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A close-up photograph of a precision tool. In the foreground, a dark, multi-fluted cutting insert is visible, with several yellowish-gold inserts on its face. In the background, a circular gauge with a scale and a needle is partially visible, indicating a measurement. The background is a blurred, light-colored surface.

**Innovation Is
Our Tool**

SWISS  QUALITY

URMA Boring System

URMA Tools

Reaming & Boring



Ø 0.2 - 2'400 mm
Ø 0.2 - 40 mm FINISHING
Ø 19.5 - 153 mm ROUGHING
Ø 18 - 153 mm FINISHING
Ø 49 - 297 mm ROUGHING + FINISHING
Ø 150 - 805 mm ROUGHING + FINISHING
Ø 500 - 2'400 mm ROUGHING + FINISHING
Ø 20 - 51 mm

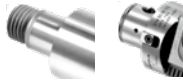


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● 库存标准品
Stock standard

○ B类, 按需定制
Index B, availability on request

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URMA Systems

Alpha-/Beta-Modul System

Ø 0.2 - 2'400 mm

Alpha-模块系统

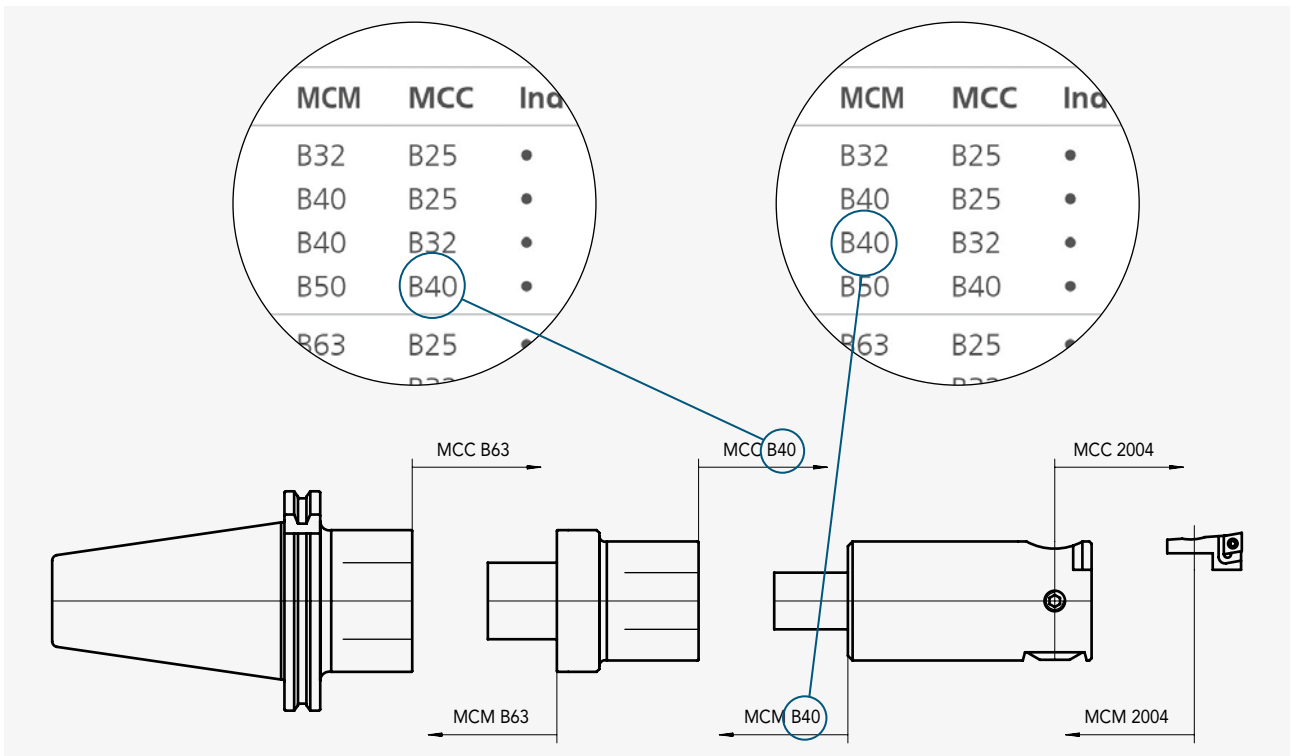


轴向螺纹连接

- 刚性好
- 对称的质量分布允许高转速
- 操作简易
- 有Beta转接模块

Axial Threaded Connection

- high stability
- mass symmetry allows high revolutions per minute
- simpler handling
- adaptor for Beta-Modul



Ø 0.2 - 2'400 mm

Beta-模块系统



侧固式连接

- 灵活性强
- 与其他系统兼容
- 较大的锥面和端面键能传递强大的扭矩
- 操作简易
- 有Alpha转接模块

With Side Lock System

- high flexibility
- compatible to other systems
- large surface area of conical drive key allows for higher torque transmission
- simpler handling
- adaptor for Alpha-Modul

URMA接口代码的使用方法

MCC 刀刃方向的接口代码
MCM 机床方向的接口代码

MCC和MCM表示刀具组件装配的不同连接特征，
这些代码必须相互匹配(见第8页图示)

Handling of URMA Match Codes

MCC Match Code towards Cutting Edges
MCM Match Code towards Machine

MCC and MCM show the different couplings to mount the tool components.
These match codes have to correspond (example page 8).

URMA Systems

DigiTec

Ø 0.2 - 2'400 mm

DigiTec

价格合理的数字化精镗头系统!

The digital fine boring system at a fair price!

DIGITEC



数字化技术应用于铇马的整个精镗头系统，直径范围从 0.3 -直到 2'400 mm

- 整个DigiTec数显系列，使用一个通用的显示单元
- 没有维护费用，失效的风险最小化
- 电池和数显部分都集成于手持的显示单元上单元上
- 出色的性价比
- 精镗头的升级版本-2011版

Digital-Technology for the entire URMA fine boring head family from Ø 0.2 up to 2'400 mm

- only one control unit for the entire DigiTec family
- no maintenance and minimal risk of failure
- battery and display are located in the handheld control unit.
- excellent price-performance ratio upgrade possible on the fine boring heads - version 2011

Ø 0.2 - 2'400 mm

...微米级的调整精度，可在机床上实现-简单而完美!

...adjustable in microns, even in the machine - easy and faultless!



更多的优点

- 通过对移动部件的直接测量实现最高精度
- 大显示屏不易出现读数错误
- 操作安全，即使是在光照很差的环境（机床内部等）
- 很容易切换公制/英制或者直径/半径
- 双功能-同时保留数显及刻度盘显示两种读数方式

Further Advantages

- highest precision through direct measuring of the movement
- large digital display reduces setup error
- safe handling, even under poor lighting conditions (machine tool workspace, etc.)
- easy to switch metric/Inch or Diameter/Radius
- «Hybrid» usage - the boring heads also work conventionally with scale

Ø 7.3 - 25 mm

刀具-套装
Tool-Set



DIGITEC

内容
Content

Order Number	描述	Description	Details	Amount
05 42 30-D	精镗头	Fine boring head DigiTec	Ø 2-40 mm	1
H06 06 07	硬质合金镗杆	Carbide boring bar	Ø 7.3-11 mm l = 24-48 mm	1
HW/C06 10 12	硬质合金镗杆	Carbide boring bar	Ø 11.8-16 mm l = 50-80 mm	1
W/C06 16 15	镗杆	Boring bar	Ø 15-20 l = 45 mm	1
07 00 06	变径杆	Reducer	Ø 6 mm	1
07 00 10	变径杆	Reducer	Ø 10 mm	1
06 16 20	镗杆	Boring bar	20-25 mm l = 60 mm	1
W/C20 02 06	精镗刀座	Fine boring insert holder		1
C00 20 01	零部件(刀片夹紧螺钉)	Spare parts (insert clamping screw)		3
C00 20 10	零部件(刀片夹紧螺钉)	Spare parts (insert clamping screw)		3
CPGT060202FXUT150	刀片 金属陶瓷	Insert cermet		10
WCGT020102FYUT150	刀片 金属陶瓷	Insert cermet		10
92 00 25-D	数显镗刀用显示单元	Display unit for DigiTec		1
DIGI 00 05	空盒子	Empty case		1
05 42 30-D 17 05 42 30-D 37 05 42 30-D 57	可供选择的刀柄: D10 41 16 DIN 69871-A/40 T10 41 16 MAS-BT-A/40 HSKA10 63 17 HSK63-A	Adapter to choose: D10 41 16 DIN 69871-A/40 T10 41 16 MAS-BT-A/40 HSKA10 63 17 HSK63-A		

数显镗刀用显示单元

Display Unit for Digital Fine Boring Heads

数显镗刀用显示单元

Display Unit for DigiTec

Order Number	L	B	H	kg	Index
92 00 25-D	120	80	25	0.185*	•

* 包含电池

Battery included



SPARE PARTS



9V E-Block
Z92 00 25 12

URMA Systems

MicroMax

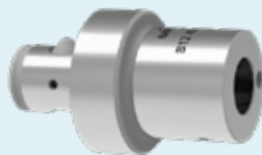
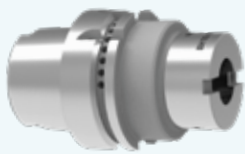
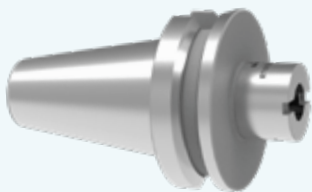
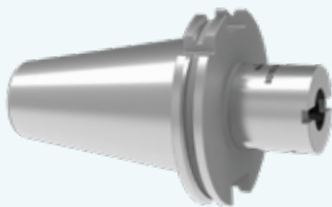
Ø 0.2 - 40 mm

MicroMax

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From page 22



Ø 0.2 - 40 mm

DIGITEC

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Page 24



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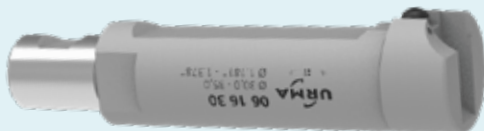
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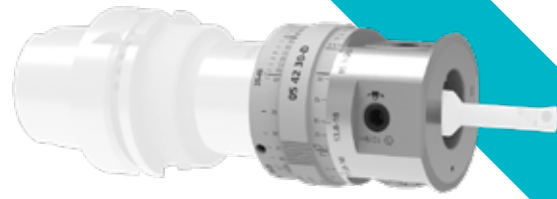
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Ø 0.2 - 40 mm

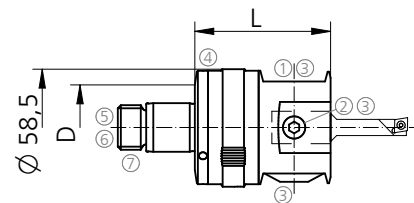


DIGITEC

直径**1µm**调整精度的精镗头*，带或者不带动平衡功能
 Fine Boring Head 1 µm/Ø *, with or without Balancing Features

平衡式精镗头
 Fine Boring Head, Balanceable

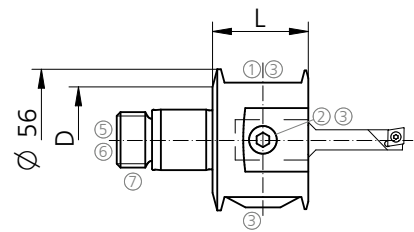
Alpha	Order Number	L	D	kg	SW	MCM	MCC	Index
42	05 42 30-D	67	42	1,3	50	42	Z16	●
42	05 42 30	67	42	1,3	50	42	Z16	●



用于数显镗刀的显示单元见第17页
 DigiTec display unit for digital fine boring heads page 17

非平衡式精镗头
 Non balanceable fine boring head

Alpha	Order Number	L	D	kg	SW	MCM	MCC	Index
42	05 42 40-D	38	42	0,7	50	42	Z16	●
42	05 42 40	38	42	0,7	50	42	Z16	●



用于数显镗刀的显示单元见第17页
 DigiTec display unit for digital fine boring heads page 17

SPARE PARTS

Alpha	1	2	3	4	5	6	7
42	Z00 05 01	Z00 23 01	G00 02 06	G00 02 03	G00 02 04	G00 02 07	Z00 22 42

Ø 0.2 - 40 mm

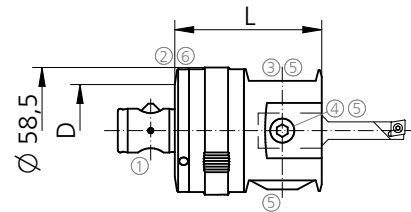


DIGITEC

直径**1µm**调整精度的精镗头*，带或者不带动平衡功能
 Fine Boring Head 1 µm/ø *, with or without Balancing Features

平衡式精镗头
 Fine Boring Head, Balanceable

Beta	Order Number	L	D	kg	MCM	MCC	Index
40	B05 40 30 067-D	67	42	1,3	B40	Z16	●
40	B05 40 30 067	67	42	1,3	B40	Z16	●



用于数显镗刀的显示单元见第17页
 DigiTec display unit for digital fine boring heads page 17

* 只有带显示单元的数显镗刀才能达到直径方向**1µm**调整精度，非数显镗刀调整精度为直径方向**10µm**
 Only with DigiTec version (-D) in connection with the display (page 17) otherwise 10 µm/ø adjustable

SPARE PARTS

Beta	①	②	③	④	⑤	⑥
40	Z00 40 21	Z00 40 23	Z00 05 01	Z00 23 01	G00 02 06	G00 02 03

Ø 0.2 - 6 mm



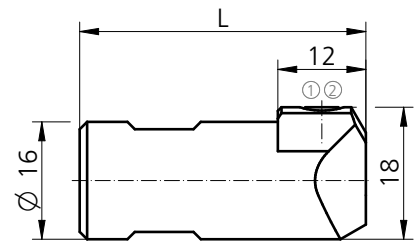
镗杆

Boring Bars

微型镗杆用变径套
Reducer for Mini-Boring Bars

Ø 0,3 - 6 mm

Order Number	L	kg	MCM	MCC	Index
B105.0016.U1.01	39	0,05	Z16	B105	●

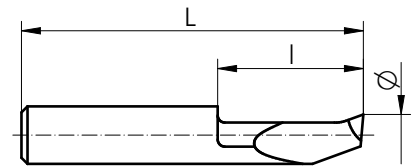


注意: 注意切削方向!
Attention: Note the direction of cutting!

硬质合金微型镗杆
Carbide Mini-Boring Bars

Ø 0,3 - 6 mm

Order Number	Ø-Range	L	kg	l	MCM	Index
L105.1802.0.02MG12	0.2 - 0.8	23	<0,01	1,0	B105	●
L105.1802.0.03MG12	0,3 - 0,9	23	<0,01	1,0	B105	●
L105.1803.0.07MG12	0,7 - 2,3	23	<0,01	2,0	B105	●
R105.1805.1.1TN35	1,0 - 3,4	25	<0,01	6,0	B105	●
R105.1809.1.2TN35	2,0 - 6,0	25	<0,01	9	B105	●



SPARE PARTS

B105..

①



6.075T15

②



G00 20 03

Ø 5.8 - 22.5 mm



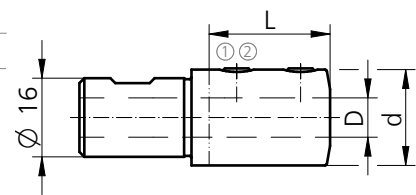
镗削深度至**8xD**硬质合金镗杆

Boring Bars with Carbide Shank for Boring Depths up to 8xD

变径套
Reducers

Ø 5,8 - 22,5 mm

Order Number	L	kg	D	d	MCM	MCC	Index
07 00 05	17	0,07	5	16	Z16	ZS5	●
07 00 06	17	0,06	6	16	Z16	ZS6	●
07 00 08	22	0,08	8	19	Z16	ZS8	●
07 00 10	25	0,09	10	22	Z16	ZS10	●
07 00 12	31	0,09	12	22	Z16	ZS12	●

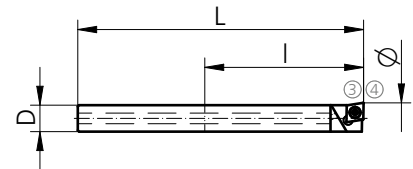


硬质合金镗杆

Boring Bars with Carbide Shanks

Ø 5,8 - 22,5 mm

Order Number	Ø-Range	L	kg	l	D	Inserts	MCM	MCC	Index
H06 05 06	5,8 - 10	65	0,02	20-40	5	WC.. 0201	ZS5	WC02	●
H06 06 07	7,3 - 11	70	0,03	24-48	6	WC.. 0201	ZS6	WC02	●
HW/C06 08 09	8,8 - 13	90	0,05	40-64	8	CC../CP.. 0602	ZS8	CP06	●
HW/C06 10 12	11,8 - 16	105	0,1	50-80	10	CC../CP.. 0602	ZS10	CP06	●
HW/C06 12 14	13,8 - 18	120	0,15	60-96	12	CC../CP.. 0602	ZS12	CP06	●
HW/C06 16 16	15,8 - 20	130	0,26	100	16	CC../CP.. 0602	ZS16	CP06	●
HW/C06 16 18	18,3 - 22,5	145	0,34	115	16	CC../CP.. 0602	ZS16	CP06	●



复合式刀座见 27页

Insert holder with combined insert pocket see page 27

SPARE PARTS

D	①	②	③	④
5-6	C00 07 01	G00 02 03	C00 20 10	G00 20 01
8-10	C00 25 03	G00 02 04	C00 20 04	G00 20 05
10-12	C00 07 02	G00 02 04	C00 20 01	G00 20 05
16			C00 20 01	G00 20 05

Ø 10 - 40 mm



钢质镗杆

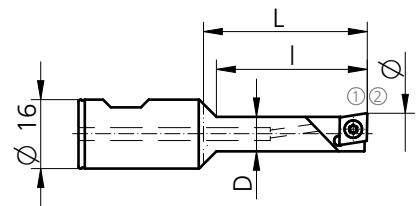
Boring Bars with Steel Shank

镗杆

Boring Bars

Ø 20 - 40 mm

Order Number	Ø-Range	L	kg	I	D	Inserts	MCM	MCC	Index
W/C06 16 10	10 - 15	38	0,06	35	8	CC../CP.. 0602..	Z16	CP06	●
W/C06 16 15	15 - 20	48	0,08	45	12,5	CC../CP.. 0602..	Z16	CP06	●
W06 16 10	10 - 15	38	0,06	35	8	CC.. 0602..	Z16	CC06	●
W06 16 15	15 - 20	48	0,08	45	12,5	CC.. 0602..	Z16	CC06	●

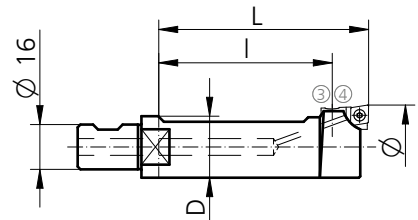


镗杆

Boring Bars

Ø 20 - 40 mm

Order Number	Ø-Range	L	kg	I	D	MCM	MCC	Index
06 16 20	20 - 25	60	0,13	47	17	Z16	2002	●
06 16 25	25 - 30	75	0,24	62	22	Z16	2002	●
06 16 30	30 - 35	75	0,24	62	27	Z16	2002	●
06 16 35	35 - 40	75	0,24	62	32	Z16	2002	●



SPARE PARTS

①	②	③	④
C00 20 01	G00 20 05	C00 25 11	G00 20 07

Ø 10 - 40 mm

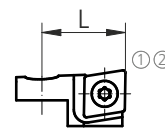


刀座
Insert Holders

刀座
Insert Holders

Ø 20 - 40 mm

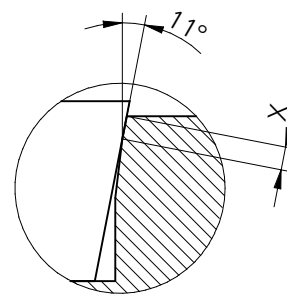
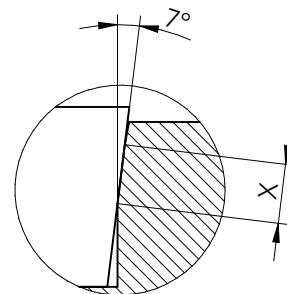
Order Number	L	kg	Inserts	MCM	MCC	Index
W/C20 02 06	13	<0,01	CC../CP.. 0602..	2002	CP06	●
W20 02 06	13	<0,01	CC.. 0602..	2002	CC06	●
WW20 02 06	13	<0,01	Wiper CC.. 0602..	2002	CC06	●



复合式刀座
Insert Holder with Combined Insert Pocket

W/C...的刀座和HW/C06...的镗杆设计可使用7°后角(CCGT...)或11°后角(CPGT...)刀片。为保证后刀面的贴合,我们强烈建议在这些刀座上使用公差紧的刀片(后刀面磨制的CCG...或CPG...刀片)。

Insert holders type W/C... and boring bars HW/C06... are designed to hold inserts with 7° (CCGT...) as well as 11° (CPGT...) clearance angle. We highly recommend to use only precision (ground) inserts (CCG... or CPG...) on such holders to guarantee a perfect fit.



SPARE PARTS

①	②
C00 20 04	G00 20 05

URMA Systems

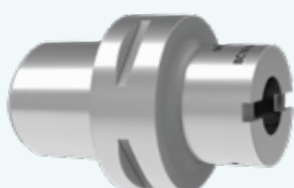
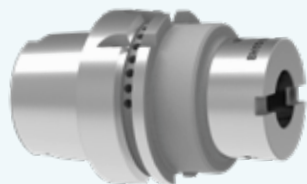
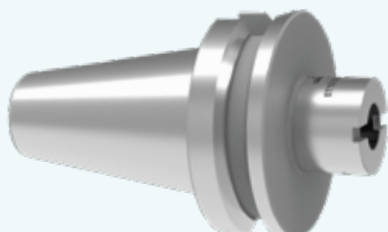
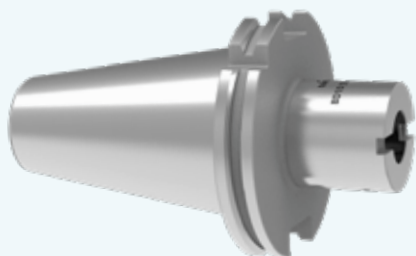
VersaMax - Type 14

Ø 19.5 - 153 mm

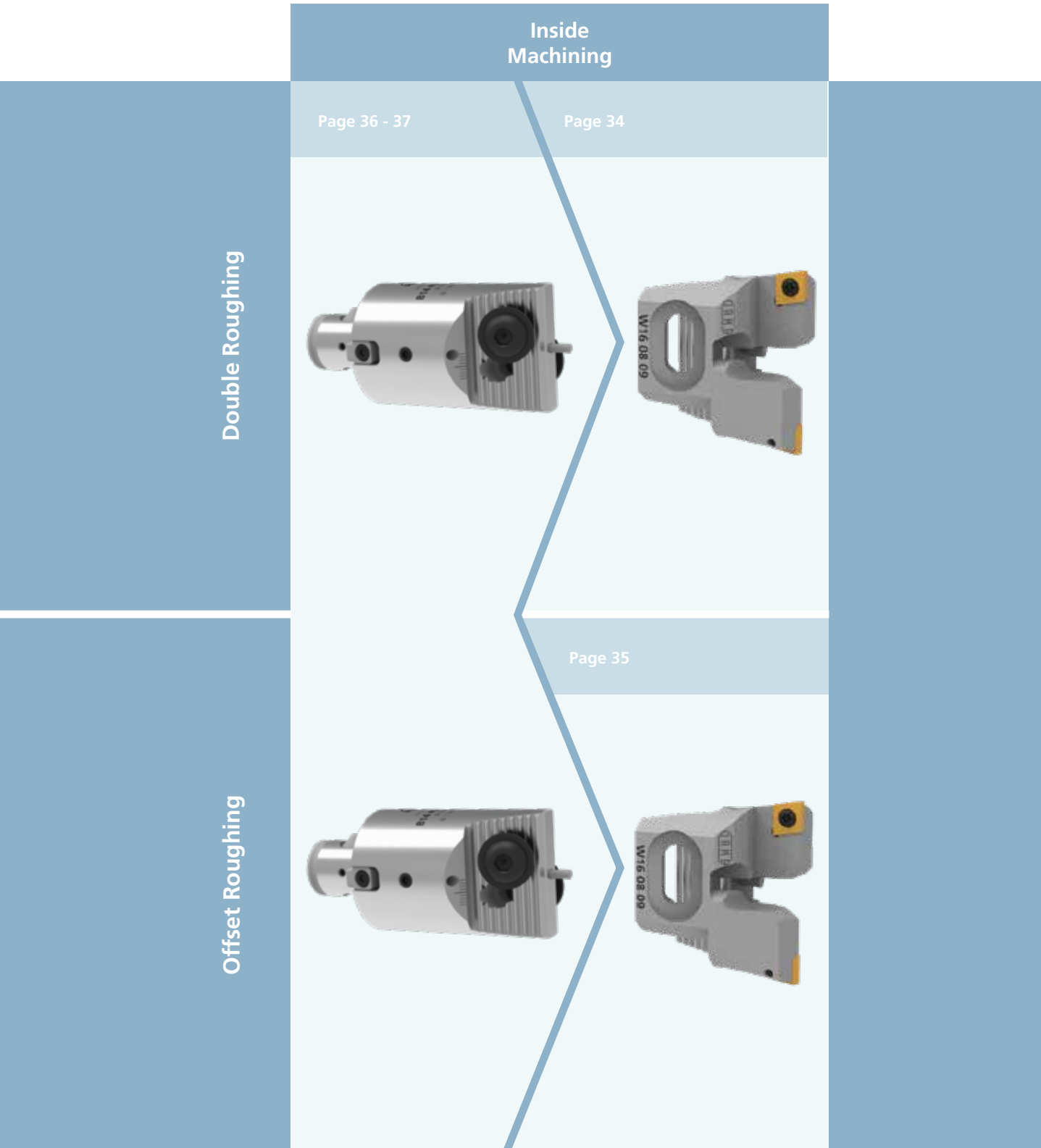
VersaMax - Type 14

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Ø 19.5 - 153 mm



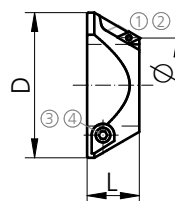
Ø 22.5 - 96 mm

倒角环
Chamfer Ring



45°倒角环
45° Chamfer Rings

Alpha	Beta	Order Nr.	Ø-Range	L	D ₁	kg	Inserts	MCM	MCC	Index
18,5		W29 00 18	22.5 - 33	18	37	0,1	DC.. 0702..	18,5	DC07	○
24,5		W29 00 24	29 - 45	22	48	0,2	DC.. 0702..	24,5	DC07	○
	25	W29 00 25	29 - 45	22	48	0,2	DC.. 07 02..	B25	DC07	○
32	32	W29 00 32	38 - 61	28	64	0,4	DC.. 11T3..	32/B32	DC11	○
42	40	W29 00 42	50 - 72	35	80	0,7	DC.. 11T3..	42/B40	DC11	○
55		W29 00 55	66 - 96	42	100	1,2	DC.. 11T3..	55	DC11	○



