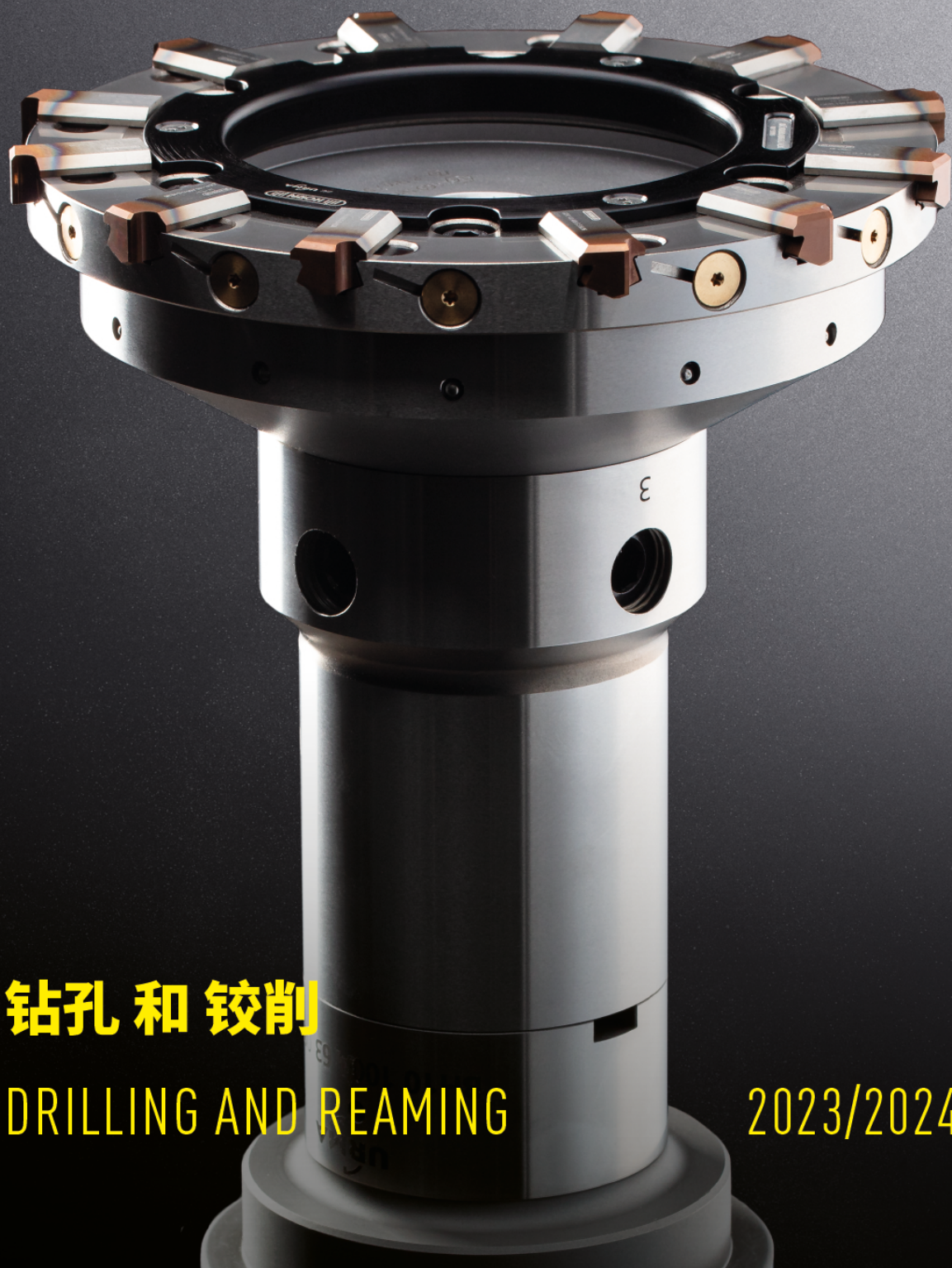


ph HORN ph



钻孔和铰削

DRILLING AND REAMING

2023/2024





**探索 HORN**  
**EXPLORE HORN**

## 尊敬的HORN用户

卓越的结果总是最佳的加工工艺和完美的工具的结合。为了实现这一目标，HORN结合了先进的技术、性能和可靠性。从单个零件到批量生产，适用于标准或特殊应用：我们的工具为您提供快速，经济，高质量的解决方案。为了帮助您选择切削参数，我们目录中的表各自提供了经过验证的经验值。充分利用我们办公室职员和销售工程师的专业知识。

可持续发展是我们企业理念的核心部分。这就是为什么我们一直关注产品和生产的质量保证、环境保护、能源效率和安全。作为高效可靠的刀具合作伙伴，我们确信您与我们一起创造一个创新和强大的经济未来。



Markus Horn  
首席执行官  
Paul Horn GmbH



Matthias Rommel  
首席执行官  
Paul Horn GmbH

## Explore HORN

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

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



Markus Horn  
CEO  
Paul Horn GmbH



Matthias Rommel  
CEO  
Paul Horn GmbH

<b>A</b>	<b>整体硬质合金钻头</b> Solid Carbide Drills	<b>DD</b>	<b>A</b>
<b>B</b>	<b>镗系列</b> Form boring system	<b>117</b>	<b>B</b>
<b>C</b>	<b>镗孔和仿形加工系列</b> Boring and profiling system	<b>105</b>	<b>C</b>
<b>D</b>	<b>镗削带精镗头</b> Boring with fine boring head	<b>URMA</b>	<b>D</b>
<b>E</b>	<b>端面切槽</b> Face grooving	<b>URMA IntraMax</b>	<b>E</b>
<b>F</b>	<b>高性能铰削</b> High-performance reaming	<b>DR</b>	<b>F</b>
<b>G</b>	<b>接头系统</b> System adaptor	<b>URMA</b>	<b>G</b>
<b>H</b>	<b>液压刀柄</b> Hydraulic expansion toolholder		<b>H</b>
<b>I</b>	<b>浮动刀柄</b> Additional equipment	<b>PZ</b>	<b>I</b>
<b>J</b>	<b>技术信息, 附加设备</b> Technical information, Additional Equipment		<b>J</b>

摘要 / INDEX

	钻孔深度 Depth of bore		螺旋角 Helix angle
	材料 P Material P		标准钻 Standard drill
	材料 M Material M		钻尖角 Point angle
	镗内孔 Internal boring		内冷钻削 Internal coolant drilling
	镗内孔 External side turning		内冷 Internal coolant
	Plandrehen Face turning		中间套筒冷却,轴向 Intermediate sleeve coolant tight
	镗孔及仿形 Boring and profiling		中间套筒冷却,径向 Intermediate sleeve peripheral cooling
	镗内孔及切槽倒角 Internal boring and grooving chamfer		台阶镗冷却 Coolant for shoulder boring
	内孔倒角 Internal chamfering		侧向盲孔冷却 Coolant for blind hole lateral
	端面槽 Face grooving		轴向盲孔冷却 Coolant for blind hole central
	内曲线端面槽 Internal face grooving in front of center		通孔冷却 Coolant for through hole
	外曲线端面槽 Axial grooving with collar		加力中间套筒 Intermediate sleeve with reinforced collar
	齿数 Numbers of teeth		轴向长度调整 axial length adjustment

	Urma		不可热缩 do not shrink
	Beta-Modul		可调跳动 Adjustable run-out
	Intramax K		轴向钟摆元件 axial pendulum element
	Intramax G		跳动检测环VDR Run-out over VDR
	直槽 Straight fluted		槽型 H Geometry H
	左旋 Left helical fluted		柄部形式 Shank forms
	Digital		刀柄形式 DIN ISO 12164-1 Shank form
	数据存储器预孔 DIN69973 Bore hole for data carrier		刀柄形式 DIN ISO 12164-1 Shank form
	可调长度 Lenght adjustable		刀柄形式 DIN ISO 7388-1 AD/AF Shank form
	调整范围(米制) Adjustment range metric		刀柄形式 DIN ISO 7388-2 JD Shank form
	转速 Number of revolutions maximum		刀柄形式 ISO 26623-1 Shank form
	模拟 analog		
	调整(米制) Adjustment metric		

- 除非另有说明, 所有尺寸均以毫米为单位。  
All dimensions in mm, unless otherwise noted.
- 可根据要求订制更多尺寸和形式。  
Further dimensions and versions are available on request.
- 锁紧螺扭矩规格, 请见技术说明。  
For torque specification of the screw, please see "Technical Instructions".
- 所有刀片座损坏的刀杆都可以由HORN维修。  
All toolholders with damaged seating can be repaired by HORN.
- 交货期 / delivery times
  - ▲ 库存 / on stock
  - △ 4周 / 4 weeks
- 根据被加工材料组 / Use for material groups
  - 推荐 / recommended
  - 次推荐 / alternative recommended
  - 不合适 / not suitable

### HORN连接接口代码-需要它做什么?

连接接口代码确保您将始终找到适当的工具, 并显示在刀杆和刀片上。如果代码匹配, 则可以在相应的刀杆中使用该刀片。  
这也适用于我们的模块化支架系统, 其中连接代码表示刀柄和刀夹之间的接口。

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

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

### HORN连接接口代码及可能的组合:

HORN connection interface codes and possible combinations:

- HIS** = 刀片座 / Insert seat
- HWS** = 工件侧接口 / Interface workpiece side
- HMS** = 机床侧接口 / Interface machine side

HIS	↔	HWS
HMS	↔	HWS

### 刀片示例

Example insert

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	Ds	HIS	EG35
<b>R105.BO.30.20.045.2</b>	0,2	1,5	2,7	2,4	7	4,5	31	0,1	3	105125	▲

### 刀杆示例

Example toolholder

产品型号 Part number	d	l <sub>1</sub>	h	l <sub>4</sub>	l <sub>5</sub>	HWS
<b>B105.0022.1.2.01</b>	22	120	20	72	5	105123 • 105124 • 105125



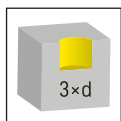
**DD**



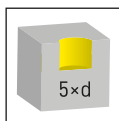
**不锈钢及钢件  
钻孔应用**

**for steel and stainless  
steeldrilling applications**

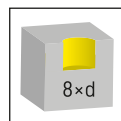
整体硬质合金钻屑刀具  
Solid carbide drilling tools  
DDP/DDM



页/Page  
11-16, 35-40



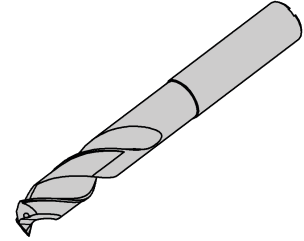
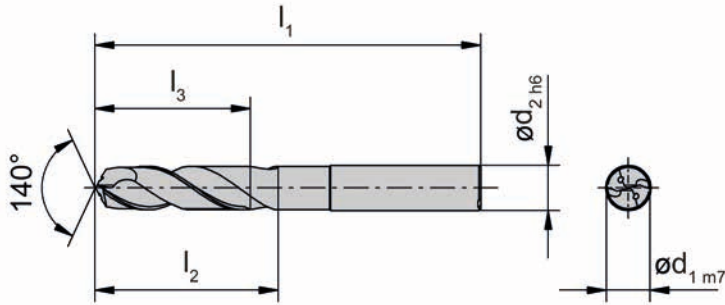
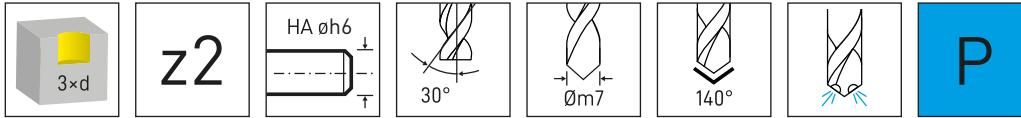
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41-46



页/Page  
23-28

切削参数  
Cutting data

页/Page  
48-53



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

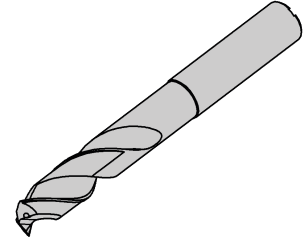
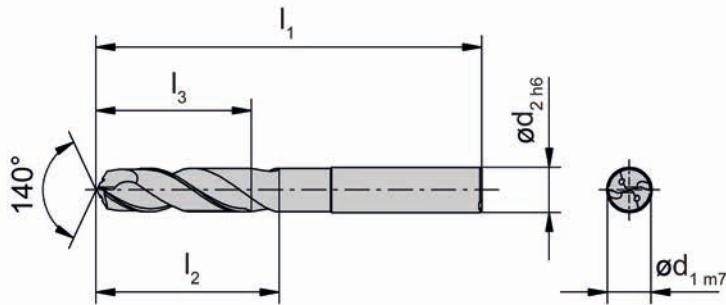
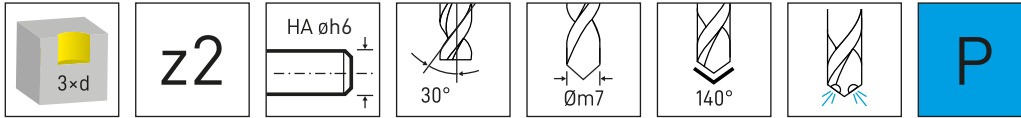
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.03.01.03000	3	6	62	20	14	HA	▲
DDP.03.01.03100	3.1	6	62	20	14	HA	△
DDP.03.01.03200	3.2	6	62	20	14	HA	△
DDP.03.01.03300	3.3	6	62	20	14	HA	▲
DDP.03.01.03400	3.4	6	62	20	14	HA	△
DDP.03.01.03500	3.5	6	62	20	14	HA	△
DDP.03.01.03600	3.6	6	62	20	14	HA	△
DDP.03.01.03700	3.7	6	62	20	14	HA	△
DDP.03.01.03800	3.8	6	66	24	17	HA	△
DDP.03.01.03900	3.9	6	66	24	17	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

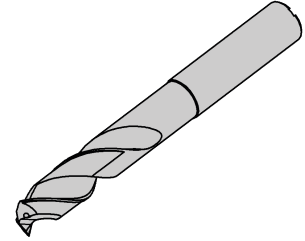
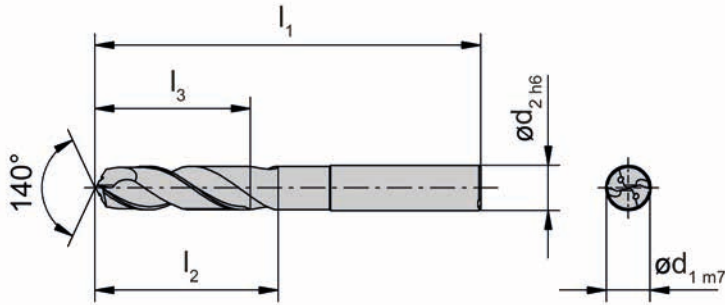
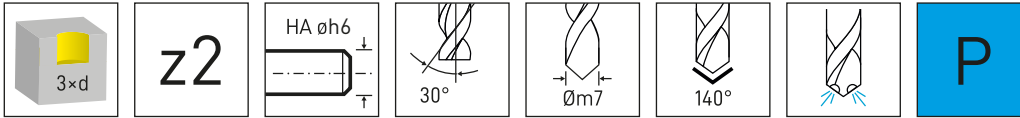
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
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DDP.03.01.04100	4.1	6	66	24	17	HA	△
DDP.03.01.04200	4.2	6	66	24	17	HA	▲
DDP.03.01.04300	4.3	6	66	24	17	HA	▲
DDP.03.01.04400	4.4	6	66	24	17	HA	△
DDP.03.01.04500	4.5	6	66	24	17	HA	▲
DDP.03.01.04600	4.6	6	66	24	17	HA	△
DDP.03.01.04650	4.65	6	66	24	17	HA	△
DDP.03.01.04700	4.7	6	66	24	17	HA	△
DDP.03.01.04800	4.8	6	66	28	20	HA	▲
DDP.03.01.04900	4.9	6	66	28	20	HA	△
DDP.03.01.05000	5	6	66	28	20	HA	▲
DDP.03.01.05100	5.1	6	66	28	20	HA	▲
DDP.03.01.05200	5.2	6	66	28	20	HA	△
DDP.03.01.05300	5.3	6	66	28	20	HA	△
DDP.03.01.05400	5.4	6	66	28	20	HA	△
DDP.03.01.05500	5.5	6	66	28	20	HA	▲
DDP.03.01.05550	5.55	6	66	28	20	HA	△
DDP.03.01.05600	5.6	6	66	28	20	HA	△
DDP.03.01.05700	5.7	6	66	28	20	HA	△
DDP.03.01.05800	5.8	6	66	28	20	HA	▲
DDP.03.01.05900	5.9	6	66	28	20	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

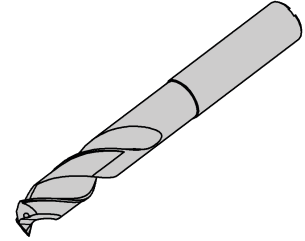
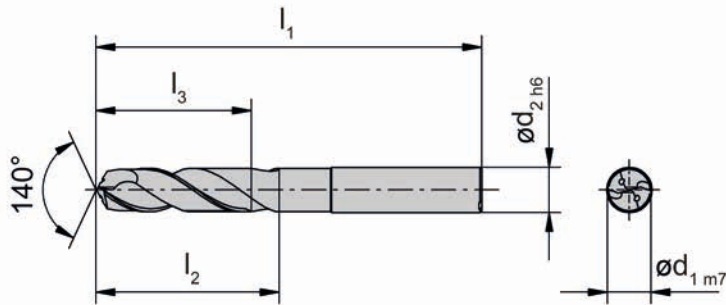
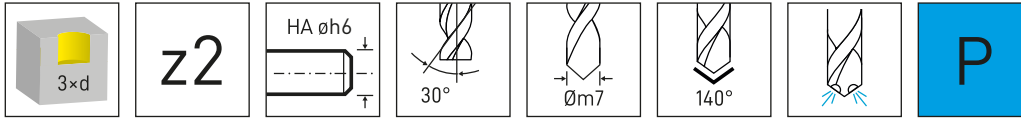
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.03.01.06000	6	6	66	28	20	HA	▲
DDP.03.01.06100	6.1	8	79	34	24	HA	△
DDP.03.01.06200	6.2	8	79	34	24	HA	△
DDP.03.01.06300	6.3	8	79	34	24	HA	△
DDP.03.01.06400	6.4	8	79	34	24	HA	△
DDP.03.01.06500	6.5	8	79	34	24	HA	△
DDP.03.01.06600	6.6	8	79	34	24	HA	△
DDP.03.01.06700	6.7	8	79	34	24	HA	△
DDP.03.01.06800	6.8	8	79	34	24	HA	▲
DDP.03.01.06900	6.9	8	79	34	24	HA	△
DDP.03.01.07000	7	8	79	34	24	HA	▲
DDP.03.01.07100	7.1	8	79	41	29	HA	△
DDP.03.01.07200	7.2	8	79	41	29	HA	△
DDP.03.01.07300	7.3	8	79	41	29	HA	△
DDP.03.01.07400	7.4	8	79	41	29	HA	▲
DDP.03.01.07500	7.5	8	79	41	29	HA	▲
DDP.03.01.07600	7.6	8	79	41	29	HA	△
DDP.03.01.07700	7.7	8	79	41	29	HA	△
DDP.03.01.07800	7.8	8	79	41	29	HA	▲
DDP.03.01.07900	7.9	8	79	41	29	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

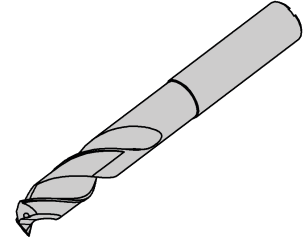
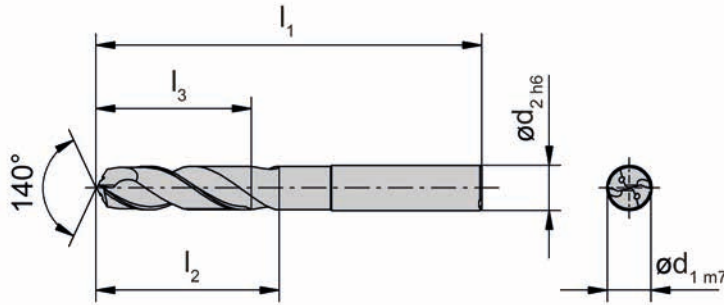
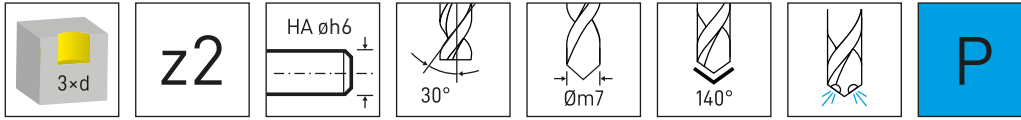
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
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DDP.03.01.08200	8.2	10	89	47	35	HA	▲
DDP.03.01.08300	8.3	10	89	47	35	HA	△
DDP.03.01.08400	8.4	10	89	47	35	HA	△
DDP.03.01.08500	8.5	10	89	47	35	HA	▲
DDP.03.01.08600	8.6	10	89	47	35	HA	△
DDP.03.01.08700	8.7	10	89	47	35	HA	△
DDP.03.01.08800	8.8	10	89	47	35	HA	▲
DDP.03.01.08900	8.9	10	89	47	35	HA	△
DDP.03.01.09000	9	10	89	47	35	HA	▲
DDP.03.01.09100	9.1	10	89	47	35	HA	△
DDP.03.01.09200	9.2	10	89	47	35	HA	△
DDP.03.01.09250	9.25	10	89	47	35	HA	△
DDP.03.01.09300	9.3	10	89	47	35	HA	△
DDP.03.01.09400	9.4	10	89	47	35	HA	△
DDP.03.01.09500	9.5	10	89	47	35	HA	▲
DDP.03.01.09600	9.6	10	89	47	35	HA	△
DDP.03.01.09700	9.7	10	89	47	35	HA	△
DDP.03.01.09800	9.8	10	89	47	35	HA	△
DDP.03.01.09900	9.9	10	89	47	35	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

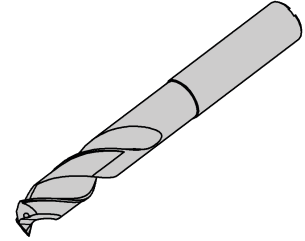
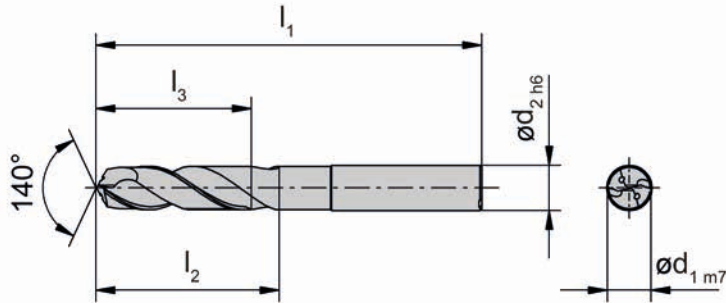
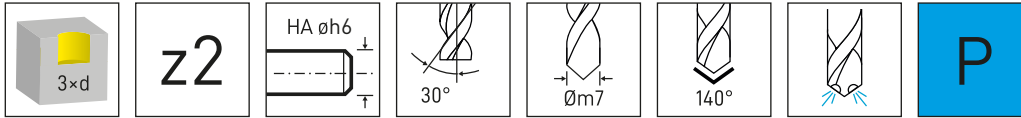
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
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DDP.03.01.11000	11	12	102	55	40	HA	▲
DDP.03.01.11500	11.5	12	102	55	40	HA	▲
DDP.03.01.11800	11.8	12	102	55	40	HA	△
DDP.03.01.12000	12	12	102	55	40	HA	▲
DDP.03.01.12500	12.5	14	107	60	43	HA	▲
DDP.03.01.12800	12.8	14	107	60	43	HA	△
DDP.03.01.13000	13	14	107	60	43	HA	▲
DDP.03.01.13500	13.5	14	107	60	43	HA	▲
DDP.03.01.13800	13.8	14	107	60	43	HA	△
DDP.03.01.14000	14	14	107	60	43	HA	▲
DDP.03.01.14500	14.5	16	115	65	45	HA	△
DDP.03.01.14800	14.8	16	115	65	45	HA	△
DDP.03.01.15000	15	16	115	65	45	HA	▲
DDP.03.01.15500	15.5	16	115	65	45	HA	△
DDP.03.01.15800	15.8	16	115	65	45	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

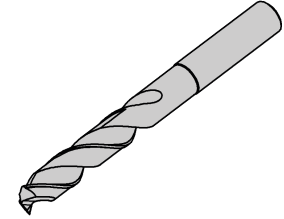
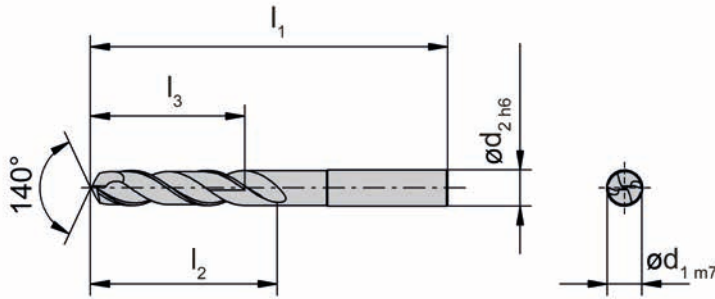
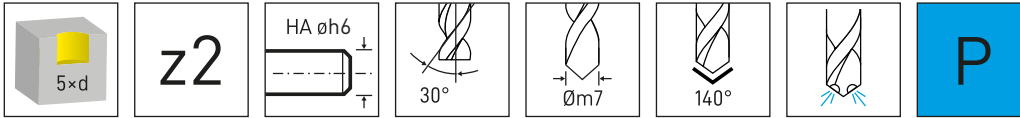
产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.03.01.16000	16	16	115	65	45	HA	▲
DDP.03.01.16500	16.5	18	123	73	51	HA	▲
DDP.03.01.16800	16.8	18	123	73	51	HA	△
DDP.03.01.17000	17	18	123	73	51	HA	△
DDP.03.01.17800	17.8	18	123	73	51	HA	△
DDP.03.01.18000	18	18	123	73	51	HA	▲
DDP.03.01.18500	18.5	20	131	79	55	HA	△
DDP.03.01.18800	18.8	20	131	79	55	HA	△
DDP.03.01.19000	19	20	131	79	55	HA	△
DDP.03.01.19500	19.5	20	131	79	55	HA	△
DDP.03.01.19800	19.8	20	131	79	55	HA	△
DDP.03.01.20000	20	20	131	79	55	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-





硬质合金牌号  
Carbide grades

▲ 库存  
on stock

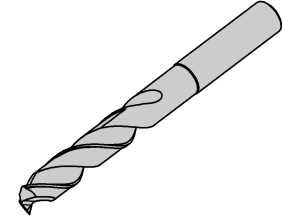
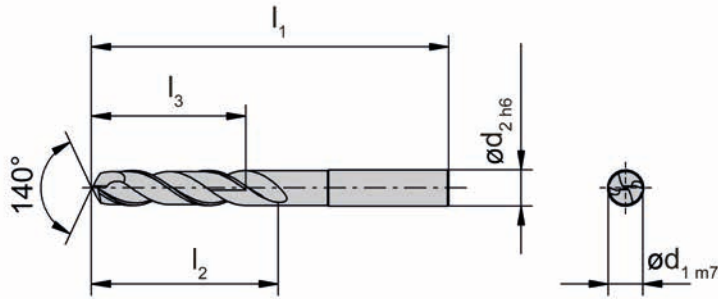
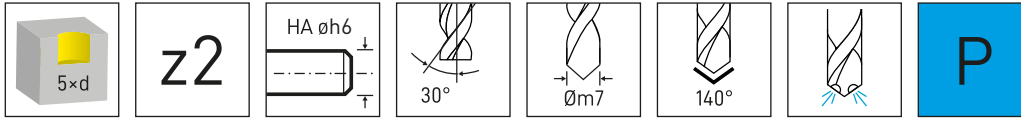
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.01.03000	3	6	66	28	23	HA	▲
DDP.05.01.03100	3.1	6	66	28	23	HA	△
DDP.05.01.03200	3.2	6	66	28	23	HA	△
DDP.05.01.03300	3.3	6	66	28	23	HA	▲
DDP.05.01.03400	3.4	6	66	28	23	HA	△
DDP.05.01.03500	3.5	6	66	28	23	HA	△
DDP.05.01.03600	3.6	6	66	28	23	HA	△
DDP.05.01.03700	3.7	6	66	28	23	HA	△
DDP.05.01.03800	3.8	6	74	36	29	HA	△
DDP.05.01.03900	3.9	6	74	36	29	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

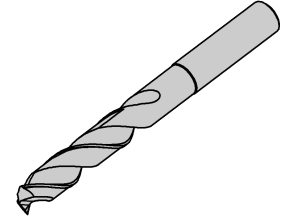
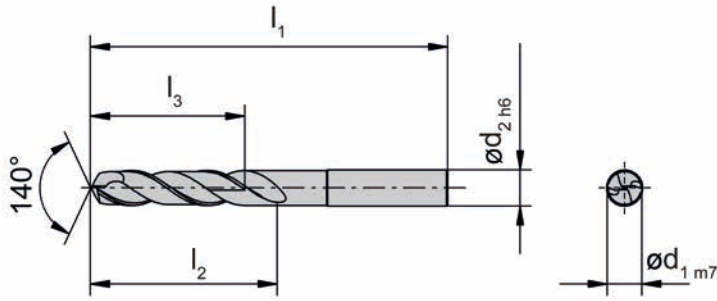
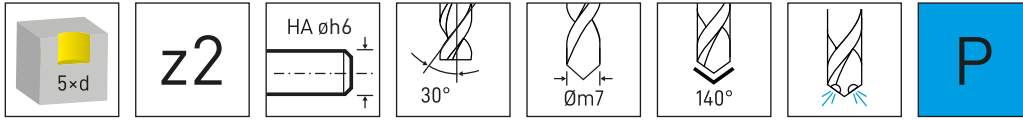
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.01.04000	4	6	74	36	29	HA	▲
DDP.05.01.04100	4.1	6	74	36	29	HA	△
DDP.05.01.04200	4.2	6	74	36	29	HA	▲
DDP.05.01.04300	4.3	6	74	36	29	HA	▲
DDP.05.01.04400	4.4	6	74	36	29	HA	△
DDP.05.01.04500	4.5	6	74	36	29	HA	▲
DDP.05.01.04600	4.6	6	74	36	29	HA	▲
DDP.05.01.04700	4.7	6	74	36	29	HA	▲
DDP.05.01.04800	4.8	6	82	44	35	HA	▲
DDP.05.01.04900	4.9	6	82	44	35	HA	△
DDP.05.01.05000	5	6	82	44	35	HA	▲
DDP.05.01.05100	5.1	6	82	44	35	HA	▲
DDP.05.01.05200	5.2	6	82	44	35	HA	▲
DDP.05.01.05300	5.3	6	82	44	35	HA	△
DDP.05.01.05400	5.4	6	82	44	35	HA	△
DDP.05.01.05500	5.5	6	82	44	35	HA	▲
DDP.05.01.05600	5.6	6	82	44	35	HA	△
DDP.05.01.05700	5.7	6	82	44	35	HA	△
DDP.05.01.05800	5.8	6	82	44	35	HA	▲
DDP.05.01.05900	5.9	6	82	44	35	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

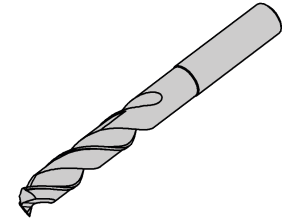
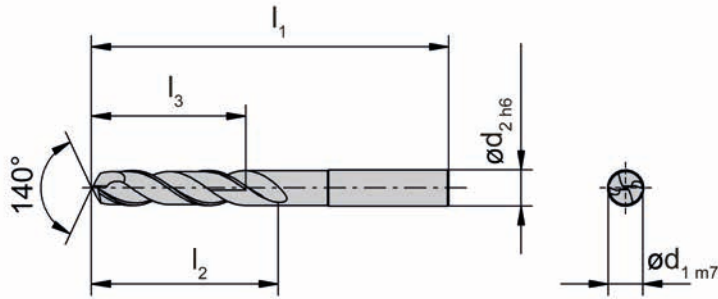
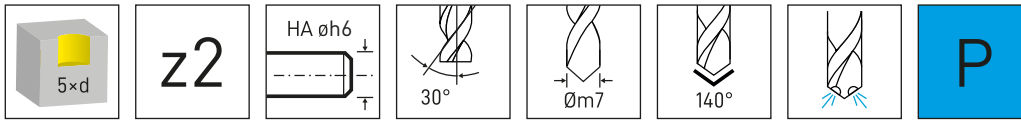
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.01.06000	6	6	82	44	35	HA	▲
DDP.05.01.06100	6.1	8	91	53	43	HA	△
DDP.05.01.06200	6.2	8	91	53	43	HA	▲
DDP.05.01.06300	6.3	8	91	53	43	HA	△
DDP.05.01.06400	6.4	8	91	53	43	HA	△
DDP.05.01.06500	6.5	8	91	53	43	HA	▲
DDP.05.01.06600	6.6	8	91	53	43	HA	▲
DDP.05.01.06700	6.7	8	91	53	43	HA	△
DDP.05.01.06800	6.8	8	91	53	43	HA	▲
DDP.05.01.06850	6.85	8	91	53	43	HA	△
DDP.05.01.06900	6.9	8	91	53	43	HA	▲
DDP.05.01.07000	7	8	91	53	43	HA	▲
DDP.05.01.07100	7.1	8	91	53	43	HA	△
DDP.05.01.07200	7.2	8	91	53	43	HA	△
DDP.05.01.07300	7.3	8	91	53	43	HA	△
DDP.05.01.07400	7.4	8	91	53	43	HA	▲
DDP.05.01.07500	7.5	8	91	53	43	HA	▲
DDP.05.01.07600	7.6	8	91	53	43	HA	△
DDP.05.01.07700	7.7	8	91	53	43	HA	△
DDP.05.01.07800	7.8	8	91	53	43	HA	△
DDP.05.01.07850	7.85	8	91	53	43	HA	△
DDP.05.01.07900	7.9	8	91	53	43	HA	▲

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

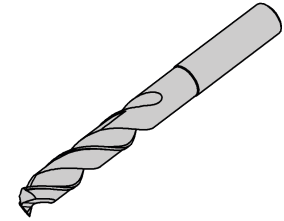
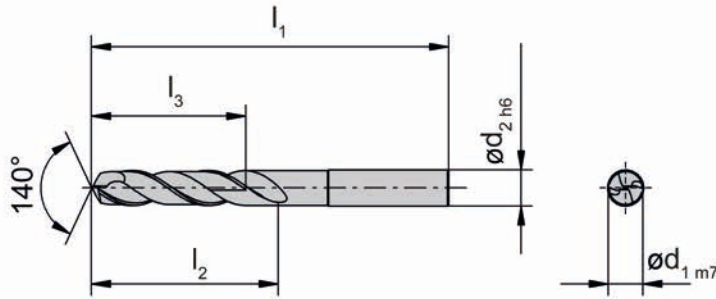
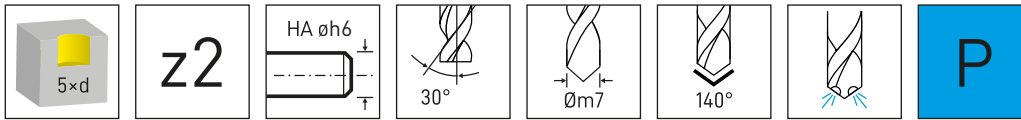
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.01.08000	8	8	91	53	43	HA	▲
DDP.05.01.08100	8.1	10	103	61	49	HA	△
DDP.05.01.08200	8.2	10	103	61	49	HA	▲
DDP.05.01.08300	8.3	10	103	61	49	HA	△
DDP.05.01.08400	8.4	10	103	61	49	HA	△
DDP.05.01.08500	8.5	10	103	61	49	HA	▲
DDP.05.01.08600	8.6	10	103	61	49	HA	△
DDP.05.01.08700	8.7	10	103	61	49	HA	△
DDP.05.01.08800	8.8	10	103	61	49	HA	▲
DDP.05.01.08850	8.85	10	103	61	49	HA	△
DDP.05.01.08900	8.9	10	103	61	49	HA	△
DDP.05.01.09000	9	10	103	61	49	HA	▲
DDP.05.01.09100	9.1	10	103	61	49	HA	△
DDP.05.01.09200	9.2	10	103	61	49	HA	△
DDP.05.01.09300	9.3	10	103	61	49	HA	▲
DDP.05.01.09400	9.4	10	103	61	49	HA	△
DDP.05.01.09500	9.5	10	103	61	49	HA	△
DDP.05.01.09600	9.6	10	103	61	49	HA	△
DDP.05.01.09700	9.7	10	103	61	49	HA	△
DDP.05.01.09800	9.8	10	103	61	49	HA	△
DDP.05.01.09850	9.85	10	103	61	49	HA	△
DDP.05.01.09900	9.9	10	103	61	49	HA	▲

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

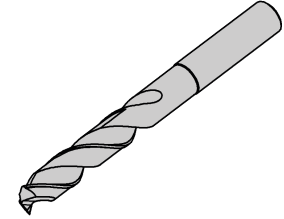
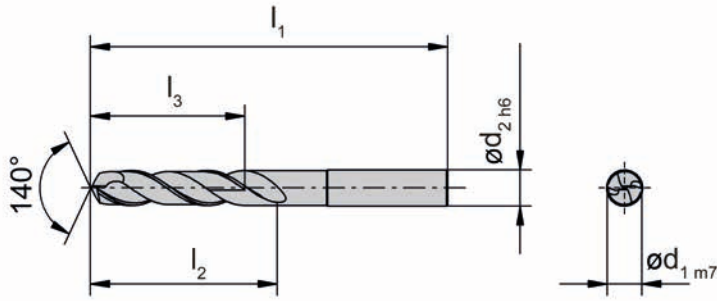
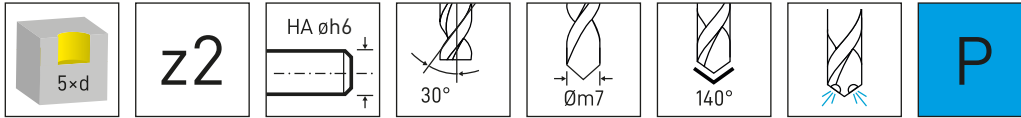
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.01.10000	10	10	103	61	49	HA	▲
DDP.05.01.10200	10.2	12	118	71	56	HA	▲
DDP.05.01.10500	10.5	12	118	71	56	HA	▲
DDP.05.01.10800	10.8	12	118	71	56	HA	△
DDP.05.01.10850	10.85	12	118	71	56	HA	△
DDP.05.01.10900	10.9	12	118	71	56	HA	▲
DDP.05.01.10950	10.95	12	118	71	56	HA	△
DDP.05.01.11000	11	12	118	71	56	HA	▲
DDP.05.01.11200	11.2	12	118	71	56	HA	△
DDP.05.01.11500	11.5	12	118	71	56	HA	▲
DDP.05.01.11800	11.8	12	118	71	56	HA	▲
DDP.05.01.11850	11.85	12	118	71	56	HA	▲
DDP.05.01.11900	11.9	12	118	71	56	HA	△
DDP.05.01.12000	12	12	118	71	56	HA	▲
DDP.05.01.12500	12.5	14	124	77	60	HA	△
DDP.05.01.12800	12.8	14	124	77	60	HA	▲
DDP.05.01.12850	12.85	14	124	77	60	HA	△
DDP.05.01.12900	12.9	14	124	77	60	HA	△
DDP.05.01.13000	13	14	124	77	60	HA	▲
DDP.05.01.13500	13.5	14	124	77	60	HA	△
DDP.05.01.13800	13.8	14	124	77	60	HA	△
DDP.05.01.14000	14	14	124	77	60	HA	▲
DDP.05.01.14500	14.5	16	133	83	63	HA	△
DDP.05.01.14800	14.8	16	133	83	63	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

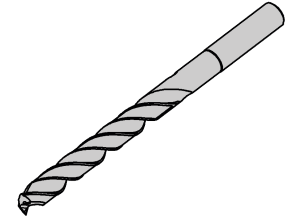
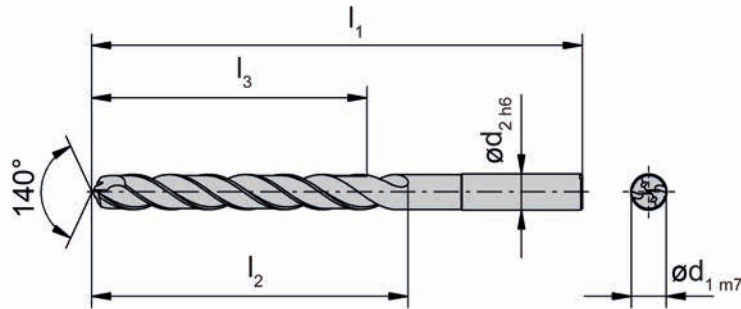
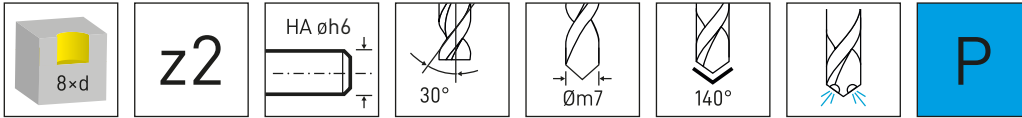
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.01.15000	15	16	133	83	63	HA	▲
DDP.05.01.15500	15.5	16	133	83	63	HA	△
DDP.05.01.15800	15.8	16	133	83	63	HA	△
DDP.05.01.16000	16	16	133	83	63	HA	▲
DDP.05.01.16500	16.5	18	143	93	71	HA	△
DDP.05.01.16800	16.8	18	143	93	71	HA	△
DDP.05.01.17000	17	18	143	93	71	HA	△
DDP.05.01.17500	17.5	18	143	93	71	HA	△
DDP.05.01.17800	17.8	18	143	93	71	HA	△
DDP.05.01.18000	18	18	143	93	71	HA	▲
DDP.05.01.18500	18.5	20	153	101	77	HA	△
DDP.05.01.18800	18.8	20	153	101	77	HA	△
DDP.05.01.19000	19	20	153	101	77	HA	△
DDP.05.01.19500	19.5	20	153	101	77	HA	△
DDP.05.01.19800	19.8	20	153	101	77	HA	△
DDP.05.01.20000	20	20	153	101	77	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

