



**Innovation Is
Our Tool**

SWISS  QUALITY

URMA MX Milling



**Präzision und Geschwindigkeit in einem:
Die neuste Generation des Planfräsens.**

Precision and speed in one:
The latest generation of face milling.

Überblick Fräs-Portfolio

Overview Milling Portfolio

Milling Key Facts

Planeckfräser
Face milling cutter

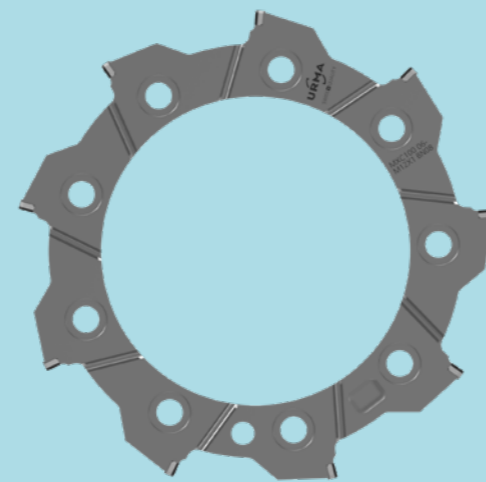
RX Schnellwechsel-System
Quick-change system RX

Modularer Aufbau
Modular design

Bestückte Vollhartmetall-Frässchneide
Tipped solid carbide milling cutter

Standard- und Sondergeometrien
Standard and dedicated geometries

Durchmesser
Diameter
50 mm, 63 mm, 80 mm, 100 mm, 125 mm



MX boronite

ab Seite 8
from page 8

Schneidstoffe
Cutting materials

CBN

Werkstoffgruppe
Material group

K H SM

Anzahl Zähne
Number of teeth

$\varnothing 50 = 5 / \varnothing 63 = 6 / \varnothing 80 = 8 /$
 $\varnothing 100 = 9 / \varnothing 125 = 10$

Schlichten und Schruppen
Finishing and roughing

ap 0.05 – 1.00 mm



MX diamond

ab Seite 28
from page 28

Schneidstoffe
Cutting materials

PKD

Werkstoffgruppe
Material group

N O

Anzahl Zähne
Number of teeth

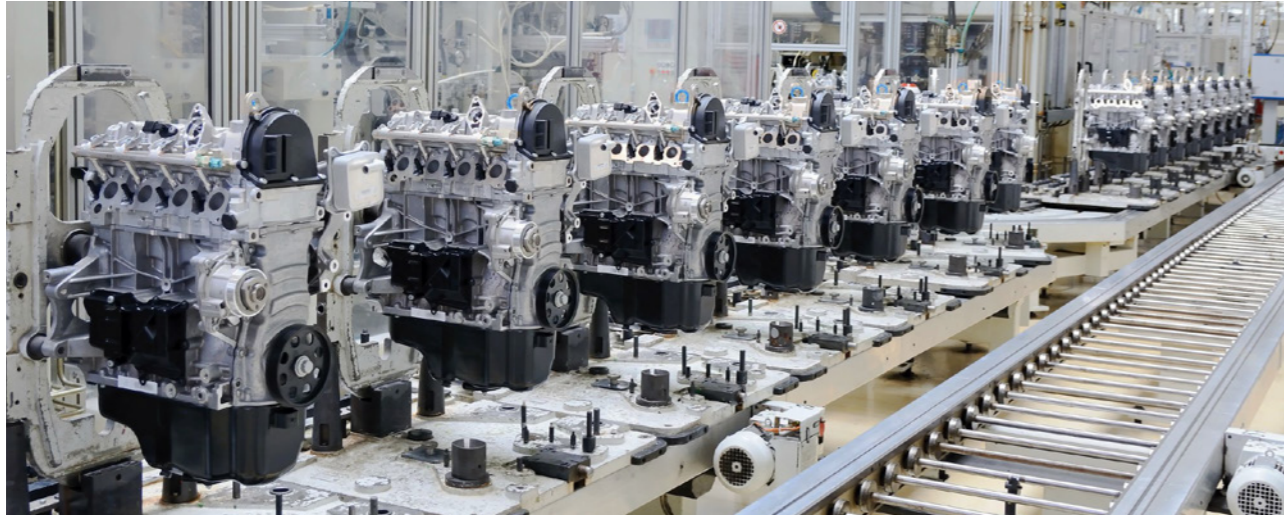
$\varnothing 50 = 10 / \varnothing 63 = 12 / \varnothing 80 = 16 /$
 $\varnothing 100 = 18 / \varnothing 125 = 20$

Schlichten und Schruppen
Finishing and roughing

ap 0.05 – 4.00 mm

URMA Milling
MX boronite

Automobil Automotive



Anforderungen

- Präzision
- Prozesssicherheit
- Einfaches Handling
- Produktivität

Anwendungsbeispiel "Abgaskrümmter"

Material: EN-GJL-250

Requirements

- Precision
- Process reliability
- Simple handling
- Productivity

Example of an "Exhaust Manifold" Application

Material: EN-GJL-250



Anwendungsdaten

Application Data

vc	1'500 m/min
fz	0.1 mm
z	9
vf	4'300 mm/min
ap	1 mm
ae	68 mm
Ra	0.45 µm
Ø	100 mm

Maschinenbauindustrie Machine Building Industry



Anforderungen

- Präzision
- Prozesssicherheit
- Tiefe Kosten
- Einfaches Handling

Anwendungsbeispiel "Formplatte"

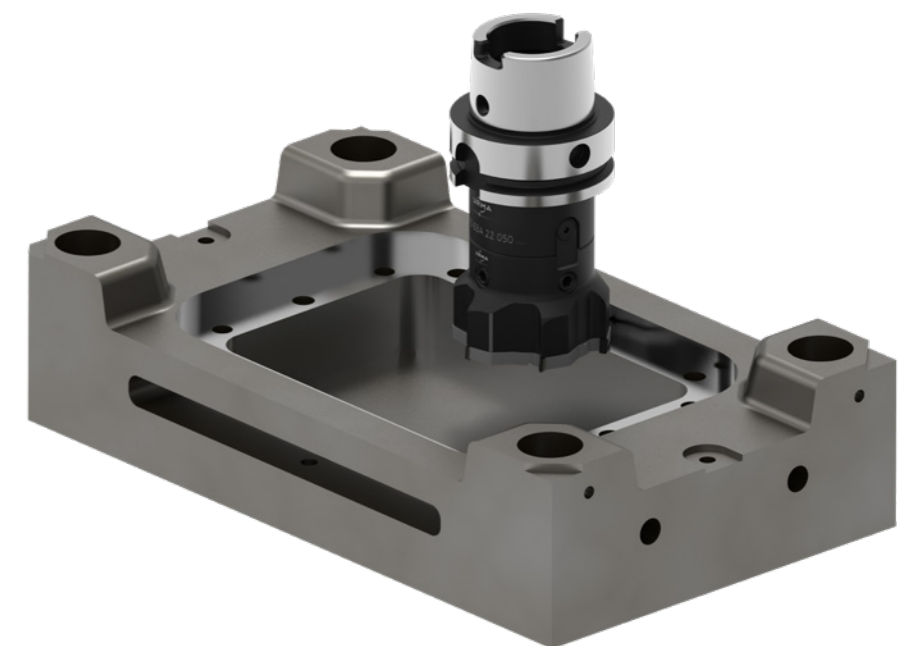
Material: 1.2842 / 52HRC

Requirements

- Precision
- Process reliability
- Low costs
- Simple handling

Example of a "Mold Plate" Application

Material: 1.2842 / 52HRC



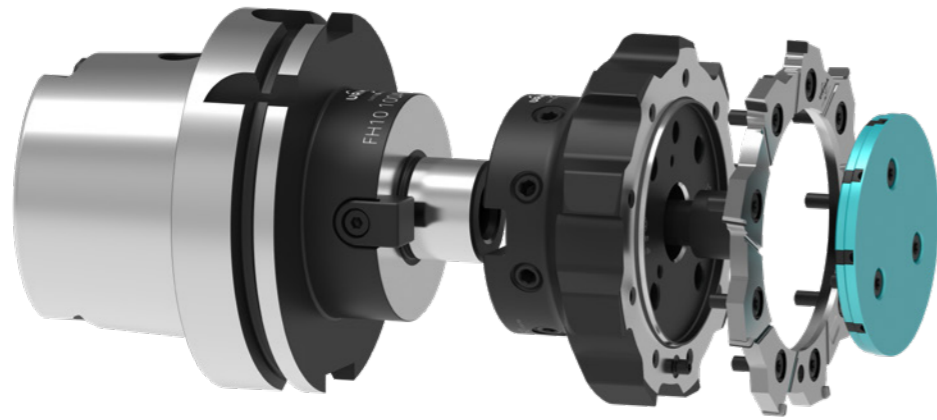
Anwendungsdaten

Application Data

vc	150 m/min
fz	0.1 mm
z	6
vf	55 mm/min
ap	0.3 mm
ae	20 mm
Ra	0.4 µm
Ø	63 mm

Ihre Vorteile mit MX boronite

Your Advantages with MX boronite

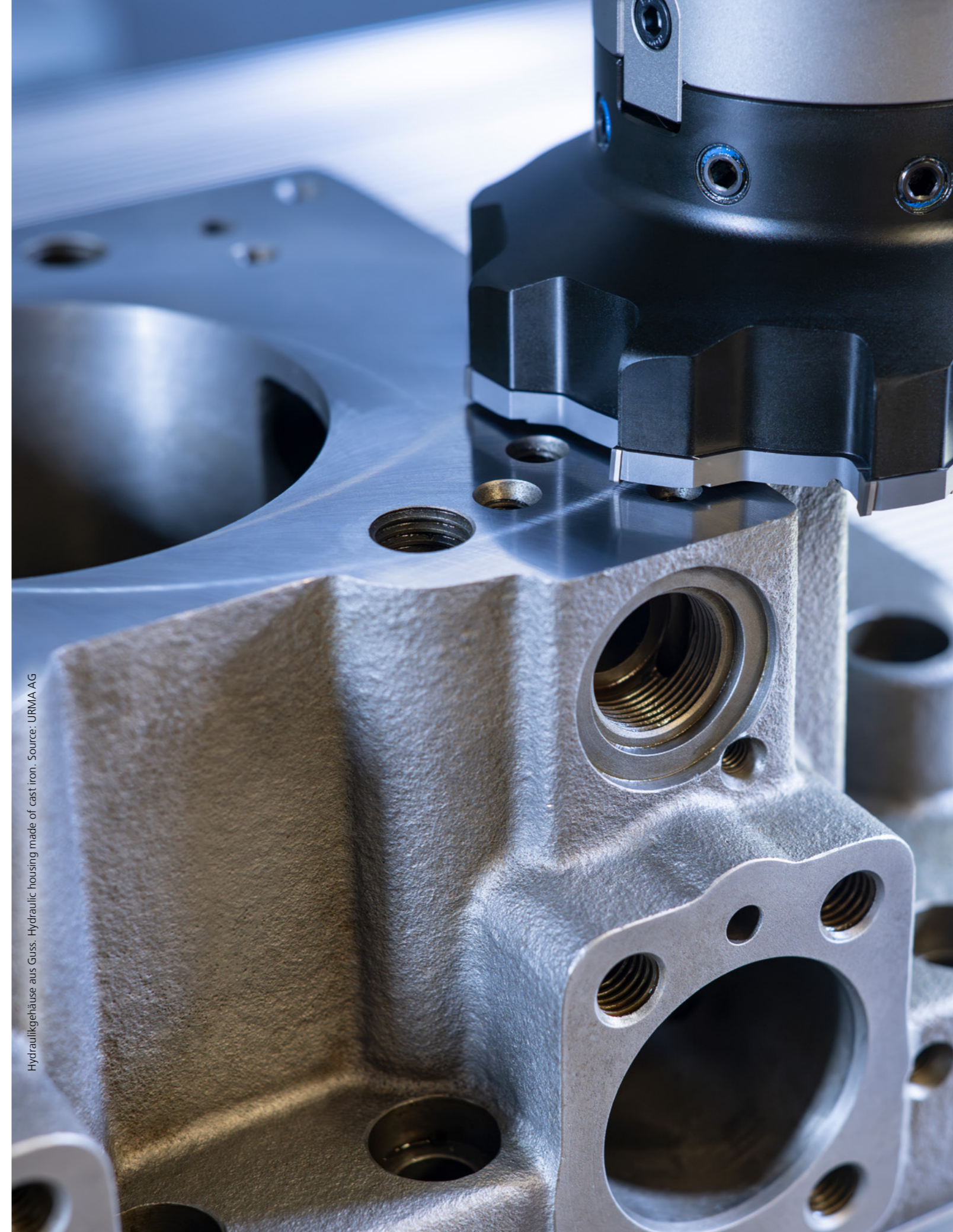


Hauptmerkmale

- Durchmesser 50 mm/63 mm/ 80 mm/100 mm/125 mm
- Höchste Genauigkeit und einfachstes Handling dank bewährter RX-Technologie
- Bedeutende Einsparungen dank Hochleistungsdaten
- Höchste Steifigkeit durch CBN bestückte Vollhartmetall Frässhneide
- Kein Einstellaufwand

Key Points

- Diameter 50 mm/63 mm/ 80 mm/100 mm/125 mm
- High precision and easy handling based on the very reliable RX-technology
- Significant savings thanks to high-performance cutting
- Highest rigidity thanks to CBN tipped solid carbide cutting ring
- No adjustment efforts for the customer



