **Gildemeister**
for machine: Gildemeister

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement** Balancing element
L381.G070.15.04	**5.10T20P**	**T20PQ**	**N314.AT40.HM**
L381.G...	**5.12T20P**	**T20PQ**	**N314.AT40.HM**



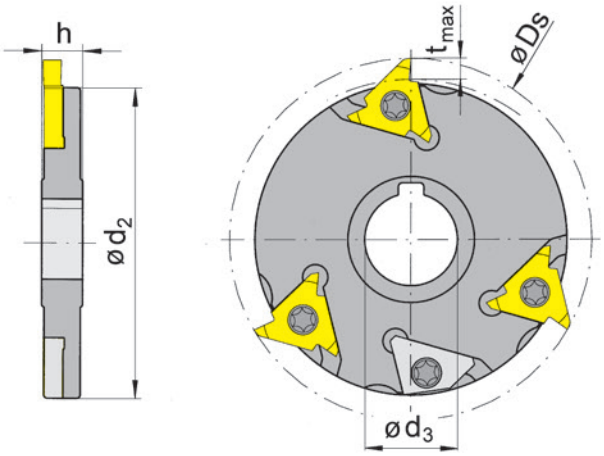


Abbildung = linksschneidend
Picture = left hand cutting version

Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
L381.G080.16.04	80	68	9	5	16	SPRINT 20/32	314027N

für Maschine: **Gildemeister**
for machine: Gildemeister

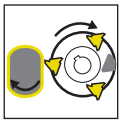
K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement links** Left hand balancing element
L381.G080.16.04	**5F.08T20P**	**T20PQ**	**L314.AT30.HM**

Schlagmesser
Cutter

381



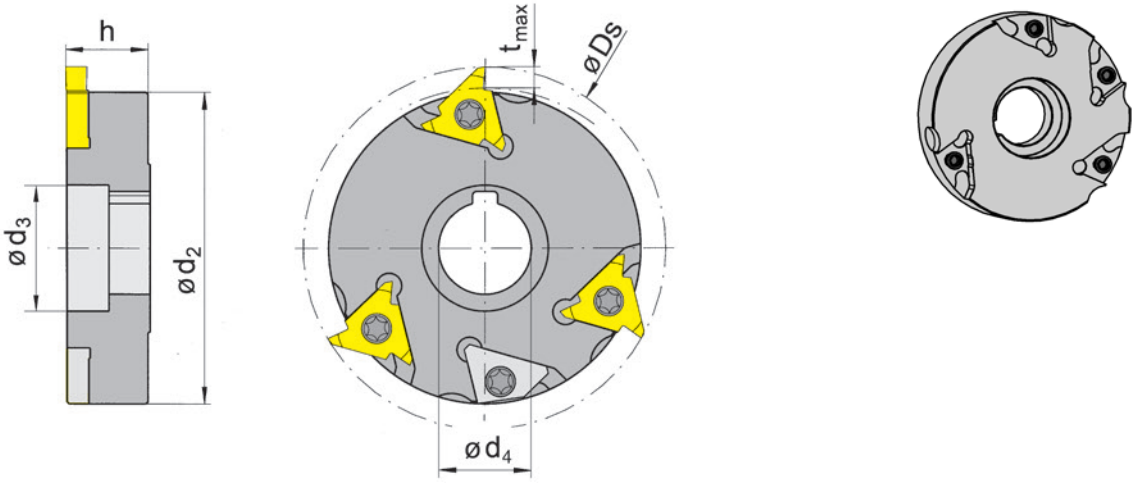


Abbildung = linksschneidend
Picture = left hand cutting version

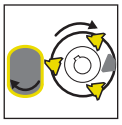
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_4	d_3	Maschinentyp Machine type	HWS
L381.G090.22.04	90	78	20	5	22	30	SPRINT 32L/-42L	314041L

für Maschine: **Gildemeister**
for machine: Gildemeister

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement** Balancing element
L381.G090.22.04	**5.12T20P**	**T20PQ**	**N314.AT40.HM**



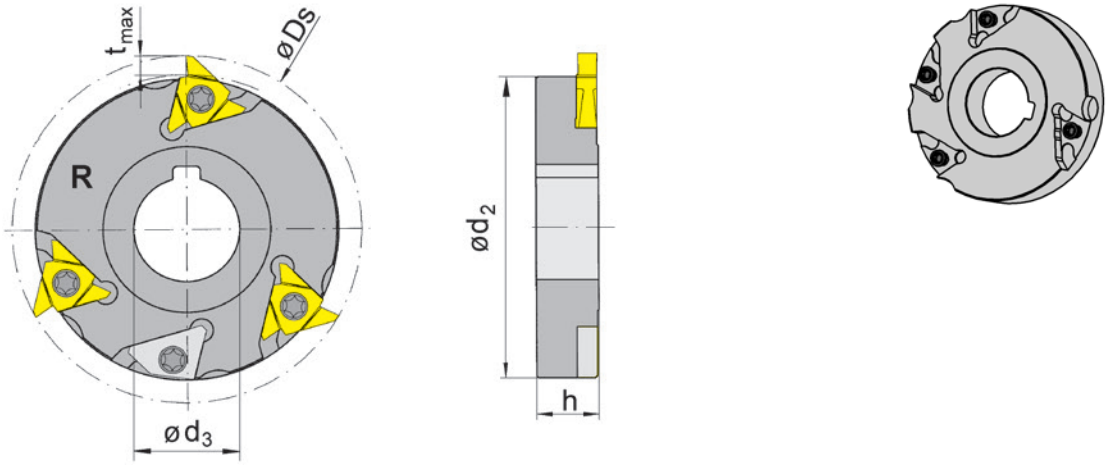


Abbildung = rechtsschneidend
Picture = right hand cutting version

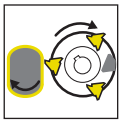
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
R381.X090.27.04	90	78	16,2	5	27	Index ABC	314041R
L381.X090.27.04	90	78	16,2	5	27	Index ABC	314041L

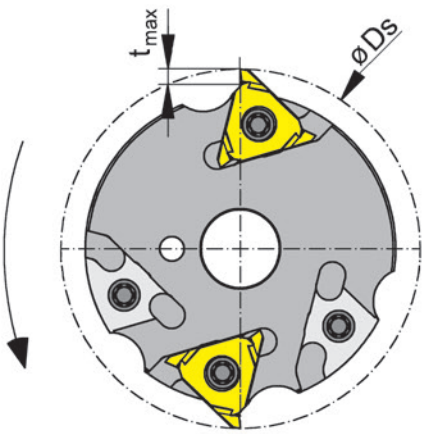
für Maschine: **INDEX**
for machine: INDEX

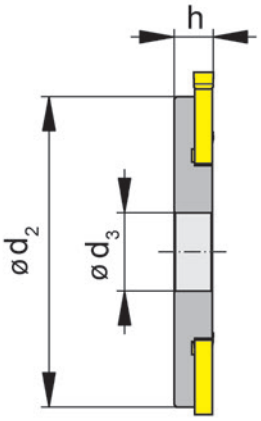
K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement** Balancing element
R/L381.X090.27.04	**5.12T20P**	**T20PQ**	**020.0314.1531**







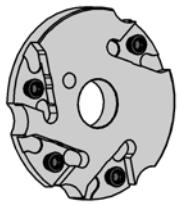


Abbildung = rechtsschneidend
Picture = right hand cutting version

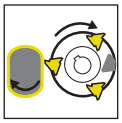
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
R381.X073.16.04	73,5	63,5	8	5	16	Index MS25	314027N

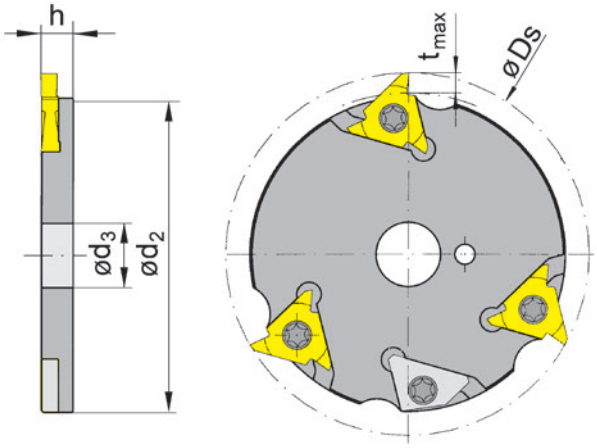
für Maschine: **INDEX**
for machine: INDEX

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement rechts** Right hand balancing element
R381.X073.16.04	**5F.08T20P**	**T20PQ**	**R314.AT30.HM**





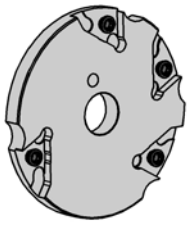


Abbildung = linksschneidend
Picture = left hand cutting version

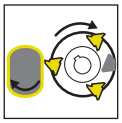
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
L381.N090.16.04	90	80	7,8	5	16	WT250	314027N

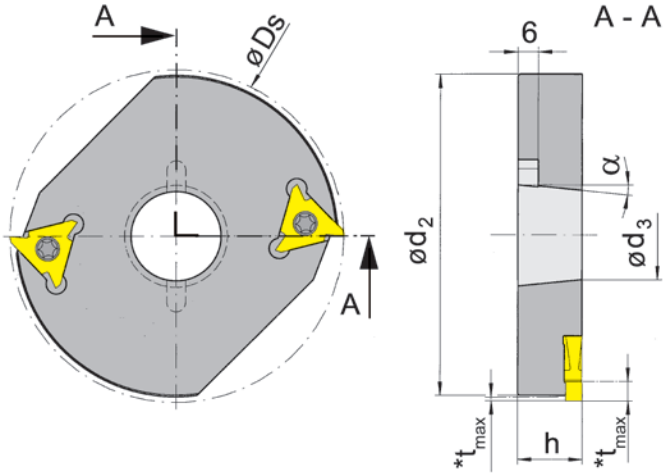
für Maschine: **Nakamura**
for machine: Nakamura

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement links** Left hand balancing element
L381.N090.16.04	**5F.08T20P**	**T20PQ**	**L314.AT30.HM**





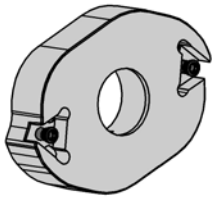


Abbildung = linksschneidend
Picture = left hand cutting version

Bestellnummer Part number	Ds	d_2	h	α	$*t_{max}$	d_3	Maschinentyp 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

für Maschine: **A.H. Schütte**
for machine: A.H. Schütte

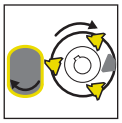
geschlossener Plattensitz, Vorschub in Axialrichtung
reinforced pocket, feed in axial direction

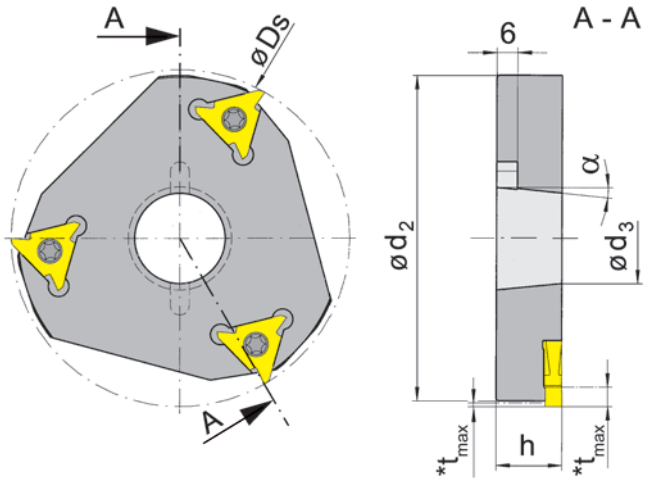
* tmax Längsfräsen = 5,0 mm / Einstechfräsen = 1,2 mm
* tmax Side Milling = 5,0 mm / Groove Milling = 1,2 mm

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
L381...	**5.15T20P**	**T20PQ**





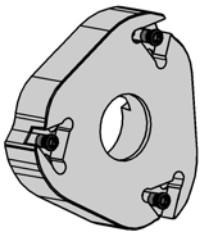


Abbildung = linksschneidend
Picture = left hand cutting version

Bestellnummer Part number	Ds	d_2	h	α	$*t_{max}$	d_3	Maschinentyp Machine type	HWS
L381.S078.30.03	78	77	19	5,42°	5	26,8	SG18, SG20, AG18	314052L
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

für Maschine: **A.H. Schütte**
for machine: A.H. Schütte

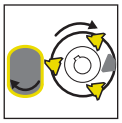
geschlossener Plattensitz, Vorschub in Axialrichtung
reinforced pocket, feed in axial direction

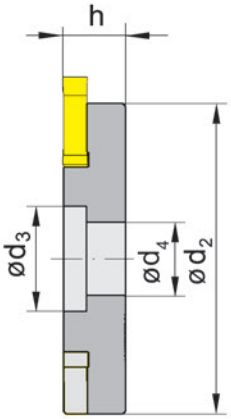
* tmax Längsfräsen = 5,0 mm / Einstechfräsen = 1,2 mm
* tmax Side Milling = 5,0 mm / Groove Milling = 1,2 mm

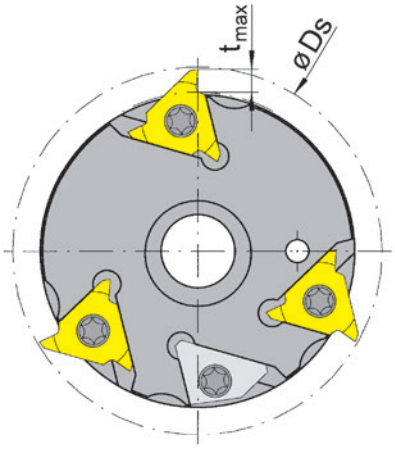
K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
L381...	**5.15T20P**	**T20PQ**







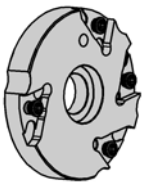


Abbildung = linksschneidend
Picture = left hand cutting version

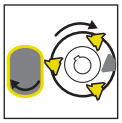
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_4	d_3	Maschinentyp Machine type	HWS
L381.D080.16.04	80	57,5	13,6	5	16	23	DECO 2000/DECO 13/20/26	314027N

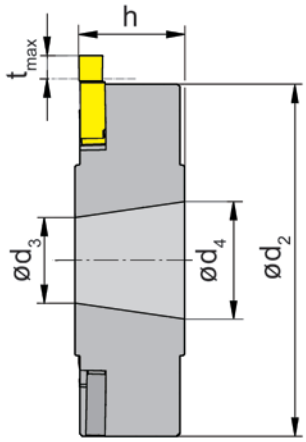
für Maschine: **Tornos**
for machine: Tornos

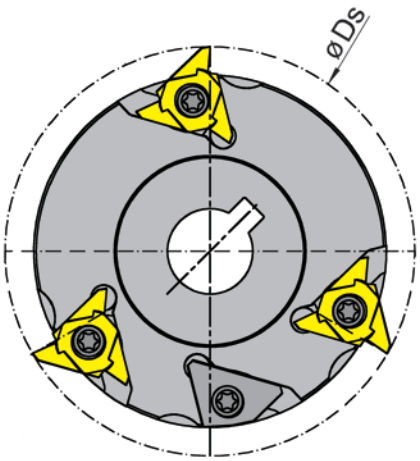
K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement links** Left hand balancing element
L381.D080.16.04	**5F.08T20P**	**T20PQ**	**L314.AT30.HM**







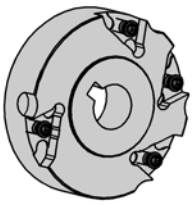


Abbildung = linksschneidend
Picture = left hand cutting version

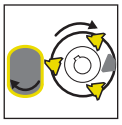
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_4	d_3	Maschinentyp Machine type	HWS
L381.D086.25.04	86	74	23	5	24,7	18	Tornos Multi-Deco	314041L

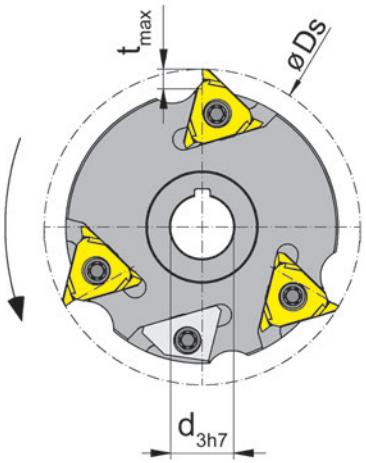
für Maschine: **Tornos**
for machine: Tornos

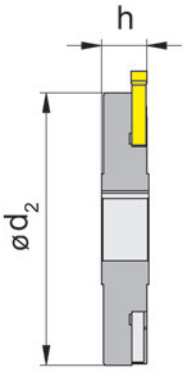
K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement** Balancing element
L381.D086.25.04	**5.12T20P**	**T20PQ**	**N314.AT40.HM**







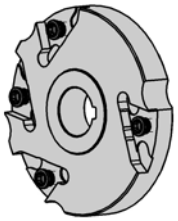


Abbildung = rechtsschneidend
Picture = right hand cutting version

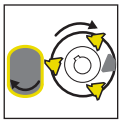
Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
R381.T080.16.04	80	69	12	5	16	TRAUB TNL18	314027N

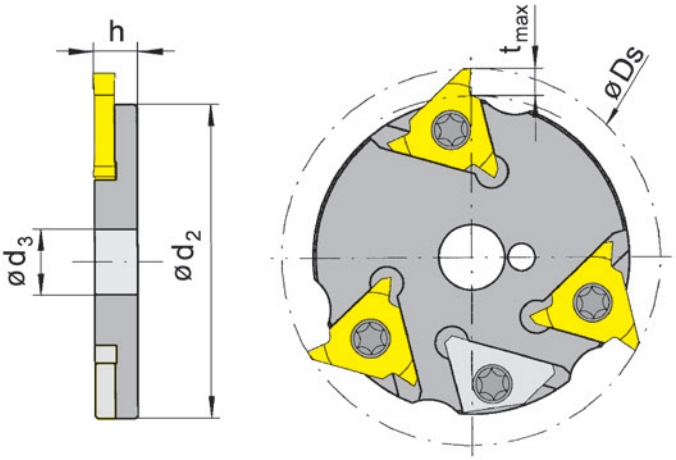
für Maschine: **Traub**
for machine: Traub

K

Ersatzteile
Spare Parts

Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement rechts** Right hand balancing element
R381.T080.16.04	**5F.08T20P**	**T20PQ**	**R314.AT30.HM**





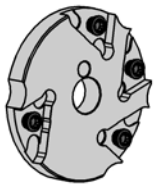


Abbildung = linksschneidend
Picture = left hand cutting version

Bestellnummer Part number	Ds	d_2	h	t_{max}	d_3	Maschinentyp Machine type	HWS
L381.T069.12.04	69	57,5	8	5	12	TNL12-7/TNL26/TNK36	314027N

für Maschine: **Traub**
for machine: Traub

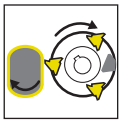
K

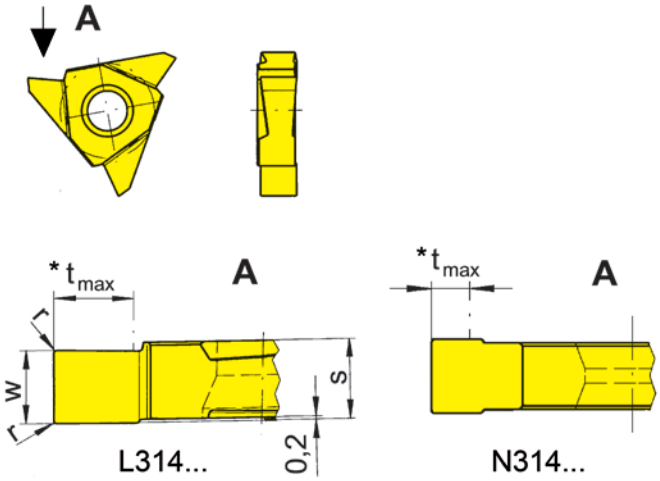
Ersatzteile
Spare Parts

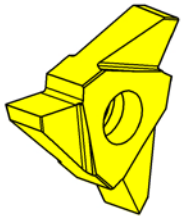
Schlagmesser Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Wuchtelement links** Left hand balancing element
L381.T069.12.04	**5F.08T20P**	**T20PQ**	**L314.AT30.HM**

Wendeschneidplatte
Indexable insert

N314 / 314







HM-Sorten
Carbide grades

▲ ab Lager
on stock

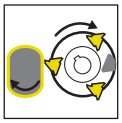
Δ 4 Wochen
4 weeks

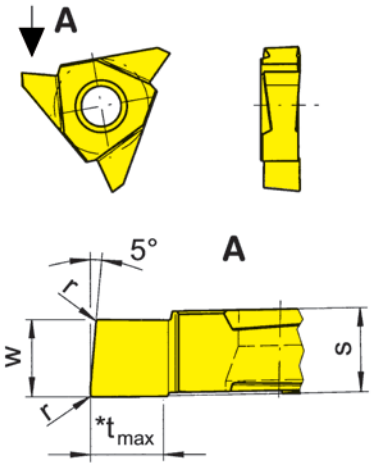
Bestellnummer Part number	w	r	s	HIS		MG12	AS45	TI25	TN35
R314.MK50.20	5	0,15	5,2	314041R			▲	▲	
L314.MK50.20	5	0,15	5,2	314041L			▲	▲	
L314.MK70.M0	7	0,15	7,4	314052L			▲	▲	▲
N314.MK40.20	4	-	3,6	314027N		▲	▲	▲	Δ
					P	o	●	●	●
					M	-	●	●	●
					K	-	●	●	●
					N	-	o	●	●
					S	-	●	●	●
					H	-	-	-	-

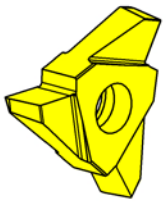
$*t_{max}$	**Einstechen** Groove Milling	**Längsfräsen** Side Milling
N314.MK40.20	siehe Fräser/see cutter	2,5
R/L314.MK50.20	siehe Fräser/see cutter	5
L314.MK70.M0	siehe Fräser/see cutter	5

K

Wendeschneidplatte 314
Indexable insert







L = links wie gezeichnet
L = left hand version shown

R = rechts spiegelbildlich
R = right hand version

▲ ab Lager
on stock

HM-Sorten
Carbide grades

Δ 4 Wochen
4 weeks

Bestellnummer Part number	w	r	s	t_{max}	HIS		AS45	T125
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		▲	▲
						P	●	●
						M	●	●
						K	●	●
						N	o	●
						S	●	●
						H	-	-

K

Funktionsprinzip des Mehrkantschlagens

Beim Mehrkantschlagen auf der Drehmaschine werden Flächen am Umfang (Mantelfläche) der Drehteile mit einem Schlagmesser erzeugt.
Das Werkstück (Hauptspindel) und das Werkzeug (rotierender Werkzeugantrieb) müssen in einem synchronen Übersetzungsverhältnis laufen.

Mehrkantschlagen wird nur im Gegenlauf ausgeführt!

Die Anzahl der erzeugten Flächen am Werkstück steht in Abhängigkeit vom Übersetzungsverhältnis zwischen dem Werkstück und dem Werkzeug sowie der Anzahl der Schneiden des Werkzeugs.

Bei einem Übersetzungsverhältnis von 2:1 wird eine leicht konvexe Oberfläche erzielt. Die geringe Formabweichung ist für Flächen zweiter Ordnung (Schlüsselflächen) brauchbar.
Bei einem Übersetzungsverhältnis von 1:1 ergeben sich stark konvexe Flächen, die für Schlüsselflächen nicht zu empfehlen sind.
Bei einem Übersetzungsverhältnis von 3:1 werden stark konkave Flächen erzeugt, die ebenfalls für Schlüsselflächen nicht zu empfehlen sind.

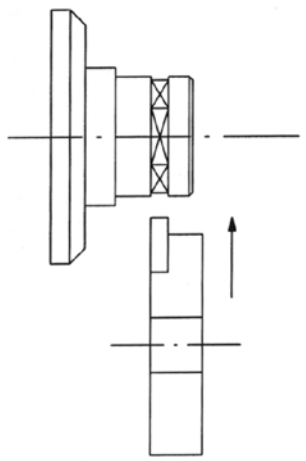
Demzufolge wird in den meisten Fällen das Übersetzungsverhältnis 2:1 angewendet.
Schlagmesser mit Z = 2 erzeugen 4 Flächen am Werkstück.

Zur Berechnung der Konvexität der erzeugten Flächen sind folgende Punkte notwendig:

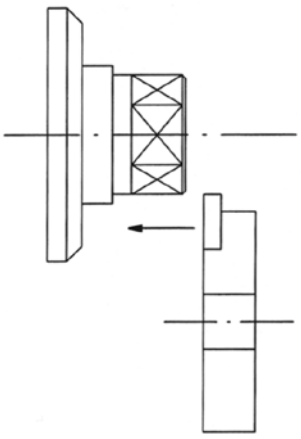
1. Schneidkreisdurchmesser des Schlagmessers
2. Zu erzeugende Schlüsselweite
3. Vorgedrehter Werkstückdurchmesser
4. Anzahl der Flächen
5. Übersetzungsverhältnis Werkstück:Werkzeug

Die Flächen können im Einstechverfahren sowie im Längsdrehverfahren erzeugt werden.
Ebenfalls kann damit eine Fase kopiert werden (entgraten der Fläche).

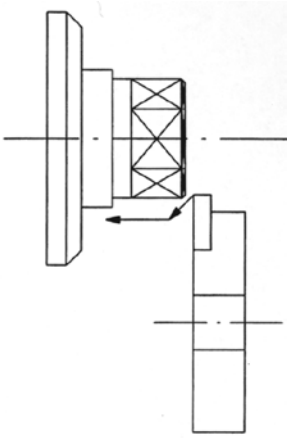
Einstechfräsverfahren



Längsfräsverfahren

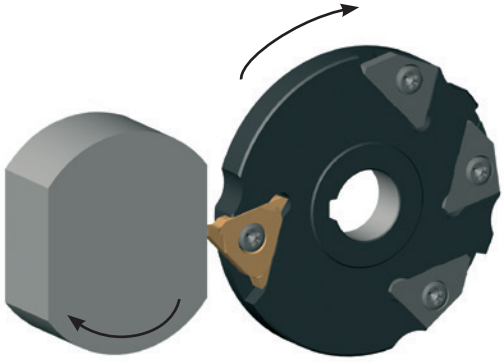


Kopieren und Längsfräsverfahren

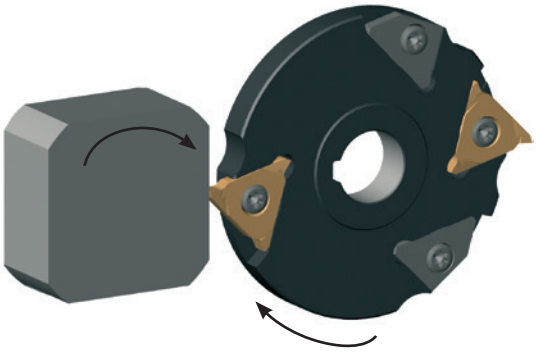


K

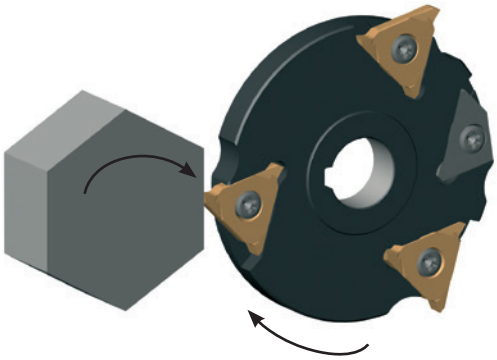
Zweikant mit 1 Schneide im Übersetzungsverhältnis von 2:1 zur Hauptspindel hergestellt.



Vierkant mit 2 Schneiden im Übersetzungsverhältnis von 2:1 zur Hauptspindel hergestellt.



Sechskant mit 3 Schneiden im Übersetzungsverhältnis von 2:1 zur Hauptspindel hergestellt.



The concept of Polygon Milling

Polygon milling describes the manufacturing of flats while rotating components with polygon milling cutters on CNC lathes, Swiss Automatics lathes or Multi Spindle machines. The component (main spindle) and the milling cutter (live tool) have to run with synchronized rotations.

The operation only works in conventional milling!

The number of flats depends on the rotation ratio between component and milling cutter as well as on the number of inserts of the milling cutter.

At a revolution ratio of 2:1, the shape of the produced flats are little convex. The form error is suitable for most applications such as across-flats.
At a revolution ratio of 1:1, the shape of the produced flats are heavily convex. This shape is not suitable for across-flats.
At a revolution ratio of 3:1, the shape of the produced flats are heavily concave. This shape is as well not suitable for across-flats.

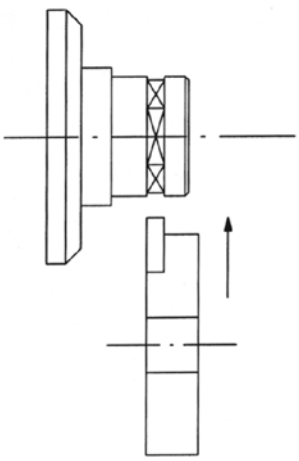
According to this, the number of flats at the component is twice the number of cutting inserts on the milling cutter.

To calculate the shape of the flats following parameter are necessary:

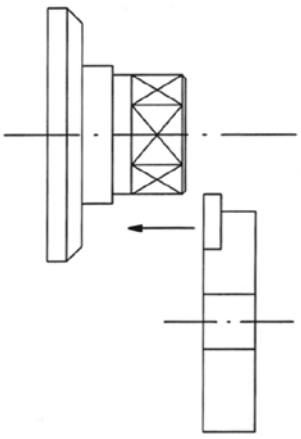
1. Cutting diameter of the polygon miling cutter
2. Across-flats dimension
3. Premachined diameter of the component
4. Number of flats
5. Revolution ratio of component and milling cutter

The flats can be produced by grooving or by turning. Chamfers can be produced by profiling (deburring).

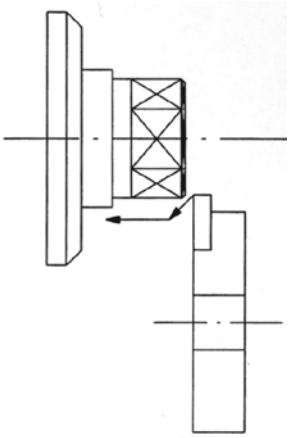
Groove milling



Side milling

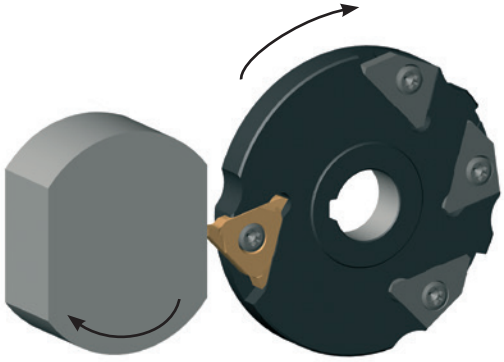


Copymilling and
Side milling

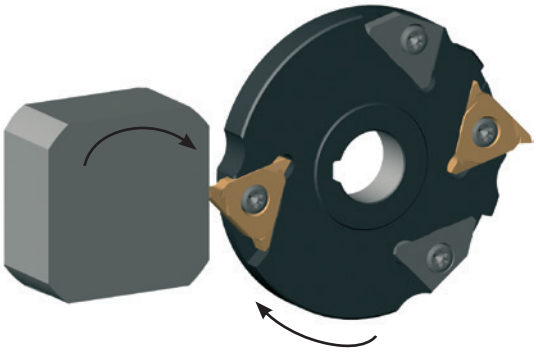


K

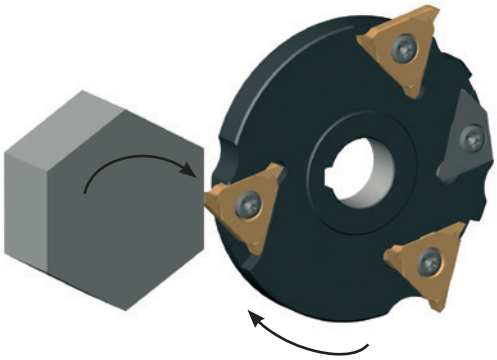
Two flats machined with 1 cutting edge. Revolution ratio 2:1 to the main spindle.



Four flats machined with 2 cutting edges. Revolution ratio 2:1 to the main spindle.



Six flats machined with 3 cutting edges. Revolution ratio 2:1 to the main spindle.