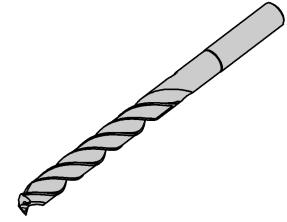
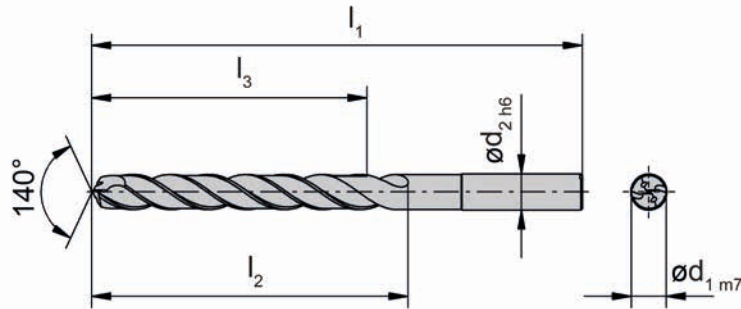
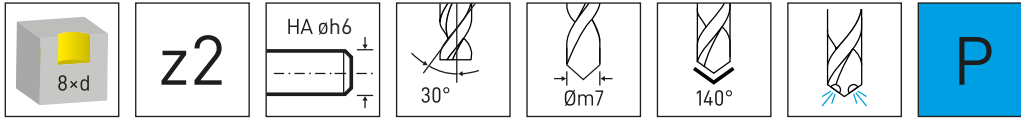
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.08.01.03000	3	6	72	34	29	HA	△
DDP.08.01.03100	3.1	6	72	34	29	HA	△
DDP.08.01.03200	3.2	6	72	34	29	HA	△
DDP.08.01.03300	3.3	6	72	34	29	HA	▲
DDP.08.01.03400	3.4	6	72	34	29	HA	△
DDP.08.01.03500	3.5	6	72	34	29	HA	△
DDP.08.01.03600	3.6	6	72	34	29	HA	△
DDP.08.01.03700	3.7	6	72	34	29	HA	△
DDP.08.01.03800	3.8	6	81	43	36	HA	△
DDP.08.01.03900	3.9	6	81	43	36	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

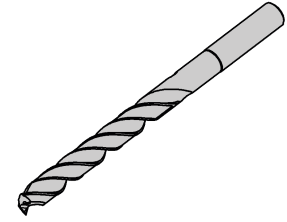
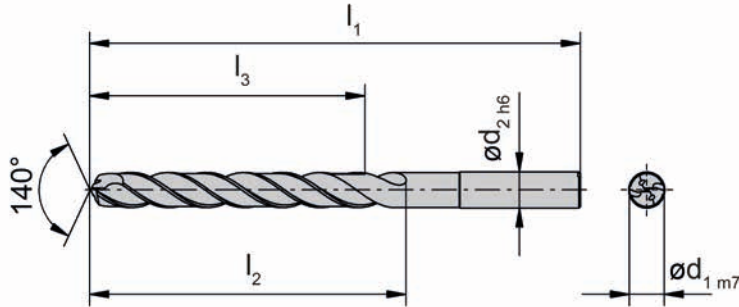
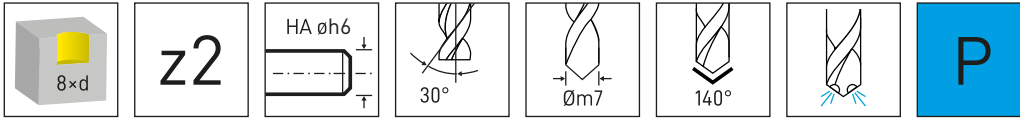
产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.08.01.04000	4	6	81	43	36	HA	▲
DDP.08.01.04100	4.1	6	81	43	36	HA	△
DDP.08.01.04200	4.2	6	81	43	36	HA	▲
DDP.08.01.04300	4.3	6	81	43	36	HA	▲
DDP.08.01.04400	4.4	6	81	43	36	HA	△
DDP.08.01.04500	4.5	6	81	43	36	HA	▲
DDP.08.01.04600	4.6	6	81	43	36	HA	△
DDP.08.01.04700	4.7	6	81	43	36	HA	△
DDP.08.01.04800	4.8	6	95	57	48	HA	▲
DDP.08.01.04900	4.9	6	95	57	48	HA	△
DDP.08.01.05000	5	6	95	57	48	HA	△
DDP.08.01.05100	5.1	6	95	57	48	HA	△
DDP.08.01.05200	5.2	6	95	57	48	HA	△
DDP.08.01.05300	5.3	6	95	57	48	HA	△
DDP.08.01.05400	5.4	6	95	57	48	HA	△
DDP.08.01.05500	5.5	6	95	57	48	HA	▲
DDP.08.01.05600	5.6	6	95	57	48	HA	△
DDP.08.01.05700	5.7	6	95	57	48	HA	△
DDP.08.01.05800	5.8	6	95	57	48	HA	△
DDP.08.01.05900	5.9	6	95	57	48	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-





硬质合金牌号  
Carbide grades

▲ 库存  
on stock

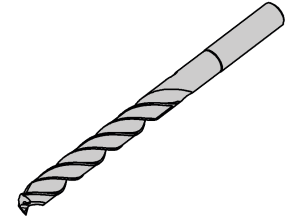
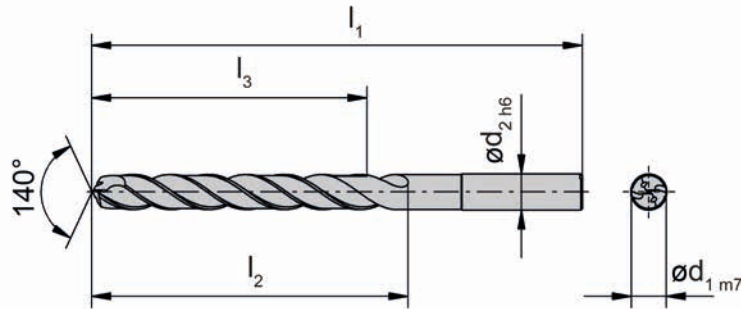
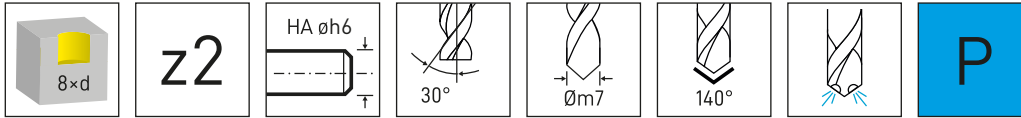
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.08.01.06000	6	6	95	57	48	HA	▲
DDP.08.01.06100	6.1	8	114	76	64	HA	△
DDP.08.01.06200	6.2	8	114	76	64	HA	△
DDP.08.01.06300	6.3	8	114	76	64	HA	△
DDP.08.01.06400	6.4	8	114	76	64	HA	△
DDP.08.01.06500	6.5	8	114	76	64	HA	△
DDP.08.01.06600	6.6	8	114	76	64	HA	△
DDP.08.01.06700	6.7	8	114	76	64	HA	△
DDP.08.01.06800	6.8	8	114	76	64	HA	▲
DDP.08.01.06900	6.9	8	114	76	64	HA	△
DDP.08.01.07000	7	8	114	76	64	HA	▲
DDP.08.01.07100	7.1	8	114	76	64	HA	△
DDP.08.01.07200	7.2	8	114	76	64	HA	△
DDP.08.01.07300	7.3	8	114	76	64	HA	△
DDP.08.01.07400	7.4	8	114	76	64	HA	△
DDP.08.01.07500	7.5	8	114	76	64	HA	▲
DDP.08.01.07600	7.6	8	114	76	64	HA	△
DDP.08.01.07700	7.7	8	114	76	64	HA	△
DDP.08.01.07800	7.8	8	114	76	64	HA	△
DDP.08.01.07900	7.9	8	114	76	64	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

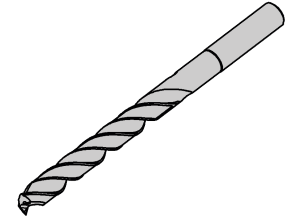
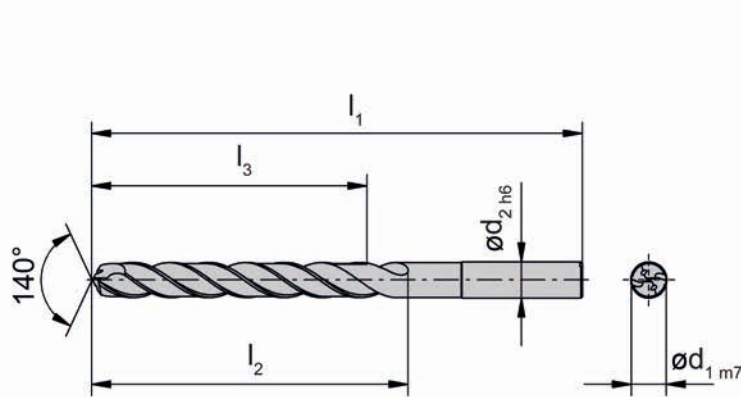
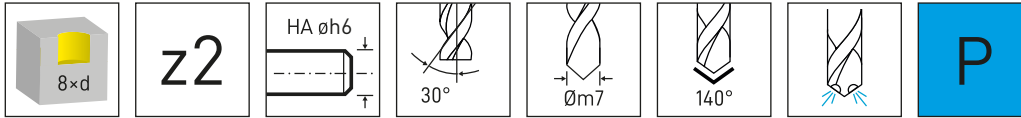
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.08.01.08000	8	8	114	76	64	HA	▲
DDP.08.01.08100	8.1	10	142	95	80	HA	△
DDP.08.01.08200	8.2	10	142	95	80	HA	▲
DDP.08.01.08300	8.3	10	142	95	80	HA	△
DDP.08.01.08400	8.4	10	142	95	80	HA	△
DDP.08.01.08500	8.5	10	142	95	80	HA	▲
DDP.08.01.08600	8.6	10	142	95	80	HA	△
DDP.08.01.08700	8.7	10	142	95	80	HA	△
DDP.08.01.08800	8.8	10	142	95	80	HA	▲
DDP.08.01.08900	8.9	10	142	95	80	HA	△
DDP.08.01.09000	9	10	142	95	80	HA	▲
DDP.08.01.09100	9.1	10	142	95	80	HA	△
DDP.08.01.09200	9.2	10	142	95	80	HA	△
DDP.08.01.09300	9.3	10	142	95	80	HA	△
DDP.08.01.09400	9.4	10	142	95	80	HA	△
DDP.08.01.09500	9.5	10	142	95	80	HA	▲
DDP.08.01.09600	9.6	10	142	95	80	HA	△
DDP.08.01.09700	9.7	10	142	95	80	HA	△
DDP.08.01.09800	9.8	10	142	95	80	HA	△
DDP.08.01.09900	9.9	10	142	95	80	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

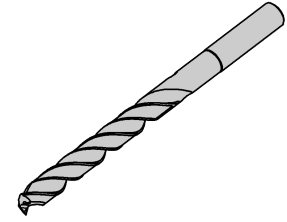
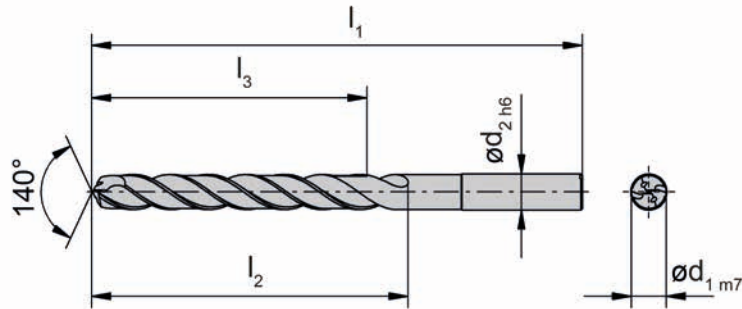
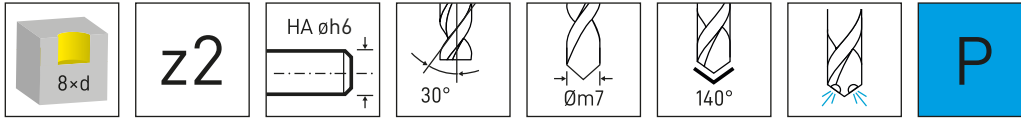
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.08.01.10000	10	10	142	95	80	HA	▲
DDP.08.01.10200	10.2	12	162	114	96	HA	▲
DDP.08.01.10500	10.5	12	162	114	96	HA	▲
DDP.08.01.10800	10.8	12	162	114	96	HA	△
DDP.08.01.11000	11	12	162	114	96	HA	▲
DDP.08.01.11500	11.5	12	162	114	96	HA	△
DDP.08.01.11800	11.8	12	162	114	96	HA	△
DDP.08.01.12000	12	12	162	114	96	HA	▲
DDP.08.01.12500	12.5	14	178	133	112	HA	△
DDP.08.01.12800	12.8	14	178	133	112	HA	△
DDP.08.01.13000	13	14	178	133	112	HA	▲
DDP.08.01.13500	13.5	14	178	133	112	HA	△
DDP.08.01.13800	13.8	14	178	133	112	HA	△
DDP.08.01.14000	14	14	178	133	112	HA	▲
DDP.08.01.14500	14.5	16	203	152	128	HA	△
DDP.08.01.14800	14.8	16	203	152	128	HA	△
DDP.08.01.15000	15	16	203	152	128	HA	△
DDP.08.01.15500	15.5	16	203	152	128	HA	△
DDP.08.01.15800	15.8	16	203	152	128	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

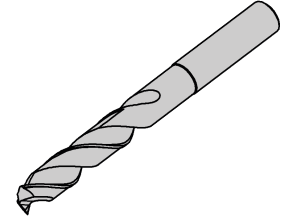
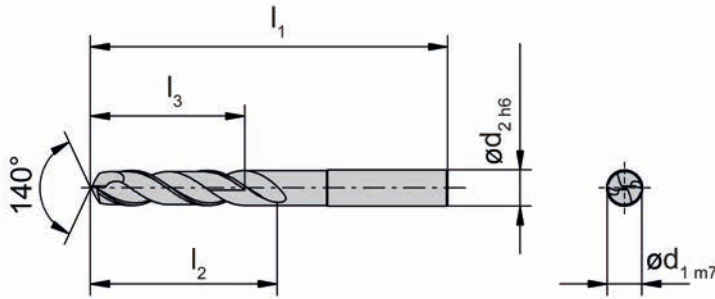
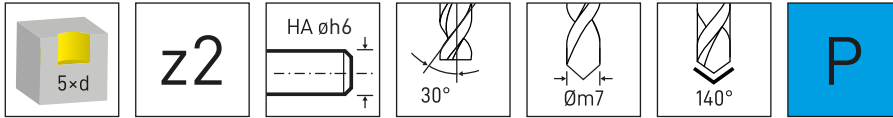
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.08.01.16000	16	16	203	152	128	HA	▲
DDP.08.01.16500	16.5	18	222	171	144	HA	△
DDP.08.01.16800	16.8	18	222	171	144	HA	△
DDP.08.01.17000	17	18	222	171	144	HA	△
DDP.08.01.17500	17.5	18	222	171	144	HA	△
DDP.08.01.17800	17.8	18	222	171	144	HA	△
DDP.08.01.18000	18	18	222	171	144	HA	△
DDP.08.01.18500	18.5	20	243	190	160	HA	△
DDP.08.01.18800	18.8	20	243	190	160	HA	△
DDP.08.01.19000	19	20	243	190	160	HA	△
DDP.08.01.19500	19.5	20	243	190	160	HA	△
DDP.08.01.19800	19.8	20	243	190	160	HA	△
DDP.08.01.20000	20	20	243	190	160	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

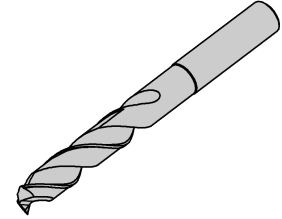
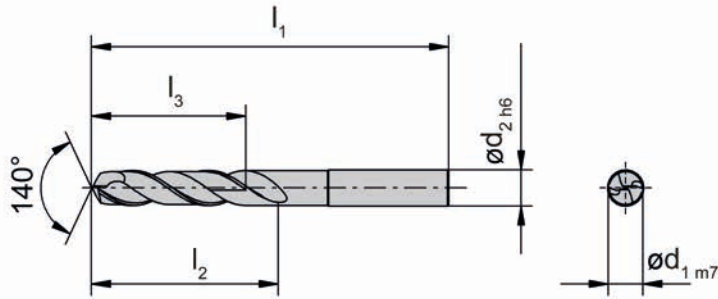
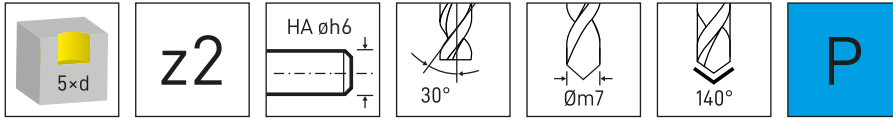
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.00.03000	3	6	66	28	23	HA	▲
DDP.05.00.03100	3.1	6	66	28	23	HA	△
DDP.05.00.03200	3.2	6	66	28	23	HA	△
DDP.05.00.03300	3.3	6	66	28	23	HA	▲
DDP.05.00.03400	3.4	6	66	28	23	HA	△
DDP.05.00.03500	3.5	6	66	28	23	HA	△
DDP.05.00.03600	3.6	6	66	28	23	HA	△
DDP.05.00.03700	3.7	6	66	28	23	HA	△
DDP.05.00.03800	3.8	6	74	36	29	HA	△
DDP.05.00.03900	3.9	6	74	36	29	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

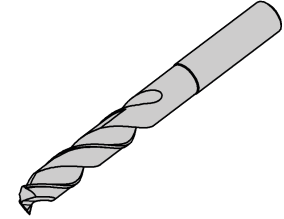
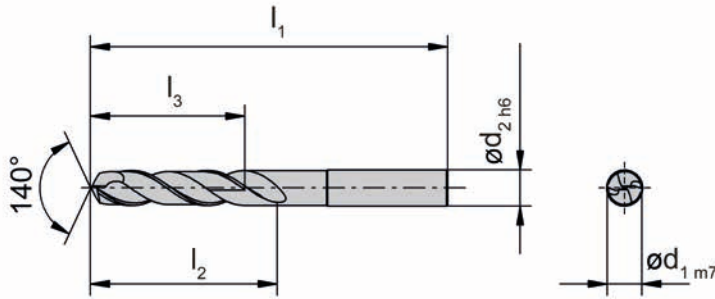
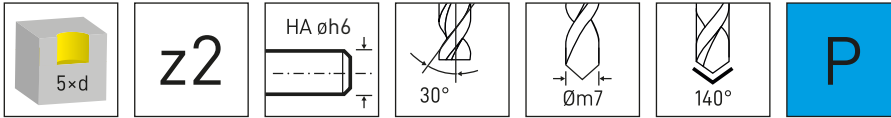
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.00.04000	4	6	74	36	29	HA	▲
DDP.05.00.04100	4.1	6	74	36	29	HA	△
DDP.05.00.04200	4.2	6	74	36	29	HA	▲
DDP.05.00.04300	4.3	6	74	36	29	HA	△
DDP.05.00.04400	4.4	6	74	36	29	HA	△
DDP.05.00.04500	4.5	6	74	36	29	HA	△
DDP.05.00.04600	4.6	6	74	36	29	HA	△
DDP.05.00.04700	4.7	6	74	36	29	HA	△
DDP.05.00.04800	4.8	6	82	44	35	HA	△
DDP.05.00.04900	4.9	6	82	44	35	HA	△
DDP.05.00.05000	5	6	82	44	35	HA	▲
DDP.05.00.05100	5.1	6	82	44	35	HA	▲
DDP.05.00.05200	5.2	6	82	44	35	HA	△
DDP.05.00.05300	5.3	6	82	44	35	HA	△
DDP.05.00.05400	5.4	6	82	44	35	HA	△
DDP.05.00.05500	5.5	6	82	44	35	HA	△
DDP.05.00.05600	5.6	6	82	44	35	HA	△
DDP.05.00.05700	5.7	6	82	44	35	HA	△
DDP.05.00.05800	5.8	6	82	44	35	HA	△
DDP.05.00.05900	5.9	6	82	44	35	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

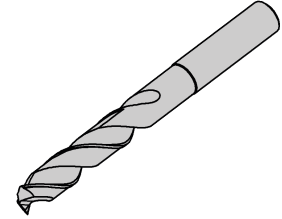
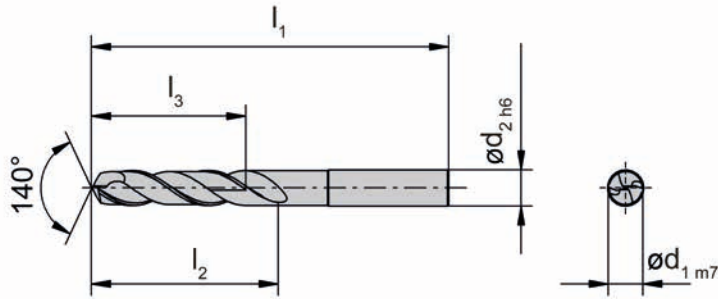
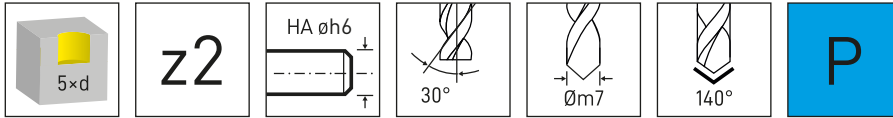
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.00.06000	6	6	82	44	35	HA	▲
DDP.05.00.06100	6.1	8	91	53	43	HA	△
DDP.05.00.06200	6.2	8	91	53	43	HA	△
DDP.05.00.06300	6.3	8	91	53	43	HA	△
DDP.05.00.06400	6.4	8	91	53	43	HA	△
DDP.05.00.06500	6.5	8	91	53	43	HA	△
DDP.05.00.06600	6.6	8	91	53	43	HA	△
DDP.05.00.06700	6.7	8	91	53	43	HA	△
DDP.05.00.06800	6.8	8	91	53	43	HA	▲
DDP.05.00.06900	6.9	8	91	53	43	HA	△
DDP.05.00.07000	7	8	91	53	43	HA	▲
DDP.05.00.07100	7.1	8	91	53	43	HA	△
DDP.05.00.07200	7.2	8	91	53	43	HA	△
DDP.05.00.07300	7.3	8	91	53	43	HA	△
DDP.05.00.07400	7.4	8	91	53	43	HA	△
DDP.05.00.07500	7.5	8	91	53	43	HA	△
DDP.05.00.07600	7.6	8	91	53	43	HA	△
DDP.05.00.07700	7.7	8	91	53	43	HA	△
DDP.05.00.07800	7.8	8	91	53	43	HA	△
DDP.05.00.07900	7.9	8	91	53	43	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

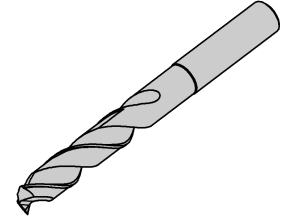
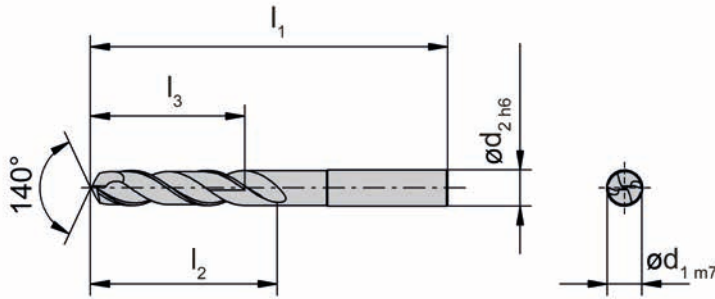
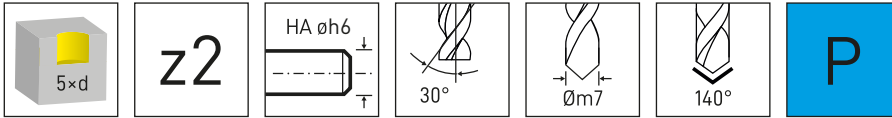
产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.00.08000	8	8	91	53	43	HA	▲
DDP.05.00.08100	8.1	10	103	61	49	HA	△
DDP.05.00.08200	8.2	10	103	61	49	HA	△
DDP.05.00.08300	8.3	10	103	61	49	HA	△
DDP.05.00.08400	8.4	10	103	61	49	HA	△
DDP.05.00.08500	8.5	10	103	61	49	HA	▲
DDP.05.00.08600	8.6	10	103	61	49	HA	△
DDP.05.00.08700	8.7	10	103	61	49	HA	△
DDP.05.00.08800	8.8	10	103	61	49	HA	△
DDP.05.00.08900	8.9	10	103	61	49	HA	△
DDP.05.00.09000	9	10	103	61	49	HA	△
DDP.05.00.09100	9.1	10	103	61	49	HA	△
DDP.05.00.09200	9.2	10	103	61	49	HA	△
DDP.05.00.09300	9.3	10	103	61	49	HA	△
DDP.05.00.09400	9.4	10	103	61	49	HA	△
DDP.05.00.09500	9.5	10	103	61	49	HA	△
DDP.05.00.09600	9.6	10	103	61	49	HA	△
DDP.05.00.09700	9.7	10	103	61	49	HA	△
DDP.05.00.09800	9.8	10	103	61	49	HA	△
DDP.05.00.09900	9.9	10	103	61	49	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-





硬质合金牌号  
Carbide grades

▲ 库存  
on stock

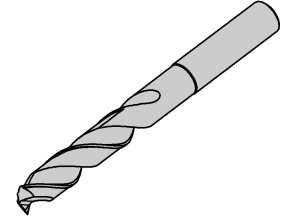
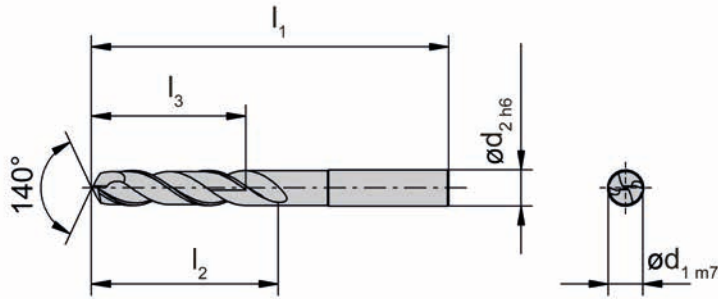
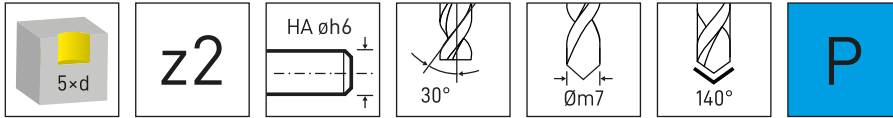
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.00.10000	10	10	103	61	49	HA	▲
DDP.05.00.10200	10.2	12	118	71	56	HA	▲
DDP.05.00.10500	10.5	12	118	71	56	HA	▲
DDP.05.00.10800	10.8	12	118	71	56	HA	△
DDP.05.00.11000	11	12	118	71	56	HA	△
DDP.05.00.11500	11.5	12	118	71	56	HA	△
DDP.05.00.11800	11.8	12	118	71	56	HA	△
DDP.05.00.12000	12	12	118	71	56	HA	△
DDP.05.00.12500	12.5	14	124	77	60	HA	△
DDP.05.00.12800	12.8	14	124	77	60	HA	△
DDP.05.00.13000	13	14	124	77	60	HA	▲
DDP.05.00.13500	13.5	14	124	77	60	HA	△
DDP.05.00.13800	13.8	14	124	77	60	HA	△
DDP.05.00.14000	14	14	124	77	60	HA	△
DDP.05.00.14500	14.5	16	133	83	63	HA	△
DDP.05.00.14800	14.8	16	133	83	63	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

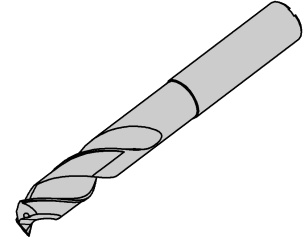
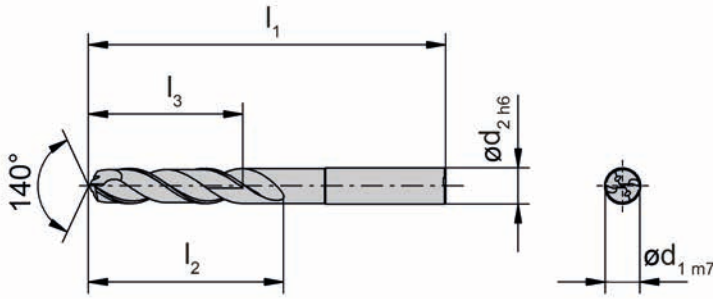
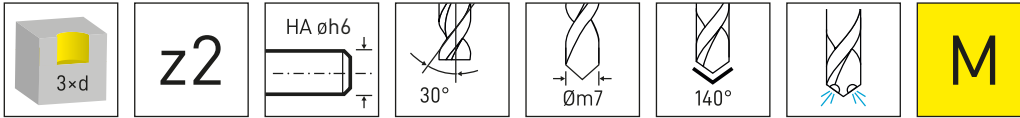
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BP35
DDP.05.00.15000	15	16	133	83	63	HA	△
DDP.05.00.15500	15.5	16	133	83	63	HA	△
DDP.05.00.15800	15.8	16	133	83	63	HA	△
DDP.05.00.16000	16	16	133	83	63	HA	△
DDP.05.00.16500	16.5	18	143	93	71	HA	△
DDP.05.00.16800	16.8	18	143	93	71	HA	△
DDP.05.00.17000	17	18	143	93	71	HA	△
DDP.05.00.17500	17.5	18	143	93	71	HA	△
DDP.05.00.17800	17.8	18	143	93	71	HA	△
DDP.05.00.18000	18	18	143	93	71	HA	△
DDP.05.00.18500	18.5	20	153	101	77	HA	△
DDP.05.00.18800	18.8	20	153	101	77	HA	△
DDP.05.00.19000	19	20	153	101	77	HA	△
DDP.05.00.19500	19.5	20	153	101	77	HA	△
DDP.05.00.19800	19.8	20	153	101	77	HA	△
DDP.05.00.20000	20	20	153	101	77	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	●
M	○
K	●
N	-
S	○
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

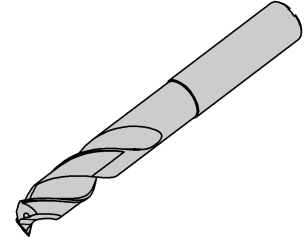
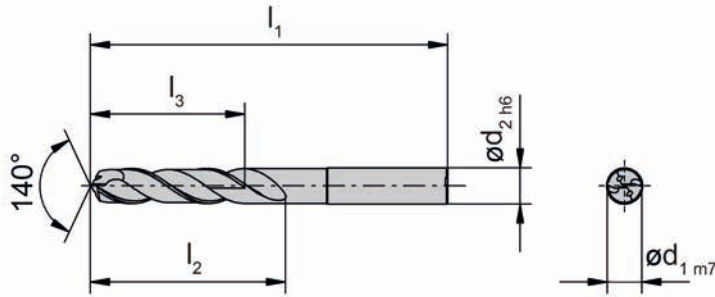
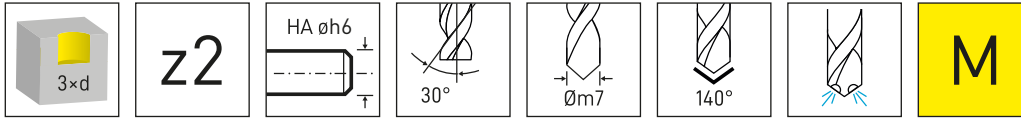
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.03.01.03000	3	6	62	20	14	HA	▲
DDM.03.01.03100	3.1	6	62	20	14	HA	△
DDM.03.01.03200	3.2	6	62	20	14	HA	△
DDM.03.01.03300	3.3	6	62	20	14	HA	▲
DDM.03.01.03400	3.4	6	62	20	14	HA	△
DDM.03.01.03500	3.5	6	62	20	14	HA	△
DDM.03.01.03600	3.6	6	62	20	14	HA	△
DDM.03.01.03700	3.7	6	62	20	14	HA	△
DDM.03.01.03800	3.8	6	66	24	17	HA	△
DDM.03.01.03900	3.9	6	66	24	17	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

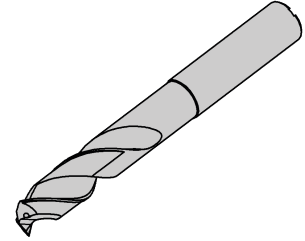
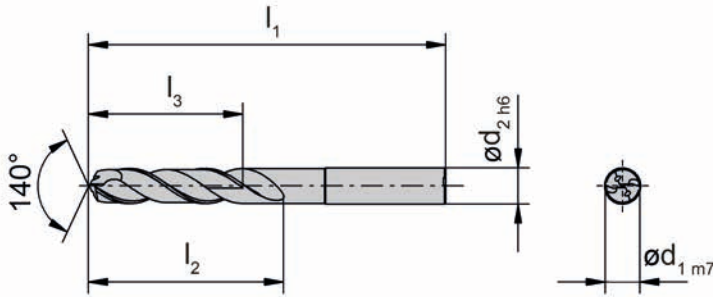
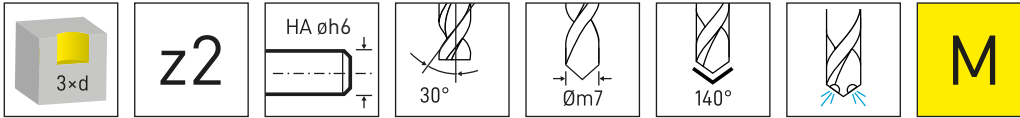
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.03.01.04000	4	6	66	24	17	HA	▲
DDM.03.01.04100	4.1	6	66	24	17	HA	△
DDM.03.01.04200	4.2	6	66	24	17	HA	▲
DDM.03.01.04300	4.3	6	66	24	17	HA	△
DDM.03.01.04400	4.4	6	66	24	17	HA	△
DDM.03.01.04500	4.5	6	66	24	17	HA	▲
DDM.03.01.04600	4.6	6	66	24	17	HA	△
DDM.03.01.04650	4.65	6	66	24	17	HA	△
DDM.03.01.04700	4.7	6	66	24	17	HA	△
DDM.03.01.04800	4.8	6	66	28	20	HA	▲
DDM.03.01.04900	4.9	6	66	28	20	HA	△
DDM.03.01.05000	5	6	66	28	20	HA	▲
DDM.03.01.05100	5.1	6	66	28	20	HA	△
DDM.03.01.05200	5.2	6	66	28	20	HA	△
DDM.03.01.05300	5.3	6	66	28	20	HA	△
DDM.03.01.05400	5.4	6	66	28	20	HA	△
DDM.03.01.05500	5.5	6	66	28	20	HA	▲
DDM.03.01.05550	5.55	6	66	28	20	HA	△
DDM.03.01.05600	5.6	6	66	28	20	HA	△
DDM.03.01.05700	5.7	6	66	28	20	HA	△
DDM.03.01.05800	5.8	6	66	28	20	HA	▲
DDM.03.01.05900	5.9	6	66	28	20	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

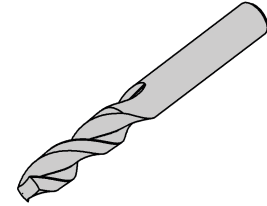
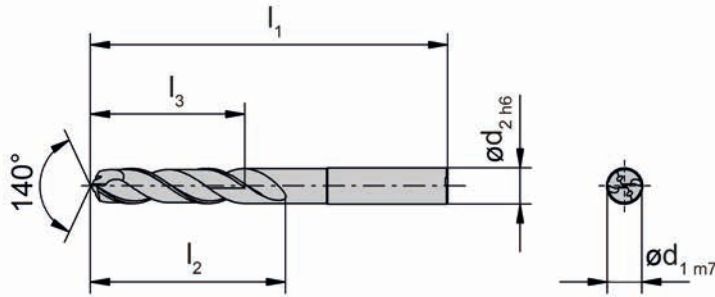
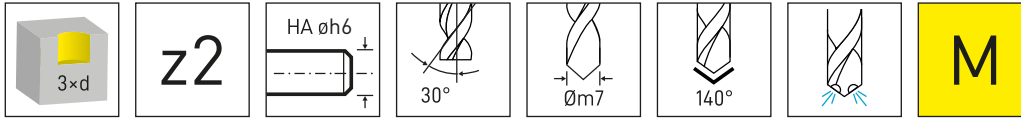
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.03.01.06000	6	6	66	28	20	HA	▲
DDM.03.01.06100	6.1	8	79	34	24	HA	△
DDM.03.01.06200	6.2	8	79	34	24	HA	△
DDM.03.01.06300	6.3	8	79	34	24	HA	△
DDM.03.01.06400	6.4	8	79	34	24	HA	△
DDM.03.01.06500	6.5	8	79	34	24	HA	▲
DDM.03.01.06600	6.6	8	79	34	24	HA	△
DDM.03.01.06700	6.7	8	79	34	24	HA	△
DDM.03.01.06800	6.8	8	79	34	24	HA	▲
DDM.03.01.06900	6.9	8	79	34	24	HA	△
DDM.03.01.07000	7	8	79	34	24	HA	▲
DDM.03.01.07100	7.1	8	79	41	29	HA	△
DDM.03.01.07200	7.2	8	79	41	29	HA	△
DDM.03.01.07300	7.3	8	79	41	29	HA	△
DDM.03.01.07400	7.4	8	79	41	29	HA	△
DDM.03.01.07500	7.5	8	79	41	29	HA	▲
DDM.03.01.07600	7.6	8	79	41	29	HA	△
DDM.03.01.07700	7.7	8	79	41	29	HA	△
DDM.03.01.07800	7.8	8	79	41	29	HA	▲
DDM.03.01.07900	7.9	8	79	41	29	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	o
M	•
K	-
N	•
S	•
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

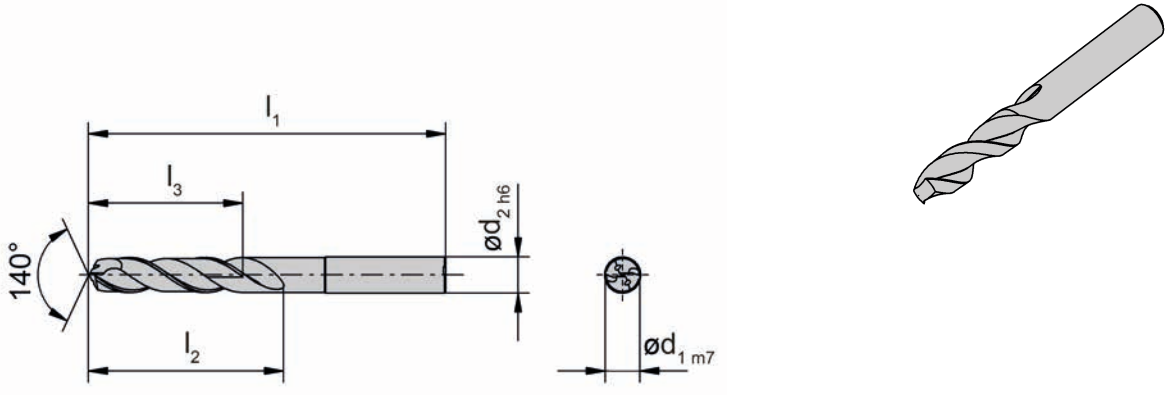
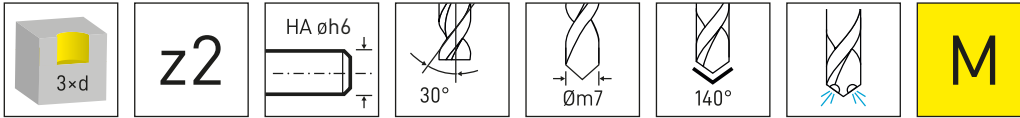
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.03.01.08000	8	8	79	41	29	HA	▲
DDM.03.01.08100	8.1	10	89	47	35	HA	△
DDM.03.01.08200	8.2	10	89	47	35	HA	△
DDM.03.01.08300	8.3	10	89	47	35	HA	△
DDM.03.01.08400	8.4	10	89	47	35	HA	△
DDM.03.01.08500	8.5	10	89	47	35	HA	▲
DDM.03.01.08600	8.6	10	89	47	35	HA	△
DDM.03.01.08700	8.7	10	89	47	35	HA	△
DDM.03.01.08800	8.8	10	89	47	35	HA	△
DDM.03.01.08900	8.9	10	89	47	35	HA	△
DDM.03.01.09000	9	10	89	47	35	HA	▲
DDM.03.01.09100	9.1	10	89	47	35	HA	△
DDM.03.01.09200	9.2	10	89	47	35	HA	△
DDM.03.01.09250	9.25	10	89	47	35	HA	△
DDM.03.01.09300	9.3	10	89	47	35	HA	△
DDM.03.01.09400	9.4	10	89	47	35	HA	△
DDM.03.01.09500	9.5	10	89	47	35	HA	▲
DDM.03.01.09600	9.6	10	89	47	35	HA	△
DDM.03.01.09700	9.7	10	89	47	35	HA	△
DDM.03.01.09800	9.8	10	89	47	35	HA	△
DDM.03.01.09900	9.9	10	89	47	35	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	o
M	●
K	-
N	●
S	●
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

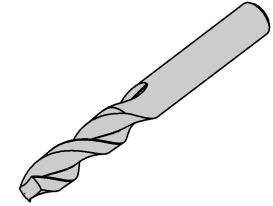
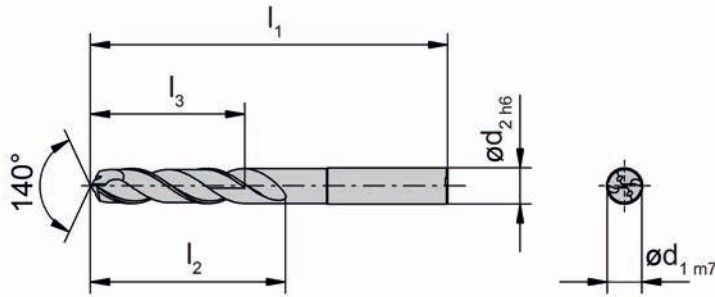
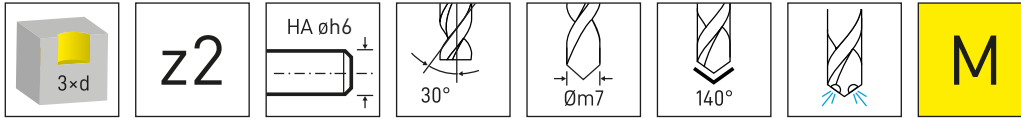
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.03.01.10000	10	10	89	47	35	HA	▲
DDM.03.01.10100	10.1	12	102	55	40	HA	△
DDM.03.01.10200	10.2	12	102	55	40	HA	△
DDM.03.01.10300	10.3	12	102	55	40	HA	△
DDM.03.01.10400	10.4	12	102	55	40	HA	△
DDM.03.01.10500	10.5	12	102	55	40	HA	▲
DDM.03.01.10600	10.6	12	102	55	40	HA	△
DDM.03.01.10700	10.7	12	102	55	40	HA	△
DDM.03.01.10800	10.8	12	102	55	40	HA	△
DDM.03.01.10900	10.9	12	102	55	40	HA	△
DDM.03.01.11000	11	12	102	55	40	HA	▲
DDM.03.01.11100	11.1	12	102	55	40	HA	△
DDM.03.01.11200	11.2	12	102	55	40	HA	▲
DDM.03.01.11300	11.3	12	102	55	40	HA	△
DDM.03.01.11400	11.4	12	102	55	40	HA	△
DDM.03.01.11500	11.5	12	102	55	40	HA	▲
DDM.03.01.11600	11.6	12	102	55	40	HA	△
DDM.03.01.11700	11.7	12	102	55	40	HA	△
DDM.03.01.11800	11.8	12	102	55	40	HA	△
DDM.03.01.11900	11.9	12	102	55	40	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	o
M	•
K	-
N	•
S	•
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