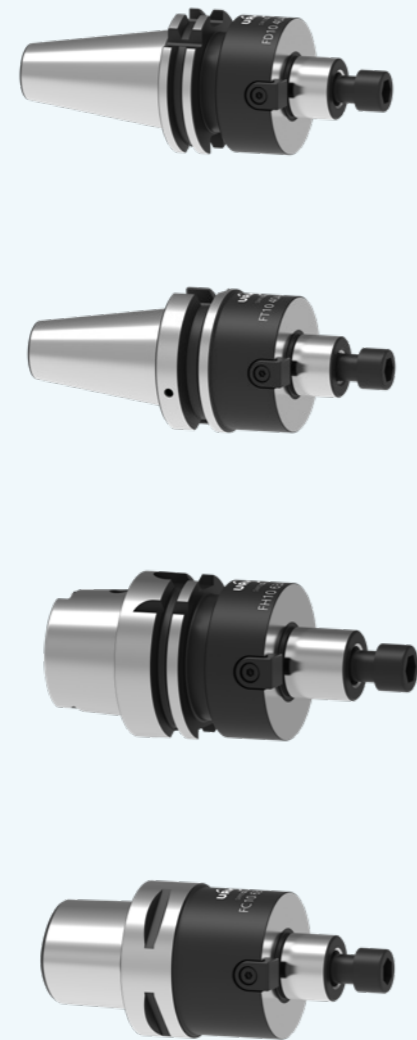
Hydraulikgehäuse aus Guss. Hydraulic housing made of cast iron. Source: URMA AG

URMA Fräsen MX boronite

URMA Milling MX boronite

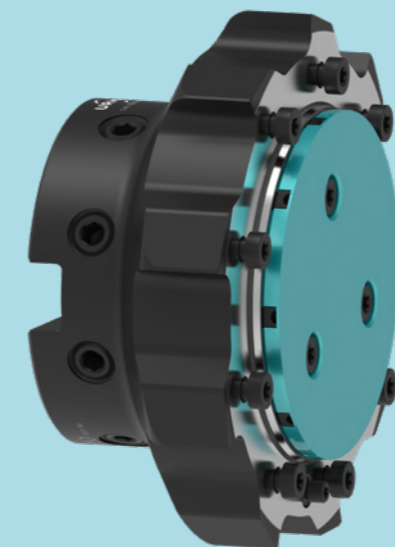
Aufnahmen
Adaptors

Seite 15
Page 15



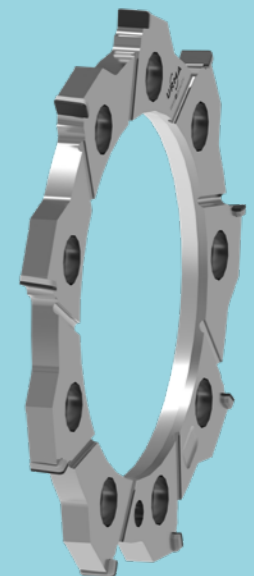
Schneidenträger
Cutter Body

Seite 14
Page 14



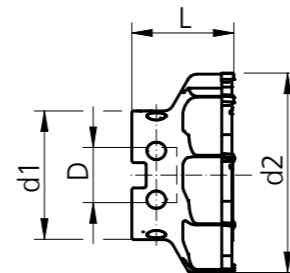
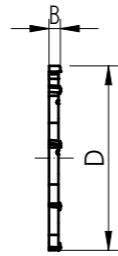
Frässhneiden
Milling Cutter

Seite 14
Page 14



Frässhneiden

Milling Cutter



Frässhneiden

Milling Cutter

System Size	Order Number	d	B	z	kg	Geometry	Grade	Stock
MXC050	MXC50 06-M12X1 BN08	50	6	5	0.07	M12X1	BN08	●
MXC063	MXC63 06-M12X1 BN08	63	6	6	0.09	M12X1	BN08	●
MXC080	MXC80 06-M12X1 BN08	80	6	8	0.15	M12X1	BN08	●
MXC100	MXC100 06-M12X1 BN08	100	6	9	0.20	M12X1	BN08	●
MXC125	MXC125 06-M12X1 BN08	125	6	10	0.39	M12X1	BN08	●

Schneidenträger

Cutter Body

Schneidenträger Stahl

Cutter Body Steel

System Size	Order Number	L	D	d1	d2	kg	Stock
MXC050	MXU50 16 040	40	16	38	49	0.29	●
MXC063	MXU63 22 045	45	22	48	62	0.57	●
MXC080	MXU80 27 050	50	27	63	79	1.07	●
MXC100	MXU100 27 050	50	27	63	99	1.48	●
MXC125	MXU125 32 055	55	32	78	124	2.55	●

Ersatzteile Schneidenträger siehe Seite 24 – 25

Spare parts blade carrier on page 24 – 25

z Anzahl Zähne
Number of teeth

● An Lager
On stock

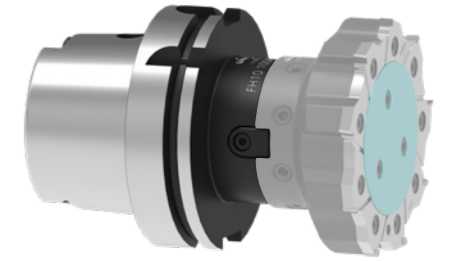
▲ Kurzfristig lieferbar
Short-term availability

○ Verfügbarkeit auf Anfrage
Availability on request

Alle Massangaben in mm
All dimensions in mm

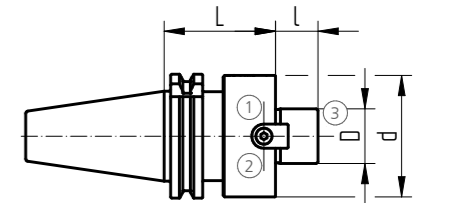
Aufnahmen

Adaptors



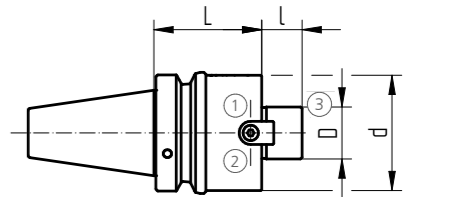
DIN 69871 - AD/B

System Size	L	I	D	d	kg	Order Number	Stock
SK40	55	17	16	38	1.13	FD10 40AB 16 055	●
SK40	55	19	22	48	1.38	FD10 40AB 22 055	●
SK40	55	21	27	60	1.65	FD10 40AB 27 055	●
SK40	60	24	32	78	2.15	FD10 40AB 32 060	●
SK50	55	17	16	38	2.86	FD10 50AB 16 055	●
SK50	55	19	22	48	3.82	FD10 50AB 22 055	●
SK50	55	21	27	60	4.00	FD10 50AB 27 055	●
SK50	55	24	32	78	4.05	FD10 50AB 32 055	●



MAS-BT JIS 6339 - AD

System Size	L	I	D	d	kg	Order Number	Stock
BT30	40	17	16	39	0.58	FT10 30A 16 040	●

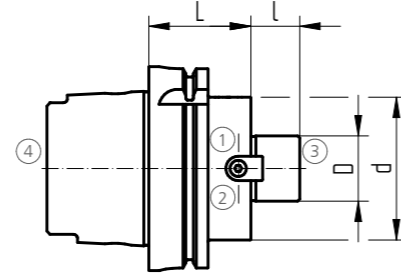


MAS-BT JIS 6339 - AD/B

System Size	L	I	D	d	kg	Order Number	Stock
BT40	55	17	16	38	1.19	FT10 40AB 16 055	●
BT40	55	19	22	48	1.38	FT10 40AB 22 055	●
BT40	55	21	27	60	1.65	FT10 40AB 27 055	●
BT40	60	24	32	78	2.15	FT10 40AB 32 060	●
BT50	55	17	16	38	3.71	FT10 50AB 16 055	●
BT50	55	19	22	48	3.82	FT10 50AB 22 055	●
BT50	55	21	27	60	4.00	FT10 50AB 27 055	●
BT50	55	24	32	78	4.05	FT10 50AB 32 055	●

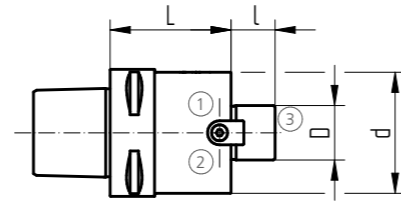
DIN 69893-HSK-A

System Size	L	I	D	d	kg	Order Number	Stock
HSK63	50	17	16	38	0.87	FH10 63A 16 050	●
HSK63	50	19	22	48	1.05	FH10 63A 22 050	●
HSK63	60	21	27	60	1.40	FH10 63A 27 060	●
HSK63	60	24	32	78	1.75	FH10 63A 32 060	●
HSK100	50	17	16	38	2.21	FH10 100A 16 050	●
HSK100	50	19	22	48	2.35	FH10 100A 22 050	●
HSK100	50	21	27	60	2.57	FH10 100A 27 050	●
HSK100	50	24	32	78	2.95	FH10 100A 32 050	●



ISO 26623-1-PSC

System Size	L	I	D	d	kg	Order Number	Stock
PSC 63	50	17	16	38	1.08	FC10 63 16 050	●
PSC 63	50	19	22	48	1.24	FC10 63 22 050	●
PSC 63	60	21	27	60	1.70	FC10 63 27 060	●
PSC 63	60	24	32	78	2.20	FC10 63 32 060	●

Ersatzteile Aufnahmen
Spare Parts Adaptors

D	①	②	③
16*	Z00 70 16 01	C00 22 60	52 01 16
16	Z00 70 16	C00 22 31	C00 22 06
22	Z00 70 22	C00 22 05	C00 24 46
27	Z00 70 27	C00 22 07	C00 24 04
32	Z00 70 32	C00 22 13	C00 24 47

*Nur für BT30 Aufnahmen
*For BT30 adaptors only

Kühlmittelrohr
Coolant Tube

Size	④
63	H00 63 01
100	H00 100 01

Zubehör

Accessories

Planlauf Kontrollscheibe

Axial Run-Out Indicating Insert

System Size	D	B	Order Number	Stock
MX050	50	6	MXP050	●
MX063	63	6	MXP063	●
MX080	80	6	MXP080	●
MX100	100	6	MXP100	●
MX125	125	6	MXP125	●

Drehmomentdreher

Screw Driver

System Size	Dimension	Drehmoment/Torque	Order Number	Stock
MX050	T8	1,5 Nm	G00 40 12	▲
MX063	T10	3 Nm	G00 40 18	▲
MX080	T10	3 Nm	G00 40 18	▲
MX100	T15	3,5 Nm	G00 40 13	▲
MX125	T15	3,5 Nm	G00 40 13	▲



Sechskant-Steckeinsatz

Hex Bit Socket

System Size	Dimension	Drehmoment/Torque	Order Number	Stock
MX050	SW5	10 – 100 Nm	G00 40 60	▲
MX063 – MX125	SW8 / SW10 / SW14	40 – 200 Nm	G00 40 40	▲
MX050	SW5	35 Nm	G00 40 45	▲
MX063	SW8	80 Nm	G00 40 44	▲
MX080	SW10	85 Nm	G00 40 43	▲
MX100	SW10	85 Nm	G00 40 43	▲
MX125	SW14	160Nm	G00 40 42	▲



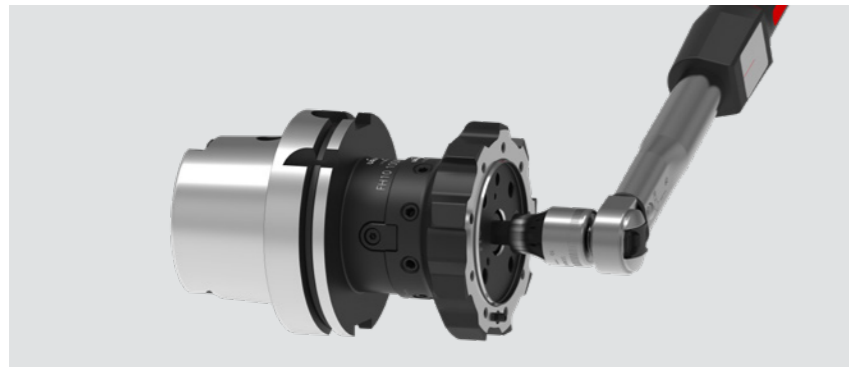
Messmittel

Measuring Device

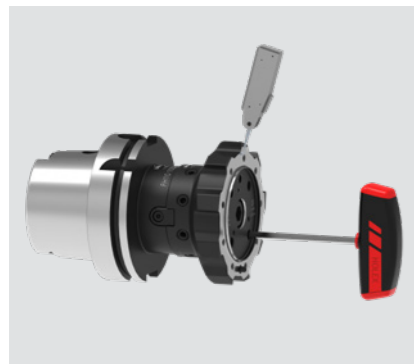
Type	Bezeichnung/Description	Order Number	Stock
Twin T10	Elektronisches Messgerät, inklusive Batterien Electronic measuring instrument, batteries incl.	04430013	○
LRC 6, AA	Batterien (3 Stück) Batteries (3 pieces)	04768002	○
GT 31	Hebelmesstaster Lever probe	03210802	○
MGA	Magnetischer Gelenkarm Magnetic articulated arm	01639022	○



Ersteinstellung Initial Setup



- 1** Werkzeug zusammenbauen.
Assemble the tool.



- 2** Planlauf einstellen.
Run-out adjustment.

- Trennstelle reinigen.**
Clean the interface.

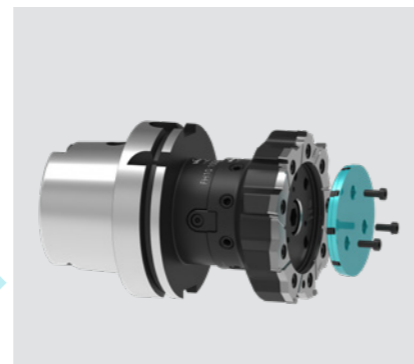
3



- 4** Frässhneide montieren.
Assemble new cutting ring.

- Kühlmittelscheibe montieren.**
Assemble the coolant disk.