Form	Schneiden im Schlagmesser	l = WKZ:HSP	Erzeugte Flächen
	1	1 : 1	nicht empfehlenswert, stark konvex
	2 1	1 : 1 2 : 1	nicht empfehlenswert, konvex gut, leicht konvex
	3 2 1	1 : 1 1,5 : 1 3 : 1	nicht empfehlenswert, konvex empfehlenswert, konvex gut, leicht konkav
	2 1	2 : 1 4 : 1	gut, leicht konvex nicht empfehlenswert, konkav
	3 2 1	1,66 : 1 2,5 : 1 5 : 1	empfehlenswert, konvex gut, leicht konkav nicht empfehlenswert, konkav
	3 2	2 : 1 3 : 1	gut, leicht konvex nicht empfehlenswert, konkav
	4 2	2 : 1 4 : 1	gut, leicht konvex nicht empfehlenswert, konkav

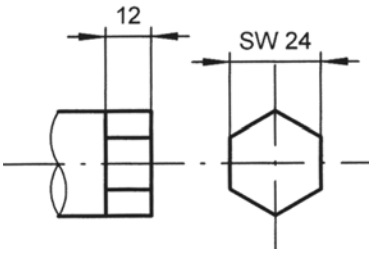
Richtwerte

Werkstoff	Sorten	v_c m/min	Vorschub f_z mm	
			Längsfräsverfahren	Einstechfräsverfahren
Al	TI25,MG12	500 - 1000	0,10 - 0,20	0,05 - 0,10
Ms58	TI25,MG12	500 - 1000	0,10 - 0,20	0,05 - 0,10
9SMnPb28	TH35,TI25,AS45	200 - 500	0,08 - 0,15	0,04 - 0,08
16MnCr5/C45	TH35,TI25,AS45	150 - 250	0,05 - 0,10	0,03 - 0,05

Vorschubswerte sind nur beim Längsfräsverfahren gültig!
Beim Einstechfräsverfahren muss der Vorschub pro Zahn, je nach Schneidbreite der Wendeschneidplatte, um 30 - 50 % reduziert werden!

Beispiel:
Längsfräsverfahren
Werkstoff: Stahl

Schlagmesser Ø 90 mm
SW 24 mm (Ø 27,7 mm)
$v_{c\,eff}$ = 448,00 m/min
f_Z = 0,08 mm
3 Schneiden, l = 2:1
Länge des Sechskants: 12 mm
Bearbeitungszeit: ~ 2,19 s



Werkzeug:
n_{WZ} = 1372,00 mm^{-1}
$v_{c\,WZ}$ = 388,25 m/min

Werkstück:
n_{WS} = 686,00 mm^{-1}
$v_{c\,WS}$ = 59,75 m/min

K

Form	No. of inserts on the cutter	Ratio = Tool:Spindel	Flats
	1	1 : 1	not suitable, heavily convex
	2 1	1 : 1 2 : 1	not suitable, convex very suitable, little convex
	3 2 1	1 : 1 1,5 : 1 3 : 1	not suitable, convex suitable, convex very suitable, little concave
	2 1	2 : 1 4 : 1	very suitable, little convex not suitable, concave
	3 2 1	1,66 : 1 2,5 : 1 5 : 1	suitable, convex very suitable, little concave not suitable, concave
	3 2	2 : 1 3 : 1	very suitable, little convex not suitable, concave
	4 2	2 : 1 4 : 1	very suitable, little convex not suitable, concave

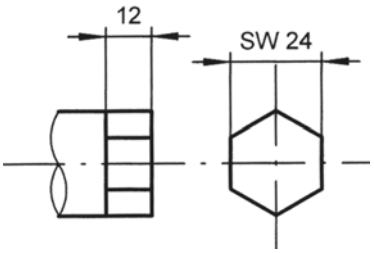
Cutting data

Material	Grades	v_c m/min	Feed rate f_z mm	
			Side milling	Groove milling
Al	TI25,MG12	500 - 1000	0,10 - 0,20	0,05 - 0,10
Ms58	TI25,MG12	500 - 1000	0,10 - 0,20	0,05 - 0,10
9SMnPb28	TH35,TI25,AS45	200 - 500	0,08 - 0,15	0,04 - 0,08
16MnCr5/C45	TH35,TI25,AS45	150 - 250	0,05 - 0,10	0,03 - 0,05

Feed rate values only valid for side milling process!
At groove milling process the feed rate has to be reduced by 30 - 50 %, depending on the insert width!

Example:
Side milling
Material: Steel

Cutter Ø 90 mm
SW 24 mm (Ø 27,7 mm)
$v_{c\,eff}$ = 448,00 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} = 1372,00 mm^{-1}
$v_{c\,WZ}$ = 388,25 m/min

Workpiece:
n_{WS} = 686,00 mm^{-1}
$v_{c\,WS}$ = 59,75 m/min

K

Übersicht Maschinenhersteller
Overview Machine manufacturer

Hersteller Machine manufacturer	Maschine Machine	Schlagmesser Cutter	Wendeschneidplatten Indexable inserts	Z	n_{max} Fräser 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*

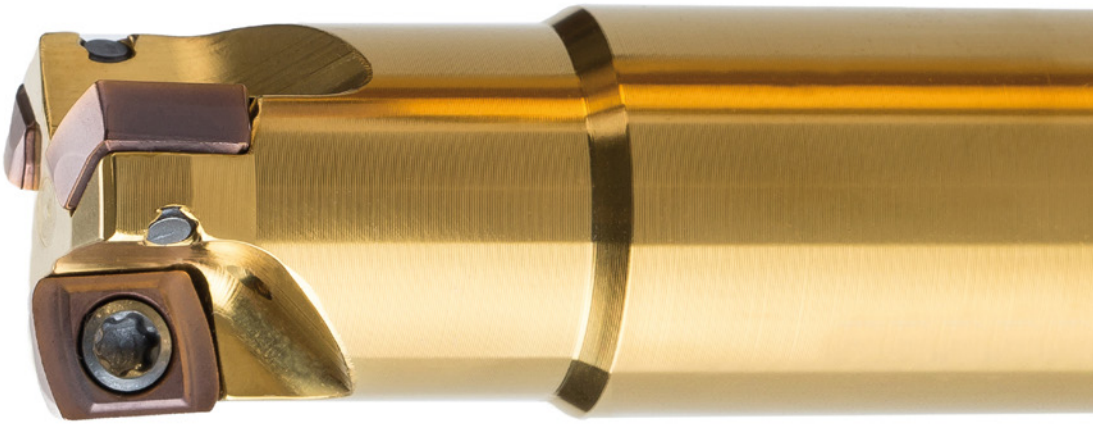
Übersicht Maschinenhersteller
Overview Machine manufacturer

Hersteller Machine manufacturer	Maschine Machine	Schlagmesser Cutter	Wendeschneidplatten Indexable inserts	Z	n_{max} Fräser 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

Mehrkantschlagmesser für weitere Maschinen auf Anfrage.
Polygon cutter for further machines upon request.

* geschlossener Plattensitz
* reinforced pocket

K



System/System	Seite/Page
DA	**496**
DAH	**520**

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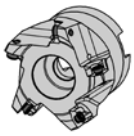
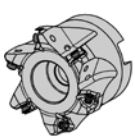
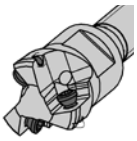
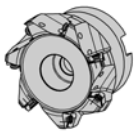
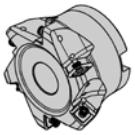
Übersicht Radial-Fäser
Overview Radial Mill

Systeme Systems	DAM31	DAM32	DAM62	DAHM25	DAHM37	DAHM82	DAHM84
							
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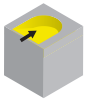
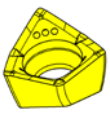
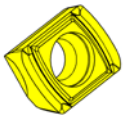
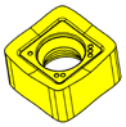
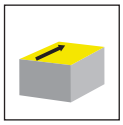
	x	x					
	x	x	x				
	x	x					
	x	x	x	x	x	x	x
	x	x	x	x	x	x	x
	x	x	x	x	x	x	x
Eignung Suitability							
P	●	●	●	●	●	●	●
M	●	●	○	●	●	○	○
K	●	●	●	●	●	●	●
N	●	●					
S	●	●	○	●	●	○	○
H							
D_C (mm)	16-32	20-63	20-80	12-25	20-80	20-50	50-125
a_{pmax} (mm)	3	4,8	4,5	1	1,2	1	1,5
	DA31	DAM32	DA62	DAH25	DAH37	DAH82	DAH84
Schneidkanten Cutting edges	 3		 6	 2	 3	 8	

Schaftfräser
End Mill
DAM31/DAM32/DAM62



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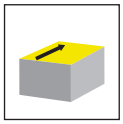
498-502

Aufsteckfräser
Arbour Mounted Cutter
DAM32/DAM62



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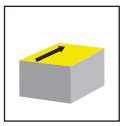
503-504

Einschraubfräser
Screw-in cutter
DAM31/DAM32/DAM62



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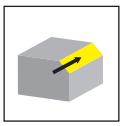
505, 507



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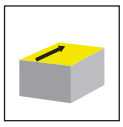
Aufnahme
Adaptor
MD



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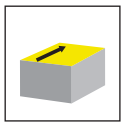
508-509

Reduzierstück
Reducer
MD



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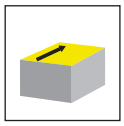
510

Verlängerung
Extension
MD



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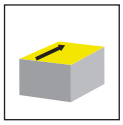
Wendeschneidplatte
Indexable insert
DA31/DA32/DA62/
SDA62



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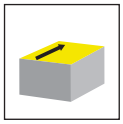
512-513, 516-517

Schneidplatte
Insert
DA32



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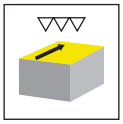

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Technische Hinweise
Technical Instructions

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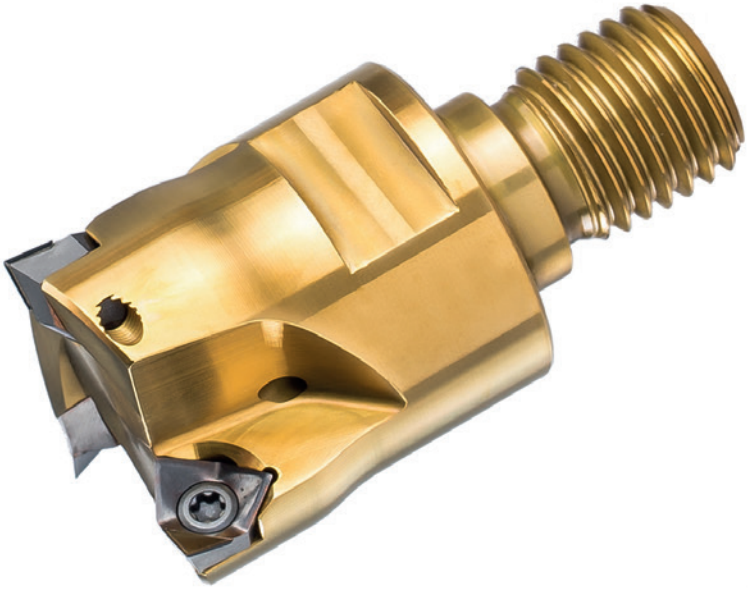
DA



System DA

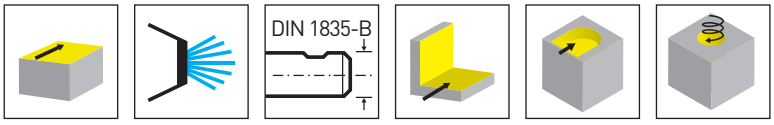
- Schaftfräser
- Aufsteckfräser
- Einschraubfräser
- Wendeschneidplatten

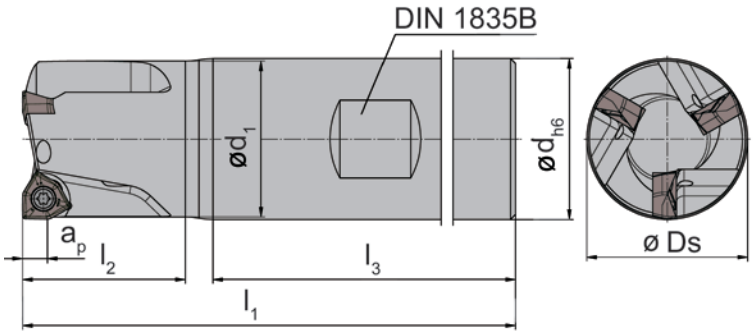
System DA

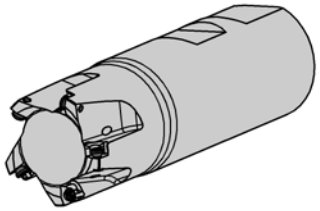
- End Mill
- Arbour Mounted Cutter
- Screw-in Cutter
- Indexable Inserts

Schaftfräser
End Mill

DAM31 / DAM32







Bestellnummer 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

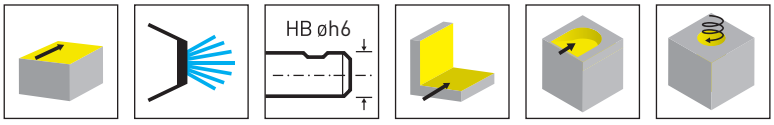
ab Ø 25 mm 2 Spannflächen
from Ø 25 mm 2 clamping flats

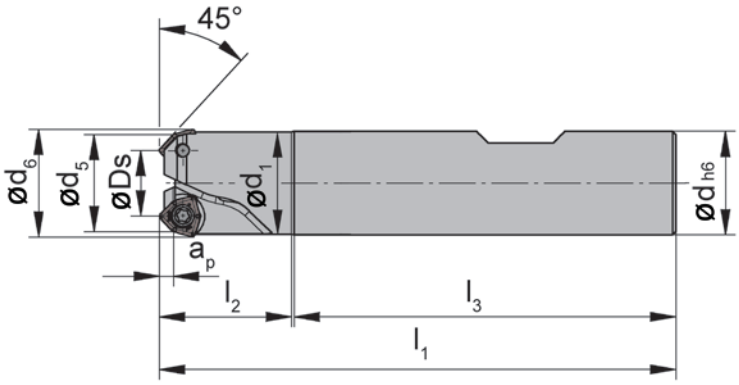
Ersatzteile
Spare Parts

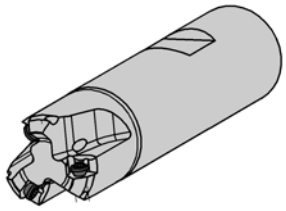
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM31.016.D163.02B	**030.2541.T8P**	**T8PL**
DAM31.020.D204.03B	**030.2547.T8P**	**T8PL**
DAM31.025.D255.04B	**030.2553.T8P**	**T8PL**
DAM31.032.D326.05B	**030.2557.T8P**	**T8PL**
DAM32.020.D205.02B	**030.3562.T10P**	**T10PL**
DAM32.025.D256.03B	**030.3569.T10P**	**T10PL**
DAM32.032.D327.03B	**030.3576.T10P**	**T10PL**

Schaftfräser
End Mill

DAM31







Bestellnummer 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

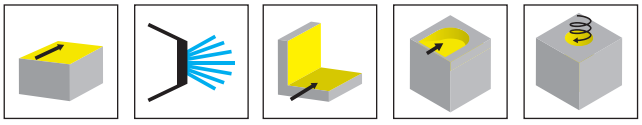
Ersatzteile
Spare Parts

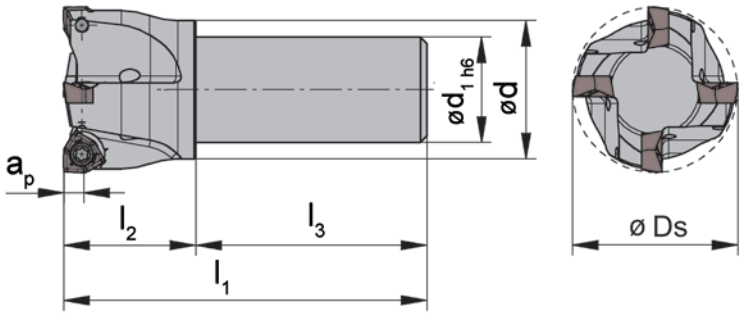
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM31.411.D163.02B	**030.2541.T8P**	**T8PL**
DAM31.414.D204.03B	**030.2547.T8P**	**T8PL**

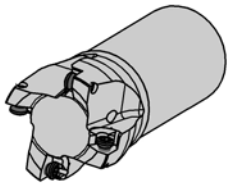
L

Schaftfräser
End Mill

DAM31







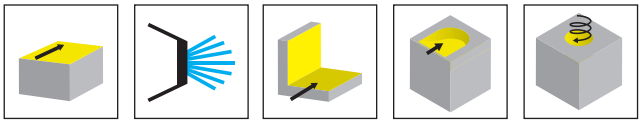
Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	HWS
DAM31.020.D160.03A	3	20	19	52	17	16	35	3	DA3120
DAM31.025.D161.04A	4	25	24	55	20	16	35	3	DA3125
DAM31.032.D162.05A	5	32	31	60	25	16	35	3	DA3132
DAM31.032.D202.05A	5	32	31	60	25	20	35	3	DA3132

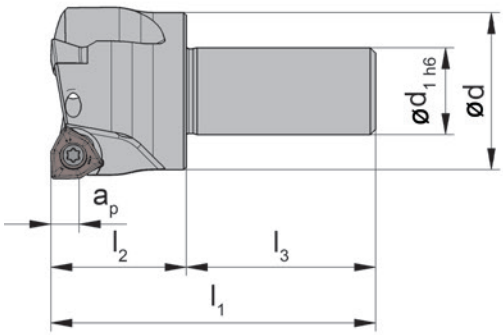
Ersatzteile
Spare Parts

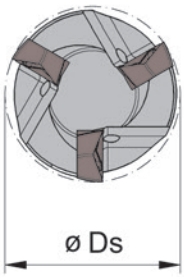
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM31.020.D160.03A	**030.2547.T8P**	**T8PL**
DAM31.025.D161.04A	**030.2553.T8P**	**T8PL**
DAM31.032....	**030.2557.T8P**	**T8PL**

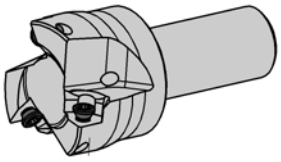
Schaftfräser
End Mill

DAM32









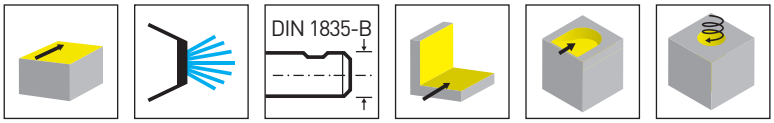
Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	HWS
DAM32.020.D160.02A	2	20	19	52	17	16	35	4,5	DA3220
DAM32.025.D161.03A	3	25	24	55	20	16	35	4,5	DA3225
DAM32.032.D162.03A	3	32	31	60	25	16	35	4,5	DA3232

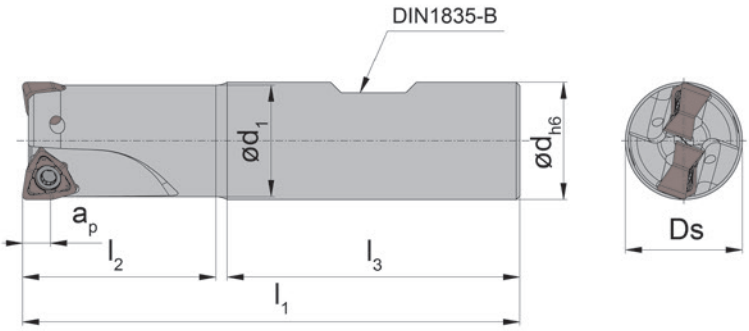
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM32.020.D160.02A	**030.3562.T10P**	**T10PL**
DAM32.025.D161.03A	**030.3569.T10P**	**T10PL**
DAM32.032.D162.03A	**030.3576.T10P**	**T10PL**

Schaftfräser
End Mill

DAM62





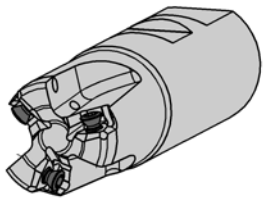


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

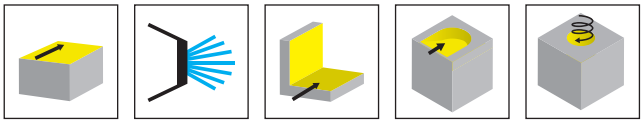
L

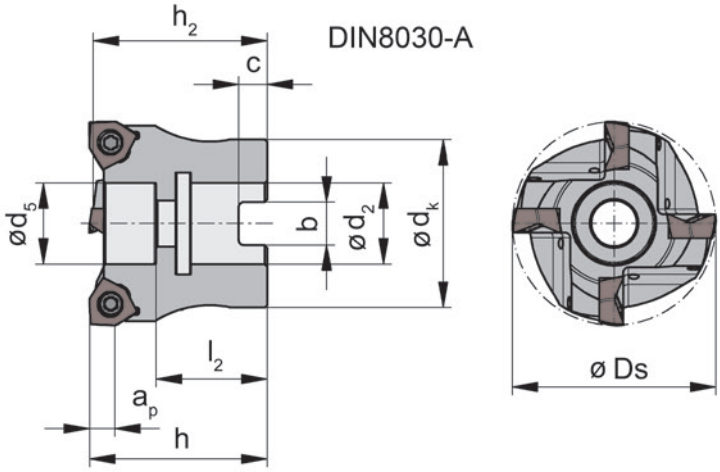
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM62...	**030.3070.T10P**	**T10PL**

Aufsteckfräser
Arbour Mounted Cutter

DAM32





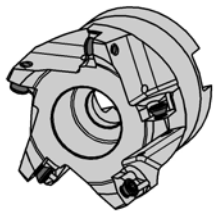


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	a_p	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

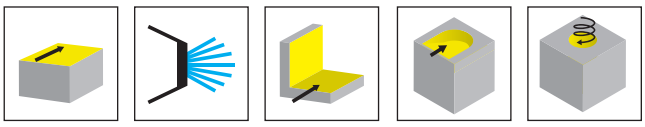
Ersatzteile
Spare Parts

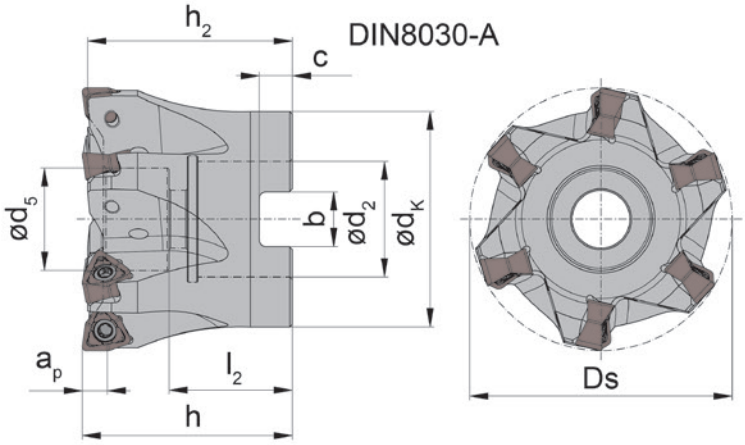
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM32...	**030.3576.T10P**	**T10PL**

L

Aufsteckfräser
Arbour Mounted Cutter

DAM62





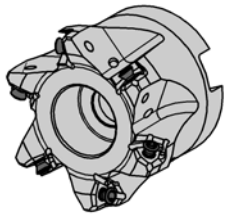


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

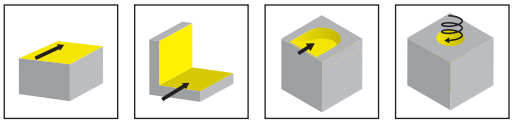
L

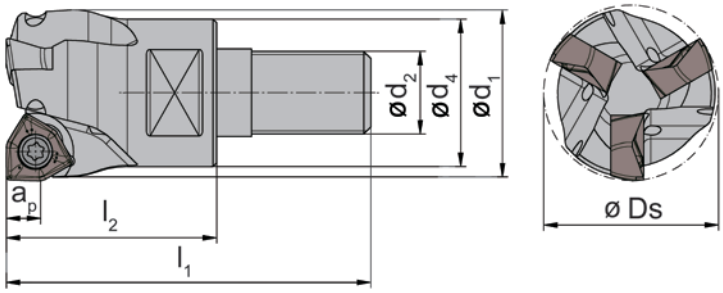
Ersatzteile
Spare Parts

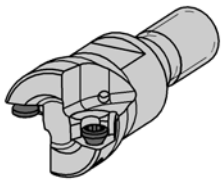
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM62...	**030.3070.T10P**	**T10PL**

Einschraubfräser
Screw-in cutter

DAM31 / DAM32







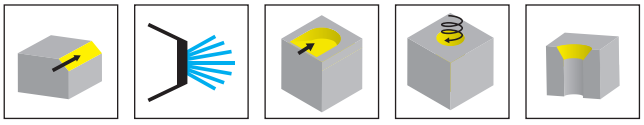
Bestellnummer Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	SW	HWS	HMS
DAM31.016.M083.02B	2	16	38	20	15	3	M8	13	10	DA3116	08001
DAM31.020.M104.03B	3	20	45	25	19	3	M10	18	15	DA3120	10001
DAM31.025.M125.04B	4	25	52	30	24	3	M12	21	17	DA3125	12001
DAM31.032.M166.05B	5	32	58	35	31	3	M16	29	24	DA3132	16001
DAM32.020.M104.02B	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

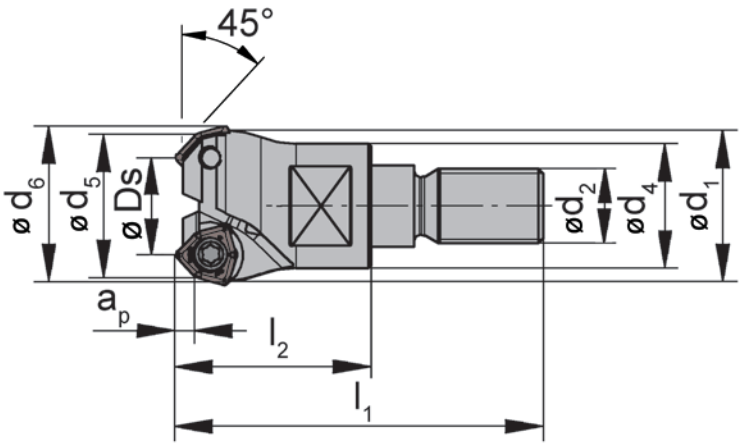
Ersatzteile
Spare Parts

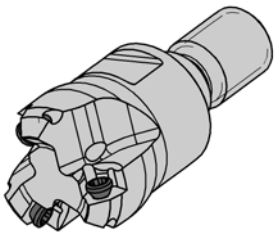
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM31.016.M083.02B	**030.2541.T8P**	**T8PL**
DAM31.020.M104.03B	**030.2547.T8P**	**T8PL**
DAM31.025.M125.04B	**030.2553.T8P**	**T8PL**
DAM31.032.M166.05B	**030.2557.T8P**	**T8PL**
DAM32.020.M104.02B	**030.3562.T10P**	**T10PL**
DAM32.025.M125.03B	**030.3569.T10P**	**T10PL**
DAM32.032.M166.03B	**030.3576.T10P**	**T10PL**

Einschraubfräser
Screw-in cutter

DAM31 / DAM32







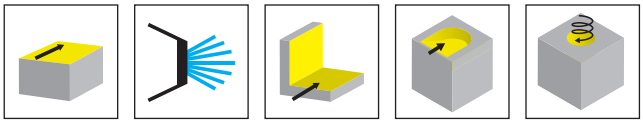
Bestellnummer Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	d_5	d_6	SW	HWS	HMS
DAM31.411.M083.02B	2	10,5	38	20	15,8	2	M8	13	15	16,9	10	DA3116	08001
DAM31.414.M104.03B	3	14,4	45	25	19,8	2	M10	18	19	20,9	15	DA3120	10001
DAM32.417.M125.03B	3	17,6	52	30	24,8	3,2	M12	21	24	28,3	17	DA3225	12001

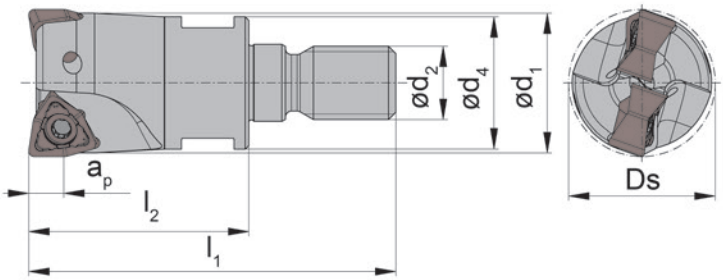
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM31.411.M083.02B	**030.2541.T8P**	**T8PL**
DAM31.414.M104.03B	**030.2547.T8P**	**T8PL**
DAM32.417.M125.03B	**030.3569.T10P**	**T10PL**

Einschraubfräser
Screw-in cutter

DAM62





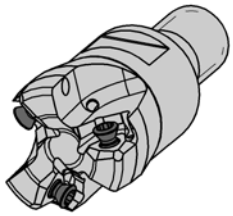


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

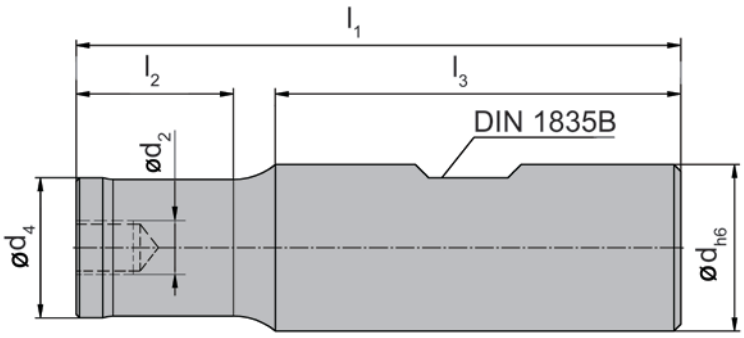
Ersatzteile
Spare Parts

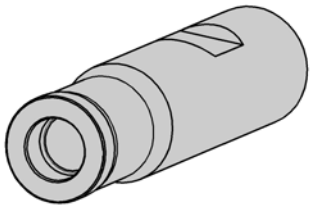
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAM62...	**030.3070.T10P**	**T10PL**

L

Aufnahme
Adaptor

MD





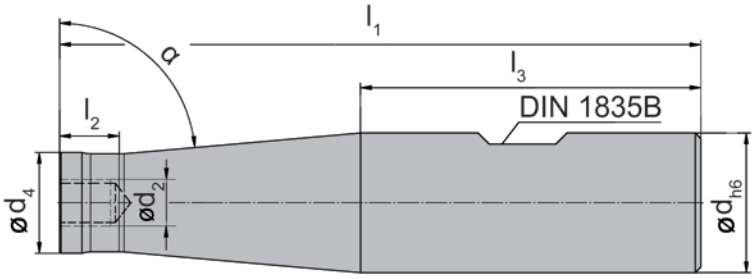
Bestellnummer Part number	l_1	l_2	l_3	d	d_4	d_2
MD13.02.00.D16B	73	14	53	16	13	M8
MD18.04.00.D20B	80	20	55	20	18	M10
MD21.06.00.D25B	91	23	61	25	21	M12
MD29.08.00.D32B	100	29	65	32	29	M16

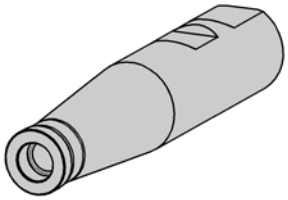
ab Ø 25 mm 2 Spannflächen
from Ø 25 mm 2 clamping flats

L

Aufnahme
Adaptor

MD





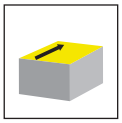
Bestellnummer Part number	l_1	l_2	l_3	d	d_4	d_2	α
MD13.02.85.D20B	105	7	55	20	13	M8	85°
MD18.04.85.D25B	115	10	61	25	18	M10	85°
MD21.06.85.D32B	140	8	65	32	21	M12	85°
MD29.08.85.D40B	150	8	75	40	29	M16	85°

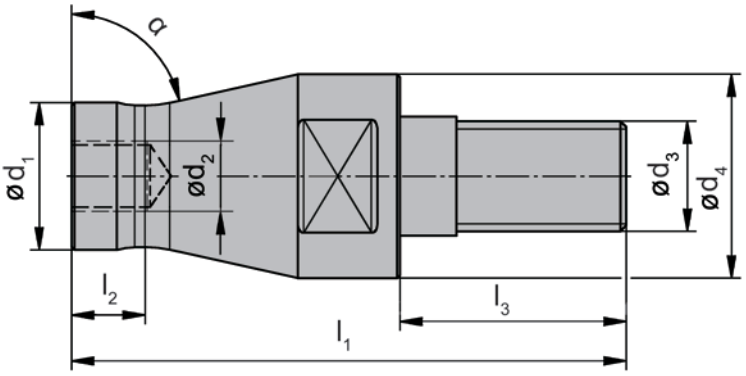
ab Ø 25 mm 2 Spannflächen
from Ø 25 mm 2 clamping flats