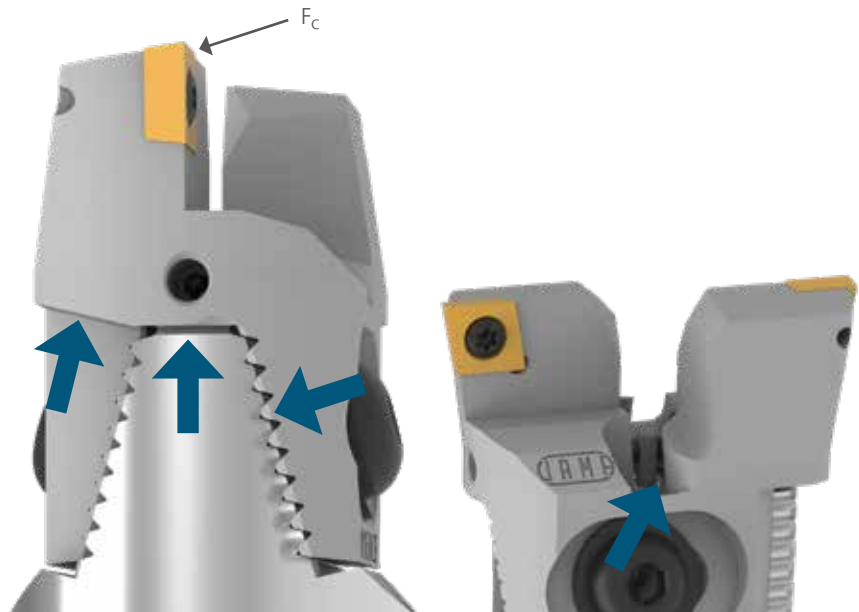
SPARE PARTS

Alpha	Beta	①	②	③	④
18,5		C00 20 01	G00 20 05	C00 22 05	G00 02 04
24,5	25	C00 20 01	G00 20 05	C00 22 13	G00 02 05
32	32	C00 20 02	G00 20 03	C00 22 02	G00 02 06
42	40	C00 20 02	G00 20 03	C00 26 27	G00 02 07
55		C00 20 02	G00 20 03	C00 22 64	G00 02 08

Ø 19.5 - 153 mm

有专利保护的URMA双刃粗镗头的优点

Advantages of the Patented URMA Double Cutter Head



专利设计将切削力(F_c)引导至刀体确保最高的稳定性,多功能性并可用于:

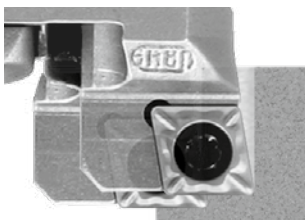
- 双刃粗镗
- 错位粗镗
- 二边分别可调
- ISO-标准刀片
- 有内冷孔
- 高可靠性
- 操作简单
- 已证实的最好刚性

Patented design to direct cutting forces (F_c) directly into the body and guarantee highest stability, versatility and allows:

- double cutter roughing
- offset roughing
- individual radial adjustment
- ISO-Standard inserts
- coolant through
- high reliability
- simple handling
- optimized stability

错位粗镗

Offset Roughing



轴向和径向错位的粗镗用于大切深加工
每分钟进给量只可按单刃加工计算 (详见 35页)

Axial and radial offset roughing for larger cutting depth

(consider only one cutting edge for the feed rate per minute calculation, details page 35)

Ø 19.5 - 153 mm



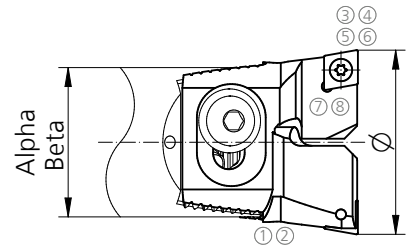
刀座

Insert Holders

90°刀座

Insert Holders 90°

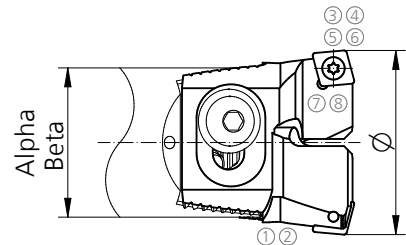
Alpha	Beta	Order Number	Ø-Range	kg	Inserts	MCM	MCC	Index
18,5		W16 01 06	19,5 - 25	0,1	CC.. 0602..	1418	CC06	●
18,5		W16 02 06	22,5 - 30	0,1	CC.. 0602..	1418	CC06	●
24,5	25	W16 04 06	29 - 39	0,1	CC.. 0602..	1424	CC06	●
32	32	W16 06 09	38 - 51	0,1	CC.. 09T3..	1432	CC09	●
42	40	W16 08 09	50 - 67	0,1	CC.. 09T3..	1442	CC09	●
55	63	W16 10 13	66 - 88	0,2	CC.. 1204..	1455	CC12	●
55	63	W16 10 12P	66 - 88	0,2	CN.. 1204..	1455	CN12	●
72	80	W16 12 12P	87 - 116	0,5	CN.. 1204..	1472	CN12	●
72	80	W16 12 16P	87 - 116	0,5	CN.. 1606..	1472	CN16	●
94	100	W16 14 16P	115 - 153	1,3	CN.. 1606..	1494	CN16	●



75°刀座

Insert Holders 75°

Alpha	Beta	Order Number	Ø-Range	kg	Inserts	MCM	MCC	Index
18,5		W18 02 06	22,5 - 30	0,1	CC.. 0602..	1418	CC06	●
24,5	25	W18 04 06	29 - 39	0,1	CC.. 0602..	1424	CC06	●
32	32	W18 06 09	38 - 51	0,1	CC.. 09T3..	1432	CC09	●
42	40	W18 08 09	50 - 67	0,1	CC.. 09T3..	1442	CC09	●
55	63	W18 10 12P	66 - 88	0,2	CN.. 1204..	1455	CN12	●
72	80	W18 12 16P	87 - 116	0,5	CN.. 1606..	1472	CN16	●
94	100	W18 14 16P	115 - 153	1,3	CN.. 1606..	1494	CN16	●



⑦⑧ 标准交付包装中不包括
Not included in the delivery

SPARE PARTS

Alpha	Beta	①	②	③	④	⑤	⑥	⑦	⑧
18,5		G00 02 01	C00 02 10	C00 20 01	G00 20 05				
24,5	25	G00 02 01	C00 02 11	C00 20 01	G00 20 05				
32	32	G00 02 02	C00 02 12	C00 20 02	G00 20 03				
42	40	G00 02 03	C00 02 13	C00 20 02	G00 20 03				
55	63	G00 02 03	C00 02 14	C00 20 05	G00 20 03				
55	63	G00 02 03	C00 02 14		G00 20 03	A00 12 11	Z00 12 02	A00 02 17	A00 32 07
72	80	G00 02 04	C00 02 15		G00 20 03	A00 12 11	Z00 12 02	A00 02 17	A00 32 07
72	80	G00 02 04	C00 02 15		G00 20 03	A00 12 12	Z00 16 03	A00 02 16	A00 32 08
94	100	G00 02 05	C00 02 16		G00 20 03	A00 12 12	Z00 16 03	A00 02 16	A00 32 08

Ø 22.5 - 153 mm



错位粗镗刀座

Insert Holders for Offset Roughing

刀刃在径向和轴向错位

2边均匀分摊切深

减半的进给，双倍的切深

Inserts offset in diameter and height

Equal chip load

Double cutting depth capacity with half the feed rate

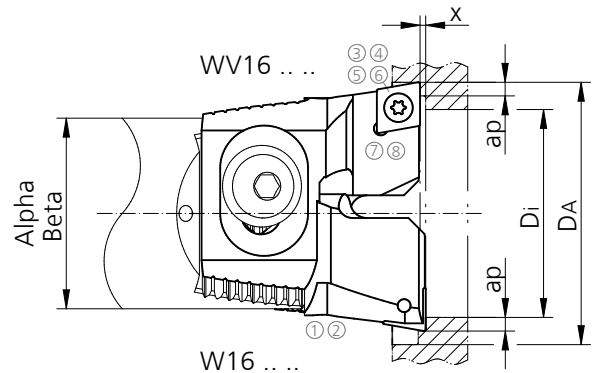
90°刀座

Insert Holders 90°

Alpha	Beta	Order Number	Order Number	Ø-Range	kg	Inserts	$a_{p,max}$	x	MCM	MCC	Index
18,5		WV16 02 06	W16 02 06	22,5 - 30	0,1	CC.. 0602..	2-3	0,2	1418	CC06	●
24,5	25	WV16 04 06	W16 04 06	29 - 39	0,1	CC.. 0602..	2-3	0,2	1424	CC06	●
32	32	WV16 06 09	W16 06 09	38 - 51	0,1	CC.. 09T3..	3-4	0,2	1432	CC09	●
42	40	WV16 08 09	W16 08 09	50 - 67	0,2	CC.. 09T3..	3-4	0,25	1442	CC09	●
55	63	WV16 10 12P	W16 10 12P	66 - 88	0,5	CN.. 1204..	4-6	0,3	1455	CN12	●
72	80	WV16 12 12P	W16 12 12P	87 - 116	1,2	CN.. 1204..	4-6	0,3	1472	CN12	●
94	100	WV16 14 16P	W16 14 16P	115 - 153	3,0	CN.. 1606..	6-8	0,4	1494	CN16	●

Formula $a_p = \frac{D_A - D_i}{4}$

⑦⑧ 标准交付包装中不包括
Not included in the delivery



SPARE PARTS

Alpha	Beta	①	②	③	④	⑤	⑥	⑦	⑧
18,5		G00 02 01	C00 02 10	C00 20 01	G00 20 05				
24,5	25	G00 02 01	C00 02 11	C00 20 01	G00 20 05				
32	32	G00 02 02	C00 02 12	C00 20 02	G00 20 03				
42	40	G00 02 03	C00 02 13	C00 20 02	G00 20 03				
55	63	G00 02 03	C00 02 14		G00 20 03	A00 12 11	Z00 12 02	A00 02 17	A00 32 07
72	80	G00 02 04	C00 02 15		G00 20 03	A00 12 11	Z00 12 02	A00 02 17	A00 32 07
94	100	G00 02 05	C00 02 16		G00 20 03	A00 12 12	Z00 16 03	A00 02 16	A00 32 08

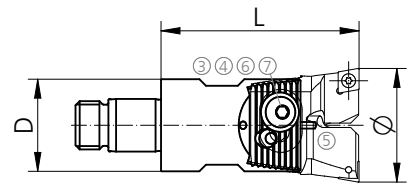
Ø 19.5 - 153 mm



双刃粗镗头
Double Cutter Heads

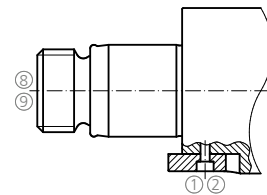
双刃粗镗头
Double Cutter Heads

Alpha	Order Number	Ø-Range	L	D	kg	SW	MCM	MCC	Index
18,5	14 18 00	19,5 - 30	40	18,5	0,1	17	18,5	1418	●
24,5	14 24 00	29 - 39	50	24,5	0,2	22	24,5	1424	●
32	14 32 00	38 - 51	65	32	0,3	27	32	1432	●
42	14 42 00	50 - 67	90	42	0,6	36	42	1442	●
55	14 55 00	66 - 88	115	55	1,3	46	55	1455	●
72	14 72 00*	87 - 116	150	72	2,9	60	72	1472	●
94	14 94 00*	115 - 153	195	94	6,3	75	94	1494	●



⑨ 标准交付包装中不包括
Not included in the delivery

* 带一驱动键
Supplied with a driving key



SPARE PARTS

Alpha	①	②	③	④	⑤	⑥	⑦	⑧	⑨
18,5			B00 22 01		C00 12 01	K00 02 01	G00 20 23		
24,5			B00 22 02		C00 12 01	K00 02 02	G00 20 24		
32			B00 22 03	G00 02 05	C00 12 08	K00 02 03			
42			B00 22 04	G00 02 06	C00 12 04	K00 02 04			
55			B00 22 05	G00 02 07	C00 12 05	K00 02 05			
72	Z00 00 72	C00 22 11	B00 22 06	G00 02 08	C00 12 06	K00 02 06	Z00 14 74	53 74 96	
94	Z00 00 94	C00 24 17	B00 22 07	G00 02 10	C00 12 07	K00 02 07	Z00 14 96	53 74 96	

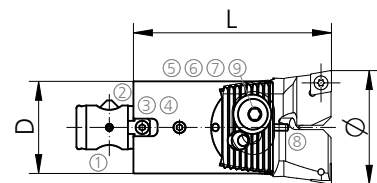
Ø 29 - 153 mm



双刃粗镗头
Double Cutter Heads

双刃粗镗头
Double Cutter Heads

Beta	Order Number	Ø-Range	L	D	kg	MCM	MCC	Index
25	B14 25 00 050	29 - 39	50	25	0,2	B25	1424	●
32	B14 32 00 065	38 - 51	65	32	0,3	B32	1432	●
40	B14 40 00 090	50 - 67	90	42	0,6	B40	1442	●
63	B14 63 00 100	66 - 88	100	63	1,5	B63	1455	●
80	B14 80 00 115	87 - 116	115	80	2,5	B80	1472	●
100	B14 100 00 145	115 - 153	145	100	4,4	B100	1494	●



SPARE PARTS

Beta	①	②	③	④	⑤	⑥	⑦	⑧	⑨
25	Z00 25 21	Z00 25 23			B00 22 02		K00 02 02	C00 12 01	G00 20 24
32	Z00 32 21	Z00 32 23			B00 22 03	G00 02 05	K00 02 03	C00 12 08	
40	Z00 40 21	Z00 40 23	Z00 40 25	C00 22 58	B00 22 04	G00 02 06	K00 02 04	C00 12 04	
63	Z00 63 21	Z00 63 23	Z00 63 25	C00 22 05	B00 22 05	G00 02 07	K00 02 05	C00 12 05	
80	Z00 80 21	Z00 80 23	Z00 80 25	C00 22 07	B00 22 06	G00 02 08	K00 02 06	C00 12 06	
100	Z00 100 21	Z00 100 23	Z00 100 25	C00 22 71	B00 22 07	G00 02 10	K00 02 07	C00 12 07	

URMA Systems

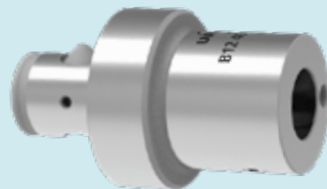
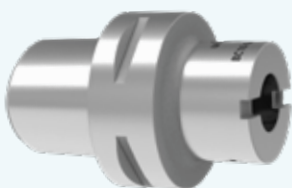
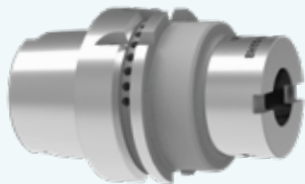
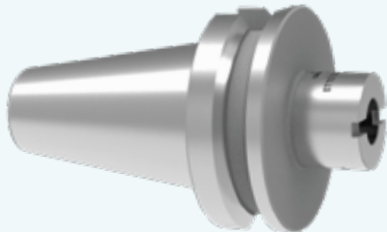
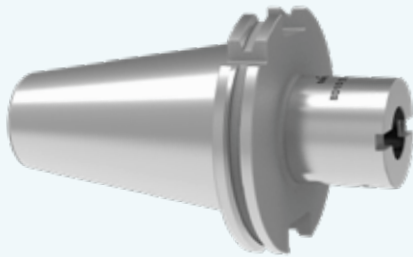
VersaMax - Type 25 / A25

Ø 18 - 153 mm

VersaMax - Type 25 / Type A25

Page 104 - 113

Page 100 - 101



Ø 18 - 153 mm

DIGITEC

Page 42 - 43

Page 48 - 49



Page 46 - 47



Ø 18 - 153 mm



DIGITEC

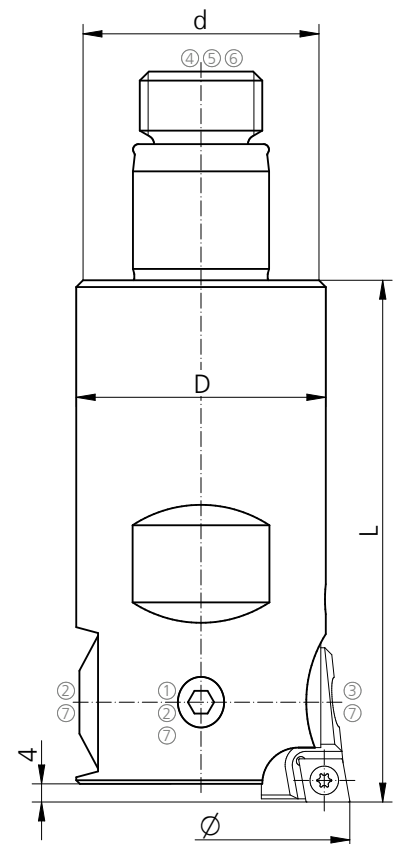
精镗头 $1 \mu\text{m}/\varnothing$ *

Fine Boring Heads $1 \mu\text{m}/\varnothing$ *

精镗头

Fine Boring Heads

Alpha	Order Number	Ø-Range	L	D	d	kg	SW	MCM	MCC	Index
24,5	25 24 30-D	29 - 39	50	26	24,5	0,2	22	24,5	2002	●
32	25 32 30-D	38 - 51	65	32	32	0,4	27	32	2004	●
42	25 42 30-D	50 - 67	90	42	42	1	36	42	2004	●
55	25 55 30-D	66 - 88	115	55	55	2,2	46	55	2006	●
72	25 72 30-D	87 - 116	75	72	72	2,5	55	72	2006	●
94	25 94 30-D	115 - 153	95	94	94	5,2	55	94	2006	●
18,5	25 16 00	18 - 22,5	65	16	18,5	0,2	17	18,5	2016	●
18,5	25 08 00	20 - 25	40	19,7	18,5	0,1	17	18,5	2002	●
18,5	25 18 00	22,5 - 30	40	20	18,5	0,1	17	18,5	2002	●
24,5	25 24 30	29 - 39	50	26	24,5	0,2	22	24,5	2002	●
32	25 32 30	38 - 51	65	32	32	0,4	27	32	2004	●
42	25 42 30	50 - 67	90	42	42	1	36	42	2004	●
55	25 55 30	66 - 88	115	55	55	2,2	46	55	2006	●
72	25 72 30	87 - 116	75	72	72	2,5	55	72	2006	●
94	25 94 30	115 - 153	95	94	94	5,2	55	94	2006	●



用于数显镗刀的显示单元见第17页

DigiTec display unit for digital fine boring heads page 17

* 只有带显示单元的数显镗刀才能达到直径方向 $1\mu\text{m}$ 调整精度，非数显镗刀调整精度为直径方向 $10\mu\text{m}$

Only with DigiTec version (-D) in connection with the display (page 17) otherwise $10 \mu\text{m}/\varnothing$ adjustable

SPARE PARTS

Alpha	Ø-Range	①	②	③	④	⑤	⑥	⑦
18,5	18 - 22,5	C00 25 18		C00 25 19	G00 02 04	G00 02 01	Z00 10 18	G00 20 02
18,5	20 - 30	C00 25 01		C00 25 11	G00 02 04	G00 02 01	Z00 10 18	G00 20 07
24,5		C00 25 02		C00 25 11	G00 02 05	G00 02 02	Z00 12 24	G00 20 07
32		C00 25 03	G00 02 04	C00 25 12	G00 02 06	G00 02 03	Z00 16 32	G00 20 03
42		C00 25 04	G00 02 04	C00 25 12	G00 02 07	G00 02 04	Z00 22 42	G00 20 03
55		C00 25 05	G00 02 06	C00 25 13	G00 02 05	G00 02 08	Z00 27 55	
72		C00 25 05	G00 02 06	C00 25 13	G00 02 10	G00 02 08	Z00 15 74	
94		C00 25 05	G00 02 06	C00 25 13	G00 02 10	G00 02 08	Z00 15 96	

Ø 29 - 153 mm



DIGITEC

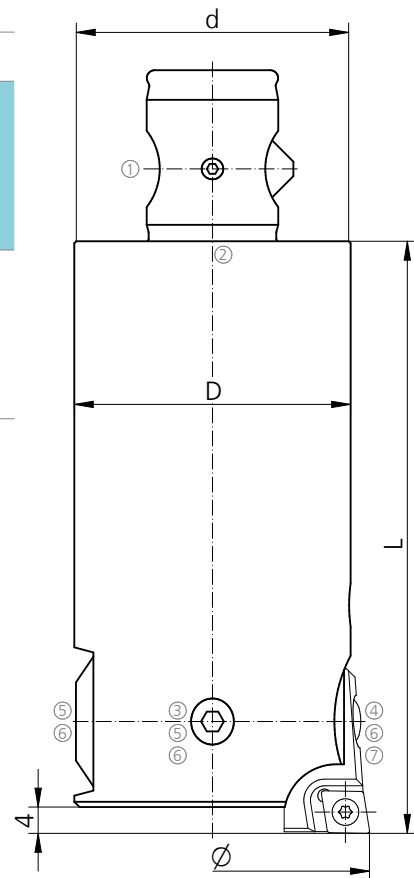
精镗头 1 µm/Ø *

Fine Boring Heads 1 µm/Ø *

精镗头

Fine Boring Heads

Beta	Order Number	Ø-Range	L	D	d	kg	MCM	MCC	Index
25	B25 25 30 050-D	29 - 39	50	26	25	0,2	B25	2002	●
32	B25 32 30 065-D	38 - 51	65	32	32	0,4	B32	2004	●
40	B25 40 30 090-D	50 - 67	90	42	40	1	B40	2004	●
63	B25 63 30 100-D	66 - 88	100	63	63	2,5	B63	2006	●
80	B25 80 30 115-D	87 - 116	115	80	80	4,3	B80	2006	●
100	B25 100 30 145-D	115 - 153	145	100	100	9,2	B100	2006	●



用于数显镗刀的显示单元见第17页
 DigiTec display unit for digital fine boring heads page 17

* 只有带显示单元的数显镗刀才能达到直径方向1µm调整精度，非数显镗刀调整精度为直径方向10µm
 Only with DigiTec version (-D) in connection with the display (page 17) otherwise 10 µm/Ø adjustable

SPARE PARTS

Beta	①	②	③	④	⑤	⑥	⑦
25	Z00 25 21	Z00 25 23	C00 25 02	C00 25 11		G00 20 07	
32	Z00 32 21	Z00 32 23	C00 25 03	C00 25 12	G00 02 04	G00 20 03	
40	Z00 40 21	Z00 40 23	C00 25 04	C00 25 12	G00 02 04	G00 20 03	
63	Z00 63 21	Z00 63 23	C00 25 05	C00 25 13	G00 02 06		G00 02 05
80	Z00 80 21	Z00 80 23	C00 25 05	C00 25 13	G00 02 06		G00 02 05
100	Z00 100 21	Z00 100 23	C00 25 05	C00 25 13	G00 02 06		G00 02 05

平衡式精镗头的优点

Advantages of Balanced Fine Boring Heads

平衡式精镗头(如A25)相较非平衡式精镗头, 其剩余不平衡量U(gmm)最多可减少100倍, 因而可允许非常高的主轴转速! 同时, 动平衡非常简单、可靠并体现为:

- 出色的表面质量
- 加工不易振动
- 孔的圆度更好
- 提高刀片寿命

是一种物有所值的额外投资!

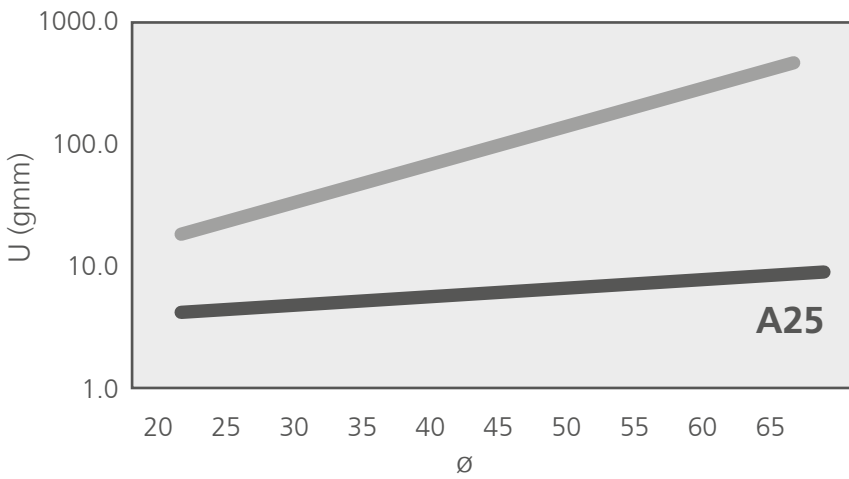
Balancable fine boring heads such as the A25 features up to 100 times less residual imbalance U (gmm) compared to standard fine boring heads and allow remarkably higher revolutions per minute! At the same time the balancing is most simple, reliable and results in:

- best surface quality
- vibration free machining
- better roundness tolerance
- improved tool life

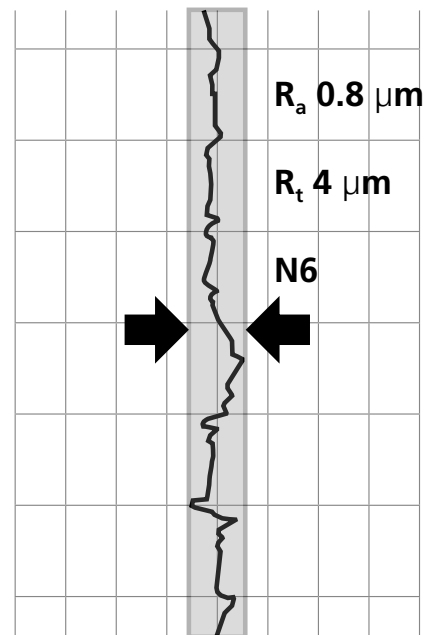
An additional investment that pays back!