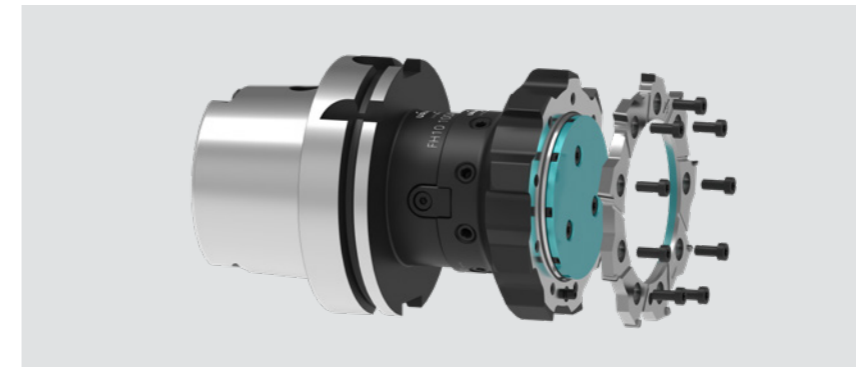
5



- 6** Bauteil bearbeiten.
Machining the component.



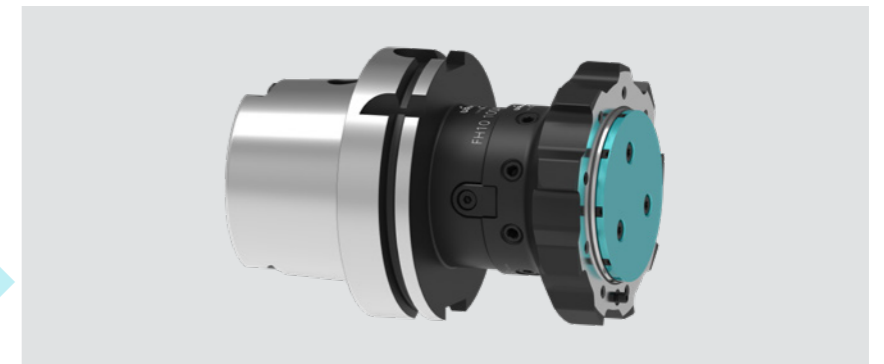
Frässhneiden-Wechsel Changing Cutting Ring



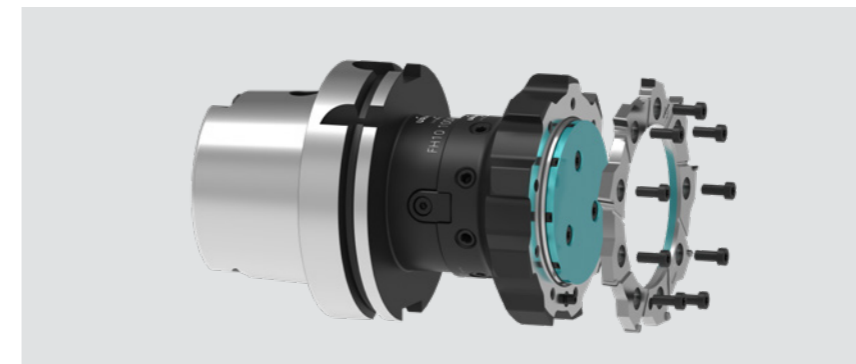
- 1** Frässhneide demontieren.
Remove the cutting ring.



- 2** Trennstelle reinigen.
Clean the interface.



- 3** Frässhneide montieren.
Assemble new cutting ring.



- 4** Bauteil bearbeiten.
Machining the component.



Werkstoff-Tabelle

Material Comparison Table

Guss

Cast Irons

ISO	UMC	Bezeichnung	Description	Rm [N/mm ²]	HB	Kc1.1	mc	DIN Nr.	Beispiel/Example
K	K1	Grauguss	Grey cast irons	< 300	< 90	1100	0.25	0.6025	EN-GJL-250 (GG25)
	K2	Grauguss	Grey cast irons	> 300	> 90	1300	0.27	0.6035	EN-GJL-350 (GG35)
	K3	Sphäroguss, Kugelgrafitguss, Temperguss	Ductile cast irons, Malleable cast irons	< 500	< 150	900	0.25	0.7040	EN-GJS-400-15 (GGG40)
	K4	Sphäroguss, Kugelgrafitguss, Temperguss	Ductile cast irons, Malleable cast irons	< 800	< 210	1400	0.28	0.7060	EN-GJS-600-3 (GGG60)
	K5	Wärmebehandelter Kugelgrafitguss (ADI)	Austempered ductile irons	< 1100	< 325	1500	0.32		EN-GJS-1000-5
	K6	Vermikularguss	Compacted graphite irons	300 – 500	90 – 150				EN-GJV-400
	K7	Austenitischer Guss mit Lamellengrafit	Austenitic lamellar cast irons	< 400				0.6655	GGL-NiCuCr 15 6 2
	K8	Austenitischer Sphäroguss, Kugelgrafitguss	Austenitic spheroidal graphite and ductile iron	300 – 600	90 – 180			0.7673	EN-GJSA-XNiMn23-4

Gehärteter Stahl

Hardened Steels

ISO	UMC	Bezeichnung	Description	Rm [N/mm ²]	HB	Kc1.1	mc	DIN Nr.	Beispiel/Example
H	H1	Einsatzstähle, Vergütungsstähle, Lagerstähle, Werkzeugstähle	Case hardening steels, heat-treatable steels, bearing steels, tool steels	1450 – 1800	< 520	3300	0.22		HRC 45 – 52
	H2	Einsatzstähle, Vergütungsstähle, Lagerstähle, Werkzeugstähle	Case hardening steels, heat-treatable steels, bearing steels, tool steels	1800 – 2100	520 – 600	4100	0.22		HRC 53 – 57
	H3	Einsatzstähle, Vergütungsstähle, Lagerstähle, Werkzeugstähle, Schnellarbeitsstähle (HSS)	Case hardening steels, heat-treatable steels, bearing steels, tool steels, high-speed steels	> 2100	> 600	4700	0.22		HRC 58 – 62

Pulvermetallurgische Werkstoffe

Powder Metallurgical Materials

ISO	UMC	Bezeichnung	Description	Rm [N/mm ²]	HB	Kc1.1	mc	DIN Nr.	Beispiel/Example
SM	SM1	Niedriglegierte Sinterwerkstoffe	Low alloyed sintered materials	200 – 450	< 135	3300	0.22		Sint-D11 / C11
	SM2	Mittel legierte Sinterwerkstoffe mit Ni < 7%	Medium alloyed sintered materials with Ni < 7%	400 – 600	120 – 180	4100	0.22		Sint-D31 / C31
	SM3	Hochlegierte Sinterwerkstoffe mit Cr und Ni > 7%	High alloyed sintered materials with Cr and Ni > 7%	400 – 600	120 – 180	4700	0.22		"Sint-D40 / C40 (AISI 316)"

Schnittdaten

Cutting Data

Guss

Cast Irons

ISO	UMC	Grade	vc	fz	ap max.	Kühlmittel Coolant
K	K1	BN08	800 – 1500 – 2000	0.05 – 0.15 – 0.3	1.5	dry
	K2					
	K3	BN08	150 – 200 – 300	0.05 – 0.15 – 0.3	1.5	wet
	K4					
	K5	BN08	100 – 150 – 200	0.05 – 0.1 – 0.15	1	wet
	K6					
	K7	BN08	N/A	N/A	N/A	N/A
	K8					

Gehärteter Stahl

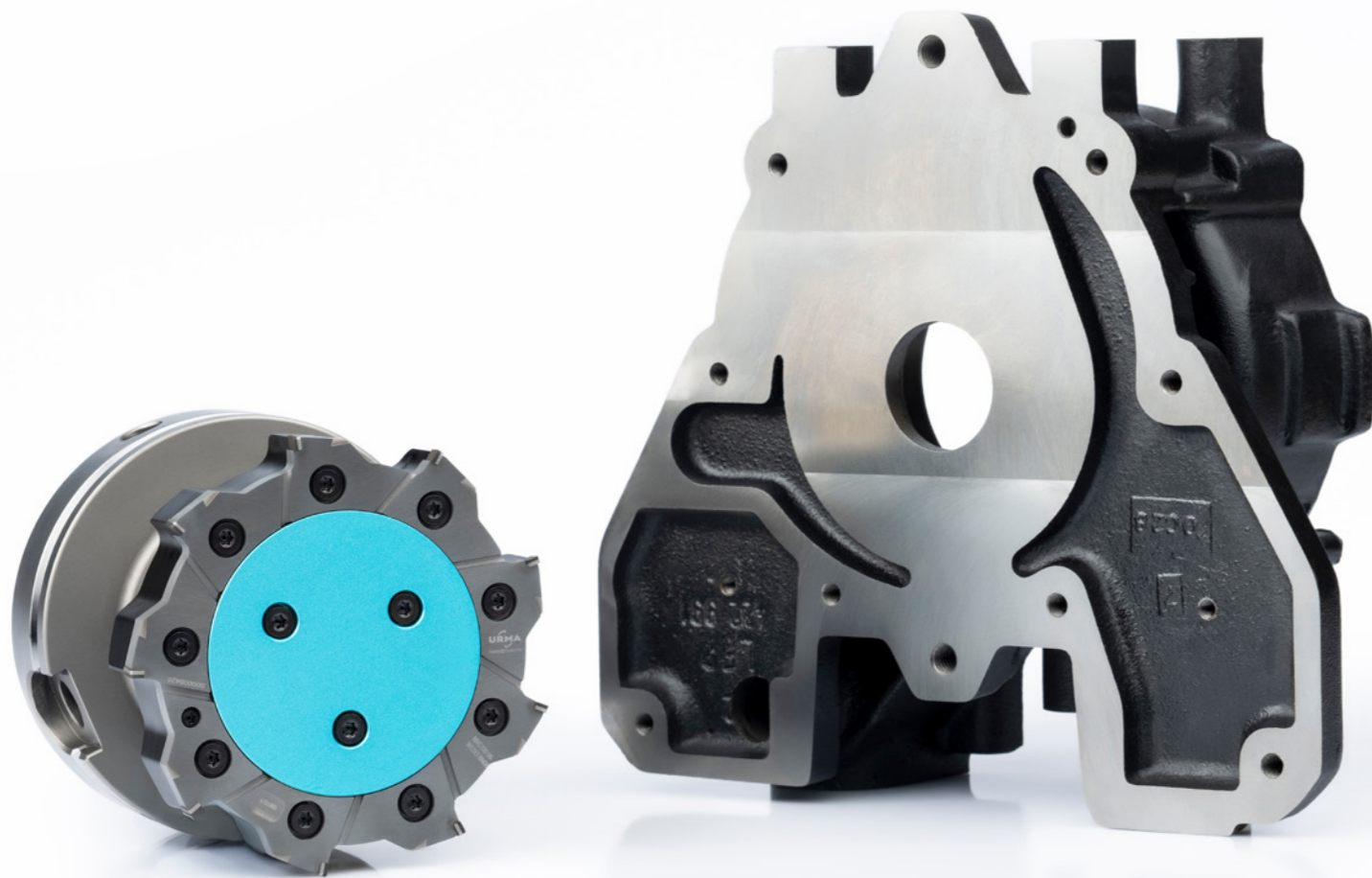
Hardened Steels

ISO	UMC	Grade	vc	fz	ap max.	Kühlmittel Coolant
H	H1	BN08	150 – 200 – 250	0.05 – 0.1 – 0.15	0.5	dry
	H2	BN08	100 – 150 – 200			
	H3	BN08	70 – 120 – 150			

Pulvermetallurgische Werkstoffe

Powder Metallurgical Materials

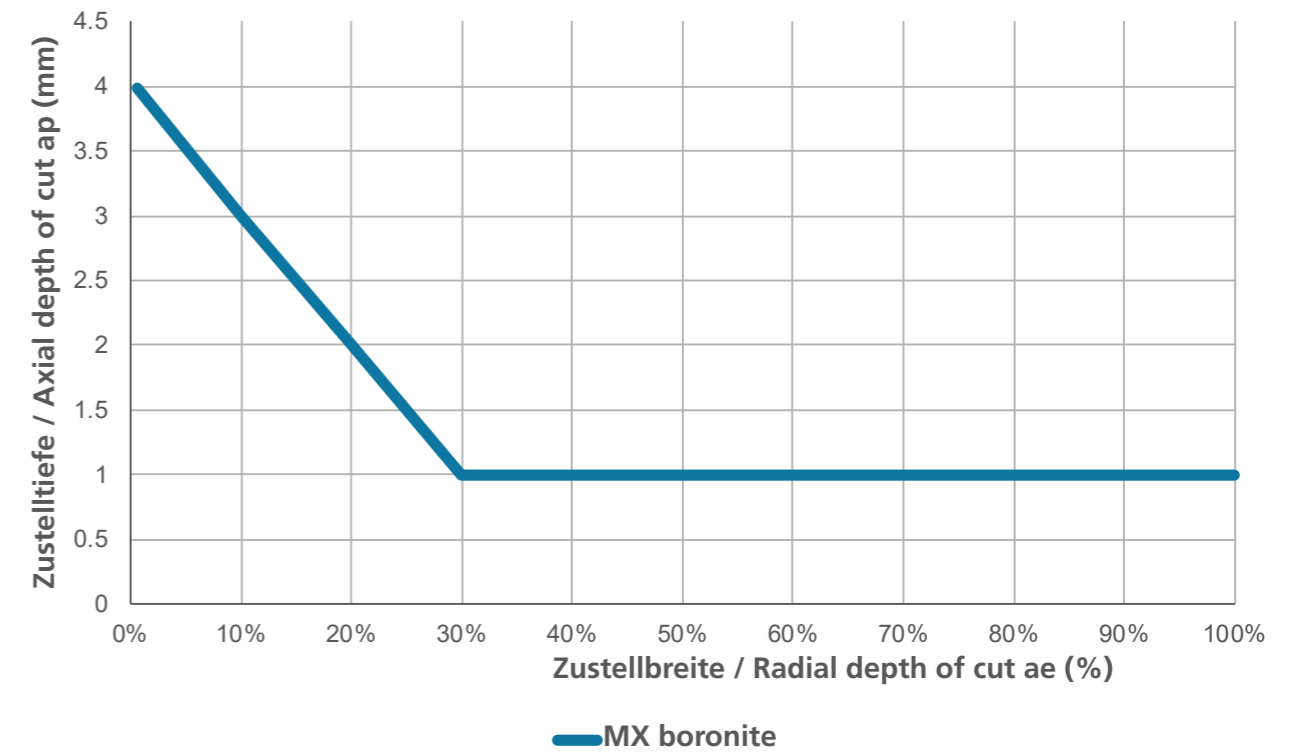
ISO	UMC	Grade	vc	fz	ap max.	Kühlmittel Coolant
SM	SM1	BN08	100 – 200 – 250	0.05 – 0.15 – 0.3	1	dry
	SM2				0.5	
	SM3				0.5	