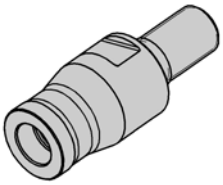
L

Reduzierstück
Reducer

MD

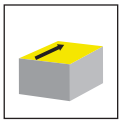


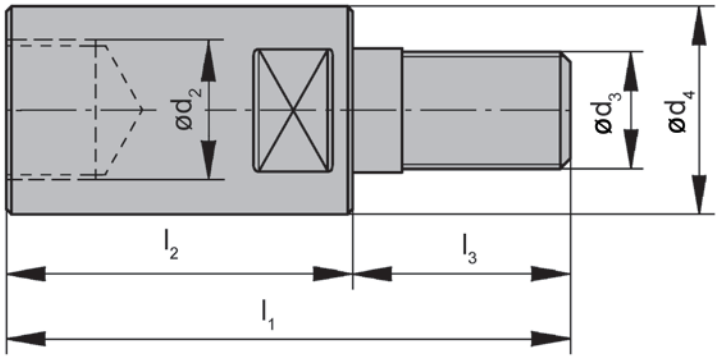


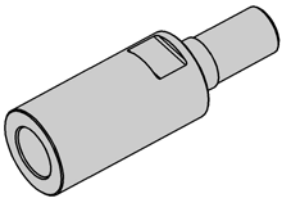


Bestellnummer Part number	l_1	l_2	l_3	d_1	d_2	d_3	d_4	SW	α
MD18.02.77.M10	49	6	20	13	M8	M10	18	15	77,5°
MD21.04.77.M12	56	10	22	18	M10	M12	21	17	77,5°
MD29.06.77.M16	52	6	23	21	M12	M16	29	24	77,5°

L



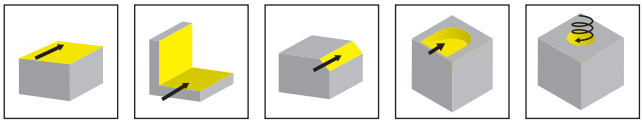


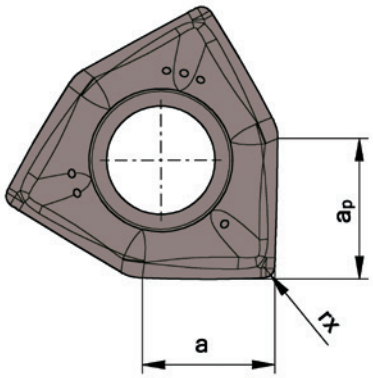


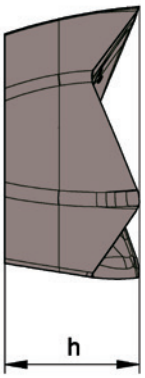
Bestellnummer Part number	l_1	l_2	l_3	d_2	d_3	d_4	SW
MD13.02.00.M08	48	30	18	M8	M8	13	10
MD18.04.00.M10	55	35	20	M10	M10	18	15
MD21.06.00.M12	57	35	22	M12	M12	21	17
MD29.08.00.M16	58	35	23	M16	M16	29	24

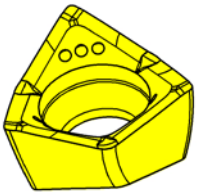
Wendeschneidplatte
Indexable insert

DA31









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

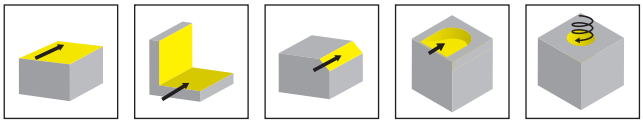
Bestellnummer Part number	Ds	a_p	a	h	r_x	HIS		SA4B	TA45
DA31.016.A.00	16	3	3	3,1	-	DA3116		▲	▲
DA31.016.A.02	16	3	3	3,1	0,2	DA3116		▲	▲
DA31.016.A.04	16	3	3	3,1	0,4	DA3116		▲	▲
DA31.020.A.00	20	3	3	3,1	-	DA3120		Δ	▲
DA31.020.A.02	20	3	3	3,1	0,2	DA3120		▲	▲
DA31.020.A.04	20	3	3	3,1	0,4	DA3120		▲	▲
DA31.025.A.00	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		▲	Δ
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		▲	▲
							P	●	●
							M	●	●
							K	●	●
							N	●	●
							S	-	●
							H	-	-

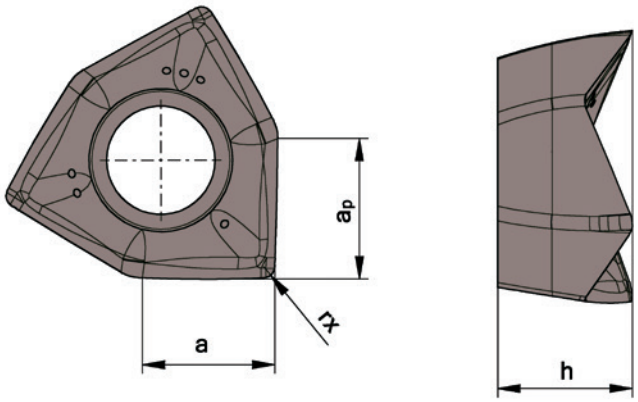
HM-Sorte TA45 bevorzugt für leichte Zerspanaufgaben, Aluminium und Schlichten. HM-Sorte SA4B bevorzugt für mittlere und schwere Zerspanaufgaben.
Carbide grade TA45 preferred for easy to machine materials, aluminium and finishing. Carbide grade SA4B preferred for middle and difficult to machine materials.

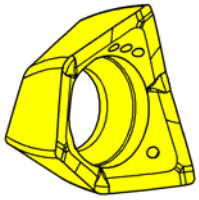
L

Wendeschneidplatte
Indexable insert

DA32







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	Ds	a_p	a	h	r_x	HIS	SA4B	TA45
DA32.020.A.00	20	4,8	4,6	4,7	-	DA3220	Δ	Δ
DA32.020.A.02	20	4,8	4,6	4,7	0,2	DA3220	▲	Δ
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	Δ	Δ
DA32.025.A.02	25	4,8	4,6	4,7	0,2	DA3225	▲	Δ
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	Δ	▲
DA32.032.A.00	32	4,8	4,6	4,7	-	DA3232	Δ	Δ
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	▲	▲

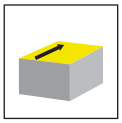
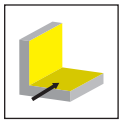
	SA4B	TA45
P	●	●
M	●	●
K	●	●
N	●	●
S	-	●
H	-	-

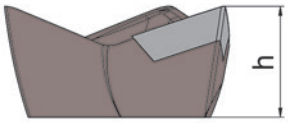
HM-Sorte TA45 bevorzugt für leichte Zerspanaufgaben, Aluminium und Schlichten. HM-Sorte SA4B bevorzugt für mittlere und schwere Zerspanaufgaben.
Carbide grade TA45 preferred for easy to machine materials, aluminium and finishing. Carbide grade SA4B preferred for middle and difficult to machine materials.

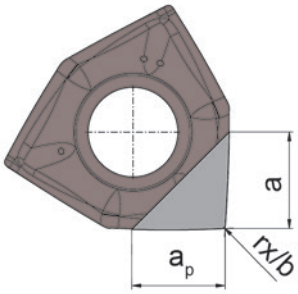
L

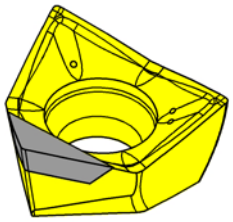
Schneidplatte
Insert

DA32



CVD-D







HM-Sorten
Carbide grades

▲ ab Lager
on stock

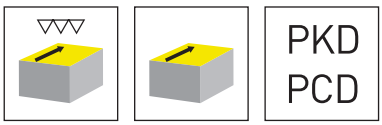
Δ 4 Wochen
4 weeks

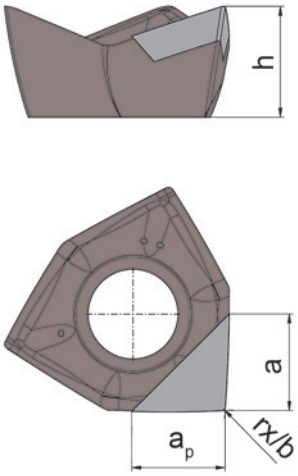
Bestellnummer Part number	Ds	a_p	a	h	r_x	b x 45°	HIS		HD05
DA32.020.25.02.C	20	3,8	3,5	4,7	0,2	-	DA3220		▲
DA32.020.25.X2.C	20	3,8	3,5	4,7	-	0,2	DA3220		Δ
DA32.025.25.02.C	25	3,8	3,5	4,7	0,2	-	DA3225		▲
DA32.025.25.X2.C	25	3,8	3,5	4,7	-	0,2	DA3225		Δ
DA32.032.25.02.C	32	3,8	3,5	4,7	0,2	-	DA3232		▲
DA32.032.25.X2.C	32	3,8	3,5	4,7	-	0,2	DA3232		▲
								P	-
								M	-
								K	-
								N	●
								S	-
								H	-

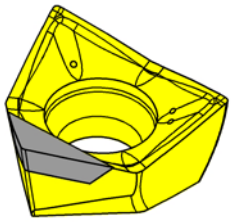
L

Schneidplatte
Insert

DA32







HM-Sorten
Carbide grades

▲ ab Lager
on stock

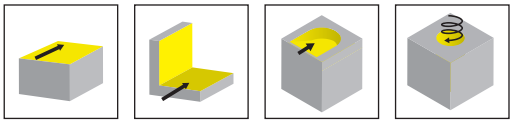
Δ 4 Wochen
4 weeks

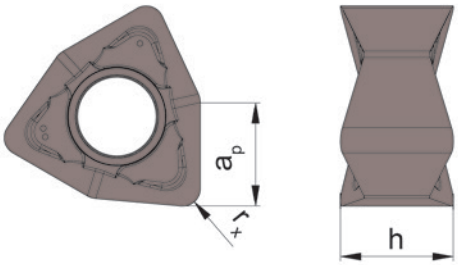
Bestellnummer Part number	Ds	a_p	a	h	r_x	HIS		PD75
DA32.020.25.02.P	20	3,8	3,5	4,7	0,2	DA3220		▲
DA32.025.25.02.P	25	3,8	3,5	4,7	0,2	DA3225		▲
DA32.032.25.02.P	32	3,8	3,5	4,7	0,2	DA3232		▲
							P	-
							M	-
							K	-
							N	●
							S	-
							H	-

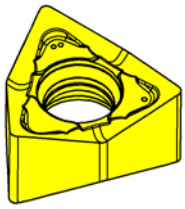
L

Wendeschneidplatte
Indexable insert

DA62







HM-Sorten
Carbide grades

▲ ab Lager
on stock

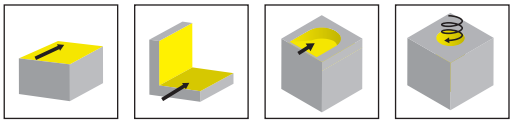
Δ 4 Wochen
4 weeks

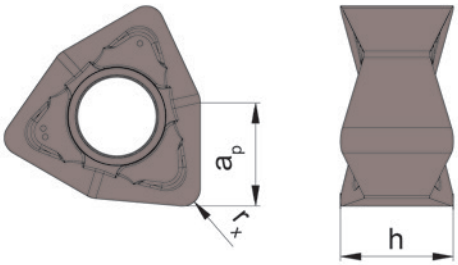
Bestellnummer Part number	a_p	h	r_x	HIS		SA4B	SD6A
DA62.0400.A.04	4,5	5,2	0,4	DA6200		▲	▲
DA62.0400.A.08	4,5	5,16	0,8	DA6200		▲	▲
					P	●	o
					M	●	-
					K	●	●
					N	●	-
					S	-	-
					H	-	-

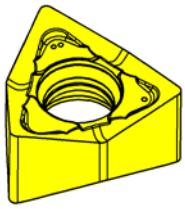
L

Wendeschneidplatte
Indexable insert

SDA62







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	a_p	h	r_x	HIS		SA4B
SDA62.0400.A.08	4,5	5,16	0,8	DA6200		▲
					P	●
					M	●
					K	●
					N	●
					S	-
					H	-

präzisionsgesintert
precision sintered

L

Eintauchwinkel, senkrecht Eintauchen seitlich und ins Volle, Aufbohren beim 90° Fräsen
Ramp angle and plunging with a 90° milling cutter

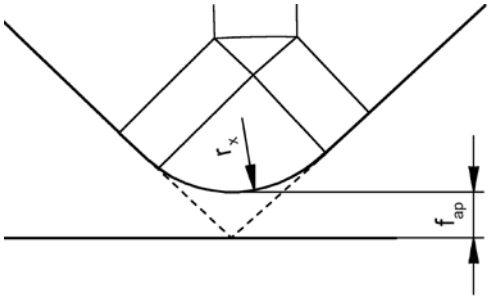
Ø (mm) Plattengröße / Insert size	32 DA32	25 DA32	20 DA32	32 DA31	25 DA31	20 DA31	16 DA31
Eintauchwinkel (°) Diving angle (°)	3,5°	3,5°	3,5°	4,0°	3,5°	3,5°	3,0°
max. senkrecht eintauchen ins Volle (mm) vertical full diving max. (mm)	1,0	0,6	0,4	1,7	0,8	0,6	0,4
Senkrecht eintauchen, max. seitliche Zustellung a_e (mm) vertical side diving a_e max. (mm)	4,6	4,6	4,6	3,1	3,1	3,1	3,1
Aufbohren, mind. Vorbohren mit D_b (mm) Predrilling D_b min. (mm)	22,8	15,8	10,8	25,8	18,8	13,8	9,8

Eintauchwinkel und senkrecht Eintauchen beim 45°-Fräsen
Ramp angle and plunging with a 45° milling cutter

Ø (mm) Plattengröße / Insert size	17 DA32	14,4 DA31	10,5 DA31
Eintauchwinkel (°) Diving angle (°)	11°	7°	10,5°
max. senkrecht eintauchen ins Volle (mm) vertical full diving max. (mm)	3,2	2,0	2,0

Korrekturfaktor für verringerte Schnitttiefe in Abhängigkeit vom Eckenradius beim 45° Fräsen
Correction factor for reduced cutting depth in consideration to the corner radius when 45° milling

DA31/32 Eckenradius r_x (mm) Corner radius r_x (mm)	DA31/32 Korrekturfaktor f_{ap} (mm) DA31/DA32 Correction factor f_{ap} (mm)
0	0
0,2	0,078
0,4	0,17
0,8	0,33
1,0	0,41



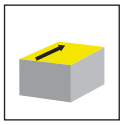
Eintauchwinkel DA62
Ramp angle DA62

Schneidkreis-Ø [mm] Cutting edge Ø [mm]	Eintauchwinkel [°] Diving angle [°]
20	2,4
25	1,75
32	1,25
40	0,95
50	0,7
63	0,55
80	0,4

Schnittgeschwindigkeiten finden Sie im Kapitel N in diesem Katalog.

Cutting speeds can be found in chapter N in this catalogue.

Schaftfräser
End Mill
DAHM25/DAHM37/
DAHM82



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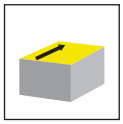
522-523, 527, 533

Einschraubfräser
Screw-in cutter
DAHM25/DAHM37/
DAHM82



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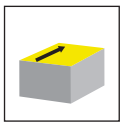
524, 528, 534

Wendeschneidplatte
Indexable insert
DAH25/DAH37/DAH82/
DAH84



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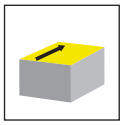
525, 530-531,
536, 538

Aufsteckfräser
Arbour Mounted Cutter
DAHM37/DAHM82/
DAHM84



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Technische Hinweise
Technical Instructions

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L

DAH

Hochvorschubfräsen System DAH

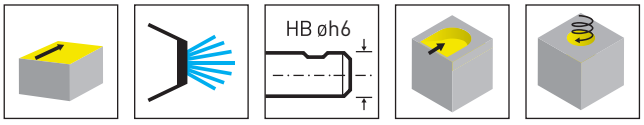
- Schaftfräser
- Aufsteckfräser
- Einschraubfräser
- Wendeschneidplatten

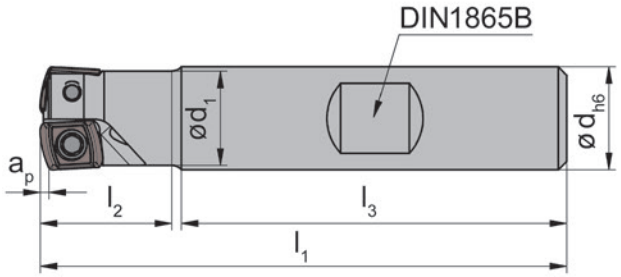
High feed milling System DAH

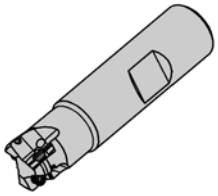
- End Mill
- Arbour Mounted Cutter
- Screw-in Cutter
- Indexable Inserts

Schaftfräser
End Mill

DAHM25







Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	HWS
DAHM.25.012.D122.02B	2	12	12	61,5	15	11	45	1	DAH25
DAHM.25.016.D163.03B	3	16	16	69,5	20	14,5	48	1	DAH25
DAHM.25.020.D204.03B	3	20	20	76,5	25	18	50	1	DAH25

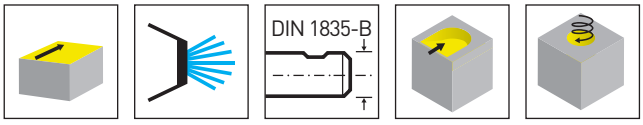
L

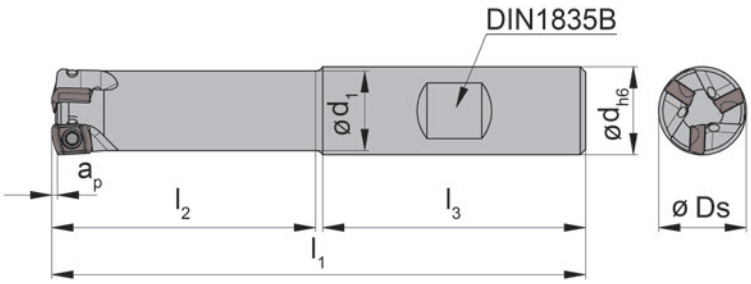
Ersatzteile
Spare Parts

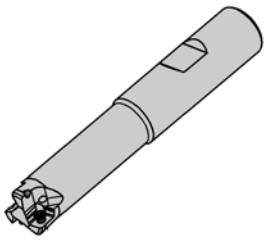
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM.25.012.D122.02B	**030.2547.T8P**	**T8PL**
DAHM.25....	**030.2553.T8P**	**T8PL**

Schaftfräser
End Mill

DAHM25







Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	HWS
DAHM.25.012.D124.02B	2	12	12	82,5	36	11,5	45	1	DAH25
DAHM.25.016.D165.02B	2	16	16	97,5	48	15,4	48	1	DAH25
DAHM.25.016.D165.03B	3	16	16	97,5	48	15,4	48	1	DAH25
DAHM.25.020.D206.03B	3	20	20	111,5	60	19	50	1	DAH25
DAHM.25.025.D257.04B	4	25	25	132,5	75	24	56	1	DAH25

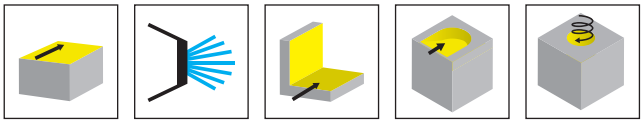
Ersatzteile
Spare Parts

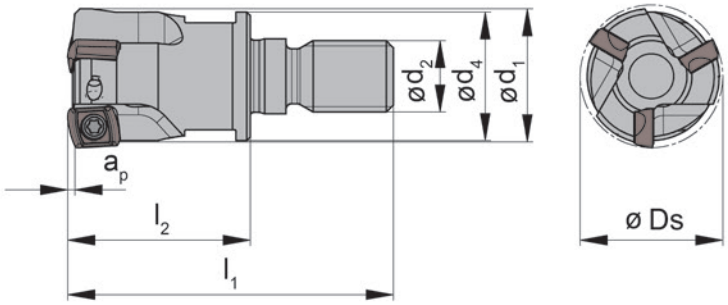
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM.25.012.D124.02B	**030.2547.T8P**	**T8PL**
DAHM.25....	**030.2553.T8P**	**T8PL**

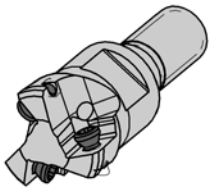
L

Einschraubfräser
Screw-in cutter

DAHM25







Bestellnummer Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	HWS	HMS
DAHM.25.012.M062.02	2	12	26	13,5	11	1	M6	11,5	DAH25	6001
DAHM.25.016.M083.02	2	16	39	20,5	13	1	M8	15,4	DAH25	08001
DAHM.25.016.M083.03	3	16	39	20,5	13	1	M8	15,4	DAH25	08001
DAHM.25.020.M104.03	3	20	45	25,5	18	1	M10	19	DAH25	10001
DAHM.25.025.M125.04	4	25	50	28	21	1	M12	24	DAH25	12001

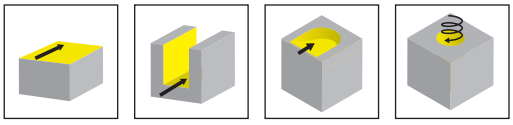
L

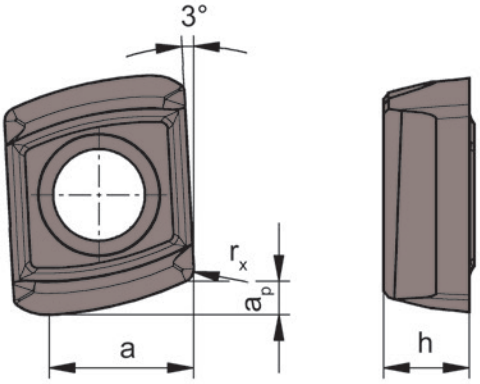
Ersatzteile
Spare Parts

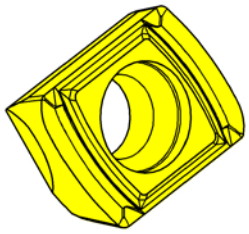
Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM.25.012.M062.02	**030.2547.T8P**	**T8PL**
DAHM.25....	**030.2553.T8P**	**T8PL**

Wendeschneidplatte
Indexable insert

DAH25







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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	-

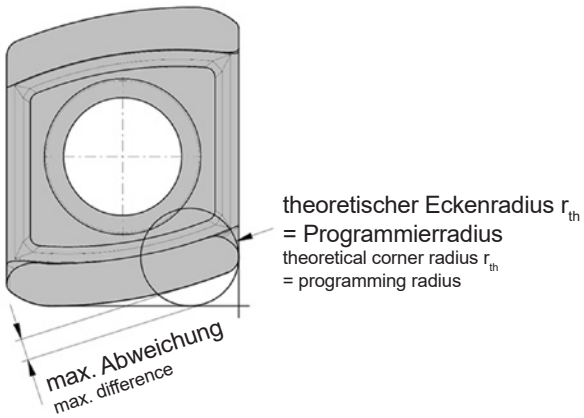
L

Eintauchwinkel
Diving angle

Schneidkreis-Ø (mm) Cutting edge Ø (mm)	Eintauchwinkel (°) Diving angle (°)
12	6,5
16	2,5
20	1,5
25	1,0

Programmierradius und Abweichung
Programming radius and difference

r_{th} (mm)	max. Abweichung (mm) max. difference (mm)
1,4	0,61



Zur Ermittlung der Drehzahl und der Schnittgeschwindigkeit muss mit dem effektiven Durchmesser d_{eff} gerechnet werden.
Dieser berechnet sich in Abhängigkeit der Schnitttiefe a_p, dem Schneidkreisdurchmesser Ds und dem Korrekturwert K_D zu:
$d_{eff} = K_D + (Ds - 12)$

The effective cutting diameter d_{eff} must be calculated to obtain the correct RPM and the cutting feed.
The effective cutting diameter is calculated using the following values and formula.
a_p = depth of cut
Ds = cutter diameter
K_D = from Correction value chart
$d_{eff} = K_D + (Ds - 12)$

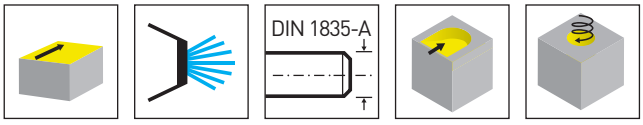
Korrekturwert
Correction value

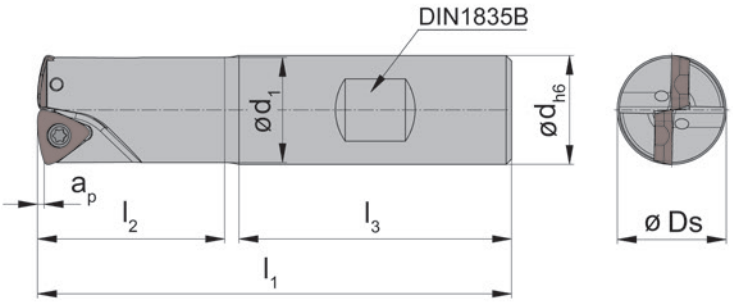
a_p [mm]	K_D [mm]
0,1	5,3
0,2	6,5
0,3	7,4
0,4	8,1
0,5	8,8
0,6	9,4
0,7	10,0
0,8	10,5
0,9	11,0
1,0	12,0

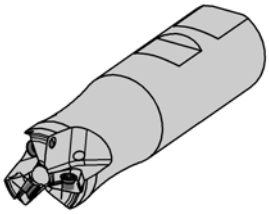
Schnittgeschwindigkeiten finden Sie im Kapitel N in diesem Katalog.
Cutting speeds can be found in chapter N in this catalogue.

Schaftfräser
End Mill

DAHM37







Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	HWS
DAHM.37.020.D204.02B	2	20	20	87	34	19	50	1,2	DAH37
DAHM.37.025.D255.03B	3	25	25	101	41	24	56	1,2	DAH37
DAHM.37.032.D326.04B	4	32	32	111	47	31	60	1,2	DAH37

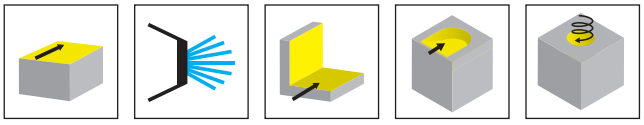
Ersatzteile
Spare Parts

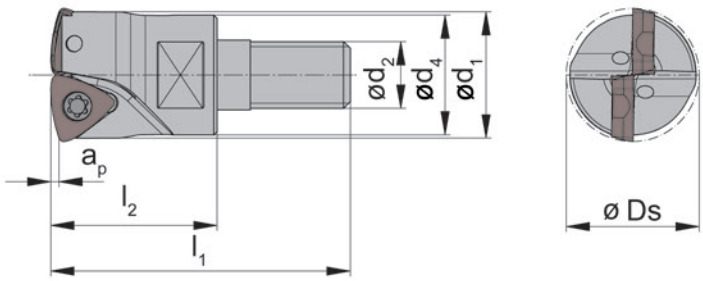
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM...	**030.3070.T10P**	**T10PL**

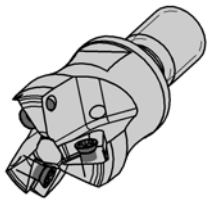
L

Einschraubfräser
Screw-in cutter

DAHM37







Bestellnummer Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	SW	HWS	HMS
DAHM.37.020.M104.02	2	20	45	25	19	1,2	M10	18	15	DAH37	10001
DAHM.37.025.M125.03	3	25	52	30	24	1,2	M12	21	17	DAH37	12001
DAHM.37.032.M166.04	4	32	58	35	31	1,2	M16	29	24	DAH37	16001
DAHM.37.040.M166.05	5	40	58	35	39	1,2	M16	29	24	DAH37	16001

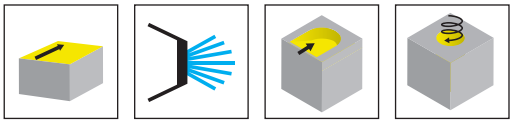
L

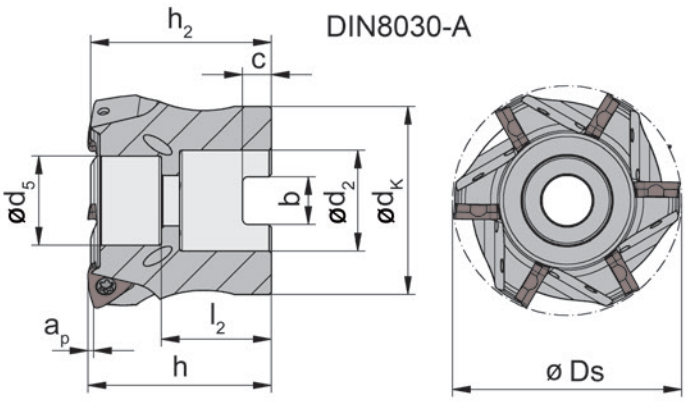
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM...	**030.3070.T10P**	**T10PL**

Aufsteckfräser
Arbour Mounted Cutter

DAHM37





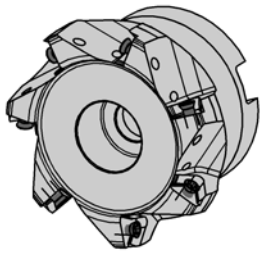


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	a_p	h_2	h	d_5	d_K	l_2	b	C	d_2	HWS
DAHM.37.040.A1635.05	5	40	1,2	34,4	35	16	33	22	8,4	5,6	16	DAH37
DAHM.37.050.A2235.06	6	50	1,2	39,4	40	19,5	41	24	10,4	6,3	22	DAH37
DAHM.37.063.A2240.07	7	63	1,2	39,4	40	19,5	49	24	10,4	6,3	22	DAH37
DAHM.37.063.A2740.07	7	63	1,2	44,4	45	21,5	49	27	12,4	7	27	DAH37
DAHM.37.080.A3245.08	8	80	1,2	54,4	55	29,5	59	33	12,4	8	32	DAH37

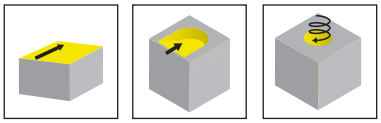
Ersatzteile
Spare Parts

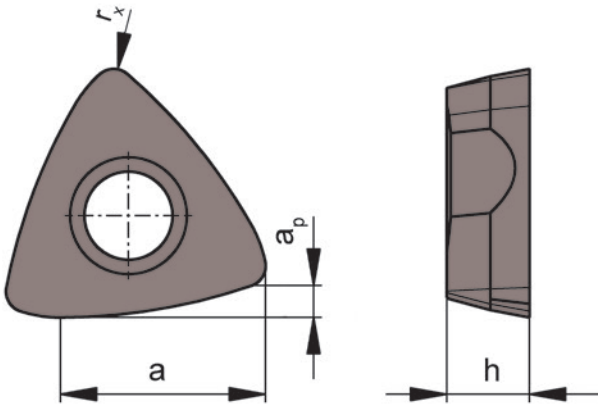
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM...	**030.3070.T10P**	**T10PL**

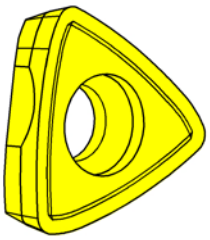
L

Wendeschneidplatte
Indexable insert

DAH37







HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

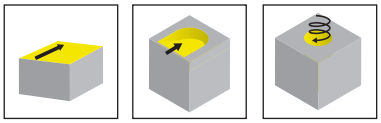
Bestellnummer Part number	a_p	a	h	r_x	HIS		SA4B	SC6A
DAH.37.022.N.08	1,2	7,9	3,18	0,8	DAH37		▲	▲
						P	●	●
						M	●	●
						K	●	●
						N	●	●
						S	-	-
						H	-	-

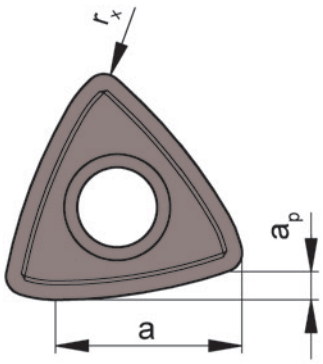
neutrale Geometrie
neutral geometry

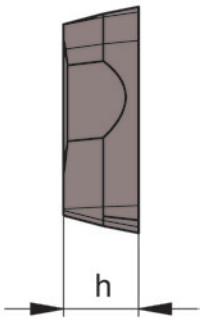
L

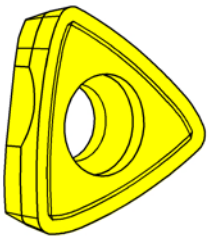
Wendeschneidplatte
Indexable insert

DAH37









HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	a_p	a	h	r_x	HIS		SA4B
DAH.37.022.S.08	1,2	7,9	3,18	0,8	DAH37		▲
						P	●
						M	●
						K	●
						N	●
						S	-
						H	-

positive Geometrie
positive geometry

L

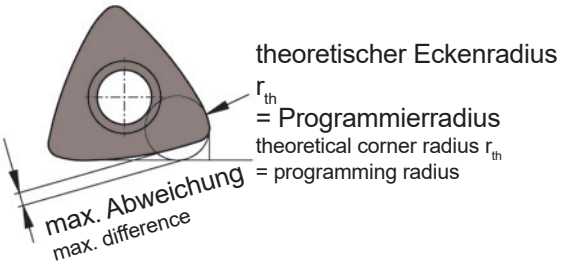
Technische Hinweise DAH37
Technical Data

Eintauchwinkel
Diving angle

Ø (mm)	Eintauchwinkel (°) Diving angle (°)
20	5,0
25	4,0
32	1,0
40	0,5
50	0,5
63	0,4
80	0,4

Programmierradius und Abweichung
Programming radius and difference

r_{th} (mm)	max. Abweichung (mm) max. difference (mm)
2	0,83



Zur Ermittlung der Drehzahl und der Schnittgeschwindigkeit muss mit dem effektiven Durchmesser d_{eff} gerechnet werden.
Dieser berechnet sich in Abhängigkeit der Schnitttiefe a_p, dem Schneidkreisdurchmesser Ds und dem Korrekturwert K_D zu:
$d_{eff} = K_D + (Ds - 20)$

The effective cutting diameter d_{eff} must be calculated to obtain the correct RPM and the cutting feed.
The effective cutting diameter is calculated using the following values and formula.
a_p = depth of cut
Ds = cutter diameter
K_D = from Correction value chart
$d_{eff} = K_D + (Ds - 20)$

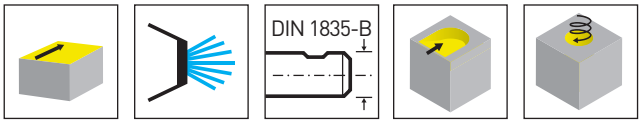
Korrekturwert
Correction value

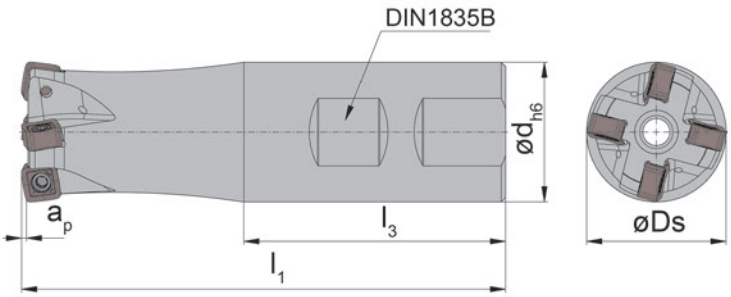
a_p [mm]	K_D [mm]
0,1	9,71
0,2	11,47
0,3	12,81
0,4	13,93
0,5	14,92
0,6	15,82
0,7	16,63
0,8	17,39
0,9	18,10
1,0	18,77
1,1	19,40
1,2	20,00

Schnittgeschwindigkeiten finden Sie im Kapitel N in diesem Katalog.
Cutting speeds can be found in chapter N in this catalogue.