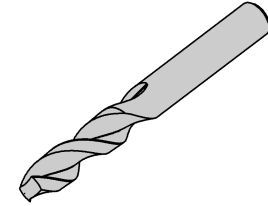
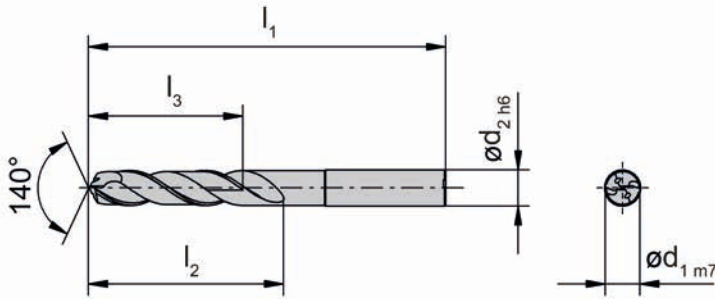
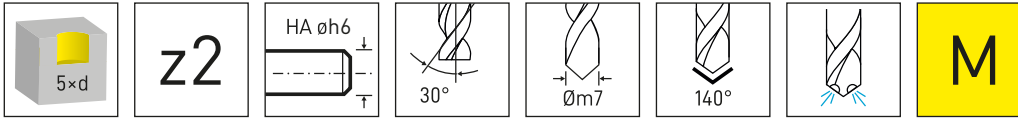
产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.03.01.12000	12	12	102	55	40	HA	▲
DDM.03.01.12500	12.5	14	107	60	43	HA	△
DDM.03.01.12800	12.8	14	107	60	43	HA	△
DDM.03.01.13000	13	14	107	60	43	HA	▲
DDM.03.01.13500	13.5	14	107	60	43	HA	△
DDM.03.01.13800	13.8	14	107	60	43	HA	△
DDM.03.01.14000	14	14	107	60	43	HA	▲
DDM.03.01.14500	14.5	16	115	65	45	HA	△
DDM.03.01.14800	14.8	16	115	65	45	HA	△
DDM.03.01.15000	15	16	115	65	45	HA	△
DDM.03.01.15500	15.5	16	115	65	45	HA	△
DDM.03.01.15800	15.8	16	115	65	45	HA	△
DDM.03.01.16000	16	16	115	65	45	HA	△
DDM.03.01.16500	16.5	18	123	73	51	HA	△
DDM.03.01.16800	16.8	18	123	73	51	HA	△
DDM.03.01.17000	17	18	123	73	51	HA	△
DDM.03.01.17500	17.5	18	123	73	51	HA	△
DDM.03.01.17800	17.8	18	123	73	51	HA	△
DDM.03.01.18000	18	18	123	73	51	HA	△
DDM.03.01.18500	18.5	20	131	79	55	HA	△
DDM.03.01.18800	18.8	20	131	79	55	HA	△
DDM.03.01.19000	19	20	131	79	55	HA	△
DDM.03.01.19500	19.5	20	131	79	55	HA	△
DDM.03.01.19800	19.8	20	131	79	55	HA	△
DDM.03.01.20000	20	20	131	79	55	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-





硬质合金牌号  
Carbide grades

▲ 库存  
on stock

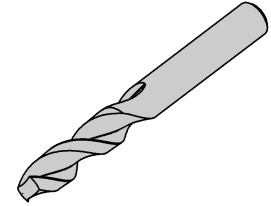
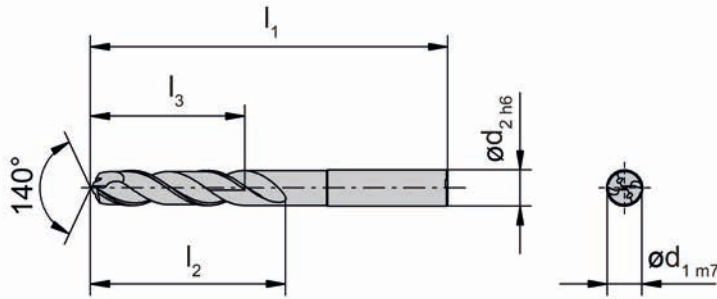
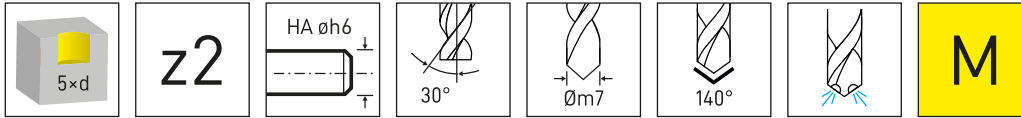
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.05.01.03000	3	6	66	28	23	HA	▲
DDM.05.01.03100	3.1	6	66	28	23	HA	△
DDM.05.01.03200	3.2	6	66	28	23	HA	△
DDM.05.01.03300	3.3	6	66	28	23	HA	▲
DDM.05.01.03400	3.4	6	66	28	23	HA	△
DDM.05.01.03500	3.5	6	66	28	23	HA	△
DDM.05.01.03600	3.6	6	66	28	23	HA	△
DDM.05.01.03700	3.7	6	66	28	23	HA	△
DDM.05.01.03800	3.8	6	74	36	29	HA	△
DDM.05.01.03900	3.9	6	74	36	29	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

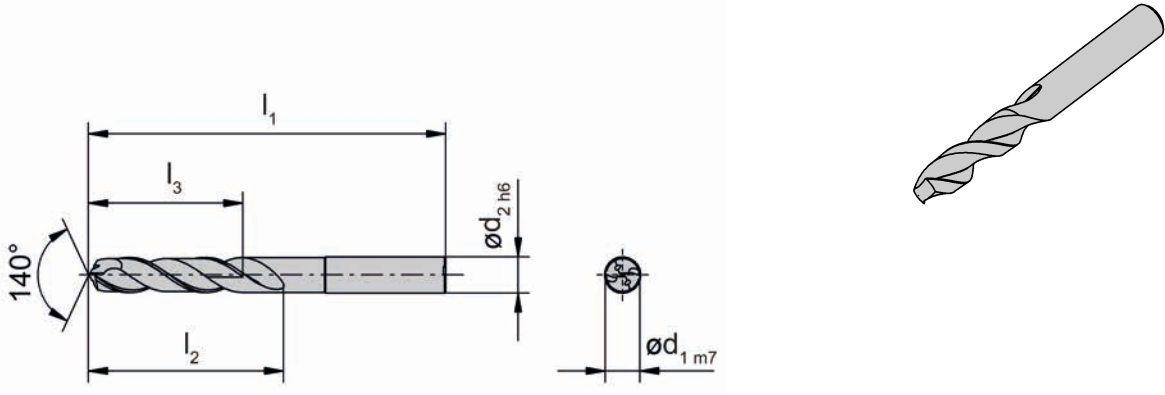
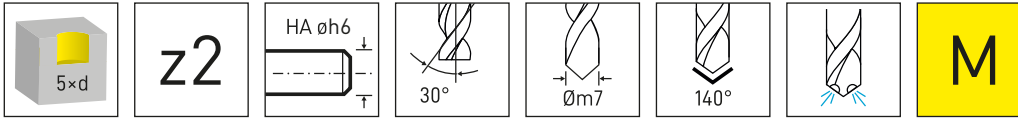
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
DDM.05.01.04000	4	6	74	36	29	HA	▲
DDM.05.01.04100	4.1	6	74	36	29	HA	△
DDM.05.01.04200	4.2	6	74	36	29	HA	▲
DDM.05.01.04300	4.3	6	74	36	29	HA	▲
DDM.05.01.04400	4.4	6	74	36	29	HA	△
DDM.05.01.04500	4.5	6	74	36	29	HA	▲
DDM.05.01.04600	4.6	6	74	36	29	HA	▲
DDM.05.01.04700	4.7	6	74	36	29	HA	▲
DDM.05.01.04800	4.8	6	82	44	35	HA	▲
DDM.05.01.04900	4.9	6	82	44	35	HA	△
DDM.05.01.05000	5	6	82	44	35	HA	▲
DDM.05.01.05100	5.1	6	82	44	35	HA	▲
DDM.05.01.05200	5.2	6	82	44	35	HA	▲
DDM.05.01.05300	5.3	6	82	44	35	HA	△
DDM.05.01.05400	5.4	6	82	44	35	HA	△
DDM.05.01.05500	5.5	6	82	44	35	HA	▲
DDM.05.01.05600	5.6	6	82	44	35	HA	△
DDM.05.01.05700	5.7	6	82	44	35	HA	△
DDM.05.01.05800	5.8	6	82	44	35	HA	▲
DDM.05.01.05900	5.9	6	82	44	35	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	o
M	•
K	-
N	•
S	•
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

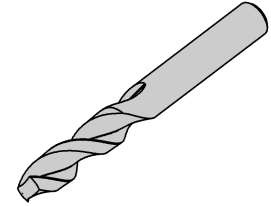
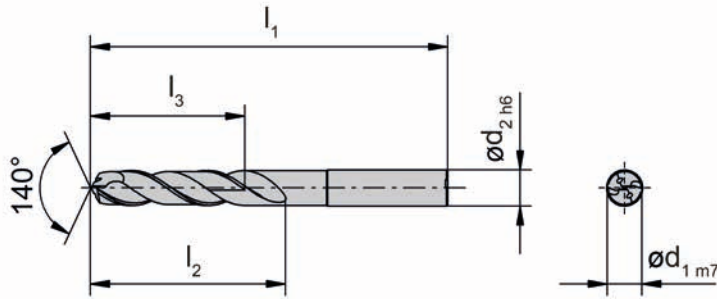
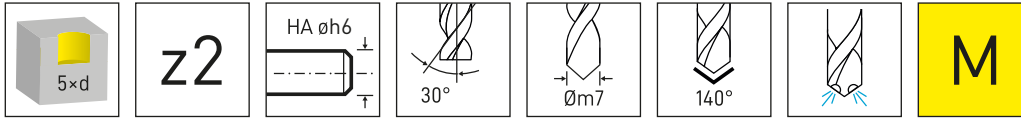
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
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DDM.05.01.06300	6.3	8	91	53	43	HA	△
DDM.05.01.06400	6.4	8	91	53	43	HA	△
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DDM.05.01.06600	6.6	8	91	53	43	HA	▲
DDM.05.01.06700	6.7	8	91	53	43	HA	△
DDM.05.01.06800	6.8	8	91	53	43	HA	▲
DDM.05.01.06900	6.9	8	91	53	43	HA	▲
DDM.05.01.07000	7	8	91	53	43	HA	▲
DDM.05.01.07100	7.1	8	91	53	43	HA	△
DDM.05.01.07200	7.2	8	91	53	43	HA	△
DDM.05.01.07300	7.3	8	91	53	43	HA	△
DDM.05.01.07400	7.4	8	91	53	43	HA	▲
DDM.05.01.07500	7.5	8	91	53	43	HA	▲
DDM.05.01.07600	7.6	8	91	53	43	HA	△
DDM.05.01.07700	7.7	8	91	53	43	HA	△
DDM.05.01.07800	7.8	8	91	53	43	HA	▲
DDM.05.01.07900	7.9	8	91	53	43	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	o
M	•
K	-
N	•
S	•
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

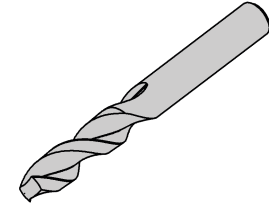
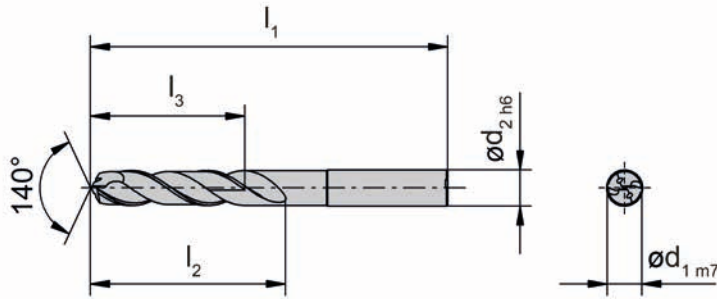
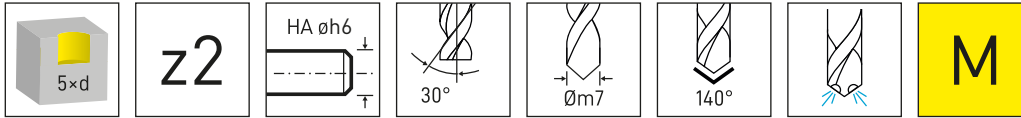
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
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DDM.05.01.08800	8.8	10	103	61	49	HA	▲
DDM.05.01.08900	8.9	10	103	61	49	HA	△
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DDM.05.01.09100	9.1	10	103	61	49	HA	△
DDM.05.01.09200	9.2	10	103	61	49	HA	△
DDM.05.01.09300	9.3	10	103	61	49	HA	▲
DDM.05.01.09400	9.4	10	103	61	49	HA	△
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DDM.05.01.09700	9.7	10	103	61	49	HA	△
DDM.05.01.09800	9.8	10	103	61	49	HA	▲
DDM.05.01.09900	9.9	10	103	61	49	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

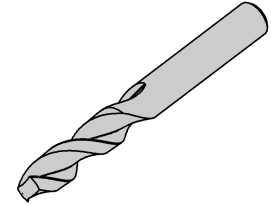
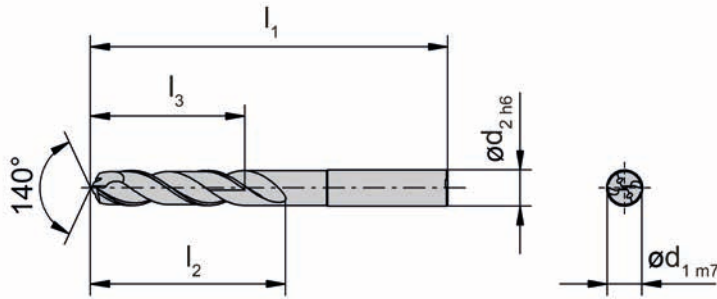
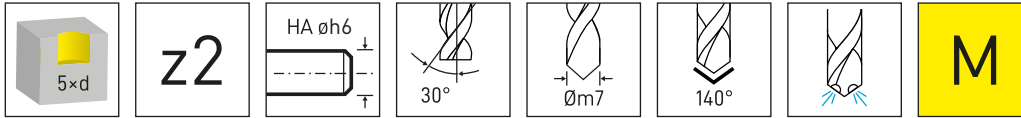
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
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DDM.05.01.10500	10.5	12	118	71	56	HA	▲
DDM.05.01.10600	10.6	12	118	71	56	HA	△
DDM.05.01.10700	10.7	12	118	71	56	HA	△
DDM.05.01.10800	10.8	12	118	71	56	HA	△
DDM.05.01.10900	10.9	12	118	71	56	HA	△
DDM.05.01.11000	11	12	118	71	56	HA	▲
DDM.05.01.11100	11.1	12	118	71	56	HA	△
DDM.05.01.11200	11.2	12	118	71	56	HA	△
DDM.05.01.11300	11.3	12	118	71	56	HA	△
DDM.05.01.11400	11.4	12	118	71	56	HA	△
DDM.05.01.11500	11.5	12	118	71	56	HA	▲
DDM.05.01.11600	11.6	12	118	71	56	HA	△
DDM.05.01.11700	11.7	12	118	71	56	HA	△
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DDM.05.01.12000	12	12	118	71	56	HA	▲
DDM.05.01.12500	12.5	14	124	77	60	HA	▲
DDM.05.01.12800	12.8	14	124	77	60	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

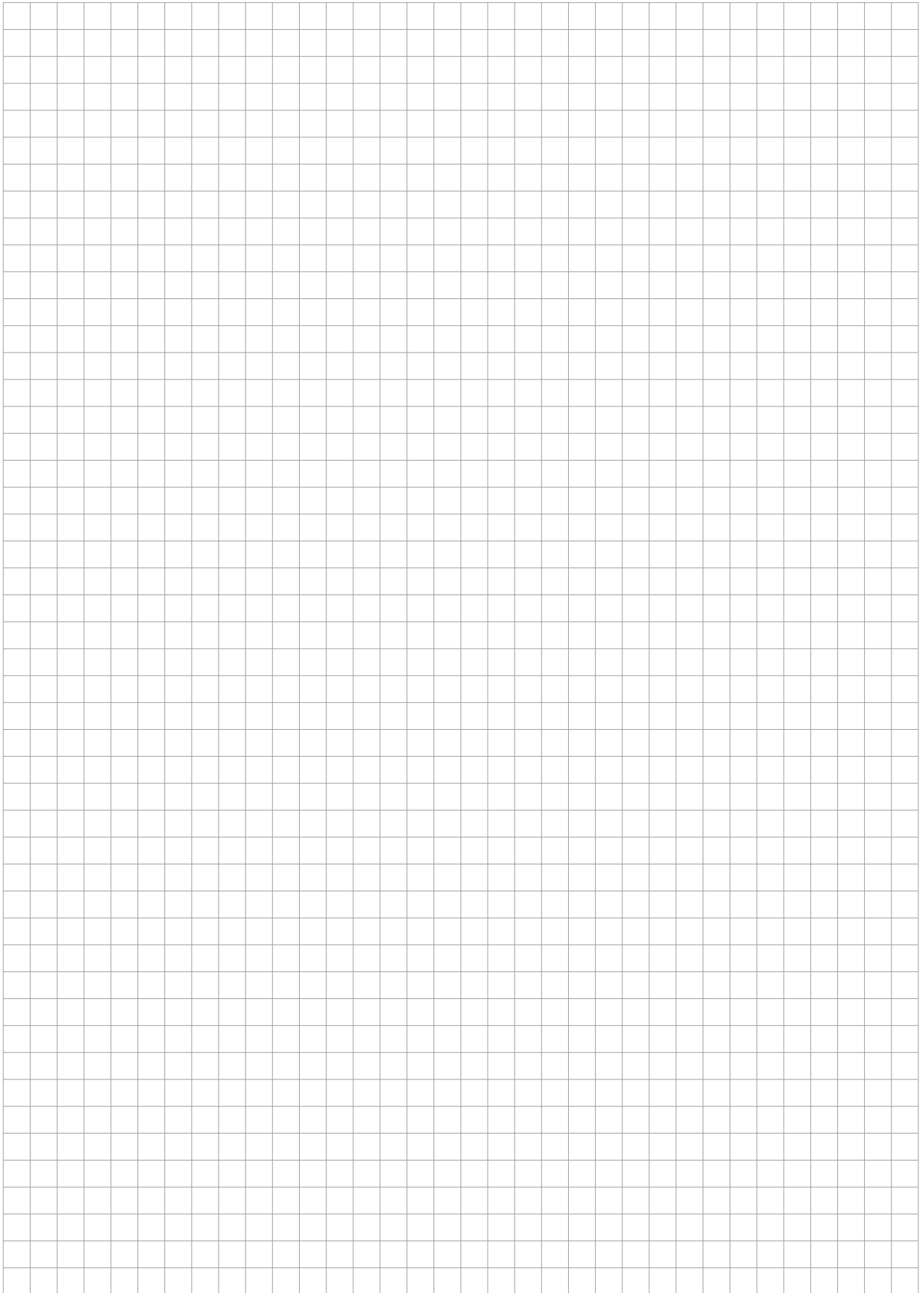
△ 4周  
4 weeks

产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	形式 Form	BM35
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DDM.05.01.13500	13.5	14	124	77	60	HA	▲
DDM.05.01.13800	13.8	14	124	77	60	HA	△
DDM.05.01.14000	14	14	124	77	60	HA	▲
DDM.05.01.14500	14.5	16	133	83	63	HA	△
DDM.05.01.14800	14.8	16	133	83	63	HA	△
DDM.05.01.15000	15	16	133	83	63	HA	△
DDM.05.01.15500	15.5	16	133	83	63	HA	△
DDM.05.01.15800	15.8	16	133	83	63	HA	△
DDM.05.01.16000	16	16	133	83	63	HA	△
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DDM.05.01.16800	16.8	18	143	93	71	HA	△
DDM.05.01.17000	17	18	143	93	71	HA	△
DDM.05.01.17500	17.5	18	143	93	71	HA	△
DDM.05.01.17800	17.8	18	143	93	71	HA	△
DDM.05.01.18000	18	18	143	93	71	HA	△
DDM.05.01.18500	18.5	20	153	101	77	HA	△
DDM.05.01.18800	18.8	20	153	101	77	HA	△
DDM.05.01.19000	19	20	153	101	77	HA	△
DDM.05.01.19500	19.5	20	153	101	77	HA	△
DDM.05.01.19800	19.8	20	153	101	77	HA	△
DDM.05.01.20000	20	20	153	101	77	HA	△

DIN6535-HE 的柄部标准

Optionally available in shank form DIN 6535-HE / Whistle Notch

P	○
M	●
K	-
N	●
S	●
H	-



材料 Material		材料组 Material group	硬度 (HB) Hardness Brinell	抗拉强度 R <sub>m</sub> [N/mm <sup>2</sup> ] Tensile Strength	材料示例 Example Material	
P	碳钢 Carbon steel	~ 0,2 % C	P1.1	125	430	CK15
		~ 0,4% C 退火 annealed	P1.2	190	610	19Mn6
		~ 0,4% C 调质 quenched	P1.3	210	640	36Mn5
		~ 0,6% C 退火 annealed	P1.4	190	610	C55
		~ 0,6% C 调质 quenched	P1.5	300	1000	CK60
		易切钢 Free cutting steel	P1.6	220	750	9SMn28
	合金钢 (<5%) Alloyed steel	退火 annealed	P2.1	180	590	100Cr6
		调质 quenched	P2.2	280	960	14NiCr10
		调质 quenched	P2.3	350	1250	34CrMo4
		调质 quenched	P2.4	430	1450	55Cr3
	高合金钢 (>5%) high alloyed steel	退火 annealed	P3.1	200	680	X10CrAl18
		硬化 hardened	P3.2	350	1200	X210Cr2
	铸钢 Cast steel	非合金 unalloyed	P4.1	180	590	GE200
		合金 alloyed	P4.2	220	750	GX40CrSi28
	粉末冶金钢 Sintered steel	软质 soft	P5.1	220	570	Sint-D39
	M	不锈钢Stainless steel	马氏体,铁素体 martensitic ferritic	M1.1	200	680
奥氏体 austenitic			M1.2	300	1000	X6CrNiMo- Ti17-12-2
奥氏体,铁素体 austenitic ferritic			M1.3	230	780	X2CrNi- Mo-N17-13-3
H	淬硬钢 Hardened steels	50-55 HRC	H1.1	-	-	
		55-60 HRC	H1.2	-	-	
		60-63 HRC	H1.3	-	-	
		> 63HRC	H1.4	-	-	



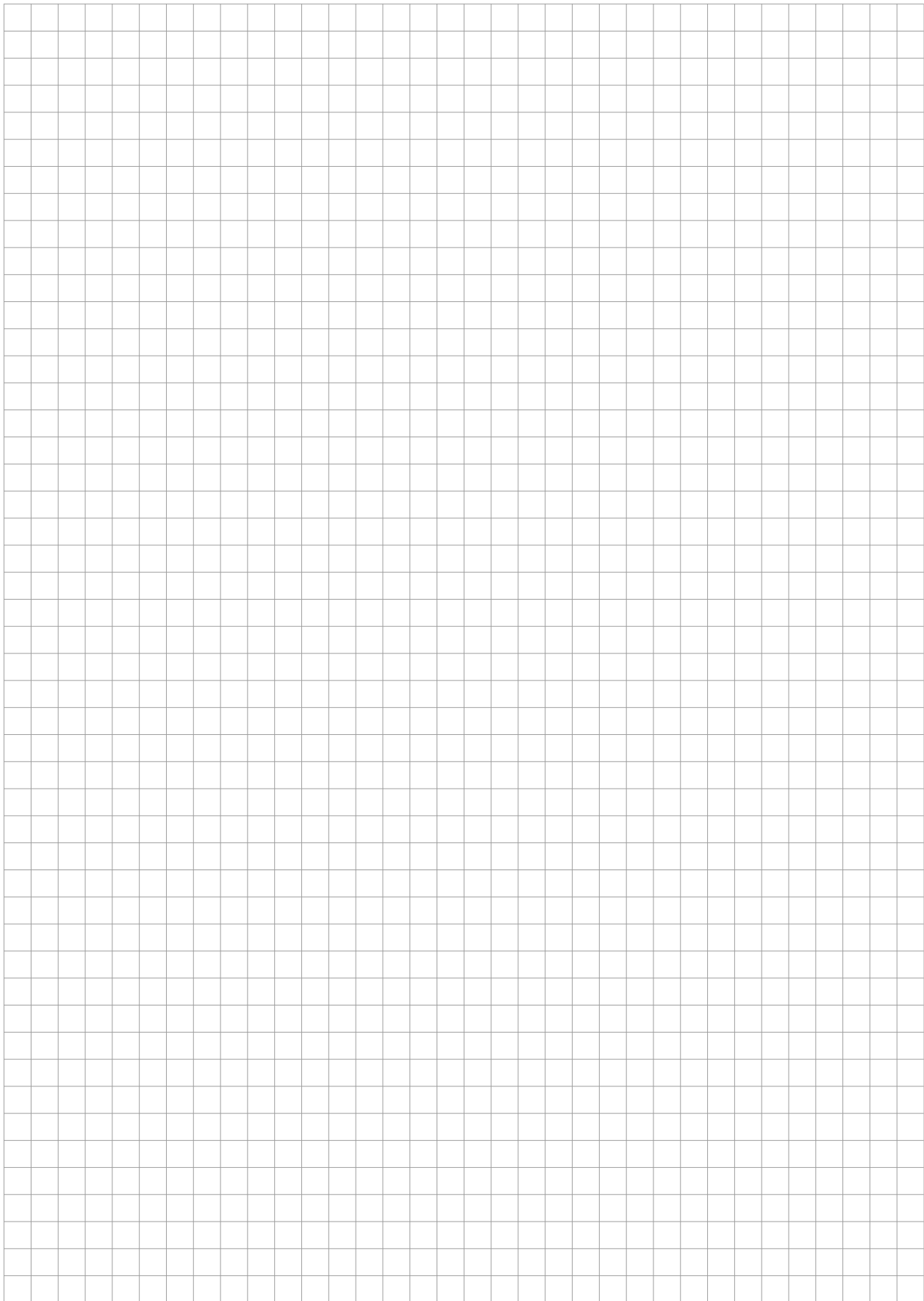
	切削速度 vc (m/min) / 起始值 Cutting speed vc (m/min) / Start values	进给 f (mm/U) Feed rate (m/rev)						
		Ø4	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
	80 - 100	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	90 - 70	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	85 - 60	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	90 - 60	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	80 - 65	0,09	0,14	0,18	0,22	0,26	0,3	0,35
	90 - 70	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	80 - 60	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	70 - 50	0,09	0,14	0,18	0,22	0,26	0,3	0,35
	60 - 40	0,08	0,12	0,16	0,2	0,24	0,28	0,3
	60 - 40	0,08	0,12	0,16	0,2	0,24	0,28	0,3
	80 - 60	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	60 - 40	0,08	0,12	0,16	0,2	0,24	0,28	0,3
	90 - 70	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	90 - 70	0,09	0,14	0,18	0,22	0,26	0,3	0,35
	100 - 80	0,09	0,14	0,18	0,22	0,26	0,3	0,35
	80 - 60	0,08	0,12	0,16	0,2	0,24	0,28	0,3
	40 - 30	0,08	0,1	0,12	0,14	0,16	0,2	0,28
	50 - 40	0,08	0,1	0,12	0,14	0,16	0,2	0,28

材料 Material		材料组 Material group	硬度 (HB) Hardness Brinell	抗拉强度 R <sub>m</sub> [N/mm <sup>2</sup> ] Tensile Strength	材料示例 Example Material	
K	灰铸铁 Grey cast iron	低拉伸强度 low tensile strength	K1.1	180	250	GG-25
		高拉伸强度 high tensile strength	K1.2	250	350	GG-40
	球磨铸铁 Spheroidal graphite cast iron	铁素体 ferritic	K2.1	160	400	GGG-40
		珠光体 perlitic	K2.1	260	700	GGG-60
	可锻铸铁 Malleable cast iron	铁素体 ferritic	K3.1	200	400	GTW-45
		珠光体 perlitic	K3.2	260	700	GTS-55-04
	奥氏体球墨铸 铁 / ADI Ausferritic spheroidal cast iron / ADI	调质 quenched	K4.1	260	800	
		调质 quenched	K4.2	350	1050	
		调质 quenched	K4.3	450	1400	
	N	铝合金 Al-alloys	非热处理 not heat treatable	N1.1	30	
热处理 heat treatable			N1.2	100	340	AlMgSi1
铸铝合金 Al-cast-alloy		< 6% Si	N2.1	80	300	AlMgSi6
		6-10% Si	N2.2	100	320	AlSi7Mg
		10-15 % Si	N2.3	130	450	AlSi12
铜合金 Copper-alloys		纯铜 Pure copper	N3.1	100	340	Cu
		黄铜, 青铜 Brass	N3.2	90	310	CuZn40Pb
		无铅黄铜 Lead-free brass	N3.3	110	430	CuZn40
		高强度 high strength	N3.4	300	1000	CuZ- n25Al5-Mn4Fe3
石墨 Graphite			N4.1			
S	耐热合金(铁基) Heat resistant alloy	退火 annealed	S1.1	200	670	
		硬化 hardened	S1.2	275	930	
	耐热合金 (镍基, 钴基) Heat resistant alloy	退火 annealed	S2.1	250	840	Inconel 600
		硬化 hardened	S2.2	350	1200	Inconel 713

	切削速度 vc (m/min) / 起始值 Cutting speed vc (m/min) / Start values	进给 f (mm/U) Feed rate (m/rev)						
		Ø4	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
	300 - 250	0,12	0,18	0,24	0,3	0,35	0,4	0,5
	300 - 250	0,12	0,18	0,24	0,3	0,35	0,4	0,5
	250 - 220	0,12	0,18	0,24	0,3	0,35	0,4	0,5
	220 - 200	0,12	0,18	0,24	0,3	0,35	0,4	0,5
	220 - 180	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	180 - 160	0,1	0,15	0,2	0,25	0,3	0,36	0,4
	160 - 140	0,12	0,18	0,24	0,3	0,35	0,4	0,5
	100 - 80	0,12	0,18	0,24	0,3	0,35	0,4	0,5
	80 - 60	0,08	0,12	0,16	0,2	0,24	0,28	0,3
	45 - 25	0,04	0,06	0,08	0,1	0,12	0,16	0,2
	40 - 30	0,03	0,05	0,07	0,1	0,12	0,16	0,2
	45 - 25	0,04	0,06	0,08	0,1	0,12	0,16	0,2
	30 - 20	0,03	0,05	0,07	0,1	0,12	0,16	0,2

材料 Material		材料组 Material group	硬度 (HB) Hardness Brinell	抗拉强度 $R_m$ [N/mm <sup>2</sup> ] Tensile Strength	材料示例 Example Material	
S 钛 Titan	钛合金 $\alpha$ Titanium alloy $\alpha$	S3.1	120	240		
	钛合金 $\alpha$ - $\beta$ Titanium alloy $\alpha$ - $\beta$	S3.2	360	1200		
	钛合金 $\beta$ Titanium alloy $\beta$	S3.3	410	1400		
O	热塑性塑料 Thermoplastics	O1.1				
	Duro塑料 Duro plaste	O1.2				
	玻璃纤维增强塑料 Plastics glass fibre reinforced	GFK	O1.3			
	碳纤维增强塑料 Plastics carbon fibre reinforced	CKF	O1.4			

	切削速度 vc (m/min) / 起始值 Cutting speed vc (m/min) / Start values	进给 f (mm/U) Feed rate (m/rev)						
		Ø4	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20
	50 - 20	0,04	0,06	0,08	0,1	0,12	0,16	0,2
	50 - 20	0,04	0,06	0,08	0,1	0,12	0,16	0,2
	50 - 20	0,04	0,06	0,08	0,1	0,12	0,16	0,2



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镗杆  
换刀片式

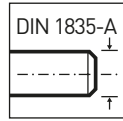
轮廓宽度 26 mm

Boring Shank  
with Insert

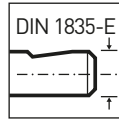
Width of profile 26 mm

B

镗杆  
Boring Shank  
B117

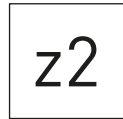


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页/Page  
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刀片  
Insert  
D117

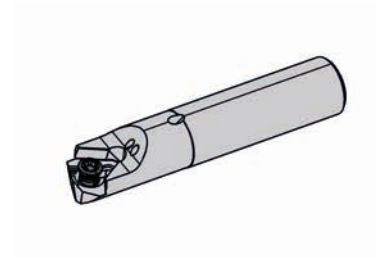
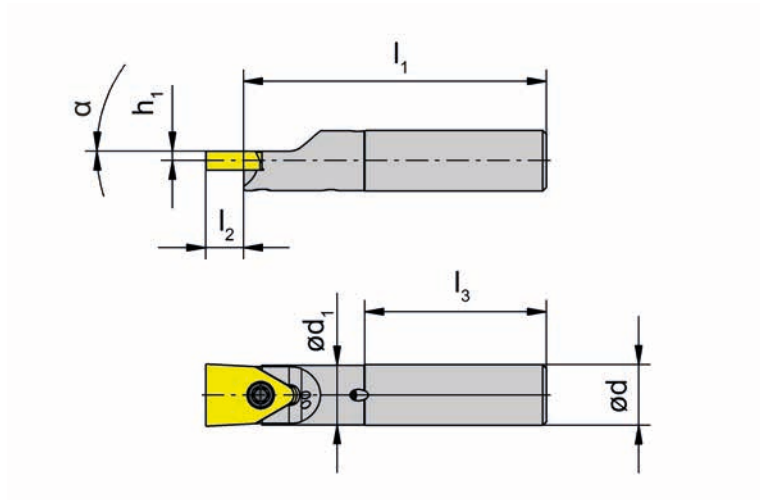
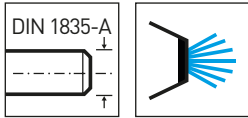


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技术信息  
Technical Instructions

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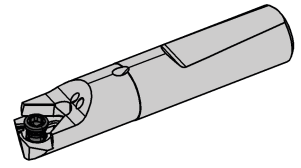
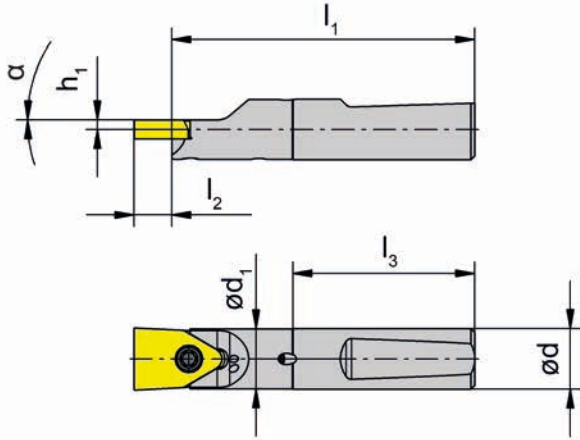
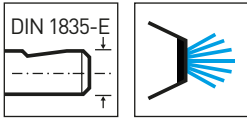


产品型号 Part number	d	l <sub>1</sub>	l <sub>2</sub>	d <sub>1</sub>	α	h <sub>1</sub>	l <sub>3</sub>	刀片 Insert
B117.DD.16.3.A.16	16	80	10	15.8	0°	2.5	48	D117.0016.02.5.00
B117.DD.16.4.A.20	16	87	13	19.8	0°	2.5	47	D117.0020.02.5.00
B117.DD.20.5.A.26	20	95	14	25.8	0°	2.5	49	D117.0026.02.5.00
B117.DD.25.6.A.26	25	100	14	24.8	0°	2.5	56	D117.0026.02.5.00

配件  
Spare Parts

镗杆 Boring Shank	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
B117.DD.16.3.A.16	5.10T20P	T20PQ
B117.DD...	6.17T20P	T20PQ

B



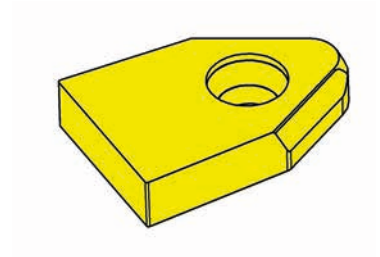
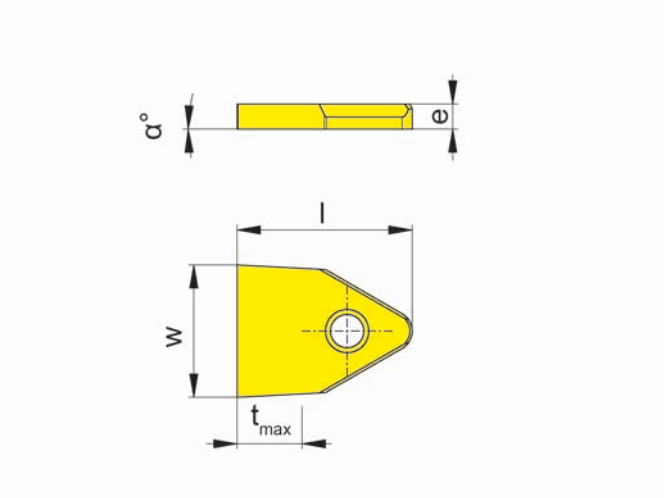
产品型号 Part number	d	l <sub>1</sub>	l <sub>2</sub>	d <sub>1</sub>	α	h <sub>1</sub>	l <sub>3</sub>	刀片 Insert
B117.DD.16.3.E.16	16	80	10	15.8	0°	2.5	48	D117.0016.02.5.00
B117.DD.16.4.E.20	16	87	13	19.8	0°	2.5	47	D117.0020.02.5.00
B117.DD.20.5.E.26	20	95	14	25.8	0°	2.5	49	D117.0026.02.5.00
B117.DD.25.6.E.26	25	100	14	24.8	0°	2.5	56	D117.0026.02.5.00

配件  
Spare Parts

镗杆 Boring Shank	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
B117.DD.16.3.E.16	5.10T20P	T20PQ
B117.DD...	6.17T20P	T20PQ

z2

B



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	w	E	t <sub>max</sub>	l	α	镗杆 Boring Shank	MG12
D117.0016.02.5.00	16	5	5	24	0°	B117.DD...16	▲
D117.0020.02.5.00	20	5	8	32	0°	B117.DD...20	▲
D117.0026.02.5.00	26	5	9	35	0°	B117.DD...26	▲

切削材料是为每种应用特别选择的，可用于材料组P, M, K和N。  
The cutting material is specially selected for each application and is available for the material groups P, M, K and N.

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

**B**

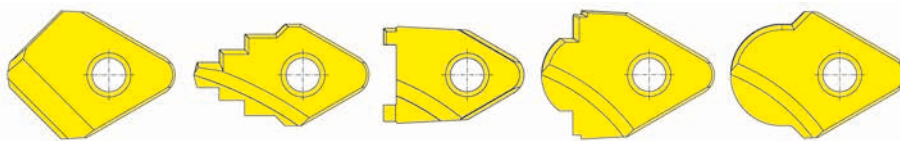
以下扭矩适用于刀片的螺钉,我们建议对螺钉不要额外使用润滑剂(如铜膏)

Following torques are allowed for screws of inserts. We recommend to use no additional gliding means (such as copper paste) for screws.