Ölpumpengehäuse aus Guss. Oil pump housing made of cast iron. Source: URMA AG

Verhältnis ae / ap

Ratio ae / ap



Maximale Drehzahl

Maximum Revolution

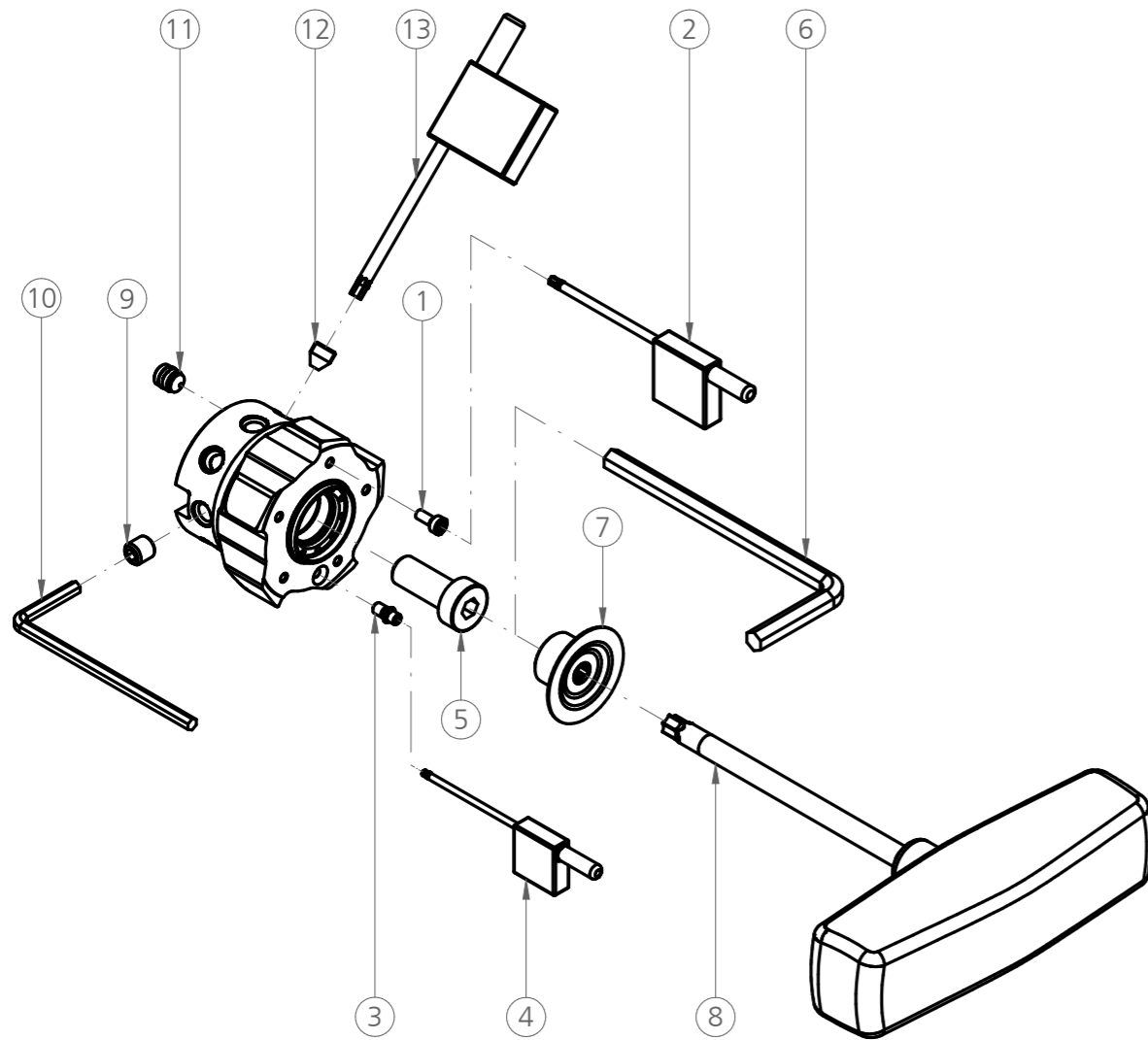
System Size	D	max. Vc	max. rpm
MXC050	50	2827 m/min	18000 1/min
MXC063	63	2968 m/min	15000 1/min
MXC080	80	3015 m/min	12000 1/min
MXC100	100	3141 m/min	10000 1/min
MXC125	125	3141 m/min	8000 1/min

Extern geprüft und zertifiziert nach DIN 15641

Externally tested and certified by DIN 15641

Ersatzteile

Spare parts

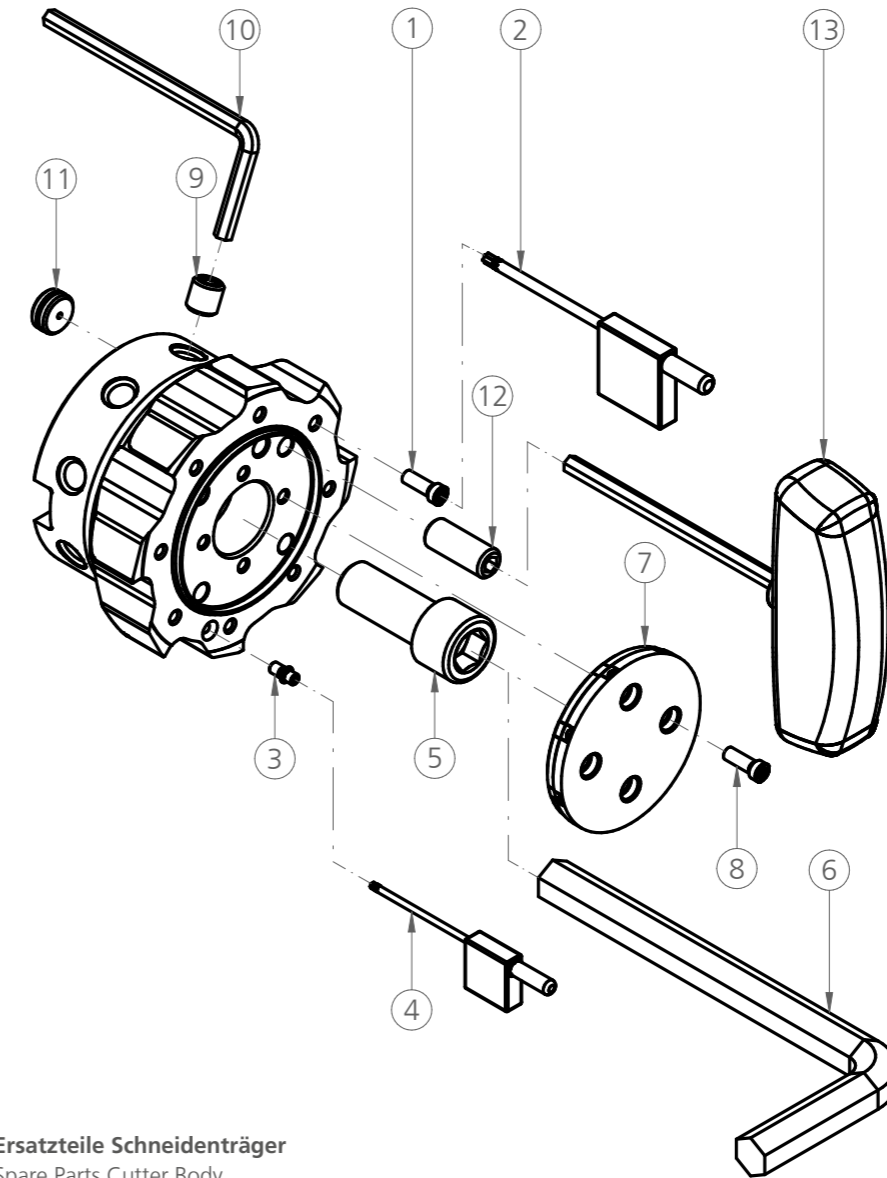


Ersatzteile Schneidenträger

Spare Parts Cutter Body

System Size	1	2	3	4	5	6
MXC050	C00 90 17	G00 20 02	C00 70 09	G00 20 01	C00 23 21	G00 02 06

System Size	7	8	9	10	11	12	13
MXC050	Z90 17 05P	G00 20 29	M6	G00 02 04	ZA00 90 15	C00 70 10	G00 20 03



Ersatzteile Schneidenträger

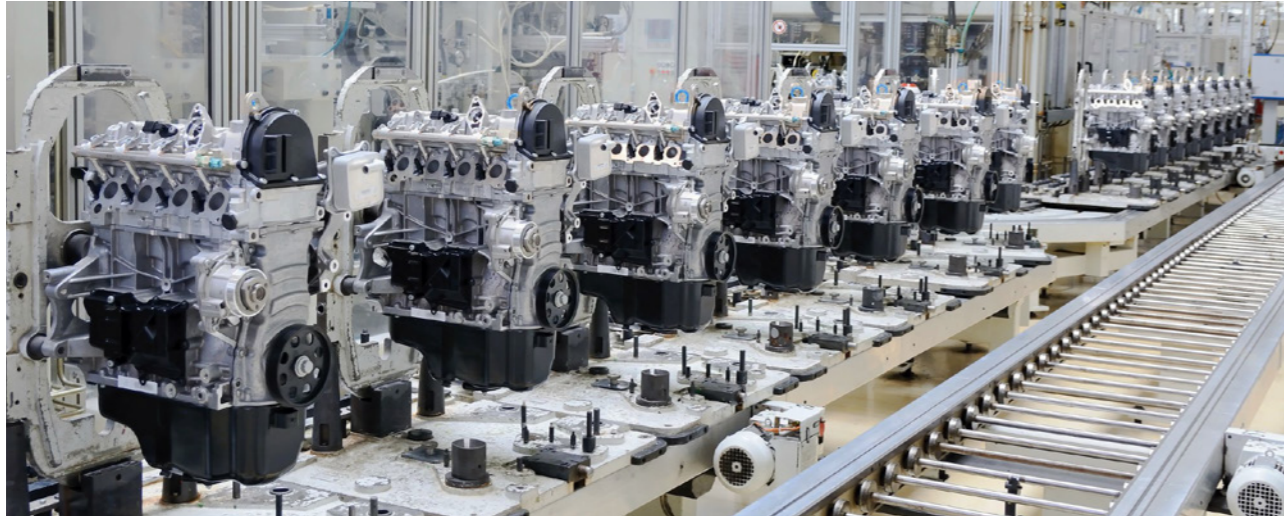
Spare Parts Cutter Body

System Size	1	2	3	4	5	6
MXC063	C00 70 04	G00 20 07	C00 70 09	G00 20 01	C00 22 64	G00 02 08
MXC080	C00 70 04	G00 20 07	C00 70 09	G00 20 01	C00 70 06	G00 02 09
MXC100	C00 70 05	G00 20 03	C00 70 08	G00 20 02	C00 70 06	G00 02 09
MXC125	C00 70 05	G00 20 03	C00 70 08	G00 20 02	C00 70 07	G00 02 16

System Size	7	8	9	10	11	12	13
MXC063	Z90 16 06P	C00 70 04	ZA00 90 11	G00 02 05	ZA00 90 14	C00 70 01	G00 02 25
MXC080	Z90 16 08P	C00 70 04	ZA00 90 11	G00 02 05	ZA00 90 13	C00 70 02	G00 02 26
MXC100	Z90 16 10P	C00 70 05	ZA00 90 11	G00 02 05	ZA00 90 13	C00 70 02	G00 02 26
MXC125	Z90 16 12P	C00 70 05	ZA00 90 11	G00 02 05	ZA00 90 07	C00 70 03	G00 02 27

URMA Milling
MX diamond

Automobil Automotive



Anforderungen

- Präzision
- Prozesssicherheit
- Einfaches Handling
- Produktivität

Requirements

- Precision
- Process reliability
- Simple handling
- Productivity

Anwendungsbeispiel "Schiebergehäuse"

Material: G-AlSi7

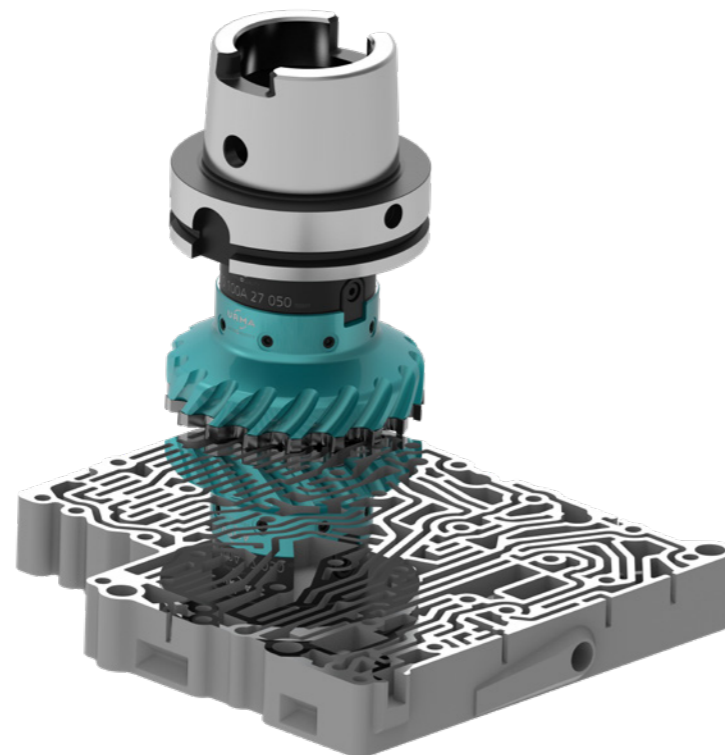
Example of a "Slider box automatic transmission"