Schaftfräser
End Mill

DAHM82





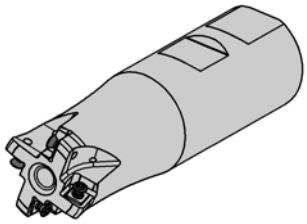


Abbildung = rechtsschneidend
Picture = right hand cutting version

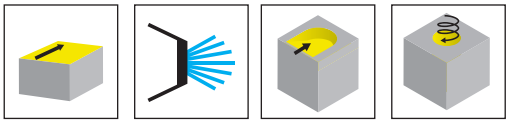
Bestellnummer Part number	Z	Ds	d	l_1	l_3	a_p	n_{max}	HWS
DAHM.82.020.D204.02B	2	20	20	87	50	1	21000	DAH82
DAHM.82.025.D255.03B	3	25	25	101	56	1	18500	DAH82
DAHM.82.032.D326.04B	4	32	32	111	60	1	16500	DAH82
DAHM.82.035.D326.04B	4	35	32	111	60	1	15500	DAH82
DAHM.82.040.D326.05B	5	40	32	111	60	1	14500	DAH82

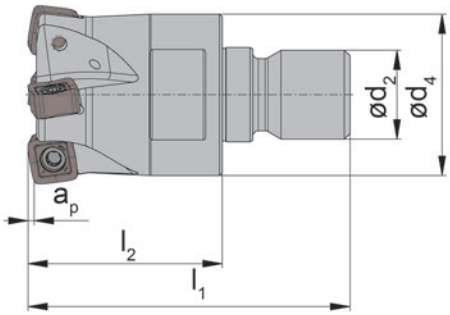
Ersatzteile
Spare Parts

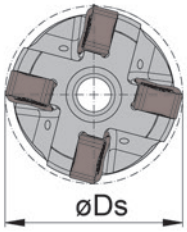
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM...	**030.3070.T10P**	**T10PL**

Einschraubfräser
Screw-in cutter

DAHM82







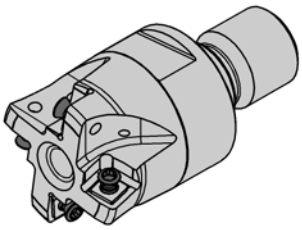


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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

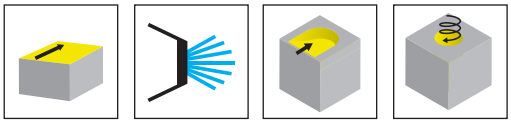
L

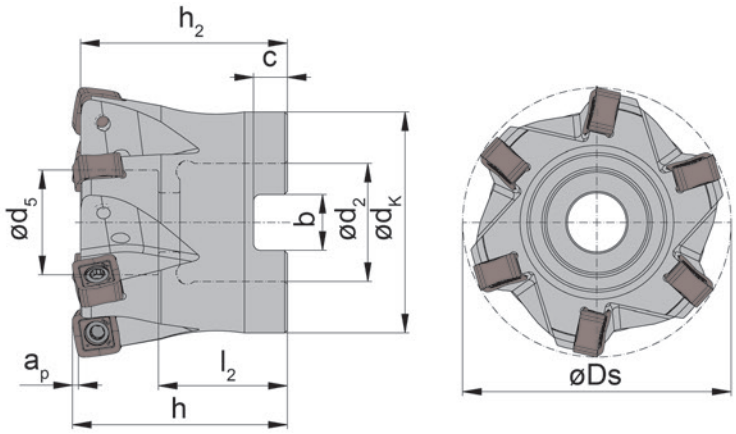
Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM...	**030.3070.T10P**	**T10PL**

Aufsteckfräser
Arbour Mounted Cutter

DAHM82





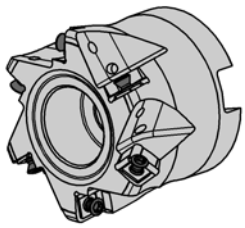


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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.82.042.A1635.05	5	42	1	33,5	35	16	33	22	8,4	5,6	16	14000	DAH82
DAHM.82.050.A2240.06	6	50	1	38,5	40	19,5	41	24	10,4	6,3	22	13000	DAH82
DAHM.82.052.A2240.06	6	52	1	38,5	40	19,5	41	24	10,4	6,3	22	13000	DAH82
DAHM.82.063.A2240.07	7	63	1	38,5	40	19,5	49	24	10,4	6,3	22	13000	DAH82

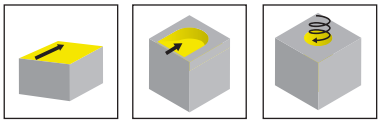
Ersatzteile
Spare Parts

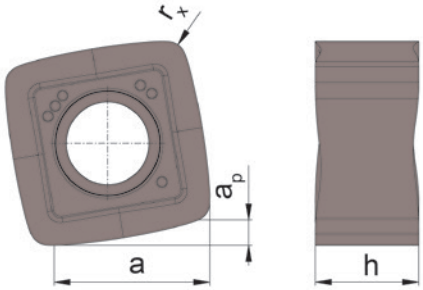
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
DAHM...	**030.3070.T10P**	**T10PL**

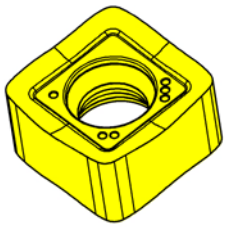
L

Wendeschneidplatte
Indexable insert

DAH82







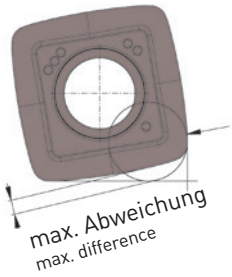
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer 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		▲	▲	▲
positive Geometrie positive geometry						P	●	●	●
						M	o	●	●
						K	o	●	●
						N	o	●	●
						S	o	-	-
						H	-	-	-

Programmierradius und Abweichung
Programming radius and difference



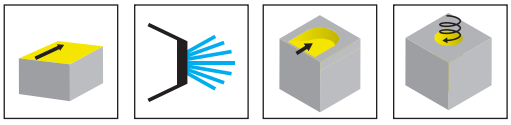
theoretischer Eckenradius r_{th}
= Programmierradius
theoretical corner radius r_{th}
= programming radius

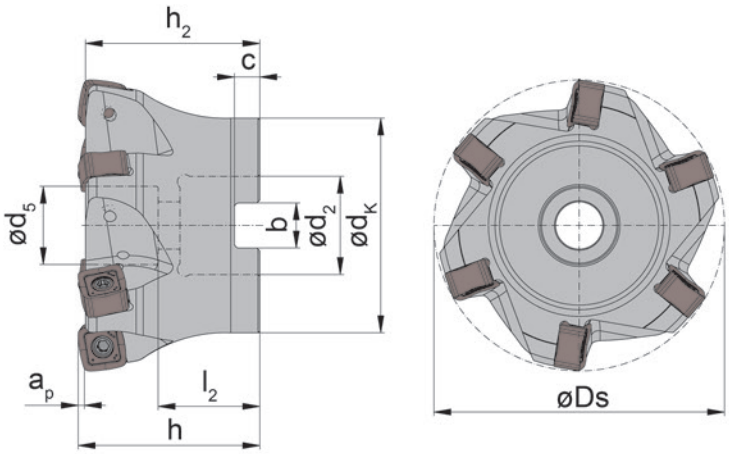
r_{th}(mm)	max. Abweichung (mm) max. difference (mm)
2	0,72

L

Aufsteckfräser
Arbour Mounted Cutter

DAHM84





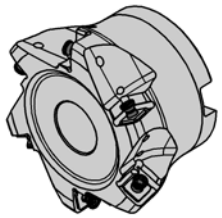


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	a_p	h_2	h	d_5	d_K	l_2	b	C	d_2	n_{max}	HWS
DAHM.84.050.A2240.04	4	50	1,5	38	40	16,5	41	25	10,4	6,3	22	8000	DAH84
DAHM.84.052.A2240.04	4	52	1,5	38	40	16,5	41	25	10,4	6,3	22	7500	DAH84
DAHM.84.063.A2240.05	5	63	1,5	38	40	19,5	49	25	10,4	6,3	22	6500	DAH84
DAHM.84.066.A2240.05	5	66	1,5	38	40	19,5	49	25	10,4	6,3	22	6500	DAH84
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

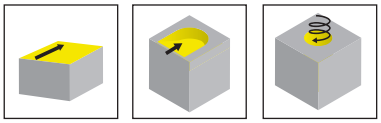
Ersatzteile
Spare Parts

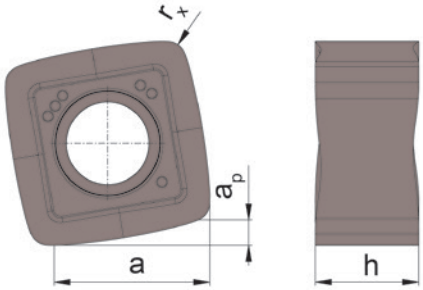
Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
DAHM.84...	**030.0412.T15P**	**T15PQ**	
DAHM.84.125.A4063.08	**030.0412.T15P**	**T15PQ**	**20.30.6367**

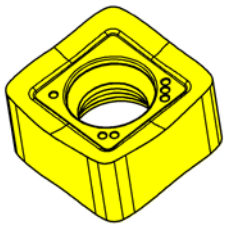
L

Wendeschneidplatte
Indexable insert

DAH84







HM-Sorten
Carbide grades

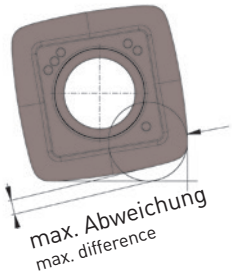
▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

Bestellnummer Part number	a_p	a	h	r_x	HIS		IG6B	SA4B	SC6A
DAH.84.030.S.12	1,5	9,8	7	1,2	DAH84		▲	▲	▲
						P	●	●	●
						M	o	●	●
						K	o	●	●
						N	o	●	●
						S	o	-	-
						H	-	-	-

positive Geometrie
positive geometry

Programmierradius und Abweichung
Programming radius and difference



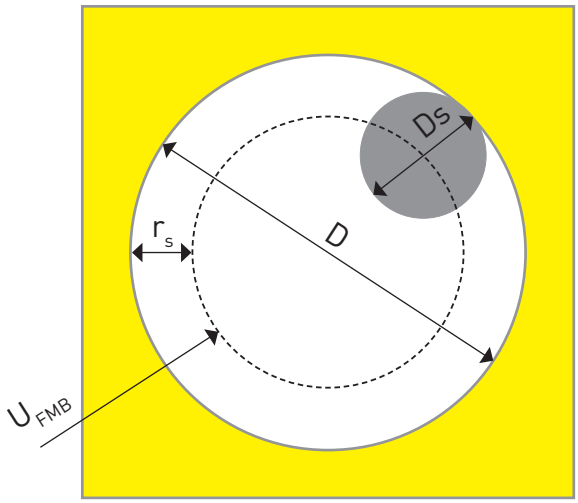
theoretischer Eckenradius r_{th}
= Programmierradius
theoretical corner radius r_{th}
= programming radius

r_{th} (mm)	max. Abweichung (mm) max. difference (mm)
3,25	0,96

L

Berechnung Fräsermittelpunktsbahn

D = Bohrungsdurchmesser Werkstück
Ds = Schneidkreisdurchmesser
r_s = Schneidkreisradius
U_{FMB} = Umfang Fräsermittelpunktsbahn



U_{FMB} = π x (Bohrungsdurchmesser Werkstück - Schneidkreisdurchmesser)

→ $U_{FMB} = \pi \times (D - Ds)$

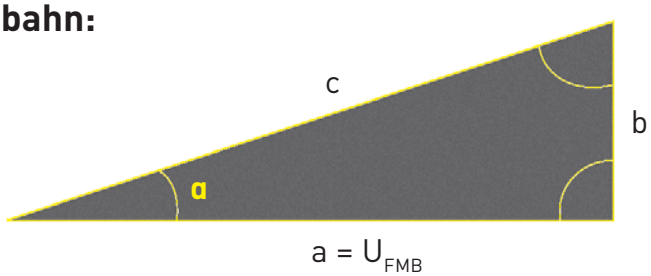
oder

U_{FMB} = π x (Bohrungsdurchmesser Werkstück - (2 x Schneidkreisradius))

→ $U_{FMB} = \pi \times (D - (2 \times r_s))$

Berechnung über Fräsermittelpunktsbahn: Basis ist das rechtwinklige Dreieck

α = Rampenwinkel
b = Schnitttiefe je Umdrehung (Steigung)
a = Umfang Fräsermittelpunktsbahn



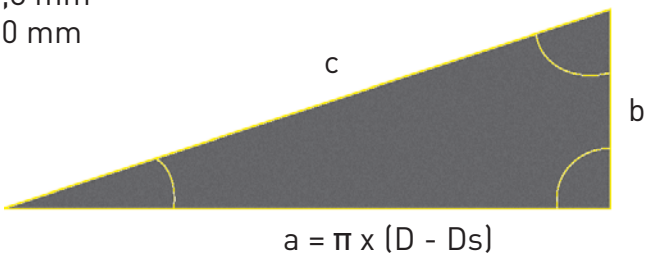
Beispielbetrachtung fehlender Rampenwinkel = ?

Bohrungsdurchmesser Werkstück	D	= 98 mm
Schnitttiefe je Umdrehung	b	= 0,8 mm
Schneidkreisdurchmesser	Ds	= 50 mm

$$\tan\alpha = \frac{\text{Gegenkathete b}}{\text{Ankathete a}}$$

$$\tan\alpha = \frac{0{,}8\ \text{mm}}{150{,}8\ \text{mm}}$$

α = 0,30°



L

Fräsermittelpunktsbahn - Theoretisch ermittelte Werte

DAH82	
Schneidkreis-Ø [mm]	Eintauchwinkel [°]
20	5
25	3,9
32	2,8
35	2,4
40	1,9
42	1,8
50	1,4

DAH84	
Schneidkreis-Ø [mm]	Eintauchwinkel [°]
50	2,7
52	2,5
63	1,8
66	1,7
80	1,3
85	1,2
100	1,0
125	0,8

Empfehlung helikales Eintauchen DAH82:

$a_{p\,max}$ = 1 mm

→ Zustellung je Umdrehung: 50% des $a_{p\,max}$ als Startwert

→ je nach Verhältnisse bis 80 % des $a_{p\,max}$ möglich

→ 0,5 mm bis 0,8 mm Zustellung je Umdrehung

Empfehlung helikales Eintauchen DAH84:

$a_{p\,max}$ = 1,5 mm

→ Zustellung je Umdrehung: 67% des $a_{p\,max}$ als Startwert

→ je nach Verhältnisse bis 80 % des $a_{p\,max}$ möglich

→ 1,0 mm bis 1,2 mm Zustellung je Umdrehung

Berechnung Bohrungsdurchmesser ebener Grund DAH82

D_{min} = (Ds - a) x 2

D_{min} = (50 mm - 6,8 mm) x 2

D_{min} = 86,4 mm

Bedeutet:

Mit dem Schneidkreisdurchmesser 50 mm ist ein Durchmesser von 86,4 mm mit ebenem Grund zu erreichen.

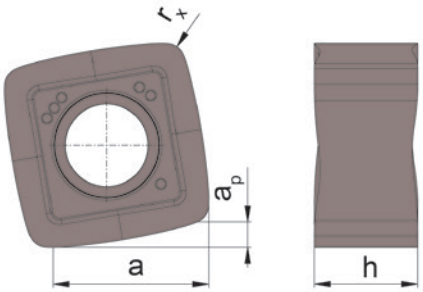
D_{max} = (Ds - r_x) x 2

D_{max} = (50 mm - 0,8 mm) x 2

D_{max} = 98,4 mm

Bedeutet:

Mit dem Schneidkreisdurchmesser 50 mm ist ein Durchmesser von 98,4 mm **ohne** ebenem Grund zu erreichen. Es bleibt Restmaterial in der Mitte stehen.



r_x = 0,8 mm

a = 6,8 mm

L

Berechnung Bohrungsdurchmesser ebener Grund DAH84

D_{min} = (Ds - a) x 2

D_{min} = (50 mm - 9,8 mm) x 2

D_{min} = 80,4 mm

Bedeutet:

Mit dem Schneidkreisdurchmesser 50 mm ist ein Durchmesser von 80,4 mm mit ebenem Grund zu erreichen.

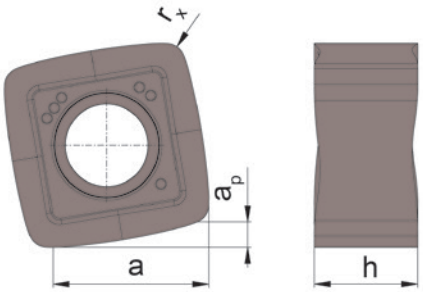
D_{max} = (Ds - r_x) x 2

D_{max} = (50 mm - 1,2 mm) x 2

D_{max} = 97,6 mm

Bedeutet:

Mit dem Schneidkreisdurchmesser 50 mm ist ein Durchmesser von 97,6 mm **ohne** ebenem Grund zu erreichen. Es bleibt Restmaterial in der Mitte stehen.



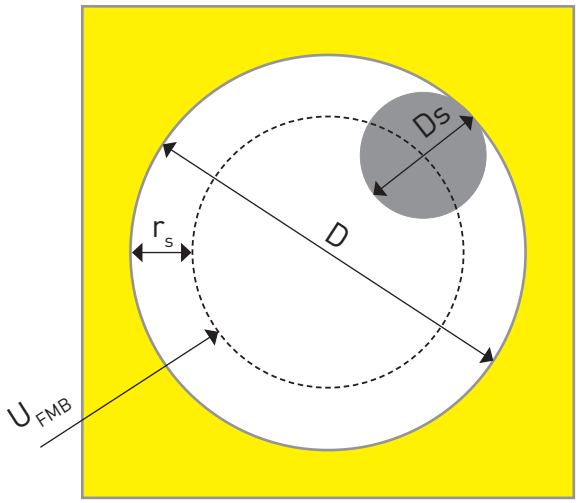
r_x = 1,2 mm

a = 9,8 mm

L

Calculation of cutter centre path

D = Bore diameter of workpiece
Ds = Cutting diameter
r_s = Cutting radius
U_{FMB} = Circumference of cutter centre path



U_{FMB} = π x (Bore diameter of workpiece - Cutting diameter)

→ $U_{FMB} = \pi \times (D - Ds)$

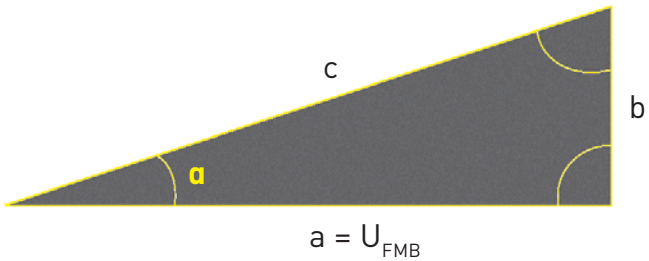
or

U_{FMB} = π x (Bore diameter of workpiece - (2 x Cutting radius))

→ $U_{FMB} = \pi \times (D - (2 \times r_s))$

Calculation using cutter centre path: The basis is the right-angled triangle

α = Ramp angle
b = Depth of cut per rotation (Pitch)
a = Circumference of cutter centre path



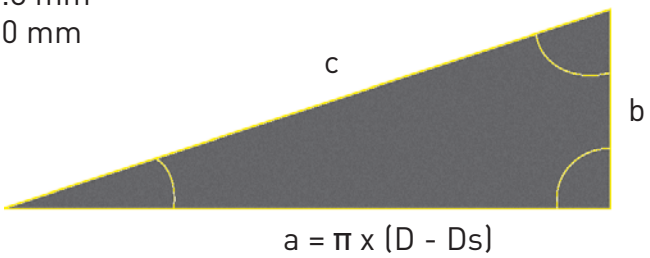
Example of missing ramp angle = ?

Bore diameter of workpiece	D	= 98 mm
Depth of cut per rotation	b	= 0.8 mm
Cutting diameter	Ds	= 50 mm

$$\tan\alpha = \frac{\text{Opposite side b}}{\text{Adjacent side a}}$$

$$\tan\alpha = \frac{0.8\ \text{mm}}{150.8\ \text{mm}}$$

$\alpha = 0.30°$



L

Cutter centre path - Theoretical values

DAH82	
Cutting Ø [mm]	Plunge angle [°]
20	5
25	3.9
32	2.8
35	2.4
40	1.9
42	1.8
50	1.4

DAH84	
Cutting Ø [mm]	Plunge angle [°]
50	2.7
52	2.5
63	1.8
66	1.7
80	1.3
85	1.2
100	1.0
125	0.8

Recommendation for helical plunging DAH82:

$a_{p\ max}$ = 1 mm

→ Feed per revolution: 50% of $a_{p\ max}$ as starting value

→ Depending on conditions, up to 80 % of the $a_{p\ max}$ possible

→ 0.5 mm up to 0.8 mm feed per revolution

Recommendation for helical plunging DAH84:

$a_{p\ max}$ = 1.5 mm

→ Feed per revolution: 67% of $a_{p\ max}$ as starting value

→ Depending on conditions, up to 80 % of the $a_{p\ max}$ possible

→ 1.0 mm up to 1.2 mm feed per revolution

Calculation of bore diameter with flat base DAH82

D_{min} = (Ds - a) x 2

D_{min} = (50 mm - 6.8 mm) x 2

D_{min} = 86.4 mm

Meaning:

With a cutting diameter 50 mm, a bore diameter of 86.4 mm **with** a flat base can be achieved.

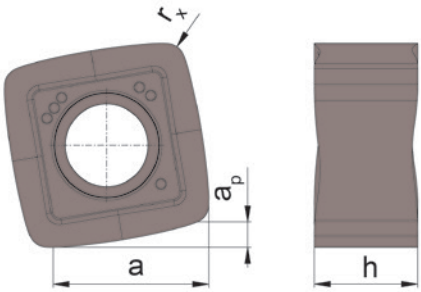
D_{max} = (Ds - r_x) x 2

D_{max} = (50 mm - 0.8 mm) x 2

D_{max} = 98.4 mm

Meaning:

With a cutting diameter 50 mm, a diameter of 98.4 mm **without** a flat base can be achieved. Material remains in the centre.



r_x = 0.8 mm

a = 6.8 mm

L

Calculation of bore diameter with flat base DAH84

D_{min} = (Ds - a) x 2

D_{min} = (50 mm - 9.8 mm) x 2

D_{min} = 80.4 mm

Meaning:

With a cutting diameter 50 mm, of a bore diameter of 80.4 mm **with** a flat base can be achieved.

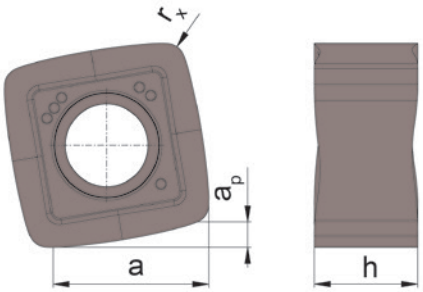
D_{max} = (Ds - r_x) x 2

D_{max} = (50 mm - 1.2 mm) x 2

D_{max} = 97.6 mm

Meaning:

With a cutting diameter 50 mm, a diameter of 97.6 mm **without** a flat base can be achieved. Material remains in the centre.



r_x = 1.2 mm

a = 9.8 mm

L

DAH8 - Korrekturwert Planfräsen

DAH8 - Correction value face milling

Korrekturwert - warum?

Correction factors - why?

- Bei der Verwendung eines Hochvorschubfräsers ist der effektive Schneidkreis durchmesser nicht identisch mit dem angegebenen Schneidkreis
- Die Korrekturwerte stehen in Abhängigkeit der Schnitttiefe a_p.
- Dies gilt für die Bearbeitung des Planfräsens.
- Berechnung für Ds effektiv für das Planfräsen: **Ds effektiv = Ds - K**

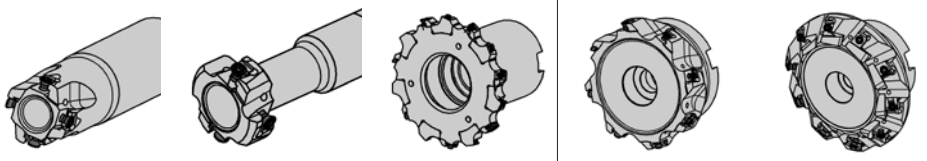
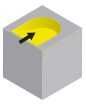
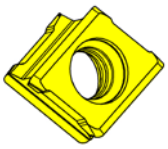
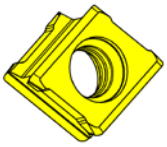
- When using a high feed milling cutter, the effective cutting diameter is not identical with the specified value.
- The correction factors are dependent on the cutting depth a_p.
- This applies to face milling.
- Calculation for Ds effective for face milling: **Ds effective = Ds - K**

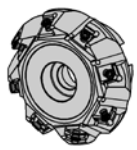
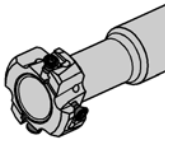
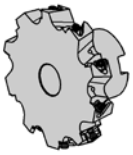
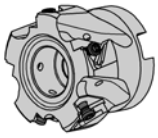
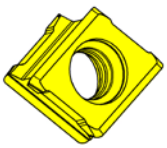
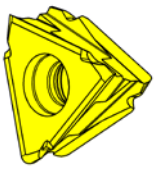
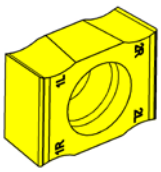
DAH82	
Schnitttiefe Depth of cut a_p [mm]	Korrekturwert Correction factor K [mm]
0,1	10,9
0,2	9,5
0,3	8,3
0,4	7,0
0,5	5,9
0,6	4,8
0,7	3,9
0,8	3,0
0,9	2,2
1,0	1,6

DAH84	
Schnitttiefe Depth of cut a_p [mm]	Korrekturwert Correction factor K [mm]
0,1	16,3
0,2	14,6
0,3	13,0
0,4	11,7
0,5	10,4
0,6	9,3
0,7	8,2
0,8	7,3
0,9	6,4
1,0	5,6
1,1	4,9
1,2	4,1
1,3	3,5
1,4	2,8
1,5	2,3

System/System	Seite/Page
M406	**554**
M409	**564**
M610	**590**

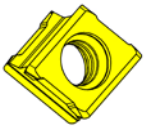
Übersicht Tangential-Fräser
Overview Tangential Mill

Systeme Systems	M406			M409		
						
	X			X	X	
	X			X	X	
	X			X		
					X	
		X	X			
	X			X		
						
Eignung Suitability						
P	●		●	●	●	
M	●			●	●	
K	●		●	●	●	
N	●			●	●	
S	●			●	●	
H						
D_c (mm)	16-40	25	100	32-250	40-250	
a_{pmax} (mm)	6,3	W = 11	W = 9,6-12,9	9,3	6,2	
		406		409		
						
Schneidkanten Cutting edges		4		4		

	M409				M610		M475
							
	X				X		
					X		
		X			X		
			X				
		X		X	X		X
							X
	●	●	●	●	●		●
	●	●	●	●	●		●
	●	●	●	●	●		●
	●	●	●		●		○
	●	●	●	●	●		
				●			
	40-250	40-63	32-50	100-125	125	50-125	40-200
	7,7	43,2	W = 14-22	W = 12,9-18,8	w = 16	9,9	SB = 3-8
	409				610		S475
							
	4				6		2+2

Übersicht System 406 und 409

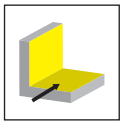
Overview System 406 and 409



	M406	M409						
κ = 90°	x	x	x	x	x		x	
κ = 90°	x	x	x	x	x		x	
κ = 90°	x	x	x	x	x		x	
κ = 90°	x		x	x	x		x	
κ = 90°		x	x	x	x		x	
κ = 90°		x			x	x	x	
κ = 45°		x	x	x				
κ = 60°		x	x					
κ = 90°		x					x	
κ = 90° w = einstellbar adjustable	x	x					x	
	x	x						x

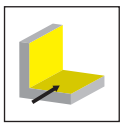
Tangentialfräsen
Tangential Milling

Schaftfräser
End Mill
M406



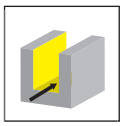
Seite/Page
556-558

Einschraubfräser
Screw-in cutter
M406



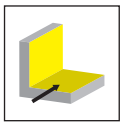
Seite/Page
559

Aufsteckfräser
Arbour Mounted Cutter
M406



Seite/Page
560

Wendeschneidplatte
Indexable insert
406



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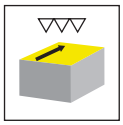
561

Schneidplatte
Insert
406



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M406

Tangentialfräsen mit System 406

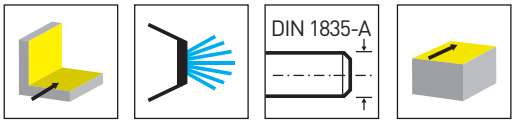
- 90° Schaftfräser
- 90° Einschraubfräser
- Aufsteckfräser