平衡方法简单
Easy to handle balancing



A25与传统精镗刀比较
Comparison A25 to conventional fine boring head



表面质量更好
Better surface quality

Ø 20 - 30 mm



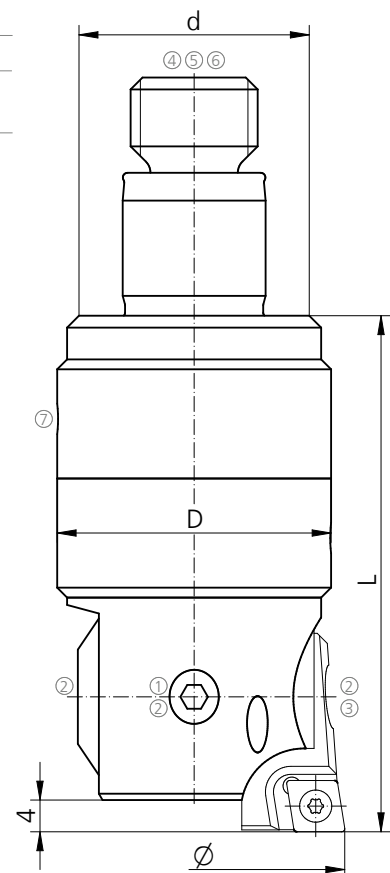
平衡式精镗头 $2 \mu\text{m}/\varnothing$

Balanceable Fine Boring Heads $2 \mu\text{m}/\varnothing$

精镗头

Fine Boring Heads

Alpha	Order Number	Ø-Range	L	D	d	kg	SW	MCM	MCC	Index
18,5	A25 08 00	20 - 25	40	19,7	18,5	0,1	17	18,5	2002	●
18,5	A25 18 00	22,5 - 30	40	21	18,5	0,1	17	18,5	2002	●



SPARE PARTS

Alpha	①	②	③	④	⑤	⑥	⑦
18,5	C00 25 01	G00 20 07	C00 25 11	Z00 10 18	G00 02 01	G00 02 04	G00 02 13

Ø 29 - 67 mm



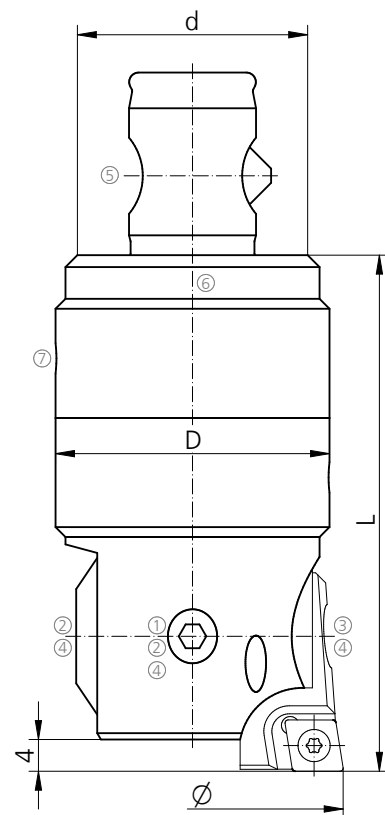
精镗头 $1 \mu\text{m}/\phi$ *

Balanceable Fine Boring Heads $2 \mu\text{m}/\phi$

精镗头

Fine Boring Heads

Beta	Order Number	Ø-Range	L	D	d	kg	MCM	MCC	Index
25	A25 25 00 050	29 - 39	50	27	25	0,2	B25	2002	●
32	A25 32 00 065	38 - 51	65	34,5	32	0,4	B32	2004	●
40	A25 40 00 090	50 - 67	90	45	42	1	B42	2004	●



SPARE PARTS

Beta	①	②	③	④	⑤	⑥	⑦
25	C00 25 02		C00 25 11	G00 20 07	Z00 25 21	Z00 25 23	G00 02 01
32	C00 25 03	G00 02 04	C00 25 12	G00 20 03	Z00 32 21	Z00 32 33	G00 02 02
40	C00 25 04	G00 02 04	C00 25 12	G00 20 03	Z00 40 21	Z00 40 23	G00 02 03

Ø 18 - 153 mm



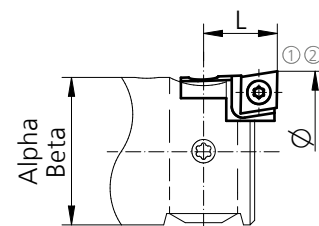
精镗刀座

Fine Boring Insert Holders

7°和11°后角的ISO刀片复合刀座

Combination Insert Holders for ISO Inserts with 7° and 11° Clearance Angle

Alpha	Beta	Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
18,5		W/C20 16 00 06	18 - 20,5	14	<0,01	CC../CP.. 0602..	2016	CP06	●
18,5		W/C20 16 01 06	20 - 22,5	14	<0,01	CC../CP.. 0602..	2016	CP06	●
18,5		W/C20 02 06	20 - 30	13	<0,01	CC../CP.. 0602..	2002	CP06	●
24,5	25	W/C20 02 06	29 - 39	13	<0,01	CC../CP.. 0602..	2002	CP06	●
32	32	W/C20 04 06	38 - 51	17	0,01	CC../CP.. 0602..	2004	CP06	●
42	40	W/C20 04 06	50 - 67	17	0,01	CC../CP.. 0602..	2004	CP06	●
55	63	W/C20 06 06	66 - 88	22	0,04	CC../CP.. 0602..	2006	CP06	●
72	80	W/C20 06 06	87 - 116	22	0,04	CC../CP.. 0602..	2006	CP06	●
94	100	W/C20 06 06	115 - 153	22	0,04	CC../CP.. 0602..	2006	CP06	●



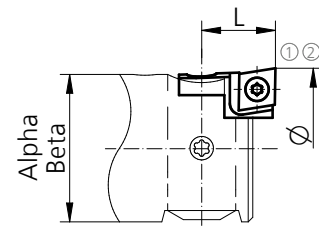
复合刀座详见27页

Insert holder with combined insert pocket see page 27

7°后角ISO刀片刀座

Insert Holders for ISO Inserts with 7° Clearance Angle

Alpha	Beta	Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
18,5		W20 02 06	20 - 30	13	<0,01	CC.. 0602..	2002	CC06	●
24,5	25	W20 02 06	29 - 39	13	<0,01	CC.. 0602..	2002	CC06	●
32	32	W20 04 06	38 - 51	17	0,01	CC.. 0602..	2004	CC06	●
42	40	W20 04 06	50 - 67	17	0,01	CC.. 0602..	2004	CC06	●
55	63	W20 06 09	66 - 88	22	0,04	CC.. 09T3..	2006	CC09	●
72	80	W20 06 09	87 - 116	22	0,04	CC.. 09T3..	2006	CC09	●
94	100	W20 06 09	115 - 153	22	0,04	CC.. 09T3..	2006	CC09	●



SPARE PARTS

Order Number	①	②
W/C20 02 06	C00 20 04	G00 20 05
W/C20 04 06	C00 20 01	G00 20 05
W/C20 06 06	C00 20 01	G00 20 05
W20 02 06	C00 20 04	G00 20 05
W20 04 06	C00 20 01	G00 20 05
W20 06 09	C00 20 37	G00 20 03

Ø 20 - 153 mm

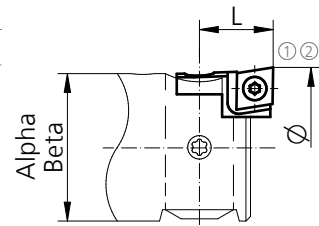


精镗刀座

Fine Boring Insert Holders

可用于7°后角修光刃刀片的95°主偏角刀座
 Insert Holders 95° for Wiper Inserts with 7° Clearance Angle

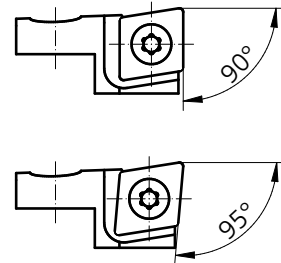
Alpha	Beta	Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
18,5		WW20 02 06	20 - 30	13	<0,01	Wiper CC.. 0602..	2002	CC06	●
24,5	25	WW20 02 06	29 - 39	13	<0,01	Wiper CC.. 0602..	2002	CC06	●
32	32	WW20 04 06	38 - 51	17	0,01	Wiper CC.. 0602..	2004	CC06	●
42	40	WW20 04 06	50 - 67	17	0,01	Wiper CC.. 0602..	2004	CC06	●
55	63	WW20 06 09	66 - 88	22	0,04	Wiper CC.. 09T3..	2006	CC09	●
72	80	WW20 06 09	87 - 116	22	0,04	Wiper CC.. 09T3..	2006	CC09	●
94	100	WW20 06 09	115 - 153	22	0,04	Wiper CC.. 09T3..	2006	CC09	●



修光刃刀片
 Wiper Inserts

修光刃刀片的优点（双倍进给时可获得普通刀片加工相同的表面质量,或者在相同进给时获得更好的表面质量）只有在使用95°主偏角刀座时才能体现出来。

The advantages of Wiper inserts (double feed rate at equal surface quality or improved surface quality at equal feed rate) can only be used with insert holders with 95° setting angle.



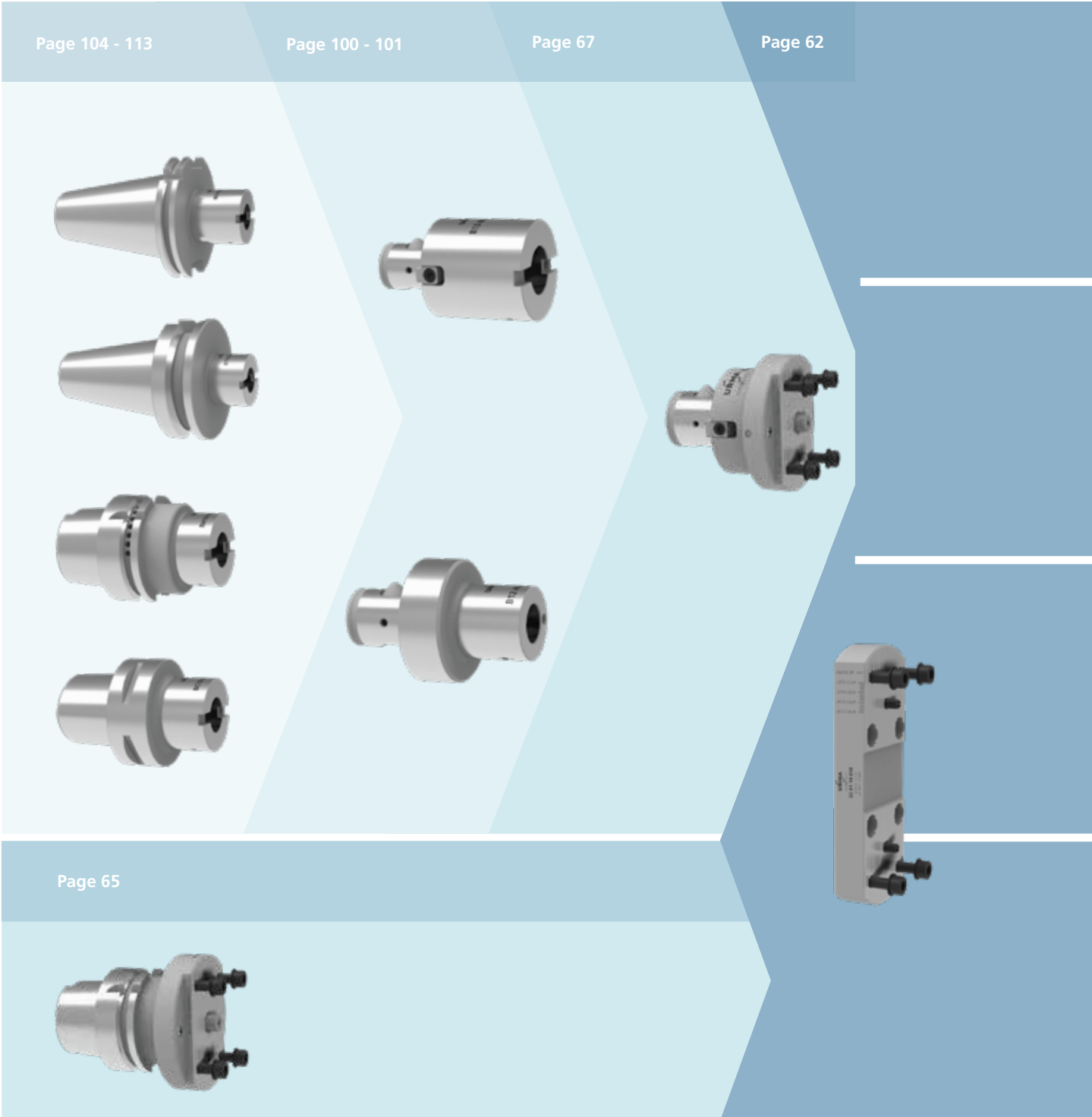
SPARE PARTS

Order Number	①	②
WW20 02 06	C00 20 04	G00 20 05
WW20 04 06	C00 20 01	G00 20 05
WW20 06 09	C00 20 37	G00 20 03

URMA Systems IntraMax


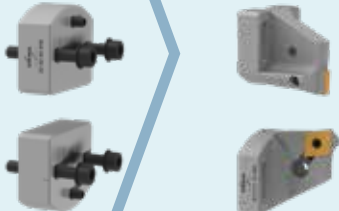
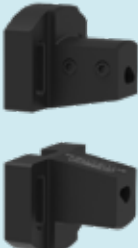

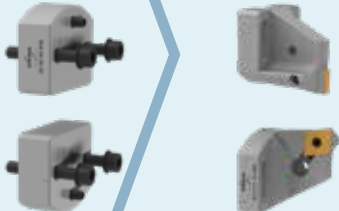





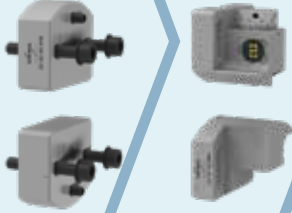

Ø 49 - 297 mm

IntraMax



Ø 49 - 297 mm

DIGITEC

	Inside Machining	Outside Machining	Axial Grooving
Double Roughing	Page 54 	Page 63 Page 54 	58 - 59 60 - 61 
Offset Roughing	Page 54 	Page 54 	
Roughing Finishing Process (RFP)	Page 54 - 55 55 	Page 54 - 55 55 	58 - 59 
Single Head Finishing	Page 55 	Page 55 	Single Head Grooving 

Ø 49 - 297 mm

粗镗刀座

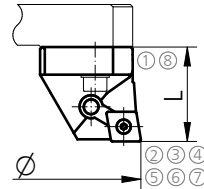
Insert Holders Roughing

可用于套车或镗孔
For Internal and External Machining

刀座
Insert holders



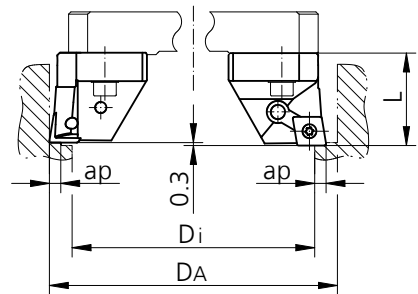
Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
W17 02 09 028	49 - 88	28	0,1	CC.. 09T3..	DK2203	CC09	●
W17 01 12 040	87 - 297	40	0,3	CN.. 1204..	DK2201	CN12	●



错位粗镗刀座

Insert Holder for Offset Roughing

Order Number	Ø-Range	L	kg	Inserts	a _p	MCM	MCC	Index
WV17 01 12 040	87 - 297	39,7	0,3	CN.. 1204..	4 - 6	DK2201	CN12	●
W17 01 12 040	87 - 297	40	0,3	CN.. 1204..	4 - 6	DK2201	CN12	●



Formula
$$a_p = \frac{D_A \cdot D_i}{4}$$

⑤⑦ 标准交付包装中不包括
Not included in the delivery

SPARE PARTS

①	②	③	④	⑤	⑥	⑦	⑧
W17 02..	C00 02 86	C00 20 02	G00 20 03	A00 12 11	A00 02 17	A00 32 07	G00 02 01
W17 01 (WV)	C00 02 79	Z00 12 02	G00 20 03	A00 12 11	A00 02 17	A00 32 07	G00 02 02

Ø 49 - 297 mm

精镗头
Fine Boring Heads

可用于套车或镗孔
For Internal and External Machining

精镗头 5 µm/ø
Fine Boring Heads 5 µm/ø

Order Number	Ø-Range	L	l	kg	MCM	MCC	Index
23 02 10 028	49 - 88	28	10	0,15	DK2203	2012	●
23 01 30 040-D	87 - 297	40	18	0,4	DK2201	2010	●
23 01 30 040	87 - 297	40	18	0,4	DK2201	2010	●

同时使用2个精镗头时: A_{min} = 53
带有控制面板的 DigiTec (-D) 数显镗刀(第 17 页), 调整精度直径方向1微米
When using of 2 heads simultaneously: A_{min} = 53
DigiTec (-D) 1 µm/ø with display unit (page 17)

精镗刀座
Fine Boring Insert Holders

Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
W/C20 12 06 000	49 - 88	18	<0,01	CP..0602../CC..0602..	2012	CP06	●
W/C20 10 06 000	87 - 297	22	0,01	CP..0602../CC..0602..	2010	CP06	●
W20 12 06 000	49 - 88	18	<0,01	CC..0602..	2012	CC06	●
W20 10 06 000	87 - 297	22	0,01	CC..0602..	2010	CC06	●
WW20 12 06 000	49 - 88	18	<0,01	Wiper CC..0602..	2012	CC06	●
WW20 10 06 000	87 - 297	22	0,01	Wiper CC..0602..	2010	CC06	●

平衡块
Counter Weights

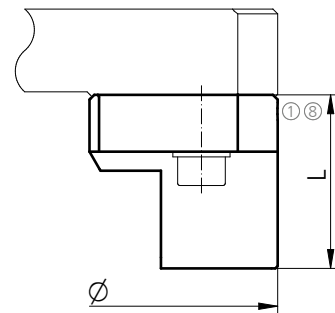
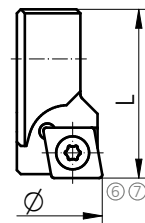
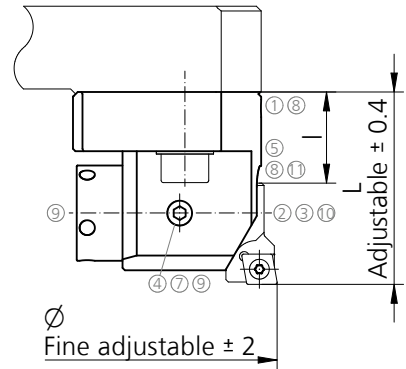
Order Number	Ø-Range	L	kg	MCM	Index
23 02 10 024	49 - 88	28	0,1	DK2203	●
23 01 10 036	87 - 297	40	0,3	DK2201	●

SPARE PARTS

Ø-Range	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
49 - 88	C00 02 86	C00 22 56	K00 02 44	C00 25 01	Z00 23 02		G00 20 07	G00 02 01	G00 02 03		
87 - 297	C00 02 79	C00 22 11	K00 02 01	C00 07 01	Z00 23 02			G00 02 02	G00 02 03	G00 02 04	G00 02 01
W..20						C00 20 01	G00 20 05				



DIGITEC

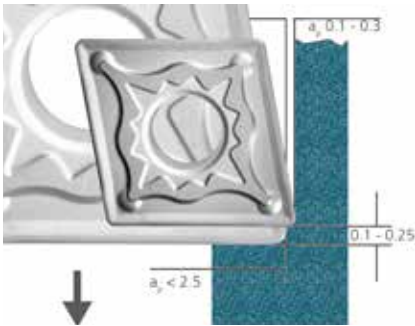


Ø 49 - 297 mm	IntraMax
Ø 150 - 805 mm	MegaMax
Ø 500 - 2'400 mm	SuperMegaMax

DIGITEC

粗精组合镗(RFP)

Simultaneous Single-Pass Rough and Finish (RFP)



粗精组合镗RFP刀具的位置

Presetting of roughing and finishing cutting edge



IntraMax粗精组合镗刀

IntraMax RFP combination

粗精组合加工需要2个刀刃在轴向和径向错开，由此加工时间得以显著缩短。粗、精加工一次完成。(RFP = 粗-精-加工)

RFP可用于IntraMax或MegaMax/SuperMegaMax系统上，加工直径从49至2'400 mm. 钢的粗加工单边余量 a_p 建议小于2.5 mm.

其他优点:

- 刀具费用较低
- 加工时间缩短
- 加工表面光洁度好
- IT7精度一次加工能达到

Simultaneous single-pass roughing and finishing requires radial and axial boring head offset. Cutting time is dramatically reduced.

(RFP = Roughing-Finishing-Process)

On both systems IntraMax and MegaMax/SuperMegaMax RFP can be applied and covers the entire diameter range from 49 to 2'400 mm. Recommended cutting depth on the roughing insert is a_p 2,5 mm for steel.

Further advantages:

- reduced tooling investment
- shorter cutting time
- high surface quality
- IT7 tolerances in one pass

Ø 5 - 45 mm

端面槽加工 Face Grooving

刀座
Insert Holder

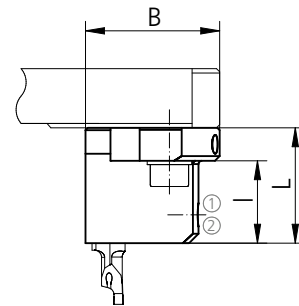
外槽
Outer Groove



Order Number	L	kg	l	B	Type	Index
BKT105.U90K.01	24,5	0,07	17,5	28,5	R105	●

从 $\text{Ø} D_{\text{amin}} = 2x (6 \text{ mm} + f_{\text{刀片}})$ 起可使用2个刀片 (f 见第 60, 61 页)。 D_{amin} 在此值以下只能用一个刀片, 另加平衡块。

From $\text{Ø} D_{\text{amin}} = 2x (6 \text{ mm} + f_{\text{insert}})$ two insert holders can be used simultaneously (f see pages 60 and 61). For smaller D_{amin} only one insert holder plus counter weight can be used together.



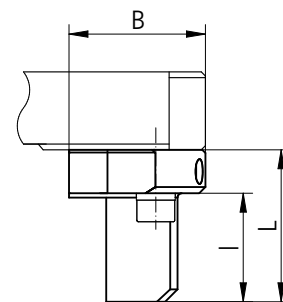
直径延伸块
Diameter Extender

Order Number	Ø-Range	Page	Insert holder	Index
1)	5 - 18	65 - 66		●
22 03 06 012	18 - 31	62	BKT105.U90K.01	●
22 03 07 012	31 - 45	62		●

- 1) 直接装在主柄上或装在中间连接块上 (见 65 - 67 页)
Direct via basic holder or intermediate adaptor (pages 65 - 67)

平衡块
Counter Weight

Order Number	L	kg	l	B	Index
020.U00K.2040	24,5	0,05	17,5	22	●



SPARE PARTS



BKT105. ... 6.075T15 G00 20 035

Ø 31 - 242 mm

刀座
Insert Holder

外槽
Outer Groove

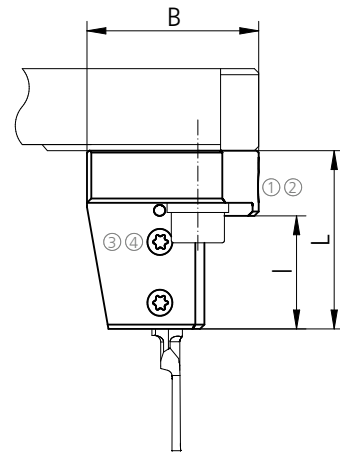
Order Number	L	kg	l	B	Type	Index
BKT105.U90G.01 ¹⁾	36,4	0,24	24,4	39,5	R105	●
BKT110.U17G.02 ²⁾	41	0,24	26	39,5	RA110	●

1) 从 $\text{Ø} D_{\text{amin}} = 2x(6 \text{ mm} + f_{\text{刀片}})$ 起可同时使用2个刀片 (f 见第 60、61 页)。 D_{amin} 在此值以下只能用一个刀片，另加平衡块。

From $\text{Ø} D_{\text{amin}} = 2x(6 \text{ mm} + f_{\text{insert}})$ two insert holders can be used simultaneously (f see pages 60 and 61). For smaller D_{amin} only one insert holder plus counter weight can be used together.

2) 从 $\text{Ø} D_{\text{amin}} = 2x(13,5 \text{ mm} + f_{\text{刀片}})$ 起可同时使用2个刀片 (f 见第 61 页)。 D_{amin} 在此值以下只能用一个刀片，另加平衡块。

From $\text{Ø} D_{\text{amin}} = 2x(13,5 \text{ mm} + f_{\text{insert}})$ two insert holders can be used simultaneously (f see page 61). For smaller D_{amin} only one insert holder plus counter weight can be used together.