Material: G-AlSi7

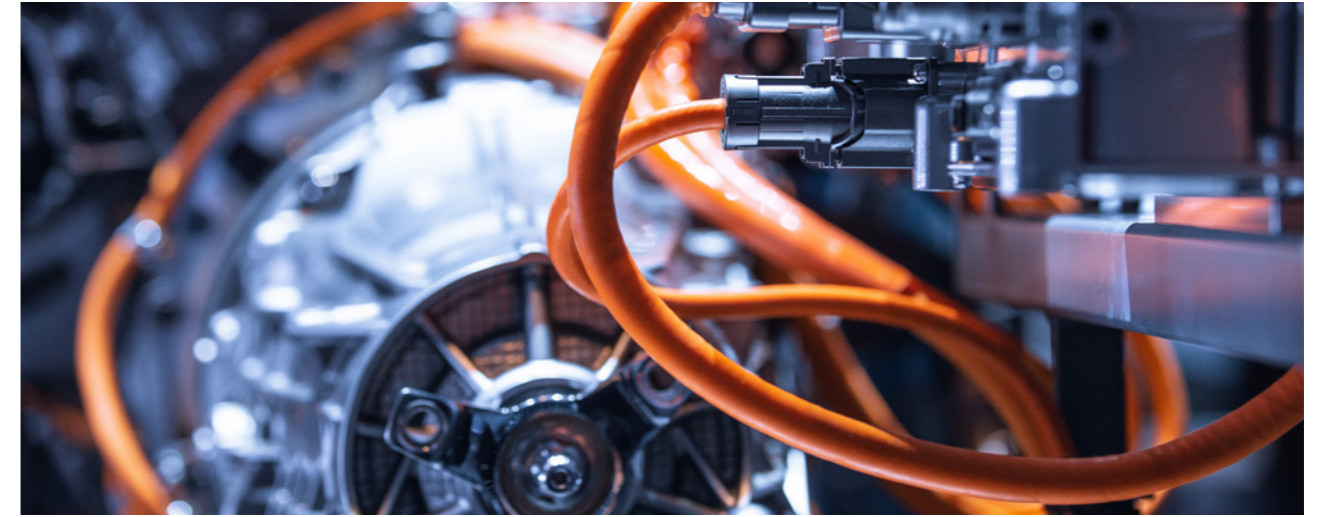
Anwendungsdaten

Application Data

vc	3'500	m/min
fz	0.15	mm
z	20	
vf	26'700	mm/min
ap	1	mm
ae	110	mm
Ra	0.35	µm
Ø	125	mm



E-Mobilität E-Mobility



Anforderungen

- Präzision
- Prozesssicherheit
- Tiefe Kosten
- Einfaches Handling

Requirements

- Precision
- Process reliability
- Low costs
- Simple handling

Anwendungsbeispiel "Statorgehäuse E-Motor"

Material: G-AlSi9

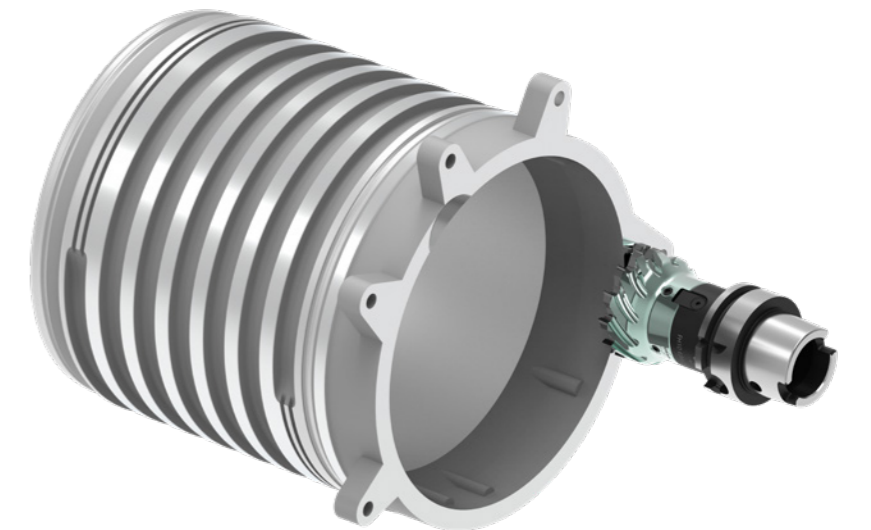
Example of a "Electric Motor Stator Housing"

Material: G-AlSi9

Anwendungsdaten

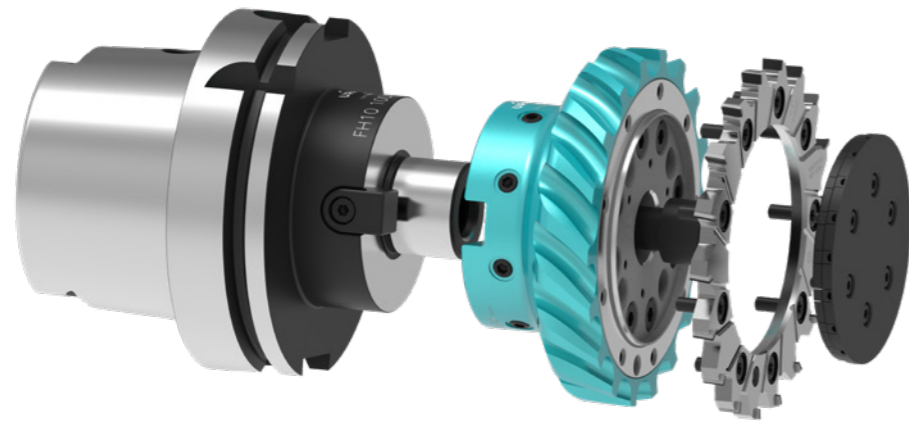
Application Data

vc	4'000	m/min
fz	0.2	mm
z	12	
vf	48'500	mm/min
ap	1	mm
ae	25-50	mm
Ra	0.4	µm
Ø	63	mm



Ihre Vorteile mit MX diamond

Your Advantages with MX diamond

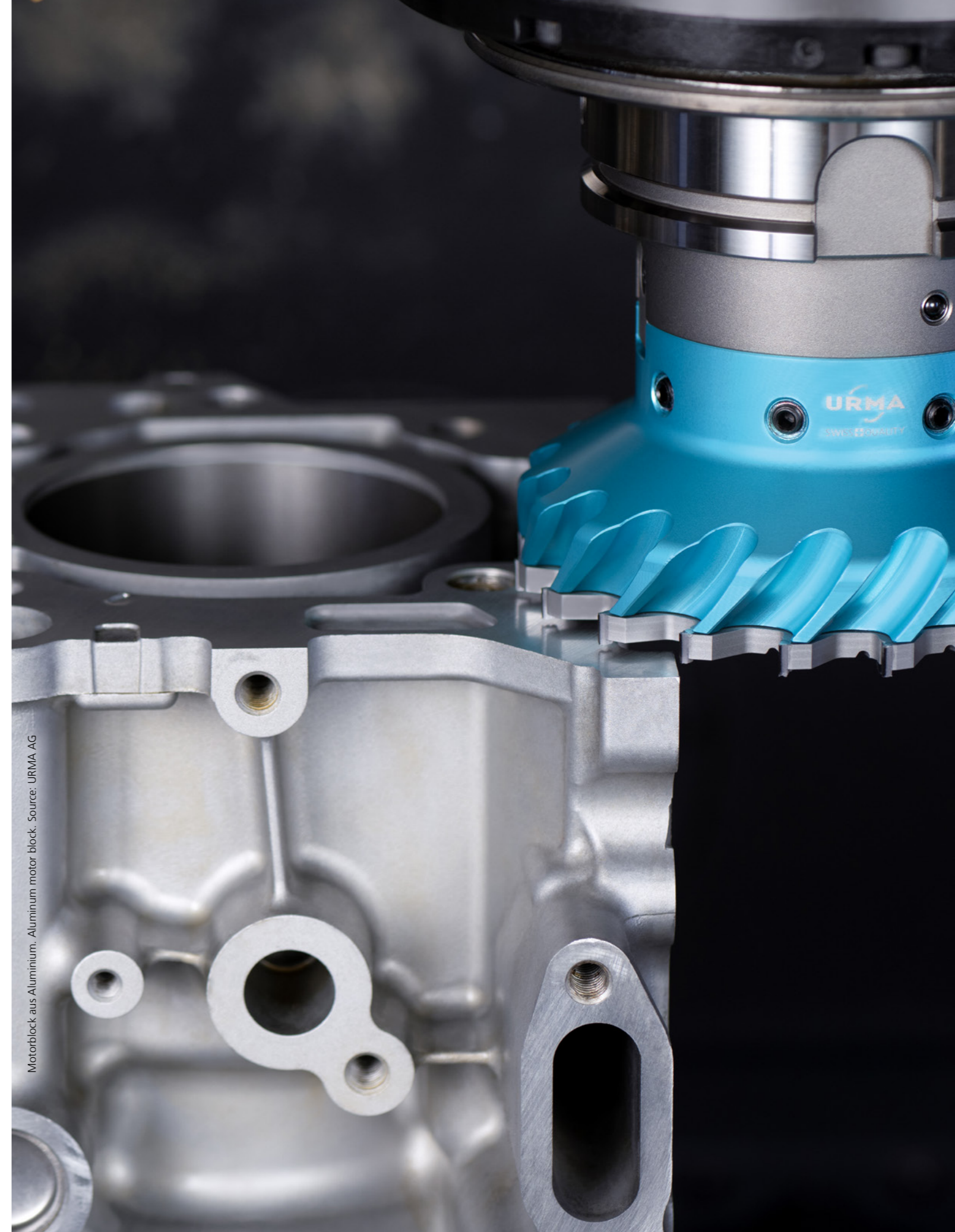


Hauptmerkmale

- Durchmesser 50 mm/63 mm/
80 mm/100 mm/125 mm
- Höchste Genauigkeit und einfachstes Handling dank bewährter RX-Technologie
- Bedeutende Einsparungen dank Hochleistungsdaten
- Höchste Steifigkeit durch PKD bestückte Vollhartmetall Frässhcibe
- Kein Einstellaufwand

Key Points

- Diameter 50 mm/63 mm/
80 mm/100 mm/125 mm
- High precision and easy handling based on the very reliable RX-technology
- Significant savings thanks to high-performance cutting
- Highest rigidity thanks to PCD tipped solid carbide cutting ring
- No adjustment efforts for the customer



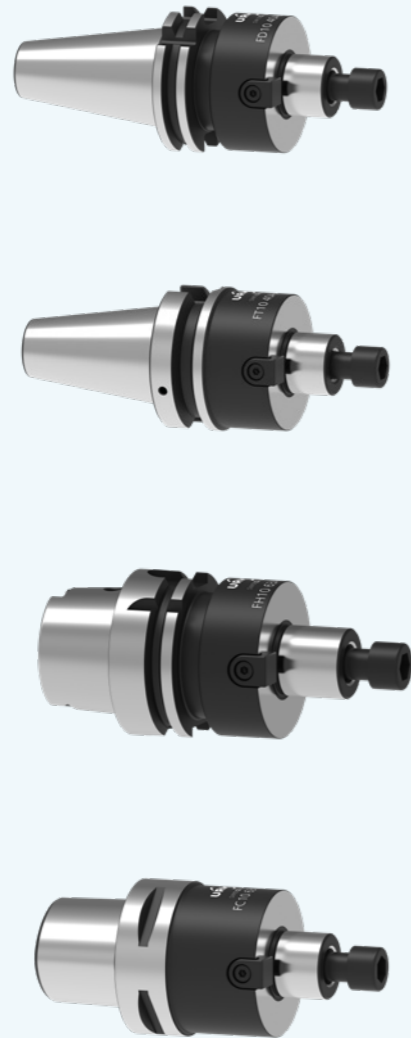
Motorblock aus Aluminium. Aluminium motor block. Source: URMA AG

URMA Fräsen MX diamond

URMA Milling MX diamond

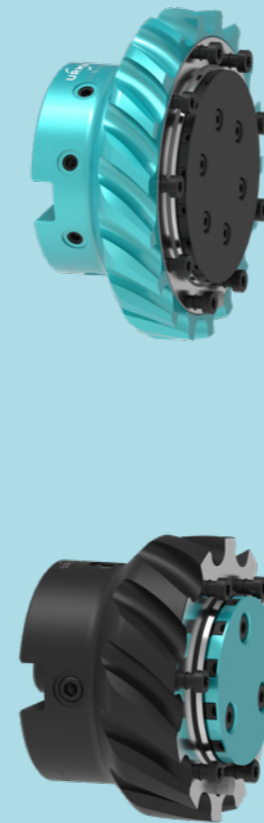
Aufnahmen
Adaptors

Seite 36 – 37
Page 36 –37



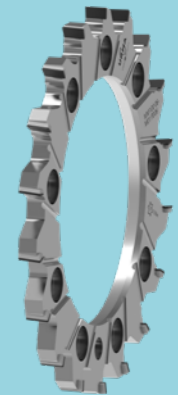
Schneidenträger
Cutter Body

Seite 35
Page 35



Frässhneiden
Milling Cutter

Seite 34
Page 34



Frässhneiden

Milling Cutter

Frässhneiden

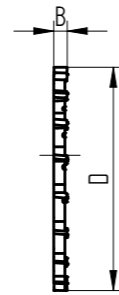
Milling Cutter

System Size	Order Number	d	B	z	kg	Geometry	Grade	Stock
MXF050	MXF50 06-M01 PD06	50	6	10	0.08	M01	PD06	●
MXF063	MXF63 06-M01 PD06	63	6	12	0.09	M01	PD06	●
MXF080	MXF80 06-M01 PD06	80	6	16	0.15	M01	PD06	●
MXF100	MXF100 06-M01 PD06	100	6	18	0.21	M01	PD06	●
MXF125	MXF125 06-M01 PD06	125	6	20	0.39	M01	PD06	●