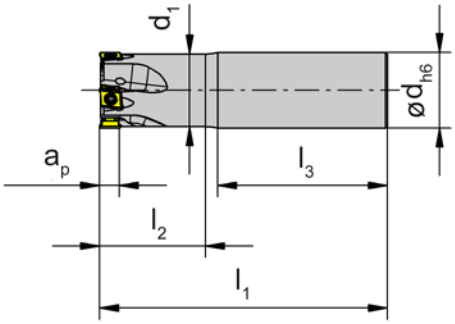
Tangential milling with system 406

- 90° End Mill
- 90° Screw-in Cutter
- Arbour Mounted Cutter

Schaftfräser
End Mill

M406





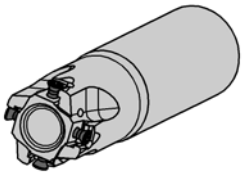


Abbildung = rechtsschneidend
Picture = right hand cutting version

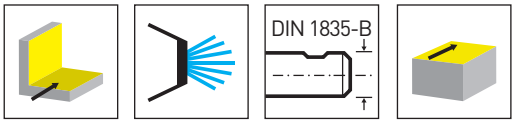
Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	n_{max}	HWS
M406.016.D16.3.02A	2	16	16	75	25	15	48	6,3	23700	40600R
M406.020.D20.4.03A	3	20	20	85	33	19	50	6,3	21200	40600R
M406.025.D25.5.04A	4	25	25	95	37	24	56	6,3	19000	40600R
M406.032.D32.6.05A	5	32	32	111	47	31	60	6,3	16700	40600R
M406.040.D32.6.06A	6	40	32	111	49	39	60	6,3	15000	40600R

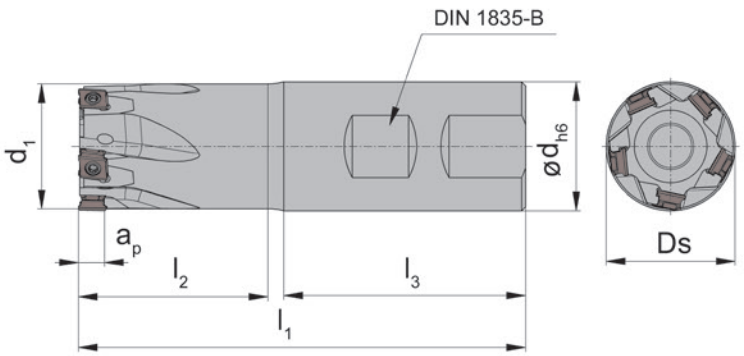
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M406...02A -...03A	**030.2669.T8P**	**T8PL**
M406...04A -...06A	**030.2608.T8P**	**T8PL**

Schaftfräser
End Mill

M406





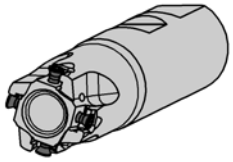


Abbildung = rechtsschneidend
Picture = right hand cutting version

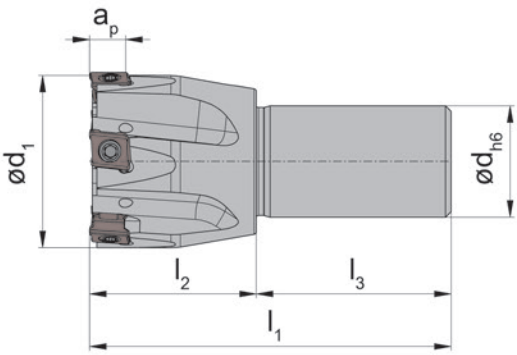
Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	n_{max}	HWS
M406.016.D16.3.02B	2	16	16	75	25	15	48	6,3	23700	40600R
M406.020.D20.4.03B	3	20	20	85	33	19	50	6,3	21200	40600R
M406.025.D25.5.04B	4	25	25	95	37	24	56	6,3	19000	40600R
M406.032.D32.6.05B	5	32	32	111	47	31	60	6,3	16700	40600R

Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M406...02B -...03B	**030.2669.T8P**	**T8PL**
M406...04B -...06B	**030.2608.T8P**	**T8PL**

Schaftfräser
End Mill

M406



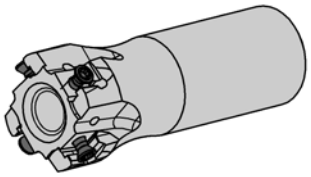


Abbildung = rechtsschneidend
Picture = right hand cutting version

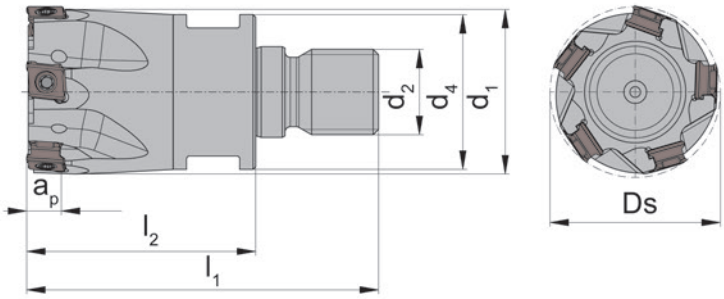
Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	n_{max}	HWS
M406.016.D12.1.02A	2	16	12	55	20	15	35	6,3	23700	40600R
M406.020.D16.1.03A	3	20	16	55	20	19	35	6,3	21200	40600R
M406.025.D16.2.04A	4	25	16	65	30	24	35	6,3	19000	40600R
M406.025.D20.2.04A	4	25	20	65	30	24	35	6,3	19000	40600R
M406.032.D16.2.05A	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

Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M406...02A -...03A	**030.2669.T8P**	**T8PL**
M406...04A -...06A	**030.2608.T8P**	**T8PL**

Einschraubfräser
Screw-in cutter

M406



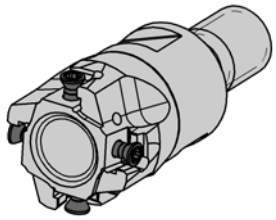
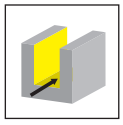


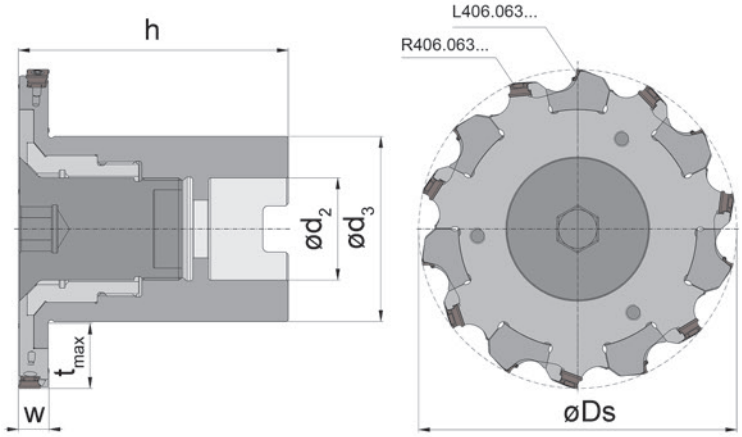
Abbildung = rechtsschneidend
Picture = right hand cutting version

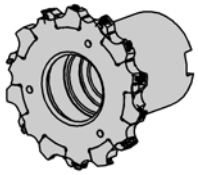
Bestellnummer Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	SW	n_{max}	HWS	HMS
M406.016.M08.3.02	2	16	41	23	15	6,3	M8	13	10	23700	40600R	08001
M406.020.M10.4.03	3	20	50	30	19	6,3	M10	18	15	21200	40600R	10001
M406.025.M12.5.04	4	25	57	35	24	6,3	M12	21	17	19000	40600R	12001
M406.032.M16.6.05	5	32	66	43	31	6,3	M16	29	24	16700	40600R	16001
M406.040.M16.6.06	6	40	66	43	39	6,3	M16	29	24	15000	40600R	16001

Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M406...02 -...03	**030.2669.T8P**	**T8PL**
M406...04 -...06	**030.2608.T8P**	**T8PL**







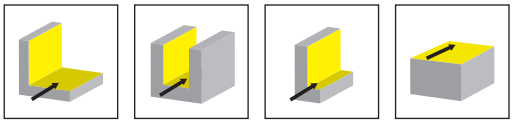
Bestellnummer Part number	Z	Z_{eff}	Ds	t_{max}	h_{min}	h_{max}	d_3	d_2	w_{min}	w_{max}	rechte WSP right hand insert	linke WSP left hand insert	HWS
M406.0100.A32.ES.96	14	7	100	20	84,8	88,1	58	32	9,6	12,9	7x R406.063...	7x L406.063...	40600R • 40600L

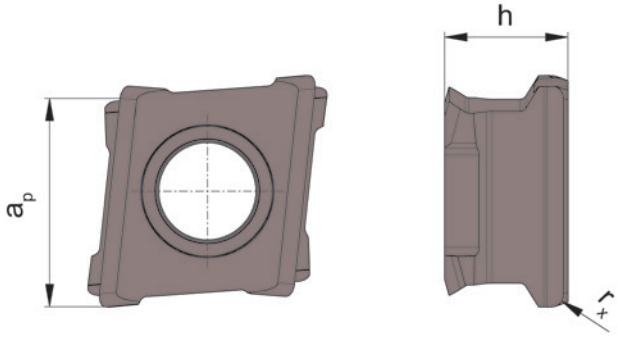
Aufsteckfräser einstellbar!
Arbour mounted cutter is adjustable!

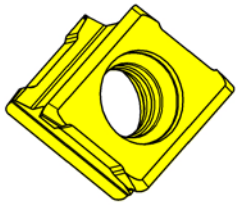
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Schraube** Screw	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Verstelladapter** Adjustment Adapter
M406.0100.A32.ES.96	**C406.0100.A32.ES.96**	**030.2608.T8P**	**T8PL**	**A406.0100.A32.ES.96**

Wendeschneidplatte 406
Indexable insert







HM-Sorten
Carbide grades

▲ ab Lager
on stock

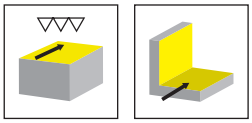
Δ 4 Wochen
4 weeks

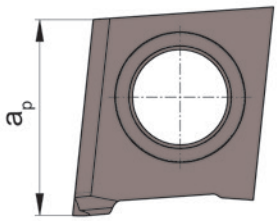
Bestellnummer Part number	a_p	h	r_x	HIS	K10	AS46	AS4B	IG35	NE2B
R406.063.U.02	6,3	3,85	0,2	40600R		Δ	▲		
R406.063.U.04	6,3	3,85	0,4	40600R		▲	▲		
R406.063.U.08	6,3	3,85	0,8	40600R		▲	▲		
R406.063.W.02	6,3	3,85	0,2	40600R	▲			▲	▲
R406.063.W.04	6,3	3,85	0,4	40600R				▲	▲
R406.063.W.08	6,3	3,85	0,8	40600R				▲	▲
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		▲	▲		
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				▲	▲

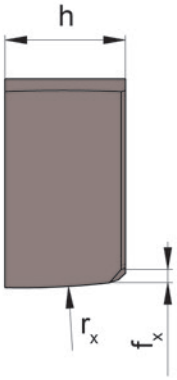
	K10	AS46	AS4B	IG35	NE2B
P	●	o	●	-	-
M	o	o	●	●	-
K	●	●	●	-	-
N	●	o	o	-	●
S	o	o	●	●	-
H	-	-	-	-	-

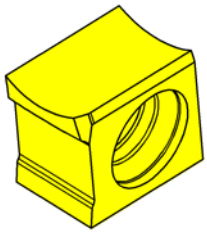
mit 4 nutzbaren Schneidkanten
with 4 usable cutting edges

präzisionsgeschliffen
precision ground









HM-Sorten
Carbide grades

▲ ab Lager
on stock

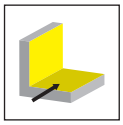
Δ 4 Wochen
4 weeks

Bestellnummer Part number	a_p	h	r_x	fx	HIS		AS46	AS4B
R406.063.S.F4	6	3,85	100	0,4	40600R		▲	▲
						P	o	●
						M	o	●
						K	●	●
						N	o	o
						S	o	●
						H	-	-

Breitschlichtschneide, präzisionsgeschliffen
Wiper geometry, precision ground

1 nutzbare Schneidkante
with 1 usable cutting edge

Schaftfräser
End Mill
M409



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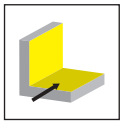
566-569

Einschraubfräser
Screw-in cutter
M409



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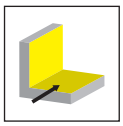
Eckfräser
Shoulder Mill
M409



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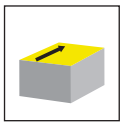
571-572

Planfräser
Face Mill
M409



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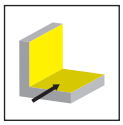
Walzenstirnfräser
Shell End Mill
M409



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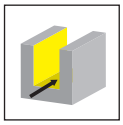
Scheibenfräser
Disc Milling Cutter
M409



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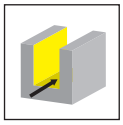
Aufsteckfräser
Arbour Mounted Cutter
M409



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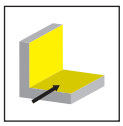
Wendeschneidplatte
Indexable insert
409



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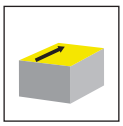

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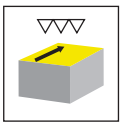

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Montageanleitung
Mounting Instructions

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M409

Tangentialfräsen mit System 409

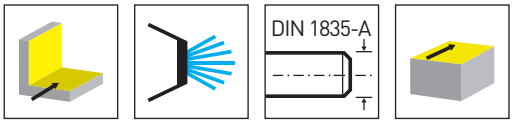
- 90° Schaftfräser
- 90° Einschraubfräser
- Eckfräser
- Planfräser
- Walzenstirnfräser
- Scheibenfräser
- Aufsteckfräser

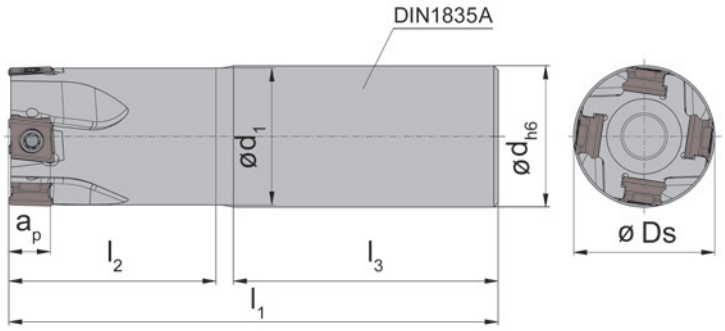
Tangential milling with system 409

- 90° End Mill
- 90° Screw-in cutter
- Shoulder Mill
- Face Mill
- Shell End Mill
- Disc Milling cutter
- Arbour Mounted Cutter

Schaftfräser
End Mill

M409





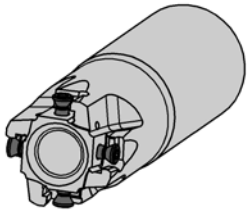


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	Form	n_{max}	HWS
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

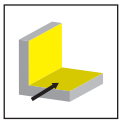
enge Teilung
narrow pitch

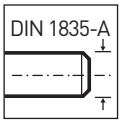
Ersatzteile
Spare Parts

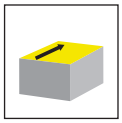
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

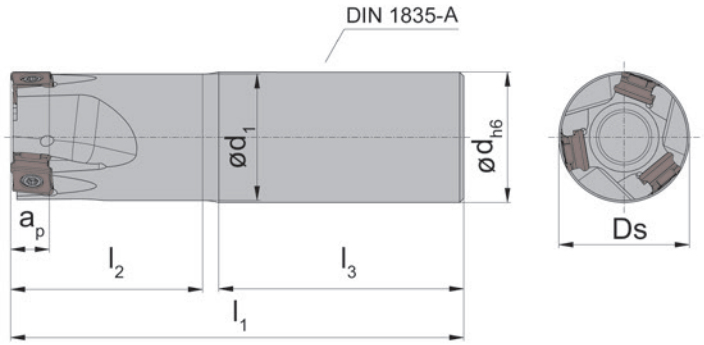
Schaftfräser
End Mill

M409









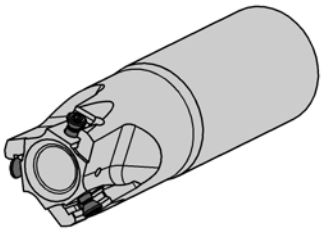


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	Form	n_{max}	HWS
M409.032.D32.6.03A	3	32	32	111	47	31	60	9,3	A	15600	40900R
M409.040.D32.6.04A	4	40	32	111	47	39	60	9,3	A	13900	40900R

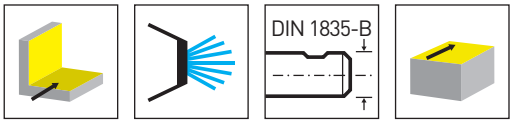
weite Teilung
wide pitch

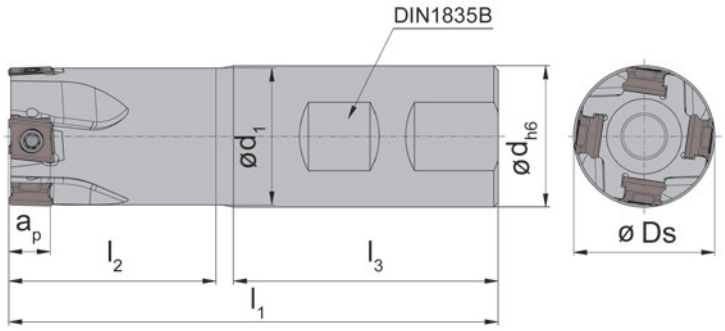
Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

Schaftfräser
End Mill

M409





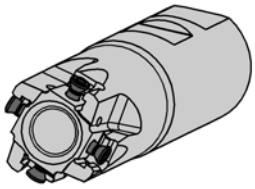


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	Form	n_{max}	HWS
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

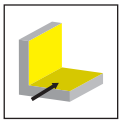
enge Teilung
narrow pitch

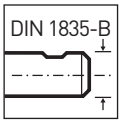
Ersatzteile
Spare Parts

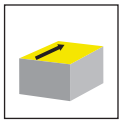
Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

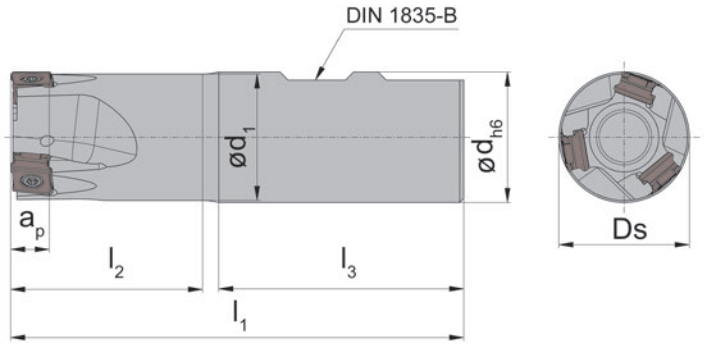
Schaftfräser
End Mill

M409









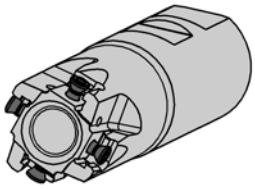


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	d	l_1	l_2	d_1	l_3	a_p	Form	n_{max}	HWS
M409.032.D32.6.03B	3	32	32	111	47	31	60	9,3	B	15600	40900R
M409.040.D32.6.04B	4	40	32	111	47	39	60	9,3	B	13900	40900R

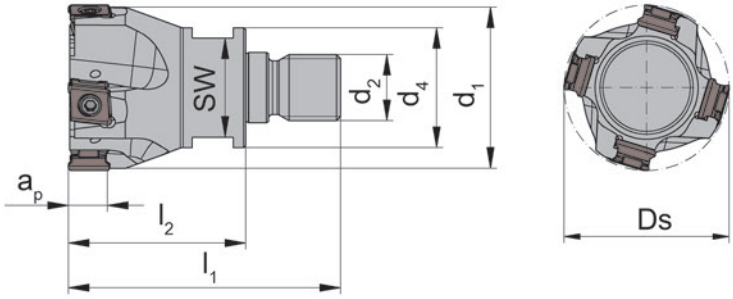
weite Teilung
wide pitch

Ersatzteile
Spare Parts

Schaftfräser End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

Einschraubfräser
Screw-in cutter

M409



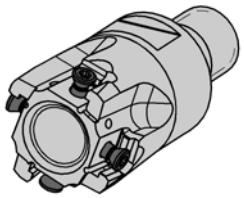


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	l_1	l_2	d_1	a_p	d_2	d_4	SW	n_{max}	HWS	HMS
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

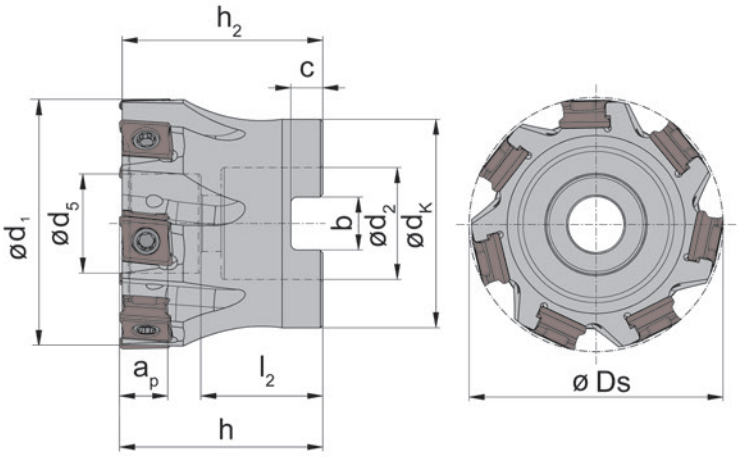
passend für Aufnahme Typ MD
suitable for Shank Type MD

Ersatzteile
Spare Parts

Einschraubfräser Screw-in cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

Eckfräser
Shoulder Mill

M409



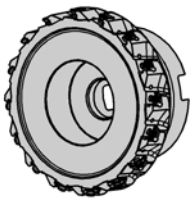


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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
M409.0250.A60.30	30	250	9,3	62,5	63	150	249	60	42	25,7	14	160	5500	40900R

bis ø100 mm Aufsteckfräser nach DIN 8030-A, ø125 mm DIN8030-B, ab ø160 mm DIN8030-C
up to ø100 mm arbour mounted cutter as per DIN 8030-A, ø125 DIN8030-B, from ø160 mm DIN 8030-C

ab ø160 mm: Verfügbarkeit und innere Kühlmittelzufuhr auf Anfrage
from ø160 mm: availability and internal coolant upon customers request

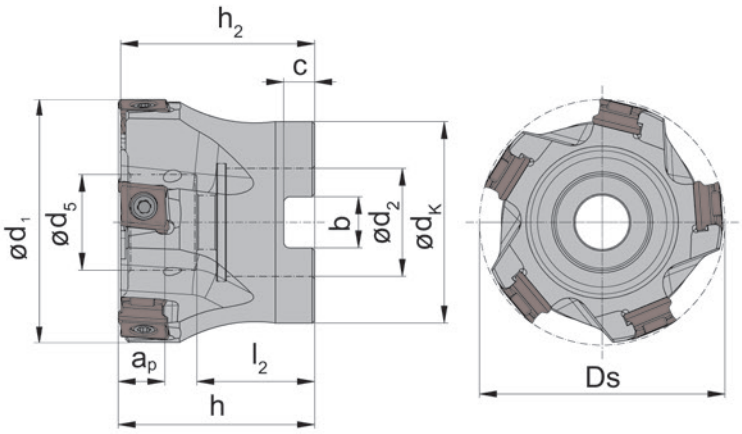
enge Teilung
narrow pitch

Ersatzteile
Spare Parts

Eckfräser Shoulder Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M409....	**030.3511.T10P**	**T10PL**	
M409.0...A40..	**030.3511.T10P**	**T10PL**	**20.30.6367**
M409.0...A60..	**030.3511.T10P**	**T10PL**	**30.45.6367**

Eckfräser
Shoulder Mill

M409



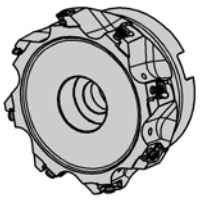


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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.A16.04	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
M409.0200.A60.16	16	200	9,3	62,5	63	135	199	60	42	25,7	14	130	6200	40900R
M409.0250.A60.20	20	250	9,3	62,5	63	150	249	60	42	25,7	14	160	5500	40900R

bis ø100 mm Aufsteckfräser nach DIN 8030-A, ø125 mm DIN8030-B, ab ø160 mm DIN8030-C
up to ø100 mm arbour mounted cutter as per DIN 8030-A, ø125 DIN8030-B, from ø160 mm DIN 8030-C

ab ø160 mm: Verfügbarkeit und innere Kühlmittelzufuhr auf Anfrage
from ø160 mm: availability and internal coolant upon customers request

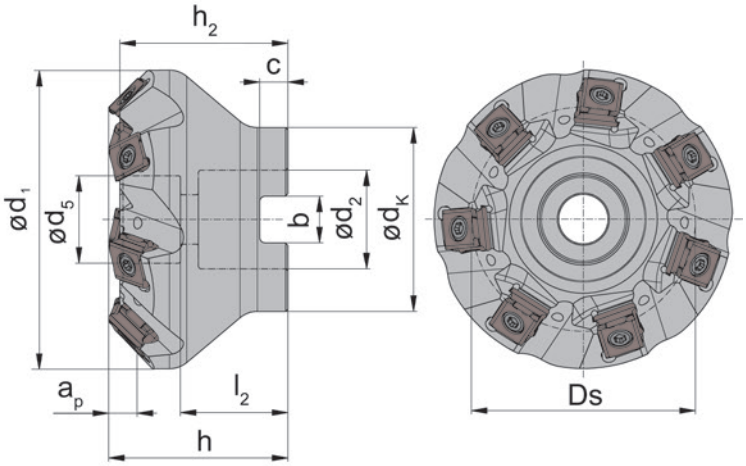
weite Teilung
wide pitch

Ersatzteile
Spare Parts

Eckfräser Shoulder Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M409....	**030.3511.T10P**	**T10PL**	
M409.0...A40..	**030.3511.T10P**	**T10PL**	**20.30.6367**
M409.0...A60..	**030.3511.T10P**	**T10PL**	**30.45.6367**

Planfräser
Face Mill

M409



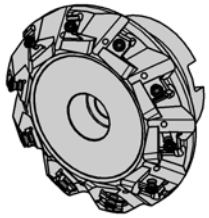


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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.A16.45.05	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
M409.0200.A60.45.24	24	200	6,2	60,5	63	135	216	60	42	25,7	14	130	6200	40900R
M409.0250.A60.45.30	30	250	6,2	60,5	63	150	266	60	42	25,7	14	160	5500	40900R

bis ø100 mm Aufsteckfräser nach DIN 8030-A, ø125 mm DIN8030-B, ab ø160 mm DIN8030-C
up to ø100 mm arbour mounted cutter as per DIN 8030-A, ø125 DIN8030-B, from ø160 mm DIN 8030-C

ap = 6,2 mm bei rx= 0,8 mm
ap = 6,2 mm can be reached with rx = 0,8 mm

ab ø160 mm: Verfügbarkeit und innere Kühlmittelzufuhr auf Anfrage
from ø160 mm: availability and internal coolant upon customers request

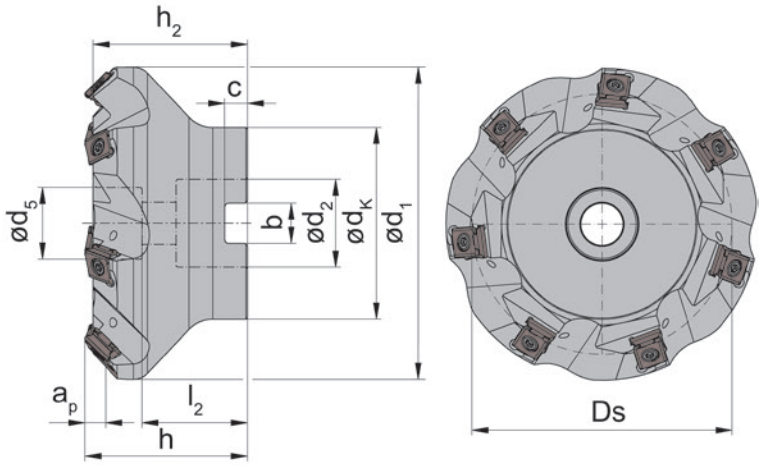
enge Teilung
narrow pitch

Ersatzteile
Spare Parts

Planfräser Face Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M409....	**030.3511.T10P**	**T10PL**	
M409.0...A40..	**030.3511.T10P**	**T10PL**	**20.30.6367**
M409.0...A60..	**030.3511.T10P**	**T10PL**	**30.45.6367**

Planfräser
Face Mill

M409



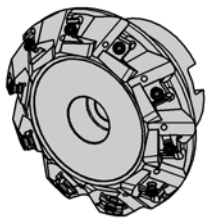


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer 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.A16.45.04	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
M409.0160.A40.45.14	14	160	6,2	60,5	63	90	176	40	29	16,4	9	110	6900	40900R
M409.0200.A60.45.16	16	200	6,2	60,5	63	135	216	40	42	25,7	14	130	6200	40900R

bis ø100 mm Aufsteckfräser nach DIN 8030-A, ø125 mm DIN8030-B, ab ø160 mm DIN8030-C
up to ø100 mm arbour mounted cutter as per DIN 8030-A, ø125 DIN8030-B, from ø160 mm DIN 8030-C

ap = 6,2 mm bei rx= 0,8 mm
ap = 6,2 mm can be reached with rx = 0,8 mm

ab ø160 mm: Verfügbarkeit und innere Kühlmittelzufuhr auf Anfrage
from ø160 mm: availability and internal coolant upon customers request

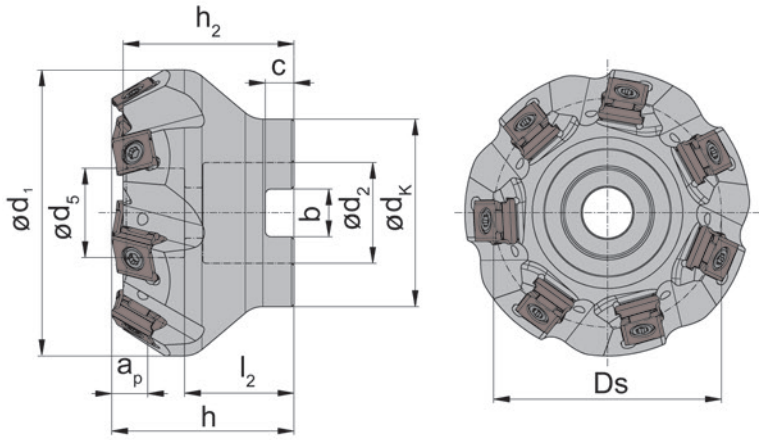
weite Teilung
wide pitch

Ersatzteile
Spare Parts

Planfräser Face Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M409....	**030.3511.T10P**	**T10PL**	
M409.0160.A40.45.14	**030.3511.T10P**	**T10PL**	**20.30.6367**
M409.0200.A60.45.16	**030.3511.T10P**	**T10PL**	**30.45.6367**

Planfräser
Face Mill

M409



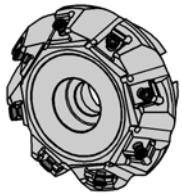


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	a_p	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
M409.0200.A60.60.24	24	200	7,7	60,5	63	135	212	60	25,7	14	130	6200	40900R
M409.0250.A60.60.30	30	250	7,7	60,5	63	150	262	60	25,7	14	160	5500	40900R

bis ø100 mm Aufsteckfräser nach DIN 8030-A, ø125 mm DIN8030-B, ab ø160 mm DIN8030-C
up to ø100 mm arbour mounted cutter as per DIN 8030-A, ø125 DIN8030-B, from ø160 mm DIN 8030-C

ap = 7,7 mm bei rx= 0,8 mm
ap = 7,7 mm can be reached with rx = 0,8 mm

ab ø160 mm: Verfügbarkeit und innere Kühlmittelzufuhr auf Anfrage
from ø160 mm: availability and internal coolant upon customers request

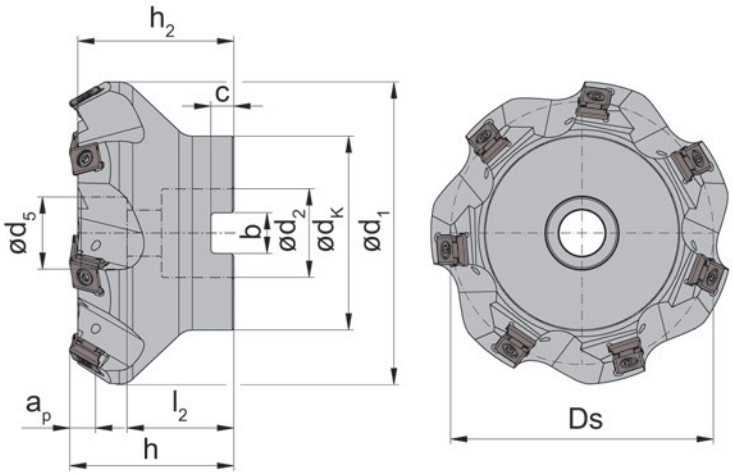
enge Teilung
narrow pitch

Ersatzteile
Spare Parts

Planfräser Face Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M409....	**030.3511.T10P**	**T10PL**	
M409.0160.A40.60.20	**030.3511.T10P**	**T10PL**	**20.30.6367**
M409.0...	**030.3511.T10P**	**T10PL**	**30.45.6367**

Planfräser
Face Mill

M409



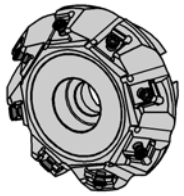


Abbildung = rechtsschneidend
Picture = right hand cutting version

Bestellnummer Part number	Z	Ds	a_p	h_2	h	d_5	d_1	d_2	b	C	d_K	n_{max}	HWS
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
M409.0160.A40.60.14	14	160	7,7	60,5	63	90	172	40	16,4	9	110	6900	40900R
M409.0200.A60.60.16	16	200	7,7	60,5	63	135	212	60	25,7	14	130	6200	40900R
M409.0250.A60.60.20	20	250	7,7	60,5	63	150	262	60	25,7	14	160	5500	40900R

bis ø100 mm Aufsteckfräser nach DIN 8030-A, ø125 mm DIN8030-B, ab ø160 mm DIN8030-C
up to ø100 mm arbour mounted cutter as per DIN 8030-A, ø125 DIN8030-B, from ø160 mm DIN 8030-C

ap = 7,7 mm bei rx= 0,8 mm
ap = 7,7 mm can be reached with rx = 0,8 mm

ab ø160 mm: Verfügbarkeit und innere Kühlmittelzufuhr auf Anfrage
from ø160 mm: availability and internal coolant upon customers request

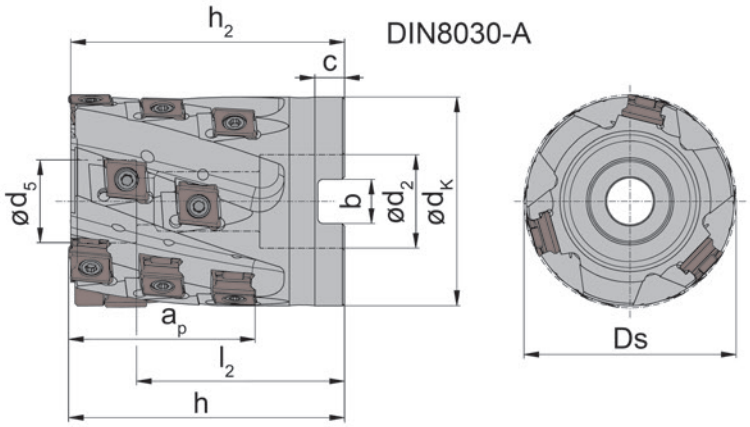
weite Teilung
wide pitch

Ersatzteile
Spare Parts

Planfräser Face Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M409....	**030.3511.T10P**	**T10PL**	
M409.0125.../...160...	**030.3511.T10P**	**T10PL**	**20.30.6367**
M409.02...	**030.3511.T10P**	**T10PL**	**30.45.6367**

Walzenstirnfräser
Shell End Mill

M409



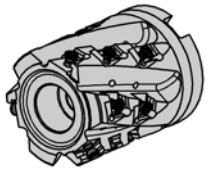


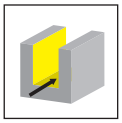
Abbildung = rechtsschneidend
Picture = right hand cutting version

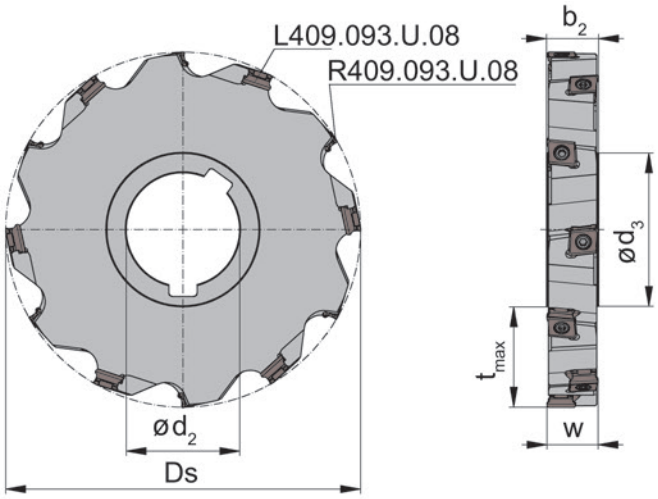
Bestellnummer Part number	Z	Z_{eff}	Ds	a_p	h_2	h	d_5	d_2	l_2	b	C	d_K	n_{max}	HWS
M409.0040.A16.W.10	10	2	40	43,2	64,5	65	16	16	53,4	8,4	5,6	39	13900	40900R
M409.0050.A22.W.15	15	3	50	43,2	64,5	65	19,5	22	49	10,4	6,3	49	12500	40900R
M409.0063.A27.W.20	20	4	63	43,2	64,5	65	21,5	27	48,8	12,4	7	62	11100	40900R

Wendeschneidplatte R409.093.U.08 ist bevorzugt zu verwenden.
Indexable insert R409.093.U.08 is preferred to use.