型号 Type	螺钉 Screw	$M_d$ Nm	夹紧扳手 Wrench	刀板 Blade
B117.DD.16.3.A.16	5.12T20P	6	T20PQ	DT20PK
B117.DD.16.4.A.20	6.17T20P	7	T20PQ	DT20PK
B117.DD.20.5.A.26	6.17T20P	7	T20PQ	DT20PK
B117.DD.25.6.A.26	6.17T20P	7	T20PQ	DT20PK
B117.DD.16.3.E.16	5.12T20P	6	T20PQ	DT20PK
B117.DD.16.4.E.20	6.17T20P	7	T20PQ	DT20PK
B117.DD.20.5.E.26	6.17T20P	7	T20PQ	DT20PK
B117.DD.25.6.E.26	6.17T20P	7	T20PQ	DT20PK

刀片轮廓根据要求

Profiled inserts upon request



105

C



### Supermini HP

大切深多功能刀具

### Supermini HP

Multifunctional tool for high cutting depths



刀片  
Insert  
105



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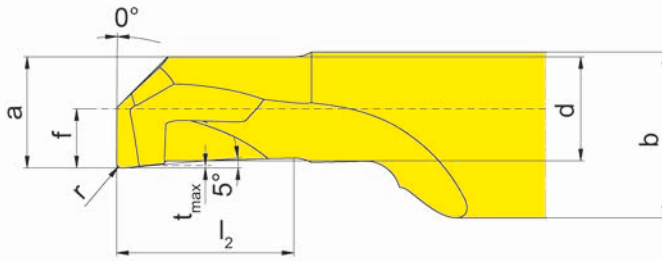
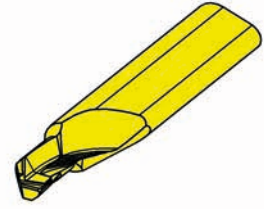
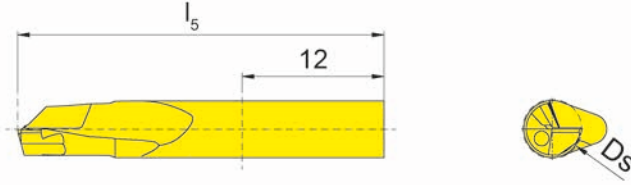
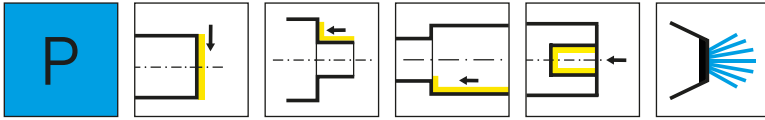
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64

技术信息  
Technical Instructions

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切削参数  
Cutting data

页/Page  
66



R=右手型-如图  
R = right hand version shown

L=左手型  
L = left hand version

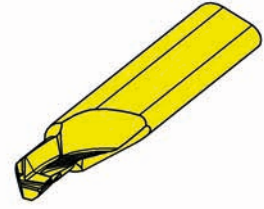
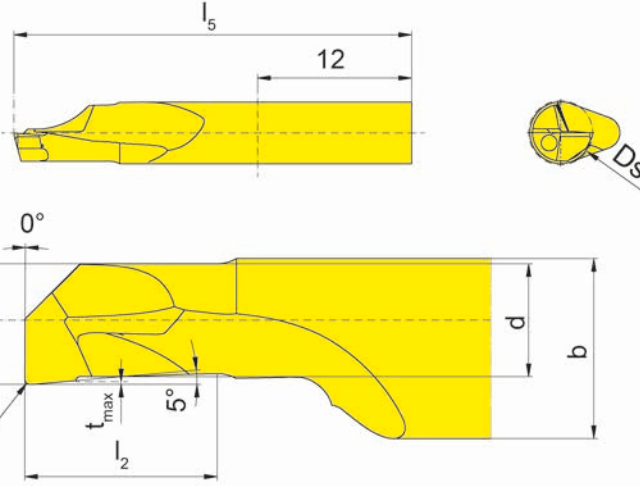
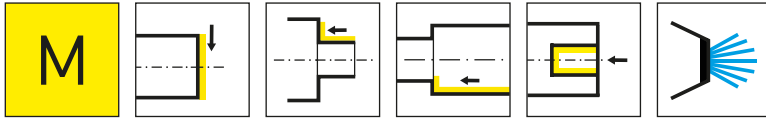
▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
▲ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	$l_2$	$l_5$	$t_{max}$	Ds	HIS	EG35
R105.BO.30.20.045.1	0.2	1.5	2.7	2.4	7	4.5	31	0.1	3	105125	▲
R105.BO.30.20.075.1	0.2	1.5	2.7	2.4	7	7.5	31	0.1	3	105125	▲
R105.BO.40.20.060.1	0.2	2	3.7	3.4	7	6	31	0.1	4	105125	▲
R105.BO.40.20.100.1	0.2	2	3.7	3.4	7	10	31	0.1	4	105125	▲
R105.BO.50.20.075.1	0.2	2.5	4.7	4.4	7	7.5	31	0.1	5	105125	▲
R105.BO.50.20.125.1	0.2	2.5	4.7	4.4	7	12.5	36	0.1	5	105125	▲
R105.BO.60.20.090.1	0.2	3	5.4	5.1	7	9	31	0.1	6	105125	▲
R105.BO.60.20.150.1	0.2	3	5.4	5.1	7	15	36	0.1	6	105125	▲
R105.BO.70.20.105.1	0.2	3.5	5.9	5.6	7	10.5	36	0.1	7	105125	▲
R105.BO.70.20.175.1	0.2	3.5	5.9	5.6	7	17.5	40	0.1	7	105125	▲
L105.BO.30.20.045.1	0.2	1.5	2.7	2.4	7	4.5	31	0.1	3	105125	△
L105.BO.30.20.075.1	0.2	1.5	2.7	2.4	7	7.5	31	0.1	3	105125	△
L105.BO.40.20.060.1	0.2	2	3.7	3.4	7	6	31	0.1	4	105125	△
L105.BO.40.20.100.1	0.2	2	3.7	3.4	7	10	31	0.1	4	105125	△
L105.BO.50.20.075.1	0.2	2.5	4.7	4.4	7	7.5	31	0.1	5	105125	△
L105.BO.50.20.125.1	0.2	2.5	4.7	4.4	7	12.5	36	0.1	5	105125	△
L105.BO.60.20.090.1	0.2	3	5.4	5.1	7	9	31	0.1	6	105125	△
L105.BO.60.20.150.1	0.2	3	5.4	5.1	7	15	36	0.1	6	105125	△
L105.BO.70.20.105.1	0.2	3.5	5.9	5.6	7	10.5	36	0.1	7	105125	△
L105.BO.70.20.175.1	0.2	3.5	5.9	5.6	7	17.5	40	0.1	7	105125	△

内冷供应从直径  $\varnothing 5$  mm起  
with through coolant supply from cutting diameter 5 mm

P	●
M	●
K	○
N	-
S	-
H	-



硬质合金牌号  
Carbide grades

R=右手型-如图  
R = right hand version shown

L=左手型  
L = left hand version

▲ 库存  
on stock

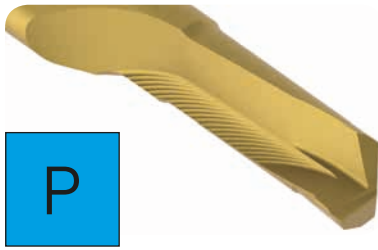
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	$l_2$	$l_5$	$t_{max}$	Ds	HIS	EG35
R105.BO.30.20.045.2	0.2	1.5	2.7	2.4	7	4.5	31	0.1	3	105125	▲
R105.BO.30.20.075.2	0.2	1.5	2.7	2.4	7	7.5	31	0.1	3	105125	▲
R105.BO.40.20.060.2	0.2	2	3.7	3.4	7	6	31	0.1	4	105125	▲
R105.BO.40.20.100.2	0.2	2	3.7	3.4	7	10	31	0.1	4	105125	▲
R105.BO.50.20.075.2	0.2	2.5	4.7	4.4	7	7.5	31	0.1	5	105125	▲
R105.BO.50.20.125.2	0.2	2.5	4.7	4.4	7	12.5	36	0.1	5	105125	▲
R105.BO.60.20.090.2	0.2	3	5.4	5.1	7	9	31	0.1	6	105125	▲
R105.BO.60.20.150.2	0.2	3	5.4	5.1	7	15	36	0.1	6	105125	▲
R105.BO.70.20.105.2	0.2	3.5	5.9	5.6	7	10.5	36	0.1	7	105125	▲
R105.BO.70.20.175.2	0.2	3.5	5.9	5.6	7	17.5	40	0.1	7	105125	▲
L105.BO.30.20.045.2	0.2	1.5	2.7	2.4	7	4.5	31	0.1	3	105125	△
L105.BO.30.20.075.2	0.2	1.5	2.7	2.4	7	7.5	31	0.1	3	105125	△
L105.BO.40.20.060.2	0.2	2	3.7	3.4	7	6	31	0.1	4	105125	△
L105.BO.40.20.100.2	0.2	2	3.7	3.4	7	10	31	0.1	4	105125	△
L105.BO.50.20.075.2	0.2	2.5	4.7	4.4	7	7.5	31	0.1	5	105125	△
L105.BO.50.20.125.2	0.2	2.5	4.7	4.4	7	12.5	36	0.1	5	105125	△
L105.BO.60.20.090.2	0.2	3	5.4	5.1	7	9	31	0.1	6	105125	△
L105.BO.60.20.150.2	0.2	3	5.4	5.1	7	15	36	0.1	6	105125	△
L105.BO.70.20.105.2	0.2	3.5	5.9	5.6	7	10.5	36	0.1	7	105125	△
L105.BO.70.20.175.2	0.2	3.5	5.9	5.6	7	17.5	40	0.1	7	105125	△

内冷供应从直径  $\varnothing 5$  mm起  
with through coolant supply from cutting diameter 5 mm

P	●
M	●
K	○
N	-
S	-
H	-





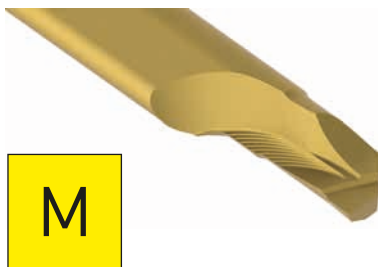
R/L105.B0...1

**几何槽型与断屑器更好的切屑控制**

- 车削大进给
- 适用于一般钢材
- 具有高进给量的修光切削刃
- 更好的切屑控制
- 一般钢的钻孔
- 以过程可靠性为目标的困难应用
- 也适用于长屑材料

**Geometry with chipbreaker for better chip control**

- Turning with large infeeds
- For general steels
- With trailing cutting edge for higher feeds
- Better chip control
- Drilling in general steels
- For problematic applications with the aim of process reliability
- Also for long-chipping materials



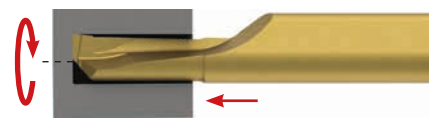
R/L105.B0...2

**通用槽型**

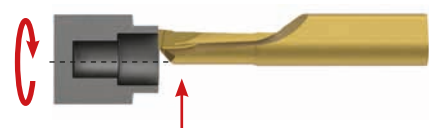
- 车削大进给
- 易于切削的通用槽型, 也适用于不锈钢
- 具有高进给量的修光切削刃
- 更小的切削压力, 甚至适用于薄壁部件
- 用于钢件和有色金属的钻孔

**Universal geometry**

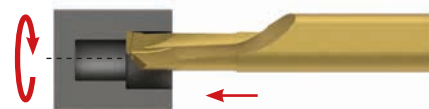
- Turning with large infeeds
- Easy cutting universal geometry also for stainless steels
- With trailing cutting edge for higher feeds
- Less cutting pressure, suitable even for thin-walled components
- For drilling in steel and non-ferrous metals



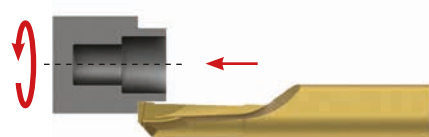
实体钻孔并可得到平底  
Drilling into the solid and achieving a flat hole bottom



车端面  
Turning of face profiles



车内孔  
Turning of internal profiles



车外圆  
Turning of external profiles



C

镗孔钢件 Boring Steel		切深 $a_p$ (mm) Depth of cut $a_p$ (mm)					
		0.5	1	1.5	2	2.5	3
		进给 $f$ [mm/U] Feed rate $f$ [mm/rev]					
R/L105.BO.30.20.045.1	1.5*D	0.03-0.05	0.02-0.03				
R/L105.BO.30.20.075.1	2.5*D	0.03-0.05	0.02-0.03				
R/L105.BO.40.20.060.1	1.5*D	0.04-0.06	0.04-0.06	0.04-0.06			
R/L105.BO.40.20.100.1	2.5*D	0.04-0.06	0.04-0.06	0.04-0.06			
R/L105.BO.50.20.075.1	1.5*D	0.05-0.08	0.05-0.08	0.04-0.07	0.04-0.07		
R/L105.BO.50.20.125.1	2.5*D	0.05-0.08	0.05-0.08	0.04-0.07	0.04-0.07		
R/L105.BO.60.20.090.1	1.5*D	0.07-0.1	0.07-0.1	0.07-0.1	0.07-0.1	0.05-0.08	
R/L105.BO.60.20.150.1	2.5*D	0.07-0.1	0.07-0.1	0.07-0.1	0.07-0.1	0.05-0.08	
R/L105.BO.70.20.105.1	1.5*D	0.08-0.1	0.07-0.1	0.07-0.1	0.07-0.1	0.07-0.08	0.05-0.07
R/L105.BO.70.20.175.1	2.5*D	0.08-0.1	0.07-0.1	0.07-0.1	0.07-0.1	0.07-0.08	0.05-0.07

不锈钢材料的进给速率:选择最小值。  
Feed rates for stainless materials: Select minimum values.

钻孔钢件 Drilling Steel		进给 $f$ [mm/U] Feed rate $f$ [mm/rev]
R/L105.BO.30.20.045.2	1.5*D	0.01-0.02
R/L105.BO.30.20.075.2	2.5*D	0.01-0.02
R/L105.BO.40.20.060.2	1.5*D	0.01-0.02
R/L105.BO.40.20.100.2	2.5*D	0.01-0.02
R/L105.BO.50.20.075.2	1.5*D	0.02-0.04
R/L105.BO.50.20.125.2	2.5*D	0.02-0.04
R/L105.BO.60.20.090.2	1.5*D	0.03-0.05
R/L105.BO.60.20.150.2	2.5*D	0.03-0.05
R/L105.BO.70.20.105.2	1.5*D	0.03-0.05
R/L105.BO.70.20.175.2	2.5*D	0.03-0.05

对于钻孔,我们推荐通用几何槽型  
For drilling we recommend the universal geometry

# B05



## 镗削

配 URMA 05 精镗头和  
Supermini 系列

## Boring

with URMA Fine Boring Head 05  
and System Supermini

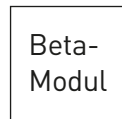
概述  
Overview

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技术信息  
Technical Instructions

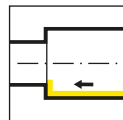
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精镗头  
Fine Boring Head  
B05



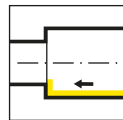
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刀杆  
Toolholder  
B105/B110

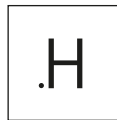


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刀片  
Insert  
105/110



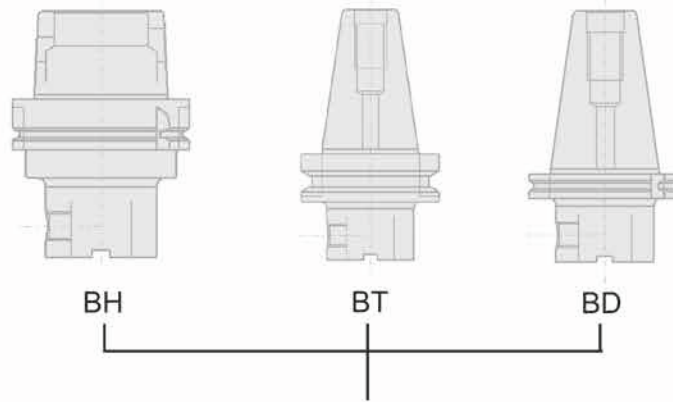
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76-81, 83-85



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D

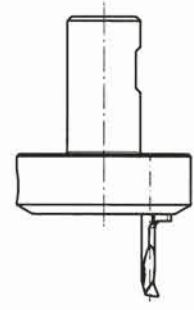
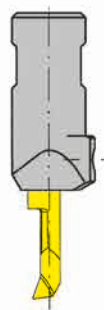
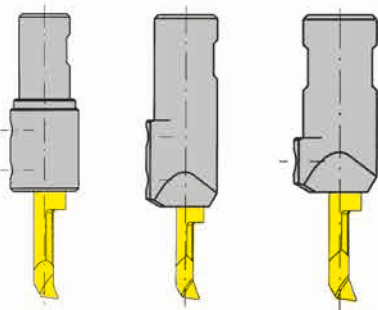
Beta模块接头 40 见章 URMA 接头系统  
Adaptor with Beta-Module 40 see Chapter System Adaptors URMA



刀杆右手旋转  
Toolholder right-hand rotation

刀杆左手旋转  
Toolholder left-hand rotation

非标方案  
Special solutions



B110

B105

B105

B105  $\lt; \varnothing 1 \text{ mm}$

右手型刀片  
Right-hand inserts

左手刀片  
Left-hand inserts

使用URMA05精镗头镗孔

Boring with fine Boring head URMA 05

D



自  $\varnothing 0.2$  mm  
带刀片 型号 105  
或者  
自  $\varnothing 6.0$  mm  
带刀片 型号 110

from  $\varnothing 0,2$  mm  
with insert type 105  
or  
from  $\varnothing 6,0$  mm  
with insert type 110



PCBN 和金刚石贴片刀片  
可用于镗削大于 $\varnothing 2$  mm的孔

详见样本  
超硬切削材料

PCBN and Diamont tipped inserts available  
for bores from a diameter of 2 mm

Please see catalogue  
ULTRA HARD CUTTING MATERIALS

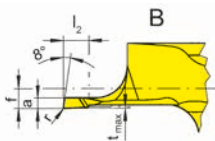
我们总是建议使用右手插入，这样你就可以顺时针旋转工作。对于直径小于1毫米的小直径，有必要例外。刀柄B105必须转动180°，以便在旋转中心后方调整supermini 刀片。

要使用105系列刀片的公式：  
如果  $f \times 2 > D_{min}$  或  $D$ ，则使用左手刀片。

We always recommend using right-hand inserts so that you can work in clockwise rotation. An exception is necessary for small diameters up to approx. 1 mm. The toolholder B105 must be turned by 180° so that the Supermini insert can be adjusted behind the centre of rotation.

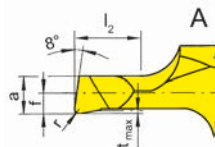
Formula for insert type 105 to be used:  
If  $f \times 2 > D_{min}$  or  $D$ , then use insert in left-hand version.

产品型号 Part number	r	f	a	b	$l_2$	$l_5$	$t_{max}$	$D_{min}$	形式 Form
<b>L105.1802.0.03</b>	0.02	1	0.25	5.9	1	23	0.02	0.3	B



$D_{min} 0.3 \text{ mm} < 2xf$   
= 左手型 / = left hand version

产品型号 Part number	r	f	a	b	$l_2$	$l_5$	$t_{max}$	$D_{min}$	形式 Form
<b>R105.1803.0.07</b>	0,05	0,3	0,6	5,9	2	23	0,05	0,7	B



$D_{min} 0.7 \text{ mm} > 2xf$   
= 右手型 / = right hand version

### 刀柄中的安装位置

Mounting position of of holder



常规 (右手型刀片)  
normal (right hand insert)

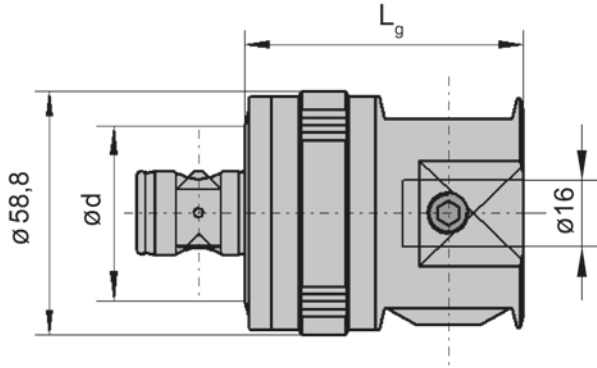
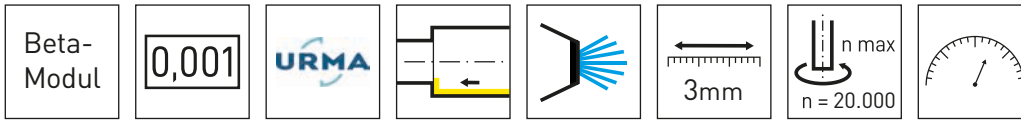


180° 倒置 (右手型刀片)  
180° rotated (right hand insert)



# 精镗头 Fine Boring Head

**B05**     $\varnothing > 0.2 \text{ mm}$



**D**

产品型号 Part number	Lg	d	Beta-Modul	重量 [kg] Weight [kg]
<b>92.00.25-D</b>				0.185
<b>B05.40.30.067</b>	67	42	40	1.3
<b>B05.40.30.067-D</b>	67	42	40	1.3

### 刻度标记 / Scale marking

B05.40.30.067: 模拟/analog = 0,01

B05.40.30.067-D: 模拟/analog = 0,01 / 数字/digital = 0,001

数显单元显示了调节范围

Digital display unit to show the adjusting range

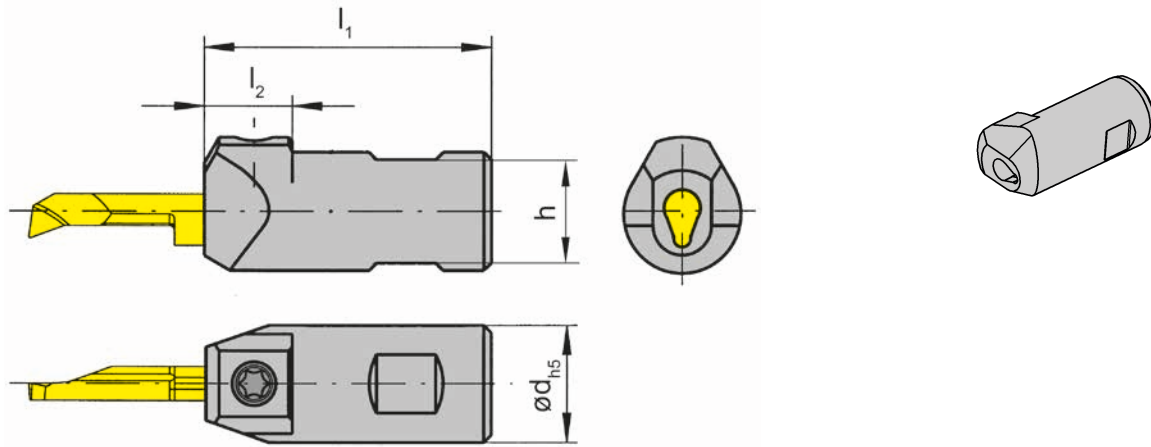
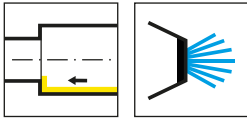
### 用于B05...-D的附加设备

Additional equipment for B05...-D

产品型号 Part number	l	b	h	重量 [kg] Weight [kg]
<b>92.00.25-D</b>	120	80	25	0.18







产品型号 Part number	$l_1$	$l_2$	d	h	HWS
<b>B105.0016.U1.01</b>	39	12	16	14	105123 • 105124 • 105125

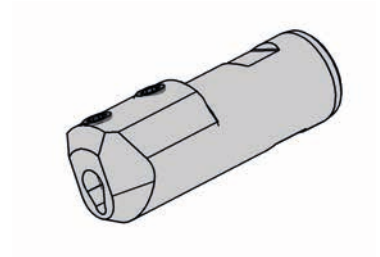
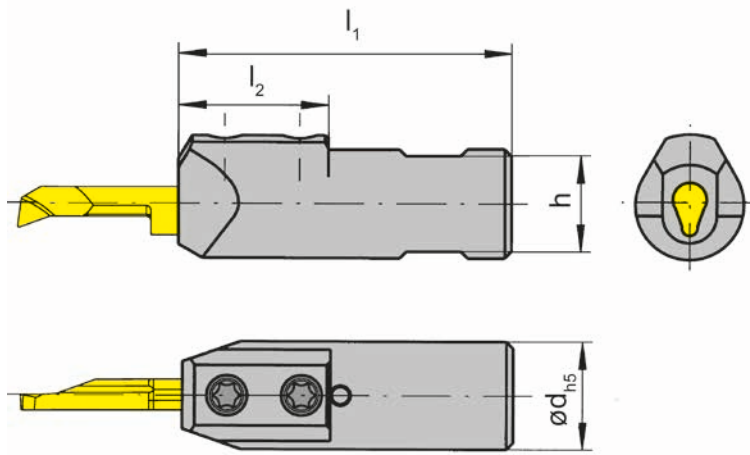
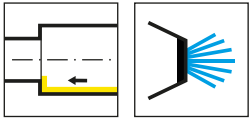
双夹持面的刀杆可以在镗头中旋转180°，使刀片可过中心，可以镗 $\varnothing 0.7 \text{ mm}$ 以下的孔。  
The double sided clamping surface allows to rotate the toolholder in the boring head of 180°. With this option it is possible to set the insert behind centre which is necessary for diameters less than  $\varnothing 0,7 \text{ mm}$ .

夹持长度12mm  
Clamping length 12 mm

配件  
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
B105.0016.U1.01	<b>6.075T15P</b>	<b>T15PQ</b>





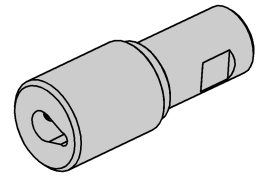
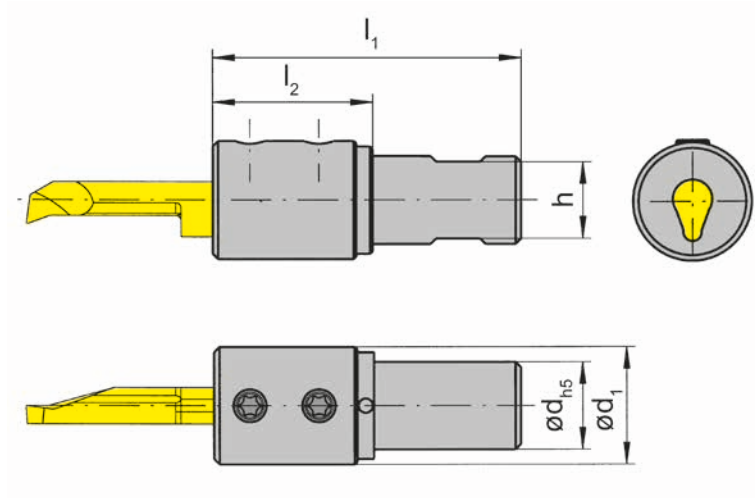
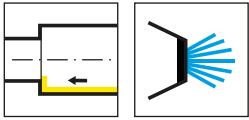
D

产品型号 Part number	$l_1$	$l_2$	d	h	HWS
<b>B105.0016.U1.02</b>	49	22	16	14	105225

夹持长度22mm  
Clamping length 22 mm

配件  
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
B105.0016.U1.02	<b>6.075T15P</b>	<b>T15PQ</b>



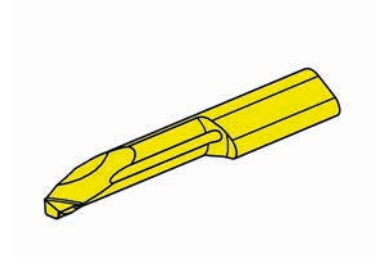
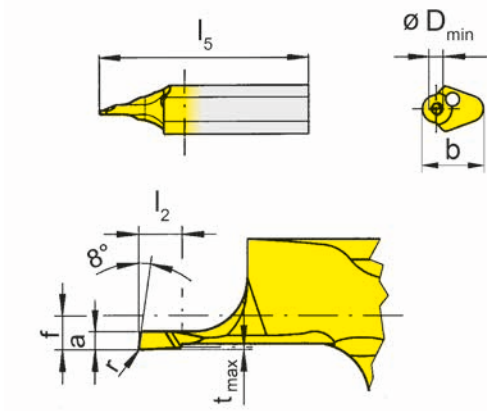
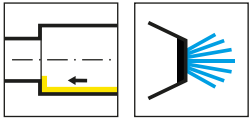
D

产品型号 Part number	$l_1$	$l_2$	d	$d_1$	h	HWS
<b>B110.0016.U1.02</b>	56	29	16	21.5	14	110260

夹持长度26mm  
Clamping length 26 mm

配件  
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
B110.0016.U1.02	<b>6.075T15P</b>	<b>T15PQ</b>



D

L=左手型-如图  
L = left hand version shown

硬质合金牌号  
Carbide grades

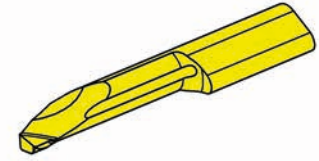
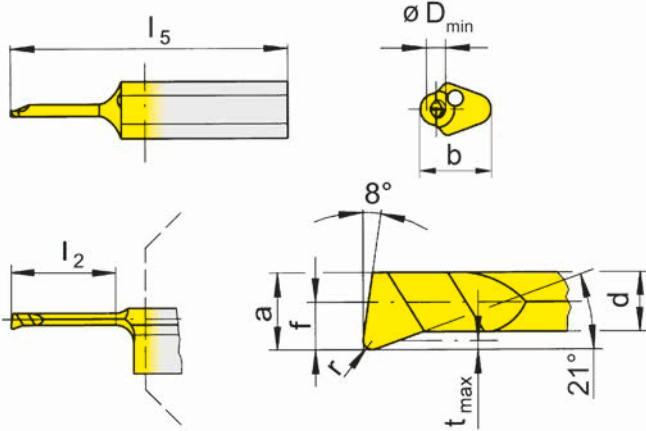
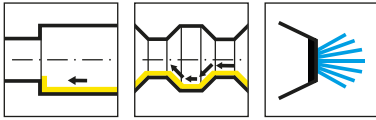
▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	r	f	a	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	形式 Form	HIS	MG12	EG35
L105.1802.0.03	0.02	1	0.25	5.9	1	23	0.02	0.3	B	105123	△	△
L105.1802.0.05	0.05	1	0.4	5.9	2	23	0.05	0.5	B	105123	▲	△
L105.1802.0.02	0.02	1	0.17	5.9	1	23	0.02	0.2	B	105123	△	△

镗孔直径0.2-1mm使用左手刀片。  
刀杆 B105.0016.U1.01 必须调转180°安装--详见技术信息  
Bore diameter 0,2 - 1 mm left hand insert used.  
Toolholder B105.0016.U1.01 must be installed rotated by 180° - see technical notes.

P	○	●
M	-	●
K	-	○
N	-	-
S	-	-
H	-	-



R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

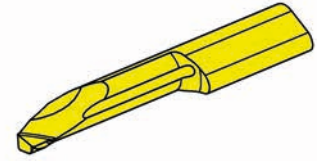
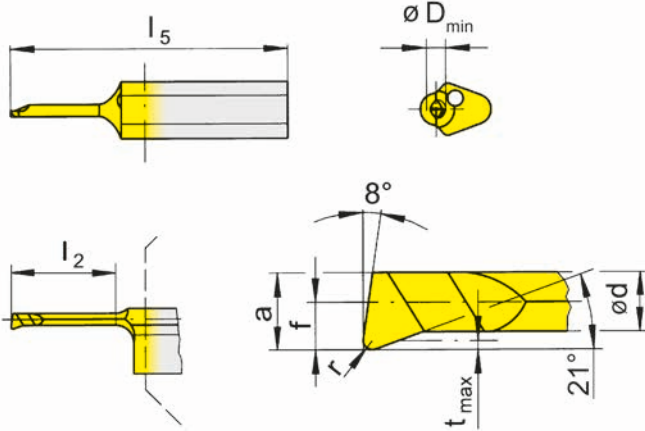
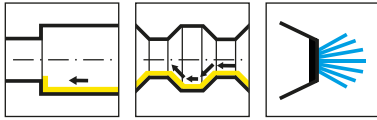
▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	MG12	EG35	TF45	TH35	TI25	TN35
R105.1805.005.0.1	0.05	0.5	0.9	0.65	5.9	4	25	0.1	1	105123		▲	▲			
R105.1805.005.1.1	0.05	0.5	0.9	0.65	5.9	6	25	0.1	1	105123		▲	▲			
R105.1805.1.1	0.1	0.5	0.9	0.65	5.9	6	25	0.1	1	105123	△	▲			▲	▲
R105.1805.2.1	0.1	0.5	0.9	0.65	5.9	8	25	0.1	1	105123		▲			▲	▲
R105.1813.005.0.15	0.05	1.3	1.4	1.1	5.9	6	25	0.15	1.5	105123		▲	▲	△		
R105.1813.005.1.15	0.05	1.3	1.4	1.1	5.9	9	25	0.15	1.5	105123		▲	▲	△		
R105.1813.005.2.15	0.05	1.3	1.4	1.1	5.9	12	30	0.15	1.5	105123		▲	▲	△		
R105.1813.01.0.15	0.1	1.3	1.4	1.1	5.9	6	25	0.15	1.5	105123		▲		▲	▲	
R105.1813.01.1.15	0.1	1.3	1.4	1.1	5.9	9	25	0.15	1.5	105123		▲		▲	▲	
R105.1813.01.2.15	0.1	1.3	1.4	1.1	5.9	12	30	0.15	1.5	105123		△		▲	▲	
											P	o	•	•	•	•
											M	-	•	•	•	•
											K	-	o	•	•	•
											N	-	-	•	•	•
											S	-	-	•	•	•
											H	-	-	-	-	-

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.





D

R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	MG12	EG35	TF45	TH35	TI25	TN35
R105.1809.005.0.2	0.05	1	1.9	1.6	5.9	6	25	0.15	2	105123		▲	▲	△	△	△
R105.1809.005.1.2	0.05	1	1.9	1.6	5.9	9	25	0.15	2	105123	△	▲	▲			
R105.1809.005.2.2	0.05	1	1.9	1.6	5.9	12	30	0.15	2	105123		▲	▲	△	△	△
R105.1809.01.0.2	0.1	1	1.9	1.6	5.9	6	25	0.15	2	105123		△		▲	▲	
R105.1809.01.1.2	0.1	1	1.9	1.6	5.9	9	25	0.15	2	105123		▲	△	▲	▲	
R105.1809.01.2.2	0.1	1	1.9	1.6	5.9	12	30	0.15	2	105123		△		▲	▲	
R105.1809.0.2	0.15	1	1.9	1.6	5.9	6	25	0.15	2	105123	▲	▲		▲	▲	▲
R105.1809.1.2	0.15	1	1.9	1.6	5.9	9	25	0.15	2	105123	▲	▲		▲	▲	▲
R105.1809.2.2	0.15	1	1.9	1.6	5.9	12	30	0.15	2	105123	▲	▲		▲	▲	▲
R105.1813.005.0.25	0.05	1.3	2.3	1.95	5.9	6	25	0.15	2.5	105123		▲	△	▲		
R105.1813.005.1.25	0.05	1.3	2.3	1.95	5.9	9	25	0.15	2.5	105123		▲	▲	△		
R105.1813.005.2.25	0.05	1.3	2.3	1.95	5.9	12	30	0.15	2.5	105123		△	▲	▲		
R105.1813.005.3.25	0.05	1.3	2.3	1.95	5.9	16	35	0.15	2.5	105123		▲	▲	△		

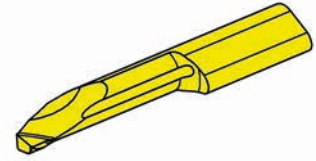
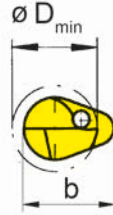
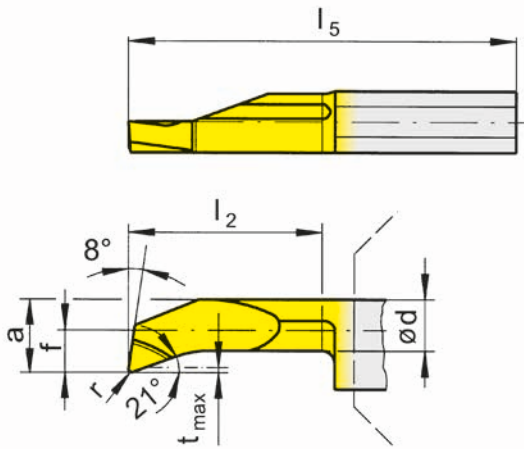
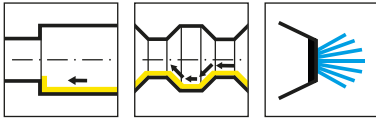
镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.

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

# 刀片 Insert

# 105

∅ > 3 mm



R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

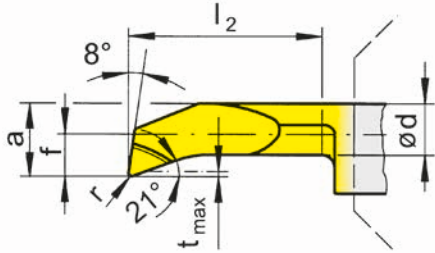
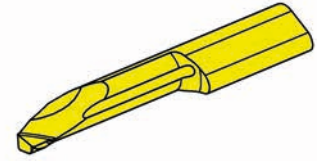
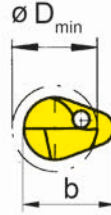
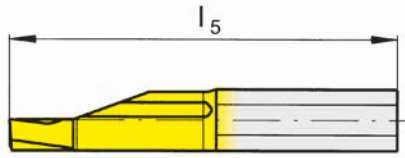
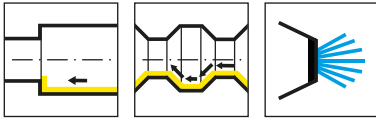
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	MG12	EG35	TF45	TH35	TI25	TN35
R105.1813.005.1.3	0.05	1.3	2.6	2.3	5.9	10	25	0.15	3	105123		▲	▲	△	△	△
R105.1813.005.2.3	0.05	1.3	2.6	2.3	5.9	15	30	0.15	3	105123		△	▲			△
R105.1813.005.3.3	0.05	1.3	2.6	2.3	5.9	20	35	0.15	3	105123		▲	▲		△	
R105.1813.01.1.3	0.1	1.3	2.6	2.3	5.9	10	25	0.15	3	105123		▲		▲	▲	
R105.1813.01.2.3	0.1	1.3	2.6	2.3	5.9	15	30	0.15	3	105123		▲		▲	▲	
R105.1813.01.3.3	0.1	1.3	2.6	2.3	5.9	20	35	0.15	3	105123		▲		▲	▲	
R105.1813.1.3	0.2	1.3	2.6	2.3	5.9	10	25	0.15	3	105123	▲	▲	△	▲	▲	▲
R105.1813.2.3	0.2	1.3	2.6	2.3	5.9	15	30	0.15	3	105123	▲	▲	△	▲	▲	▲
R105.1813.3.3	0.2	1.3	2.6	2.3	5.9	20	35	0.15	3	105123	▲	▲		▲	▲	▲
R105.1819.005.1.4	0.05	1.9	3.7	2.9	6.4	10	25	0.3	4	105124		▲	▲	△	△	
R105.1819.005.2.4	0.05	1.9	3.7	2.9	6.4	15	30	0.3	4	105124		▲	▲			
R105.1819.005.3.4	0.05	1.9	3.7	2.9	6.4	20	35	0.3	4	105124		▲	▲	△		
R105.1819.1.4	0.2	1.9	3.7	2.9	6.4	10	25	0.3	4	105124	▲	▲		▲	▲	▲
R105.1819.2.4	0.2	1.9	3.7	2.9	6.4	15	30	0.3	4	105124	▲	▲	△	▲	▲	▲
R105.1819.3.4	0.2	1.9	3.7	2.9	6.4	20	35	0.3	4	105124	▲	▲	△	▲	▲	▲

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.

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





D

R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

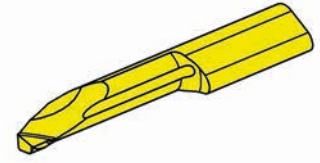
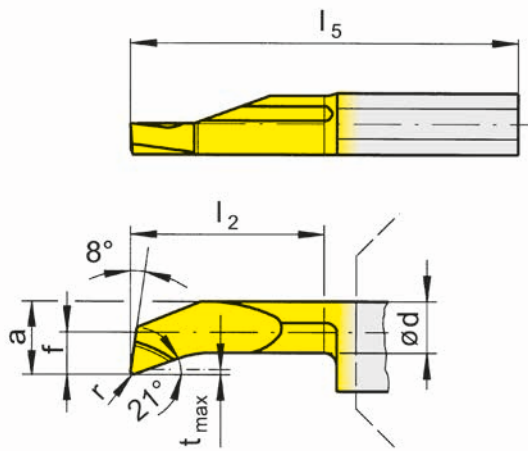
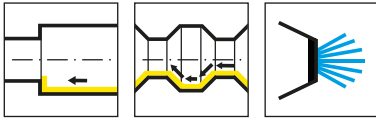
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	MG12	EG35	TF45	TH35	TI25	TN35
R105.1823.1.5	0.2	2.3	4.7	4	7	10	25	0.5	5	105125	▲	▲	△	▲	▲	▲
R105.1823.2.5	0.2	2.3	4.7	4	7	15	30	0.5	5	105125	▲	▲		▲	▲	▲
R105.1823.3.5	0.2	2.3	4.7	4	7	20	35	0.5	5	105125	▲	▲	△	▲	▲	▲
R105.1823.4.5	0.2	2.3	4.7	4	7	25	40	0.5	5	105125	▲	▲		▲	▲	▲
R105.1823.5.5	0.2	2.3	4.7	4	7	30	45	0.5	5	105125	▲	▲		▲	▲	▲
R105.1823.005.1.5	0.05	2.3	4.7	4	7	10	25	0.5	5	105125	△	▲	▲	△		
R105.1823.005.2.5	0.05	2.3	4.7	4	7	15	30	0.5	5	105125		▲	▲	△		△
R105.1823.005.3.5	0.05	2.3	4.7	4	7	20	35	0.5	5	105125		▲	▲	△		△
R105.1823.005.4.5	0.05	2.3	4.7	4	7	25	40	0.5	5	105125		▲	▲			△
R105.1823.005.5.5	0.05	2.3	4.7	4	7	30	45	0.5	5	105125		△	▲	△		

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.

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





R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

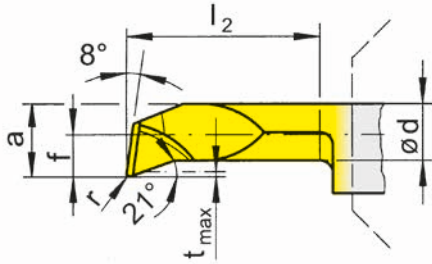
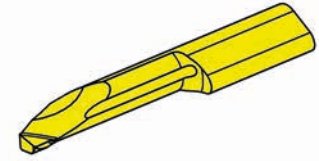
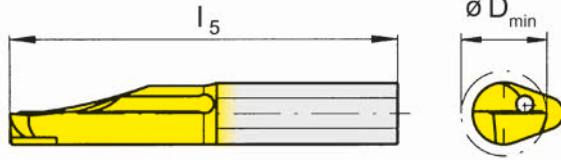
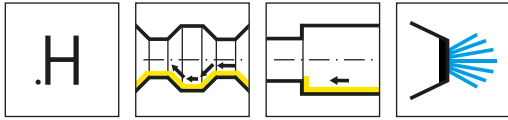
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	MG12	EG35	TF45	TH35	TI25	TN35
R105.1833.005.2.6	0.05	3.3	5.7	4.7	7	15	30	0.5	6	105125		▲	▲			
R105.1833.005.3.6	0.05	3.3	5.7	4.7	7	20	35	0.5	6	105125		△	▲			
R105.1833.005.4.6	0.05	3.3	5.7	4.7	7	25	40	0.5	6	105125		△	▲			
R105.1833.005.5.6	0.05	3.3	5.7	4.7	7	30	45	0.5	6	105125		△	▲			△
R105.1833.2.6	0.2	3.3	5.7	4.7	7	15	30	0.5	6	105125	▲	▲		▲	▲	▲
R105.1833.3.6	0.2	3.3	5.7	4.7	7	20	35	0.5	6	105125	▲	▲	△	▲	▲	▲
R105.1833.4.6	0.2	3.3	5.7	4.7	7	25	40	0.5	6	105125	▲	▲		▲	▲	▲
R105.1833.5.6	0.2	3.3	5.7	4.7	7	30	45	0.5	6	105125	▲	▲		▲	▲	▲
R105.1840.005.3.7	0.05	4	6.4	5.2	7	20	35	0.5	6.8	105125		△	▲			
R105.1840.005.4.7	0.05	4	6.4	5.2	7	25	40	0.5	6.8	105125		△	▲			
R105.1840.005.5.7	0.05	4	6.4	5.2	7	30	45	0.5	6.8	105125		△	▲			
R105.1840.3.7	0.2	4	6.4	5.2	7	20	35	0.5	6.8	105125	▲	▲	△	▲	▲	▲
R105.1840.4.7	0.2	4	6.4	5.2	7	25	40	0.5	6.8	105125	▲	▲	△	▲	▲	▲
R105.1840.5.7	0.2	4	6.4	5.2	7	30	45	0.5	6.8	105125	▲	▲		▲	▲	▲

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.