Frässhneiden (Gratfrei Geometrie)

Milling Cutter (Burr-Free geometry)

System Size	Order Number	d	B	z	kg	Geometry	Grade	Stock
MXF050	MXF50 06-C01 PD06	50	6	10	0.08	C01	PD06	●
MXF063	MXF63 06-C01 PD06	63	6	12	0.09	C01	PD06	●
MXF080	MXF80 06-C01 PD06	80	6	16	0.15	C01	PD06	●
MXF100	MXF100 06-C01 PD06	100	6	18	0.21	C01	PD06	●
MXF125	MXF125 06-C01 PD06	125	6	20	0.39	C01	PD06	●



Schneidenträger

Cutter Body

Schneidenträger Stahl

Cutter Body Steel

System Size	Order Number	L	D	d1	d2	kg	Stock
MXF050	MXX50 16 040	40	16	38	49	0.3	●
MXF063	MXX63 22 045	45	22	48	62	0.6	●
MXF080	MXX80 27 050	50	27	63	79	1.09	●

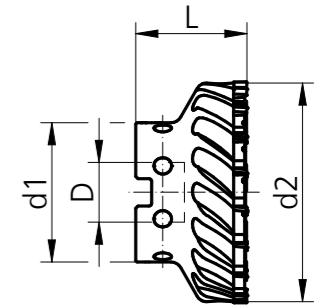
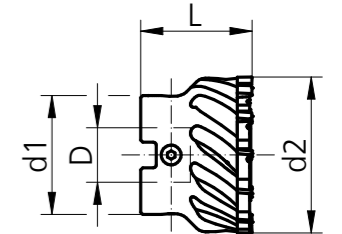
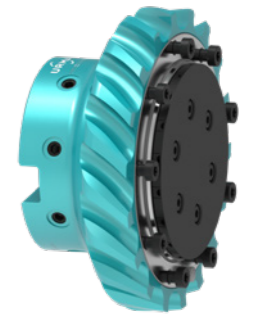
Schneidenträger Aluminium

Cutter Body Aluminium

System Size	Order Number	L	D	d1	d2	kg	Stock
MXF100	MXKL100 27 050A	50	27	63	99	0.95	●
MXF125	MXKL125 32 055A	55	32	78	124	1.52	●

Ersatzteile Schneidenträger siehe Seite 38 – 39

Spare parts blade carrier on page 38 – 39



z Anzahl Zähne
Number of teeth

● An Lager
On stock

▲ Kurzfristig lieferbar
Short-term availability

○ Verfügbarkeit auf Anfrage
Availability on request

Alle Massangaben in mm
All dimensions in mm

Aufnahmen

Adaptors

DIN 69874 – AD/B

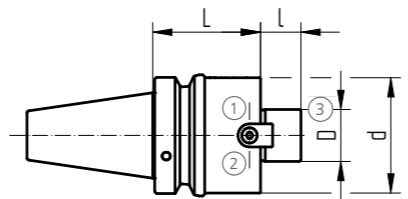
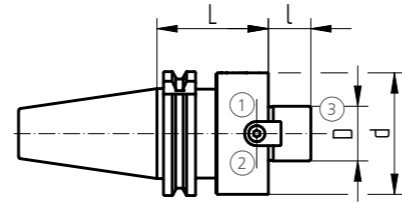
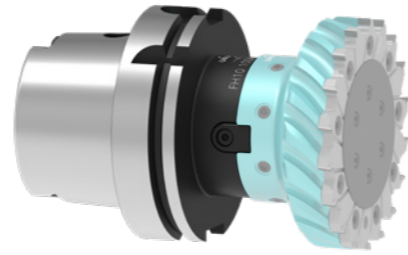
System Size	L	I	D	d	kg	Order Number	Stock
SK40	55	17	16	38	1.13	FD10 40AB 16 055	●
SK40	55	19	22	48	1.38	FD10 40AB 22 055	●
SK40	55	21	27	60	1.65	FD10 40AB 27 055	●
SK40	60	24	32	78	2.15	FD10 40AB 32 060	●
SK50	55	17	16	38	2.86	FD10 50AB 16 055	●
SK50	55	19	22	48	3.82	FD10 50AB 22 055	●
SK50	55	21	27	60	4.00	FD10 50AB 27 055	●
SK50	55	24	32	78	4.05	FD10 50AB 32 055	●

MAS-BT JIS 6339 - AD

System Size	L	I	D	d	kg	Order Number	Stock
BT30	40	17	16	39	0.58	FT10 30A 16 040	●

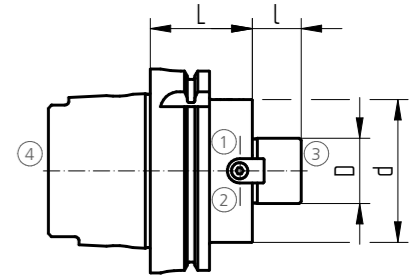
MAS-BT JIS 6339 – AD/B

System Size	L	I	D	d	kg	Order Number	Stock
BT40	55	17	16	38	1.19	FT10 40AB 16 055	●
BT40	55	19	22	48	1.38	FT10 40AB 22 055	●
BT40	55	21	27	60	1.65	FT10 40AB 27 055	●
BT40	60	24	32	78	2.15	FT10 40AB 32 060	●
BT50	55	17	16	38	3.71	FT10 50AB 16 055	●
BT50	55	19	22	48	3.82	FT10 50AB 22 055	●
BT50	55	21	27	60	4.00	FT10 50AB 27 055	●
BT50	55	24	32	78	4.05	FT10 50AB 32 055	●



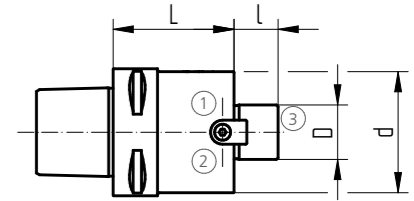
DIN 69893-HSK-A

System Size	L	I	D	d	kg	Order Number	Stock
HSK63	50	17	16	38	0.87	FH10 63A 16 050	●
HSK63	50	19	22	48	1.05	FH10 63A 22 050	●
HSK63	60	21	27	60	1.40	FH10 63A 27 060	●
HSK63	60	24	32	78	1.75	FH10 63A 32 060	●
HSK100	50	17	16	38	2.21	FH10 100A 16 050	●
HSK100	50	19	22	48	2.35	FH10 100A 22 050	●
HSK100	50	21	27	60	2.57	FH10 100A 27 050	●
HSK100	50	24	32	78	2.95	FH10 100A 32 050	●



ISO 26623-1-PSC

System Size	L	I	D	d	kg	Order Number	Stock
PSC 63	50	17	16	38	1.08	FC10 63 16 050	●
PSC 63	50	19	22	48	1.24	FC10 63 22 050	●
PSC 63	60	21	27	60	1.70	FC10 63 27 060	●
PSC 63	60	24	32	78	2.20	FC10 63 32 060	●



Ersatzteile

Spare Parts

D	①	②	③
16*	Z00 70 16 01	C00 22 60	52 01 16
16	Z00 70 16	C00 22 31	C00 22 06
22	Z00 70 22	C00 22 05	C00 24 46
27	Z00 70 27	C00 22 07	C00 24 04
32	Z00 70 32	C00 22 13	C00 24 47

*Nur für BT30 Aufnahmen

*For BT30 adaptors only

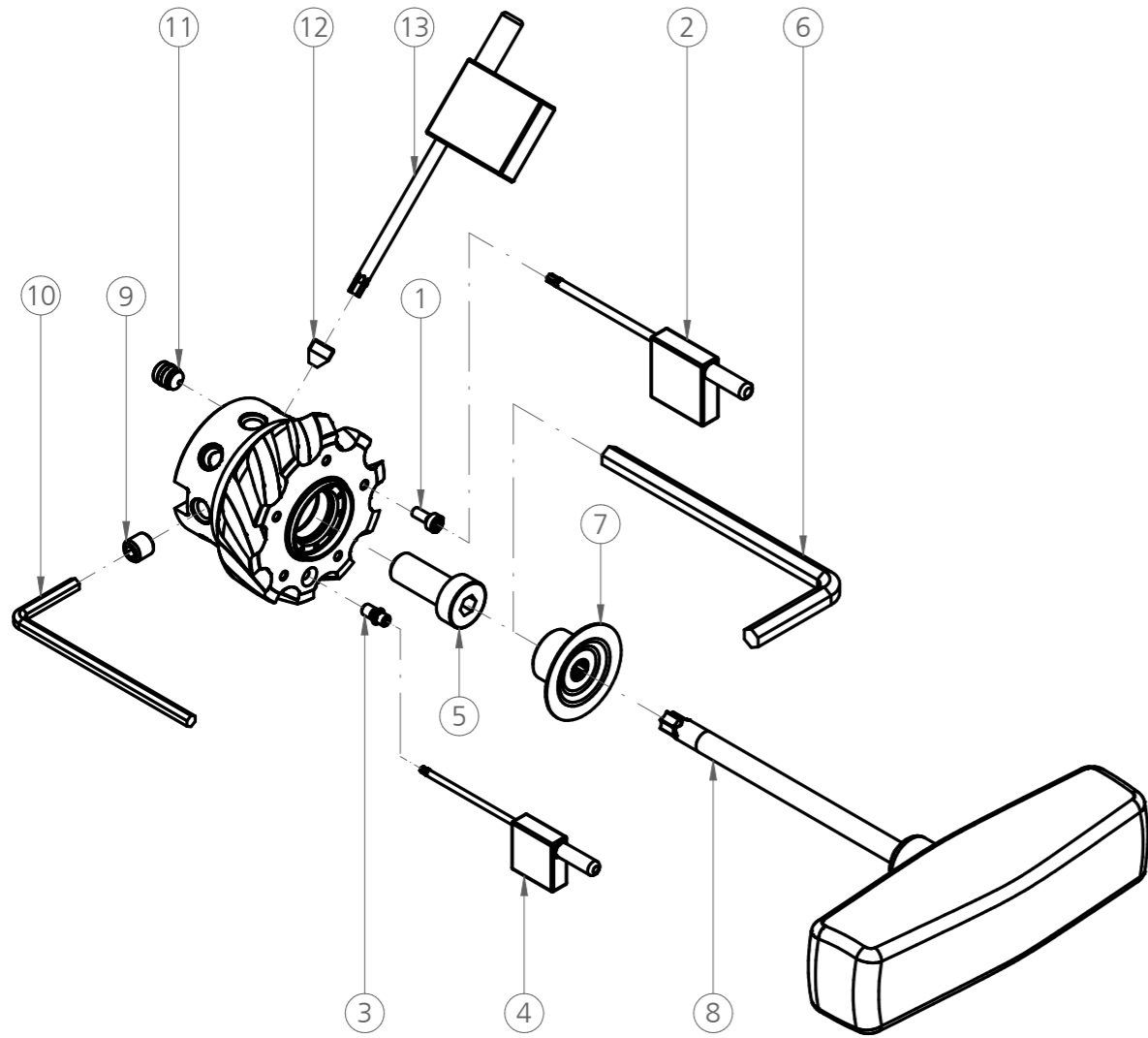
Kühlmittelrohr

Coolant Tube

Size	④
63	H00 63 01
100	H00 100 01

Ersatzteile

Spare parts

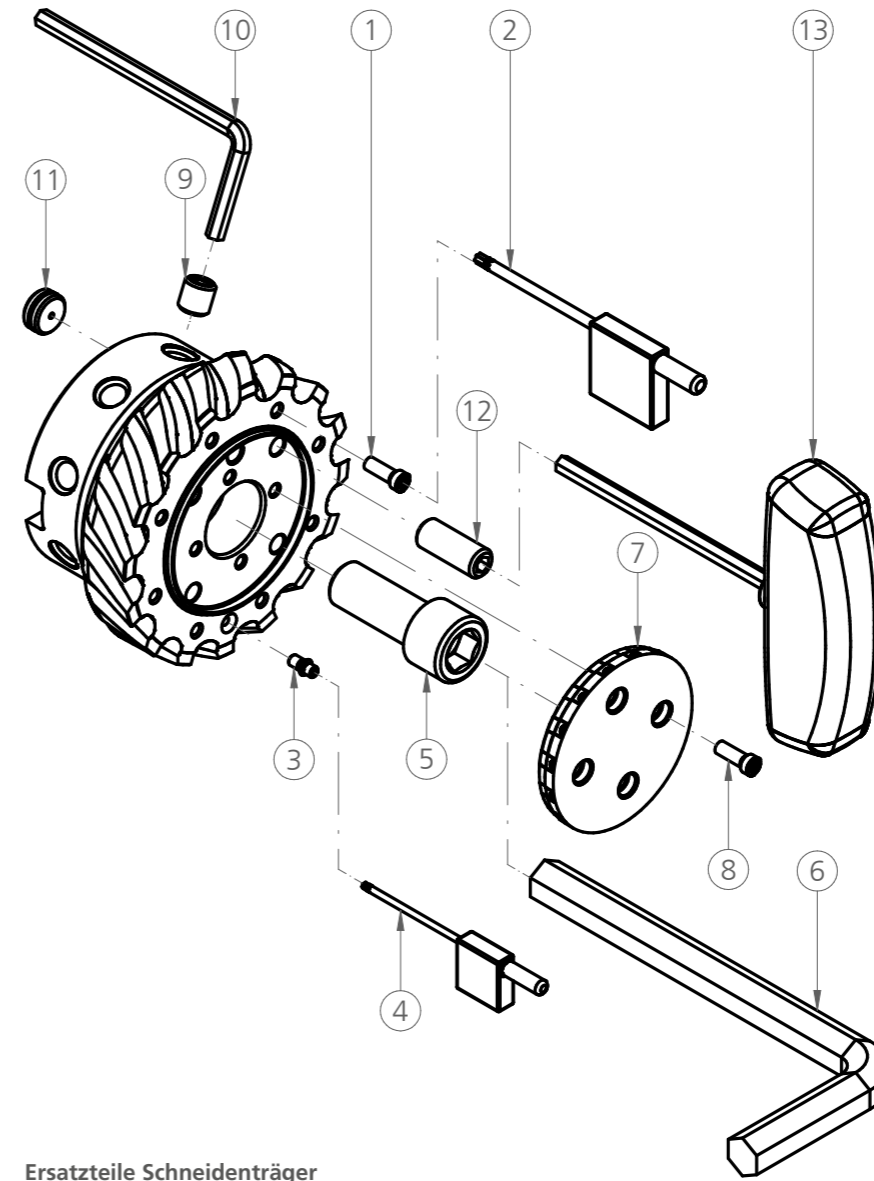


Ersatzteile Schneidenträger

Spare Parts Cutter Body

System Size	①	②	③	④	⑤	⑥
MXF050	C00 90 17	G00 20 02	C00 70 09	G00 20 01	C00 23 21	G00 02 06