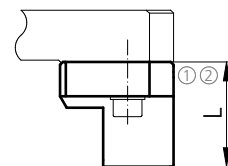
直径延伸块
Diameter Extender

Order Number	Ø-Range	Page	Insert holder	Index
1)	31 - 61	65 - 66		●
22 01 11 018	61 - 91	62		●
22 01 14 018	91 - 122	62	BKT105.U90G.01	●
22 01 17 018	122 - 152	62	BKT110.U17G.02	●
22 01 20 023	152 - 182	62		●
22 01 23 023	182 - 212	62		●
22 01 26 028	212 - 242	62		●

1) 直接装在主柄上或装在中间连接块上 (见65 - 67页)
Direct via basic holder or intermediate adaptor (pages 65 - 67)

平衡块
Counter Weight

Order Number	Ø-Range	L	kg	MCM	Index
23 01 10 036	31 - 242	40	0,3	DK2201	●



SPARE PARTS

Ø-Range	①	②	③	④
31 - 242	C00 02 79	G00 02 02	6.075T15	G00 20 030

端面切槽 (HORN-URMA 系统)

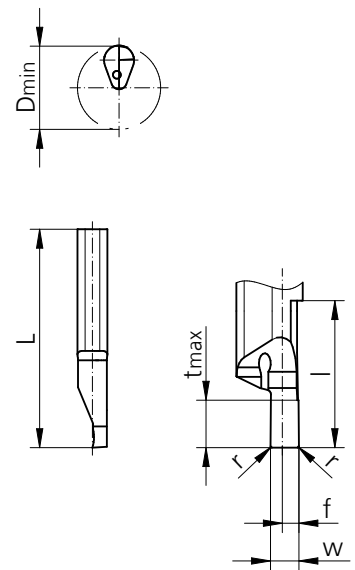
Face Grooving (System HORN-URMA)



刀片型号 105...8

Inserts Type 105...8

Order Number	W ^{+0.05}	f	r	L	l	t _{max}	D _{min}	Type	硬质合金牌号		Index
									MG12	TI25	
R105.0510.1.8	1,0	2,0	0,05	25	10	2,0	5,0	BKT105...	●	●	●
R105.0515.1.8	1,5	2,0	0,05	25	10	3,0	5,0	BKT105...	●	●	●
R105.0520.1.8	2,0	2,0	0,05	25	10	5,0	5,0	BKT105...	●	●	●
R105.0510.2.8	1,0	2,0	0,05	35	15	2,0	5,0	BKT105...	●	●	●
R105.0515.2.8	1,5	2,0	0,05	35	15	3,0	5,0	BKT105...	●	●	●
R105.0520.2.8	2,0	2,0	0,05	35	15	5,0	5,0	BKT105...	●	●	●
R105.0610.1.8	1,0	2,0	0,05	25	10	2,0	6,0	BKT105...	●	●	●
R105.0615.1.8	1,5	2,0	0,05	25	10	3,0	6,0	BKT105...	●	●	●
R105.0620.1.8	2,0	2,0	0,05	25	10	5,0	6,0	BKT105...	●	●	●
R105.0610.2.8	1,0	2,0	0,05	35	15	2,0	6,0	BKT105...	●	●	●
R105.0615.2.8	1,5	2,0	0,05	35	15	3,0	6,0	BKT105...	●	●	●
R105.0620.2.8	2,0	2,0	0,05	35	15	5,0	6,0	BKT105...	●	●	●
R105.0810.1.8	1,0	2,0	0,15	25	10	2,0	8,0	BKT105...	●	●	●
R105.0815.1.8	1,5	2,0	0,15	25	10	3,0	8,0	BKT105...	●	●	●
R105.0820.1.8	2,0	2,0	0,15	25	10	4,0	8,0	BKT105...	●	●	●
R105.0825.1.8	2,5	2,0	0,15	25	10	5,0	8,0	BKT105...	●	●	●
R105.0830.1.8	3,0	2,0	0,15	25	10	6,0	8,0	BKT105...	●	●	●
R105.0810.2.8	1,0	2,0	0,15	35	15	2,0	8,0	BKT105...	●	●	●
R105.0815.2.8	1,5	2,0	0,15	35	15	3,0	8,0	BKT105...	●	●	●
R105.0820.2.8	2,0	2,0	0,15	35	15	4,0	8,0	BKT105...	●	●	●
R105.0825.2.8	2,5	2,0	0,15	35	15	5,0	8,0	BKT105...	●	●	●
R105.0830.2.8	3,0	2,0	0,15	35	15	6,0	8,0	BKT105...	●	●	●

**MG12**

非涂层硬质合金，用于钢、铸铁和非铁金属的低速加工

TI25

TiCN 涂层硬质合金，用于钢和非铁金属的中速加工

其他尺寸和刀形另询

MG12

Uncoated carbide for low cutting speed in steel, cast iron and non-ferrous metals

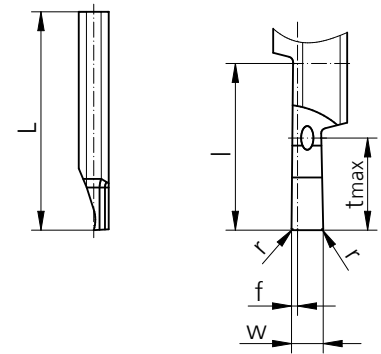
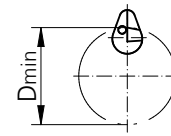
TI25

TiCN coated carbide for medium cutting speed in steel and non-ferrous metals

Further dimension and insert profiles on demand

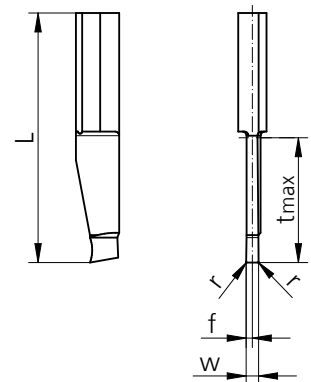
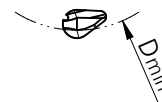
刀片型号 **105...9**
Inserts Type 105...9

Order Number	$W^{+0.05}$	f	r	L	l	t_{max}	D_{min}	Type	硬质合金牌号 Carbide grades Ti25	Index
R105.0810.1.9	1,0	0,4	0,15	25	10	2,0	8,0	BKT105...	●	●
R105.0815.1.9	1,5	0,4	0,15	25	10	3,0	8,0	BKT105...	●	●
R105.0820.1.9	2,0	0,4	0,15	25	10	4,0	8,0	BKT105...	●	●
R105.0825.1.9	2,5	0,4	0,15	25	10	5,0	8,0	BKT105...	●	●
R105.0830.1.9	3,0	0,4	0,15	25	10	6,0	8,0	BKT105...	●	●



刀片型号 **A110**
Inserts Type A110

Order Number	$W^{+0.05}$	f	r	L	t_{max}	D_{min}	Type	硬质合金牌号 Carbide grades Ti25	Index
RA110.2030.3.0	3,0	1,5	0,2	50	20	20 - 50*	BKT110...	●	●
RA110.2030.5.0	3,0	1,5	0,2	60	30	20 - 50*	BKT110...	●	●
RA110.5030.3.0	3,0	1,5	0,2	50	20	>50	BKT110...	●	●
RA110.5030.5.0	3,0	1,5	0,2	60	30	>50	BKT110...	●	●



* 端面切槽直径为 $D_0=20-50$ mm 之间时才有可能在全切宽的情况下到达全切深
Face grooving with full width to the full depth only possible between $D_0 = 20 - 50$ mm

Ø 49 - 297 mm

直径延伸块

Diameter Extenders



直径延伸块

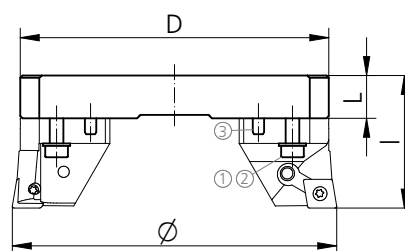
Diameter Extenders

Ø 49 - 88 mm

Order Number	Ø-Range	L	I	D	kg	MCM	MCC	Index
1)	49 - 62							●
22 03 06 012	62 - 75	12	40	59	0,2	Z2203	DK2203	●
22 03 07 012	75 - 88	12	40	72	0,3	Z2203	DK2203	●

1) 直接装在主柄上或装在中间连接块上 (见65 - 67页)

Direct via basic holder or intermediate adaptor (pages 65 - 67)



直径延伸块

Diameter Extenders

Ø 87 - 297 mm

Order Number	Ø-Range	L	I	D	kg	MCM	MCC	Index
1)	87 - 117						DK2201	●
22 01 11 018	117 - 147	18	58	110	0,8	Z2201	DK2201	●
22 01 14 018	147 - 177	18	58	140	1	Z2201	DK2201	●
22 01 17 018	177 - 207	18	58	170	1,2	Z2201	DK2201	●
22 01 20 023	207 - 237	23	63	200	1,6	Z2201	DK2201	●
22 01 23 023	237 - 267	23	63	230	1,9	Z2201	DK2201	●
22 01 26 028	267 - 297	28	63	260	2,6	Z2201	DK2201	●

1) 直接装在主柄上或装在中间连接块上 (见65 - 67页)

Direct via basic holder or intermediate adaptor (pages 65 - 67)

SPARE PARTS

Ø-Range	①	②	③
49 - 88	C00 22 05	K00 02 01	C00 12 08
87 - 297	C00 22 02	K00 02 20	C00 12 61

Ø 9 - 249 mm

套车中间块
Intermediate Adaptors for External Machining



套车中间块
Intermediate Adaptors

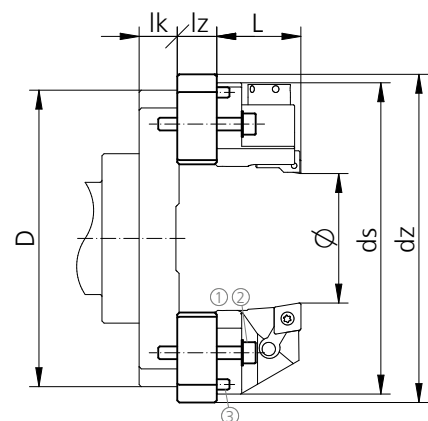
Ø 9 - 35 mm

Order Number	Ø-Range	D	dz	ds	L	lz	lk	kg	Diameter extender	MCM	MCC	Index
22 04 00 012	9 - 22	59	74	Ø + 56 mm	28	12	12	0,1	22 03 06 012	DK2203	DK2203	●
22 04 00 012	22 - 35	72	87	Ø + 56 mm	28	12	12	0,1	22 03 07 012	DK2203	DK2203	●

套车中间块
Intermediate Adaptors

Ø 9 - 249 mm

Order Number	Ø-Range	D	dz	ds	L	lz	lk	kg	Diameter extender	MCM	MCC	Index
22 02 00 018	9 - 39	110	125	Ø + 100 mm	40	18	18	0,25	22 01 11 018	DK2201	DK2201	●
22 02 00 018	39 - 69	140	155	Ø + 100 mm	40	18	18	0,25	22 01 14 018	DK2201	DK2201	●
22 02 00 018	69 - 99	170	185	Ø + 100 mm	40	18	18	0,25	22 01 17 018	DK2201	DK2201	●
22 02 00 018	99 - 129	200	215	Ø + 100 mm	40	18	23	0,25	22 01 20 023	DK2201	DK2201	●
22 02 00 018	129 - 159	230	245	Ø + 100 mm	40	18	23	0,25	22 01 23 023	DK2201	DK2201	●
22 02 00 018	159 - 189	260	275	Ø + 100 mm	40	18	28	0,25	22 01 26 028	DK2201	DK2201	●
22 02 00 018	189 - 219	290	305	Ø + 100 mm	40	18	28	0,25	22 01 29 028	DK2201	DK2201	●
22 02 00 018	219 - 249	320	335	Ø + 100 mm	40	18	28	0,25	22 01 32 028	DK2201	DK2201	●



SPARE PARTS


Ø-Range	①	②	③
9 - 35	C00 22 05	K00 02 01	C00 12 08
9 - 249	C00 22 74	K00 02 20	C00 12 61

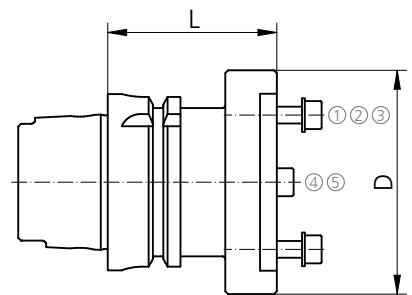
Ø 49 - 297 mm

主柄直接连接块
Direct Adaptors








主柄直接连接块
Direct Adaptors

Order Number		Ø-Range	D	L	kg	MCC	Index
D11 41 03 052	SK40 / A	49 - 88	46	52	1,2	Z2203	●
H11 43 03 052	SK40 / B	49 - 88	46	52	1,2	Z2203	●
T11 41 03 052	MAS-BT40	49 - 88	46	52	1,3	Z2203	●
HSKA11 63 03	HSKA-63	49 - 88	46	60	1,3	Z2203	●
D11 41 01 054	SK40 / A	87 - 297	80	54	1,4	Z2201	●
H11 43 01 054	SK40 / B	87 - 297	80	54	1,4	Z2201	●
T11 41 01 054	MAS-BT40	87 - 297	80	54	1,5	Z2201	●
HSKA11 63 01	HSKA-63	87 - 297	80	60	1,4	Z2201	●



SPARE PARTS

Ø-Range	①	②	③	④	⑤
49 - 88					
87 - 207	C00 22 05	K00 02 01	G00 02 04	Z00 21 20	C00 12 08
	C00 22 02	K00 02 20	G00 02 06		

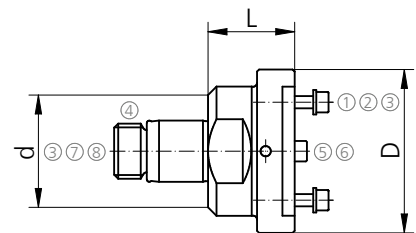
Ø 49 - 297 mm

中间连接块
Intermediate Adaptors



模块化的中间连接块
Intermediate Adaptors

Alpha	Order Number	Ø-Range	L	D	d	kg	MCM	MCC	Index
42	21 42 46 036	49 - 88	36	46	42	0,5	42	Z2203	●
55	21 55 80 042	87 - 297	42	80	55	0,8	55	Z2201	●



SPARE PARTS

Ø-Range	①	②	③	④	⑤	⑥	⑦	⑧
49 - 88	C00 22 05	K00 02 01	G00 02 04	Z00 22 42		C00 12 08	G00 02 07	
87 - 297	C00 22 02	K00 02 20	G00 02 06	Z00 27 55	Z00 21 20		G00 02 08	G00 02 05

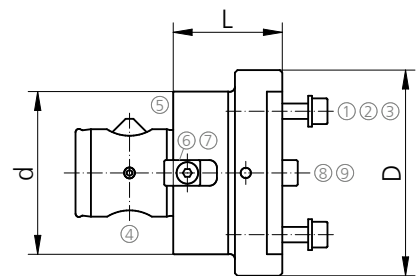
Ø 49 - 297 mm

中间连接块
Intermediate Adaptors



模块化的中间连接块
Intermediate Adaptors

Beta	Order Number	Ø-Range	L	D	d	kg	MCM	MCC	Index
40	B21 40 46 036	49 - 88	36	46	42	0,5	B40	Z2203	●
63	B21 63 80 042	87 - 297	42	80	63	0,8	B63	Z2201	●



SPARE PARTS

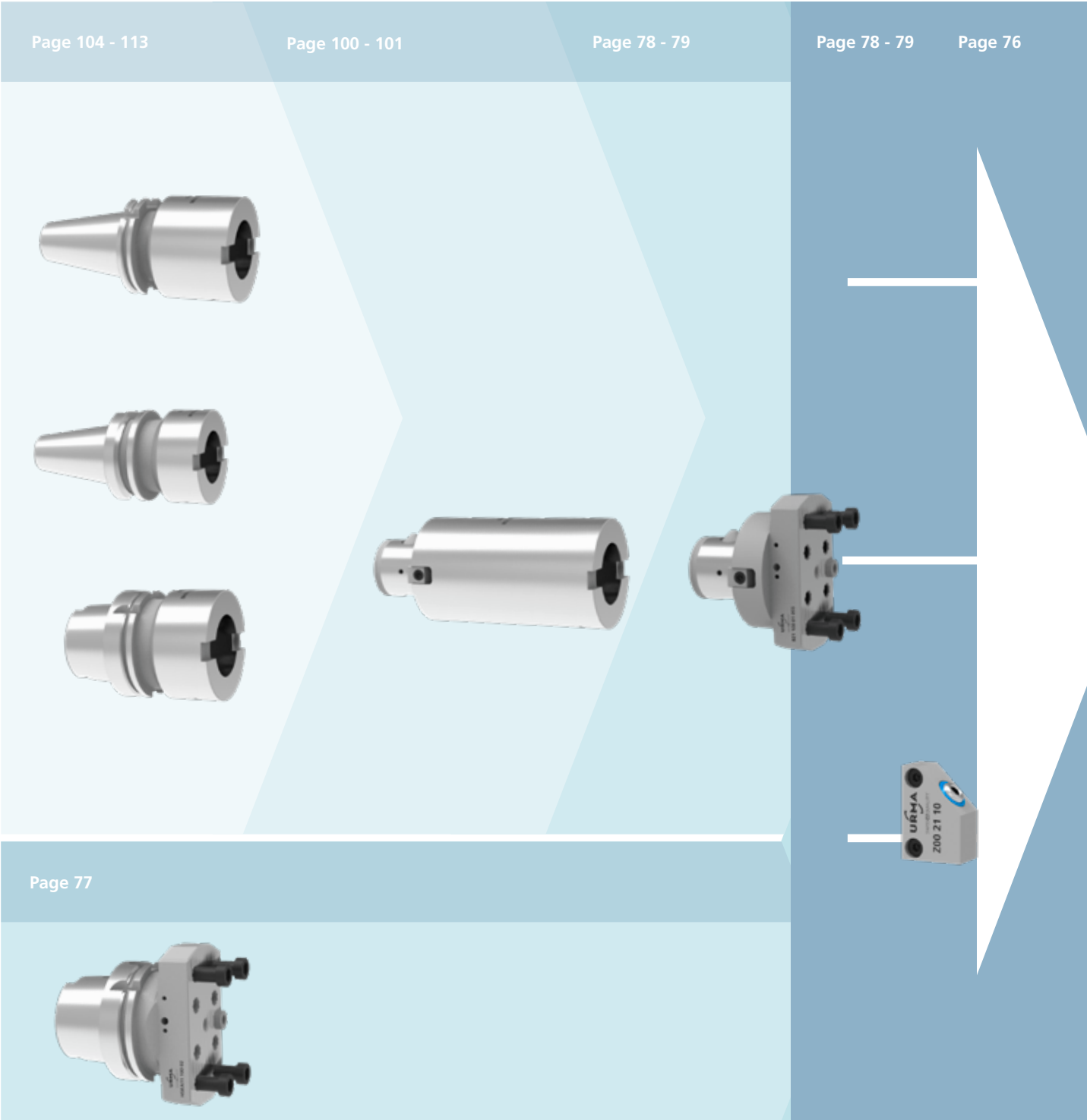
Ø-Range	①	②	③	④	⑤	⑥	⑦	⑧	⑨
49 - 88	C00 22 05	K00 02 01	G00 02 04	Z00 40 21	Z00 40 23	Z00 40 25	C00 22 58		C00 12 08
87 - 297	C00 22 02	K00 02 20	G00 02 06	Z00 63 21	Z00 63 23	Z00 63 25	C00 22 05	Z00 21 20	

URMA Systems

MegaMax

Ø 150 - 805 mm





MegaMax



Ø 150 - 805 mm

DIGITEC



	Inside Machining
Double Roughing	Page 72 
Offset Roughing	Page 73 
Roughing Finishing Process (RFP)	Page 72 - 74 Page 75 
Single Head Finishing	Page 74 

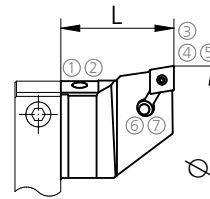
Ø 150 - 805 mm	MegaMax
Ø 500 - 2'400 mm	SuperMegaMax



刀座
Insert Holders

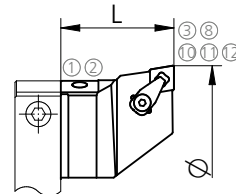
90°刀座
Insert Holders 90°

Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
W17 00 12P	150 - 2400	75	1,5	CN.. 1204..	K00	CN12	●
W17 00 16P	150 - 2400	75	1,5	CN.. 1606..	K00	CN16	●



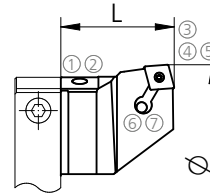
90°陶瓷刀片刀座
Insert Holders 90° for Ceramic Inserts

Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
K17 00 16	150 - 2400	75	1,5	CN.. 1607..	K00	CN1607	●



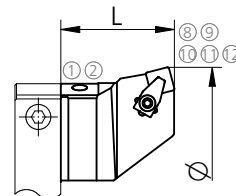
75°刀座
Insert Holders 75°

Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
W19 00 16P	150 - 2400	75	1,5	CN.. 1606..	K00	CN16	●



75°陶瓷刀片刀座
Insert Holders 75° for Ceramic Inserts

Order Number	Ø-Range	L	kg	Inserts	MCM	MCC	Index
K19 00 15	150 - 2400	75	1,5	SN.. 1507..	K00	SN15	●



⑥⑦ 标准交付包装中不包括
Not included in the delivery

SPARE PARTS

①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	
CN.. 1204..	C00 02 17	G00 02 06	A00 12 11	Z00 12 02	G00 20 03	A00 02 17	A00 32 07				G00 02 04	
CN.. 1606..	C00 02 17	G00 02 06	A00 12 12	Z00 16 03	G00 20 03	A00 02 16	A00 32 08					
CN.. 1607..	C00 02 17	G00 02 06	A00 12 18					G00 02 05	A00 02 15	A00 42 05	G00 02 04	
SN.. 1507..	C00 02 17	G00 02 06						G00 02 05	A00 12 06	A00 02 14	A00 42 05	G00 02 04

Ø 150 - 805 mm	MegaMax
Ø 500 - 2'400 mm	SuperMegaMax



错位粗镗刀座

Insert Holders for Offset Roughing

刀片在直径和高度方向错位
 双刃均匀负载
 双倍的切削深度

Inserts offset in diameter and height
 Equal chip load
 Double cutting depth capacity

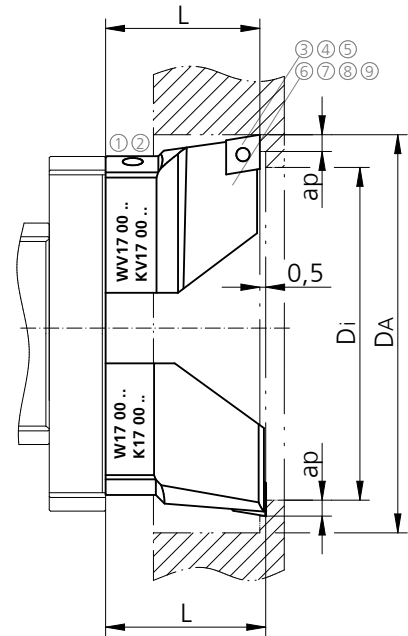
90°刀座

Insert Holders 90°

Order Number	Ø-Range	L	kg	Inserts	a _p	MCM	MCC	Index
W17 00 12P	150 - 2400	75,0	1,5	CN.. 1204..	6	K00	CN12	●
WV17 00 12P	150 - 2400	74,5	1,5	CN.. 1204..	6	K00	CN12	●
W17 00 16P	150 - 2400	75,0	1,5	CN.. 1606..	8	K00	CN16	●
WV17 00 16P	150 - 2400	74,5	1,5	CN.. 1606..	8	K00	CN16	●
K17 00 16*	150 - 2400	75,0	1,5	CNMX 1607.. T..	8	K00	CN1607	●
KV17 00 16*	150 - 2400	74,5	1,5	CNMX 1607.. T..	8	K00	CN1607	●

* 用于陶瓷刀片的上压式刀座
 for ceramic inserts with Ceramtec notch type clamping

Formula $a_p = \frac{D_A - D_i}{4}$



⑥⑦ 标准交付包装中不包括
 Not included in the delivery

SPARE PARTS

①	②	③	④	⑤	⑥	⑦	⑧	⑨
CN.. 1204..	C00 02 17	G00 02 06	A00 12 11	Z00 12 02	G00 20 03	A00 02 17	A00 32 07	
CN.. 1606..	C00 02 17	G00 02 06	A00 12 12	Z00 16 03	G00 20 03	A00 02 16	A00 32 08	
CN.. 1607..	C00 02 17	G00 02 06	A00 12 18					A00 42 05 A00 02 15

Ø 150 - 805 mm

MegaMax

Ø 500 - 2'400 mm

SuperMegaMax

精镗头

Fine Boring Head

精镗头 $1 \mu\text{m}/\varnothing$ *Fine Boring Head $1 \mu\text{m}/\varnothing$ *

Order Number	Ø-Range	L	I	kg	MCM	MCC	Index
23 00 30-D	150 - 2400	77	42	2,3	K00	DK2200	●
23 00 30	150 - 2400	77	42	2,3	K00	DK2200	●

用于数显镗刀的显示单元见第17页

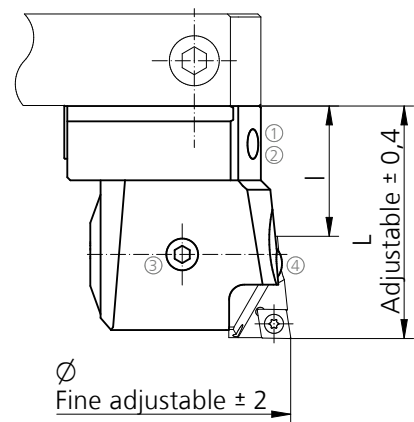
DigiTec display unit for digital fine boring heads page 17

* 只有带显示单元的数显镗刀才能达到直径方向 $1\mu\text{m}$ 调整精度,
非数显镗刀调整精度为直径方向 $10\mu\text{m}$

Only with DigiTec version (-D) in connection with the display (page 17)
otherwise $10 \mu\text{m}/\varnothing$ adjustable



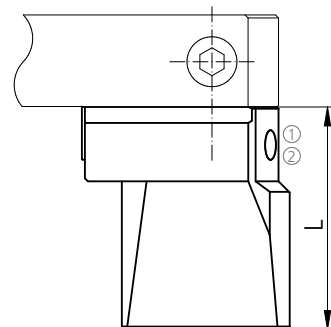
DIGITEC



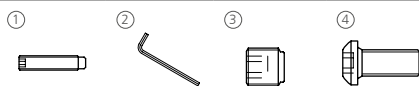
平衡块

Counter Weight

Order Number	Ø-Range	L	kg	MCM	Index
23 10 20	150 - 2400	64	2,3	K00	●



SPARE PARTS



C00 02 17 G00 02 06 Z00 23 01 C00 23 01

Ø 150 - 805 mm	MegaMax
Ø 500 - 2'400 mm	SuperMegaMax

精镗刀座

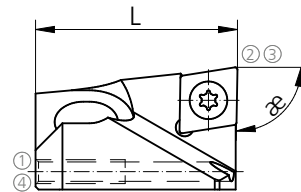
Fine Boring Insert Holders



90°刀座

Insert Holders 90°

Order Number	Ø-Range	L	kg	Inserts	æ	MCM	MCC	Index
W/C20 00 06	150 - 2400	34	0,06	CP./CC.. 0602..	90	DK2200	CP06	●
W20 00 09	150 - 2400	34	0,06	CC.. 09T3..	90	DK2200	CC09	●
WW20 00 09	150 - 2400	34	0,06	WIPER CC.. 09T3	95	DK2200	CC09	●



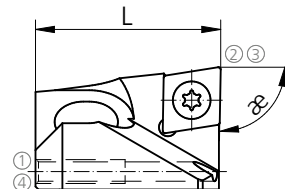
粗精组合镗(RFP)

For Simultaneous Roughing and Finishing (RFP)

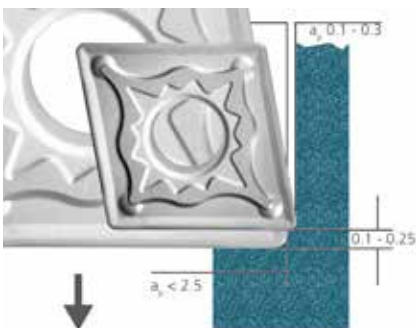
RFP粗精组合镗用90°刀座

RFP Insert Holders 90°

Order Number	Ø-Range	L	kg	Inserts	æ	MCM	MCC	Index
W20 00 09RFP	150 - 2400	31	0,05	CC.. 09T3..	90	DK2200	CC09	●
WW20 00 09RFP	150 - 2400	31	0,05	WIPER CC.. 09T3	95	DK2200	CC09	●



RFP = Roughing-Finishing-Process



粗精组合镗RFP刀具的位置
见 57 页的说明

Presetting of roughing and finishing cutting edge
Description see page 57

同时使用粗镗刀座W17 00 12P (第 72 页)

Simultaneously applicable with roughing insert holder W17 00 12P (page 72)