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





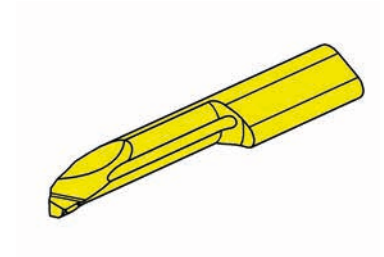
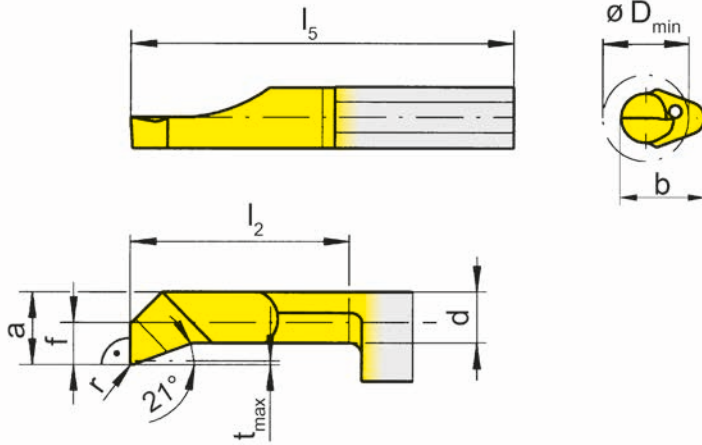
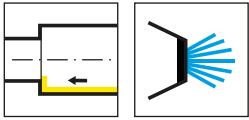
R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades  
▲ 库存  
on stock  
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	EG35	TF45	TH35
R105.1819.1.H.4	0.2	1.9	3.7	2.9	7	10	25	0.3	4	105125	△	▲	▲
R105.1819.2.H.4	0.2	1.9	3.7	2.9	7	15	30	0.3	4	105125	▲	▲	▲
R105.1819.3.H.4	0.2	1.9	3.7	2.9	7	20	35	0.3	4	105125	△	▲	▲
R105.1823.1.H.5	0.2	2.3	4.7	4	7	10	25	0.5	5	105125	▲	▲	▲
R105.1823.2.H.5	0.2	2.3	4.7	4	7	15	30	0.5	5	105125	▲	▲	▲
R105.1823.3.H.5	0.2	2.3	4.7	4	7	20	35	0.5	5	105125	▲	▲	▲
R105.1823.4.H.5	0.2	2.3	4.7	4	7	25	40	0.5	5	105125	▲	▲	▲
R105.1823.5.H.5	0.2	2.3	4.7	4	7	30	45	0.5	5	105125	△	▲	▲
R105.1833.2.H.6	0.2	3.3	5.7	4.7	7	15	30	0.5	6	105125	△	▲	▲
R105.1833.3.H.6	0.2	3.3	5.7	4.7	7	20	35	0.5	6	105125	△	▲	▲
R105.1833.4.H.6	0.2	3.3	5.7	4.7	7	25	40	0.5	6	105125	△	▲	▲
R105.1833.5.H.6	0.2	3.3	5.7	4.7	7	30	45	0.5	6	105125	△	▲	▲
R105.1840.3.H.7	0.2	4	6.4	5.2	7	20	35	0.5	7	105125	▲	▲	▲
R105.1840.4.H.7	0.2	4	6.4	5.2	7	25	40	0.5	7	105125	△	▲	▲
R105.1840.5.H.7	0.2	4	6.4	5.2	7	30	45	0.5	7	105125	△	▲	▲

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.

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



R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

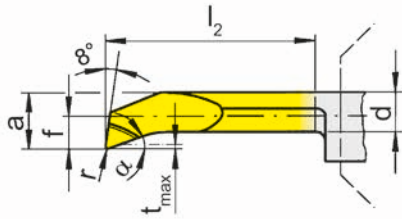
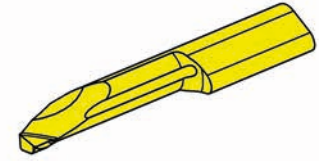
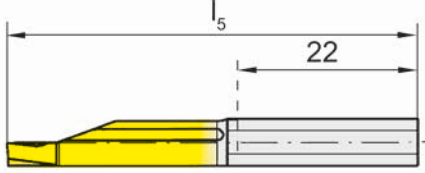
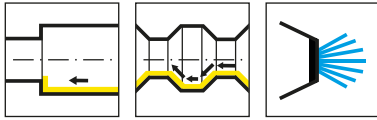
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	HIS	EG35	TH35	TI25	TN35
R105.9013.01.1.3	0.1	1.3	2.6	2.3	5.9	10	25	0.15	3	105123	▲	▲		
R105.9013.01.2.3	0.1	1.3	2.6	2.3	5.9	15	30	0.15	3	105123	▲	▲		
R105.9013.1.3	0.2	1.3	2.6	2.3	5.9	10	25	0.15	3	105123	▲			▲
R105.9013.2.3	0.2	1.3	2.6	2.3	5.9	15	30	0.15	3	105123	▲			▲
R105.9019.01.1.4	0.1	1.9	3.7	2.9	6.4	10	25	0.3	4	105124	▲	▲		
R105.9019.01.2.4	0.1	1.9	3.7	2.9	6.4	15	30	0.3	4	105124	▲	▲		
R105.9019.01.3.4	0.1	1.9	3.7	2.9	6.4	20	35	0.3	4	105124	▲	▲		
R105.9019.1.4	0.2	1.9	3.7	2.9	6.4	10	25	0.3	4	105124	▲			▲
R105.9019.2.4	0.2	1.9	3.7	2.9	6.4	15	30	0.3	4	105124	▲		▲	▲
R105.9023.01.1.5	0.1	2.3	4.7	4	7	10	25	0.5	5	105125	▲	▲		
R105.9023.01.2.5	0.1	2.3	4.7	4	7	15	30	0.5	5	105125	▲	▲		
R105.9023.01.3.5	0.1	2.3	4.7	4	7	20	35	0.5	5	105125	▲	▲		
R105.9023.01.4.5	0.1	2.3	4.7	4	7	25	40	0.5	5	105125	▲	▲		
R105.9023.1.5	0.2	2.3	4.7	4	7	10	25	0.5	5	105125	▲	▲		▲
R105.9023.2.5	0.2	2.3	4.7	4	7	15	30	0.5	5	105125	▲	▲		▲
R105.9023.3.5	0.2	2.3	4.7	4	7	20	35	0.5	5	105125	▲			▲

镗孔直径>1mm使用右手刀片.  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息  
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.01 must be installed at position 0° - see technical instructions.

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





D

R=右手型-如图  
R = right hand version shown

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

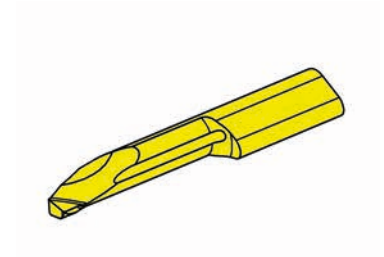
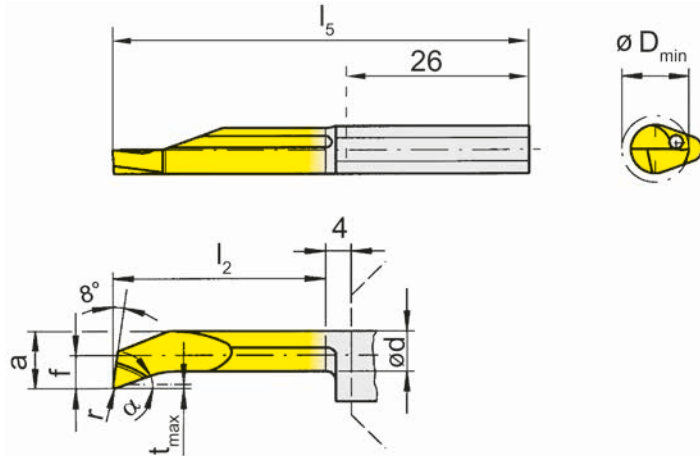
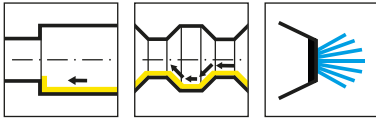
△ 4周  
4 weeks

产品型号 Part number	r	f	a	d	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	α	HIS	EG35	TH35	TI25	TN35
R105.1823.4.5.2	0.1	2.3	4.7	4.2	7	25	50	0.3	5	21°	105225	△	▲	▲	
R105.1823.5.5.2	0.1	2.3	4.7	4.2	7	30	55	0.3	5	21°	105225	△	▲	▲	
R105.1833.4.6.2	0.1	3.3	5.7	4.9	7	25	50	0.3	6	21°	105225	△	▲	▲	
R105.1833.5.6.2	0.1	3.3	5.7	4.9	7	30	55	0.3	6	21°	105225	△	▲	▲	
R105.1840.4.7.2	0.1	4	6.4	5.4	7	25	50	0.3	6.8	21°	105225	△	▲	▲	
R105.1840.5.7.2	0.1	4	6.4	5.4	7	30	55	0.3	6.8	21°	105225	△	▲	▲	△
R105.1840.7.7.2	0.1	4	6.4	5.4	7	40	65	0.3	6.8	21°	105225	▲		▲	
R105.4733.5.6.2	0.1	3.3	5.7	3.7	7	30	55	1.8	6	47°	105225	△	▲	▲	

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息

Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.02 must be installed at position 0° - see technical instructions.

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



R=右手型-如图  
R = right hand version shown

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
▲ 4周  
4 weeks

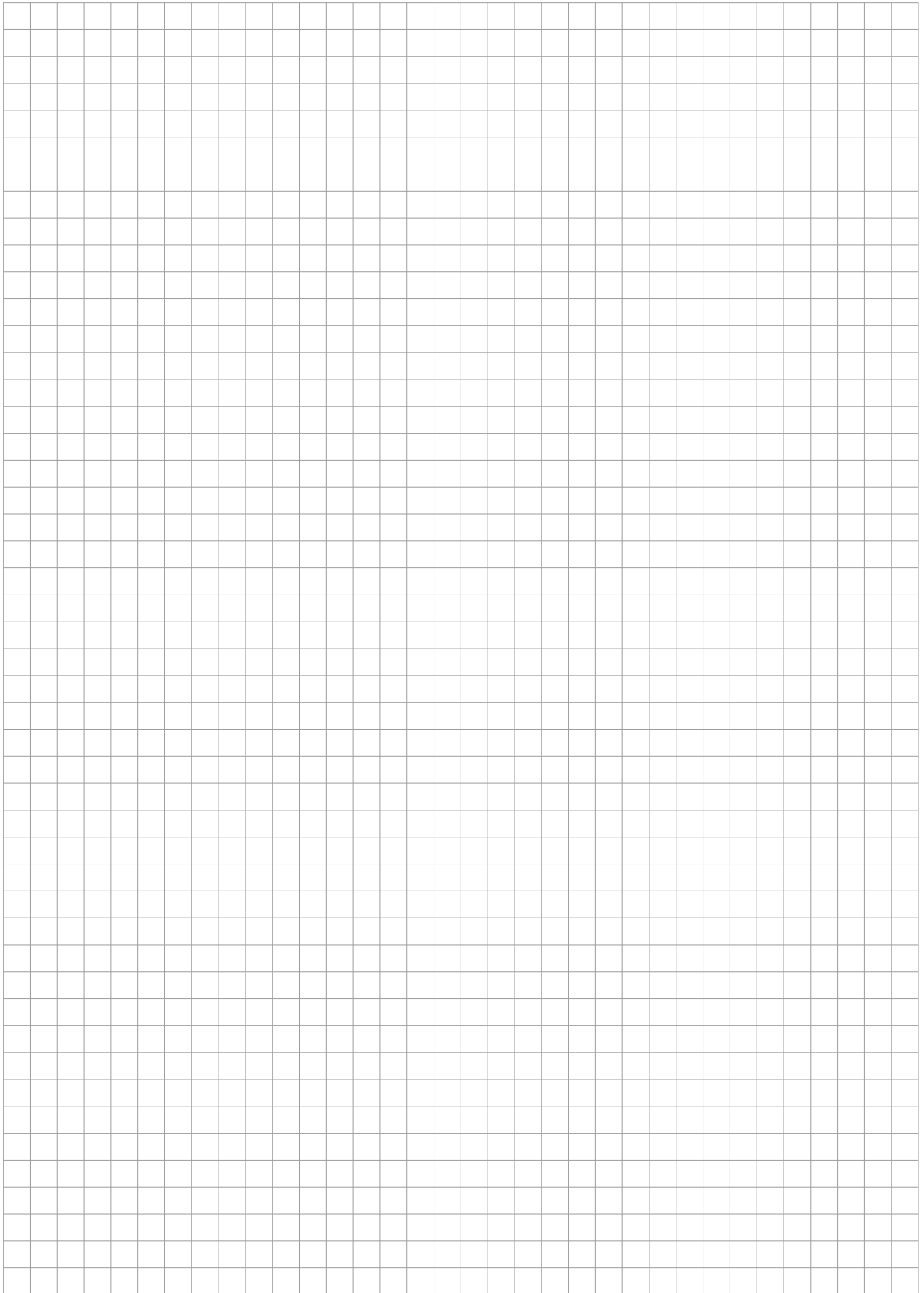
产品型号 Part number	r	f	a	d	l <sub>2</sub>	l <sub>5</sub>	t <sub>max</sub>	D <sub>min</sub>	α	HIS	EG35	TH35	TI25
<b>R110.1829.7.6</b>	0.2	2.9	5.7	4.8	40	70	0.5	6	21°	110260	▲	▲	▲
<b>R110.1829.9.6</b>	0.2	2.9	5.7	4.8	50	80	0.5	6	21°	110260	▲	▲	▲
<b>R110.1829.9.8</b>	0.2	4	7.4	6	50	80	0.5	8	21°	110260	▲	▲	▲
											P	●	●
											M	●	●
											K	●	●
											N	-	●
											S	-	●
											H	-	-

镗孔直径>1mm使用右手刀片。  
刀杆 B105.0016.U1.01 必须0°安装--详见技术信息

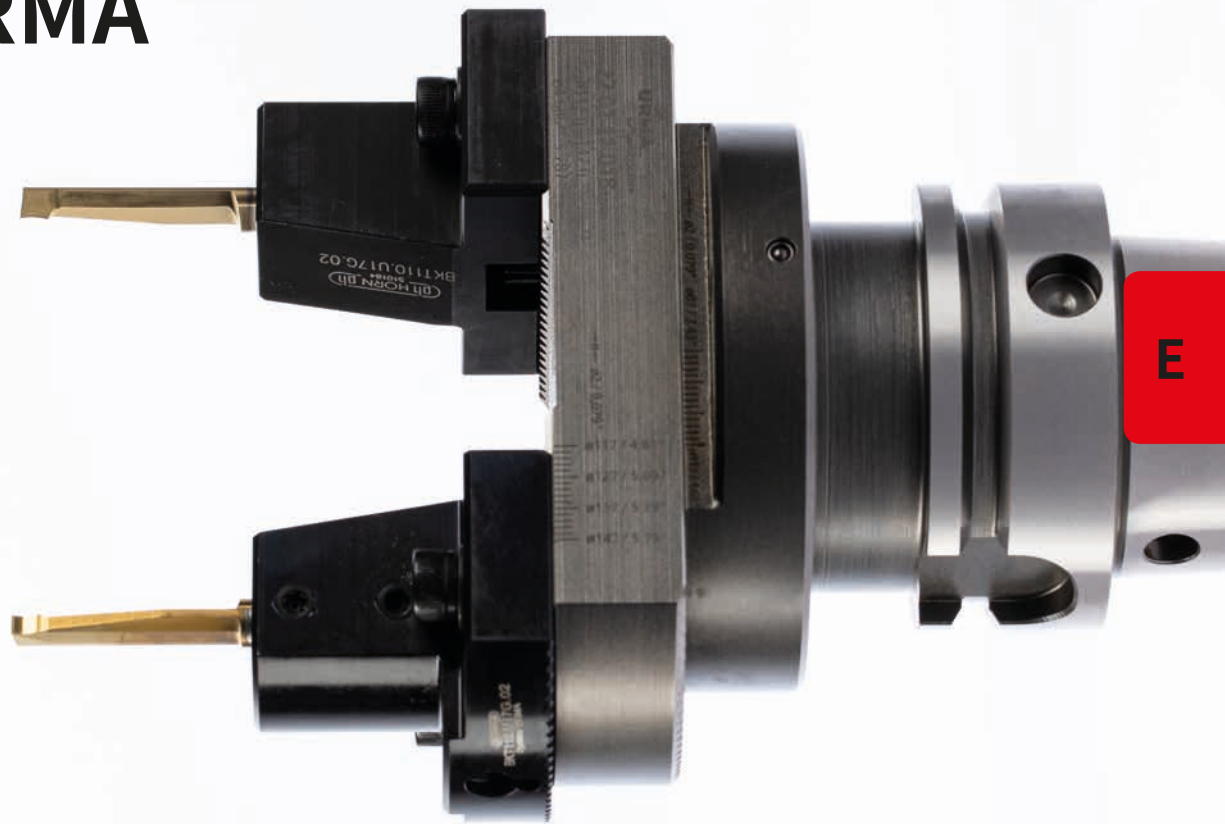
Bore diameter from 1 mm right-hand inserts used.  
Toolholder B105.0016.U1.02 must be installed at position 0° - see technical instructions.



D



# URMA



URMA-IntraMax  
端面切槽系列

Face Grooving  
with URMA IntraMax

概述  
Overview

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URMA常规刀柄  
Basic Holder Urma  
C11/D11/H11/HSK-A 11  
T11



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98

URMA中间接头  
Intermediate adaptors URMA  
BKT/B21



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页/Page  
99

直径扩展 URMA  
Diameter extender URMA  
22



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可调刀杆  
Adjustable holder  
BKT



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页/Page  
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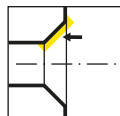
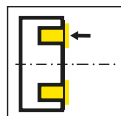
平衡块  
Balancing weight  
020/23



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97-99

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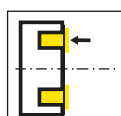
刀片  
Insert  
105/A110



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105-109, 111

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110

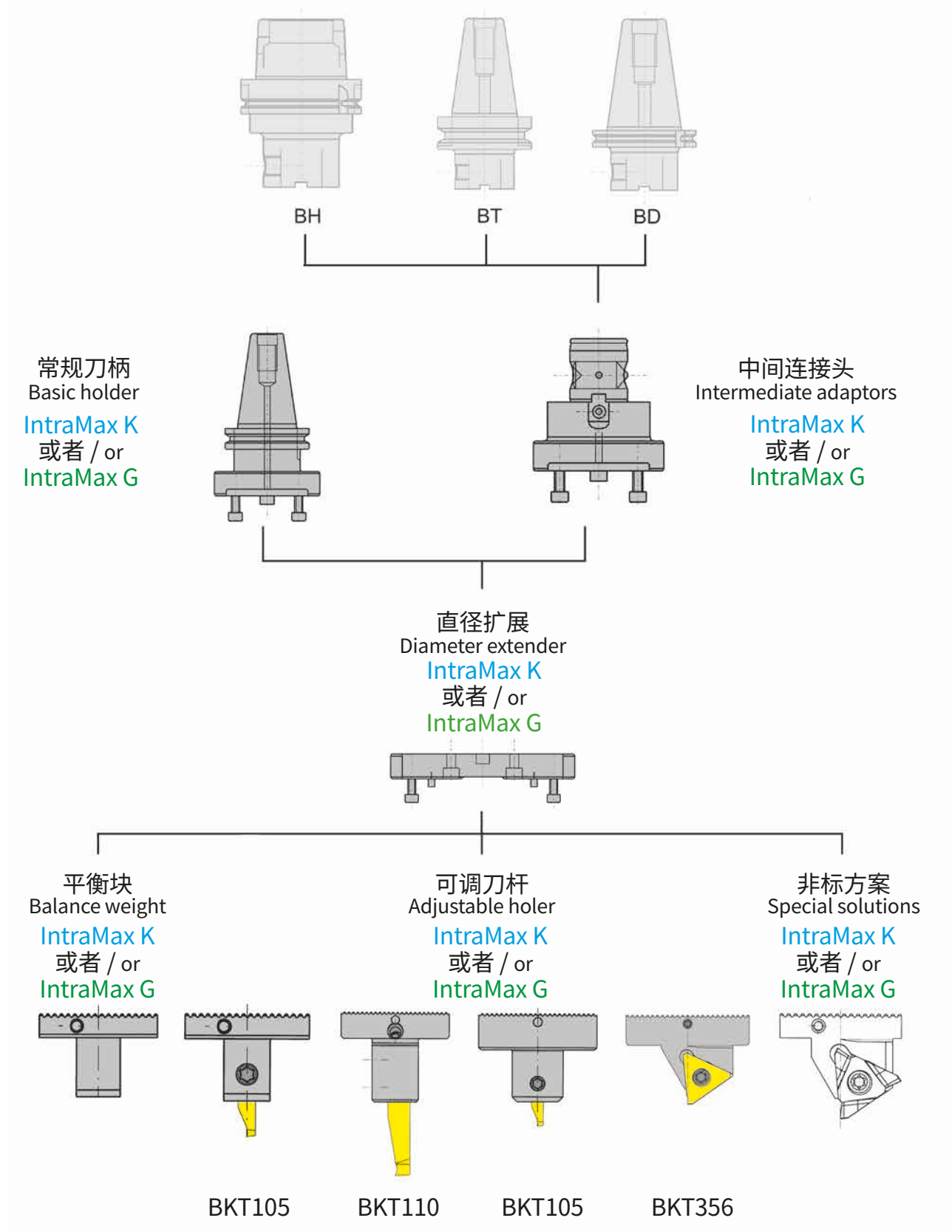
可转位刀片  
Indexable insert  
A315

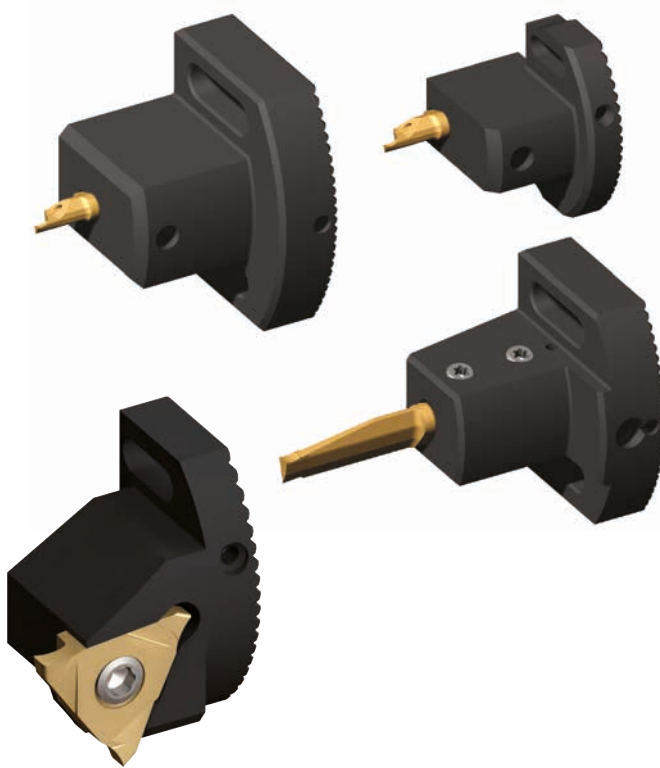


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Beta模块接头 40/63  
Adaptor with Beta-Module 40/63  
见章 系统接杆 URMA /Chapter System Adaptors URMA





$t_{\max}$  达 5.0 mm  
带刀片 型号 105

$t_{\max}$  达 30 mm  
带刀片 型号 110

$t_{\max}$  达 3.0 mm  
带刀片 型号 315

$t_{\max}$  up to 5.0 mm  
with insert type 105

$t_{\max}$  up to 30 mm  
with insert type A110

$t_{\max}$  up to 3.0 mm  
with insert type 315

E

如果工具只装配了一个可调滑块，我们建议在可能的情况下使用一个配重。

以下可以实现使用两个刀夹功能：

- 双刃开槽或镗(有效齿数= 2)
- 内、外缘偏移槽的切槽(有效齿数= 1)
- 两个独立槽(有效齿数= 1)

如果安装了两个可调节刀夹，有时需要调整相对于彼此的刀具长度。  
作为标配，只有可调支架BKT110.U17G.02 用于A110刀片，包括长度调节。

If the tool is assembled with only one adjustable holder, we recommend using a counterweight on the opposite if possible.

The following is possible with two cartridges:

- Double-edged grooving or counterboring (effective number of teeth = 2)
- Grooving with offset groove inner and outer edge (effective number of teeth = 1)
- Two separate grooves (effective number of teeth = 1)

If two adjustable holders are set up, it is sometimes necessary to adjust the tool length relative to each other.

As standard, only the adjustable holder BKT110.U17G.02 for insert type A110 includes length adjustment.

URMA IntraMax模块化系统专为镗孔而设计，也适用于其他加工操作，如精加工镗孔、端面槽、反镗孔和沉孔或其他特殊解决方案。与HORN槽加工系统相结合，可以组装成铣床的旋转刀具。

有两种不兼容的IntraMax系统尺寸:

IntraMax K, (小)为 $\varnothing 49-88$  mm, 刀夹宽度35mm, 径向调节范围8mm。

IntraMax G, (大型)为 $\varnothing 87-\varnothing 297$  mm, 刀夹宽度49 mm, 径向调节范围15 mm。

中间刀夹的直径范围可以通过增加直径扩展器来增加。每个中间适配器都有一个特定的直径范围。

URMA刀杆的范围和HORN槽系统的范围是不同的。见下表。

The URMA IntraMax modular system, designed for boring, is also suitable for other machining operations, such as finish boring, face grooving, counterboring and countersinking or other special solutions. In combination with HORN grooving systems, rotating tools for milling machines can be assembled.

Two non-compatible IntraMax system sizes are available:

IntraMax K, ( small ) for  $\varnothing 49-88$  mm, adaptor width 35 mm, adjustment range 8 mm radial.

IntraMax G, ( large ) for  $\varnothing 87-\varnothing 297$  mm, adaptor width 49 mm, adjustment range 15 mm radial.

The diameter range of the intermediate adaptor can be increased by building up a diameter extender. Each intermediate adaptor covers a specific diameter range.

The ranges of URMA insert holders and those of the HORN grooving systems are different. See table.

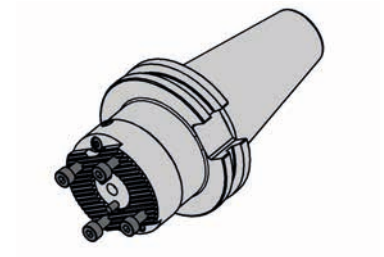
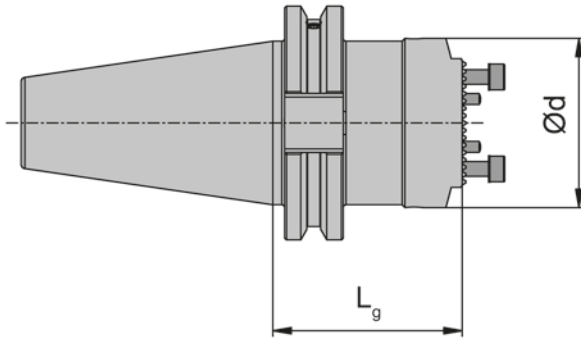
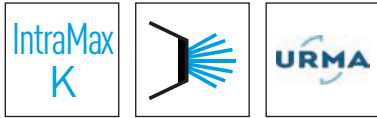
### IntraMax K - IntraMax $\varnothing 49 - \varnothing 88$ mm, 刀夹宽度 / width of adapter = 35 mm

配直径扩展部件 with diameter extender	URMA-ISO	HORN BKT105/110	HORN BKT365
-	49-62	5-18	47-61
22 03 06 012	62-75	18-31	60-74
22 03 07 012	75-88	31-45	73-87

### IntraMax G - IntraMax $\varnothing 87 - \varnothing 297$ mm, 刀夹宽度 / width of adapter = 49 mm

配直径扩展部件 with diameter extender	URMA-ISO	HORN BKT105/110	HORN BKT365
-	87-117	31-61	81-110
22 01 11 018	117-147	61-91	111-140.5
22 01 14 018	147-177	91-122	140.5-170.5
22 01 17 018	177-207	122-152	170.5-200.5
22 01 20 018	207-237	152-181	200.5-230.5
22 01 23 018	237-267	181-211	230.5-260.5
22 01 26 018	269-297	211-241	260.5-290.5





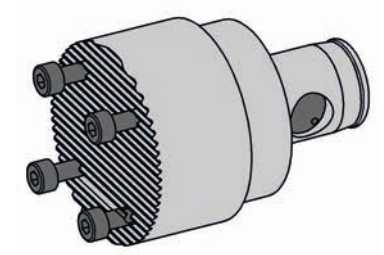
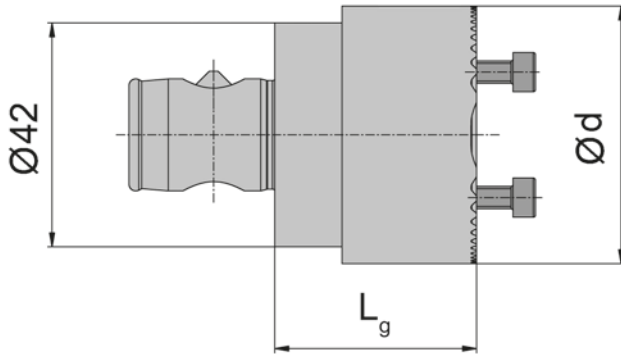
E

产品型号 Part number	Lg	d	直径范围 用于 Diameter Range for 型号 / type 105 / 315	重量 [kg] Weight [kg]	系列 System
C11 41 03 052	52	46	5 - 18 / -	1.2	CAT40
D11 41 03 052	52	46	5 - 18 / 47 - 61	1.2	SK40/A
H11 43 03 052	52	46	5 - 18 / 47 - 61	1.2	SK40/B
HSKA 11 63 03	60	46	5 - 18 / 47 - 61	1.3	HSKA-63
T11 41 03 052	52	46	5 - 18 / 47 - 61	1.3	MAS-BT40

配件

Spare Parts

URMA常规刀柄 Basic Holder Urma	锁紧螺钉 Clamping Screw
C/D/H/HSKA/T11...	C00 22 05

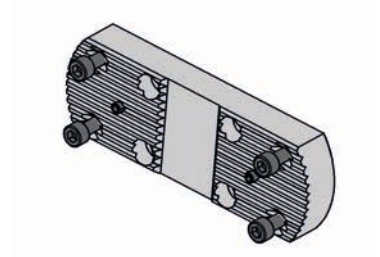
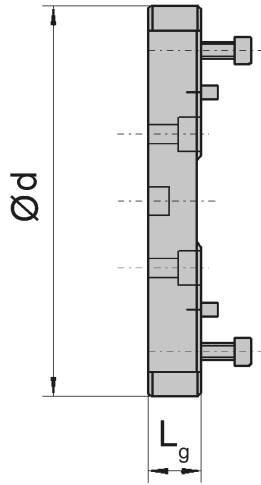


产品型号 Part number	Lg	d	直径范围 用于 Diameter Range for 型号 / type 105 / 315	Beta-Modul	重量 [kg] Weight [kg]
<b>B21 40 46 036</b>	36	46	5 - 18 / 47 - 61	40	0,5

配件  
Spare Parts

URMA中间接头 Intermediate adaptors URMA	锁紧螺钉 Clamping Screw
<b>B21 40 46 036</b>	<b>C00 22 05</b>





E

产品型号 Part number	Lg	d	直径范围 用于 Diameter Range for 型号 / type 105 / 315	重量 [kg] Weight [kg]
22 03 06 012	12	59	18 - 31 / 60 - 74	0.2
22 03 07 012	12	72	31 - 45 / 73 - 87	0.3

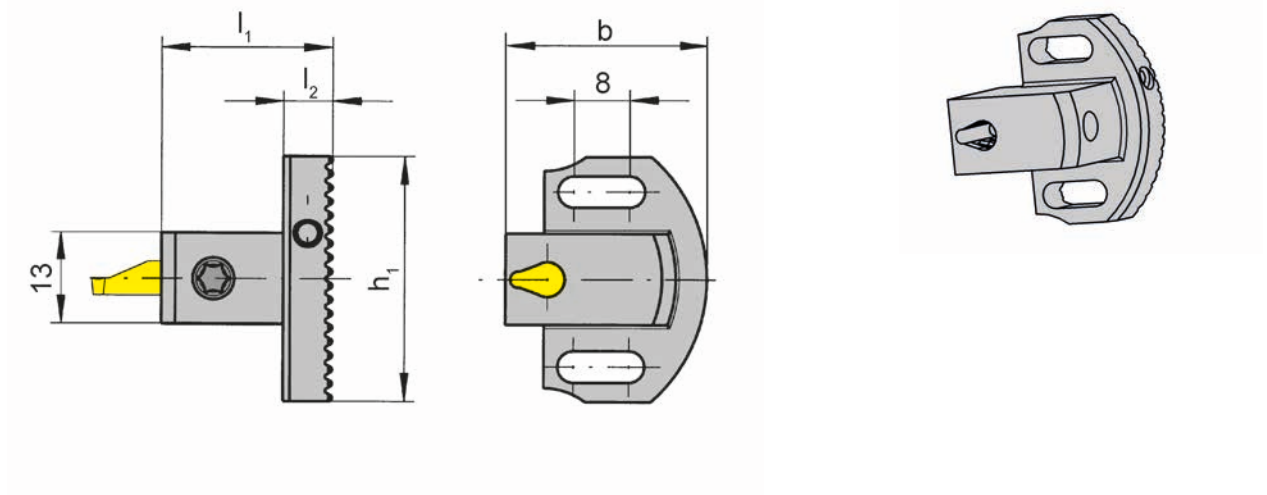
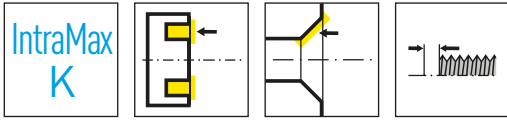
配件  
Spare Parts

直径扩展 URMA Diameter extender URMA	锁紧螺钉 Clamping Screw
22 0...	C00 22 05

# 可调刀杆

Adjustable holder

**BKT**  $\varnothing \geq 5 \text{ mm}$



产品型号 Part number	$l_1$	$h_1$	$b$	$l_2$	HWS
<b>BKT105.U90K.01</b>	24.5	35	28.5	7	105123 • 105124 • 105125

夹持长度12mm  
Clamping length 12 mm

直径 $Da \text{ min} = 2 \times (6 \text{ mm} + f \text{ Insert})$ 以上时可以使用两个刀夹  
2 Cartridges are suitable from  $Da \text{ min} = 2 \times (6 \text{ mm} + f \text{ Insert})$

## 配件

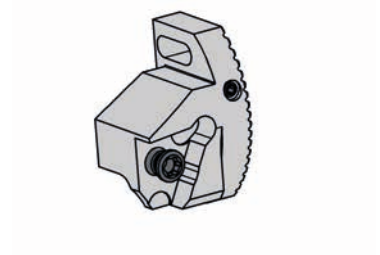
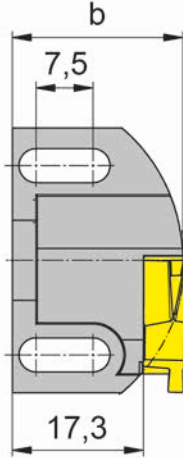
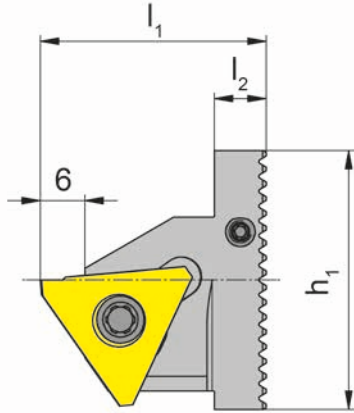
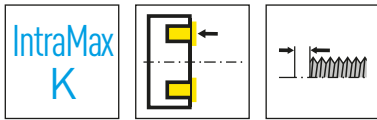
Spare Parts

可调刀杆 Adjustable holder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
BKT105.U90K.01	<b>6.075T15P</b>	<b>T15PQ</b>

# 可调刀杆

## Adjustable holder

BKT  $\varnothing \geq 47 \text{ mm}$



E

产品型号 Part number	$l_1$	$h_1$	$b$	$l_2$	HWS
<b>BKT356.U90K.05</b>	30.5	35	22.8	7	31505R

2 刀夹适用于 $\varnothing 47-87 \text{ mm}$   
2 Cartridges are suitable from  $\varnothing 47 - 87 \text{ mm}$

### 配件

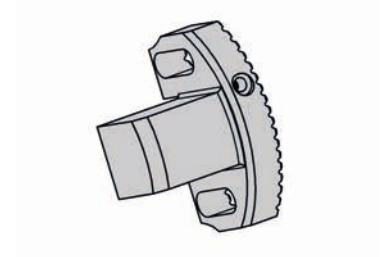
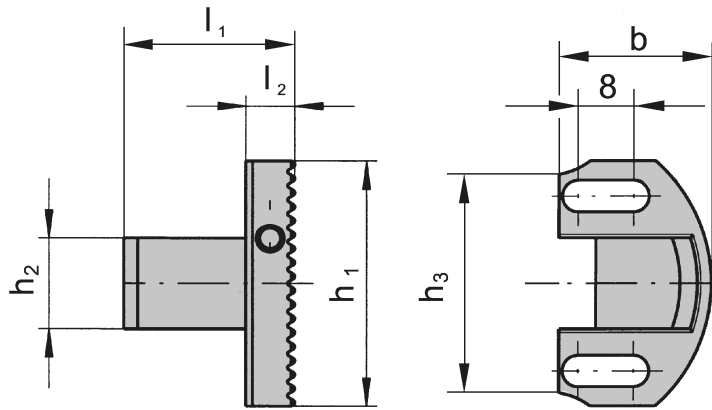
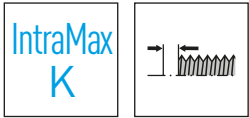
#### Spare Parts

可调刀杆 Adjustable holder	锁紧螺钉 Clamping Screw	TORX PLUS® 扳手 TORX PLUS® Wrench
<b>BKT356.U90K.05</b>	<b>5.12T20P</b>	<b>T20PQ</b>



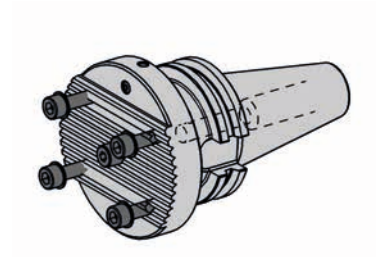
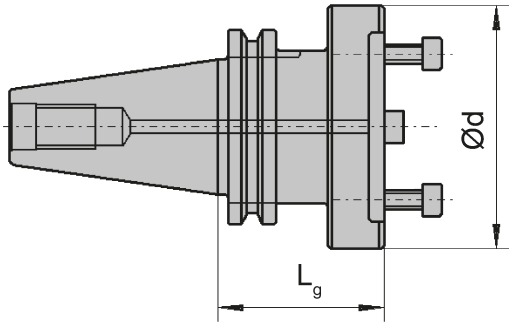
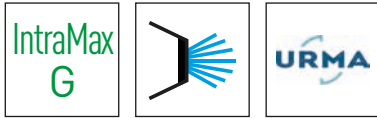
平衡块  
Balancing weight

020



产品型号 Part number	$l_1$	$h_2$	$h_1$	$h_3$	$b$	$l_2$
020.U00K.2040	24.5	13	35	31	22	7





E

产品型号 Part number	Lg	d	直径范围 用于 Diameter Range for 型号 / type 105 / 315	重量 [kg] Weight [kg]	系列 System
D11 41 01 054	54	80	31 - 61 / 81 - 110	1.4	SK40/A
H11 43 01 054	54	80	31 - 61 / 81 - 110	1.4	SK40/B
HSKA 11 63 01	60	80	31 - 61 / 81 - 110	1.4	HSKA-63
T11 41 01 054	54	80	31 - 61 / 81 - 110	1.5	MAS-BT40

配件

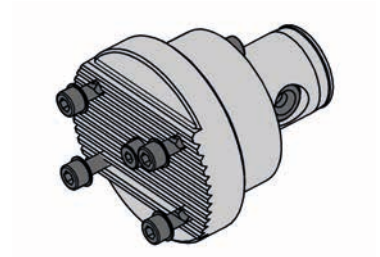
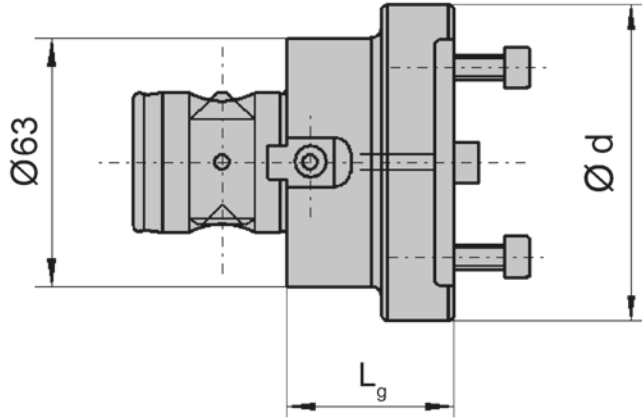
Spare Parts

URMA常规刀柄 Basic Holder Urma	螺钉 Screw
D/H/HSKA/T11...	C00 22 02

# URMA中间接头

Intermediate adaptors URMA

# B21

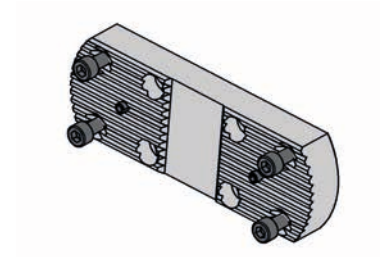
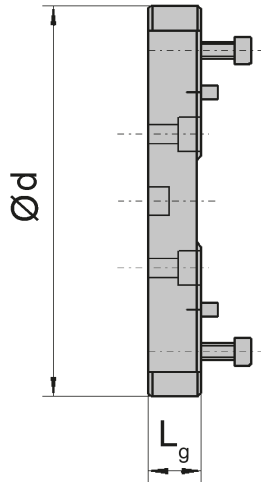


产品型号 Part number	Lg	d	直径范围 用于 Diameter Range for 型号 / type 105 / 315	Beta-Modul	重量 [kg] Weight [kg]
<b>B21 63 80 042</b>	42	80	31 - 61 / 81 - 110	63	0,8

## 配件 Spare Parts

URMA中间接头 Intermediate adaptors URMA	螺钉 Screw	锁紧螺钉 Clamping Screw
B21 63 80 042	<b>C00 22 02</b>	<b>C00 22 05</b>