System Size	⑦	⑧	⑨	⑩	⑪	⑫	⑬
MXF050	Z90 17 05P	G00 20 29	M6	G00 02 04	ZA00 90 15	C00 70 10	G00 20 03

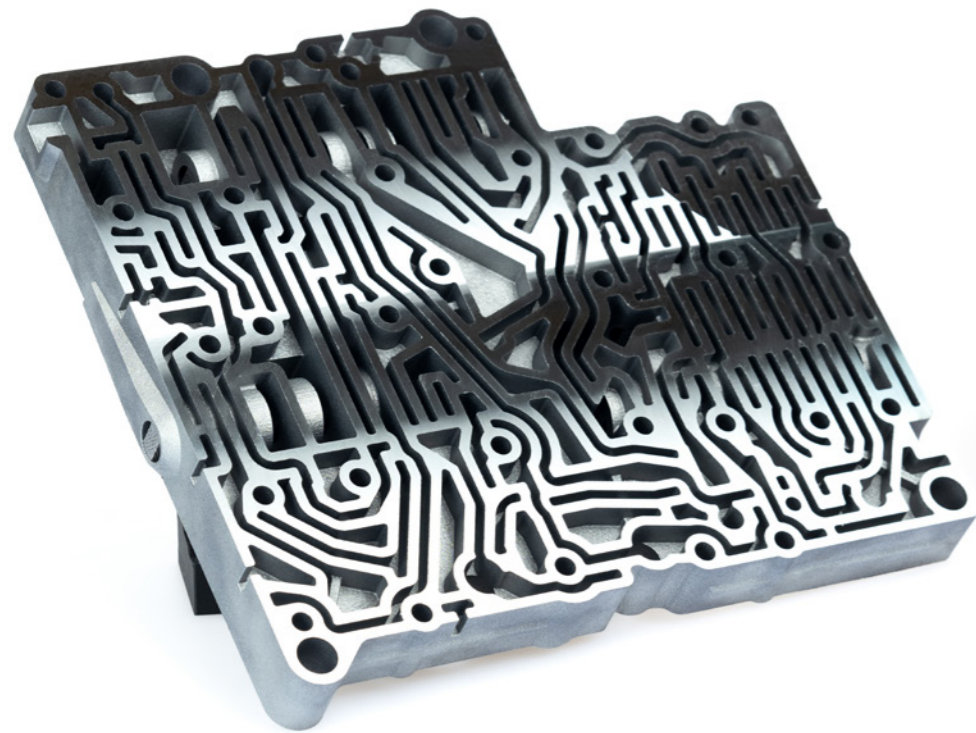


Ersatzteile Schneidenträger

Spare Parts Cutter Body

System Size	①	②	③	④	⑤	⑥
MXF063	C00 70 04	G00 20 07	-	G00 20 01	C00 22 64	G00 02 08
MXF080	C00 70 04	G00 20 07	C00 70 09	G00 20 01	C00 70 06	G00 02 09
MXF100	C00 70 05	G00 20 03	-	G00 20 02	C00 70 06	G00 02 09
MXF125	C00 70 05	G00 20 03	-	G00 20 02	C00 70 07	G00 02 16

System Size	⑦	⑧	⑨	⑩	⑪	⑫	⑬
MXF063	Z90 15 06P	C00 70 04	ZA00 90 11	G00 02 05	ZA00 90 14	C00 70 01	G00 02 25
MXF080	Z90 15 08P	C00 70 04	ZA00 90 11	G00 02 05	ZA00 90 13	C00 70 02	G00 02 26
MXF100	Z90 15 10	C00 70 05	ZA00 90 11	G00 02 05	ZA00 90 13	C00 70 02	G00 02 26
MXF125	Z90 15 12	C00 70 05	ZA00 90 11	G00 02 05	ZA00 90 07	C00 70 03	G00 02 27



Schieberkasten aus Aluminium, Aluminium transmission valve body, Source: URMA AG

Zubehör

Accessories

Planlauf Kontrollscheibe

Axial Run-Out Indicating Insert

System Size	D	B	Order Number	Stock
MX050	50	6	MXP050	●
MX063	63	6	MXP063	●
MX080	80	6	MXP080	●
MX100	100	6	MXP100	●
MX125	125	6	MXP125	●

Drehmomentdreher

Screw Driver

System Size	Dimension	Drehmoment/Torque	Order Number	Stock
MX050	T8	1,5 Nm	G00 40 12	▲
MX063	T10	3 Nm	G00 40 18	▲
MX080	T10	3 Nm	G00 40 18	▲
MX100	T15	3,5 Nm	G00 40 13	▲
MX125	T15	3,5 Nm	G00 40 13	▲

Sechskant-Steckeinsatz

Hex Bit Socket

System Size	Dimension	Drehmoment/Torque	Order Number	Stock
MX050	SW5	10 – 100 Nm	G00 40 60	▲
MX063 – MX125	SW8 / SW10 / SW14	40 – 200 Nm	G00 40 40	▲
MX050	SW5	35 Nm	G00 40 45	▲
MX063	SW8	80 Nm	G00 40 44	▲
MX080	SW10	85 Nm	G00 40 43	▲
MX100	SW10	85 Nm	G00 40 43	▲
MX125	SW14	160 Nm	G00 40 42	▲

Messmittel

Measuring Device

Type	Bezeichnung/Description	Order Number	Stock
Twin T10	Elektronisches Messgerät, inklusive Batterien Electronic measuring instrument, batteries incl.	04430013	○
LRC 6, AA	Batterien (3 Stück) Batteries (3 pieces)	04768002	○
GT 31	Hebelmesstaster Lever probe	03210802	○
MGA	Magnetischer Gelenkarm Magnetic articulated arm	01639022	○

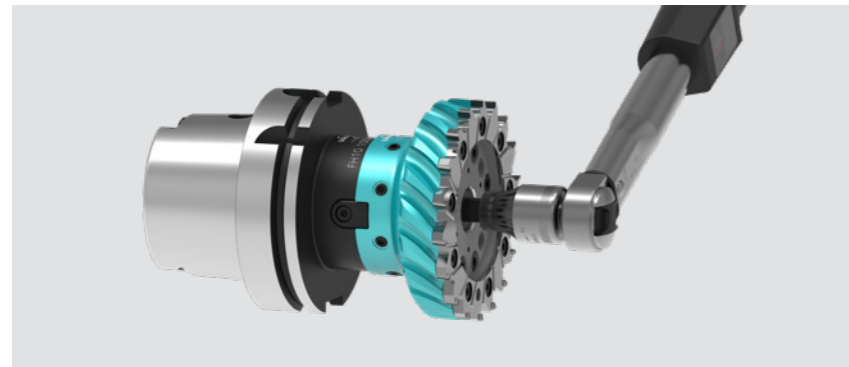


Twin T10

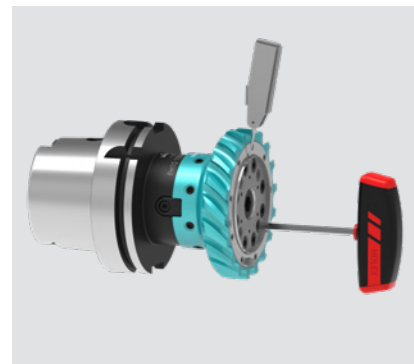


MGA

Ersteinstellung Initial Setup



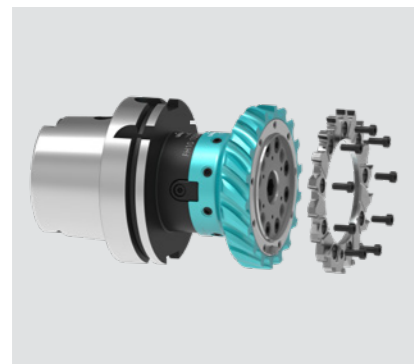
- 1** Werkzeug zusammenbauen.
Assemble the tool.



- 2** Planlauf einstellen.
Run-out adjustment.

- Trennstelle reinigen.**
Clean the interface.

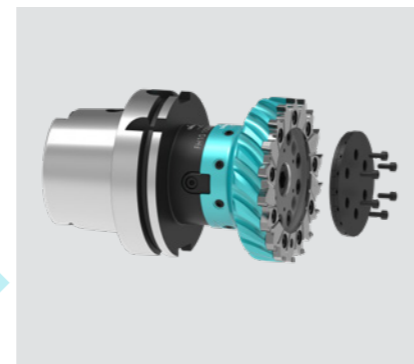
3



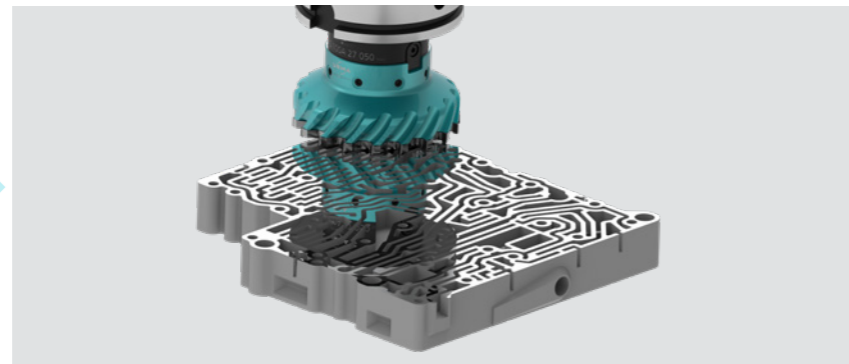
- 4** Frässhneide montieren.
Assemble new cutting ring.

- Kühlmittelscheibe montieren.**
Assemble the coolant disk.

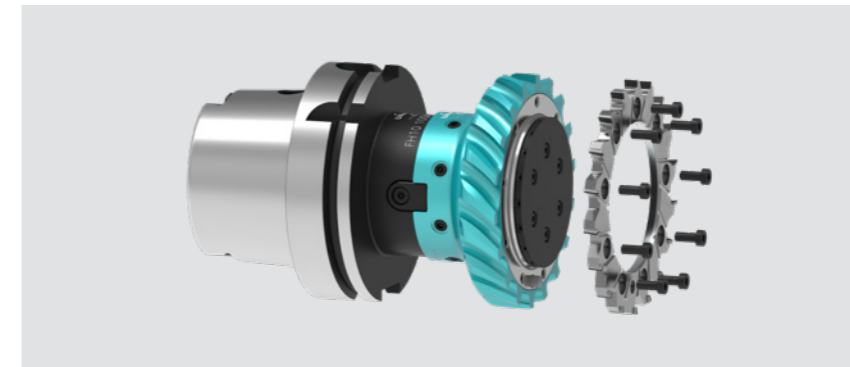
5



- 6** Bauteil bearbeiten.
Machining the component.



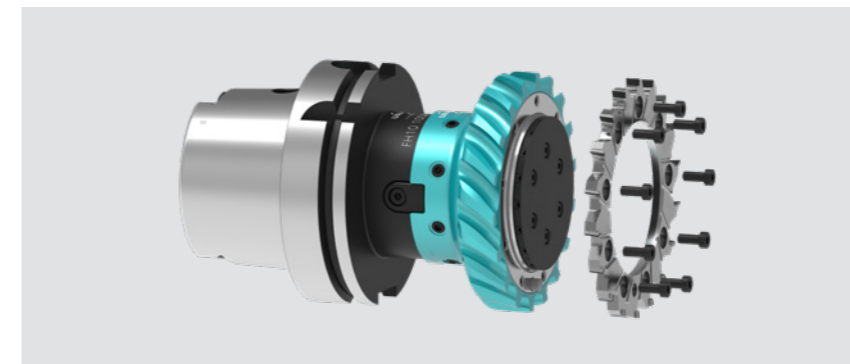
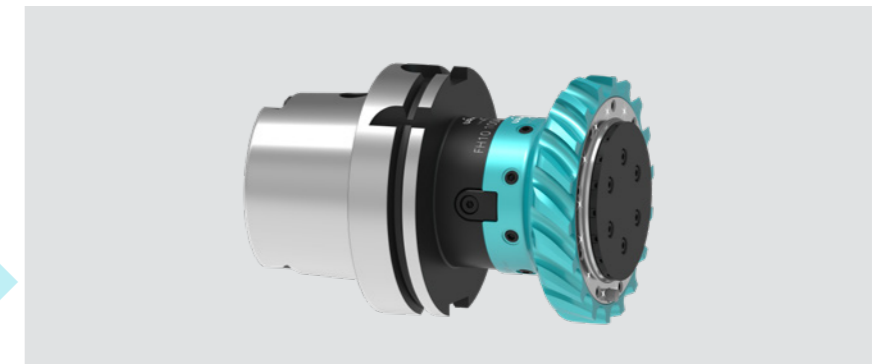
Frässhneiden-Wechsel Changing Cutting Ring



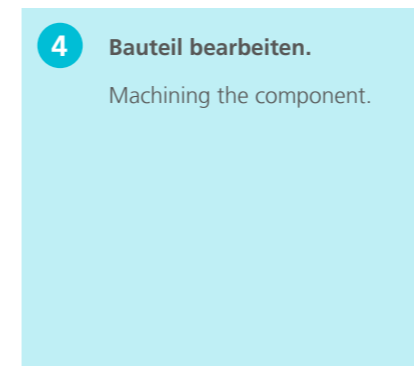
- 1** Frässhneide demontieren.
Remove the cutting ring.