SPARE PARTS

	①	②	③	④
CP./CC.. 0602..	G00 02 02	C00 20 01	G00 20 05	C00 02 12
CC.. 09T3..	G00 02 02	C00 20 02	G00 20 03	C00 02 12

Ø 150 - 805 mm

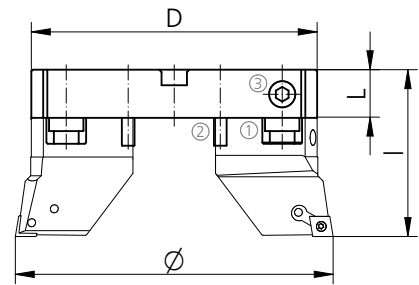
直径延伸块
Diameter Extenders



钢质直径延伸块
Diameter Extenders Made of Steel

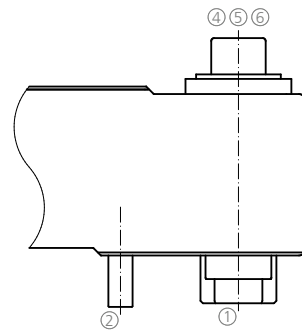
Order Number	Ø-Range	L	I	D	kg	MCM	MCC	Index
22 00 13	150 - 205	30	105	130	1,8	Z2200	K00	●
22 00 18	200 - 255	30	105	180	2,6	Z2200	K00	●
22 00 23	250 - 305	35	110	230	4	Z2200	K00	●

更多尺寸可提供定制
Further dimensions available on request



铝合金直径延伸块
Diameter Extenders Made of Aluminium

Order Number	Ø-Range	L	I	D	kg	MCM	MCC	Index
L22 00 23	250 - 305	55	130	230	2,8	Z2200	K00	●
L22 00 28	300 - 355	55	130	280	3,3	Z2200	K00	●
L22 00 33	350 - 405	55	130	330	3,8	Z2200	K00	●
L22 00 38	400 - 455	55	130	380	4,3	Z2200	K00	●
L22 00 43	450 - 505	55	130	430	4,8	Z2200	K00	●
L22 00 48	500 - 555	65	140	480	6,1	Z2200	K00	●
L22 00 53	550 - 605	65	140	530	6,7	Z2200	K00	●
L22 00 58	600 - 655	65	140	580	7,3	Z2200	K00	●
L22 00 63	650 - 705	65	140	630	8,9	Z2200	K00	●
L22 00 68	700 - 755	65	140	680	9,6	Z2200	K00	●
L22 00 73	750 - 805	65	140	730	10,2	Z2200	K00	●



从Ø = 250起
from Ø = 250

SPARE PARTS

D	①	②	③	④	⑤	⑥
130-180	Z00 22 24	Z00 22 21	Z00 22 23			
230 steel	Z00 22 16	Z00 22 21		Z00 22 15	C00 24 04	K00 02 06
230-280	Z00 22 16	Z00 22 21		Z00 22 15	C00 24 04	K00 02 06
480-805	Z00 22 16	Z00 22 21		Z00 22 15	C00 26 09	K00 02 06

Ø 150 - 805 mm

主柄直接联接块
Direct Adaptors



DIN 69871-A/D

Order Number	▽	L	D	kg	MCC	Index
D11 50 02	50	85	130	5,6	Z2200	●

DIN 69871B

Order Number	▽	L	D	kg	MCC	Index
H11 53 02	50	85	130	5,6	Z2200	●

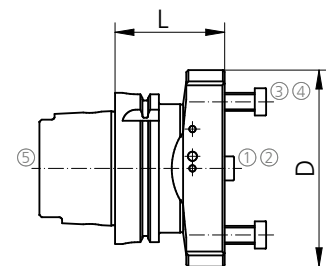
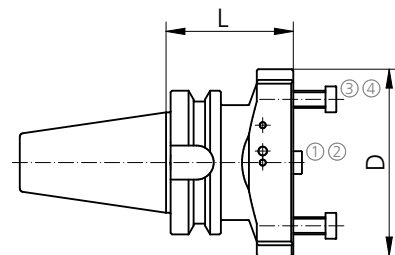
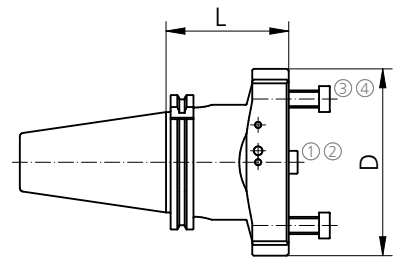
MAS-BT

Order Number	▽	L	D	kg	MCC	Index
T11 51 02	50	88	130	5,6	Z2200	●

DIN 69893A HSK

Order Number	▽	L	D	kg	MCC	Index
HSKA11 100 02*	100	72	130	4,4	Z2200	●

* 不包括冷却液套管
Coolant tube is not included



SPARE PARTS

①	②	③	④	⑤
Z00 21 02	C00 22 27	C00 22 03	G00 02 19	H00 100 01

冷却喷嘴见 78,79 页
Coolant nozzle see pages 78 and 79

Ø 150 - 805 mm

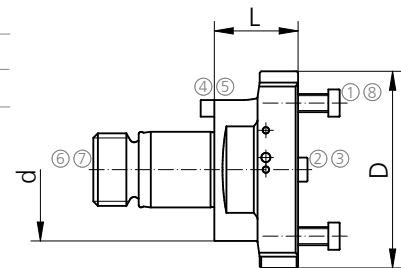
中间联接块
Intermediate Adaptors



中间连接块
Intermediate Adaptors

Alpha	Order Number	L	kg	D	d	MCM	MCC	Index
94	21 94 01	55	4,3	130	94	94	Z2200	●

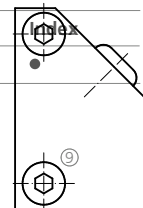
① 标准交付包装中不包括
Not included in the delivery



冷却喷嘴
Coolant Nozzle

Alpha	Order Number	kg	MCC
94	Z00 21 10	0,07	Z0021

每个中间联接块需要两个
2 pieces per intermediate adaptor necessary



SPARE PARTS

Alpha	①	②	③	④	⑤	⑥	⑦	⑧	⑨
94	C00 22 03	Z00 21 02	C00 22 27	Z00 00 94	C00 24 17	Z00 14 96	53 74 96	G00 02 19	C00 22 05

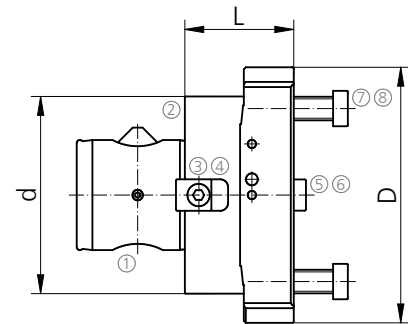
Ø 150 - 805 mm

中间联接块
Intermediate Adaptors



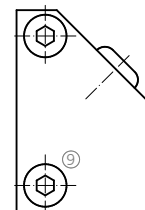
中间连接块
Intermediate Adaptors

Beta	Order Number	L	kg	D	d	MCM	MCC	Index
100	B21 100 01 055	55	4,5	130	100	B100	Z2200	●



冷却喷嘴
Coolant Nozzle

Beta	Order Number	kg	MCC	Index
100	Z00 21 10	0,07	Z0021	●



每个中间联接块需要两个
2 pieces per intermediate adaptor necessary

SPARE PARTS

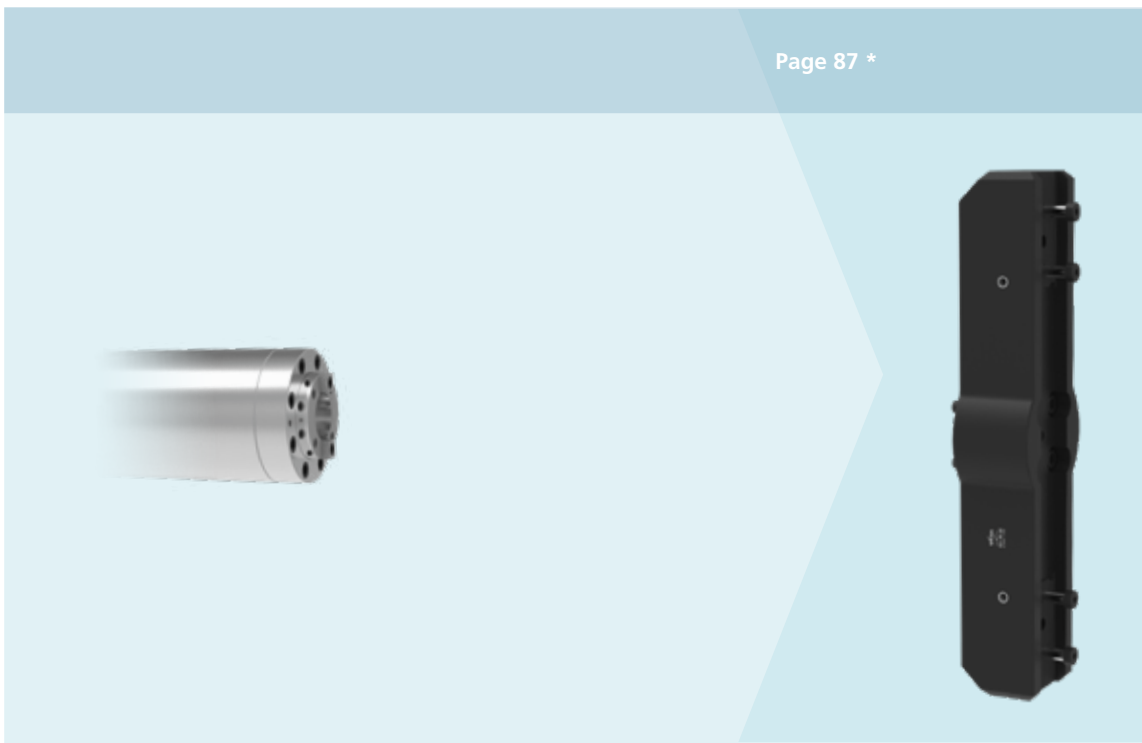
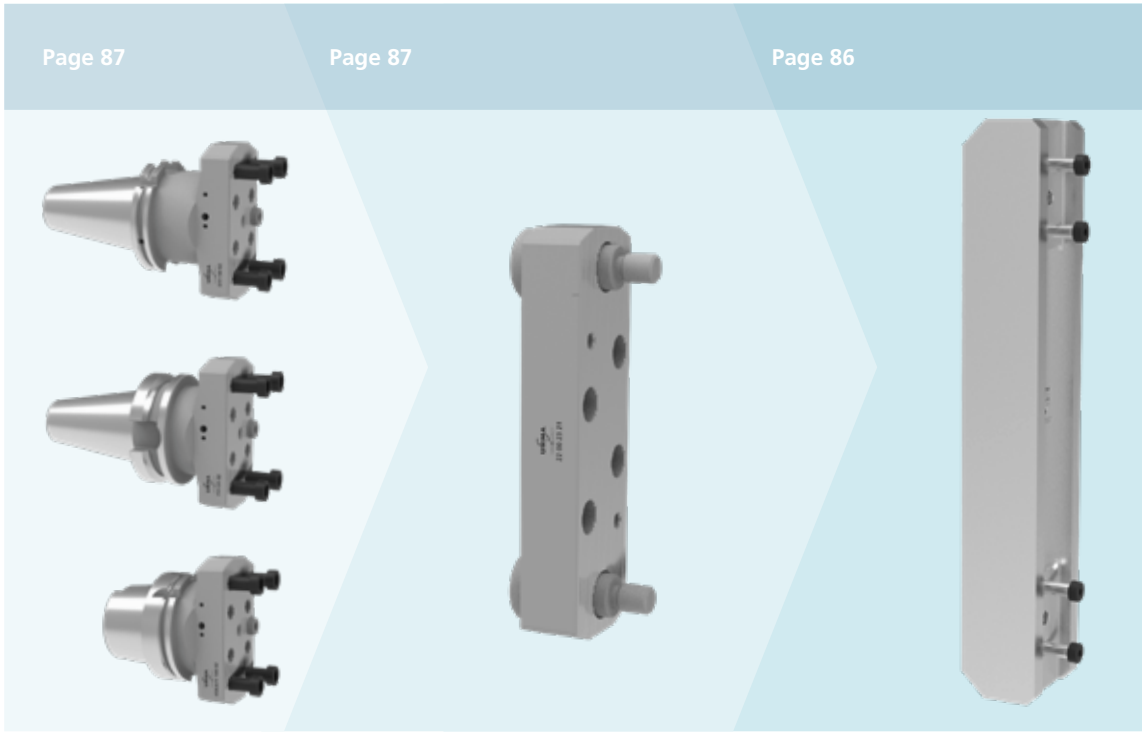
Beta	①	②	③	④	⑤	⑥	⑦	⑧	⑨
100	Z00 100 21	Z00 100 23	Z00 100 25	C00 22 71	Z00 21 02	C00 22 27	C00 22 03	G00 02 19	C00 22 05

URMA Systems

SuperMegaMax

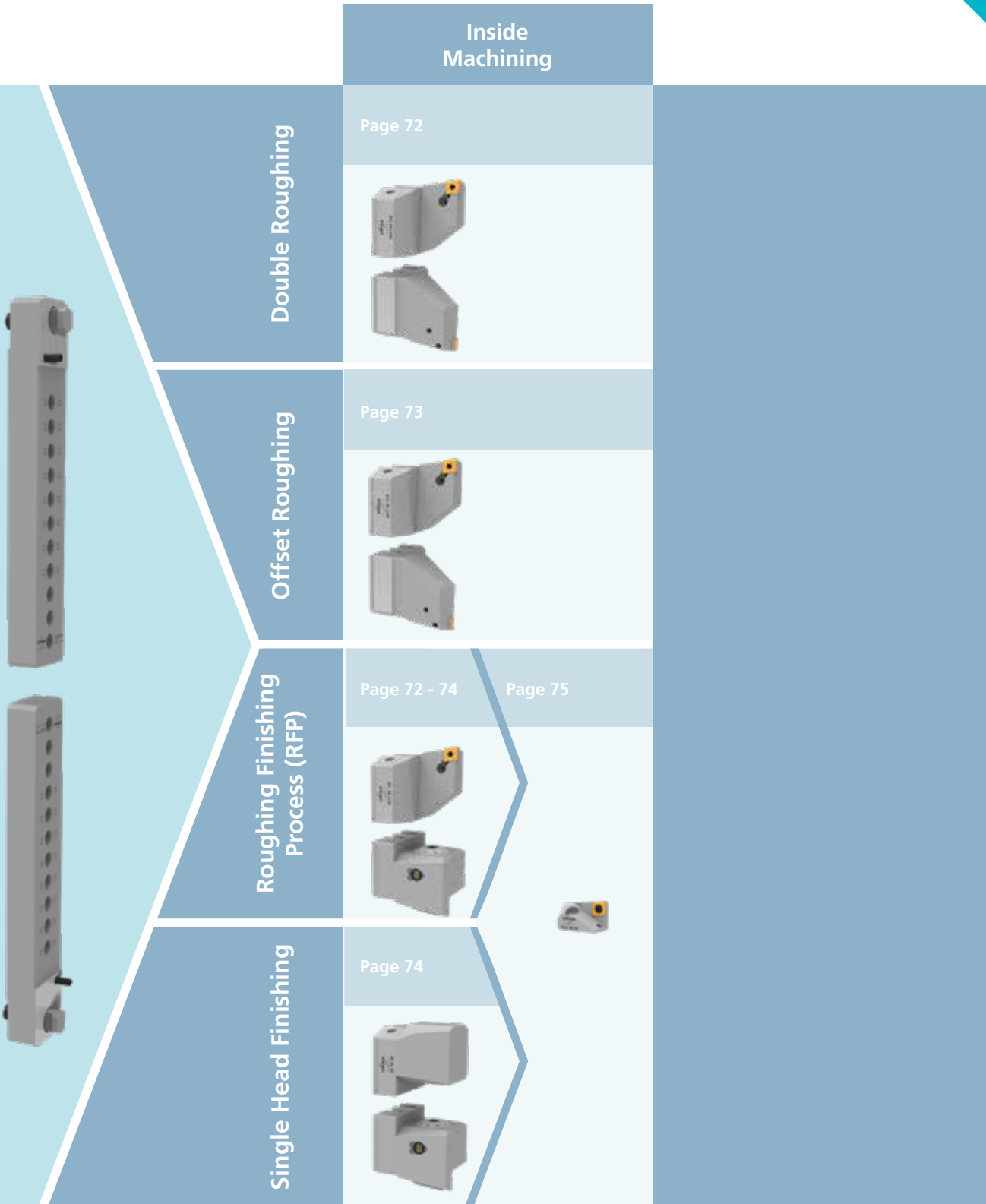
Ø 500 - 2'400 mm

SuperMegaMax



Ø 500 - 2'400 mm

DIGITEC



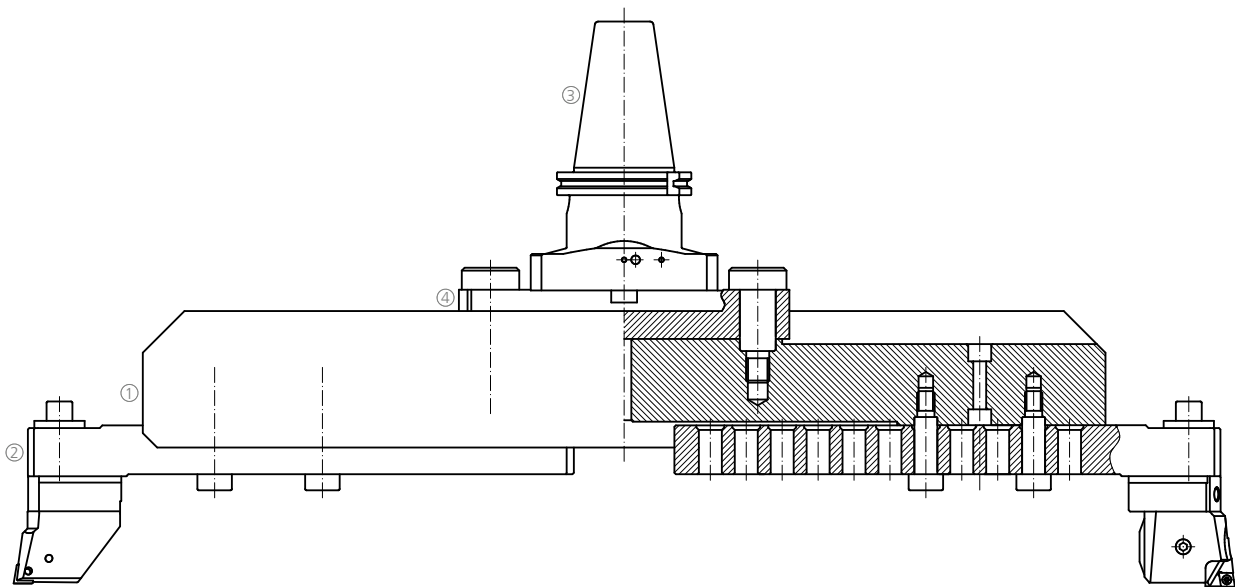
* 根据要求;强烈推荐把刀具锁紧到主轴头上
 on request; it is highly recommended to bolt the tools to the spindle nose

Ø 500 - 2'400 mm



安装 **SuperMegaMax**

Assembling SuperMegaMax



- ① 刀柄（铝合金）
Adaptor (aluminium)
- ② 刀柄（铝合金）
Diameter Extender
- ③ 刀柄
Tool Holder
- ④ 带特殊锁紧螺柱的直径延长块
Diameter Extender with Special Lock Stud

要求的切削数据

Cutting data on request

Ø 500 - 2'400 mm



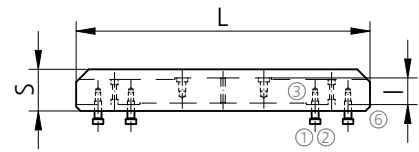
刀柄 / 直径延长杆

Adaptor / Diameter Extender

刀柄 (铝合金)

Adaptor (Aluminium)

Order Number	Ø-Range	L	I	S	kg	Index
21 20 05 *	500 - 700	350	50	65	6	●
21 20 07 *	700 - 900	550	60	75	12	●
21 20 10	800 - 1200	670	60	95	17	●
21 20 11	1200 - 1600	1070	60	95	28	●
21 20 12	1600 - 2000	1470	115	150	64	●
21 20 13	2000 - 2400	1870	115	150	81.5	●

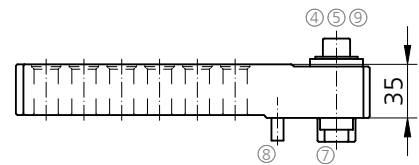


* 直接安装到刀柄上
Directly assembled to the tool holder

刀柄 (铝合金)

Diameter Extender

Order Number	Ø-Range	kg	Index
22 00 05	500 - 900	6.3	●
22 20 10	800 - 2400	8	○



刀夹信息, 第 72 页; 显示单元第 17 页; 精镗头, 第 74 页; 精镗头刀夹, 第 75 页; 平衡块 74 页; 冷却喷嘴, 第 78 页

Information about insert holder p. 72, display unit p. 17, fine boring heads p. 74, fine boring insert holders p. 75, counterweight p. 74 and coolant nozzle p. 78

SPARE PARTS

	①	②	③	④	⑤	⑥	⑦	⑧	⑨
21 20 05	G00 02 08	C00 23 02							
21 20 07	G00 02 08	C00 23 02							
21 20 10	G00 02 08	C00 23 02							
21 20 11	G00 02 08	C00 23 02							
21 20 12	G00 02 08	C00 23 02	C00 96 13	C00 23 48	Z00 21 13	22 20 13			
21 20 13	G00 02 08	C00 23 02	C00 96 13	C00 22 92	Z00 21 13	22 20 13			
22 00 05				C00 24 04	Z00 22 15		Z00 22 16	Z00 22 21	K00 02 06
22 20 10				C00 24 04	Z00 22 15		Z00 22 16	Z00 22 21	K00 02 06

Ø 500 - 2'400 mm



刀柄 / 直径延长块

Tool Holder / Diameter Extender

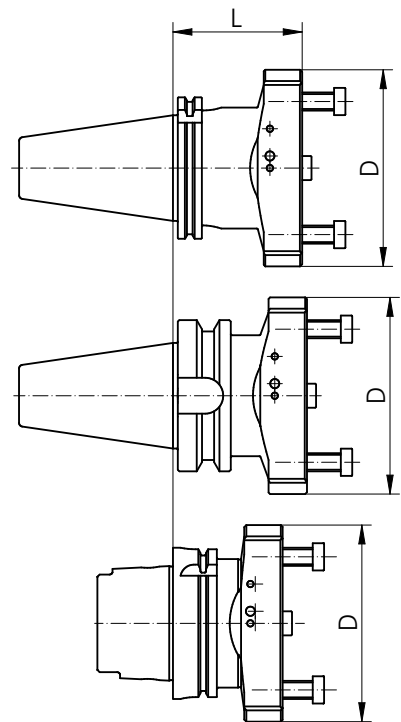
刀柄*

Tool Holder *

Order Number	Ø-Range		◁	L	D	kg	Index
D11 50 02	500 - 2400	DIN 69871 A	50	85	130	5.6	●
H11 53 02	500 - 2400	DIN 69871 B	50	85	130	5.6	●
T11 51 02	500 - 2400	MAS-BT	50	88	130	5.6	●
HSKA11 100 02	500 - 2400	DIN 69893 A	100	72	130	4.4	●

* 强烈推荐将刀具锁定在主轴上
非标刀柄按需定制

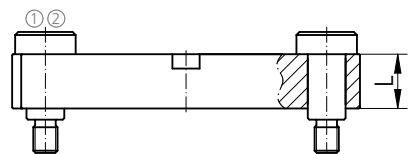
It is highly recommended to bolt the tools to the spindle nose
Adaptors on request



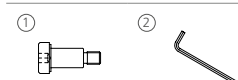
带特殊锁紧螺柱的直径延长块

Diameter extender with special lock stud

Order Number	Ø-Range	L	kg	Index
22 00 23 21	800 - 1600	35	5	●
22 00 43 21	1600 - 2400	40	9.7	●