Ersatzteile
Spare Parts

Walzenstirnfräser Shell End Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**





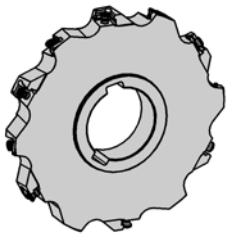


Abbildung = rechtsschneidend
Picture = right hand cutting version

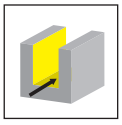
Bestellnummer Part number	Z	Z_{eff}	Ds	t_{max}	d_2	b_2	d_3	w	n_{max}	rechte WSP right hand insert	linke WSP left hand insert	HWS
M409.0100.32.S.14	10	5	100	26	32	14,4	46	14	8800	5x R409.093.U.08	5x L409.093.U.08	40900R • 40900L
M409.0100.32.S.18	10	5	100	26	32	18,4	46	18	8800	5x R409.093.U.08	5x L409.093.U.08	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

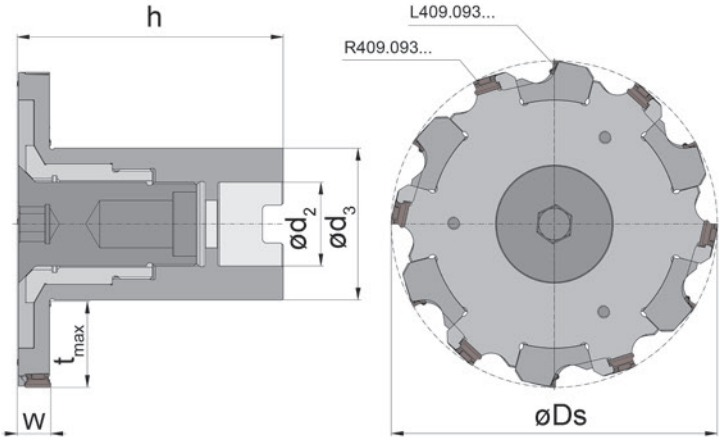
Ersatzteile
Spare Parts

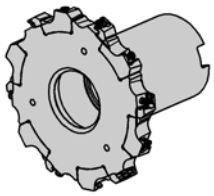
Scheibenfräser Disc Milling Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M409...	**030.3511.T10P**	**T10PL**

Aufsteckfräser
Arbour Mounted Cutter

M409







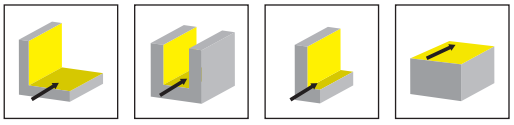
Bestellnummer Part number	Z	Z_{eff}	Ds	t_{max}	h_{min}	h_{max}	d_3	d_2	w_{min}	w_{max}	rechte WSP right hand insert	linke WSP left hand insert	HWS
M409.0125.A32.ES.129	12	6	125	32,5	102	107,9	58	32	12,9	18,8	6x R409.093...	6x L409.093...	40900R • 40900L

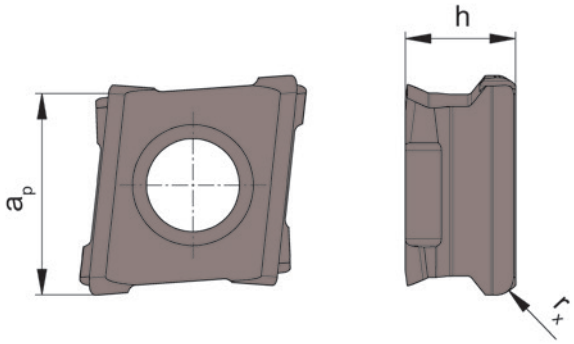
Aufsteckfräser einstellbar!
Arbour mounted cutter is adjustable!

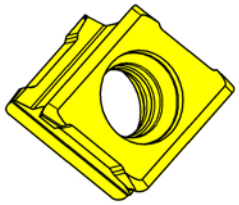
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Schraube** Screw	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Verstelladapter** Adjustment Adapter
M409.0125.A32.ES.129	**C409.0125.A32.ES.129**	**030.3511.T10P**	**T10PL**	**A409.0125.A32.ES.129**

Wendeschneidplatte 409
Indexable insert







HM-Sorten
Carbide grades

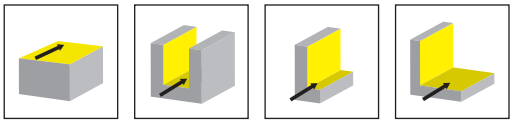
▲ ab Lager
on stock

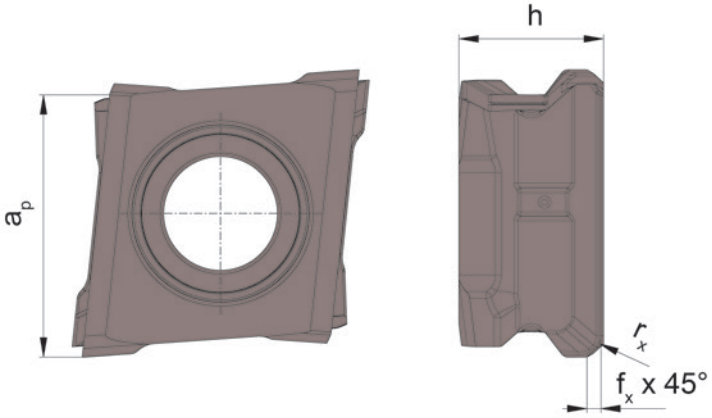
Δ 4 Wochen
4 weeks

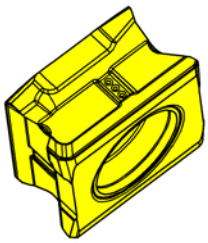
Bestellnummer Part number	a_p	h	r_x	HIS		K10	AS46	AS4B	IG35	NE2B
R409.093.U.02	9,3	5,2	0,2	40900R			Δ	▲		
R409.093.U.04	9,3	5,2	0,4	40900R			▲	▲		
R409.093.U.08	9,3	5,2	0,8	40900R			▲	▲		
R409.093.U.12	9,3	5,2	1,2	40900R			▲	▲		
R409.093.W.02	9,3	5,2	0,2	40900R		▲			▲	▲
R409.093.W.04	9,3	5,2	0,4	40900R					▲	▲
R409.093.W.08	9,3	5,2	0,8	40900R					▲	▲
R409.093.W.12	9,3	5,2	1,2	40900R					▲	▲
L409.093.U.02	9,3	5,2	0,2	40900L			Δ	▲		
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					▲	Δ
					P	●	o	●	-	-
					M	o	o	●	●	-
					K	●	●	●	-	-
					N	●	o	o	-	●
					S	o	o	●	●	-
					H	-	-	-	-	-

mit 4 nutzbaren Schneidkanten
with 4 usable cutting edges

Wendeschneidplatte 409
Indexable insert







HM-Sorten
Carbide grades

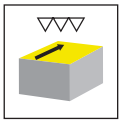
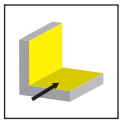
▲ ab Lager
on stock

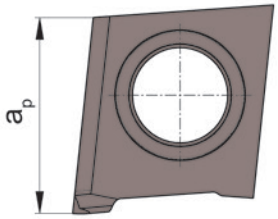
Δ 4 Wochen
4 weeks

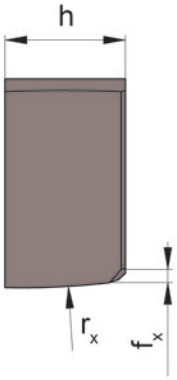
Bestellnummer Part number	a_p	h	r_x	fx	HIS		AS45	AS46
RS409.090.P.F05	9	5,2	0,6	0,5	40900R		▲	▲
LS409.090.P.F05	9	5,2	0,6	0,5	40900L		▲	▲
						P	●	o
						M	●	o
						K	●	●
						N	o	o
						S	●	o
						H	-	-

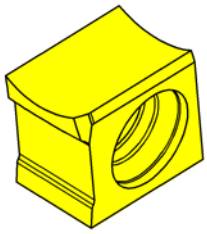
mit 4 nutzbaren Schneidkanten
with 4 usable cutting edges

Wendeschneidplatte 409
Indexable insert







HM-Sorten
Carbide grades

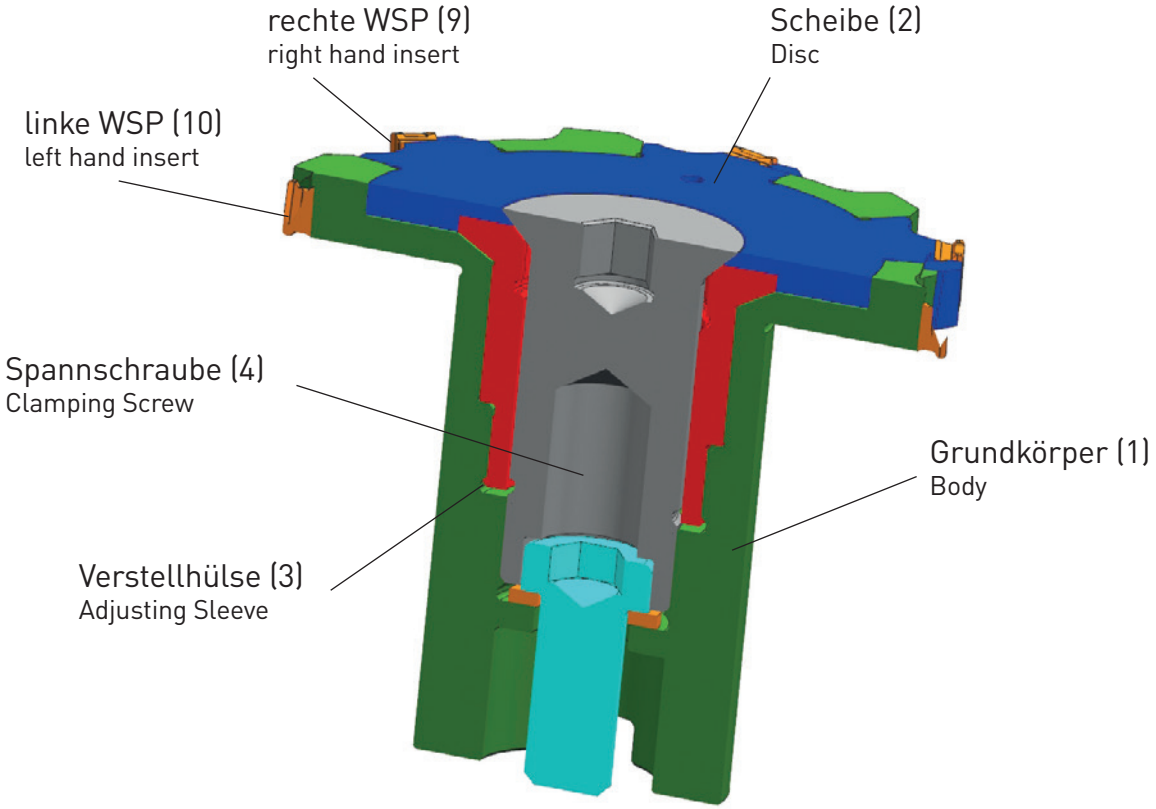
▲ ab Lager
on stock

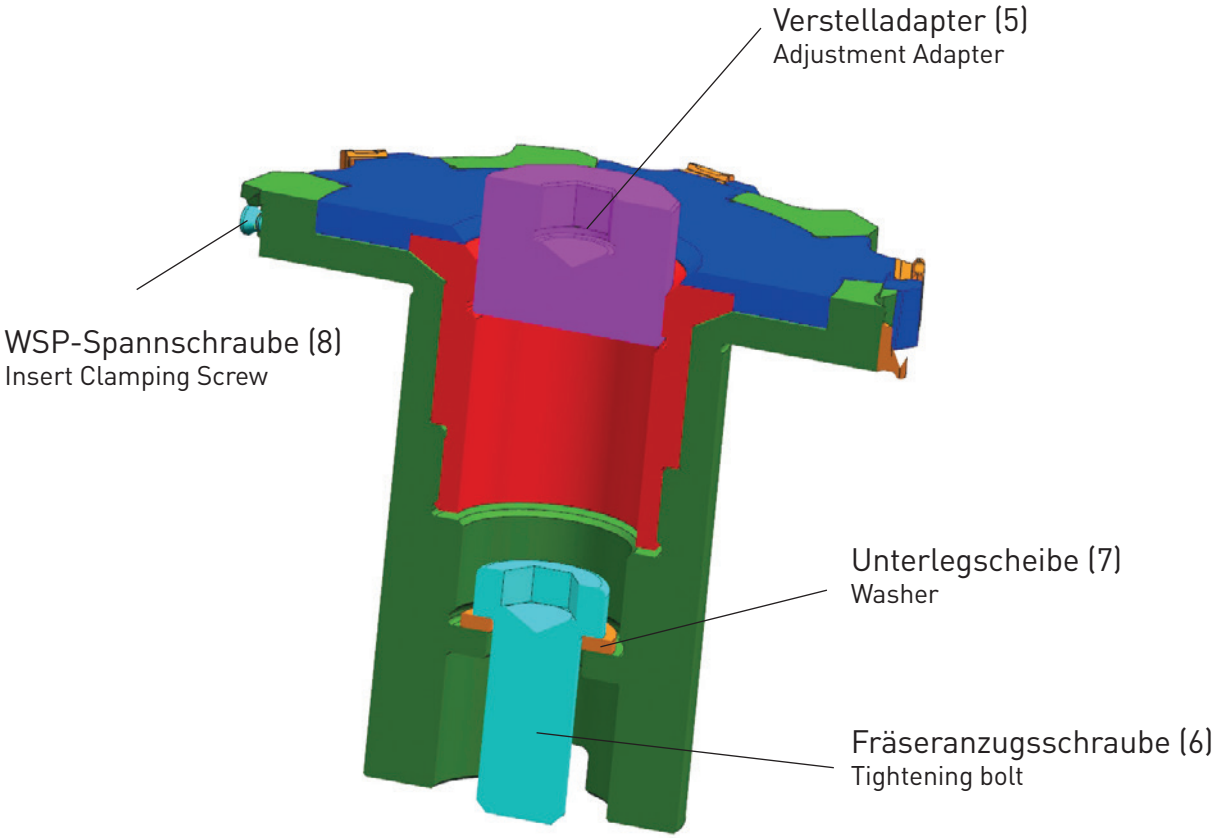
Δ 4 Wochen
4 weeks

Bestellnummer Part number	a_p	h	r_x	fx	HIS		AS46	AS4B
R409.093.S.F4	9,3	5,2	100	0,4	40900R		▲	▲
						P	o	●
						M	o	●
						K	●	●
						N	o	o
						S	o	●
						H	-	-

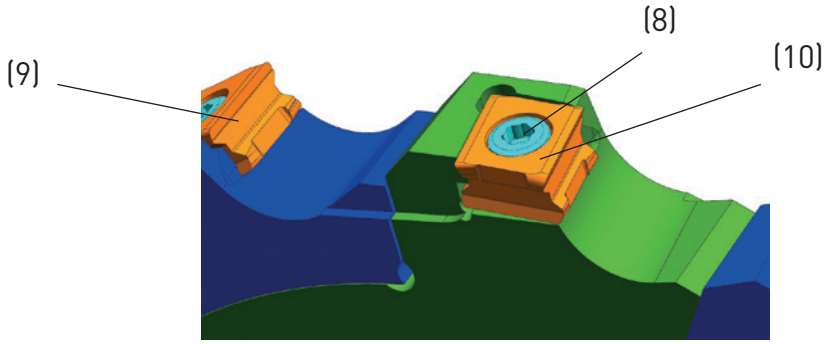
Breitschlichtschneide, präzisionsgeschliffen
Wiper geometry, precision ground

1 nutzbare Schneidkante
with 1 usable cutting edge

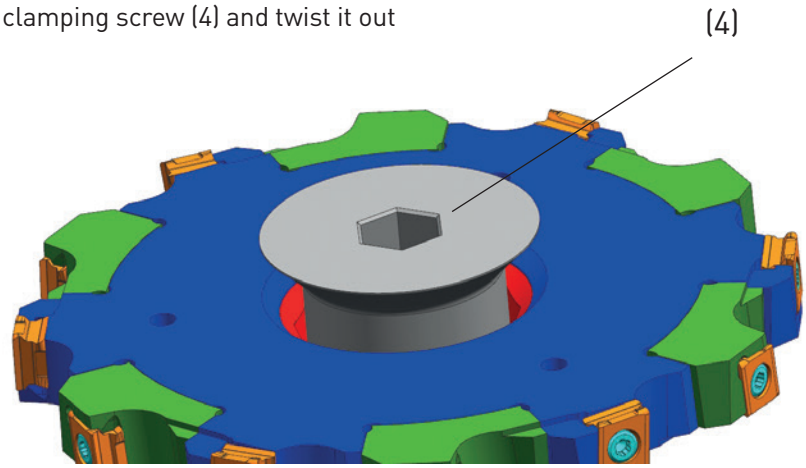

rechte WSP (9)
right hand insert
Scheibe (2)
Disc
linke WSP (10)
left hand insert
Spannschraube (4)
Clamping Screw
Grundkörper (1)
Body
Verstellhülse (3)
Adjusting Sleeve


Verstelladapter (5)
Adjustment Adapter
WSP-Spannschraube (8)
Insert Clamping Screw
Unterlegscheibe (7)
Washer
Fräseranzugsschraube (6)
Tightening bolt

1. Montage der Wendeschneidplatten mittels WSP-Spannschraube (8);
   [rechte WSP (9) und linke WSP (10) Ausführung]
   Mount the indexable insert using clamping screw(8);
   [right-hand insert (9) and left-hand insert (10) version]

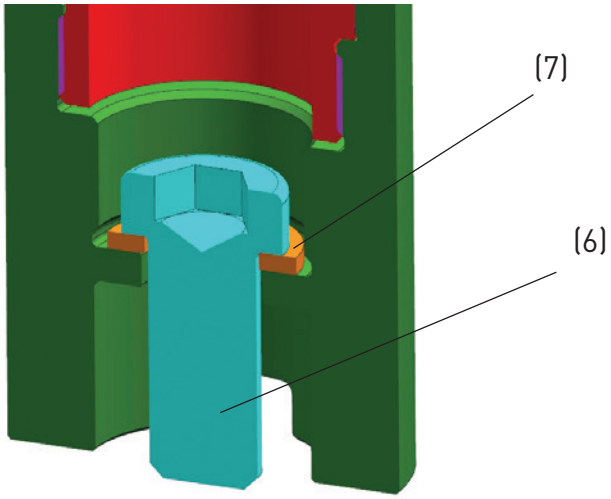


2. Spannschraube (4) lösen und heraus drehen
   Loosen the clamping screw (4) and twist it out



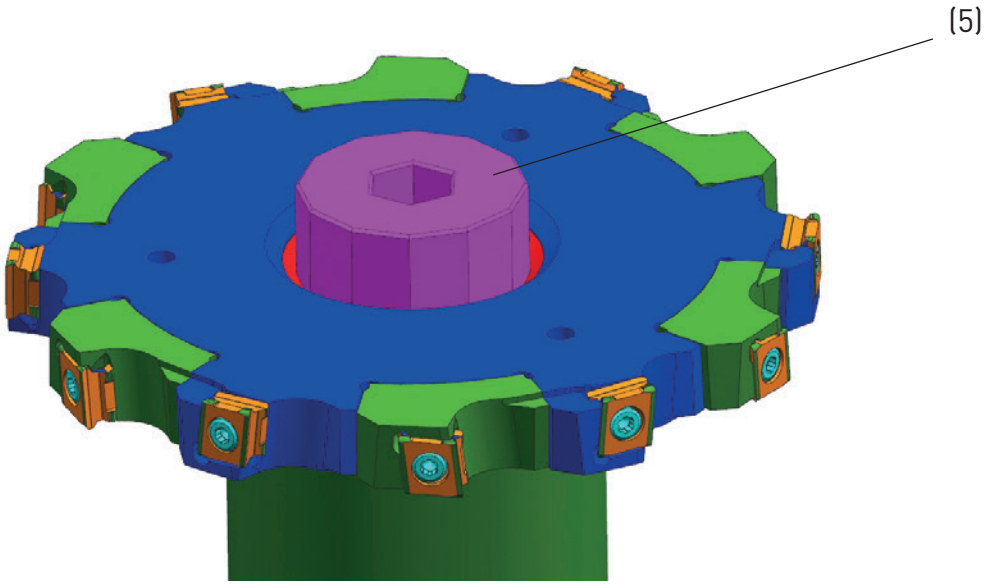
3. Fräswerkzeug mit beigelegter Unterlegscheibe (7) und Fräseranzugsschraube (6) auf die Werkzeugaufnahme (nicht abgebildet) montieren

   Mount the milling tool with the enclosed washer (7) and cutter tightening bolt (6) on the toolholder (not shown)



4. Schneidbreite des Fräsers mithilfe des Verstelladapters (5) auf das geforderte Maß voreinstellen

   Pre-set the cutting width of the milling cutter to the required dimension with the aid of the adjustment adapter (5)

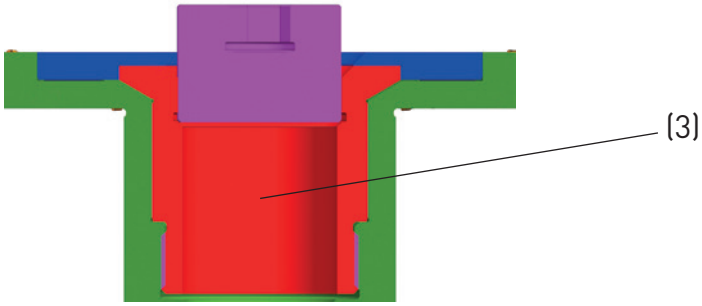


Einstellung auf einem Werkzeugvoreinstellgerät:

a. Montiertes Werkzeug in die Adaption des Voreinstellgerätes einsetzen
b. Sicher stellen, dass das Mindestmaß (System 409 → 12,9 mm; System 406 → 9,6 mm) des Werkzeugs eingestellt ist.
   Anmerkung: Verstellhülse (3) ist auf Anschlag eingedreht

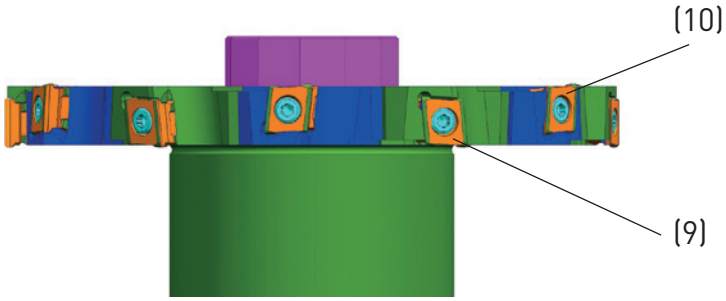
Adjustment on a tool presetter:

a. Insert the mounted tool into the adapter of the presetter.
b. Ensure the minimum dimension (system 409 → 12.9 mm; System 406 → 9.6 mm) of the tool.
   Note: Adjusting sleeve (3) is tightened fully



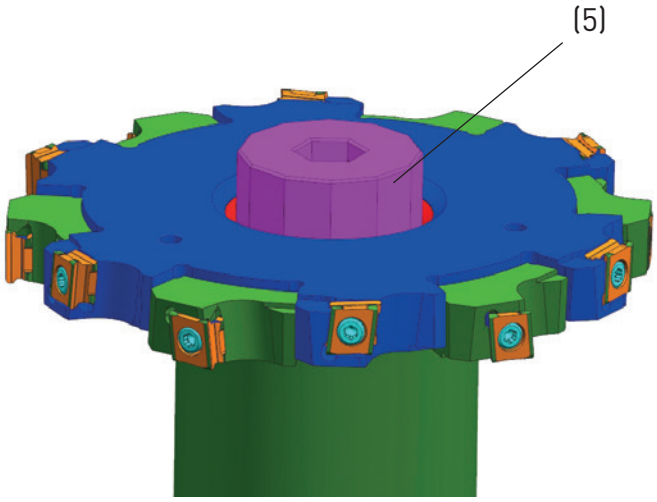
c. Untere Schneidenreihe ausmessen [linke WSP's (9)]
d. Obere Schneidenreihe ausmessen [rechte WSP's (10)]

c. Measure the lower cutting edge row [left hand inserts (9)]
d. Measure the upper cutting edge row [right hand inserts (10)]



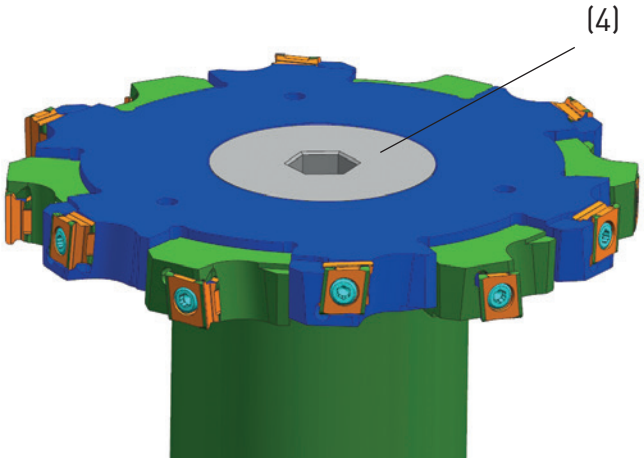
e. Mittels des Verstelladapters (5) die Schneidbreite justieren (axiale Verstellung je Umdrehung entspricht 1,5 mm)

e. Adjust the cutting width by means of the adjustment adapter (5) (axial adjustment for each turn corresponds to 1.5 mm)



f. Spannschraube (4) eindrehen und festziehen

f. Screw in and tighten the clamping screw (4)



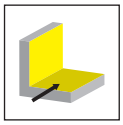
Hinweis:

1) Nach der ersten gefertigten Nut ist diese zu messen bzw. zu prüfen. Eine Korrektur der Schneidbreite des Fräswerkzeugs ist gegebenenfalls vorzunehmen.
2) Grundsätzlich ist bei der Montage und Demontage auf Sauberkeit der einzelnen Teile zu achten.
3) Empfehlenswert ist das Schmieren bzw. Fetten der Lauf- und Gewindeflächen des Einstellmechanismus.
4) Die maximale Schneidbreite beachten:
   System 409 → 18,8 mm; System 406 → 12,9 mm

Note:

1) After the first groove has been machined, it must be measured or checked. If necessary, the cutting width of the milling tool must be corrected.
2) The individual parts must be kept clean during assembly and disassembly
3) We recommend lubricating or greasing the contact and thread surfaces of the adjustment mechanism.
4) Observe the maximum cutting width:
   System 409 → 18.8 mm; System 406 → 12.9 mm

Eckfräser
Shoulder Mill
M610



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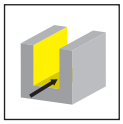
Aufsteckfräser
Arbour Mounted Cutter
M610



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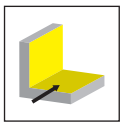
Wendeschneidplatte
Indexable insert
610



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M610

Tangentialfräsen mit System 610

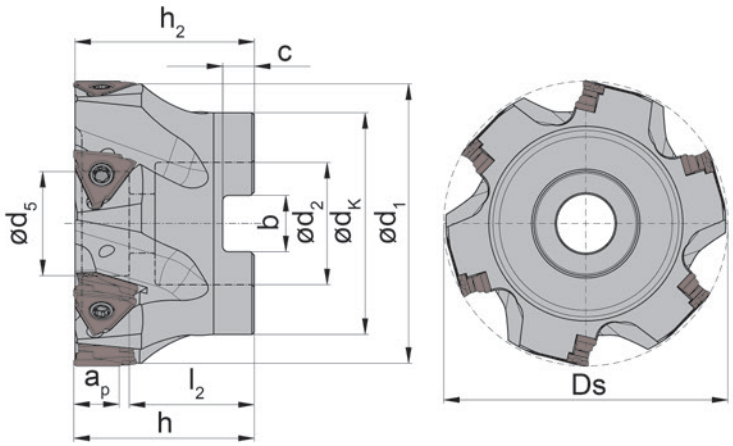
- Eckfräser
- Aufsteckfräser

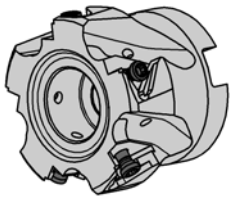
Tangential milling with system 610

- Shoulder Mill
- Arbour Mounted Cutter

Eckfräser
Shoulder Mill

M610





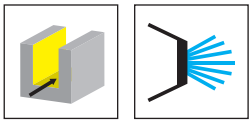
Bestellnummer Part number	Z	Ds	a_p	h_2	h	d_5	d_1	d_2	l_2	b	C	d_K	n_{max}	HWS
M610.0050.A22.05	5	50	9,9	39,7	40	19,5	49	22	24	10,4	6,3	41	10000	61000R
M610.0063.A22.06	6	63	9,9	39,7	40	19,5	62	22	25	10,4	6,3	49	9000	61000R
M610.0063.A27.06	6	63	9,9	39,7	40	23	62	27	27,5	12,4	7	49	9000	61000R
M610.0080.A27.08	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