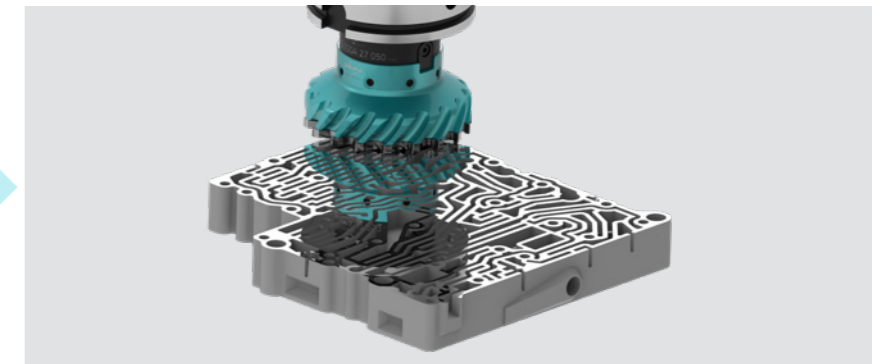
- 2** Trennstelle reinigen.
Clean the interface.



- 3** Frässhneide montieren.
Assemble new cutting ring.



- 4** Bauteil bearbeiten.
Machining the component.



Werkstoff-Tabelle

Material Comparison Table

Nichteisen-Metalle Non-ferrous metals

ISO	UMC	Bezeichnung	Description	Rm [N/mm ²]	HB	Kc1.1	mc	DIN Nr.	Beispiel / e.g.
N	N1	Aluminium Knetlegierungen mit Si < 2%	Aluminum wrought alloy with Si < 2%	< 300	< 150	600	0.23	3.3535	AlMg3
	N2	Aluminiumlegierungen mit Si < 7%	Aluminum alloys, Si < 7%	< 400	< 120	700	0.25	3.2152	AlSi6Cu4
	N3	Aluminiumlegierungen mit Si > 8% < 15% und Magnesiumlegierungen	Aluminum alloys 8% < Si < 15% and alloys Magnesium	< 400	< 120	700	0.25	3.2163 3.2581	AlSi9Cu3 AlSi12
	N4	Aluminiumlegierungen mit Si > 15%	Aluminum alloys, Si > 15%	> 400	> 120	800	0.25		AlSi17Cu4Mg
	N5	Kupferlegierungen gut zerspanbar	Copper alloys, good machinability	< 700	< 210	800	0.2	2.0401 2.1090	CuZn39Pb3 CuSn7Zn4Pb7-C
	N6	Kupferlegierungen schwieriger zerspanbar	Copper alloys, more difficult machinability	> 500	> 150	1100	0.25	2.0966	CuAl10Ni5Fe4

Kunst- und Verbundwerkstoffe Composite Materials

ISO	UMC	Bezeichnung	Description	Rm [N/mm ²]	HB	Kc1.1	mc	DIN Nr.	Beispiel / e.g.
O	O1	Thermoplastische Kunststoffe	Thermoplastic polymers			150	0.26		Polyamid 6 (PA 6) Polyoxymethylen (POM)
	O2	Duroplastische Kunststoffe	Thermosetting plastics			150	0.26		Epoxydharze (EP)
	O3	Kunststoffe mit < 50% Glas	Reinforced plastics with < 50% glass fibers			300	0.26		Polyamid 6 mit 30% GF (PA 6 GF 30)
	O4	Glas-, Kohlen-, Aramidfaser-verstärkte Kunststoffe	Glass fiber-, carbon fiber- and aramid reinforced plastics			300	0.26		GFK CFK

Schnittdaten

Cutting Data

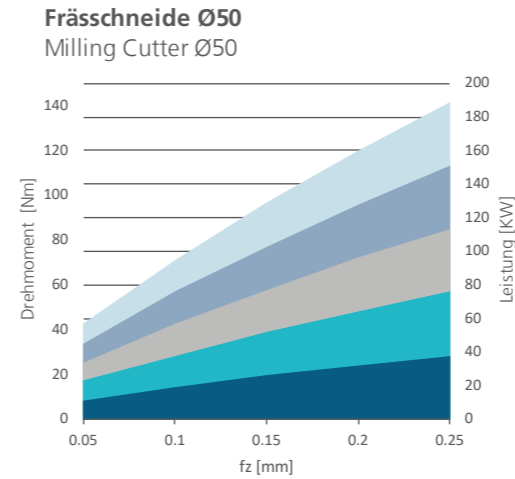
ISO	UMC	Grade	VC	fz	ISO	UMC	Grade	VC	fz
N	N1	PD06	2000 – 3500 – 5000	0.05 – 0.15 – 0.3	O	O1	PD06	500 – 800 – 1000	0.05 – 0.15 – 0.3
	N2					O2			
	N3	PD06	1500 – 2500 – 3500	0.05 – 0.15 – 0.3		O3	PD06	300 – 600 – 800	0.05 – 0.15 – 0.3
	N4					O4			
	N5	PD06	1000 – 1800 – 2500	0.05 – 0.15 – 0.3					
	N6								

Maximale Drehzahl Maximum Revolution

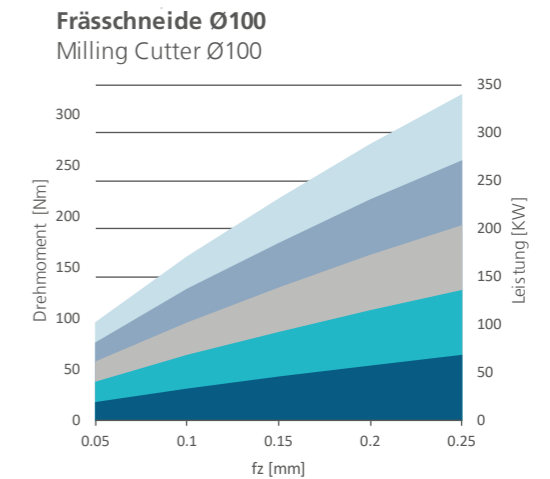
System Size	D	max. Vc	max. rpm
MXF050	50	3926 m/min	25000 1/min
MXF063	63	4948 m/min	25000 1/min
MXF080	80	5026 m/min	20000 1/min
MXF100	100	4712 m/min	15000 1/min
MXF125	125	4712 m/min	12000 1/min

Drehmoment-/Leistungsbedarf

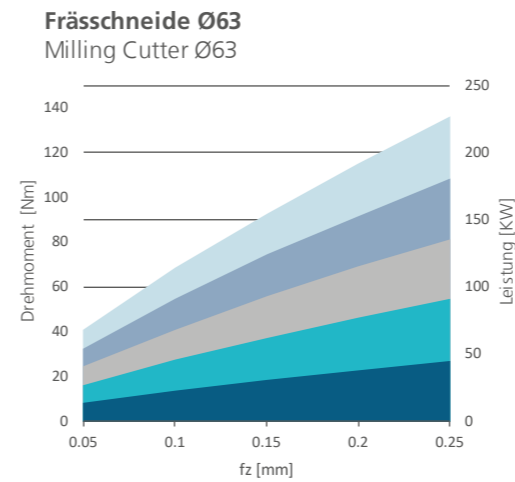
Torque And Power Requirements



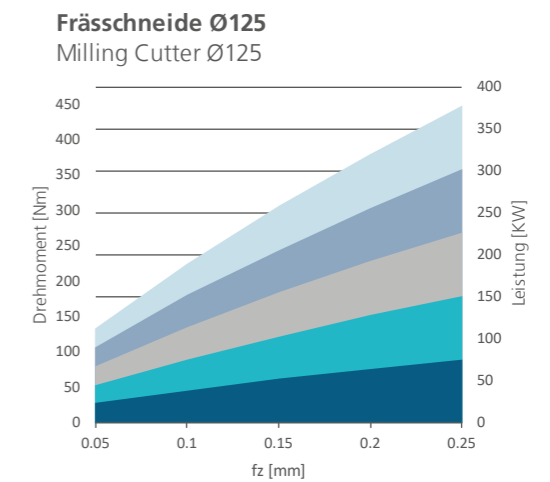
Ø50 / z = 10 / ae = 50mm / AlMgSi1 / vc = 3000m/min



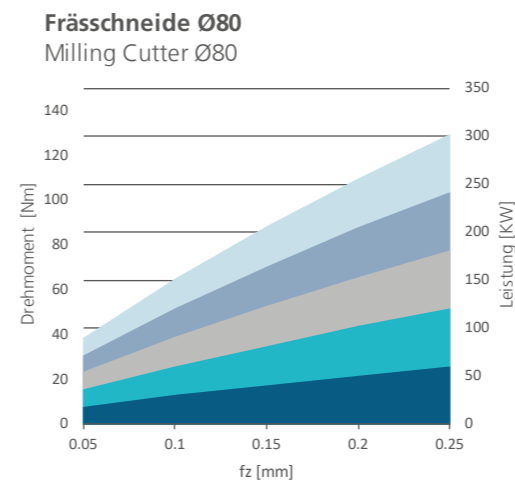
Ø100 / z = 18 / ae = 100mm / AlMgSi1 / vc = 3000m/min



Ø63 / z = 12 / ae = 63mm / AlMgSi1 / vc = 3000m/min



Ø125 / z = 20 / ae = 125mm / AlMgSi1 / vc = 3000m/min



Ø80 / z = 12 / ae = 80mm / AlMgSi1 / vc = 3000m/min

- ap 5 mm
- ap 4 mm
- ap 3 mm
- ap 2 mm
- ap 1 mm



Bearbeitungsstudie – Fräsen
Machining Study – Milling

Absender * Sender		Number	
Firma / Endkunde End User Company		Vertretung Distributor	
Adresse Address		Aussendienst Sales Contact	
Maschine Machine-Tool			
Hersteller und Typ Manufacturer and Model		Max. Vorschub Max. Feed Rate mm/min.	Max. Spindeldrehzahl u/min Max. Spindle Speed rpm
Horizontal * Horizontal <input type="checkbox"/>	Vertikal * Vertical <input type="checkbox"/>	Spindleleistung Spindle Power kW	
Spindelaufnahme * Spindle Holder	Grösse * Size	Ausführung * Execution	Max. Werkzeuggewicht Max. Tool Weight kg
DIN 69893-HSK <input type="checkbox"/>	20 <input type="checkbox"/> 25 <input type="checkbox"/>	A <input type="checkbox"/>	Max. Werkzeuglänge Max. Tool Length mm
DIN 69871 <input type="checkbox"/>	30 <input type="checkbox"/> 32 <input type="checkbox"/>	B <input type="checkbox"/>	Max. Kippmoment Max. Overturning Moment Nm
MAS-BT <input type="checkbox"/>	40 <input type="checkbox"/> 50 <input type="checkbox"/>	C <input type="checkbox"/>	
ISO 26623-PSC <input type="checkbox"/>	63 <input type="checkbox"/> 80 <input type="checkbox"/>	D <input type="checkbox"/>	
..... <input type="checkbox"/>	100 <input type="checkbox"/> <input type="checkbox"/>	E <input type="checkbox"/>	
..... <input type="checkbox"/>			
Kühlung Lubricant			
Öl * Oil <input type="checkbox"/>	MMS * 1) MLS 1) <input type="checkbox"/>	Emulsion * Emulsion <input type="checkbox"/>	Mischungsverhältnis (in %) Ratio of Mixture (in %)
Innere Kühlmittelzufuhr * Intern. Coolant Supply <input type="checkbox"/>			Kühlmitteldruck (bar)* Coolant Pressure (bar)
Werkstück Workpiece			
Bezeichnung Designation	Werkstoffnummer * Material Number	Behandlungszustand (Härte) * Treatment Condition (Hardness)	
Bearbeitungsanforderungen Machining Requirements			
Minimale Auskraglänge Minimum Tool Length (OAL)	Störkonturen Interfering contours mm	Aufmass: Allowance:	
Oberflächengüte (µm) * Surface Quality (µm)	<input type="checkbox"/> <input type="checkbox"/>	R_a <input type="checkbox"/>	R_z <input type="checkbox"/> R_t <input type="checkbox"/>
Datum * Date	Jährliche Produktion: Annual Production:		
Bemerkungen Notes	Dringlichkeit: Urgency:		

* **Pflichtfelder**
Mandatory fields

1) **Mindermengen Schmierung**
Minimal lubrication system (mist coolant)

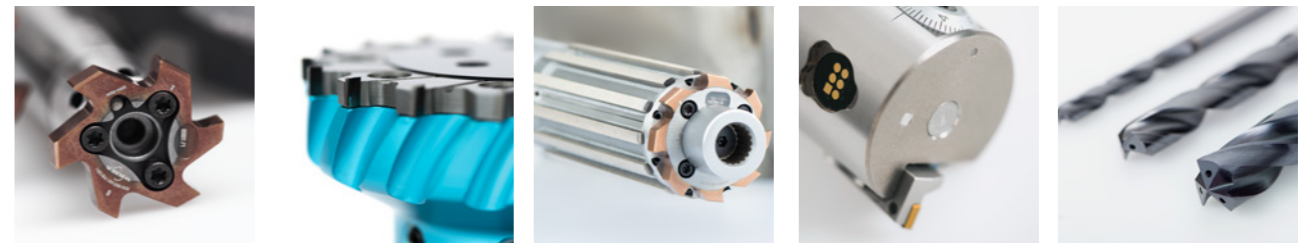
Beilage: Ihre Bearbeitungsskizze *
Attachment: Your Application Sketch

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