SPARE PARTS



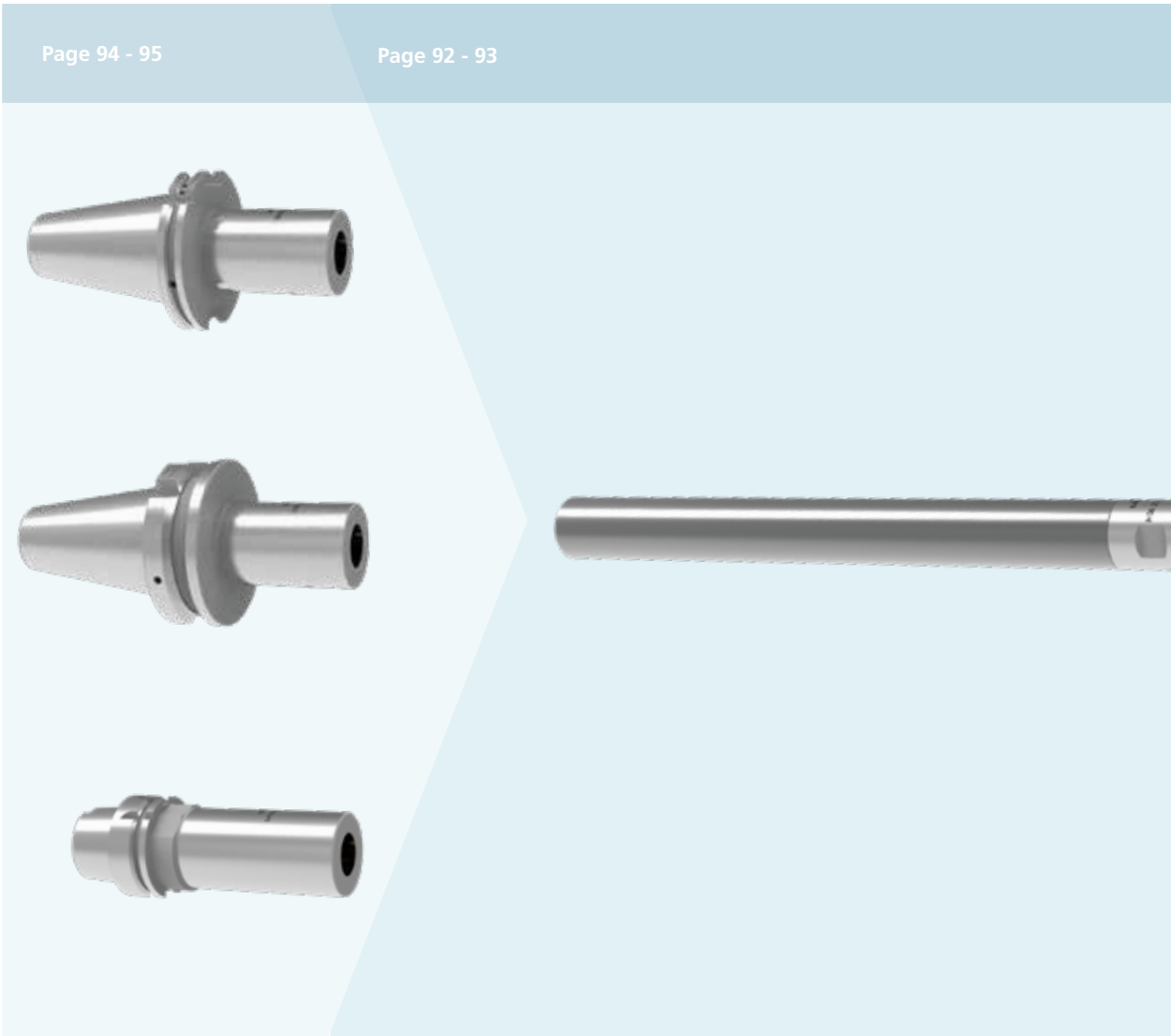
Z00 21 21 G00 02 10

URMA Systems







LBS-System

Ø 20 - 51 mm

LBS-系统
LBS-System



Ø 20 - 51 mm

		Inside Machining	
Double Roughing	Page 36 - 37	Page 34	
			
Offset Roughing		Page 35	
			
Finishing	Page 42 - 43	Page 48 - 49	
			

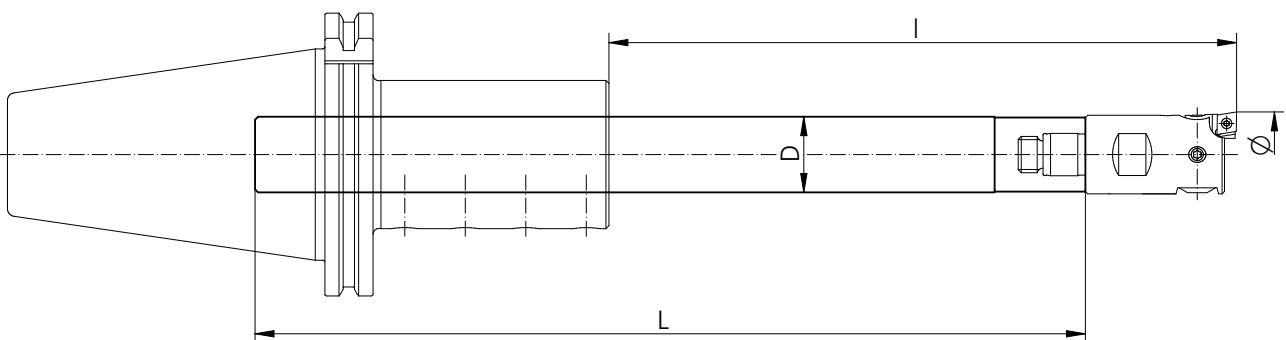
Ø 20 - 51 mm



硬质合金镗杆
Carbide Boring Bars

硬质合金镗杆
Carbide Boring Bars

Alpha	Order Number	Ø-Range	L	l	D	kg	SW	MCM	MCC	Index
18,5	H06 18 A18 200	20 - 30	200	139 - 185	18,5	0,65	17	ZS18,5	18,5	●
25	H06 25 A24 234	29 - 39	234	167 - 209	25	1,4	22	ZS25	24,5	●
25	H06 25 A24 276	29 - 39	276	209 - 251	25	1,7	22	ZS25	24,5	●
32	H06 32 A32 351	38 - 51	351	240 - 320	32	3,5	27	ZS32	32	●



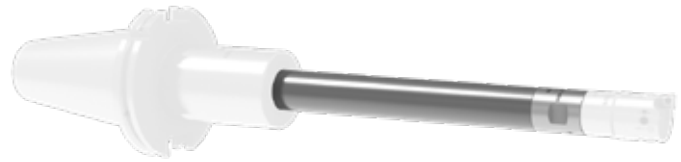
LBS-系统既可用于精加工,也可用于粗加工

The LBS-System is suitable for both roughing and finishing

相配的精镗头见 42页和 46页, 双刃粗镗头见 36页

Suitable fine boring heads see pages 42 and 46, double cutter roughing heads see page 36

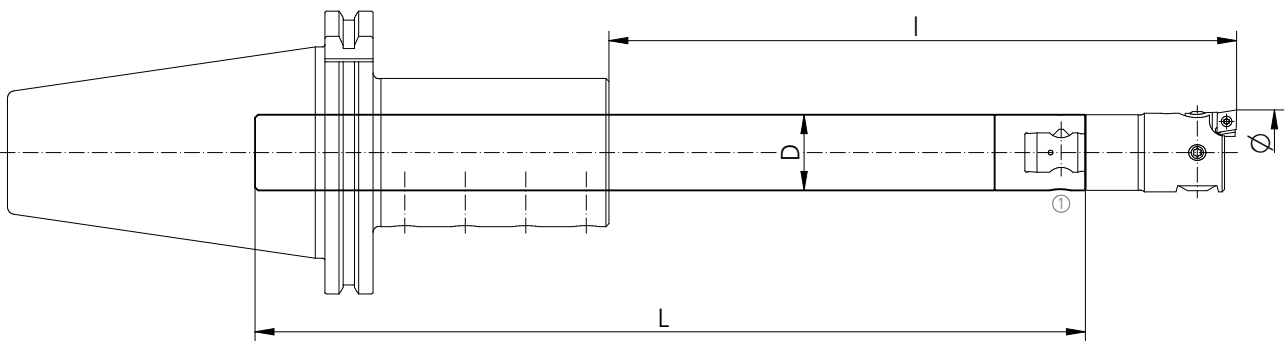
Ø 29 - 51 mm



硬质合金镗杆
Carbide Boring Bars

硬质合金镗杆
Carbide Boring Bars


Beta	Order Number	Ø-Range	L	I	D	kg	SW	MCM	MCC	Index
25	H06 25 B25 234	29 - 39	234	167 - 209	25	1,4	22	ZS25	B25	●
25	H06 25 B25 276	29 - 39	276	209 - 251	25	1,7	22	ZS25	B25	●
32	H06 32 B32 351	38 - 51	351	240 - 320	32	3,5	27	ZS32	B32	●

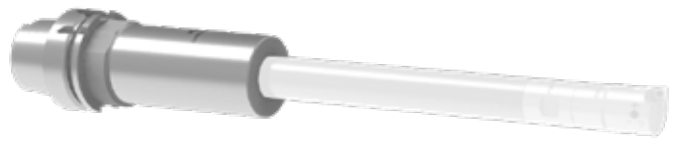


LBS-系统既可用于精加工,也可用于粗加工
The LBS-System is suitable for both roughing and finishing

相配的精镗头见 43页和 47页, 双刃粗镗头见 37页
Suitable Fine boring heads see pages 43 and 47, double cutter roughing heads see page 37

SPARE PARTS

Beta	①	
25		Z00 25 24
32		Z00 32 24



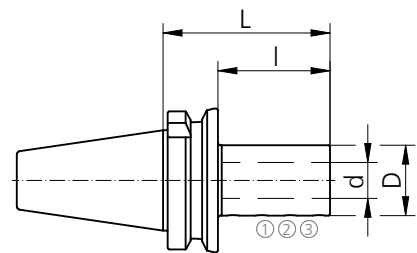
LBS-基础柄

LBS-Tool Holders

基础柄MAS-BT

Tool Holders MAS-BT

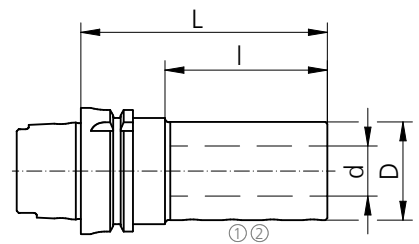
Order Number	L	kg	I	D			MCC	Index
LT10 41 18 040	67	1,9	40	44	18,5	MAS-BT-A/40	ZS18,5	●
LT10 43 18 040	67	1,3	40	44	18,5	MAS-BT-B/40	ZS18,5	●
LT10 51 18 060	98	4,1	60	44	18,5	MAS-BT-A/50	ZS18,5	●
LT10 53 18 060	98	4,1	60	44	18,5	MAS-BT-B/50	ZS18,5	●
LT10 41 25 057	84	1,4	57	49	25	MAS-BT-A/40	ZS25	●
LT10 43 25 057	84	1,4	57	49	25	MAS-BT-B/40	ZS25	●
LT10 51 25 078	116	4,2	78	49	25	MAS-BT-A/50	ZS25	●
LT10 53 25 078	116	4,2	78	49	25	MAS-BT-B/50	ZS25	●
LT10 51 32 095	133	4,7	95	60	32	MAS-BT-A/50	ZS32	●
LT10 53 32 095	133	4,7	95	60	32	MAS-BT-B/50	ZS32	●



基础柄HSK

Tool Holders HSK

Order Number	L	kg	I	D			MCC	Index
LH10 63 18 101	127	1,7	85	44	18,5	HSK 63-A	ZS18,5	●
LH10 63 25 117	143	2,0	101	49	25	HSK 63-A	ZS25	●
LH10 100 18 107	152	3,7	107	44	18,5	HSK 100-A	ZS18,5	●
LH10 100 25 159	204	4,4	159	49	25	HSK 100-A	ZS25	●
LH10 100 32 170	215	5,3	170	60	32	HSK 100-A	ZS32	●



SPARE PARTS

d	①	②	③
18,5	G00 02 05	C00 96 10	
25	G00 02 05		Z00 10 91
32	G00 02 06	C00 96 11	



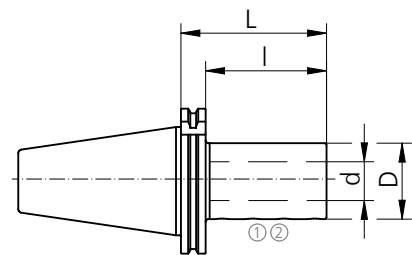
LBS-基础柄

LBS-Tool Holders

基础柄 **DIN 69871**

Tool Holders DIN 69871

Order Number	L	kg	I	D	d		MCC	Index
LD10 41 18 042	61	1,1	42	44	18.5	DIN 69871-A/40	ZS18,5	●
LD10 43 18 042	61	1,1	42	44	18.5	DIN 69871-B/40	ZS18,5	●
LD10 50 18 060	79	3,1	60	44	18.5	DIN 69817-A/50	ZS18,5	●
LD10 53 18 060	79	3,1	60	44	18.5	DIN 69871-B/50	ZS18,5	●
LD10 41 25 059	79	1,3	59	49	25	DIN 69871-A/40	ZS25	●
LD10 43 25 059	79	1,3	59	49	25	DIN 69871-B/40	ZS25	●
LD10 50 25 078	98	3,3	78	49	25	DIN 69871-A/50	ZS25	●
LD10 53 25 078	98	3,3	78	49	25	DIN 69871-B/50	ZS25	●
LD10 50 32 095	114	3,7	95	60	32	DIN 69871-A/50	ZS32	●
LD10 53 32 095	114	3,7	95	60	32	DIN 69871-B/50	ZS32	●



SPARE PARTS

d	①	②
18,5	G00 02 05	C00 96 10
25	G00 02 05	C00 96 10
32	G00 02 06	C00 96 11

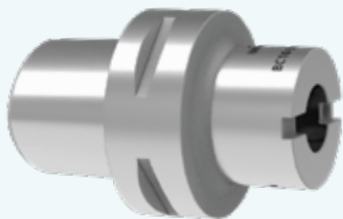
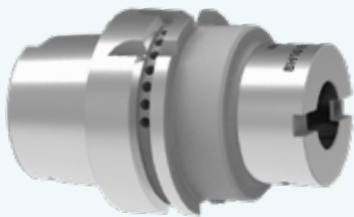
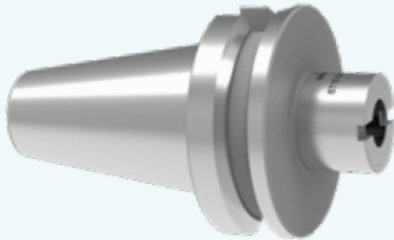
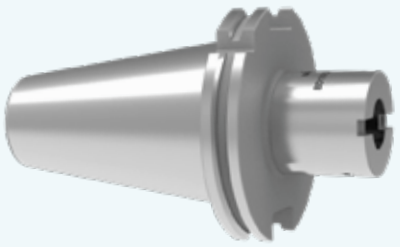
URMA Systems

Modular Components

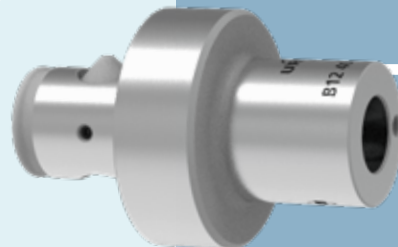
模块化部件
Modular Components

Page 104 - 113

Page 100 - 101



Page 102 - 103



DigiTec Page 11

MicroMax Page 19

VersaMax - Type 14 Page 29

VersaMax - Type 25 / Type A25 Page 39

IntraMax Page 51

MegaMax Page 69

SuperMegaMax Page 81

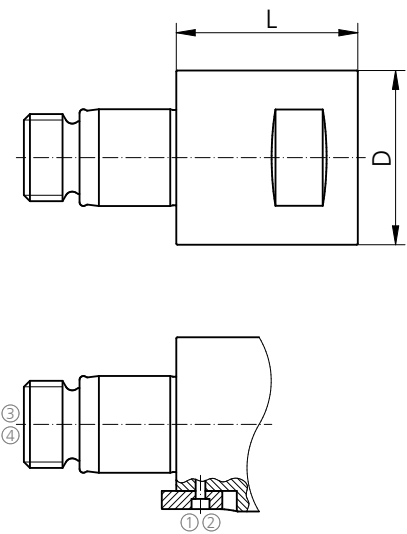


延长杆
Extensions

延长杆 Alpha-Alpha
Extensions

Alpha	Order Number	L	D	kg	SW	MCM	MCC	Index
18,5	13 18 01	25	18,5	0,1	17	18,5	18,5	●
18,5	13 18 11	35	18,5	0,1	17	18,5	18,5	●
24,5	13 24 01	30	24,5	0,1	22	24,5	24,5	●
24,5	13 24 11	45	24,5	0,2	22	24,5	24,5	●
32	13 32 01	40	32	0,2	27	32	32	●
32	13 32 11	60	32	0,3	27	32	32	●
42	13 42 01	50	42	0,5	36	42	42	●
42	13 42 11	80	42	0,8	36	42	42	●
55	13 55 01	70	55	1,2	46	55	55	●
55	13 55 11	105	55	1,5	46	55	55	●
72	13 72 01*	75	72	2,2	60	72	72	●
94	13 94 01*	100	94	5,1	75	94	94	●

* 带一驱动键
Supplied with a driving key



④ 标准交付包装中不包括
Not included in the delivery

SPARE PARTS

Alpha	Beta	①	②	③	④
72	80	Z00 00 72	C00 22 11	Z00 14 74	53 74 96
94	100	Z00 00 94	C00 24 17	Z00 14 96	53 74 96



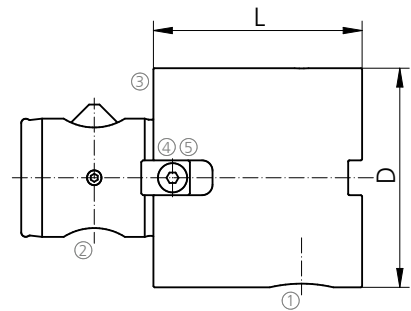
延长杆

Extensions

延长杆 **Beta-Beta**

Extensions Beta-Beta

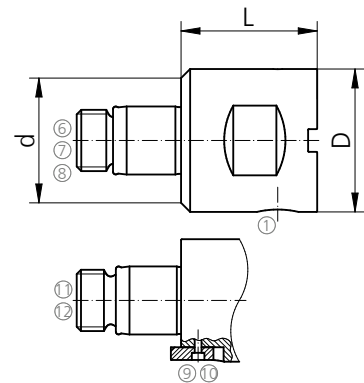
Beta	Order Number	L	D	kg	MCM	MCC	Index
25	B13 25 25 045	45	25	0,2	B25	B25	●
25	B13 25 25 070	70	25	0,3	B25	B25	●●
32	B13 32 32 035	35	32	0,2	B32	B32	●●
32	B13 32 32 070	70	32	0,4	B32	B32	●●
40	B13 40 40 045	45	42	0,4	B40	B40	●●
40	B13 40 40 070	70	42	0,7	B40	B40	●●
50	B13 50 50 065	65	50	1,0	B50	B50	●●
50	B13 50 50 100	100	50	1,5	B50	B50	●●
63	B13 63 63 060	60	63	1,3	B63	B63	●●
63	B13 63 63 125	125	63	2,9	B63	B63	●●
80	B13 80 80 080	80	80	2,9	B80	B80	●●
80	B13 80 80 160	160	80	6,1	B80	B80	●●
100	B13 100 100 080	80	100	4,9	B100	B100	●●
100	B13 100 100 180	180	100	10,9	B100	B100	●●



延长杆 **Alpha-Beta**

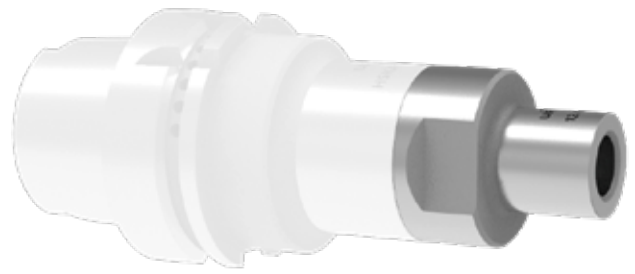
Extensions Alpha-Beta

Alpha	Beta	Order Number	L	D	d	kg	SW	MCM	MCC	Index
24,5	25	B13 24 25 030	30	25	24,5	0,1	22	24,5	B25	○
32	32	B13 32 32 040	40	32	32	0,2	27	32	B32	○
42	40	B13 42 40 045	45	42	42	0,5	36	42	B40	○
55	63	B13 55 63 060	60	63	55	1,3	45	55	B63	○
72	80	B13 72 80 080	80	80	72	2,9	55	72	B80	○
94	100	B13 94 100 080	80	100	94	4,1	90	94	B100	○



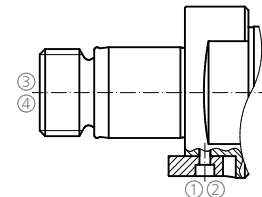
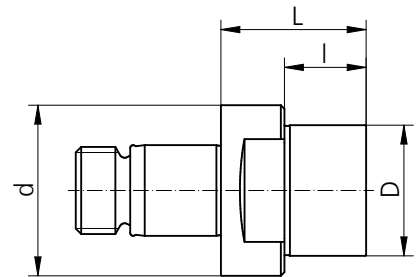
SPARE PARTS

Alpha	Beta	1	2	3	4	5	6	7	8	9	10	11	12
24,5	25	Z00 25 24	Z00 25 21	Z00 25 23					G00 02 05	G00 02 02	Z00 12 24		
32	32	Z00 32 24	Z00 32 21	Z00 32 23					G00 02 06	G00 02 03	Z00 16 32		
42	40	Z00 40 24	Z00 40 21	Z00 40 23	Z00 40 25	C00 22 58			G00 02 07	G00 02 04	Z00 22 42		
	50	Z00 50 24	Z00 50 21	Z00 50 23	Z00 50 25	C00 22 60							
55	63	Z00 63 24	Z00 63 21	Z00 63 23	Z00 63 25	C00 22 05	G00 02 08	G00 02 05	Z00 27 55				
72	80	Z00 80 24	Z00 80 21	Z00 80 23	Z00 80 25	C00 22 07					Z00 00 72	C00 22 11	Z00 14 74 53 74 96
94	100	Z00 100 24	Z00 100 21	Z00 100 23	Z00 100 25	C00 22 71					Z00 00 94	C00 24 17	Z00 14 96 53 74 96



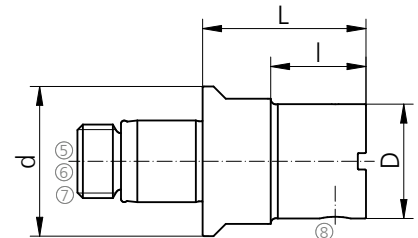
变径杆
Reducers

Alpha	Alpha 1	Order Number	L	I	D	d	kg	SW	MCM	MCC	Index
24,5	18,5	12 24 02	30	15	18,5	24,5	0,1	22	24,5	18,5	●
24,5	18,5	12 24 03	55	40	18,5	24,5	0,2	22	24,5	18,5	●
32	18,5	12 32 02	30	15	18,5	32	0,2	27	32	18,5	●
32	24,5	12 32 07	40	25	24,5	32	0,3	27	32	24,5	●
32	24,5	12 32 08	70	55	24,5	32	0,3	27	32	24,5	●
42	18,5	12 42 02	35	15	18,5	42	0,4	36	42	18,5	●
42	24,5	12 42 07	45	25	24,5	42	0,4	36	42	24,5	●
42	32	12 42 12	45	25	32	42	0,4	36	42	32	●
42	32	12 42 13	85	65	32	42	0,7	36	42	32	●
55	18,5	12 55 02	40	15	18,5	55	0,7	46	55	18,5	●
55	24,5	12 55 07	50	25	24,5	55	0,7	46	55	24,5	●
55	32	12 55 12	50	25	32	55	0,7	46	55	32	●
55	42	12 55 17	55	30	42	55	0,8	46	55	42	●
55	42	12 55 18	105	80	42	55	1,3	46	55	42	●
72	18,5	12 72 02	45	15	18,5	72	1,5	60	72	18,5	○
72	18,5	12 72 03	70	40	18,5	72	1,5	60	72	18,5	○
72	24,5	12 72 07	55	25	24,5	72	1,5	60	72	24,5	○
72	32	12 72 13	95	65	32	72	1,8	60	72	32	○
72	42	12 72 17	60	30	42	72	1,6	60	72	42	●
72	55	12 72 22	60	30	55	72	1,7	60	72	55	●
94	18,5	12 94 03	75	40	18,5	94	2,3	75	94	18,5	○
94	24,5	12 94 08	90	55	24,5	94	3,0	75	94	24,5	○
94	32	12 94 12	60	25	32	94	3,0	75	94	32	○
94	32	12 94 13	100	65	32	94	3,2	75	94	32	○
94	55	12 94 22	60	30	55	94	3,1	75	94	55	●
94	72	12 94 27*	80	45	72	94	3,5	75	94	72	●



变径杆 Alpha-Beta
Reducers Alpha-Beta

Alpha	Beta	Order Number	L	I	D	d	kg	SW	MCM	MCC	Index
32	25	B12 32 25 035	35	18	25	32	0,3	27	32	B25	○
42	25	B12 42 25 045	45	25	25	42	0,4	36	42	B25	○
42	32	B12 42 32 050	50	30	32	42	0,4	36	42	B32	○
55	32	B12 55 32 055	55	30	32	55	0,7	46	55	B32	○
55	40	B12 55 40 060	60	35	42	55	0,8	46	55	B40	○
72	40	B12 72 40 065*	65	35	42	72	1,7	60	72	B40	○
72	63	B12 72 63 065*	65	35	63	72	2,0	60	72	B63	○
94	63	B12 94 63 070*	70	35	63	94	3,4	75	94	B63	○



SPARE PARTS

Alpha	Beta	①	②	③	④	⑤	⑥	⑦	⑧	
25									Z00 25 24	
32	32						G00 02 06	G00 02 03	Z00 16 32	Z00 25 32
42	40						G00 02 07	G00 02 04	Z00 22 42	Z00 25 40
55	63							G00 02 05	Z00 27 55	Z00 24 63
72		Z00 00 72	C00 22 11	Z00 14 74	53 74 96					
94		Z00 00 94	C00 24 17	Z00 14 96	53 74 96					

* 带一驱动键
supplied with a driving key

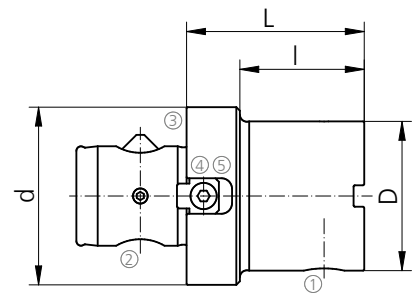
④ 标准交付包装中不包括
Not included in the delivery



变径杆
Reducers

变径杆 **Beta-Beta**
Reducers Beta-Beta

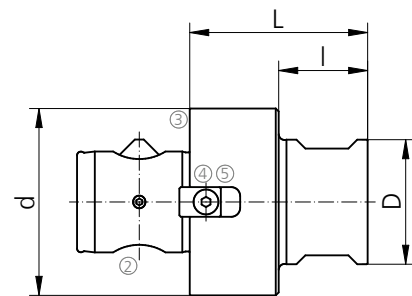
Beta	Beta 1	Order Number	L	l	D	d	kg	SW	MCM	MCC	Index
32	25	B12 32 25 040	40	25	25	32	0,2		B32	B25	●
40	25	B12 40 25 040	40	25	25	42	0,3		B40	B25	●
40	32	B12 40 32 045	45	30	32	42	0,3		B40	B32	●
50	40	B12 50 40 050	50	35	42	50	0,5		B50	B40	●
63	25	B12 63 25 045	45	25	25	63	0,7		B63	B25	●
63	32	B12 63 32 050	50	30	32	63	0,9		B63	B32	●
63	40	B12 63 40 055	55	35	42	63	1,1		B63	B40	●
63	50	B12 63 50 060	60	40	50	63	1,1		B63	B50	●
80	40	B12 80 40 060	60	35	42	80	2,2		B80	B40	●
80	50	B12 80 50 060*	60	35	50	80	2,2		B80	B50	○
80	63	B12 80 63 060	60	35	63	80	2,4		B80	B63	●
100	40	B12 100 40 060	60	35	42	100	2,6		B100	B40	○
100	50	B12 100 50 080*	80	50	50	100	3,5		B100	B50	○
100	63	B12 100 63 060	60	35	63	100	3,3		B100	B63	●
100	80	B12 100 80 075	75	50	80	100	3,5		B100	B80	●