E

产品型号 Part number	Lg	d	直径范围 用于 Diameter Range for 型号 / type 105 / 315	重量 [kg] Weight [kg]
22 01 11 018	18	110	61 - 91 / 111 - 140.5	0.8
22 01 14 018	18	140	91 - 122 / 140.5 - 170.5	1
22 01 17 018	18	170	122 - 152 / 170.5 - 200	1.2

配件

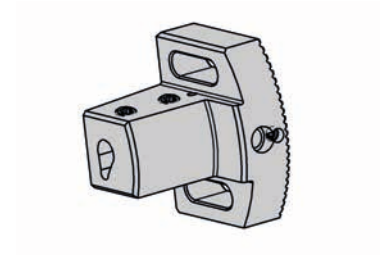
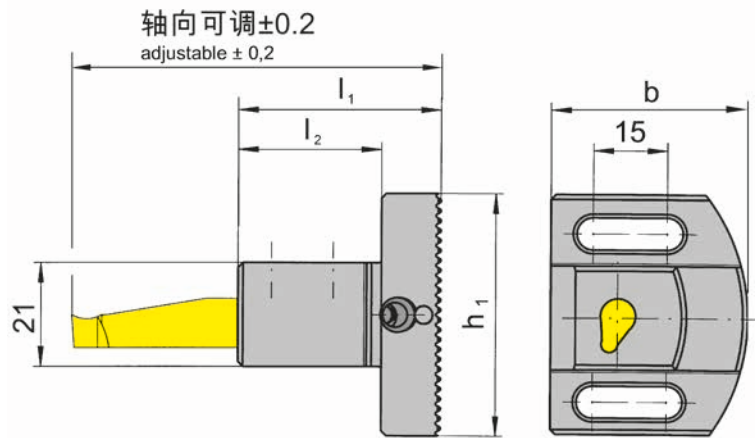
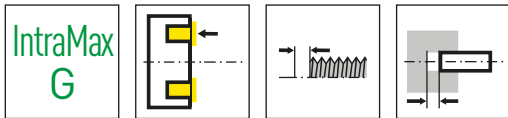
Spare Parts

直径扩展 URMA Diameter extender URMA	锁紧螺钉 Clamping Screw
22 0...	C00 22 02

# 可调刀杆

## Adjustable holder

BKT  $\varnothing \geq 31 \text{ mm}$



产品型号 Part number	$l_1$	$l_2$	$h_1$	b	HWS
<b>BKT110.U17G.02</b>	41	26	49	39.5	110260

仅适用于右手刀片  
for right hand inserts only

2刀柄适用于,从  $D_a \text{ min} = 2x (13,5 \text{ mm} + f \text{ 刀片尺寸})$   
2 Holders are suitable from  $D_a \text{ min} = 2x (13,5 \text{ mm} + f \text{ Insert})$

### 配件

#### Spare Parts

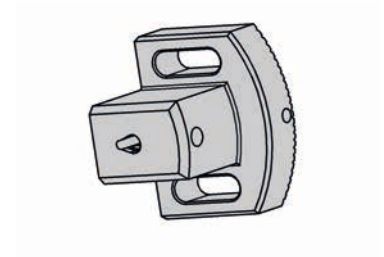
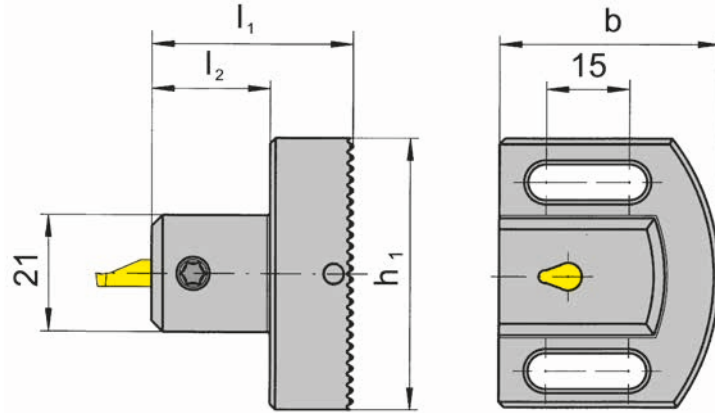
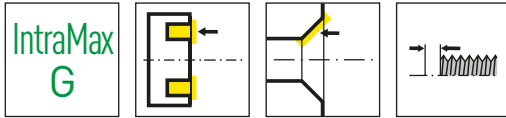
可调刀杆 Adjustable holder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
BKT110.U17G.02	<b>6.075T15P</b>	<b>T15PQ</b>



# 可调刀杆

Adjustable holder

BKT  $\varnothing \geq 31 \text{ mm}$



E

产品型号 Part number	$l_1$	$l_2$	$h_1$	b	HWS
<b>BKT105.U90G.01</b>	36.4	24.4	49	39.5	105123 • 105124 • 105125

夹持长度12mm  
Clamping length 12 mm

## 配件

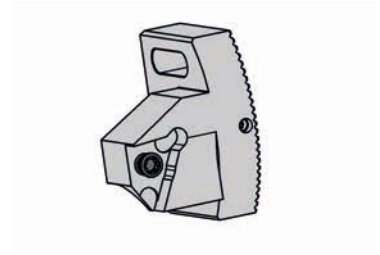
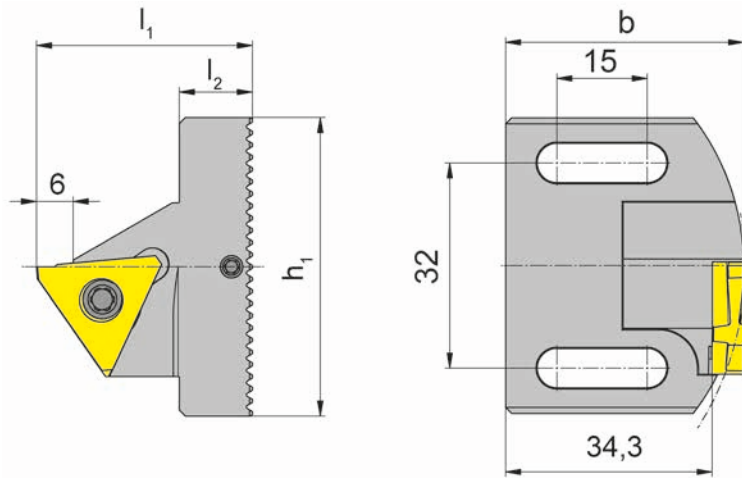
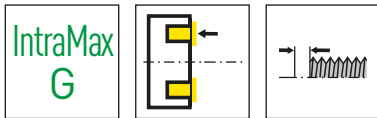
Spare Parts

可调刀杆 Adjustable holder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
<b>BKT105.U90G.01</b>	<b>6.075T15P</b>	<b>T15PQ</b>

# 可调刀杆

Adjustable holder

BKT  $\varnothing \geq 81 \text{ mm}$



产品型号 Part number	$l_1$	$h_1$	$b$	$l_2$	HWS
<b>BKT356.U90G.05</b>	42.4	49	39.8	12	31505R

仅限右手刀片

for right hand inserts only

两刀柄适合于直径  $\varnothing 81 - 200 \text{ mm}$

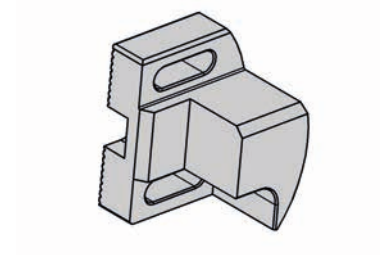
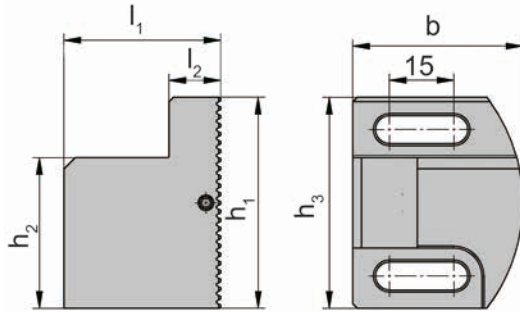
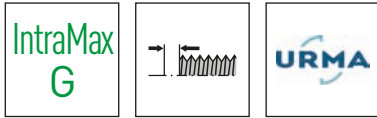
2 Holder are suitable from  $\varnothing 81 - 200 \text{ mm}$

## 配件

Spare Parts

可调刀杆 Adjustable holder	锁紧螺钉 Clamping Screw	TORX PLUS® 扳手 TORX PLUS® Wrench
<b>BKT356.U90G.05</b>	<b>5.12T20P</b>	<b>T20PQ</b>





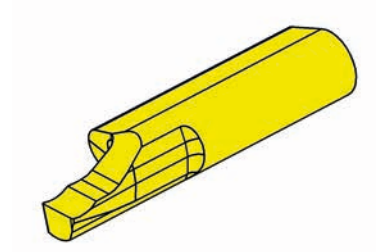
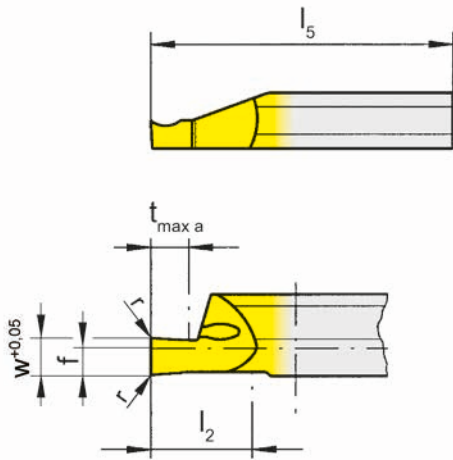
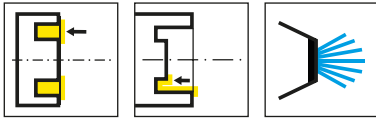
E

产品型号 Part number	$l_1$	$h_2$	$h_1$	$h_3$	$b$	$l_2$	重量 [kg] Weight [kg]
23 01 10 036	36.4	34.8	49	49	39.5	12.5	0.3

配件  
Spare Parts

Balancing weight	螺钉 Screw
23 01 10 036	C00 22 02





R=右手型-如图  
R = right hand version shown

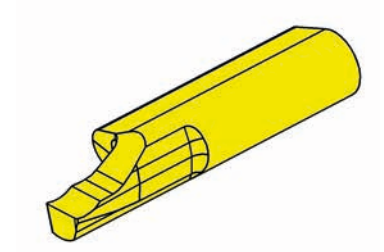
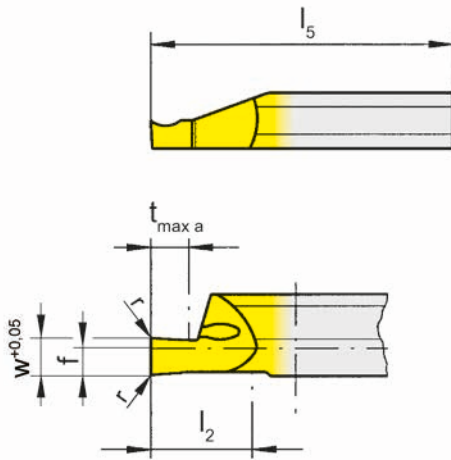
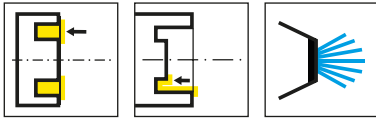
L=左手型  
L = left hand version

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
△ 4周  
4 weeks

产品型号 Part number	w	r	f	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max a</sub>	D <sub>a min</sub>	HIS	MG12	EG35	T125
R105.0510.1.8	1	0.05	2	7	10	25	2	5	105125	▲	▲	▲
R105.0515.1.8	1.5	0.05	2	7	10	25	3	5	105125	▲	▲	▲
R105.0520.1.8	2	0.05	2	7	10	25	5	5	105125	▲	▲	▲
R105.0510.2.8	1	0.05	2	7	15	35	2	5	105125	△	▲	▲
R105.0515.2.8	1.5	0.05	2	7	15	35	3	5	105125	△	▲	▲
R105.0520.2.8	2	0.05	2	7	15	35	5	5	105125	△	▲	▲
L105.0510.1.8	1	0.05	2	7	10	25	2	5	105125	▲	▲	▲
L105.0515.1.8	1.5	0.05	2	7	10	25	3	5	105125	▲	▲	▲
L105.0520.1.8	2	0.05	2	7	10	25	5	5	105125	△	▲	▲
L105.0510.2.8	1	0.05	2	7	15	35	2	5	105125	△	△	▲
L105.0515.2.8	1.5	0.05	2	7	15	35	3	5	105125	△	▲	▲
L105.0520.2.8	2	0.05	2	7	15	35	5	5	105125	△	▲	▲
P	○	●	●									
M	-	●	●									
K	-	○	●									
N	-	-	●									
S	-	-	●									
H	-	-	-									





E

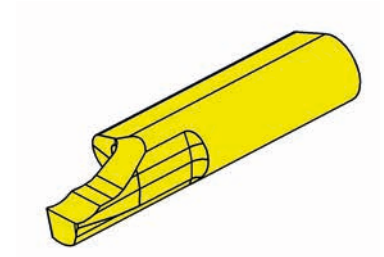
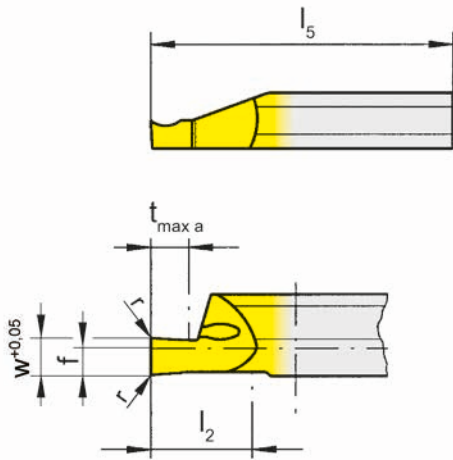
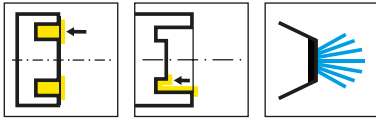
R=右手型-如图  
R = right hand version shown

L=左手型  
L = left hand version

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
△ 4周  
4 weeks

产品型号 Part number	w	r	f	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max a</sub>	D <sub>a min</sub>	HIS	MG12	EG35	T125
R105.0610.1.8	1	0.05	2	7	10	25	2	6	105125	▲	▲	▲
R105.0615.1.8	1.5	0.05	2	7	10	25	3	6	105125	▲	▲	▲
R105.0620.1.8	2	0.05	2	7	10	25	5	6	105125	▲	▲	▲
R105.0610.2.8	1	0.05	2	7	15	35	2	6	105125	▲	▲	▲
R105.0615.2.8	1.5	0.05	2	7	15	35	3	6	105125	▲	▲	▲
R105.0620.2.8	2	0.05	2	7	15	35	5	6	105125	▲	▲	▲
L105.0610.1.8	1	0.05	2	7	10	25	2	6	105125	△	▲	▲
L105.0615.1.8	1.5	0.05	2	7	10	25	3	6	105125	△	▲	▲
L105.0620.1.8	2	0.05	2	7	10	25	5	6	105125	△	▲	▲
L105.0610.2.8	1	0.05	2	7	15	35	2	6	105125	△	△	▲
L105.0615.2.8	1.5	0.05	2	7	15	35	3	6	105125	△	△	▲
L105.0620.2.8	2	0.05	2	7	15	35	5	6	105125	△	△	▲
P	o	●	●									
M	-	●	●									
K	-	o	●									
N	-	-	●									
S	-	-	●									
H	-	-	-									



R=右手型-如图  
R = right hand version shown

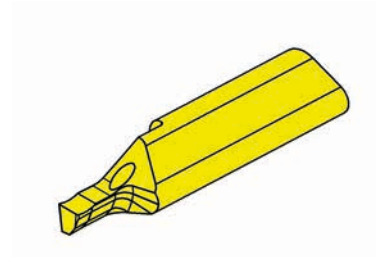
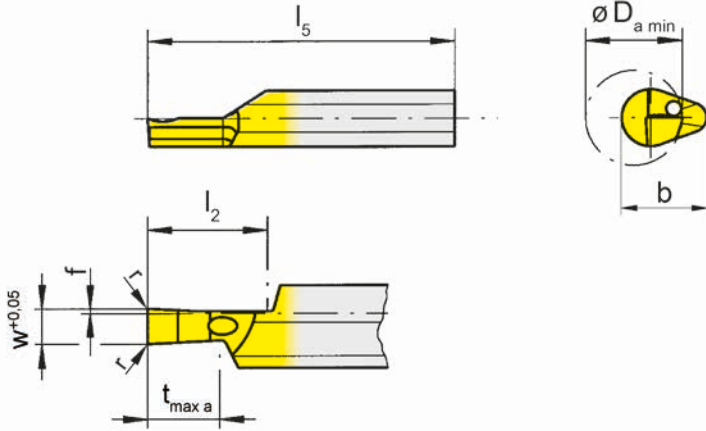
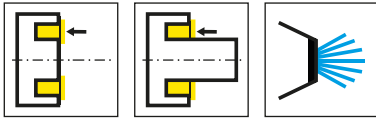
L=左手型  
L = left hand version

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
▲ 4周  
4 weeks

产品型号 Part number	w	r	f	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max a</sub>	D <sub>a min</sub>	HIS	EG35	T125
R105.0810.1.8	1	0.15	2	7	10	25	2	8	105125	▲	▲
R105.0815.1.8	1.5	0.15	2	7	10	25	3	8	105125	▲	▲
R105.0820.1.8	2	0.15	2	7	10	25	4	8	105125	▲	▲
R105.0825.1.8	2.5	0.15	2	7	10	25	5	8	105125	▲	▲
R105.0830.1.8	3	0.15	2	7	10	25	6	8	105125	▲	▲
R105.0810.2.8	1	0.15	2	7	15	35	2	8	105125	▲	▲
R105.0815.2.8	1.5	0.15	2	7	15	35	3	8	105125	▲	▲
R105.0820.2.8	2	0.15	2	7	15	35	4	8	105125	▲	▲
R105.0825.2.8	2.5	0.15	2	7	15	35	5	8	105125	▲	▲
R105.0830.2.8	3	0.15	2	7	15	35	6	8	105125	▲	▲
L105.0810.1.8	1	0.15	2	7	10	25	2	8	105125	▲	▲
L105.0815.1.8	1.5	0.15	2	7	10	25	3	8	105125	▲	▲
L105.0820.1.8	2	0.15	2	7	10	25	4	8	105125	▲	▲
L105.0825.1.8	2.5	0.15	2	7	10	25	5	8	105125	▲	▲
L105.0830.1.8	3	0.15	2	7	10	25	6	8	105125	▲	▲
L105.0810.2.8	1	0.15	2	7	15	35	2	8	105125	▲	▲
L105.0815.2.8	1.5	0.15	2	7	15	35	3	8	105125	▲	▲
L105.0820.2.8	2	0.15	2	7	15	35	4	8	105125	▲	▲
L105.0825.2.8	2.5	0.15	2	7	15	35	5	8	105125	▲	▲
L105.0830.2.8	3	0.15	2	7	15	35	6	8	105125	▲	▲
P	●	●									
M	●	●									
K	○	●									
N	-	●									
S	-	●									
H	-	-									





E

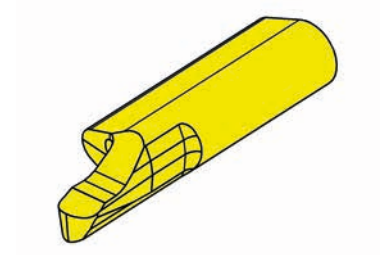
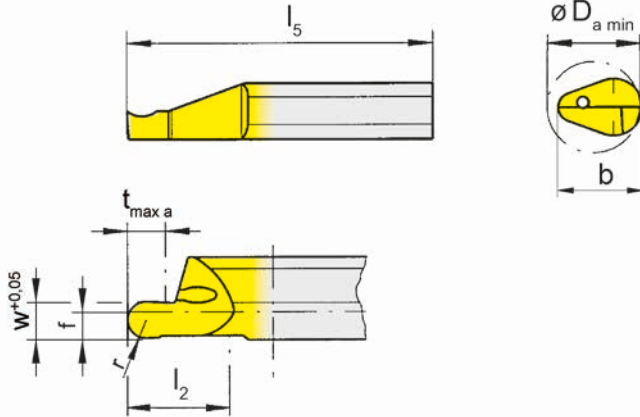
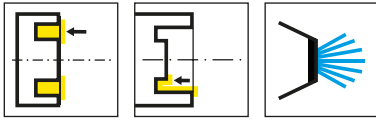
R=右手型-如图  
R = right hand version shown

L=左手型  
L = left hand version

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
▲ 4周  
4 weeks

产品型号 Part number	w	r	f	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max a</sub>	D <sub>a min</sub>	HIS	EG35	T125
R105.0810.1.9	1	0.15	0.4	7	10	25	2	8	105125	▲	▲
R105.0815.1.9	1.5	0.15	0.4	7	10	25	3	8	105125	▲	▲
R105.0820.1.9	2	0.15	0.4	7	10	25	4	8	105125	▲	▲
R105.0825.1.9	2.5	0.15	0.4	7	10	25	5	8	105125	▲	▲
R105.0830.1.9	3	0.15	0.4	7	10	25	6	8	105125	▲	▲
L105.0810.1.9	1	0.15	0.4	7	10	25	2	8	105125	▲	▲
L105.0815.1.9	1.5	0.15	0.4	7	10	25	3	8	105125	▲	▲
L105.0820.1.9	2	0.15	0.4	7	10	25	4	8	105125	▲	▲
L105.0825.1.9	2.5	0.15	0.4	7	10	25	5	8	105125	▲	▲
L105.0830.1.9	3	0.15	0.4	7	10	25	6	8	105125	▲	▲
										P	●
										M	●
										K	●
										N	-
										S	-
										H	-



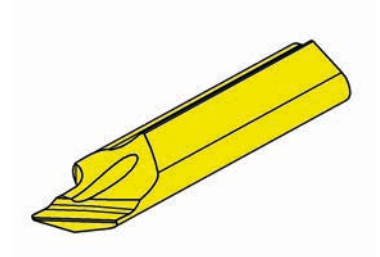
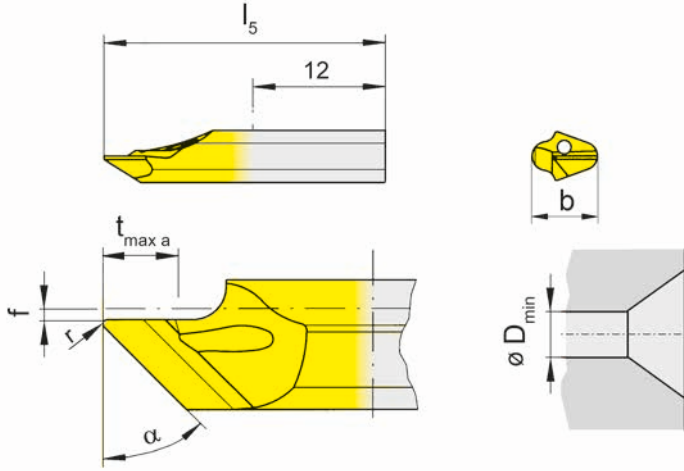
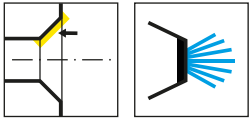
R=右手型-如图  
R = right hand version shown

L=左手型  
L = left hand version

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
△ 4周  
4 weeks

产品型号 Part number	w	r	f	b	l <sub>2</sub>	l <sub>5</sub>	t <sub>max a</sub>	D <sub>a min</sub>	HIS	EG35	TI25	P	M	K	N	S	H
R105.8V10.1.8	1	0.5	2	7	10	25	2	8	105125	▲	▲	●	●	●	-	-	-
R105.8V16.1.8	1.6	0.8	2	7	10	25	3	8	105125	▲	▲	●	●	●	-	-	-
R105.8V20.1.8	2	1	2	7	10	25	4	8	105125	▲	▲	●	●	●	-	-	-
R105.8V25.1.8	2.5	1.25	2	7	10	25	5	8	105125	▲	▲	●	●	●	-	-	-
R105.8V30.1.8	3	1.5	2	7	10	25	6	8	105125	▲	▲	●	●	●	-	-	-
R105.8V10.2.8	1	0.5	2	7	15	35	2	8	105125	▲	▲	●	●	●	-	-	-
R105.8V16.2.8	1.6	0.8	2	7	15	35	3	8	105125	▲	▲	●	●	●	-	-	-
R105.8V20.2.8	2	1	2	7	15	35	4	8	105125	▲	▲	●	●	●	-	-	-
R105.8V25.2.8	2.5	1.25	2	7	15	35	5	8	105125	▲	▲	●	●	●	-	-	-
R105.8V30.2.8	3	1.5	2	7	15	35	6	8	105125	▲	▲	●	●	●	-	-	-
L105.8V10.1.8	1	0.5	2	7	10	25	2	8	105125	▲	▲	●	●	●	-	-	-
L105.8V16.1.8	1.6	0.8	2	7	10	25	3	8	105125	▲	▲	●	●	●	-	-	-
L105.8V20.1.8	2	1	2	7	10	25	4	8	105125	▲	▲	●	●	●	-	-	-
L105.8V25.1.8	2.5	1.25	2	7	10	25	5	8	105125	△	▲	●	●	●	-	-	-
L105.8V30.1.8	3	1.5	2	7	10	25	6	8	105125	▲	▲	●	●	●	-	-	-
L105.8V10.2.8	1	0.5	2	7	15	35	2	8	105125	△	▲	●	●	●	-	-	-
L105.8V16.2.8	1.6	0.8	2	7	15	35	3	8	105125	△	▲	●	●	●	-	-	-
L105.8V20.2.8	2	1	2	7	15	35	4	8	105125	▲	▲	●	●	●	-	-	-
L105.8V25.2.8	2.5	1.25	2	7	15	35	5	8	105125	△	▲	●	●	●	-	-	-
L105.8V30.2.8	3	1.5	2	7	15	35	6	8	105125	△	▲	●	●	●	-	-	-



E

R=右手型-如图  
R = right hand version shown

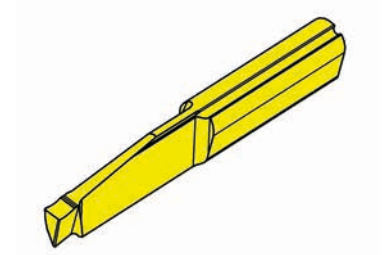
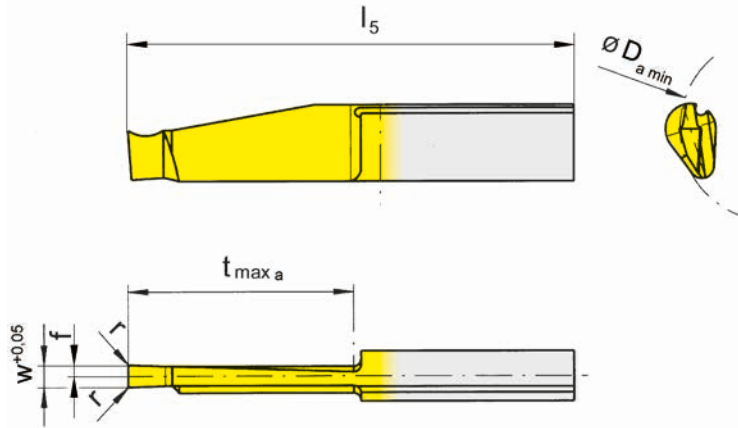
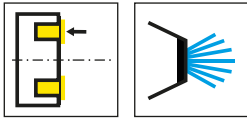
L=左手型  
L = left hand version

▲ 库存  
on stock

硬质合金牌号  
Carbide grades

△ 4周  
4 weeks

产品型号 Part number	r	f	b	l <sub>5</sub>	t <sub>max a</sub>	D <sub>min</sub>	α	HIS	EG35	TF45	TI25	TN35
R105.0045.0.1	0.2	0.5	5.9	20	3.5	1	45°	105123	▲	▲		▲
R105.0045.1.1	0.2	0.5	5.9	25	3.5	1	45°	105123	▲	▲	△	
R105.0060.0.1	0.2	0.5	5.9	20	4	1	60°	105123	▲	▲		
R105.0060.1.1	0.2	0.5	5.9	25	4	1	60°	105123	▲	▲	△	
L105.0045.0.1	0.2	0.5	5.9	20	3.5	1	45°	105123	▲	▲		▲
L105.0045.1.1	0.2	0.5	5.9	25	3.5	1	45°	105123	▲	▲	△	
L105.0060.0.1	0.2	0.5	5.9	20	4	1	60°	105123	▲	▲		
L105.0060.1.1	0.2	0.5	5.9	25	4	1	60°	105123	▲	▲	△	
P	●	●	●	●	●	●	●					
M	●	●	●	●	●	●	●					
K	○	●	●	●	●	●	●					
N	-	●	●	●	●	●	●					
S	-	●	●	●	●	●	●					
H	-	-	-	-	-	-	-					



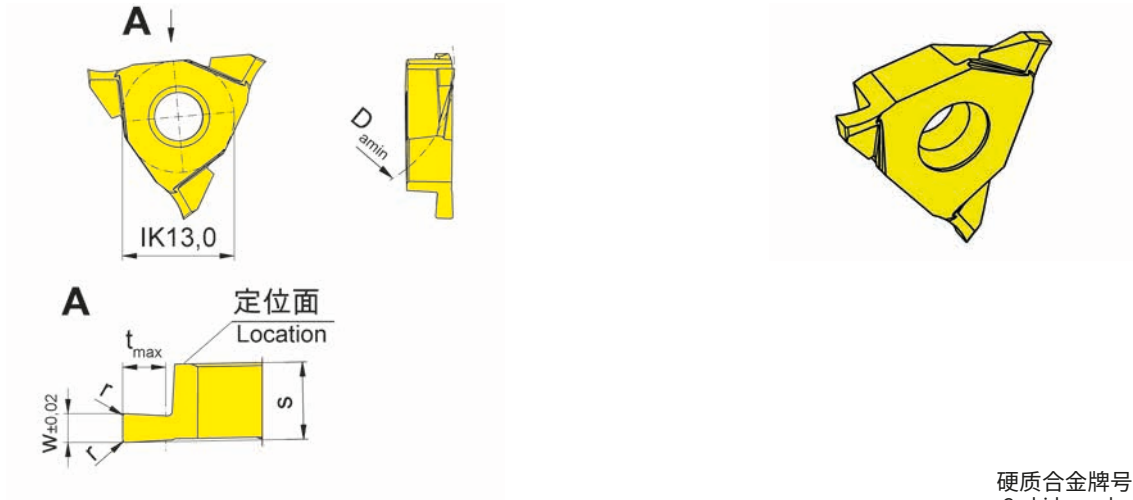
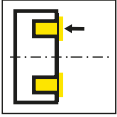
R=右手型-如图  
R = right hand version shown

L=左手型  
L = left hand version

硬质合金牌号  
Carbide grades  
▲ 库存  
on stock  
△ 4周  
4 weeks

产品型号 Part number	w	r	f	l <sub>5</sub>	t <sub>max a</sub>	D <sub>a min</sub>	HIS	EG35	TH35	TI25	TN35	
RA110.2030.3.0	3	0.2	1.5	50	20	20	110260	▲	▲	▲	▲	
RA110.2030.5.0	3	0.2	1.5	60	30	20	110260	▲	▲	▲	▲	
RA110.5030.3.0	3	0.2	1.5	50	20	50	110260	▲		▲		
RA110.5030.5.0	3	0.2	1.5	60	30	50	110260	▲		▲		
<b>注意:配合RA110.2030...刀杆</b> Da min在20和50mm之间时,端面切槽可达满切下的最大切深。 <b>Note for RA110.2030...:</b> Face grooving with full width of the full depth only possible between Da min 20 - 50 mm.								P	●	●	●	●
								M	●	●	●	●
								K	○	●	●	●
								N	-	●	●	●
								S	-	●	●	●
								H	-	-	-	-





E

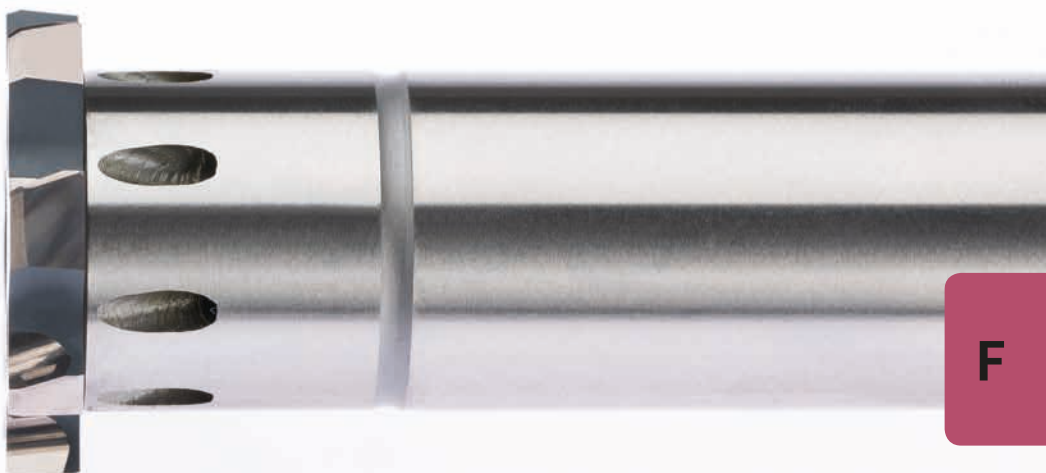
R=右手型-如图  
R = right hand version shown

▲ 库存  
on stock

硬质合金牌号  
Carbide grades  
▲ 4周  
4 weeks

产品型号 Part number	w	r	t <sub>max</sub>	D <sub>a min</sub>	s	HIS	TH35	TN35
RA315.2015.02R	1.5	0.2	2	20	5.4	31505R	Δ	
RA315.3020.02R	2	0.2	3	30	5.4	31505R	▲	
RA315.3030.02R	3	0.2	3	30	5.4	31505R	Δ	
							P	● ●
							M	● ●
							K	● ●
							N	● ●
							S	● ●
							H	- -





F

系列/System	页/Page
<b>概述</b> Overview	<b>114</b>
<b>DR small</b>	<b>116</b>
<b>DR medium</b>	<b>126</b>
<b>DR large</b>	<b>164</b>
技术信息 Technical Instructions	<b>183</b>

## DR small



尺寸规格 size	Ds <sub>min</sub>	Ds <sub>max</sub>
DR08	7.600	8.1
DR10	8.101	9.6
DR11	9.601	11.1
DR13	11.101	13.1

高性能铰孔已经进入了新的维度，世界上最小的可更换刀片式铰孔系统。

High-performance reaming has entered new dimensions with the world's smallest replaceable insert reaming system.

F

## DR medium



尺寸规格 size	Ds <sub>min</sub>	Ds <sub>max</sub>
016	11.900	15.6
019	15.601	18.6
024	18.601	23.6
029	23.601	28.6
036	28.601	35.6
044	35.601	43.6
052	43.601	51.6
061	51.601	60.6
081	60.601	80.6
101	80.601	100.6
121	100.601	120.6
141	120.601	140.6

铰孔是一种全新的创新和独特的设计，旨在实现高生产率。  
这种高精度可更换的刀片扩孔系统是最佳工艺可靠性的保证。

Reaming newly innovated and defined by a unique design, engineered for high productivity.  
This high-precision replaceable insert reaming system is the guarantee for best process reliability.

## DR large



尺寸规格 size	Ds <sub>min</sub>	Ds <sub>max</sub>
150	139.801	149.8
160	149.801	159.8
170	159.801	169.8
180	169.801	179.8
190	179.801	189.8
200	189.801	200.2

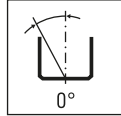
强大的大直径铰孔。创新、灵活的铰孔系统结合了URMA可更换铰削头技术的所有优点。

Powerful reaming for large diameters. The innovative, flexible reaming system that combines all the advantages of URMA's replaceable reaming head technologies.

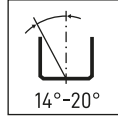
概述  
Overview

页/Page  
118-119

刀片  
Insert  
DR small

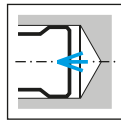


页/Page  
120

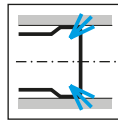


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铰刀刀杆  
Reaming insert holder  
MDR small



页/Page  
122



页/Page  
123

跳动测量环  
Runout Control Disc  
DR small

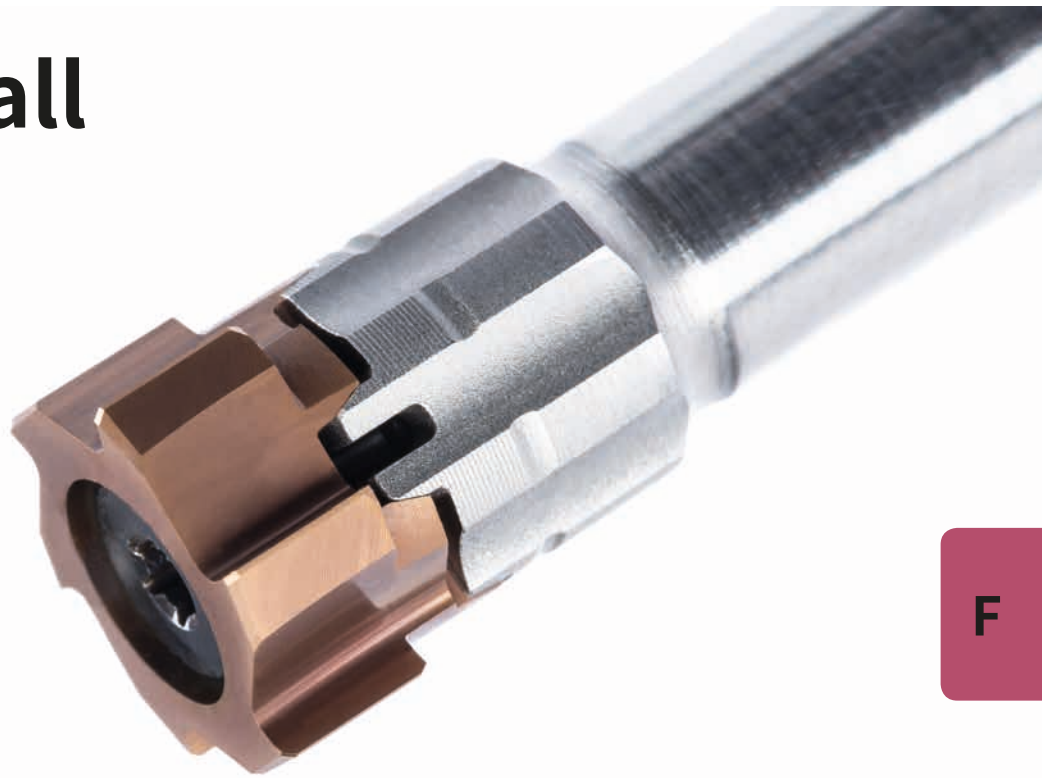
页/Page  
124

技术信息  
Technical Instructions

页/Page  
125

F

# DR small



F

模块化铰刀系统

Ø 7.6 - 13.1 mm

Modular Reaming System

Ø 7,6 - 13,1 mm

# 刀片尺寸 DR08-DR13 (small)

## System Size DR08-DR13 (small)

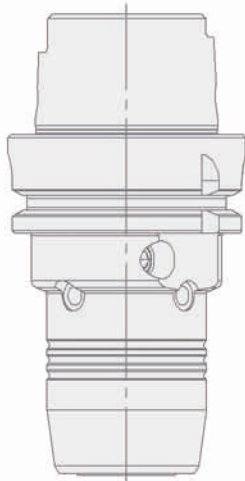


**刀具旋转用**  
for rotating use  
见章 液压刀柄  
Chapter Hydraulic Expansion Toolholder

**车削用**  
for use on lathes  
见章 带平面刀柄  
Chapter Floating holder

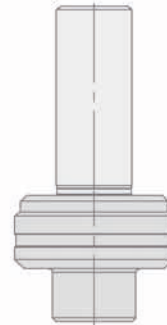
### HDR

跳动  
可调液压刀柄  
run out  
adjustable hydraulic  
expansion toolholder



### PZ

带平面刀柄  
Floating holder



### ER

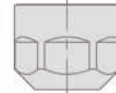
筒夹  
Collet



垫片  
Seal

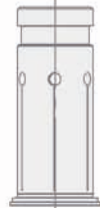


变径套筒  
Chucking nut



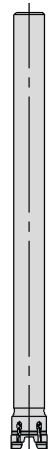
### HDZB

变径套筒  
Intermedium sleeves



### MDR small

铰刀刀杆  
Reaming insert holder



### DR small

刀片  
Insert



螺钉  
Screw



F

### ISO公差订货示例

Ordering example with ISO tolerance

## DR.13.12000.H7.A1 HL3H

**DR**

DR small 系列设计  
DR small system designation

**13**

刀片座尺寸  
Seating size

**12.000**

直径 单位:毫米  
Diameter in mm

**H7**

公差  
Tolerance

**A1**

切削刃槽型  
Cutting geometry

**HL3H**

硬质合金材质  
Carbide grade

### 货示例解释

对于有孔公差规格的订单,其直径按Horn标准确定。根据尺寸和公差的不同,成品直径大约在公差范围的上三分之一。

标准品刀片设计示例:  
DR.13.12000.H7.A1 HL3H  
刀片精磨尺寸  $\varnothing 12,014 \pm 0.003$  mm

一款非标刀片对应其规格尺寸设计,与标准刀片不同,刀片尺寸公差会根据孔的公差而定。非标刀片会标明要求直径。非标刀片根据非标应用推荐,而非标准品公差。

标准品刀片设计示例:  
DR.13.12000.Q3.A1 HL3H  
刀片精磨尺寸  $\varnothing 12,005 \pm 0.003$  mm

### 非标尺寸订货示例

Ordering example with target size (Q insert)

## DR.13.12005.Q3.A1 HL3H

**DR**

DR small 系列设计  
DR small system designation

**13**

刀片座尺寸  
Seating size

**12.005**

非标直径 mm  
Target size diameter in mm

**Q**

非标尺寸代码  
Code for target size insert

**3**

制造公差 +/-  $\mu\text{m}$   
Manufacturing tolerance +/-  $\mu\text{m}$

**A1**

切削刃槽型  
Cutting geometry

**HL3H**

硬质合金材质  
Carbide grade

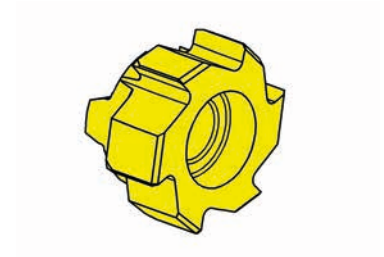
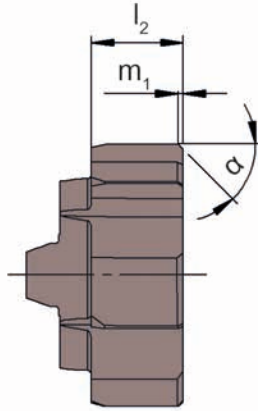
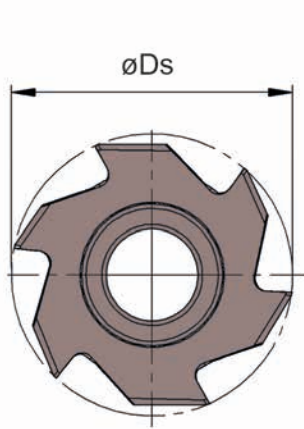
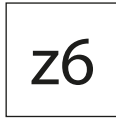
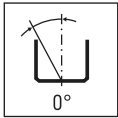
### Explanation of insert size order example

For orders with specifications of the bore tolerance, the diameter is defined by HORN standard. Depending on the size and tolerance, the finished diameter is approximately in the upper third of the tolerance range.