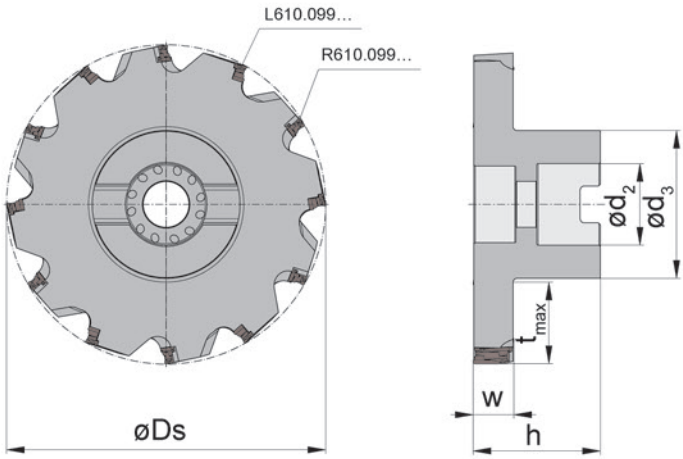
Ersatzteile
Spare Parts

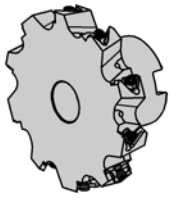
Eckfräser Shoulder Mill	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench	**Fräseranzugsschraube** Tightening Bolt
M610....	**030.3513.T15P**	**T15PQ**	
M610.0125.A40.12	**030.3513.T15P**	**T15PQ**	**20.30.6367**

Aufsteckfräser
Arbour Mounted Cutter

M610





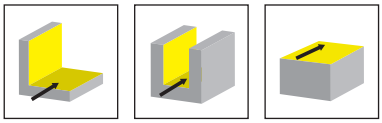


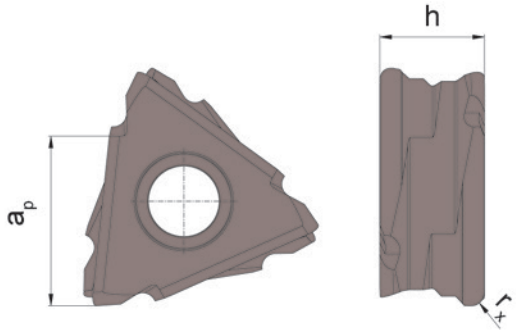
Bestellnummer Part number	Z	Z_{eff}	Ds	t_{max}	h	d_3	d_2	n_{max}	w	rechte WSP right hand insert	linke WSP left hand insert	HWS
M610.0125.A32.S.16	12	6	125	32,5	50	58	32	6000	16	6x R610.099.U....	6x L610.099.U....	61000L

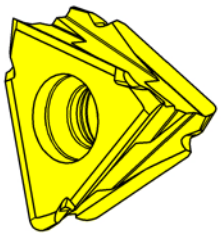
Ersatzteile
Spare Parts

Aufsteckfräser Arbour Mounted Cutter	**Spannschraube** Clamping Screw	**TORX PLUS®-Schlüssel** TORX PLUS® Wrench
M610.0125.A32.S.16	**030.3513.T15P**	**T15PQ**

Wendeschneidplatte 610
Indexable insert







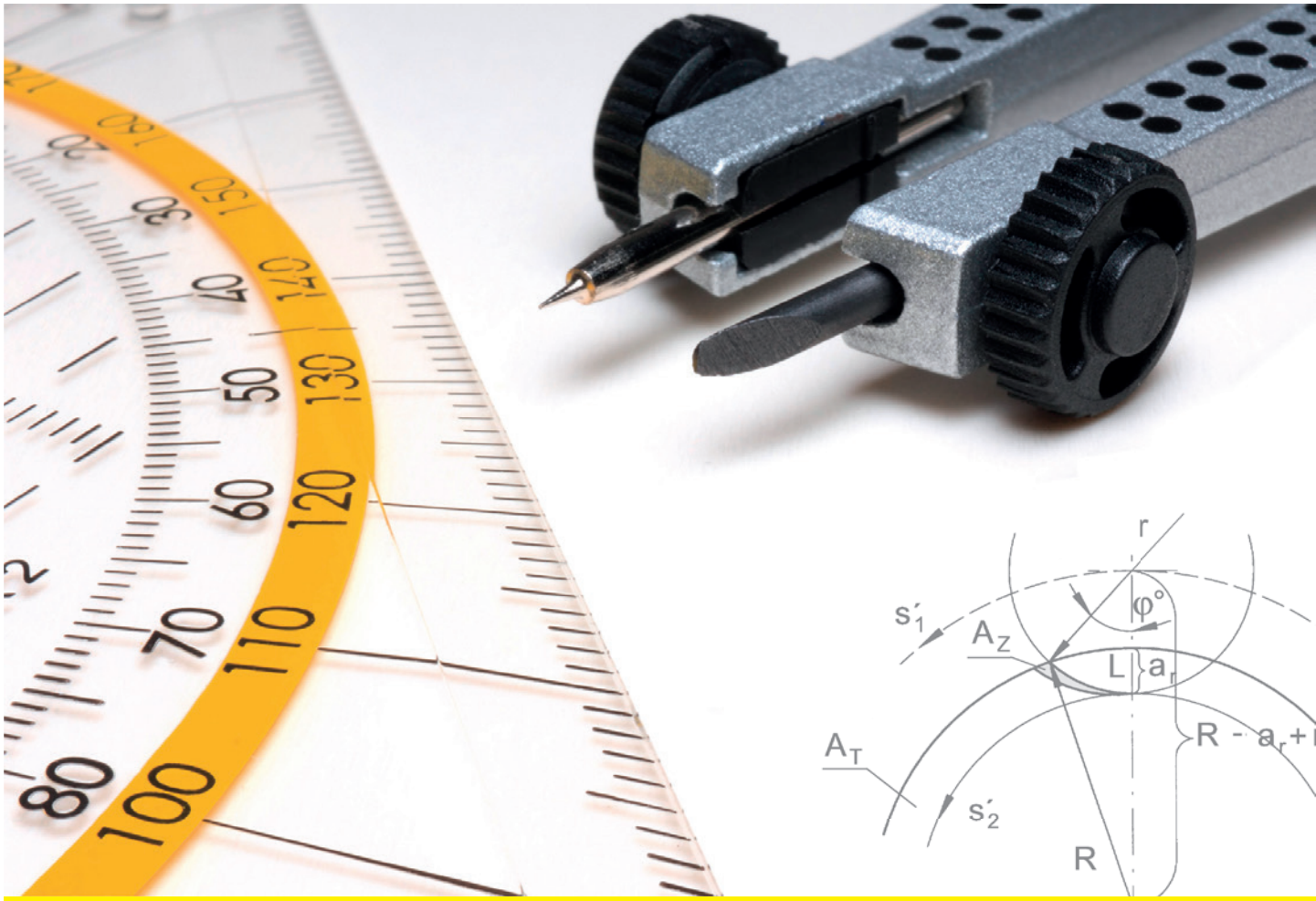
HM-Sorten
Carbide grades

▲ ab Lager
on stock

Δ 4 Wochen
4 weeks

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

Technische Hinweise
Technical Instructions



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Anzugsmomente
Torque of Screws

Nachstehende Drehmomente sind für die Spannschrauben zulässig. Wir empfehlen keine zusätzlichen Gleitmittel wie Kupferpaste oder ähnliches für die Schrauben zu verwenden.

Following torques are allowed for screws of inserts. We do not recommend using any additional lubricants such as copper paste or similar for the screws.

Typ Type	Schraube Screw	M_d Nm	Schlüssel Clamping wrench	Klinge 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
DAHM.25.012...	030.2547.T8P	**1,3**	T8PL	DT8PK
DAHM.25	030.2553.T8P	**1,3**	T8PL	DT8PK
DAHM.37.../.82...	030.3070.T10P	**3,4**	T10PL	DT10PK
DAHM.62	5.12T20P	**6,5**	T20PQ	DT20PK / DT20PQ
DAHM.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

Anzugsmomente
Torque of Screws

Typ Type	Schraube Screw	M_d Nm	Schlüssel Clamping wrench	Klinge 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	**6,5**	T20PQ	DT20PK / DT20PQ
M335	6.17T25P	**12,0**	T25PQ	DT20PQ
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	030.2523.T6P	**0,7**	T8PL	DT8PK
M475...06	030.3350.T10P	**3,0**	T10PQ	DT10PK
M475...08	030.2523.T6P	**0,7**	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

Vorschubwerte und Zeitberechnung

Feed rates and time calculation

Einfach und problemlos lässt sich dies mit dem Rechenprogramm HCT bewältigen. Wir empfehlen, die Schnittdaten mit diesem Programm zu ermitteln, weil nur so die hohe Zerspanungsleistung und Standzeit der HORN-Zirkularfräser erreicht werden kann. Grundlagen der Berechnung finden Sie auf den nachfolgenden Seiten dargestellt.

It is simple and easy to calculate your speed and feeds using HORN'S HCT programme. We recommend that you calculate the cutting data with this programme as, it will provide you with the best cutting performance and results. Basic features of the calculations can be found on the following pages.

Grundlegende Hinweise:

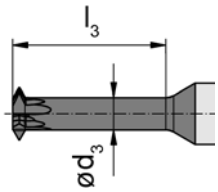
Basic recommendations:

Auskraglänge des Fräsers

Overhang of the milling cutter

Wählen Sie die Aufnahmen oder die Fräserschäfte so kurz wie möglich und prüfen Sie den Rund- und Planlauf der Werkzeuge. Große Schnittbreiten kombiniert mit hoher Auskraglänge erfordern oftmals technische Maßnahmen wie Schnittaufteilung, um das gewünschte Fräsergebnis zu erreichen.

Select the shortest possible clamping device and milling shank, to control the runout tolerance of the tools. Large cutting widths in combination with long overhangs require specific manufacturing methods such as dividing the cutting width to achieve the best possible cutting result due to reduced cutting forces.



Durchmesser des Fräsers

Diameter of the milling cutter

Rechnerisch ergeben sich dem Bohrungsdurchmesser angenäherte Fräserdurchmesser, die kleinste Fräsermittelpunktsbahn, damit extrem hohe Vorschübe und kurze Bearbeitungszeiten realisiert werden können. Oftmals wird aber der Durchmesser von den Werkstückgegebenheiten bestimmt.

When using a large diameter cutter, whose relationship is close to the bore diameter, manufacturing cycle time can be reduced, due to the smaller centre of rotation and higher feed rates could be realized. Many times the rotation of the milling cutter centre will be defined by the parameters of the workpiece and the whole application setup.

Gewindefräsen

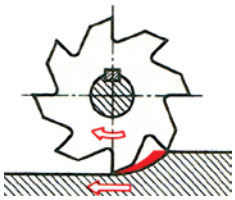
Thread milling

Mit HORN-Zirkulargewindefräsern werden bei voller Frästiefe die Gewindegänge einzeln abgefahren. Dabei ergeben sich Gewinde mit hoher Zylindrizität, besonders in hochfesten Werkstoffen. In Sacklochbohrungen empfiehlt es sich vom Bohrungsgrund nach außen zu arbeiten. Damit vermeidet man das Auffahren auf Späne und vermindert die Gefahr der Beschädigung des Werkzeugs.

Als Faustformel beim Gewindefräsen gilt:
Das Werkzeug darf nicht größer sein als 70% des Kerndurchmessers, ansonsten schneidet es in den Gewindegängen nach.

With HORN thread milling inserts, the thread profile is generated in one full cut to the profile depth of the thread. This produces threads with minimal taper, especially in high alloyed steels. In blind holes, it is recommended to mill from the bottom to the top. Otherwise, there is the risk of damaging the tool because of milling into chips at the bottom of the blind hole.

A general recommendation for thread milling:
The milling cutter diameter should not exceed 70% of the minor diameter of the thread. Otherwise, recutting of the profile occurs, which could bring the whole thread out of tolerance.



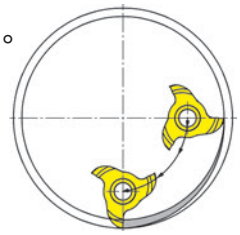
Fräsrichtung

Milling direction

HORN-Zirkularfräswerkzeuge sind rechtsschneidend und es wird empfohlen, wie bei Hartmetall-Werkzeugen üblich, im Gleichlauf zu fräsen.

Most HORN milling tools are right-handed and it is recommended to use them with the climb milling process as this is generally recommended for carbide tools.

Einfahrschleife > 45°
Ramp angle



Eintauchen in das Werkstück

Milling entry into the workpiece

Einfaches radiales Eintauchen erzeugt aufgrund des hohen Umschlingungswinkels oftmals Schwingungen, die sich beim Nutfräsen bis zum Erreichen des Nutgrundes nicht mehr beruhigen. Empfohlen wird deshalb unter 45° bis 180° in einer Einfahrschleife auf Nuttiefe zu fräsen. Die ermittelten Vorschubwerte beziehen sich zwar auf die volle Frästiefe, werden aber auch beim Einfahren beibehalten.

A simple radial entry of the milling cutter creates a very long contact angle which leads to vibrations which will not disappear for the rest of the milling operation and are visual on the bottom of the groove. It is recommended to enter the groove with a ramp angle of 45° up to 180° to the maximum depth of cut. The calculated cutting data refers to the milling condition when the insert is in the full cut, but can be also used for the entry loop.

Formelzeichen
Symbols

ISO

a_r	a_e	radiale Schnitttiefe radial depth of cut
d		Schneidkreis-Ø [mm] Cutting edge Ø [mm]
f		Vorschub pro Umdrehung $f = f_z \cdot Z$ [mm/U] [mm/rev] Feed per revolutions
f_z	s_z	Vorschub/Zahn $f_z = \frac{v_f}{Z \cdot n}$ [mm] Feed/tooth
h_m		mittlere Spandicke medium thickness of chip
n		Drehzahl $n = \frac{v_c \cdot 1000}{d \cdot \pi}$ [1/min] Revolutions
r		Radius Fräser Radius of cutter
R		Radius Werkstück Radius of workpiece
v_c		Schnittgeschwindigkeit $v_c = \frac{d \cdot \pi \cdot n}{1000}$ [m/min] Cutting speed
v_f	s'	Vorschubgeschwindigkeit $v_f = f_z \cdot Z \cdot n$ [mm/min] Feed rate
v_{f2}	s'_2	Vorschubgeschwindigkeit der Schneide (Nutgrund-Ø) Feed rate of tool tip
v_{f3}	s'_1	Vorschubgeschwindigkeit der Fräsmittelpunktsbahn Feed rate of tool centre
Z		Zähnezahl Number of teeth

Vorschubwerte Eckfräser DAM

Feed rate shoulder mill

Werkstoff Material		Material-gruppe Material group	DAM31 Eckfräser Shoulder mill κ = 90°				DAM32 Eckfräser Shoulder mill κ = 90°				DAM62 Eckfräser Shoulder mill κ = 90°			
			a_e / D_C				a_e / D_C				a_e / D_C			
			100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
P	unlegierter Stahl Carbon steel	P1.1 - P1.5	0,12	0,14	0,15	0,20	0,16	0,18	0,20	0,27	0,15	0,17	0,19	0,25
	niedrig legierter Stahl (<5%) Alloyed steel	P2.1 - P2.4	0,08	0,09	0,10	0,13	0,10	0,12	0,13	0,17	0,11	0,13	0,14	0,18
	hochlegierter Stahl (>5%) high alloyed steel	P3.1 - P3.2												
	Stahlguss Cast steel	P4.1 - P4.2												
	Sinterstahl Sintered steel	P5.1												
M	Rostfreier Stahl Stainless steel	M1.1-M1.3	0,06	0,07	0,08	0,10	0,08	0,09	0,10	0,13	0,08	0,09	0,10	0,13
K	Grauguss Grey cast iron	K1.1-K.1.2	0,12	0,14	0,15	0,20	0,16	0,18	0,20	0,27	0,19	0,22	0,24	0,32
	Kugelgraphitguss Spheroidal graphite cast iron	K2.1-K2.2	0,10	0,12	0,13	0,17	0,13	0,15	0,16	0,22	0,15	0,17	0,19	0,25
	Temperguss Malleable cast iron	K3.1-K3.2	0,10	0,12	0,13	0,17	0,13	0,15	0,16	0,22	0,15	0,17	0,19	0,25
	Ausferritisches Gussseisen Ausferritic spheroidal cast iron ADI	K4.1-K4.3	0,08	0,09	0,10	0,13	0,11	0,13	0,14	0,18	0,11	0,13	0,14	0,18
N	Al-Legierungen Al-alloys	N1.1-N1.2	0,08	0,09	0,10	0,13	0,11	0,13	0,14	0,18	0,11	0,13	0,14	0,18
	Al-Guss-Legierung Al-cast-alloy	N2.1-N2.3	0,10	0,12	0,13	0,17	0,13	0,15	0,16	0,22	0,13	0,15	0,16	0,22
	Kupfer-Legierungen Copper-alloys	N3.1-N3.4	0,06	0,07	0,08	0,10	0,11	0,13	0,14	0,18	0,11	0,13	0,14	0,18
	Graphit Graphite	N4.1												
S	Warmfeste Legierung (Fe) Heat resistant alloy	S1.1-S1.2	0,06	0,07	0,08	0,10	0,08	0,09	0,10	0,13	0,09	0,10	0,11	0,15
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	S2.1-S2.2	0,06	0,07	0,08	0,10	0,08	0,09	0,10	0,13	0,09	0,10	0,11	0,15
	Titan Titan	S3.1-S3.3	0,06	0,07	0,08	0,10	0,08	0,09	0,10	0,13	0,09	0,10	0,11	0,15
H	Gehärtete Stähle Hardened steels	H1.1-H1.4												
O	Thermoplaste Thermoplastics	O1.1												
	Duroplaste Duro plaste	O1.2												
	Kunstst. glasfaserverstärkt Plastics glass fibre reinforced	O1.3												
	Kunstst. kohlefaserverstärkt Plastics carbon fibre reinforced	O1.4												

Vorschubwerte Tangentialfräser

Feed rate tangential mill

Werkstoff Material		Material-gruppe Material group	M406 Eckfräser Shoulder Mill κ = 90°				M409 Eckfräser Shoulder Mill κ = 90°				M406 T-Nut Fräser T-Slot Cutter κ = 90°		
			a_e / D_C				a_e / D_C				a_e / D_C		
			100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%
P	unlegierter Stahl Carbon steel	P1.1 - P1.5	0,16	0,18	0,20	0,27	0,20	0,23	0,25	0,33	0,10	0,12	0,13
	niedrig legierter Stahl (<5%) Alloyed steel	P2.1 - P2.4	0,14	0,16	0,18	0,23	0,18	0,21	0,23	0,30	0,08	0,09	0,10
	hochlegierter Stahl (>5%) high alloyed steel	P3.1 - P3.2											
	Stahlguss Cast steel	P4.1 - P4.2											
	Sinterstahl Sintered steel	P5.1											
M	Rostfreier Stahl Stainless steel	M1.1-M1.3	0,10	0,12	0,13	0,17	0,12	0,12	0,13	0,17	0,06	0,07	0,08
K	Grauguss Grey cast iron	K1.1-K.1.2	0,16	0,18	0,20	0,27	0,18	0,18	0,20	0,27	0,12	0,14	0,15
	Kugelgraphitguss Spheroidal graphite cast iron	K2.1-K2.2	0,14	0,16	0,18	0,23	0,16	0,16	0,18	0,23	0,10	0,12	0,13
	Temperguss Malleable cast iron	K3.1-K3.2	0,14	0,16	0,18	0,23	0,16	0,16	0,18	0,23			
	Ausferritisches Gussseisen/ADI Ausferritic spheroidal cast iron/ADI	K4.1-K4.3											
N	Al-Legierungen Al-alloys	N1.1-N1.2	0,12	0,14	0,15	0,20	0,14	0,14	0,15	0,20			
	Al-Guss-Legierung Al-cast-alloy	N2.1-N2.3	0,15	0,17	0,19	0,25	0,14	0,17	0,19	0,25			
	Kupfer-Legierungen Copper-alloys	N3.1-N3.4	0,10	0,12	0,13	0,17	0,12	0,12	0,13	0,17			
	Graphit Graphite	N4.1											
S	Warmfeste Legierung (Fe) Heat resistant alloy	S1.1-S1.2	0,08	0,09	0,10	0,13	0,10	0,09	0,10	0,13			
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	S2.1-S2.2	0,08	0,09	0,10	0,13	0,10	0,09	0,10	0,13			
	Titan Titan	S3.1-S3.3	0,08	0,09	0,10	0,13	0,10	0,09	0,10	0,13			
H	Gehärtete Stähle Hardened steels	H1.1-H1.4											
O	Thermoplaste Thermoplastics	O1.1											
	Duroplaste Duro plaste	O1.2											
	Kunststoffe glasfaserverstärkt Plastics glass fibre reinforced	O1.3											
	Kunststoffe kohlefaserverstärkt Plastics carbon fibre reinforced	O1.4											

	M409 T-Nut Fräser T-Slot Cutter κ = 90°				M409 Walzenstirnfräser Shell End Mill κ = 90°				M409 Planfräser Face Mill κ = 45°				M409 Planfräser Face Mill κ = 60°			
	a_e / D_C				a_e / D_C				a_e / D_C				a_e / D_C			
	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
	0,12	0,14	0,15	0,20	0,15	0,17	0,19	0,25	0,28	0,32	0,35	0,47	0,23	0,26	0,29	0,38
	0,10	0,12	0,13	0,17	0,12	0,14	0,15	0,20	0,25	0,29	0,31	0,42	0,21	0,24	0,26	0,35
	0,06	0,07	0,08	0,10	0,08	0,12	0,13	0,17	0,17	0,12	0,13	0,17	0,14	0,16	0,18	0,23
	0,14	0,16	0,18	0,23	0,16	0,18	0,20	0,27	0,25	0,18	0,20	0,27	0,21	0,24	0,26	0,35
	0,10	0,12	0,13	0,17	0,12	0,16	0,18	0,23	0,22	0,16	0,18	0,23	0,18	0,21	0,23	0,30
					0,12	0,16	0,18	0,23	0,22	0,16	0,18	0,23	0,18	0,21	0,23	0,30
					0,12	0,14	0,15	0,20	0,20	0,14	0,15	0,20	0,16	0,18	0,20	0,27
					0,10	0,17	0,19	0,25	0,20	0,17	0,19	0,25	0,16	0,18	0,20	0,27
					0,10	0,12	0,13	0,17	0,17	0,12	0,13	0,17	0,14	0,16	0,18	0,23
					0,10	0,09	0,10	0,13	0,14	0,09	0,10	0,13	0,12	0,14	0,15	0,20
					0,10	0,09	0,10	0,13	0,14	0,09	0,10	0,13	0,12	0,14	0,15	0,20
					0,10	0,09	0,10	0,13	0,14	0,09	0,10	0,13	0,12	0,14	0,15	0,20

Vorschubwerte Tangentialfräser

Feed rate tangential mill

Werkstoff Material		Material-gruppe Material group	M409 Scheibenfräser Disc Milling Cutter κ = 90°				M610 Eckfräser Shoulder Mill κ = 90°			
			a_e / D_C				a_e / D_C			
			100%	50%	20%	10%	100%	50%	20%	10%
P	unlegierter Stahl Carbon steel	P1.1 - P1.5	0,15	0,17	0,19	0,25	0,16	0,18	0,20	0,27
	niedrig legierter Stahl (<5%) Alloyed steel	P2.1 - P2.4	0,13	0,15	0,16	0,22	0,14	0,16	0,18	0,23
	hochlegierter Stahl (>5%) high alloyed steel	P3.1 - P3.2								
	Stahlguss Cast steel	P4.1 - P4.2								
	Sinterstahl Sintered steel	P5.1								
M	Rostfreier Stahl Stainless steel	M1.1-M1.3	0,08	0,09	0,10	0,13	0,10	0,12	0,13	0,17
K	Grauguss Grey cast iron	K1.1-K.1.2	0,18	0,21	0,23	0,30	0,16	0,18	0,20	0,27
	Kugelgraphitguss Spheroidal graphite cast iron	K2.1-K2.2	0,15	0,17	0,19	0,25	0,14	0,16	0,18	0,23
	Temperguss Malleable cast iron	K3.1-K3.2	0,15	0,17	0,19	0,25	0,14	0,16	0,18	0,23
	Ausferritisches Gussseisen/ADI Ausferritic spheroidal cast iron/ADI	K4.1-K4.3								
N	Al-Legierungen Al-alloys	N1.1-N1.2	0,12	0,14	0,15	0,20	0,12	0,14	0,15	0,20
	Al-Guss-Legierung Al-cast-alloy	N2.1-N2.3	0,10	0,12	0,13	0,17	0,15	0,17	0,19	0,25
	Kupfer-Legierungen Copper-alloys	N3.1-N3.4	0,10	0,12	0,13	0,17	0,10	0,12	0,13	0,17
	Graphit Graphite	N4.1								
S	Warmfeste Legierung (Fe) Heat resistant alloy	S1.1-S1.2	0,08	0,09	0,10	0,13	0,08	0,09	0,10	0,13
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	S2.1-S2.2	0,08	0,09	0,10	0,13	0,08	0,09	0,10	0,13
	Titan Titan	S3.1-S3.3	0,08	0,09	0,10	0,13	0,08	0,09	0,10	0,13
H	Gehärtete Stähle Hardened steels	H1.1-H1.4								
O	Thermoplaste Thermoplastics	O1.1								
	Duroplaste Duro plaste	O1.2								
	Kunststoffe glasfaserverstärkt Plastics glass fibre reinforced	O1.3								
	Kunststoffe kohlefaserverstärkt Plastics carbon fibre reinforced	O1.4								

	M610 Scheibenfräser Disc Milling Cutter κ = 90°				M475 Scheibenfräser Disc Milling Cutter w = 3 + 4 mm				M475 Scheibenfräser Disc Milling Cutter w = 6 + 8 mm			
	a_e / D_C				a_e / D_C				a_e / D_C			
	100%	50%	20%	10%	100%	50%	20%	10%	100%	50%	20%	10%
	0,15	0,17	0,19	0,25	0,09	0,10	0,11	0,15	0,11	0,13	0,14	0,18
	0,13	0,15	0,16	0,22	7,00	8,05	8,75	11,69	0,09	0,10	0,11	0,15
	0,08	0,09	0,10	0,13	0,05	0,06	0,06	0,08	0,06	0,07	0,08	0,10
	0,18	0,21	0,23	0,30	0,11	0,13	0,14	0,18	0,14	0,16	0,18	0,23
	0,15	0,17	0,19	0,25	0,09	0,10	0,11	0,15	0,11	0,13	0,14	0,18
	0,15	0,17	0,19	0,25	0,09	0,10	0,11	0,15	0,11	0,13	0,14	0,18
	0,12	0,14	0,15	0,20	0,07	0,08	0,09	0,12	0,09	0,10	0,11	0,15
	0,10	0,12	0,13	0,17	0,06	0,07	0,08	0,10	0,08	0,09	0,10	0,13
	0,10	0,12	0,13	0,17								
	0,08	0,09	0,10	0,13	0,05	0,06	0,06	0,08	0,06	0,07	0,08	0,10
	0,08	0,09	0,10	0,13	0,05	0,06	0,06	0,08	0,06	0,07	0,08	0,10
	0,08	0,09	0,10	0,13	0,05	0,06	0,06	0,08	0,06	0,07	0,08	0,10

Vorschubwerte Hochvorschubfräser

Feed rate high feed mill

Werkstoff Material		Material-gruppe Material group	DAHM25 Hochvorschubfräser Disc Milling Cutter κ = 24°				DAHM37 Hochvorschubfräser Disc Milling Cutter κ = 19°				
			a_e / D_C				a_e / D_C				
			100%	50%	20%	10%	100%	50%	20%	10%	
P	unlegierter Stahl Carbon steel	P1.1 - P1.5	0,90	1,04	1,13	1,50	1,20	1,38	1,50	2,00	
	niedrig legierter Stahl (<5%) Alloyed steel	P2.1 - P2.4	0,80	0,92	1,00	1,34	1,00	1,38	1,50	2,00	
	hochlegierter Stahl (>5%) high alloyed steel	P3.1 - P3.2									
	Stahlguss Cast steel	P4.1 - P4.2									
	Sinterstahl Sintered steel	P5.1									
M	Rostfreier Stahl Stainless steel	M1.1-M1.3	0,40	0,46	0,50	0,67	0,50	1,38	1,50	2,00	
K	Grauguss Grey cast iron	K1.1-K.1.2	1,10	1,27	1,38	1,84	1,20	1,38	1,50	2,00	
	Kugelgraphitguss Spheroidal graphite cast iron	K2.1-K2.2	0,90	1,04	1,13	1,50	1,00	1,38	1,50	2,00	
	Temperguss Malleable cast iron	K3.1-K3.2	0,90	1,04	1,13	1,50	1,00	1,38	1,50	2,00	
	Ausferritisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	K4.1-K4.3									
N	Al-Legierungen Al-alloys	N1.1-N1.2									
	Al-Guss-Legierung Al-cast-alloy	N2.1-N2.3									
	Kupfer-Legierungen Copper-alloys	N3.1-N3.4									
	Graphit Graphite	N4.1									
S	Warmfeste Legierung (Fe) Heat resistant alloy	S1.1-S1.2	0,40	0,46	0,50	0,67	0,50	0,58	0,63	0,84	
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	S2.1-S2.2	0,40	0,46	0,50	0,67	0,50	0,58	0,63	0,84	
	Titan Titan	S3.1-S3.3	0,40	0,46	0,50	0,67	0,50	0,58	0,63	0,84	
H	Gehärtete Stähle Hardened steels	H1.1-H1.4									
O	Thermoplaste Thermoplastics	O1.1									
	Duroplaste Duro plaste	O1.2									
	Kunststoffe glasfaserverstärkt Plastics glass fibre reinforced	O1.3									
	Kunststoffe kohlefaserverstärkt Plastics carbon fibre reinforced	O1.4									

	DAHM82 Hochvorschubfräser Disc Milling Cutter κ = 10°				DAHM84 Hochvorschubfräser Disc Milling Cutter κ = 10°			
	a_e / D_C				a_e / D_C			
	100%	50%	20%	10%	100%	50%	20%	10%
	1,20	1,38	1,50	2,00	1,30	1,50	1,63	2,17
	1,00	1,38	1,50	2,00	1,10	1,27	1,38	1,84
	0,50	0,58	0,63	0,84	0,60	0,69	0,75	1,00
	1,20	1,38	1,50	2,00	1,30	1,50	1,63	2,17
	1,00	1,15	1,25	1,67	1,10	1,27	1,38	1,84
	1,00	1,15	1,25	1,67	1,10	1,27	1,38	1,84
	0,60	0,69	0,75	1,00	0,70	0,81	0,88	1,17
	0,60	0,69	0,75	1,00	0,70	0,81	0,88	1,17
	0,60	0,69	0,75	1,00	0,70	0,81	0,88	1,17

Schnittdaten Eck- und Planfräsen (radial)

Cutting Data Corner and Face milling (radial)

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e/D_c		
							100%	50%	20%
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	160	200	240
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	160	200	240
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	160	200	240
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	160	200	240
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	160	200	240
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	160	200	240
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	180	200	220
		vergütet quenched	P2.2	280	960	14NiCr10	180	200	220
		vergütet quenched	P2.3	350	1250	34CrMo4	180	200	220
		vergütet quenched	P2.4	430	1450	55Cr3	180	200	220
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18			
		gehärtet hardened	P3.2	350	1200	X210Cr2			
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200			
		legiert alloyed	P4.2	220	750	GX40CrSi28			
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39			
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	80	105	130
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	80	105	130
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3	80	105	130