* 需单独订购的备件
* Spare parts on request

变径杆 **Beta-Alpha**
Reducers Beta-Alpha

Beta	Alpha	Order Number	L	l	D	d	kg	SW	MCM	MCC	Index
25	18,5	B12 25 18 040	40	25	18,5	25	0,1	17	B25	18,5	●
32	18,5	B12 32 18 040	40	25	18,5	32	0,1	17	B32	18,5	●
40	18,5	B12 40 18 040	40	25	18,5	42	0,2	17	B40	18,5	●
50	18,5	B12 50 18 040	40	15	18,5	50	0,5	17	B50	18,5	○
50	24,5	B12 50 24 050	50	25	24,5	50	0,6	22	B50	24,5	○
50	32	B12 50 32 050	50	25	32	50	0,6	27	B50	32	○
60	24,5	B12 63 24 055	55	25	24,5	63	1,0	22	B63	24,5	○
65	32	B12 63 32 055	55	25	32	63	1,1	27	B63	32	○
63	42	B12 63 42 060	60	30	42	63	1,1	36	B63	42	○



SPARE PARTS

Beta	①	②	③	④	⑤
25	Z00 25 24	Z00 25 21	Z00 25 23		
32	Z00 32 24	Z00 32 21	Z00 32 23		
40	Z00 40 24	Z00 40 21	Z00 40 23	Z00 40 25	C00 22 58
50	Z00 50 24	Z00 50 21	Z00 50 23	Z00 50 25	C00 22 60
63	Z00 63 24	Z00 63 21	Z00 63 23	Z00 63 25	C00 22 05
80	Z00 80 24	Z00 80 21	Z00 80 23	Z00 80 25	C00 22 07
100	Z00 100 24	Z00 100 21	Z00 100 23	Z00 100 25	C00 22 71



刀柄系统

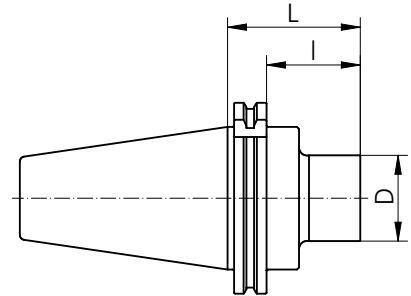
System Adaptors

轴向螺纹连接

With Axial Threaded Connection

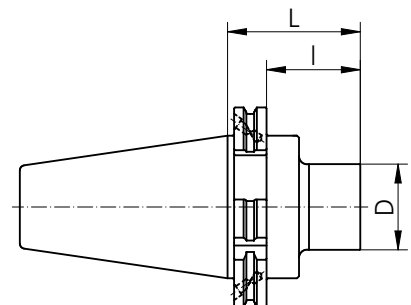
DIN 69871-A/D

Alpha	Order Number		L	I	D	kg	MCC	Index
18,5	D10 31 02	30	34	15	18,5	0,4	18,5	○
32	D10 31 12	30	44	25	32	0,5	32	○
42	D10 31 16	30	35	16	42	0,4	42	●
42	D10 31 17	30	49	30	42	0,5	42	○
18,5	D10 41 03	40	75	40	18,5	1,1	18,5	●
24,5	D10 41 07	40	60	25	24,5	1,1	24,5	●
24,5	D10 41 08	40	90	55	24,5	1,2	24,5	●
32	D10 41 12	40	60	25	32	1,1	32	●
32	D10 41 13	40	100	65	32	1,4	32	●
32	D10 41 14	40	100	125	32	1,8	32	○
42	D10 41 16	40	35	16	42	1,2	42	●
42	D10 41 17	40	65	30	42	1,3	42	●
55	D10 41 22	40	65	46	55	1,2	55	●
55	D10 41 23	40	135	100	55	2,6	55	○
72	D10 41 27	40	80	45	72	1,8	72	○
18,5	D10 50 03	50	75	40	18,5	3,2	18,5	○
24,5	D10 50 07	50	60	25	24,5	3,2	24,5	●
32	D10 50 12	50	60	25	32	3,2	32	●
42	D10 50 17	50	65	30	42	4,0	42	●
55	D10 50 22	50	65	30	55	3,3	55	●
55	D10 50 24	50	240	105	55	6,7	55	○
72	D10 50 27	50	80	61	72	3,7	72	●
94	D10 50 32	50	85	66	94	4,0	94	●

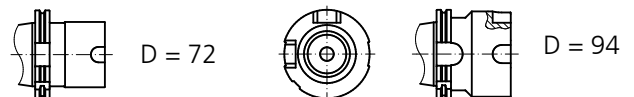


DIN 69871-B

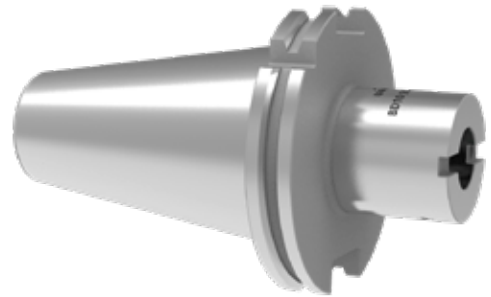
Alpha	Order Number		L	I	D	kg	MCC	Index
42	H10 43 16	40	35	16	42	1,2	42	●
55	H10 43 22	40	65	46	55	1,2	55	●
42	H10 53 17	50	65	30	42	4,0	42	●
55	H10 53 22	50	65	30	55	3,3	55	●
72	H10 53 27	50	80	61	72	3,7	72	●
94	H10 53 32	50	85	66	94	4,0	94	●



D = 72 mm 带一个驱动键
 D = 94 mm 带2个驱动键
 D = 72 mm with one driving keyway
 D = 94 mm with two driving keyways



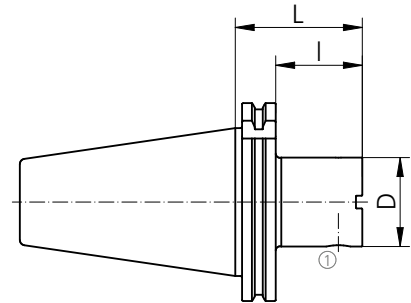
刀柄系统
System Adaptors



侧固式连接
With Side Lock System

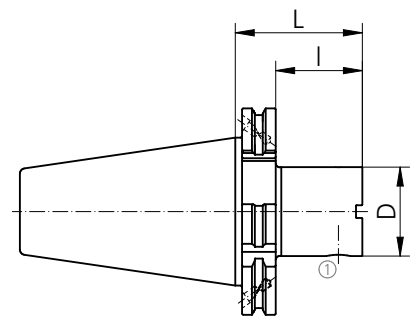
DIN 69871-A/D

Beta	Order Number	□	L	I	D	kg	MCC	Index
25	BD10 40A 25 050	40	50	31	25	0,8	B25	●
32	BD10 40A 32 050	40	50	31	32	0,9	B32	●
40	BD10 40A 40 035	40	35	16	42	0,9	B40	●
40	BD10 40A 40 050	40	50	31	42	1,1	B40	●
50	BD10 40A 50 050	40	50	31	50	1,2	B50	●
63	BD10 40A 63 065	40	65	46	63	1,5	B63	●
25	BD10 50A 25 060	50	60	41	25	2,8	B25	●
32	BD10 50A 32 060	50	60	41	32	2,9	B32	●
40	BD10 50A 40 060	50	60	41	42	3,0	B40	●
50	BD10 50A 50 060	50	60	41	50	3,2	B50	●
63	BD10 50A 63 060	50	60	41	63	3,3	B63	●
80	BD10 50A 80 070	50	70	51	80	4,0	B80	●
100	BD10 50A 100 115	50	115	96	100	6,9	B100	●



DIN 69871-B

Beta	Order Number	□	L	I	D	kg	MCC	Index
40	BD10 40B 40 035	40	35	16	42	0,9	B40	●
63	BD10 40B 63 065	40	65	46	63	1,5	B63	●
63	BD10 40B 63 090	40	90	55	63	2,0	B63	○
40	BD10 50B 40 060	50	60	41	42	3,0	B40	●
50	BD10 50B 50 060	50	60	41	50	3,2	B50	●
63	BD10 50B 63 060	50	60	41	63	3,3	B63	●
100	BD10 50B 100 115	50	115	96	100	6,9	B100	●



SPARE PARTS

Beta	①
25	Z00 25 24
32	Z00 32 24
40	Z00 40 24
50	Z00 50 24
63	Z00 63 24
80	Z00 80 24
100	Z00 100 24



刀柄系统

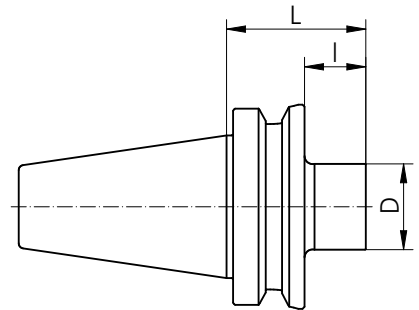
System Adaptors

轴向螺纹连接

With Axial Threaded Connection

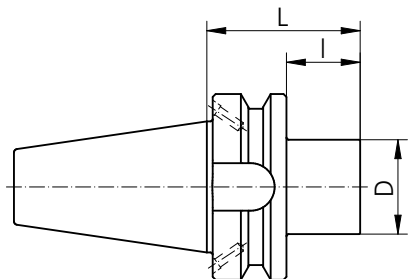
MAS-BT-A

Alpha	Order Number	▽	L	I	D	kg	MCC	Index
18,5	T10 31 02	30	37	15	18,5	0,4	18,5	○
32	T10 31 12	30	47	25	32	0,5	32	○
42	T10 31 16	30	32	10	42	0,8	42	○
18,5	T10 41 03	40	67	40	18,5	1,0	18,5	●
18,5	T10 41 04	40	102	75	18,5	1,1	18,5	○
24,5	T10 41 07	40	52	25	24,5	1,0	24,5	●
32	T10 41 12	40	52	25	32	1,0	32	●
42	T10 41 16	40	29	2	42	1,0	42	●
42	T10 41 17	40	57	30	42	1,1	42	●
42	T10 41 18	40	107	80	42	1,7	42	○
55	T10 41 22	40	57	30	55	1,2	55	●
55	T10 41 23	40	127	100	55	2,5	55	○
24,5	T10 51 09	50	138	100	24,5	4,0	24,5	○
32	T10 51 13	50	103	65	32	4,0	32	●
42	T10 51 17	50	68	30	42	3,3	42	●
42	T10 51 19	50	198	160	42	5,2	42	○
55	T10 51 22	50	68	30	55	3,8	55	●
55	T10 51 24	50	243	205	55	7,1	55	○
72	T10 51 27	50	83	45	72	4,2	72	●
72	T10 51 29	50	293	255	72	10,8	72	○
94	T10 51 32	50	88	50	94	4,7	94	●



MAS-BT-B

Alpha	Order Number	▽	L	I	D	kg	MCC	Index
24,5	T10 43 07	40	52	25	24,5	1,1	24,5	
32	T10 43 12	40	52	25	32	1,1	32	
42	T10 43 16	40	29	2	42	0,9	42	
55	T10 43 22	40	57	30	55	1,2	55	

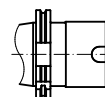


D = 72 mm 带一个驱动键

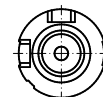
D = 94 mm 带2个驱动键

D = 72 mm with one driving keyway

D = 94 mm with two driving keyways



D = 72



D = 94

刀柄系统

System Adaptors

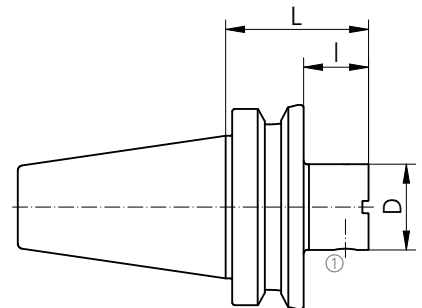
侧固式连接

With Side Lock System



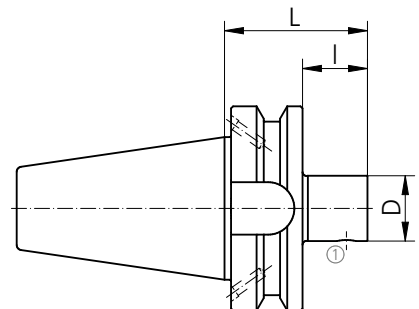
MAS-BT-A

Beta	Order Number	□	L	I	D	kg	MCC	Index
25	BT10 40A 25 060	40	60	33	25	0,8	B25	●
32	BT10 40A 32 060	40	60	33	32	0,9	B32	●
40	BT10 40A 40 028	40	28	1	42	0,9	B40	●
40	BT10 40A 40 060	40	60	33	42	1,2	B40	●
50	BT10 40A 50 060	40	60	33	50	1,3	B50	●
63	BT10 40A 63 055	40	55	28	63	1,4	B63	●
32	BT10 50A 32 070	50	70	32	32	3,7	B32	●
40	BT10 50A 40 070	50	70	32	42	3,9	B40	●
50	BT10 50A 50 070	50	70	32	50	4,1	B50	●
63	BT10 50A 63 080	50	80	42	63	4,3	B63	●
80	BT10 50A 80 100	50	100	62	80	5,5	B80	●
100	BT10 50A 100 110	50	110	72	100	7,0	B100	●



MAS-BT-B

Beta	Order Number	□	L	I	D	kg	MCC	Index
32	BT10 50B 32 070	50	70	32	32	3,8	B32	○
40	BT10 40B 40 060	40	60	33	42	1,3	B40	○
50	BT10 50B 50 070	50	70	32	50	4,0	B50	○
63	BT10 50B 63 080	50	80	42	63	4,4	B63	○
100	BT10 50B 100 110	50	110	72	100	6,3	B100	○



SPARE PARTS

Beta	①
25	Z00 25 24
32	Z00 32 24
40	Z00 40 24
50	Z00 50 24
63	Z00 63 24
80	Z00 80 24
100	Z00 100 24

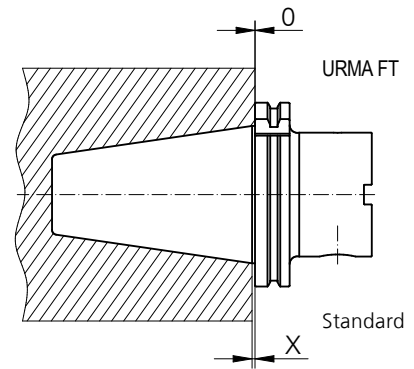
URMA-FT 刀柄系统

System Adaptors URMA-FT

侧固式连接
With Side Lock System

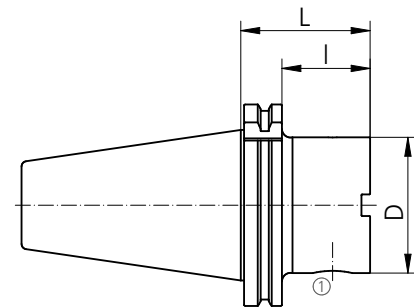
用于提高刚性和切削效率
与现有系统相对应

For improved rigidity and higher cutting performance
Equivalent to existing systems



DIN 69871-A

Beta	Order Number		L	I	D	kg	MCC	Index
40	BDP10 50A 40 060	50	60	41	42	3,0	B40	●
63	BDP10 50A 63 060	50	60	41	63	3,3	B63	●
80	BDP10 50A 80 070	50	70	51	80	4,0	B80	●
100	BDP10 50A 100 115	50	115	96	100	6,9	B100	●



SPARE PARTS

Beta		Order Number
40	Z00 40 24	Z00 40 24
63	Z00 63 24	Z00 63 24
80	Z00 80 24	Z00 80 24
100	Z00 100 24	Z00 100 24

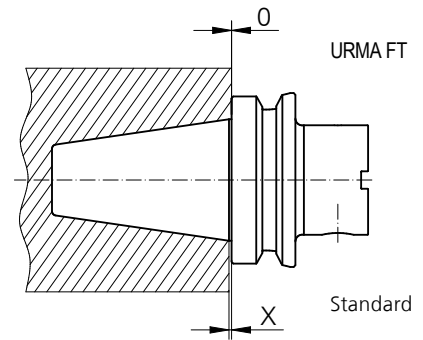
URMA-FT 刀柄系统

System Adaptors URMA-FT

侧固式连接
With Side Lock System

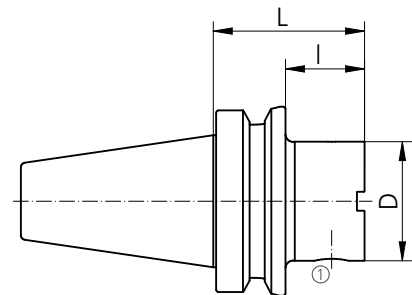
用于提高刚性和切削效率
与现有系统相对应

For improved rigidity and higher cutting performance
Equivalent to existing systems



MAS-BT-A

Beta	Order Number		L	I	D	kg	MCC	Index
40	BTP10 40A 40 028	40	28	1	42	0,9	B40	●
63	BTP10 40A 63 055	40	55	28	63	1,5	B63	●
63	BTP10 50A 63 080	50	80	42	63	4,3	B63	●
100	BTP10 50A 100 110	50	110	72	100	7,0	B100	●



SPARE PARTS

Beta		
40	Z00 40 24	
63	Z00 63 24	
80	Z00 80 24	
100	Z00 100 24	



刀柄系统

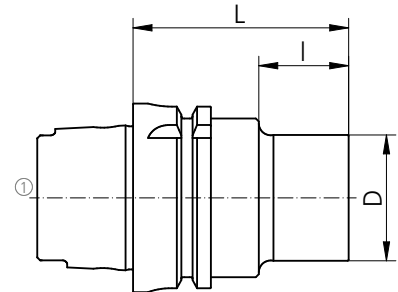
System Adaptors

轴向螺纹连接

With Axial Threaded Connection

DIN 69893-A

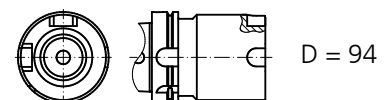
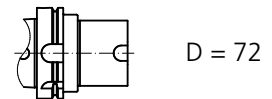
Alpha	Order Number	□	L	I	D	kg	MCC	Index
18,5	HSKA10 40 02	40	50	15	18,5	0,3	18,5	○
24,5	HSKA10 40 07	40	60	25	24,5	0,4	24,5	○
32	HSKA10 40 12	40	65	30	32	0,4	32	○
42	HSKA10 50 17	50	72	46	42	0,7	42	○
18,5	HSKA10 63 02*	63	57	15	18,5	1,0	18,5	●
24,5	HSKA10 63 07*	63	67	25	24,5	1,0	24,5	●
32	HSKA10 63 12*	63	67	25	32	1,1	32	●
42	HSKA10 63 17*	63	72	30	42	1,2	42	●
55	HSKA10 63 21*	63	82	56	55	1,4	55	●
72	HSKA10 63 26	63	97	55	72	2,2	72	○
55	HSKA10 80 21	80	82	40	55	2,0	55	○
72	HSKA10 80 26	80	102	60	72	2,8	72	○
94	HSKA10 80 32	80	122	80	94	4,5	94	○
18,5	HSKA10 100 03	100	85	40	18,5	2,8	18,5	○
24,5	HSKA10 100 07	100	70	25	24,5	2,8	24,5	○
24,5	HSKA10 100 08	100	100	55	24,5	2,9	24,5	○
32	HSKA10 100 12	100	70	25	32	2,8	32	○
32	HSKA10 100 13	100	110	65	32	3,0	32	○
42	HSKA10 100 17*	100	75	30	42	3,0	42	●
42	HSKA10 100 18	100	125	80	42	3,4	42	○
55	HSKA10 100 21*	100	85	40	55	3,3	55	●
72	HSKA10 100 26**	100	100	55	72	4,2	72	●
94	HSKA10 100 32**	100	125	96	94	6,0	94	●



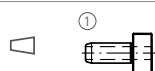
* 不含冷却管
Coolant tube is not included

** 含非标冷却管
Coolant tube included

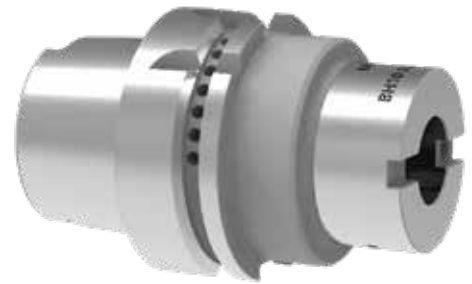
D = 72 mm 带一个驱动键
D = 94 mm 带2个驱动键
D = 72 mm with one driving keyway
D = 94 mm with two driving keyways



SPARE PARTS



40	H00 40 01
50	H00 50 01
63	H00 63 01
80	H00 80 01
100	H00 100 01



刀柄系统

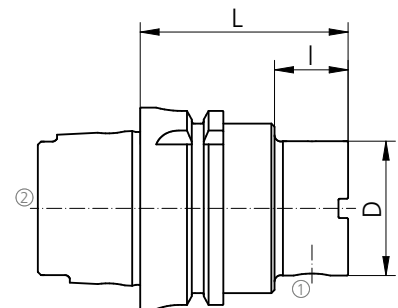
System Adaptors

侧固式连接

With Side Lock System

DIN 69893-A

Beta	Order Number	▽	L	I	D	kg	MCC	Index
25	BH10 50A 25 055	50	55	29	25	0,5	B25	○
32	BH10 50A 32 060	50	60	34	32	0,6	B321	○
40	BH10 50A 40 065	50	65	39	42	0,7	B40	○
25	BH10 63A 25 055*	63	55	29	25	0,9	B25	●
32	BH10 63A 32 060*	63	60	34	32	1,0	B32	●
40	BH10 63A 40 065*	63	65	23	42	1,1	B40	●
50	BH10 63A 50 070*	63	70	28	50	1,5	B50	●
63	BH10 63A 63 080*	63	80	54	63	1,5	B63	●
40	BH10 80A 40 065	80	65	23	42	1,7	B40	○
63	BH10 80A 63 080	80	80	38	63	2,1	B63	○
80	BH10 80A 80 090	80	90	48	80	2,7	B80	○
100	BH10 80A 100 100	80	100	58	100	3,8	B100	○
32	BH10 100A 32 060*	100	60	31	32	2,3	B32	●
40	BH10 100A 40 080*	100	80	35	42	3,1	B40	●
50	BH10 100A 50 080*	100	80	35	50	3,2	B50	●
63	BH10 100A 63 080*	100	80	35	63	3,3	B63	●
80	BH10 100A 80 090*	100	90	45	80	4,0	B80	●
100	BH10 100A 100 100*	100	100	71	100	5,0	B100	●



* 不含冷却管

Coolant tube is not included

SPARE PARTS

Beta	①	②	
25	Z00 25 24	80	H00 50 01
32	Z00 32 24	63	H00 63 01
40	Z00 40 24	80	H00 80 01
50	Z00 50 24	100	H00 100 01
63	Z00 63 24		
80	Z00 80 24		
100	Z00 100 24		


刀柄系统

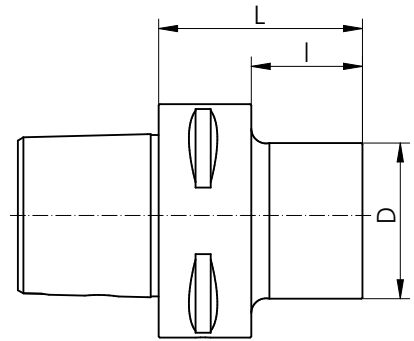
System Adaptors

轴向螺纹连接


With Axial Threaded Connection

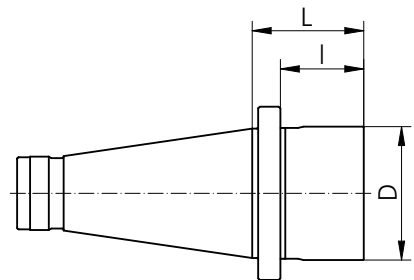
ISO 26623 PSC

Alpha	Order Number		L	I	D	kg	MCC	Index
42	AC10 63 17 055	Size 6	55	30	42	1.0	42	●
55	AC10 63 21 060	Size 6	60	35	55	1.3	55	●



ISO DIN 2080


Alpha	Order Number		L	I	D	kg	MCC	Index
42	10 40 16	40	13,6	2	42	0,9	42	○
42	10 40 17	40	41,6	30	42	1,0	42	○
55	10 40 22	40	41,6	30	55	1,0	55	○
42	10 50 17	50	45,2	30	42	2,8	42	○
55	10 50 22	50	45,2	30	55	2,8	55	○
72	10 50 27	50	60,2	45	72	3,2	72	○
94	10 50 32	50	65,2	50	94	3,5	94	○

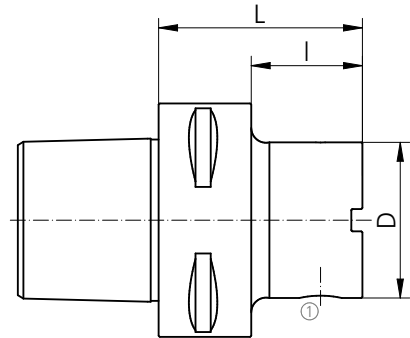


刀柄系统
System Adaptors


侧固式连接
With Side Lock System

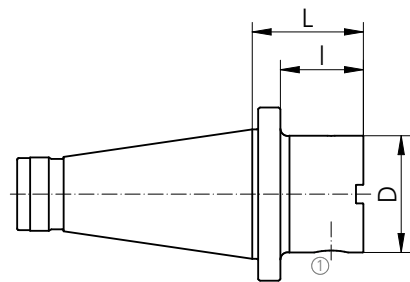
ISO 26623-1-PSC

Beta	Order Number		L	I	D	kg	MCC	Index
40	BC10 63 40 055	Size 6	55	30	42	1,0	B40	●
50	BC10 63 50 060	Size 6	60	35	50	1,2	B50	●
63	BC10 63 63 065	Size 6	65	-	63	1,5	B63	●





ISO DIN 2080

Beta	Order Number		L	I	D	kg	MCC	Index
40	BI10 40 40 035	40	35	23	42	0,7	B40	○
40	BI10 40 40 050	40	50	38	42	1,1	B40	○
63	BI10 40 63 070	40	70	58	63	1,8	B63	○
40	BI10 50 40 060	50	60	45	42	3,0	B40	○
63	BI10 50 63 060	50	60	45	63	3,5	B63	○
100	BI10 50 100 100	50	100	85	100	6,8	B100	○

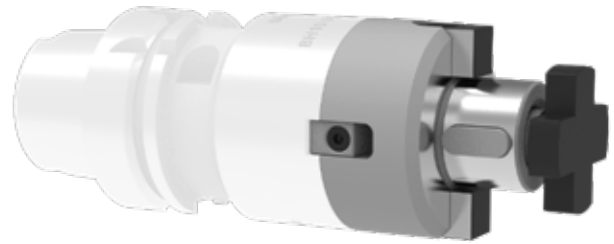


SPARE PARTS

Beta		
40	Z00 40 24	
50	Z00 50 24	
63	Z00 63 24	
100	Z00 100 24	

URMA Systems

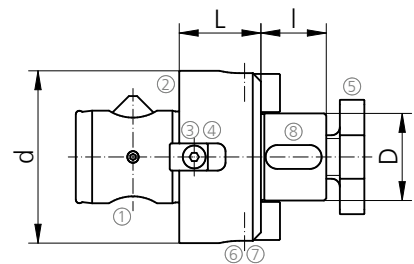
Adaptor Toolholders



面铣刀刀柄
Shell Mill Adaptors

面铣刀刀柄
Shell End Mill Adaptors

Beta	Order Number	L	l	D	d	kg	MCM	Index
63	B44 63 13 030	30	12	13	63	0,8	B63	○
	B44 63 16 030	30	17	16	63	0,8	B63	○
	B44 63 22 030	30	19	22	63	0,9	B63	○
	B44 63 27 030	30	21	27	63	1	B63	○
	B44 63 32 030	30	24	32	63	1,1	B63	○
	B44 63 40 030	30	27	40	63	1,3	B63	○