Example standard insert designation:  
DR.13.12000.H7.A1 HL3H  
insert ground to  $\varnothing 12,014 \pm 0.003$  mm

A Q-insert designation is selected for a specific insert dimension. In contrary to standard inserts where all tolerances refer to the bore tolerance, Q-inserts indicates the required insert diameter (target size). Q-inserts are recommended for special applications where standard tolerance ranges are not applicable.

Example Q-insert designation:  
DR.13.12005.Q3.A1 HL3H  
insert ground to  $\varnothing 12,005 \pm 0.003$  mm



图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

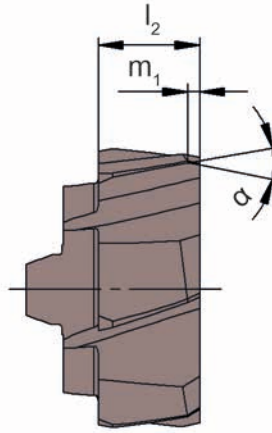
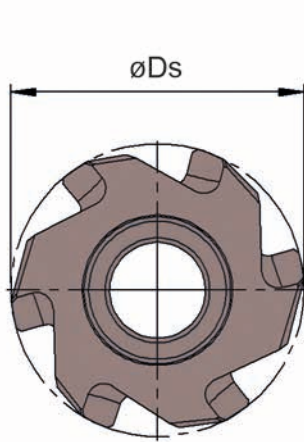
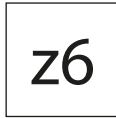
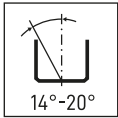
▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H
DR.08.08000.H7.A1	8	H7	08	0.25	45	4.5	4	▲	▲
DR.08.08000.H7.A7	8	H7	08	0.25	45	4.5	4	▲	▲
DR.08.08000.H7.A7	8	H7	08	0.25	45	4.5	4	▲	▲
DR.10.09000.H7.A1	9	H7	10	0.25	45	4.5	6	▲	▲
DR.10.09000.H7.A7	9	H7	10	0.25	45	4.5	6	△	▲
DR.10.09000.H7.A7	9	H7	10	0.25	45	4.5	6	△	▲
DR.11.10000.H7.A1	10	H7	11	0.25	45	4.5	6	▲	▲
DR.11.10000.H7.A7	10	H7	11	0.25	45	4.5	6	▲	▲
DR.11.10000.H7.A7	10	H7	11	0.25	45	4.5	6	▲	▲
DR.11.11000.H7.A1	11	H7	11	0.25	45	4.5	6	▲	▲
DR.11.11000.H7.A7	11	H7	11	0.25	45	4.5	6	△	▲
DR.11.11000.H7.A7	11	H7	11	0.25	45	4.5	6	△	▲
DR.13.12000.H7.A1	12	H7	13	0.25	45	4.5	6	▲	▲
DR.13.12000.H7.A7	12	H7	13	0.25	45	4.5	6	△	▲
DR.13.12000.H7.A7	12	H7	13	0.25	45	4.5	6	△	▲
DR.13.13000.H7.A1	13	H7	13	0.25	45	4.5	6	▲	△
DR.13.13000.H7.A7	13	H7	13	0.25	45	4.5	6	△	▲
DR.13.13000.H7.A7	13	H7	13	0.25	45	4.5	6	△	▲

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions





图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H
DR.08.08000.H7.B1	8	H7	08	0.54	25°	4.5	4	▲	▲
DR.08.08000.H7.B7	8	H7	08	0.54	25°	4.5	4	▲	▲
DR.08.08000.H7.B7	8	H7	08	0.54	25°	4.5	4	▲	▲
DR.10.09000.H7.B1	9	H7	10	0.54	25°	4.5	6	▲	▲
DR.10.09000.H7.B7	9	H7	10	0.54	25°	4.5	6	△	△
DR.10.09000.H7.B7	9	H7	10	0.54	25°	4.5	6	△	△
DR.11.10000.H7.B1	10	H7	11	0.54	25°	4.5	6	▲	▲
DR.11.10000.H7.B7	10	H7	11	0.54	25°	4.5	6	▲	▲
DR.11.10000.H7.B7	10	H7	11	0.54	25°	4.5	6	▲	▲
DR.11.11000.H7.B1	11	H7	11	0.54	25°	4.5	6	▲	▲
DR.11.11000.H7.B7	11	H7	11	0.54	25°	4.5	6	△	△
DR.11.11000.H7.B7	11	H7	11	0.54	25°	4.5	6	△	△
DR.13.12000.H7.B1	12	H7	13	0.54	25°	4.5	6	▲	▲
DR.13.12000.H7.B7	12	H7	13	0.54	25°	4.5	6	▲	▲
DR.13.12000.H7.B7	12	H7	13	0.54	25°	4.5	6	▲	▲
DR.13.13000.H7.B1	13	H7	13	0.54	25°	4.5	6	▲	▲
DR.13.13000.H7.B7	13	H7	13	0.54	25°	4.5	6	△	△
DR.13.13000.H7.B7	13	H7	13	0.54	25°	4.5	6	△	△

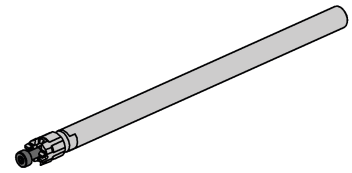
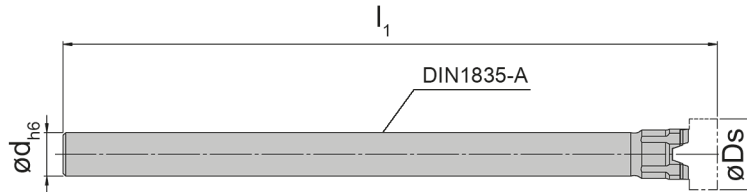
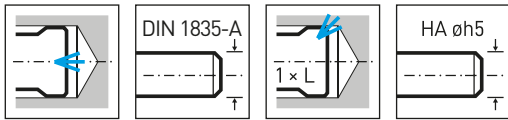
推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions



# 铰刀刀杆

## Reaming insert holder

# MDR small



### 内冷

internal coolant

S = 盲孔 中心  
= Blind hole, central

L = 盲孔 侧面  
= Blind hole, lateral

F

产品型号 Part number	Ds <sub>min</sub>	Ds <sub>max</sub>	l <sub>1</sub>	d	冷却 Coolant	尺寸规格 Size
MDR.08.ST06.086.A.S	7.6	8.1	86	6	L	08
MDR.08.HM06.102.A.S	7.6	8.1	102	6	L	08
MDR.10.ST06.096.A.S	8.101	9.6	96	6	L	10
MDR.10.HM06.116.A.S	8.101	9.6	116	6	L	10
MDR.11.ST08.106.A.S	9.601	11.1	106	8	S	11
MDR.11.HM08.126.A.S	9.601	11.1	126	8	S	11
MDR.13.ST08.120.A.S	11.101	13.1	120	8	S	13
MDR.13.HM08.150.A.S	11.101	13.1	150	8	S	13

刀杆材质: HM=硬质合金 ST=钢

Material of shank: HM = Carbide ST = Steel

1组螺钉, 1个Torx扳手-无需单独订购!

1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

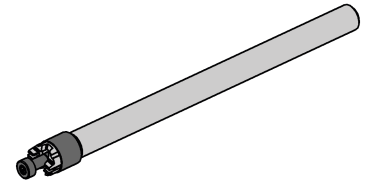
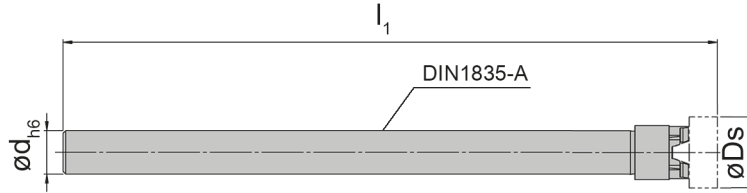
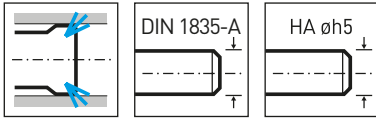
Spare Parts

铰刀刀杆 Reaming insert holder	锁紧螺钉 Clamping Screw
MDR.08...	C009051
MDR.10...	C009052
MDR.11...	C009053B
MDR.13...	C009054B

# 铰刀刀杆

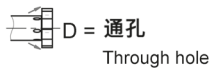
## Reaming insert holder

# MDR small



### 内冷

Through coolant



产品型号 Part number	Ds <sub>min</sub>	Ds <sub>max</sub>	l <sub>1</sub>	d	冷却 Coolant	尺寸规格 Size
MDR.08.ST06.086.A.D	7.6	8.1	86	6	D	08
MDR.08.HM06.102.A.D	7.6	8.1	102	6	D	08
MDR.10.ST06.096.A.D	8.101	9.6	96	6	D	10
MDR.10.HM06.116.A.D	8.101	9.6	116	6	D	10
MDR.11.ST08.106.A.D	9.601	11.1	106	8	D	11
MDR.11.HM08.126.A.D	9.601	11.1	126	8	D	11
MDR.13.ST08.120.A.D	11.101	13.1	120	8	D	13
MDR.13.HM08.150.A.D	11.101	13.1	150	8	D	13

刀杆材质: HM=硬质合金 ST=钢  
Material of shank: HM = Carbide ST = Steel

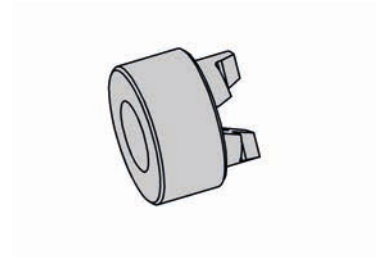
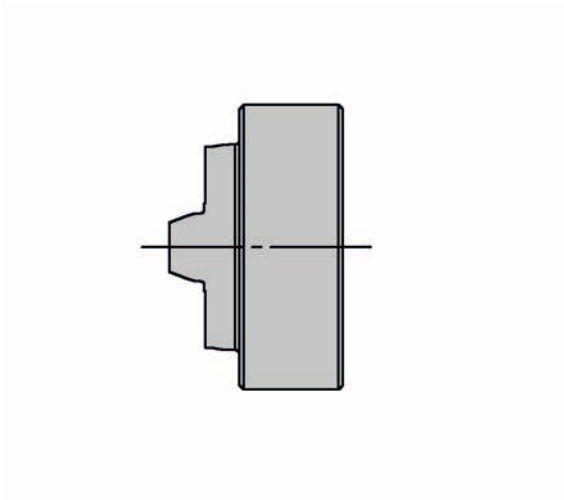
1组螺钉, 1个Torx扳手-无需单独订购!  
1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

Spare Parts

铰刀刀杆 Reaming insert holder	锁紧螺钉 Clamping Screw
MDR.08...	C009051
MDR.10...	C009052
MDR.11...	C009053
MDR.13...	C009054

F



F

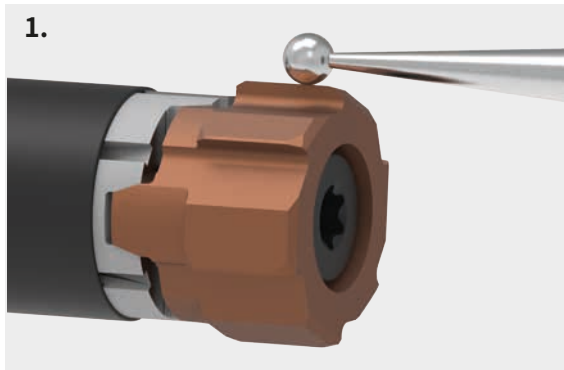
产品型号 Part number	尺寸规格 Size
DR.08.ROCD	08
DR.10.ROCD	10
DR.11.ROCD	11
DR.13.ROCD	13

### 跳动调节

为了达到刀具最好效果,需要零跳动。为了抵消来自于刀杆及主轴的跳动误差,我们推荐使用补偿刀柄及浮动刀柄。刀片跳动可以有不同的方法检测:

#### Runout adjustment

To achieve the best reaming results a tool with zero runout is desirable. In order to compensate for any errors due to runout from the toolholders or the machine spindle, we recommend a compensation holder or floating chuck. The runout of HORN DR small reamers can be measured with different methods:

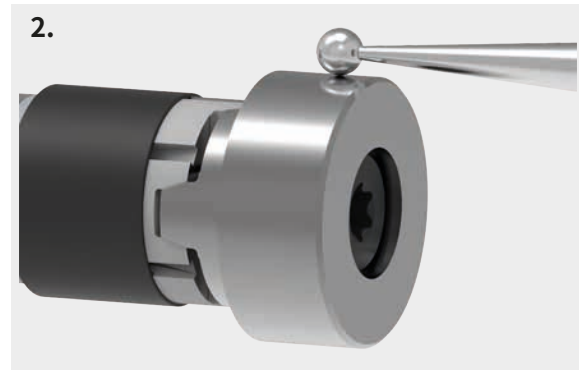


#### 1. 使用现有刀片

HORN DR small 刀具是精确制造。跳动测量及调整可以轻松通过刀片外侧直径。

##### 1. On the external diameter of the insert

HORN DR small tools are manufactured very accurately. Runout measuring/adjustment can be done easily through the outside diameter of the insert.



#### 2. 通过跳动测量环

使用跳动测量环也可以轻松调整跳动。

##### 2. Through runout indicating insert

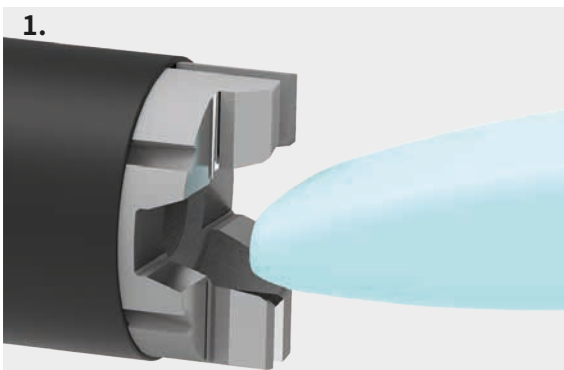
With the runout indicating insert it's even easier to adjust the runout.

### 更换刀片

为达到最佳性能,适当清理接口处及使用扭矩扳手是必要的。

#### Insert change

For optimal performance proper cleaning of the interface and using the defined tightening torque is imperative.

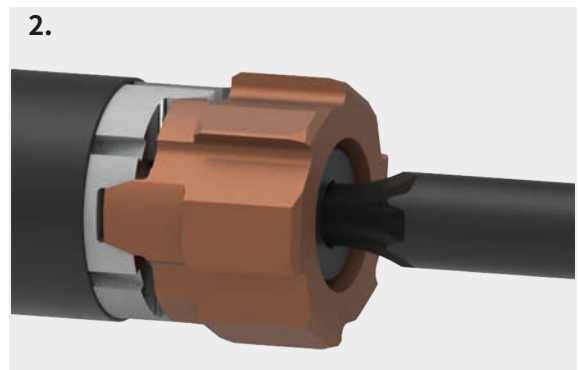


#### 1. 清洁接口

使用包装中所含的造型粘土可以最有效地清洁界面。

##### 1. Cleaning of the interface

The interface can be cleaned most effectively with the contained modelling clay in the insert packaging.



#### 2. 更换刀片

刀片被放置在先前清洗过的接口上,并通过所需的拧紧扭矩进行拧紧。

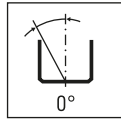
##### 2. Insert change

The insert is placed on the previously cleaned interface and tightened through the required tightening torque.

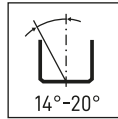
概述  
Overview

页/Page  
128-129, 143-144

刀片  
Insert  
DR medium

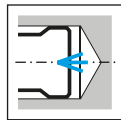


页/Page  
130, 132, 134,  
136, 145, 147,  
149

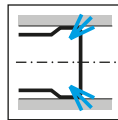


页/Page  
131, 133, 135,  
137, 146, 148,  
150

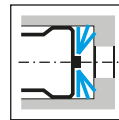
铰刀刀杆  
Reaming insert holder  
MDR



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138, 151



页/Page  
139, 141, 152

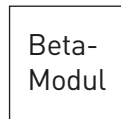


页/Page  
140, 153

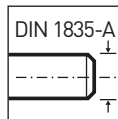
跳动测量环  
Runout Control Disc  
DR medium

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142

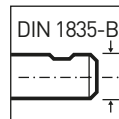
刀柄  
Shank  
VDR



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155



页/Page  
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直接安装于系统  
Direct mounting  
VDR



页/Page  
157



页/Page  
158



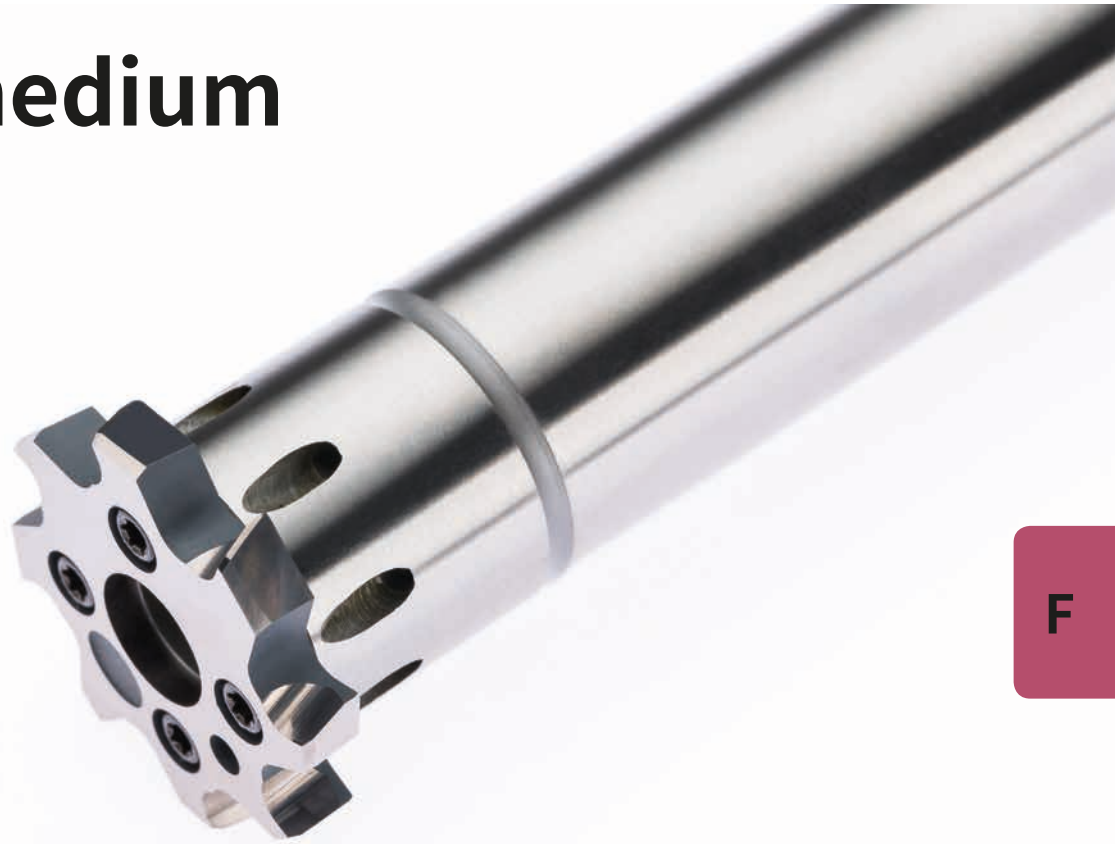
页/Page  
159

技术信息  
Technical Instructions

页/Page  
160-163

F

# DR medium



## 模块化铰刀系统

Ø 11.9 - 35.6 mm  
Ø 35.6 - 140.6 mm

## Modular Reaming System

Ø 11,9 - 35,6 mm  
Ø 35,6 - 140,6 mm

# 刀片尺寸 DR016 - DR036

## System Size DR016 - DR036

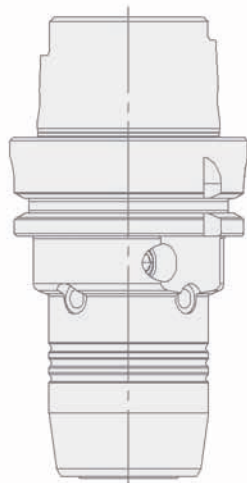


配圆柱柄刀杆  $\varnothing$  11.900 - 35.600 mm  
with cylindrical shank for  $\varnothing$  11,900 - 35,600 mm

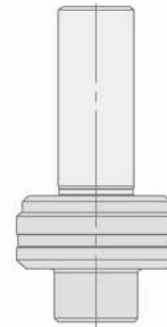
**旋转刀具用**  
for rotating use  
见章 液压刀柄  
Chapter Hydraulic Expansion Toolholder

**车床用**  
for use on lathes  
见章 带平面刀柄  
Chapter Floating holder

**HDR**  
跳动  
可调液压刀柄  
  
run out  
adjustable hydraulic  
expansion toolholder



**PZ**  
浮动刀柄  
Floating holder



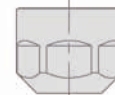
**ER**  
筒夹  
Collet



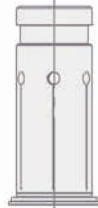
垫片  
Seal



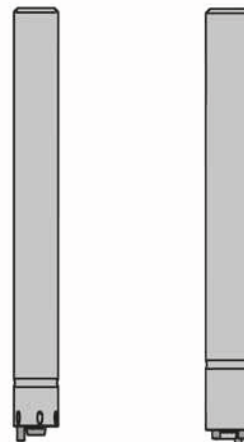
夹紧套筒  
Chucking nut



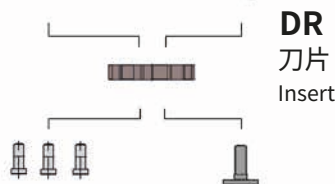
**HDZB**  
变径套  
Intermedium sleeves



**MDR**  
铰刀刀杆带标准接口  
  
Reaming insert holder  
with standard interface



**MDR...Z**  
铰刀刀杆带加强接口  
  
Reaming insert holder  
with reinforced interface



螺钉  
Screw

F



### ISO公差订货示例

Ordering example with ISO tolerance

## DR.016.01200.H7.A1 HL3H

**DR**

DR 系列设计  
DR System designation

**016**

刀片座尺寸  
Seating size

**12.00**

直径 mm  
Diameter in mm

**H7**

公差  
Tolerance

**A1**

切削刃槽型  
Cutting geometry

**HL3H**

硬质合金材质  
Carbide grade

### 订货示例解释

对于有孔公差规格的订单,其直径按Horn标准确定。根据尺寸和公差的不同,成品直径大约在公差范围的上三分之一。

标准品刀片设计示例:  
DR.016.01200.H7.A1 HL3H  
刀片精磨尺寸  $\varnothing 12.014 \pm 0.003$  mm

一款非标刀片对应其规格尺寸设计.与标准刀片不同,刀片尺寸公差会根据孔的公差而定. 非标刀片会标明要求直径. 非标刀片根据非标应用推荐,而非标准品公差。

一张‘DRS’图纸必须创建Q切削刃.此处不能使用相对应的标准指定号.一片DRS铰刀刀片对应的图纸必须选择有效名义尺寸(小数点后3位或不同于ISO的公差)。

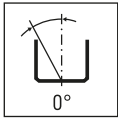
### Explanation of insert size order example

For orders with specifications of the bore tolerance, the diameter is defined by HORN standard. Depending on the size and tolerance, the finished diameter is approximately in the upper third of the tolerance range.

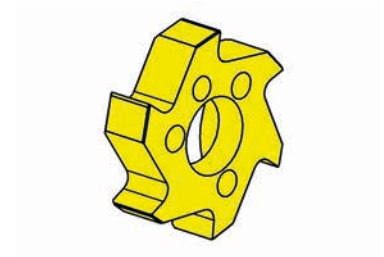
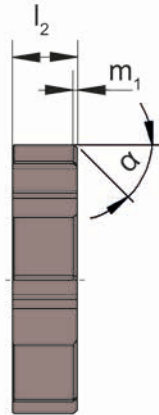
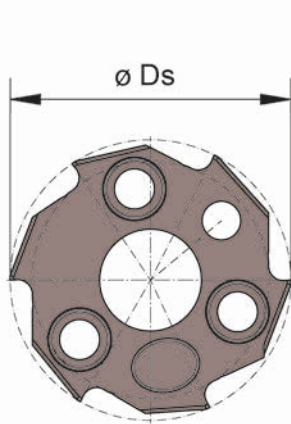
Examples standard insert designation:  
DR.016.01200.H7.A1 HL3H  
insert ground to  $\varnothing 12,014 \pm 0.003$  mm

A Q-insert designation is selected for a specific insert dimension. In contrary to standard inserts where all tolerances refer to the bore tolerance, Q-inserts indicates the required insert diameter (target size). Q-inserts are recommended for special applications where standard tolerance ranges are not applicable.

A “DRS” drawing must be created for Q cutting edges. The corresponding standard designation number cannot be used here. A DRS reaming insert with a corresponding drawing must also be selected for nominal diameters with 3 decimal places or tolerances which do not comply with the ISO code.



z6



图示=右手型  
Picture = right hand cutting version

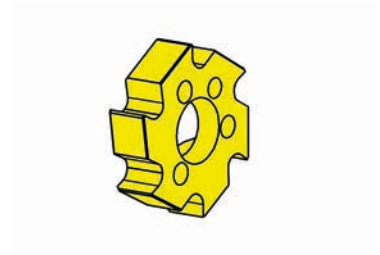
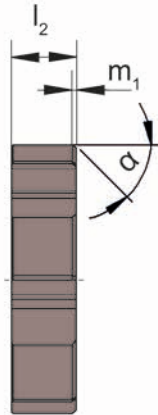
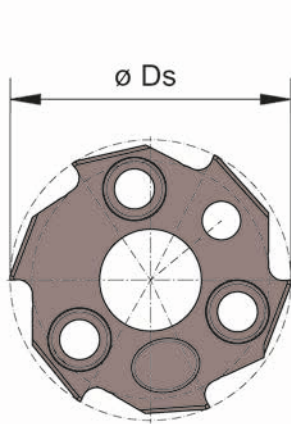
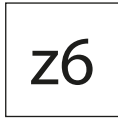
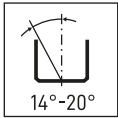
硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.016.01200.H7.A1	12	H7	016	0.25	45°	4.3	6		▲	
DR.016.01200.H7.A6	12	H7	016	0.25	45°	4.3	6		△	△
DR.016.01200.H7.A7	12	H7	016	0.25	45°	4.3	6	△		
DR.016.01300.H7.A1	13	H7	016	0.25	45°	4.3	6		▲	
DR.016.01300.H7.A6	13	H7	016	0.25	45°	4.3	6		△	△
DR.016.01300.H7.A7	13	H7	016	0.25	45°	4.3	6	△		
DR.016.01400.H7.A1	14	H7	016	0.25	45°	4.3	6		▲	
DR.016.01400.H7.A6	14	H7	016	0.25	45°	4.3	6		△	△
DR.016.01400.H7.A7	14	H7	016	0.25	45°	4.3	6	△		
DR.016.01500.H7.A1	15	H7	016	0.25	45°	4.3	6		▲	
DR.016.01500.H7.A6	15	H7	016	0.25	45°	4.3	6		△	△
DR.016.01500.H7.A7	15	H7	016	0.25	45°	4.3	6	△		
DR.019.01600.H7.A1	16	H7	019	0.25	45°	4.3	6		▲	
DR.019.01600.H7.A6	16	H7	019	0.25	45°	4.3	6		△	△
DR.019.01600.H7.A7	16	H7	019	0.25	45°	4.3	6	△		
DR.019.01700.H7.A1	17	H7	019	0.25	45°	4.3	6		▲	
DR.019.01700.H7.A6	17	H7	019	0.25	45°	4.3	6		△	△
DR.019.01700.H7.A7	17	H7	019	0.25	45°	4.3	6	△		

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions



图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

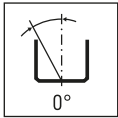
▲ 库存  
on stock

△ 4周  
4 weeks

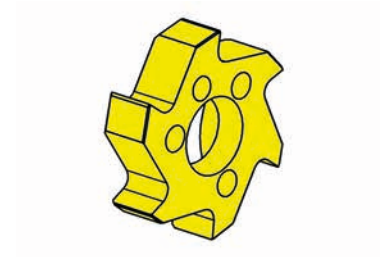
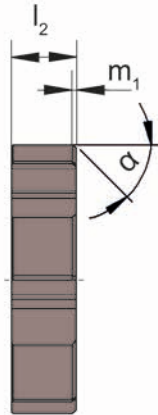
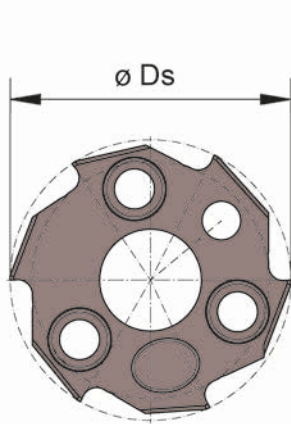
产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.016.01200.H7.B1	12	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01200.H7.B6	12	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01200.H7.B7	12	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01300.H7.B1	13	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01300.H7.B6	13	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01300.H7.B7	13	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01400.H7.B1	14	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01400.H7.B6	14	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01400.H7.B7	14	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01500.H7.B1	15	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01500.H7.B6	15	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.016.01500.H7.B7	15	H7	016	0.54	25°	4.3	6	▲	▲	▲
DR.019.01600.H7.B1	16	H7	019	0.54	25°	4.3	6	▲	▲	▲
DR.019.01600.H7.B6	16	H7	019	0.54	25°	4.3	6	▲	▲	▲
DR.019.01600.H7.B7	16	H7	019	0.54	25°	4.3	6	▲	▲	▲
DR.019.01700.H7.B1	17	H7	019	0.54	25°	4.3	6	▲	▲	▲
DR.019.01700.H7.B6	17	H7	019	0.54	25°	4.3	6	▲	▲	▲
DR.019.01700.H7.B7	17	H7	019	0.54	25°	4.3	6	▲	▲	▲

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z6



图示=右手型  
Picture = right hand cutting version

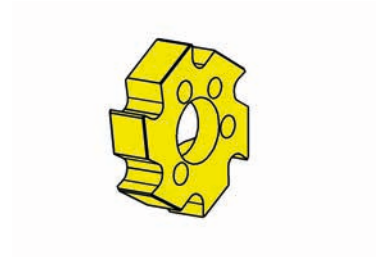
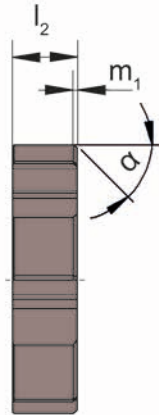
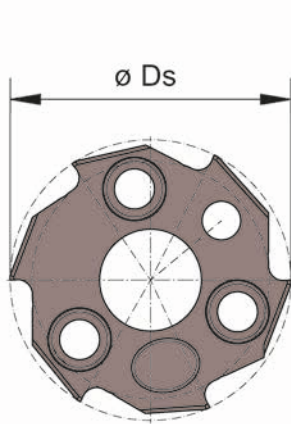
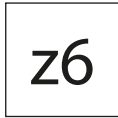
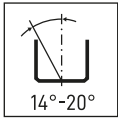
硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.019.01800.H7.A1	18	H7	019	0.25	45°	4.3	6		▲	
DR.019.01800.H7.A6	18	H7	019	0.25	45°	4.3	6		△	△
DR.019.01800.H7.A7	18	H7	019	0.25	45°	4.3	6	△		
DR.024.01900.H7.A1	19	H7	024	0.25	45°	4.3	6		▲	
DR.024.01900.H7.A6	19	H7	024	0.25	45°	4.3	6		△	△
DR.024.01900.H7.A7	19	H7	024	0.25	45°	4.3	6	△		
DR.024.02000.H7.A1	20	H7	024	0.25	45°	4.3	6		▲	
DR.024.02000.H7.A6	20	H7	024	0.25	45°	4.3	6		△	△
DR.024.02000.H7.A7	20	H7	024	0.25	45°	4.3	6	△		
DR.024.02100.H7.A1	21	H7	024	0.25	45°	4.3	6		▲	
DR.024.02100.H7.A6	21	H7	024	0.25	45°	4.3	6		△	△
DR.024.02100.H7.A7	21	H7	024	0.25	45°	4.3	6	△		
DR.024.02200.H7.A1	22	H7	024	0.25	45°	4.3	6		▲	
DR.024.02200.H7.A6	22	H7	024	0.25	45°	4.3	6		△	△
DR.024.02200.H7.A7	22	H7	024	0.25	45°	4.3	6	△		
DR.024.02300.H7.A1	23	H7	024	0.25	45°	4.3	6		▲	
DR.024.02300.H7.A6	23	H7	024	0.25	45°	4.3	6		△	△
DR.024.02300.H7.A7	23	H7	024	0.25	45°	4.3	6	△		

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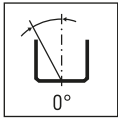
图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades  
▲ 库存  
on stock  
△ 4周  
4 weeks

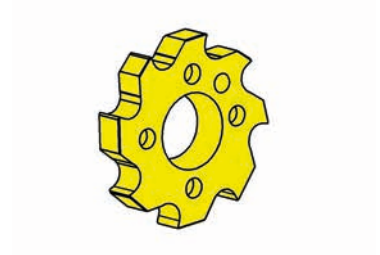
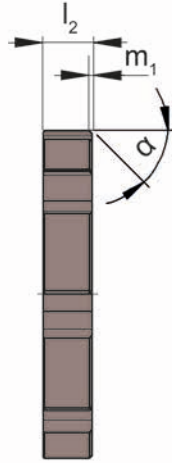
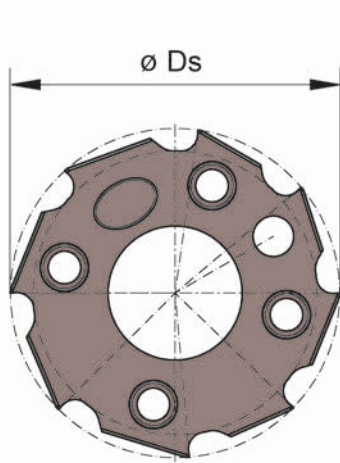
产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
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DR.019.01800.H7.B6	18	H7	019	0.54	25°	4.3	6		△	△
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DR.024.01900.H7.B1	19	H7	024	0.54	25°	4.3	6		▲	
DR.024.01900.H7.B6	19	H7	024	0.54	25°	4.3	6		△	△
DR.024.01900.H7.B7	19	H7	024	0.54	25°	4.3	6	△		
DR.024.02000.H7.B1	20	H7	024	0.54	25°	4.3	6		▲	
DR.024.02000.H7.B6	20	H7	024	0.54	25°	4.3	6		△	△
DR.024.02000.H7.B7	20	H7	024	0.54	25°	4.3	6	△		
DR.024.02100.H7.B1	21	H7	024	0.54	25°	4.3	6		▲	
DR.024.02100.H7.B6	21	H7	024	0.54	25°	4.3	6		△	△
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DR.024.02300.H7.B6	23	H7	024	0.54	25°	4.3	6		△	△
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z8

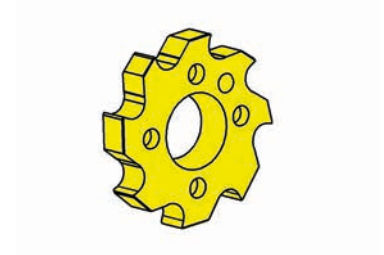
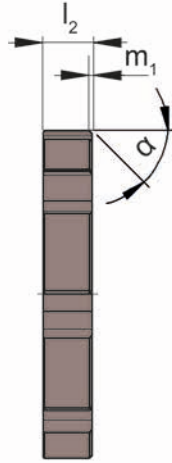
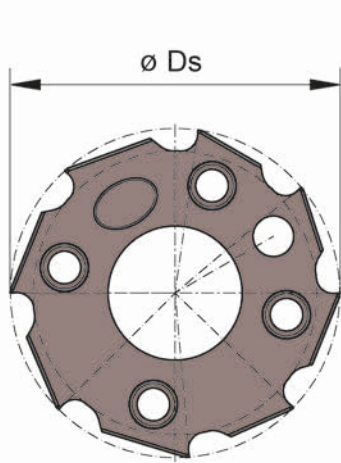
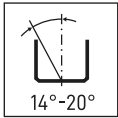


图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades  
▲ 库存  
on stock  
△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.029.02400.H7.A1	24	H7	029	0.3	45°	4.3	8		▲	
DR.029.02400.H7.A6	24	H7	029	0.3	45°	4.3	8		△	△
DR.029.02400.H7.A7	24	H7	029	0.3	45°	4.3	8	△		
DR.029.02500.H7.A1	25	H7	029	0.3	45°	4.3	8		▲	
DR.029.02500.H7.A6	25	H7	029	0.3	45°	4.3	8		△	△
DR.029.02500.H7.A7	25	H7	029	0.3	45°	4.3	8	△		
DR.029.02600.H7.A1	26	H7	029	0.3	45°	4.3	8		▲	
DR.029.02600.H7.A6	26	H7	029	0.3	45°	4.3	8		△	△
DR.029.02600.H7.A7	26	H7	029	0.3	45°	4.3	8	△		
DR.029.02700.H7.A1	27	H7	029	0.3	45°	4.3	8		▲	
DR.029.02700.H7.A6	27	H7	029	0.3	45°	4.3	8		△	△
DR.029.02700.H7.A7	27	H7	029	0.3	45°	4.3	8	△		
DR.029.02800.H7.A1	28	H7	029	0.3	45°	4.3	8		▲	
DR.029.02800.H7.A6	28	H7	029	0.3	45°	4.3	8		△	△
DR.029.02800.H7.A7	28	H7	029	0.3	45°	4.3	8	△		
DR.036.02900.H7.A1	29	H7	036	0.3	45°	4.3	8		▲	
DR.036.02900.H7.A6	29	H7	036	0.3	45°	4.3	8		△	△
DR.036.02900.H7.A7	29	H7	036	0.3	45°	4.3	8	△		

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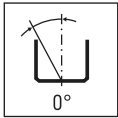
图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades  
▲ 库存 on stock  
△ 4周 4 weeks

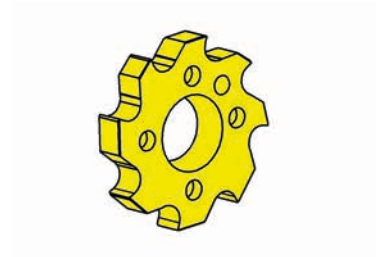
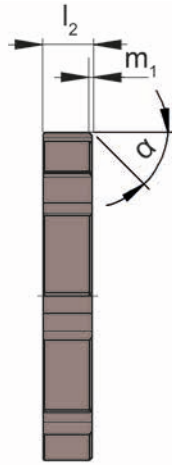
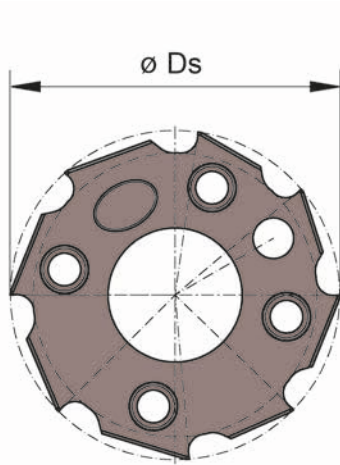
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DR.029.02500.H7.B6	25	H7	029	0.64	25°	4.3	8		△	△
DR.029.02500.H7.B7	25	H7	029	0.64	25°	4.3	8	△		
DR.029.02600.H7.B1	26	H7	029	0.64	25°	4.3	8		△	
DR.029.02600.H7.B6	26	H7	029	0.64	25°	4.3	8		△	△
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DR.029.02700.H7.B1	27	H7	029	0.64	25°	4.3	8		△	
DR.029.02700.H7.B6	27	H7	029	0.64	25°	4.3	8			△
DR.029.02700.H7.B7	27	H7	029	0.64	25°	4.3	8	△		
DR.029.02800.H7.B1	28	H7	029	0.64	25°	4.3	8		▲	
DR.029.02800.H7.B6	28	H7	029	0.64	25°	4.3	8		△	△
DR.029.02800.H7.B7	28	H7	029	0.64	25°	4.3	8	△		
DR.036.02900.H7.B1	29	H7	036	0.64	25°	4.3	8		▲	
DR.036.02900.H7.B6	29	H7	036	0.64	25°	4.3	8		△	△
DR.036.02900.H7.B7	29	H7	036	0.64	25°	4.3	8	△		

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions





z8



图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

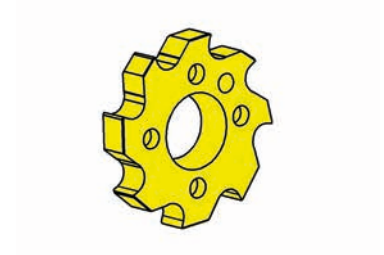
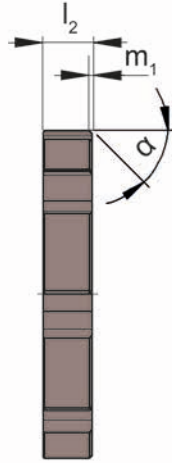
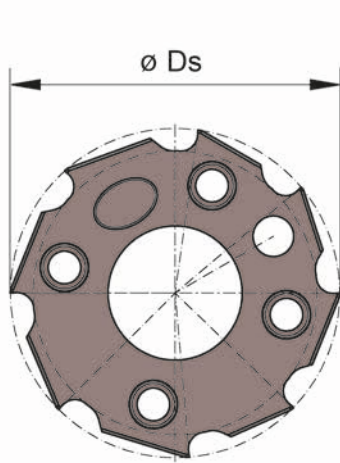
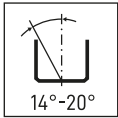
▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.036.03000.H7.A1	30	H7	036	0.3	45°	4.3	8		▲	
DR.036.03000.H7.A6	30	H7	036	0.3	45°	4.3	8		△	△
DR.036.03000.H7.A7	30	H7	036	0.3	45°	4.3	8	△		
DR.036.03100.H7.A1	31	H7	036	0.3	45°	4.3	8		▲	
DR.036.03100.H7.A6	31	H7	036	0.3	45°	4.3	8			△
DR.036.03100.H7.A7	31	H7	036	0.3	45°	4.3	8	△		
DR.036.03200.H7.A1	32	H7	036	0.3	45°	4.3	8		▲	
DR.036.03200.H7.A6	32	H7	036	0.3	45°	4.3	8		△	△
DR.036.03200.H7.A7	32	H7	036	0.3	45°	4.3	8	△		
DR.036.03300.H7.A1	33	H7	036	0.3	45°	4.3	8		△	
DR.036.03400.H7.A1	34	H7	036	0.3	45°	4.3	8		▲	
DR.036.03400.H7.A6	34	H7	036	0.3	45°	4.3	8		△	△
DR.036.03400.H7.A7	34	H7	036	0.3	45°	4.3	8	△		
DR.036.03500.H7.A1	35	H7	036	0.3	45°	4.3	8		▲	
DR.036.03500.H7.A6	35	H7	036	0.3	45°	4.3	8		△	△
DR.036.03500.H7.A7	35	H7	036	0.3	45°	4.3	8	△		

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions





图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades  
▲ 库存 on stock  
△ 4周 4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.036.03000.H7.B1	30	H7	036	0.64	25°	4.3	8		▲	
DR.036.03000.H7.B6	30	H7	036	0.64	25°	4.3	8		△	△
DR.036.03000.H7.B7	30	H7	036	0.64	25°	4.3	8	△		
DR.036.03100.H7.B1	31	H7	036	0.64	25°	4.3	8		△	
DR.036.03100.H7.B7	31	H7	036	0.64	25°	4.3	8	△		
DR.036.03200.H7.B1	32	H7	036	0.64	25°	4.3	8		▲	
DR.036.03200.H7.B6	32	H7	036	0.64	25°	4.3	8		△	△
DR.036.03200.H7.B7	32	H7	036	0.64	25°	4.3	8	△		
DR.036.03300.H7.B1	33	H7	036	0.64	25°	4.3	8		△	
DR.036.03400.H7.B1	34	H7	036	0.64	25°	4.3	8		▲	
DR.036.03400.H7.B6	34	H7	036	0.64	25°	4.3	8		△	△
DR.036.03400.H7.B7	34	H7	036	0.64	25°	4.3	8	△		
DR.036.03500.H7.B1	35	H7	036	0.64	25°	4.3	8		▲	
DR.036.03500.H7.B6	35	H7	036	0.64	25°	4.3	8		△	△
DR.036.03500.H7.B7	35	H7	036	0.64	25°	4.3	8	△		

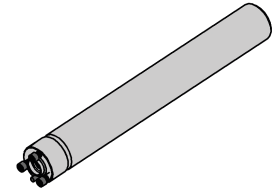
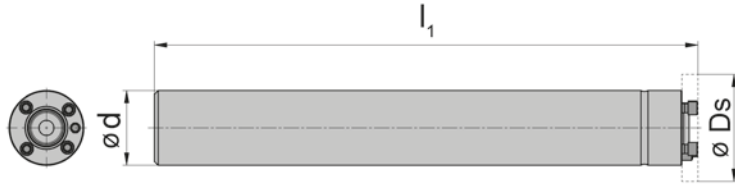
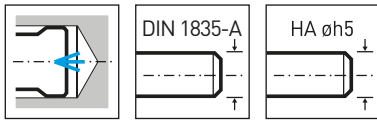
推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions



# 铰刀刀杆

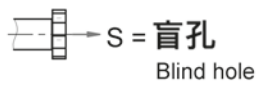
## Reaming insert holder

# MDR



### 内冷

Through coolant



F

产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	冷却 Coolant	尺寸规格 Size
MDR.016.ST10.100.A.S	11.9	15.6	100	10	S	016
MDR.016.HM10.160.A.S	11.9	15.6	160	10	S	016
MDR.016.ST10.160.A.S	11.9	15.6	160	10	S	016
MDR.019.ST12.115.A.S	15.601	18.6	115	12	S	019
MDR.019.HM12.185.A.S	15.601	18.6	185	12	S	019
MDR.019.ST12.185.A.S	15.601	18.6	185	12	S	019
MDR.024.ST16.128.A.S	18.601	23.6	128	16	S	024
MDR.024.HM16.208.A.S	18.601	23.6	208	16	S	024
MDR.024.ST16.208.A.S	18.601	23.6	208	16	S	024
MDR.029.ST20.145.A.S	23.601	28.6	145	20	S	029
MDR.029.HM20.240.A.S	23.601	28.6	240	20	S	029
MDR.029.ST20.240.A.S	23.601	28.6	240	20	S	029
MDR.036.ST25.170.A.S	28.601	35.6	170	25	S	036
MDR.036.HM25.274.A.S	28.601	35.6	274	25	S	036
MDR.036.ST25.274.A.S	28.601	35.6	274	25	S	036

刀杆材质: HM=硬质合金 ST=钢

Material of shank: HM = Carbide ST = Steel

1组螺钉, 1个Torx扳手-无需单独订购!