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84

	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%
	140	160	180							140	160	180				180	210	240
	140	160	180							140	160	180				180	210	240
	140	160	180							140	160	180				180	210	240
	140	160	180							140	160	180				180	210	240
	140	160	180							140	160	180				180	210	240
																180	200	220
																180	200	220
																180	200	220
																180	200	220
													80	105	130	80	105	130
													80	105	130	80	105	130
													80	105	130	80	105	130

Schnittdaten Eck- und Planfräsen (radial)

Cutting Data Corner and Face milling (radial)

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e/D_c		
							100%	50%	20%
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	220	260	300
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	220	240	260
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	220	240	260
		perlitisch perlitic	K2.1	260	700	GGG-60	220	240	260
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45			
		perlitisch perlitic	K3.2	260	700	GTS-55-04			
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800				
		vergütet quenched	K4.2	350	1050				
		vergütet quenched	K4.3	450	1400				
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	350	675	1000
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	350	675	1000
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6			
		6-10% Si	N2.2	100	320	AlSi7Mg			
		10-15 % Si	N2.3	130	450	AlSi12			
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu			
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb			
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40			
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3			
	Graphit Graphite		N4.1						

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84

	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%
	140	150	160							220	260	300	220	260	300	160	170	180
	140	150	160							220	240	260	220	240	260	160	170	180
	140	150	160							220	240	260	220	240	260	160	170	180
	140	150	160							220	240	260	220	240	260	160	170	180
	500	850	1200	500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									
				500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									
	500	850	1200	500	1750	3000	500	1750	3000									

Schnittdaten Eck- und Planfräsen (radial)

Cutting Data Corner and Face milling (radial)

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e/D_c			
							100%	50%	20%	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670					
		gehärtet hardened	S1.2	275	930					
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600				
		gehärtet hardened	S2.2	350	1200	Inconel 713				
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240					
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200					
		Titanlegierung β Titanium alloy β	S3.3	410	1400					
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1							
		55-60 HRC	H1.2							
		60-63 HRC	H1.3							
		> 63HRC	H1.4							
O	Thermoplaste Thermoplastics		O1.1							
	Duroplaste Duro plaste		O1.2							
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3							
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4							

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84

	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%
	25	28	30										30	55	80	30	55	80
	25	28	30										30	55	80	30	55	80
	25	28	30										30	55	80	30	55	80
	25	28	30										30	55	80	30	55	80
	25	28	30										30	55	80	30	55	80
	25	28	30										30	55	80	30	55	80
	25	28	30										30	55	80	30	55	80

Schnittdaten Eck- und Planfräsen (tangential)

Cutting Data Corner and Face milling (tangential)

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	K10 a_e/D_c			
							100%	50%	20%	
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15				
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6				
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5				
		~ 0,6% C geglüht annealed	P1.4	190	610	C55				
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60				
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28				
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6				
		vergütet quenched	P2.2	280	960	14NiCr10				
		vergütet quenched	P2.3	350	1250	34CrMo4				
		vergütet quenched	P2.4	430	1450	55Cr3				
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18				
		gehärtet hardened	P3.2	350	1200	X210Cr2				
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200				
		legiert alloyed	P4.2	220	750	GX40CrSi28				
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39				
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13				
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2				
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3				

	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%						
	160	200	240	160	200	240	180	210	240									
	160	200	240	160	200	240	180	210	240									
	160	200	240	160	200	240	180	210	240									
	160	200	240	160	200	240	180	210	240									
	160	200	240	160	200	240	180	210	240									
	160	200	240	160	200	240	180	210	240									
	180	200	220	180	200	220	180	200	220									
	180	200	220	180	200	220	180	200	220									
	180	200	220	180	200	220	180	200	220									
	180	200	220	180	200	220												
	80	105	130	80	105	130	80	105	130									
	80	105	130	80	105	130	80	105	130									
	80	105	130	80	105	130	80	105	130									

Schnittdaten Eck- und Planfräsen (tangential)

Cutting Data Corner and Face milling (tangential)

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	K10 a_e/D_c			
							100%	50%	20%	
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25				
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40				
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40				
		perlitisch perlitic	K2.1	260	700	GGG-60				
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45				
		perlitisch perlitic	K3.2	260	700	GTS-55-04				
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800					
		vergütet quenched	K4.2	350	1050					
		vergütet quenched	K4.3	450	1400					
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1				
		vergütbar heat treatable	N1.2	100	340	AlMgSi1				
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6	350	475	600	
		6-10% Si	N2.2	100	320	AlSi7Mg	350	475	600	
		10-15 % Si	N2.3	130	450	AlSi12				
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu	180	205	230	
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb	180	205	230	
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40	180	205	230	
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3	180	205	230	
	Graphit Graphite		N4.1							

	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%						
	220	260	300	220	260	300	160	170	180									
	220	240	260	220	240	260	160	170	180									
	220	240	260	220	240	260	160	170	180									
	220	240	260	220	240	260	160	170	180									
	350	675	1000	350	675	1000												
	350	675	1000	350	675	1000												
									500	1750	3000							
									500	1250	2000							
									350	925	1500							
									220	260	300							
									180	205	230							
									180	210	240							
									160	205	250							

Schnittdaten Eck- und Planfräsen (tangential)

Cutting Data Corner and Face milling (tangential)

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	K10 a_e/D_c			
							100%	50%	20%	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670					
		gehärtet hardened	S1.2	275	930					
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600				
		gehärtet hardened	S2.2	350	1200	Inconel 713				
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240					
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200					
		Titanlegierung β Titanium alloy β	S3.3	410	1400					
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1							
		55-60 HRC	H1.2							
		60-63 HRC	H1.3							
		> 63HRC	H1.4							
O	Thermoplaste Thermoplastics		O1.1				500	1000	1500	
	Duroplaste Duro plaste		O1.2				500	1000	1500	
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3							
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4							

	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%						
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
										500	1000	1500						
										500	1000	1500						

Schnittdaten Eckfräsen
Cutting Data Corner milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	K10 a_e/D_c			
							100%	50%	20%	
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15				
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6				
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5				
		~ 0,6% C geglüht annealed	P1.4	190	610	C55				
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60				
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28				
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6				
		vergütet quenched	P2.2	280	960	14NiCr10				
		vergütet quenched	P2.3	350	1250	34CrMo4				
		vergütet quenched	P2.4	430	1450	55Cr3				
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18				
		gehärtet hardened	P3.2	350	1200	X210Cr2				
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200				
		legiert alloyed	P4.2	220	750	GX40CrSi28				
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39				
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13				
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2				
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3				

Walzenstirnfräser M409
Shell End Mill

	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%						
	130	160	190	130	160	190	145	170	195									
	130	160	190	130	160	190	145	170	195									
	130	160	190	130	160	190	145	170	195									
	130	160	190	130	160	190	145	170	195									
	130	160	190	130	160	190	145	170	195									
	130	160	190	130	160	190	145	170	195									
	145	160	175	145	160	175	145	160	175									
	145	160	175	145	160	175	145	160	175									
	145	160	175	145	160	175	145	160	175									
	145	160	175	145	160	175	145	160	175									
	65	85	105	65	85	105	65	85	105									
	65	85	105	65	85	105	65	85	105									
	65	85	105	65	85	105	65	85	105									

Schnittdaten Eckfräsen
Cutting Data Corner milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	K10 a_e/D_c		
							100%	50%	20%
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25			
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40			
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40			
		perlitisch perlitic	K2.1	260	700	GGG-60			
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45			
		perlitisch perlitic	K3.2	260	700	GTS-55-04			
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800				
		vergütet quenched	K4.2	350	1050				
		vergütet quenched	K4.3	450	1400				
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1			
		vergütbar heat treatable	N1.2	100	340	AlMgSi1			
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6	280	380	480
		6-10% Si	N2.2	100	320	AlSi7Mg	280	380	480
		10-15 % Si	N2.3	130	450	AlSi12			
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu	145	165	185
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb	145	165	185
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40	180	205	230
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3	180	205	230
	Graphit Graphite		N4.1						

Walzenstirnfräser M409
Shell End Mill

	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%						
	180	210	240	180	210	240	130	140	150									
	180	210	240	180	210	240	130	140	150									
	180	210	240	180	210	240	130	140	150									
	180	210	240	180	210	240	130	140	150									
	280	540	800	280	540	800												
	280	540	800	280	540	800												
										400	1400	2400						
										400	1000	1600						
										280	740	1200						
										180	210	240						
										145	165	185						
										145	165	185						
										130	165	200						

Schnittdaten Eckfräsen
Cutting Data Corner milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	K10 a_e/D_c			
							100%	50%	20%	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670					
		gehärtet hardened	S1.2	275	930					
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600				
		gehärtet hardened	S2.2	350	1200	Inconel 713				
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240					
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200					
		Titanlegierung β Titanium alloy β	S3.3	410	1400					
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1							
		55-60 HRC	H1.2							
		60-63 HRC	H1.3							
		> 63HRC	H1.4							
O	Thermoplaste Thermoplastics		O1.1				400	800	1200	
	Duroplaste Duro plaste		O1.2				400	800	1200	
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3							
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4							

Walzenstirnfräser M409
Shell End Mill

	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%						
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
							30	55	80									
										400	800	1200						
										400	800	1200						

Schnittdaten Nutfräsen
Cutting Data Groove Milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	RC4G a_e/D_C 25%	RC4G a_e/D_C 10%
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	160	240
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	160	240
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	160	240
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	160	240
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	160	240
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	160	240
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	180	220
		vergütet quenched	P2.2	280	960	14NiCr10	180	220
		vergütet quenched	P2.3	350	1250	34CrMo4	180	220
		vergütet quenched	P2.4	430	1450	55Cr3	180	220
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18	80	120
		gehärtet hardened	P3.2	350	1200	X210Cr2	80	100
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200	160	220
		legiert alloyed	P4.2	220	750	GX40CrSi28	80	140
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39		
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	80	140
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	70	120
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3	70	120

Scheibenfräser M406, M409, M475, M610

Disc Milling Cutter

	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%				
			130	190	130	190	145	190						
			130	190	130	190	145	190						
			130	190	130	190	145	190						
			130	190	130	190	145	190						
			130	190	130	190	145	190						
			130	190	130	190	145	190						
			145	175	145	175	145	175						
			145	175	145	175	145	175						
			145	175	145	175	145	175						
			145	175	145	175								
			65	105	60	105	65	105						
			65	105	60	105	65	105						
			65	105	60	105	65	105						

Schnittdaten Nutfräsen
Cutting Data Groove Milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	RC4G a_e/D_C	
							25%	10%
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	180	250
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	120	180
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	120	160
		perlitisch perlitic	K2.1	260	700	GGG-60	120	160
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45	60	120
		perlitisch perlitic	K3.2	260	700	GTS-55-04	60	140
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800			
		vergütet quenched	K4.2	350	1050			
		vergütet quenched	K4.3	450	1400			
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1		
		vergütbar heat treatable	N1.2	100	340	AlMgSi1		
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6		
		6-10% Si	N2.2	100	320	AlSi7Mg		
		10-15 % Si	N2.3	130	450	AlSi12		
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu		
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb		
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40		
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3		
	Graphit Graphite		N4.1					

Scheibenfräser M406, M409, M475, M610

Disc Milling Cutter

	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%				
			175	240	175	240	130	145						
			175	240	175	240	130	145						
			175	240	175	240	130	145						
			175	240	175	240	130	145						
			280	800	280	800								
			280	800	280	800								
	280	480							400	2400				
	280	480							400	1600				
									280	1200				
	145	185							175	240				
	145	185							145	185				
	145	185							145	190				
	145	185							130	200				

Schnittdaten Nutfräsen
Cutting Data Groove Milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	RC4G a_e/D_C		
							25%	10%	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670				
		gehärtet hardened	S1.2	275	930				
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600			
		gehärtet hardened	S2.2	350	1200	Inconel 713			
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240				
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200				
		Titanlegierung β Titanium alloy β	S3.3	410	1400				
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1						
		55-60 HRC	H1.2						
		60-63 HRC	H1.3						
		> 63HRC	H1.4						
O	Thermoplaste Thermoplastics		O1.1						
	Duroplaste Duro plaste		O1.2						
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3						
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4						

Scheibenfräser M406, M409, M475, M610

Disc Milling Cutter

	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%				
							25	65						
							25	65						
							25	65						
							25	65						
							25	65						
							25	65						
							25	65						
	400	1200							400	1200				
	400	1200							400	1200				

Schnittdaten Fasen Fräsen DAM31, DAM32

Cutting Data Chamfering milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e / D_C		TA45 a_e / D_C	
							20%	10%	20%	10%
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	240	290	180	215
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	240	290	180	215
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	240	290	180	215
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	240	290	180	215
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	240	290	180	215
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	240	290		
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	220	265		
		vergütet quenched	P2.2	280	960	14NiCr10	220	265		
		vergütet quenched	P2.3	350	1250	34CrMo4	220	265		
		vergütet quenched	P2.4	430	1450	55Cr3	220	265		
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18				
		gehärtet hardened	P3.2	350	1200	X210Cr2				
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200				
		legiert alloyed	P4.2	220	750	GX40CrSi28				
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39				
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	130	155		
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	130	155		
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3	130	155		

Schnittdaten Fasen Fräsen DAM31, DAM32

Cutting Data Chamfering milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e / D_C		TA45 a_e / D_C	
							20%	10%	20%	10%
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	300	360	160	195
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	260	360	160	195
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	260	360	160	195
		perlitisch perlitic	K2.1	260	700	GGG-60	260	360	160	195
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45				
		perlitisch perlitic	K3.2	260	700	GTS-55-04				
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800					
		vergütet quenched	K4.2	350	1050					
		vergütet quenched	K4.3	450	1400					
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	1000	1200	1200	1450
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	1000	1200	1200	1450
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6			1200	1450
		6-10% Si	N2.2	100	320	AlSi7Mg			1200	1450
		10-15 % Si	N2.3	130	450	AlSi12				
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu			1200	1450
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb			1200	1450
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40			1200	1450
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3			1200	1450
	Graphit Graphite		N4.1							

Schnittdaten T-Nuten Fräsen M406, M409

Cutting Data T-slot milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	AS46 a_e/D_C		AS4B a_e/D_C	
							100%	50%	100%	50%
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	130	160	130	160
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	130	160	130	160
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	130	160	130	160
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	130	160	130	160
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	130	160	130	160
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	130	160	130	160
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	145	160	145	160
		vergütet quenched	P2.2	280	960	14NiCr10	145	160	145	160
		vergütet quenched	P2.3	350	1250	34CrMo4	145	160	145	160
		vergütet quenched	P2.4	430	1450	55Cr3	145	160	145	160
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18				
		gehärtet hardened	P3.2	350	1200	X210Cr2				
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200				
		legiert alloyed	P4.2	220	750	GX40CrSi28				
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39				
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	65	85	65	85
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	65	85	65	85
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3	65	85	65	85

Schnittdaten T-Nuten Fräsen M406, M409

Cutting Data T-slot milling

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	AS46 a_e/D_c		AS4B a_e/D_c	
							100%	50%	100%	50%
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	180	210	180	210
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	180	210	180	210
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	180	210	180	210
		perlitisch perlitic	K2.1	260	700	GGG-60	180	210	180	210
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45				
		perlitisch perlitic	K3.2	260	700	GTS-55-04				
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800					
		vergütet quenched	K4.2	350	1050					
		vergütet quenched	K4.3	450	1400					
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	280	540	280	540
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	280	540	280	540
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6				
		6-10% Si	N2.2	100	320	AlSi7Mg				
		10-15 % Si	N2.3	130	450	AlSi12				
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu				
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb				
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40				
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3				
	Graphit Graphite		N4.1							

Schnittdaten Bohrzirkularfräsen

Cutting Data Helical Interpolation

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e/D_c			
							100%	50%	20%	
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	145	180	215	
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	145	180	215	
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	145	180	215	
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	145	180	215	
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	145	180	215	
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	145	180	215	
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	160	180	200	
		vergütet quenched	P2.2	280	960	14NiCr10	160	180	200	
		vergütet quenched	P2.3	350	1250	34CrMo4	160	180	200	
		vergütet quenched	P2.4	430	1450	55Cr3	160	180	200	
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18				
		gehärtet hardened	P3.2	350	1200	X210Cr2				
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200				
		legiert alloyed	P4.2	220	750	GX40CrSi28				
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39				
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	70	95	120	
		austenitisch austenitic ferritic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	70	95	120	
		austenitisch ferritisch austenitic	M1.3	230	780	X2CrNiMo-N17-13-3	70	95	120	

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84

	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%						
	125	145	165	125	145	165				160	190	210						
	125	145	165	125	145	165				160	190	210						
	125	145	165	125	145	165				160	190	210						
	125	145	165	125	145	165				160	190	210						
	125	145	165	125	145	165				160	190	210						
										160	180	200						
										160	180	200						
										160	180	200						
										160	180	200						
							70	95	120	70	95	120						
							70	95	120	70	95	120						
							70	95	120	70	95	120						

Schnittdaten Bohrzirkularfräsen

Cutting Data Helical Interpolation

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e/D_c		
							100%	50%	20%
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	200	235	270
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	200	235	270
	Kugel-graphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	200	235	270
		perlitisch perlitic	K2.1	260	700	GGG-60	200	235	270
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45			
		perlitisch perlitic	K3.2	260	700	GTS-55-04			
	Ausferri-tisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800				
		vergütet quenched	K4.2	350	1050				
		vergütet quenched	K4.3	450	1400				
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	300	600	900
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	300	600	900
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6			
		6-10% Si	N2.2	100	320	AlSi7Mg			
		10-15 % Si	N2.3	130	450	AlSi12			
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu			
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb			
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40			
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3			
	Graphit Graphite		N4.1						

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84

	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%						
	125	135	145	200	235	270	200	235	270	145	155	165						
	125	135	145	200	235	270	200	235	270	145	155	165						
	125	135	145	200	235	270	200	235	270	145	155	165						
	125	135	145	200	235	270	200	235	270	145	155	165						
	450	775	1100															
	450	775	1100															
	450	775	1100															
	450	775	1100															
	450	775	1100															
	450	775	1100															
	450	775	1100															
	450	775	1100															

Schnittdaten Bohrzirkularfräsen

Cutting Data Helical Interpolation

Werkstoff Material			Material-gruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	SA4B a_e/D_c			
							100%	50%	20%	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670					
		gehärtet hardened	S1.2	275	930					
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600				
		gehärtet hardened	S2.2	350	1200	Inconel 713				
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240					
		Titanlegierung α-β Titanium alloy α- β	S3.2	360	1200					
		Titanlegierung β Titanium alloy β	S3.3	410	1400					
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1							
		55-60 HRC	H1.2							
		60-63 HRC	H1.3							
		> 63HRC	H1.4							
O	Thermoplaste Thermoplastics		O1.1							
	Duroplaste Duro plaste		O1.2							
	Kunststoffe glasfaser-verstärkt Plastics glass fibre reinforced	GFK	O1.3							
	Kunststoffe kohlefaser-verstärkt Plastics carbon fibre reinforced	CFK	O1.4							

DAM31, DAM32, DAM62, DAHM25, DAHM37, DAHM82, DAHM84

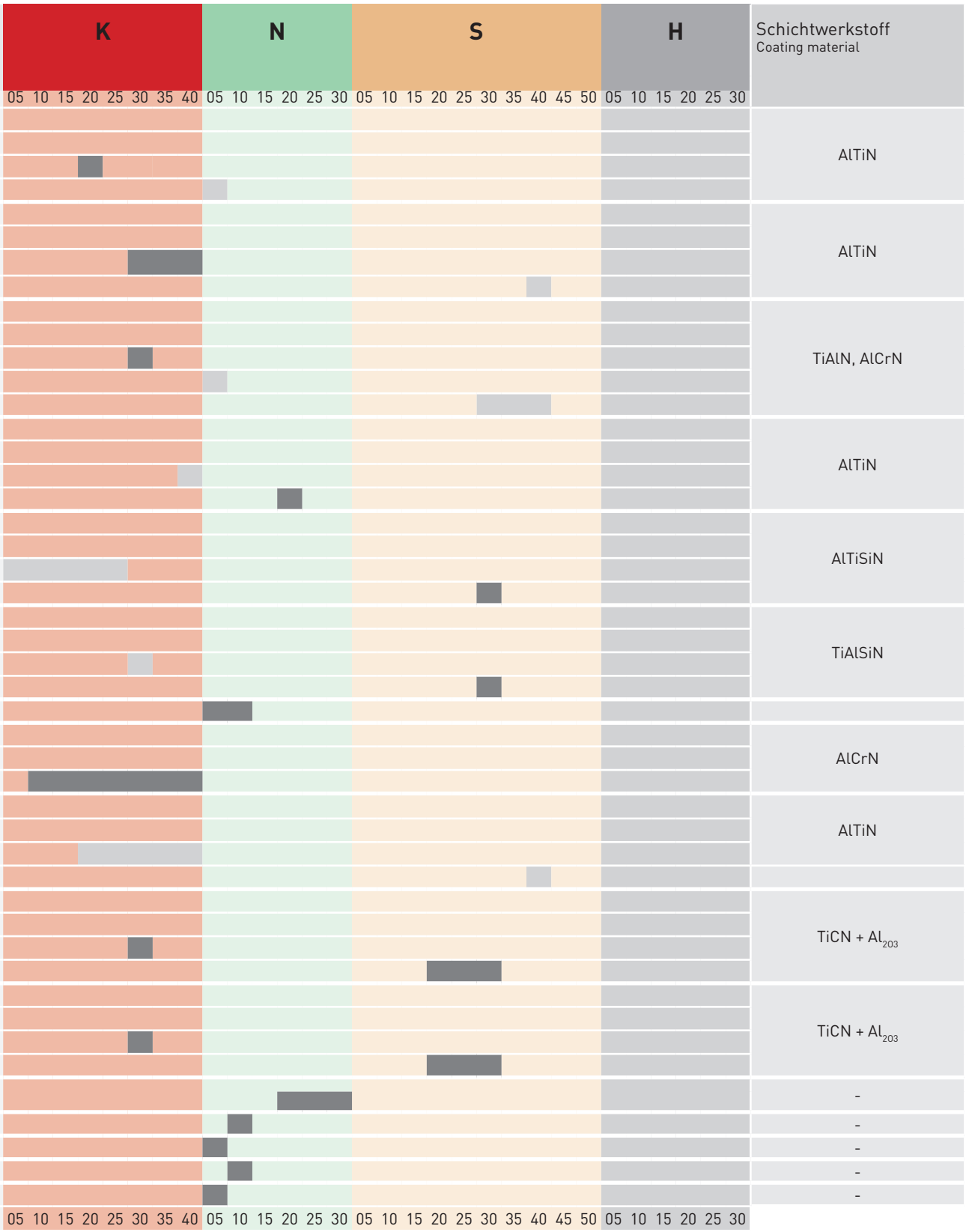
	TA45 a_e/D_C			SD6A a_e/D_C			SC6A a_e/D_C			IG6B a_e/D_C								
	100%	50%	20%	100%	50%	20%	100%	50%	20%	100%	50%	20%						
	23	25	27				25	50	75	25	50	75						
	23	25	27				25	50	75	25	50	75						
	23	25	27				25	50	75	25	50	75						
	23	25	27				25	50	75	25	50	75						
	23	25	27				25	50	75	25	50	75						
	23	25	27				25	50	75	25	50	75						
	23	25	27				25	50	75	25	50	75						

Sortenübersicht Fräsen
Grade overview Milling

Beschichtungs-verfahren Coating process	Sortenbezeichnung Grade designation HORN	Norm	Anwendung Application	P 05 10 15 20 25 30 35 40 45 50	M 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	○		
		HC - S 30-40	○		
	TA45	HC - P 40	○		
		HC - M 40	●		
		HC - K 40	○		
		HC - N 20	●		
	IG6B	HC - P 05-30	●		
		HC - M10-30	○		
		HC - K 05-20	○		
		HC - S 30	●		
	IG35	HC - P 20-40	●		
		HC - M 20-40	●		
		HC - K 30	○		
		HC - S 30	●		
	NE2B	HC - N 05-10	●		
	RC4G	HC - P 05-30	●		
		HC - M 20-30	●		
		HC - K 10-40	●		
	AS45	HC - P 30-50	●		
		HC - M 30-50	●		
		HC - K 20-40	○		
		HC - S 40	○		
CVD	SD6A	HC - P 10-30	○		
		HC - M 05-30	○		
		HC - K 30	●		
		HC - S 20-30	●		
	SC6A	HC - P 10-30	○		
		HC - M 05-30	○		
		HC - K 30	●		
		HC - S 20-30	●		
unbeschichtet uncoated	K10	HW - N 15-30	●		
CVD-D	HD05	N - 10	●		
	HD08	N - 05	●		
PKD	PD70	PD - N 10	●		
	PD75	PD - N 05	●		
				05 10 15 20 25 30 35 40 45 50	05 10 15 20 25 30 35 40 45 50

● Hauptanwendung
Main application

○ Nebenanwendung
Secondary application


K
N
S
H
Schichtwerkstoff
Coating material
05 10 15 20 25 30 35 40
05 10 15 20 25 30
05 10 15 20 25 30 35 40 45 50
05 10 15 20 25 30
AlTiN
AlTiN
TiAlN, AlCrN
AlTiN
AlTiSiN
TiAlSiN
AlCrN
AlTiN
TiCN + Al203
TiCN + Al203
-
-
-
-
-

Zubehör
Additional Equipment

D 041 VL

0,4-1 Nm

D 15 VL

1-5 Nm

D 28 VL

2-7 Nm

Drehmoment-Schraubendreher mit Skala
- mit variabler Einstellmöglichkeit
- numerische Drehmoment-Anzeige in Fensterskala

Drehmoment stufenlos einstellbar mit Einstellwerkzeug Torque-Setter (enthalten).
Griff: Ergonomischer Mehrkomponentengriff, extrem handlich durch leichte und kompakte Bauweise. Klicksignal beim Erreichen des eingestellten Drehmomentwertes.
Normen: EN ISO 6798, BS EN 26789, ASME B107.14.M.
Genauigkeit: ± 6 %, rückführbar auf nationale Normale

Torque screw driver with scale
- variable torque setting
- adjusted torque is shown on display

The Torque can be adjusted with a special torque setter (included).
Handle: Ergonomical form gives perfect handling abilities. Audible signal when set torque is reached.
Standard: EN ISO 6798, BS EN 26789, ASME B 107.14.M.
Precision: ± 6 %

ED 28 VL
für / for
D041VL / D15VL / D28VL

Einstellwerkzeug für Drehmoment-Schraubendreher

Griff: Celluloseacetat mit microfeiner Oberflächenstruktur
Klinge: Achtkantklinge, durchgehend gehärtet, verzinkt

Device for setting the required torque

Handle: Celluloseacetat with micro structured surface
Blade: Octogonal (8 flats) blade, hardened galvanized

D515QL

5-14 Nm

Drehmoment-Schraubendreher mit Skala
- mit variabler Einstellmöglichkeit
- numerische Drehmoment-Anzeige in Fensterskala

Drehmoment stufenlos einstellbar mit Einstellwerkzeug Torque-Setter (enthalten).
Griff: Ergonomischer Mehrkomponentengriff, extrem handlich durch leichte und kompakte Bauweise. Klicksignal beim Erreichen des eingestellten Drehmomentwertes.
Normen: EN ISO 6798, BS EN 26789, ASME B107.14.M.
Genauigkeit: ± 6 %, rückführbar auf nationale Normale

Torque screw driver with scale
- variable torque setting
- adjusted torque is shown on display

The Torque can be adjusted with a special torque setter (included).
Handle: Ergonomical form gives perfect handling abilities. Audible signal when set torque is reached.
Standard: EN ISO 6798, BS EN 26789, ASME B 107.14.M.
Precision: ± 6 %

ED515QL
für / for
D515QL

Einstellwerkzeug für Drehmoment-Schraubendreher

Griff: Celluloseacetat mit microfeiner Oberflächenstruktur
Klinge: Achtkantklinge, durchgehend gehärtet, verzinkt

Device for setting the required torque.

Handle: Celluloseacetat with micro structured surface
Blade: Octogonal (8 flats) blade, hardened galvanized

DT6PK
DT7PK
DT8PK
DT9PK
DT10PK
DT15PK
DT20PK
DT25PK
für / for
D041VL / D15VL / D28VL

Plus

Wechselklinge für TORX PLUS® Schrauben

Klinge: Hochwertiger Chrom-Vanadium-Molybdän Stahl, durchgehend gehärtet, mattverchromt Wiha Chrom Top-Klingenspitze garantiert höchste Maßhaltigkeit. Farbcodierung dunkelgrün
Anwendung: Kontrolliertes Verschrauben bei vorgegebenem Drehmoment, in Kombination mit einem Wiha Drehmomentgriff.

Blade for TORX-Plus® screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precison. Colored code dark green
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.

DT6K
DT8K
DT15K
für / for
D041VL / D15VL / D28VL

Wechselklinge für Torx Schrauben

Klinge: Hochwertiger Chrom-Vanadium-Molybdän Stahl, durchgehend gehärtet, mattverchromt Wiha Chrom Top-Klingenspitze garantiert höchste Maßhaltigkeit. Farbcodierung dunkelgrün
Anwendung: Kontrolliertes Verschrauben bei vorgegebenem Drehmoment, in Kombination mit einem Wiha Drehmomentgriff.

Blade for Torx screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precison. Colored code dark green
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.

DT15PQ
DT20PQ
DT25PQ
DT27PQ
DT30PQ
für / for
D515QL

Plus

Wechselklinge für TORX PLUS® Schrauben

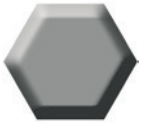
Klinge: Hochwertiger Chrom-Vanadium-Molybdän Stahl, durchgehend gehärtet, mattverchromt Wiha Chrom Top-Klingenspitze garantiert höchste Maßhaltigkeit. Farbcodierung dunkelgrün
Anwendung: Kontrolliertes Verschrauben bei vorgegebenem Drehmoment, in Kombination mit einem Wiha Drehmomentgriff.

Blade for TORX-Plus® screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precison. Colored code dark green
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.

DSW15K
DSW20K
DSW25K
DSW30K
DSW40K
für / for
D041VL / D15VL / D28VL

DSW50K
DSW60K
für / for
D15QL



Wechselklinge für Innensechskant-Schrauben

Klinge: Hochwertiger Chrom-Vanadium-Molybdän-Stahl, durchgehend gehärtet, mattverchromt Wiha Chrom Top-Klingenspitze garantiert höchste Maßhaltigkeit. Farbcodierung rot
Anwendung: Kontrolliertes Verschrauben bei vorgegebenem Drehmoment, in Kombination mit einem Wiha Drehmomentgriff.

Blade for allen screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precison. Colored code red
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle

D14ZBK
für / for
D041VL / D15VL / D28VL

Universal-Bithalter für C6,3 und E6,3 (1/4") Bits

Klinge: Hochwertiger Chrom-Vanadium-Molybdän Stahl, durchgehend gehärtet, mattverchromt.
Hülse: Aus rostfreiem Stahl
Anwendung: Zum kontrollierten Verschrauben bei vorgegebenem Drehmoment, in Kombination mit einem Drehmomentgriff.

Universal Bitholder for C6,3 and E6,3 (1/4") Bits

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated.
Collar: Stainless steel
Utilization: For controlled screw setting with definite torque in combination with torque screw driver handle.

D14ZBQ
für / for
D515QL

Universal-Bithalter für C6,3 und E6,3 (1/4") Bits

Klinge: Hochwertiger Chrom-Vanadium-Molybdän Stahl, durchgehend gehärtet, mattverchromt.
Hülse: Aus rostfreiem Stahl
Anwendung: Zum kontrollierten Verschrauben bei vorgegebenem Drehmoment, in Kombination mit einem Drehmomentgriff.

Universal Bitholder for C6,3 and E6,3 (1/4") Bits

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated.
Collar: Stainless steel
Utilization: For controlled screw setting with definite torque in combination with torque screw driver handle.

14ZQK

Bithalter mit Quergriff für C6,3 und E6,3(1/4") Bits

Klinge: Hochwertiger Chrom-Vanadium-Molybdän Stahl, durchgehend gehärtet, mattverchromt
Hülse: Aus rostfreiem Stahl
Anwendung: Zum kontrollierten Öffnen

Universal Bitholder with T-handle for C6,3 and E6,3 (1/4") Bits

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated.
Collar: Stainless steel
Utilization: For controlled opening

T6PW
T7PW
T8PW
T9PW
T10PW
T15PW
T20PW
T25PW
T30PW

Plus

Stiftschlüssel für TORX PLUS® Schrauben

Anwendung: Für alle TORX PLUS® Schraubaufgaben
Achtung: TORX PLUS®-Schlüssel passen NICHT in Torx-Schrauben

Wrench for TORX PLUS® Screws

Utilization: For all kind of using TORX PLUS® Screws
Attention: TORX PLUS®-Wrench does NOT fit for Torx-Screws

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N110	413
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SDA62	517
SM328	348
WFB	38, 67, 90, 120, 156, 182

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KFRAES100DE, 01/2025, Printed in Germany