SPARE PARTS

D	①	②	③	④	⑤	⑥	⑦	⑧
	Z00 63 21	Z00 63 23	Z00 63 25	C00 22 05				
13					52 01 13	Z00 B44 16 01	C00 22 30	
16					52 01 16	Z00 B44 16 01	C00 22 30	F00 04 13
22					52 01 22	Z00 B44 22 01	C00 22 31	F00 04 14
27					52 01 27	Z00 B44 27 01	C00 22 05	F00 04 15
32					52 01 32	Z00 B44 32 01	C00 22 71	F00 04 16
40					52 01 40	Z00 B44 40 01	C00 22 71	F00 04 17



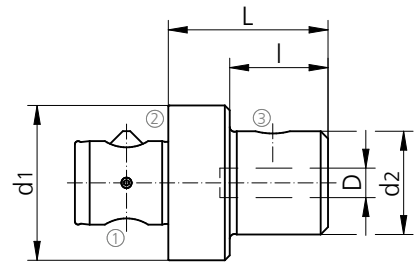
Weldon 侧固刀柄 DIN 1835 B

Weldon Adaptors DIN 1835 B

侧固刀柄

Weldon Adaptors

Beta	Order Number	L	l	D	d ₁	d ₂	kg	MCM	Index
40	B55 40 06 045	45	30	6	42	25	0,3	B40	○
40	B55 40 08 045	45	30	8	42	28	0,3	B40	○
40	B55 40 10 055	55	40	10	42	35	0,4	B40	○
40	B55 40 12 065	65	65	12	42	42	0,6	B40	○
63	B55 63 06 050	50	25	6	63	25	0,9	B63	○
63	B55 63 08 050	50	25	8	63	28	0,9	B63	○
63	B55 63 10 055	55	30	10	63	35	1	B63	○
63	B55 63 12 065	65	40	12	63	42	1,1	B63	○
63	B55 63 14 065	65	40	14	63	45	1,2	B63	○
63	B55 63 16 065	65	40	16	63	48	1,2	B63	○
63	B55 63 18 065	65	40	18	63	50	1,3	B63	○
63	B55 63 20 065	65	40	20	63	52	1,3	B63	○
63	B55 63 25 075	75	75	25	63	65	1,8	B63	○



SPARE PARTS

Beta	D	①	②	③
40				
		Z00 40 21	Z00 40 23	
63		Z00 63 21	Z00 63 23	
	6			Z00 55 06
	8			Z00 55 08
	10			Z00 55 10
	12			Z00 55 12
	14			Z00 55 14
	16			Z00 55 16
	18			Z00 55 18
	20			Z00 55 20
	25			Z00 55 25



弹簧套筒

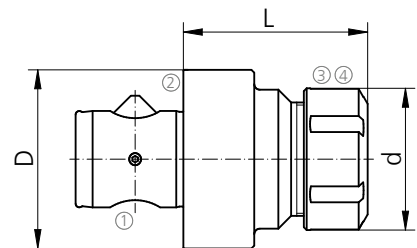
Collet Adaptors

弹簧套筒

Collet Adaptors

Beta	Order Number	L	D	d	kg	ER/ESX	MCM	Index
40	B60 40 25 065	65	42	42	0,4	25	B40	○
63	B60 63 32 065	65	63	50	1	32	B63	○

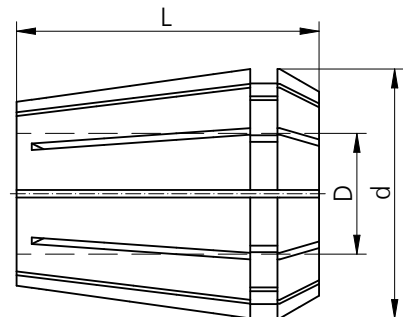
- ④ 标准交付包装中不包括
Not included in the delivery



套装弹簧套

Collet Sets

Order Number	L	D	d	ER/ESX	MCM	Index
62 25 00	34	1-15	26	25	ER25	○
62 32 00	40	2,0-20	33	32	ER32	○



单一弹簧套

Single Collets

Order Number	L	D	d	ER/ESX	MCM	Index
62 25 dd ¹⁾	34	1-17	26	25	ER25	○
62 32 dd ¹⁾	40	2,0-20	33	32	ER32	○

- ¹⁾ 标明所需直径
Indicate required diameter

SPARE PARTS

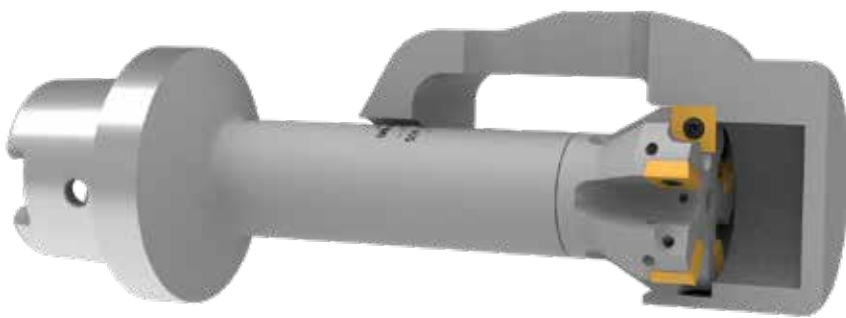
Beta	①	②	③	④
40	Z00 40 21	Z00 40 23	H00 05 05	00 05 05
63	Z00 63 21	Z00 63 23	H00 05 03	00 05 02

URMA Systems

Special Tools

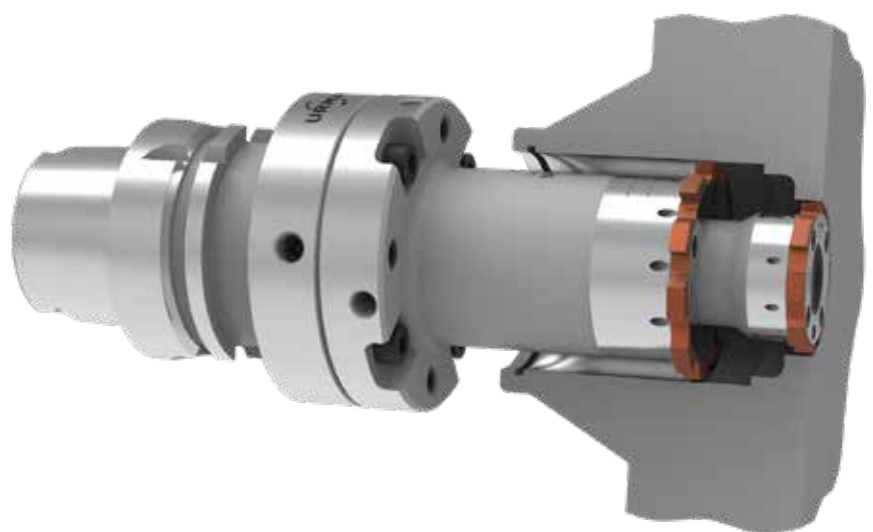
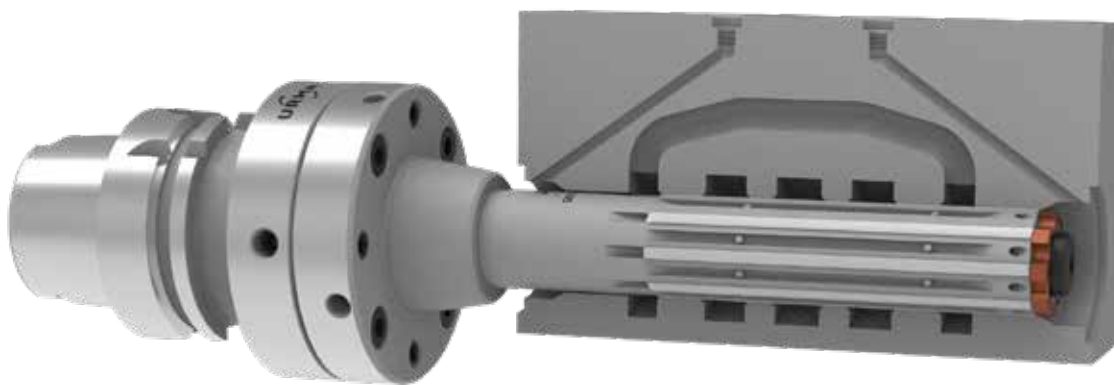
非标刀具
Special Tools

可按需定制
Available on Request



非标刀具
Special Tools

可按需定制
Available on Request



URMA Systems Machining Study

加工参数表

Machining study

填表人 * Sender		Number
公司 Company		URMA代理 URMA Distributor
地址 Address		联系人 Contact
		部门 Department
电话 Telephone	传真 Fax	电邮 E-Mail
机床 Machine-Tool		
机床型号 Machine Type		功率 (kW) Drive Power (kW)
卧式 * Horizontal <input type="checkbox"/>	立式 * Vertical <input type="checkbox"/>	刀具旋转 * Tool rotating <input type="checkbox"/>
刀柄 * Spindle Holder		刚性 Stability
限制条件 Restrictions Due to		
冷却液 Lubricant		
油 * Oil <input type="checkbox"/>	微量润滑 * 1) MLS 1) <input type="checkbox"/>	乳化液 * Emulsion <input type="checkbox"/>
内冷 Intern. Coolant Supply <input type="checkbox"/>		混合比例 Ratio of Mixture
		冷却液压力 (bar)* Coolant Pressure (Bar)
工件 Workpiece		
名称 Designation	图号 Drawing Number	材料号 * Material Number
标准号 * Specification	热处理 * Treatment Condition	强度 * Strength
每年加工孔数 * Number of Bores per Year	批量 Batch Size	
加工要求 Machining Requirements		
孔径-Ø * Bore ø	孔长 * Bore Length	预孔-Ø * Pre-Machined ø
公差 * Tolerance	工件长 (xs) Gage Length (xs)	预加工方法 * Method of Pre-Machining
其他公差要求 Additional Tolerance Requirements	盲孔 * Blind Hole <input type="checkbox"/>	目标时间 Target Time
表面光洁度 (µm) * Surface Quality (µm)	断续切削 * Cutting Interruption <input type="checkbox"/>	目标寿命 Target Quantity
R _a <input type="checkbox"/> R _z <input type="checkbox"/> R _t <input type="checkbox"/>	加工节拍 Cycle Time <input type="checkbox"/>	
日期 * Date	批准 * Visa	附件: 加工草图 * Attachement: Your Application Sketch

* 必填项
Mandatory fields

1) 微量润滑
Minimal lubrication system (mist coolant)

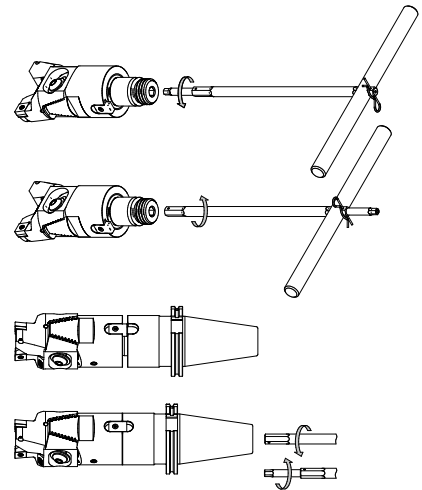
Fax +41 62 889 20 28
customerservice@urma.ch

URMA Systems Manuals

Alpha-模块系统的安装

Assembly of Systems Alpha-Modul

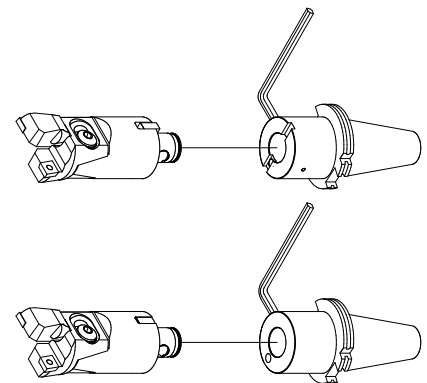
- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 用小六角扳手以逆时针方向旋松锁紧螺钉 2. 用大六角扳手以顺时针方向将螺纹接头旋到底 3. 将双刃粗镗头和主柄安装在一起，直到键槽和键对准 4. 用大六角扳手以逆时针方向将螺纹接头旋入主柄，用小六角扳手顺时针方向拧紧锁紧螺钉 | <ol style="list-style-type: none"> 1. Loosen locking screw with small hexagonal key (turn counter clock wise) 2. Screw threaded plug with large hexagonal key (clockwise) down to the bottom 3. Screw double cutter head and adaptor together until the slot and key align 4. Screw threaded plug into the adaptor with the large hexagonal key by turning counter clock wise. Tighten the locking screw with the small hexagonal key by turning clock wise |
|--|---|



Beta-模块系统的安装

Assembly of Beta-Modul Components

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. 在安装以前，检查浮动螺栓是否正确安装(凹槽须对准螺钉) 2. 如使用标准的ABS主柄，连接键需要转180度(自系统尺寸40开始) | <ol style="list-style-type: none"> 1. Before assembling, check that the floating bolt has been correctly mounted (indentation must point towards the screw) 2. If standard adaptors are being used, the keyway must be turned through 180° (valid from system size 40) |
|--|--|



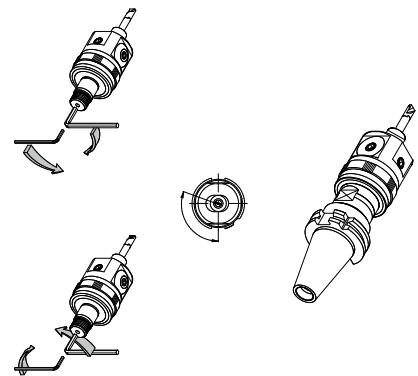
精镗头刀刃定向

Cutting Edge Orientation of Fine Boring Heads

Ø 0.2 - 153 mm

MicroMax, VersaMax - Type 25/A25

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. 松开锁紧螺钉，用扳手将螺纹联接头彻底松开 2. 将精镗头旋入手柄至二者端面接触，确定修正角度Alpha 3. 用扳手将螺纹联接头旋松约1.5倍修正角度Alpha，再拧紧锁紧螺钉 4. 切削刃现已相对手柄定位完成 | <ol style="list-style-type: none"> 1. Loosening the locking screw, screw the threaded plug in completely with the spanner 2. Screw in the boring head until both faces boring head and adaptor are in contact - define the correction angle (Alpha) 3. Unscrew the threaded plug with the spanner by about 1,5 times the correction angle (Alpha). Re-tighten the locking screw 4. The cutting edge is now orientated on the stop-position of the adaptor |
|---|---|



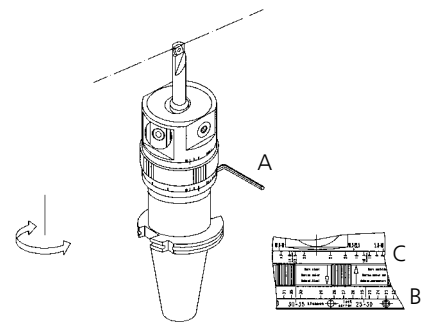
精镗头的平衡

Balancing the Fine Boring Head

Ø 0.2 - 40 mm

MicroMax

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. 松开平衡环上的螺钉A 2. 将2个环上的刻度对准于镗孔直径数，刻度B用于钢制镗杆，刻度C用于硬质合金镗杆。 3. 重新拧紧锁紧螺钉 4. 镗头现自动平衡于所需镗孔直径 | <ol style="list-style-type: none"> 1. Loosen the locking screw A on the balance ring 2. Align the two scales to set the bore diameter. Scale B corresponds with steel boring bars, scale C with carbide boring bars. 3. Re-tighten the locking screw 4. The boring head is now automatically balanced for the required boring diameter |
|---|--|



精镗头的平衡

Balancing the Fine Boring Head

Ø 20 - 67 mm

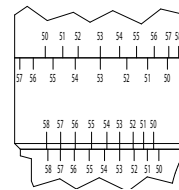
VersaMax - Type A25

例如Ø 53 mm

平衡精镗头A25, 仅需将平衡环旋至所需镗孔直径刻度上, 然后拧紧锁紧螺钉

Example Ø 53 mm

To balance the A25, simply position the graduated rings to the required diameter value and lock



预调精镗头

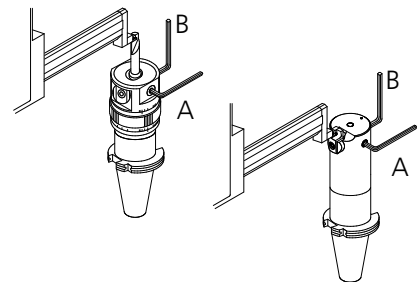
Pre-Setting Fine Boring Heads

Ø 0.2 - 153 mm

MicroMax, VersaMax - Type 25/A25

1. 松开锁紧螺钉A
2. 在微米刻度盘B上预调镗孔直径
3. 重新拧紧锁紧螺钉

1. Loosen locking screw A
2. Set the boring diameter at the micrometer screw B
3. Re-tighten the locking screw



IntraMax 刀具系统的装配

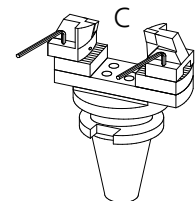
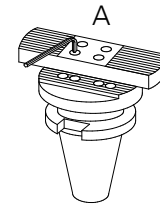
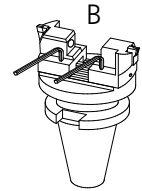
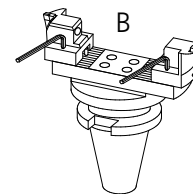
Assembly of System IntraMax

Ø 49 - 297 mm

IntraMax

1. 用4个螺钉A将直径延伸块安装在主柄或中间连接块上
2. 用螺钉B安装粗镗头或精镗头
(通常需要同时安装两个镗头)
3. 使用镗头和主柄上的刻度线粗调镗头尺寸
4. 如用于套镗，须加装中间连接块C
5. 然后用螺栓C安装粗镗头或精镗头

1. Mount the diameter adaptor (if need) onto the adaptor or intermediate adaptor with four screws A
2. Mount the roughing or finishing insert holders with two screws B each (normally, two heads ar mounted at the same time)
3. Align the insert holders using the coarse graduations on the head and the adaptor
4. For external machining, the intermediate adaptor must be mounted, C
5. Then mount the roughing or finishing insert holders with two screws C



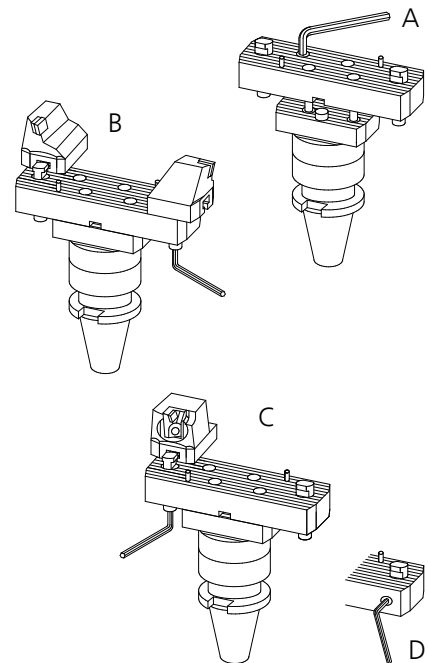
系统的装配

Assembly of System

Ø 150 - 805 mm

MegaMax

1. 使用4个螺栓A，将直径延伸块紧固到中间联接模块上。
 2. 将粗镗头或精镗头以垂直于齿槽方向装入，然后旋转90°，对于Ø 150-250 mm的直径延伸块需卸下锁紧螺钉C，等装上镗头后再旋入。（注意锁紧螺栓的锥孔）
 3. 通过镗头和延伸块上的刻度线粗调直径尺寸。
1. The diameter extender is fastened to the intermediate adaptor with four bolts A
 2. Roughing insert holders and fine boring heads are slid laterally across the line of the serration and then rotated B. With diameter extenders Ø 150-250 mm it is also necessary to fully unscrew the clamping screws C and refit them after mounting the heads (note taper bore on clamping bolt D).
 3. Align the insert holders using the coarse graduations on the head and the adaptor



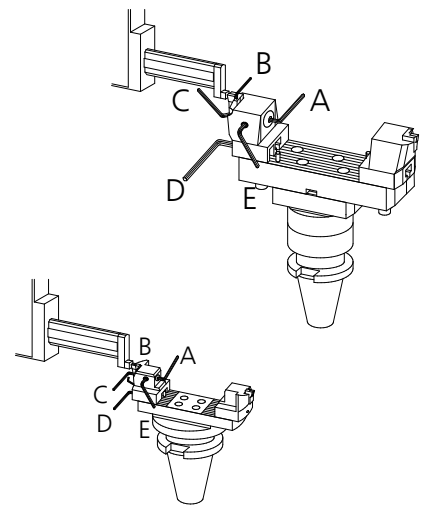
预调刀具系统

Pre-Setting the System

IntraMax, MegaMax, SuperMegaMax

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 通过微调刻度盘A或微调螺钉D将镗孔直径调至预调尺寸 2. 锁紧微调刻度盘锁紧螺钉E 3. 若同时使用2个精镗头, 用扳手C松开精镗头刀片,用扳手B调整刀刃,再用扳手C重新锁紧 | <ol style="list-style-type: none"> 1. Set the boring diameter to the pre-set position using setting dial A or adjusting screw D respectively 2. Tighten the setting dial locking device E 3. If two fine boring heads are to be used simultaneously, loosen the fine boring insert using key C, set the blade with key B, and reclamp with the key C |
|--|---|

Ø 49 - 2'400 mm



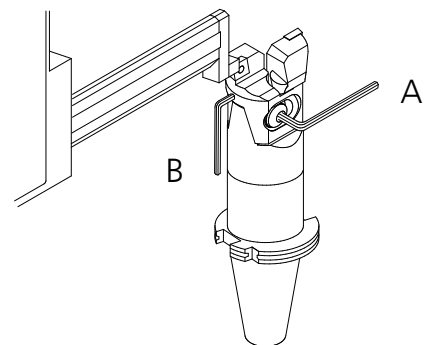
预调双刃粗镗刀

Setting the Bore Diameter on a Double Cutter

VersaMax - Type 14

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. 将锁紧螺钉A稍稍拧紧 (弹簧垫片需装上) 2. 调整微调螺钉,将刀刃调至准确的直径位置 3. 将锁紧螺钉用力拧紧 | <ol style="list-style-type: none"> 1. Gently tighten clamping screws A (spring washer must be fitted) 2. Set the cutter to the exact diameter with the adjusting screw B 3. Firmly tighten clamping screw A |
|---|--|

Ø 19.5 - 153 mm

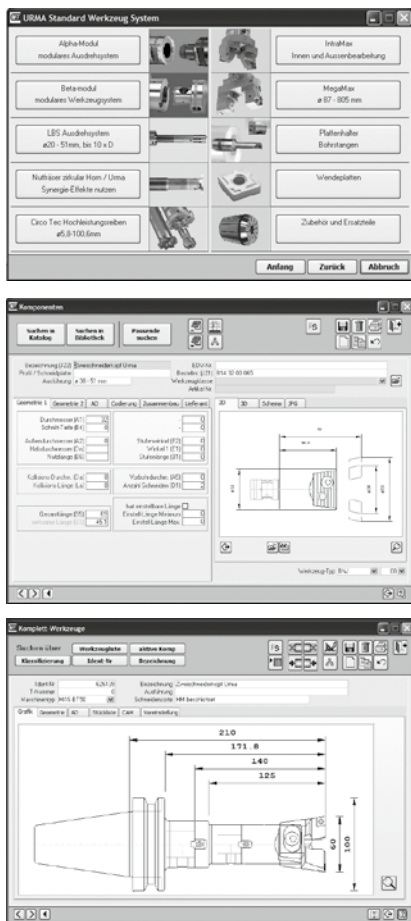


URMA Systems

WinTool

WinTool

带有钨马样本的电子刀具管理
E-Tool Management with URMA Catalogue



Tool Sheet URMA

600035 Double Cutter URMA Machine Typ - no attachment -

Recorded: 05.08.2016 Modified: 05.08.2016

Diameter	60
Cutting length	0
Radius	0
Main Arc	0
Length	210
Width	0
Collision Lgt (Lx)	145.6
Collision Dia.	100
Cutting Width	0
Side Angle	0
Weight	5.4
Price	0

Product Code / Sort	Description / Item No.	
1 BT10 50A 50 070 e 50x70 mm Beta-modul	Adaptor URMA BT-A	
1 B12 50 40 050 e 50/40x50 mm Beta-modul	Reduction URMA	
1 B14 40 00 090 e 50 - 67 mm	Double Cutter URMA	
2 W16 08 09 CC... 09T3... e 50 - 67 mm	Double Cutter Insert Holder 90	

	ap	as	D	z	Vc	fz	S	F	P	T (min)
Cold work tool steel	3	30	60	2	220	0.2	1167	466.8	0	0
low alloyed up to 1000 N/mm²										

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URMA AG WERKZEUGFABRIK

Obermatt 3
CH-5102 Rapperswil
Switzerland
T +41 62 889 20 20
F +41 62 889 20 28
info@urma.ch
www.urma.ch

Subsidiaries

URMA GmbH
Eisenbahnstraße 37
DE-77815 Bühl
+49 7223 911 170
info@urma-gmbh.de

URMA Trading (Shanghai) Co. Ltd.
Room 511, Hua Nan Mansion
1988 Dongfang Road
Pudong New District
CN-200125 Shanghai
+86 (21) 6109 6216
info@urmachina.com

Iraupen URMA
Polígono Belartza
ES-20018 Donostia-San Sebastian
Spain
+34 943 667 036
info@iraupen.es

License Manufacturer

Command Tooling Systems, LLC
13931 Sunfish Lake Blvd.
Ramsey MN, 55303 USA
+1 800 328 2197
support@commandtool.com

Paul Horn GmbH
Unter dem Holz 33-35
DE-72072 Tübingen
+49 (0) 7071 7004 0
info@phorn.de

Sumitomo Electric Ind., Ltd.
1-1-1, Koyakita,
Itami-shi, Hyogo 664-0016
Japan
+81 72 772 4535
info@sumitomotool.com