1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

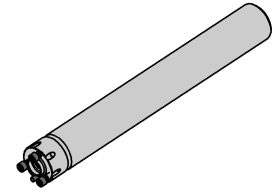
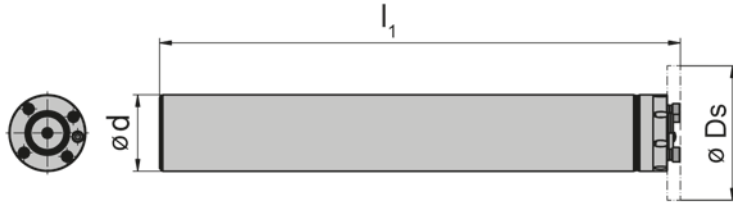
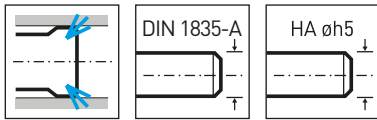
Spare Parts

铰刀刀杆 Reaming insert holder	螺钉 Screw
MDR.016...-019...	C009000
MDR.024...-036...	C009001

# 铰刀刀杆

## Reaming insert holder

# MDR



### 内冷

Through coolant



D = 通孔

Through hole

产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	冷却 Coolant	尺寸规格 Size
MDR.016.ST10.100.A.D	11.9	15.6	100	10	D	016
MDR.016.HM10.160.A.D	11.9	15.6	160	10	D	016
MDR.016.ST10.160.A.D	11.9	15.6	160	10	D	016
MDR.019.ST12.115.A.D	15.601	18.6	115	12	D	019
MDR.019.HM12.185.A.D	15.601	18.6	185	12	D	019
MDR.019.ST12.185.A.D	15.601	18.6	185	12	D	019
MDR.024.ST16.128.A.D	18.601	23.6	128	16	D	024
MDR.024.HM16.208.A.D	18.601	23.6	208	16	D	024
MDR.024.ST16.208.A.D	18.601	23.6	208	16	D	024
MDR.029.ST20.145.A.D	23.601	28.6	145	20	D	029
MDR.029.HM20.240.A.D	23.601	28.6	240	20	D	029
MDR.029.ST20.240.A.D	23.601	28.6	240	20	D	029
MDR.036.ST25.170.A.D	28.601	35.6	170	25	D	036
MDR.036.HM25.274.A.D	28.601	35.6	274	25	D	036
MDR.036.ST25.274.A.D	28.601	35.6	274	25	D	036

刀杆材质: HM=硬质合金 ST=钢

Material of shank: HM = Carbide ST = Steel

1组螺钉, 1个Torx扳手-无需单独订购!

1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

Spare Parts

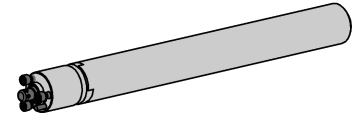
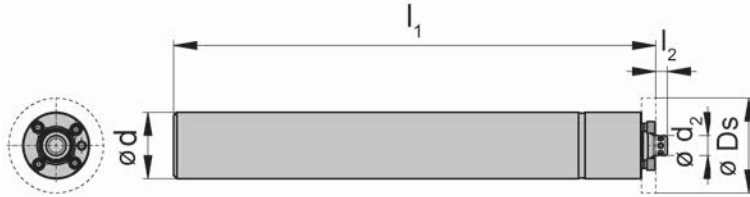
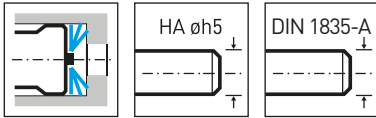
铰刀刀杆 Reaming insert holder	螺钉 Screw
MDR.016...-019...	C009000
MDR.024...-036...	C009001



# 铰刀刀杆

## Reaming insert holder

# MDR



### 内冷

Through coolant



R = 冷却反冲  
Backwash cooling

F

产品型号 Part number	Ds <sub>min</sub>	Ds <sub>max</sub>	l <sub>2</sub>	l <sub>1</sub>	d	d <sub>2</sub>	冷却 Coolant	尺寸规格 Size
MDR.016.HM10.160.A.R	11.9	15.6	2	160	10	2.5	R	016
MDR.016.ST10.100.A.R	11.9	15.6	2	100	10	2.5	R	016
MDR.016.ST10.160.A.R	11.9	15.6	2	160	10	2.5	R	016
MDR.019.HM12.185.A.R	15.601	18.6	2.5	185	12	3.5	R	019
MDR.019.ST12.115.A.R	15.601	18.6	2.5	115	12	3.5	R	019
MDR.019.ST12.185.A.R	15.601	18.6	2.5	185	12	3.5	R	019
MDR.024.HM16.208.A.R	18.601	23.6	3	208	16	5	R	024
MDR.024.ST16.128.A.R	18.601	23.6	3	128	16	5	R	024
MDR.024.ST16.208.A.R	18.601	23.6	3	208	16	5	R	024
MDR.029.HM20.240.A.R	23.601	28.6	3.5	240	20	6	R	029
MDR.029.ST20.145.A.R	23.601	28.6	3.5	145	20	6	R	029
MDR.029.ST20.240.A.R	23.601	28.6	3.5	240	20	6	R	029
MDR.036.HM25.274.A.R	28.601	35.6	4	274	25	8	R	036
MDR.036.ST25.170.A.R	28.601	35.6	4	170	25	8	R	036
MDR.036.ST25.274.A.R	28.601	35.6	4	274	25	8	R	036

刀杆材质: HM=硬质合金 ST=钢

Material of shank: HM = Carbide ST = Steel

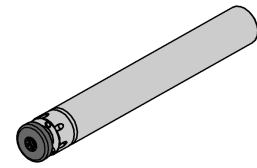
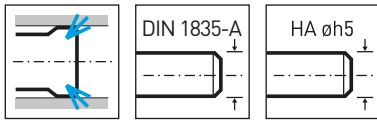
1组螺钉, 1个Torx扳手-无需单独订购!

1 Set of screws, 1 Torx wrench - no separate order required!

# 铰刀刀杆

## Reaming insert holder

# MDR



### 内冷

Through coolant



D = 通孔

Through hole

产品型号 Part number	Ds <sub>min</sub>	Ds <sub>max</sub>	l <sub>2</sub>	l <sub>1</sub>	d	d <sub>2</sub>	冷却 Coolant	尺寸规格 Size
MDR.016.ST10.100.A.D.Z	11.9	15.6	2.5	100	10	9.8	D	016
MDR.016.HM10.160.A.D.Z	11.9	15.6	2.5	160	10	9.8	D	016
MDR.016.ST10.160.A.D.Z	11.9	15.6	2.5	160	10	9.8	D	016
MDR.019.ST12.115.A.D.Z	15.601	18.6	3	115	12	11.8	D	019
MDR.019.HM12.185.A.D.Z	15.601	18.6	3	185	12	11.8	D	019
MDR.019.ST12.185.A.D.Z	15.601	18.6	3	185	12	11.8	D	019
MDR.024.ST16.128.A.D.Z	18.601	23.6	4	128	16	15.8	D	024
MDR.024.HM16.208.A.D.Z	18.601	23.6	4	208	16	15.8	D	024
MDR.024.ST16.208.A.D.Z	18.601	23.6	4	208	16	15.8	D	024
MDR.029.ST20.145.A.D.Z	23.601	28.6	4	145	20	24.5	D	029
MDR.029.HM20.240.A.D.Z	23.601	28.6	4	240	20	24.5	D	029
MDR.029.ST20.240.A.D.Z	23.601	28.6	4	240	20	24.5	D	029
MDR.036.ST25.170.A.D.Z	28.601	35.6	4	170	25	24.5	D	036
MDR.036.HM25.274.A.D.Z	28.601	35.6	4	274	25	24.5	D	036
MDR.036.ST25.274.A.D.Z	28.601	35.6	4	274	25	24.5	D	036

刀杆材质: HM=硬质合金 ST=钢

Material of shank: HM = Carbide ST = Steel

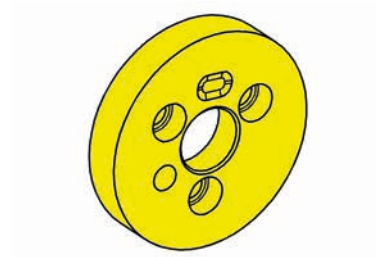
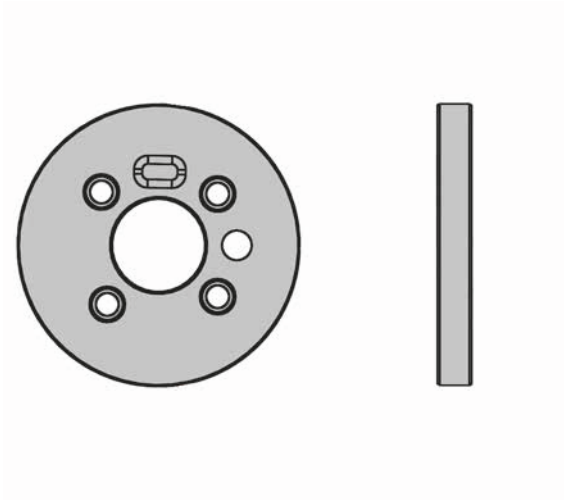
1组螺钉, 1个Torx扳手-无需单独订购!

1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

Spare Parts

铰刀刀杆 Reaming insert holder	螺钉 Screw	TORX 扳手 Torx Wrench
MDR.016...	C00 90 22	T15Q
MDR.019...	C009023	T20Q
MDR.024...	C009024	T30Q
MDR.029...-036...	C009025	T30Q



F

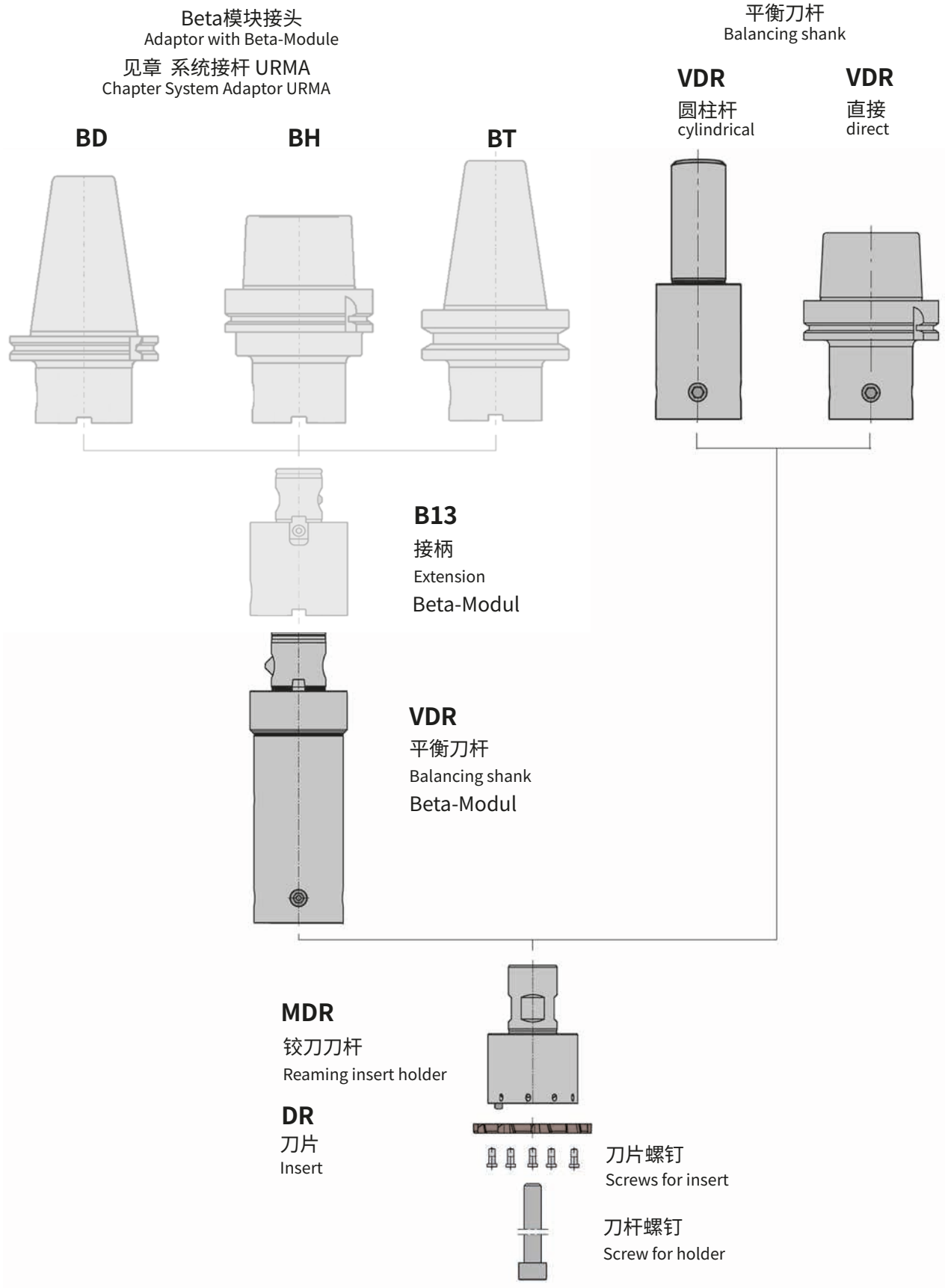
产品型号 Part number	尺寸规格 Size
DR.016.ROCD	016
DR.019.ROCD	019
DR.024.ROCD	024
DR.029.ROCD	029
DR.036.ROCD	036

# 刀片尺寸 DR044 - DR141

## System Size DR044 - DR141



模块化系统 直径  $\varnothing$  35.601 - 140.600 mm  
 Modular System for  $\varnothing$  35,601 - 140,600 mm



### ISO公差订货示例

Ordering example with ISO tolerance

## DR.044.03561.H7.A1 HL3H

**DR**

DR 系列设计  
DR System designation

**044**

刀片座尺寸  
Seating size

**35,61**

直径 单位:毫米  
Diameter in mm

**H7**

公差  
Tolerance

**A1**

切削刃槽型  
Cutting geometry

**HL3H**

硬质合金材质  
Carbide grade

F

### 订货示例解释

对于有孔公差规格的订单,其直径按Horn标准确定。根据尺寸和公差的不同,成品直径大约在公差范围的上三分之一。

标准品刀片设计示例:  
DR.044.03561.H7.A1 HL3H  
刀片精磨尺寸  $\varnothing 35,63 \pm 0.003$  mm

一款非标刀片对应其规格尺寸设计,与标准刀片不同,刀片尺寸公差会根据孔的公差而定。非标刀片会标明要求直径。非标刀片根据非标应用推荐,而非标准品公差。

一张‘DRS’图纸必须创建Q切削刃。此处不能使用相对应的标准指定号。一片DRS铰刀刀片对应的图纸必须选择有效名义尺寸(小数点后3位或不同于ISO的公差)

### Explanation of insert size order example

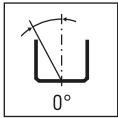
For orders with specifications of the bore tolerance, the diameter is defined by HORN standard. Depending on the size and tolerance, the finished diameter is approximately in the upper third of the tolerance range.

Examples standard insert designation:  
DR.044.03561.H7.A1 HL3H  
insert ground to  $\varnothing 35,63 \pm 0.003$  mm

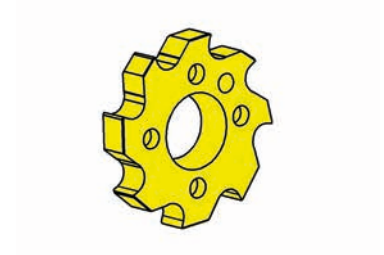
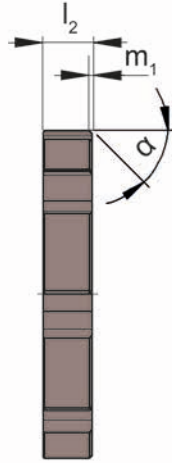
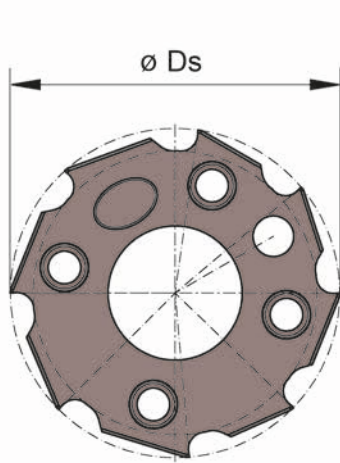
A Q-insert designation is selected for a specific insert dimension. In contrary to standard inserts where all tolerances refer to the bore tolerance, Q-inserts indicates the required insert diameter (target size). Q-inserts are recommended for special applications where standard tolerance ranges are not applicable.

A “DRS” drawing must be created for Q cutting edges. The corresponding standard designation number cannot be used here. A DRS reaming insert with a corresponding drawing must also be selected for nominal diameters with 3 decimal places or tolerances which do not comply with the ISO code.





z8



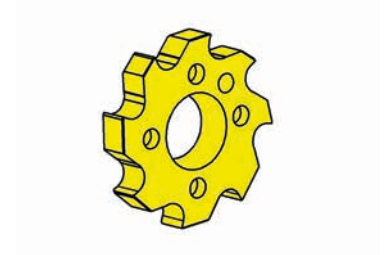
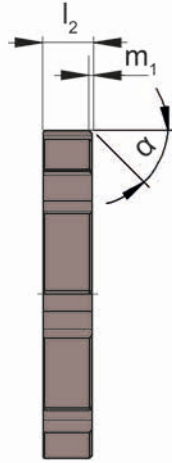
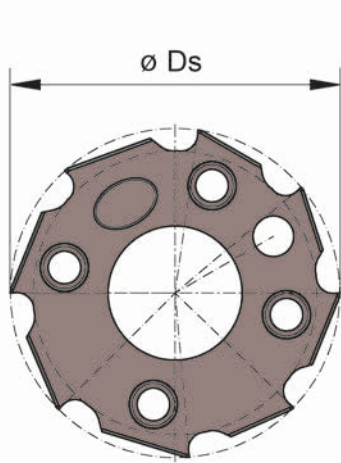
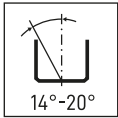
图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades  
▲ 库存  
on stock  
△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.044.03600.H7.A1	36	H7	044	0.35	45°	4.3	8		△	
DR.044.03600.H7.A6	36	H7	044	0.35	45°	4.3	8		△	△
DR.044.03600.H7.A7	36	H7	044	0.35	45°	4.3	8	△		
DR.044.03700.H7.A1	37	H7	044	0.35	45°	4.3	8		▲	
DR.044.03800.H7.A1	38	H7	044	0.35	45°	4.3	8		▲	
DR.044.03900.H7.A1	39	H7	044	0.35	45°	4.3	8		△	
DR.044.04000.H7.A1	40	H7	044	0.35	45°	4.3	8		▲	
DR.044.04000.H7.A6	40	H7	044	0.35	45°	4.3	8			△
DR.044.04000.H7.A7	40	H7	044	0.35	45°	4.3	8	△		
DR.044.04100.H7.A1	41	H7	044	0.35	45°	4.3	8		△	
DR.044.04200.H7.A1	42	H7	044	0.35	45°	4.3	8		▲	
DR.044.04200.H7.A6	42	H7	044	0.35	45°	4.3	8		△	△
DR.044.04200.H7.A7	42	H7	044	0.35	45°	4.3	8	△		
DR.044.04300.H7.A1	43	H7	044	0.35	45°	4.3	8		▲	

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions





图示=右手型  
Picture = right hand cutting version

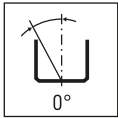
硬质合金牌号  
Carbide grades

▲ 库存  
on stock

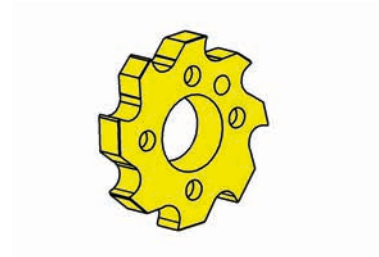
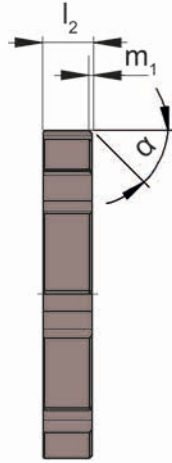
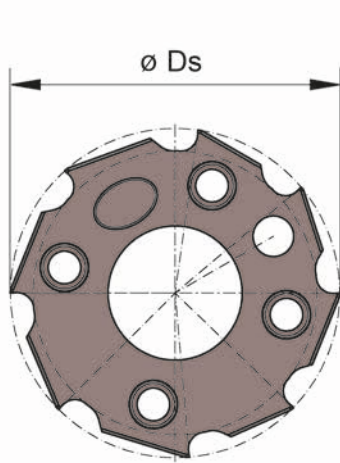
△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.044.03600.H7.B1	36	H7	044	0.75	25°	4.3	8		▲	
DR.044.03600.H7.B6	36	H7	044	0.75	25°	4.3	8		△	△
DR.044.03600.H7.B7	36	H7	044	0.75	25°	4.3	8	△		
DR.044.03700.H7.B1	37	H7	044	0.75	25°	4.3	8		△	
DR.044.03800.H7.B1	38	H7	044	0.75	25°	4.3	8		▲	
DR.044.03900.H7.B1	39	H7	044	0.75	25°	4.3	8		△	
DR.044.04000.H7.B1	40	H7	044	0.75	25°	4.3	8		▲	
DR.044.04000.H7.B6	40	H7	044	0.75	25°	4.3	8		△	△
DR.044.04000.H7.B7	40	H7	044	0.75	25°	4.3	8	△		
DR.044.04100.H7.B1	41	H7	044	0.75	25°	4.3	8		△	
DR.044.04200.H7.B1	42	H7	044	0.75	25°	4.3	8		▲	
DR.044.04200.H7.B6	42	H7	044	0.75	25°	4.3	8		△	△
DR.044.04200.H7.B7	42	H7	044	0.75	25°	4.3	8	△		
DR.044.04300.H7.B1	43	H7	044	0.75	25°	4.3	8		△	

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions



z10



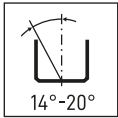
图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades  
▲ 库存  
on stock  
△ 4周  
4 weeks

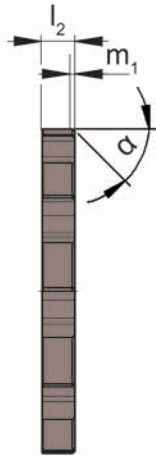
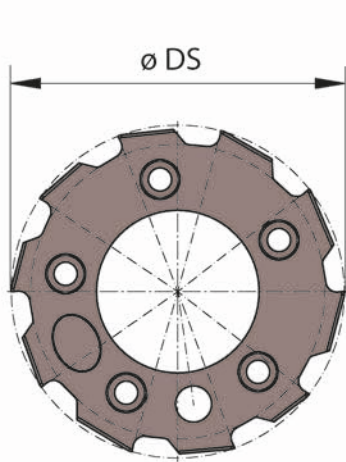
产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.052.04400.H7.A1	44	H7	052	0.35	45°	4.3	10		▲	
DR.052.04500.H7.A1	45	H7	052	0.35	45°	4.3	10		▲	
DR.052.04500.H7.A6	45	H7	052	0.35	45°	4.3	10		△	△
DR.052.04500.H7.A7	45	H7	052	0.35	45°	4.3	10	△		
DR.052.04600.H7.A1	46	H7	052	0.35	45°	4.3	10		▲	
DR.052.04700.H7.A1	47	H7	052	0.35	45°	4.3	10		▲	
DR.052.04800.H7.A1	48	H7	052	0.35	45°	4.3	10		△	
DR.052.04900.H7.A1	49	H7	052	0.35	45°	4.3	10		▲	
DR.052.05000.H7.A1	50	H7	052	0.35	45°	4.3	10		▲	
DR.052.05000.H7.A6	50	H7	052	0.35	45°	4.3	10		△	△
DR.052.05000.H7.A7	50	H7	052	0.35	45°	4.3	10	△		
DR.061.05200.H7.A1	52	H7	061	0.35	45°	4.3	10		▲	
DR.061.05500.H7.A1	55	H7	061	0.35	45°	4.3	10		▲	
DR.061.06000.H7.A1	60	H7	061	0.35	45°	4.3	10		△	

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions





z10



图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

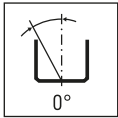
▲ 库存  
on stock

△ 4周  
4 weeks

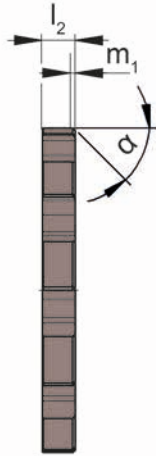
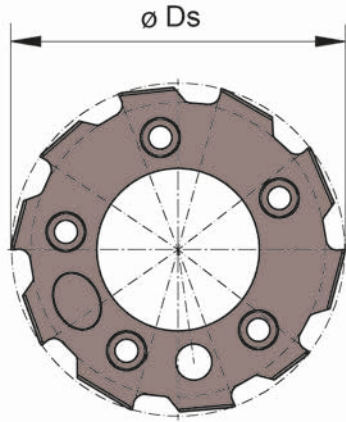
产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	DT2H	HL3H	H20
DR.052.04400.H7.B1	44	H7	052	0.75	25°	4.3	10			
DR.052.04500.H7.B1	45	H7	052	0.75	25°	4.3	10		▲	
DR.052.04500.H7.B6	45	H7	052	0.75	25°	4.3	10		▲	▲
DR.052.04500.H7.B7	45	H7	052	0.75	25°	4.3	10	▲		
DR.052.04600.H7.B1	46	H7	052	0.75	25°	4.3	10		▲	
DR.052.04700.H7.B1	47	H7	052	0.75	25°	4.3	10		▲	
DR.052.04800.H7.B1	48	H7	052	0.75	25°	4.3	10		▲	
DR.052.04900.H7.B1	49	H7	052	0.75	25°	4.3	10		▲	
DR.052.05000.H7.B1	50	H7	052	0.75	25°	4.3	10		▲	
DR.052.05000.H7.B6	50	H7	052	0.75	25°	4.3	10		▲	▲
DR.052.05000.H7.B7	50	H7	052	0.75	25°	4.3	10	▲		
DR.061.05200.H7.B1	52	H7	061	0.75	25°	4.3	10		▲	
DR.061.05500.H7.B1	55	H7	061	0.75	25°	4.3	10		▲	
DR.061.06000.H7.B1	60	H7	061	0.75	25°	4.3	10		▲	

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions

F



z12



图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

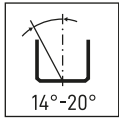
▲ 库存  
on stock

△ 4周  
4 weeks

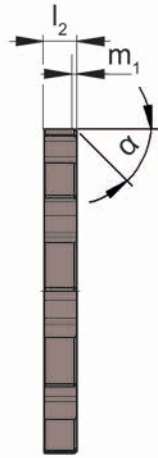
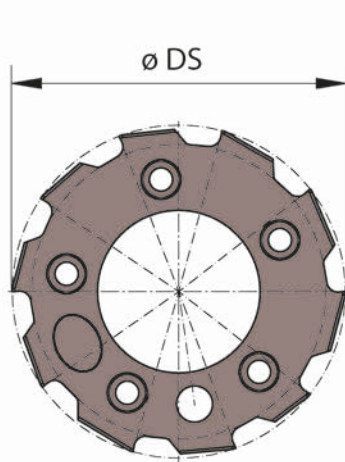
产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	H/L3H
DR.081.06500.H7.A1	65	H7	081	0.4	45°	4.3	12	▲
DR.081.06800.H7.A1	68	H7	081	0.4	45°	4.3	12	△
DR.081.07000.H7.A1	70	H7	081	0.4	45°	4.3	12	▲
DR.081.07500.H7.A1	75	H7	081	0.4	45°	4.3	12	▲
DR.081.08000.H7.A1	80	H7	081	0.4	45°	4.3	12	▲
DR.101.08500.H7.A1	85	H7	101	0.45	45°	4.3	12	▲
DR.101.09000.H7.A1	90	H7	101	0.45	45°	4.3	12	▲
DR.101.09500.H7.A1	95	H7	101	0.45	45°	4.3	12	△
DR.101.10000.H7.A1	100	H7	101	0.45	45°	4.3	12	▲
DR.121.11000.H7.A1	110	H7	121	0.6	45°	5.3	12	△
DR.121.12000.H7.A1	120	H7	121	0.6	45°	5.3	12	△
DR.141.13000.H7.A1	130	H7	141	0.6	45°	5.3	12	△
DR.141.14000.H7.A1	140	H7	141	0.6	45°	5.3	12	△

推荐切削槽型及硬质合金材质请详见技术说明  
For recommendations of cutting geometry and carbide grade please see technical instructions





z12



图示=右手型  
Picture = right hand cutting version

硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	公差 Tolerance	尺寸规格 Size	$m_1$	$\alpha$	$l_2$	Z	H13H
DR.081.06500.H7.B1	65	H7	081	0.86	25°	4.3	12	▲
DR.081.06800.H7.B1	68	H7	081	0.86	25°	4.3	12	△
DR.081.07000.H7.B1	70	H7	081	0.86	25°	4.3	12	△
DR.081.07500.H7.B1	75	H7	081	0.86	25°	4.3	12	△
DR.081.08000.H7.B1	80	H7	081	0.86	25°	4.3	12	△
DR.101.08500.H7.B1	85	H7	101	0.97	25°	4.3	12	△
DR.101.09000.H7.B1	90	H7	101	0.97	25°	4.3	12	△
DR.101.09500.H7.B1	95	H7	101	0.97	25°	4.3	12	△
DR.101.10000.H7.B1	100	H7	101	0.97	25°	4.3	12	△
DR.121.11000.H7.B1	110	H7	121	1.29	25°	5.3	12	△
DR.121.12000.H7.B1	120	H7	121	1.29	25°	5.3	12	△
DR.141.13000.H7.B1	130	H7	141	1.29	25°	5.3	12	△
DR.141.14000.H7.B1	140	H7	141	1.29	25°	5.3	12	△

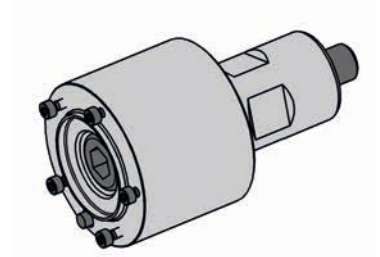
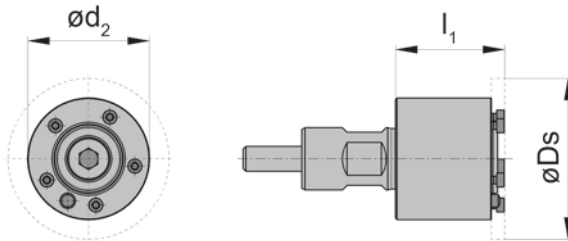
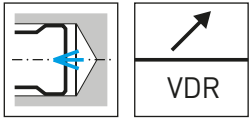
推荐切削槽型及硬质合金材质请详见技术说明

For recommendations of cutting geometry and carbide grade please see technical instructions

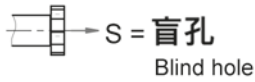
# 铰刀刀杆

## Reaming insert holder

# MDR



**内冷**  
Through coolant



产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	$d_2$	冷却 Cooling	尺寸规格 Size
<b>MDR.044.32.30.V.S</b>	35.601	43.6	30	32	S	44
<b>MDR.052.39.35.V.S</b>	43.601	51.6	35	39	S	52
<b>MDR.061.46.40.V.S</b>	51.601	60.6	40	46	S	61
<b>MDR.081.56.50.V.S</b>	60.601	80.6	50	56	S	81
<b>MDR.101.76.60.V.S</b>	80.601	100.6	60	76	S	101
<b>MDR.121.76.60.V.S</b>	100.601	120.6	60	76	S	121
<b>MDR.141.76.60.V.S</b>	120.601	140.6	60	76	S	141

1组螺钉, 1个Torx扳手-无需单独订购!  
1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

#### Spare Parts

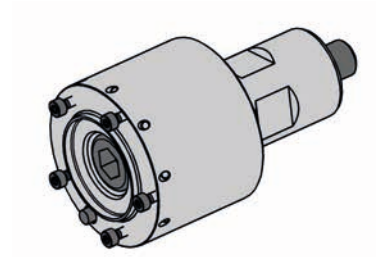
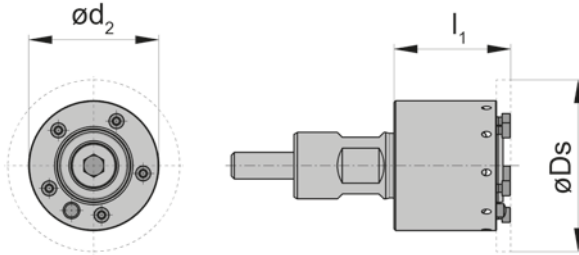
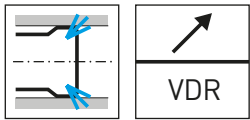
铰刀刀杆 Reaming insert holder	螺钉 Screw	圆柱螺钉 Cylindrical screw
MDR.044.32.30.V.S	<b>C009002</b>	<b>C002623B</b>
MDR.052.39.35.V.S	<b>C009002</b>	<b>C002638B</b>
MDR.061.46.40.V.S	<b>C009002</b>	<b>C002426B</b>
MDR.081.56.50.V.S	<b>C009004</b>	<b>C002637B</b>
MDR.101-141...V.S	<b>C009004</b>	<b>C002431B</b>

F


# 铰刀刀杆

## Reaming insert holder

# MDR



**内冷**  
Through coolant

 D = 通孔  
Through hole

F

产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	$d_2$	冷却 Cooling	尺寸规格 Size
MDR.044.32.30.V.D	35.601	43.6	30	32	D	044
MDR.052.39.35.V.D	43.601	51.6	35	39	D	052
MDR.061.46.40.V.D	51.601	60.6	40	46	D	061
MDR.081.56.50.V.D	60.601	80.6	50	56	D	081
MDR.101.76.60.V.D	80.601	100.6	60	76	D	101
MDR.121.76.60.V.D	100.601	120.6	60	76	D	121
MDR.141.76.60.V.D	120.601	140.6	60	76	D	141

1组螺钉, 1个Torx扳手-无需单独订购!  
1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

#### Spare Parts

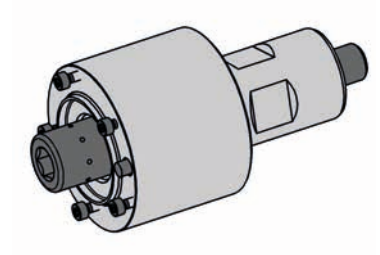
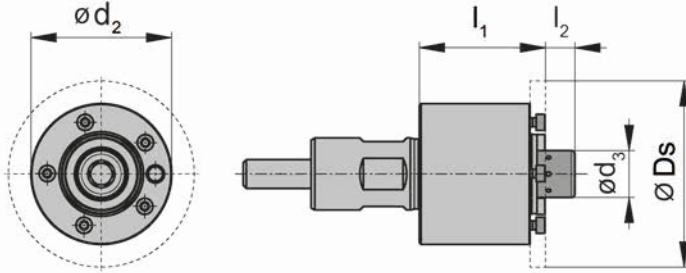
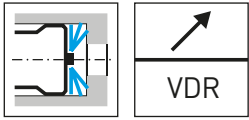
铰刀刀杆 Reaming insert holder	螺钉 Screw	圆柱螺钉 Cylindrical screw
MDR.044.32.30.V.D	C009002	C002623
MDR.052.39.35.V.D	C009002	C002638
MDR.061.46.40.V.D	C009002	C002426
MDR.081.56.50.V.D	C009004	C002637
MDR.101-141...V.D	C009004	C002431



# 铰刀刀杆

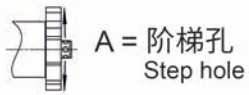
## Reaming insert holder

# MDR



### 内冷

Through coolant



产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_2$	$l_1$	$d_2$	$d_3$	冷却 Cooling	尺寸规格 Size
MDR.044.32.30.V.A	35.601	43.6	8	30	32	13	A	044
MDR.052.39.35.V.A	43.601	51.6	8	35	39	13	A	052
MDR.061.46.40.V.A	51.601	60.6	10	40	46	16	A	061
MDR.081.56.50.V.A	60.601	80.6	12	50	56	18	A	081
MDR.101.76.60.V.A	80.601	100.6	14	60	76	24	A	101
MDR.121.76.60.V.A	100.601	120.6	14	60	76	24	A	121
MDR.141.76.60.V.A	120.601	140.6	14	60	76	24	A	141

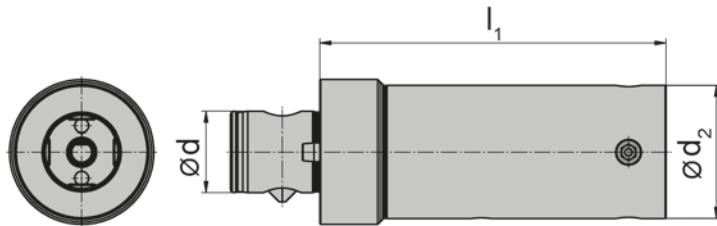
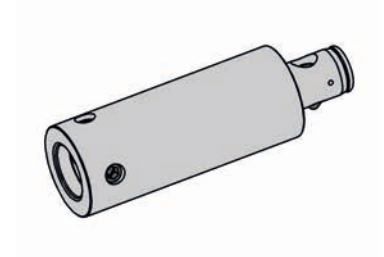
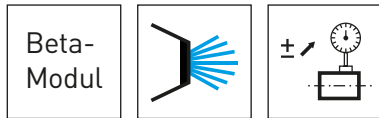
1组螺钉, 1个Torx扳手-无需单独订购!  
1 Set of screws, 1 Torx wrench - no separate order required!

### 配件

Spare Parts

铰刀刀杆 Reaming insert holder	锁紧螺钉 Clamping Screw	螺钉 Screw
MDR.044.32.30.V.A	Z900200	C009002
MDR.052.39.35.V.A	Z900201	C009002
MDR.061.46.40.V.A	Z900202	C009002
MDR.081.56.50.V.A	Z900203	C009004
MDR.101-141...V.A	Z900204	C009004

F

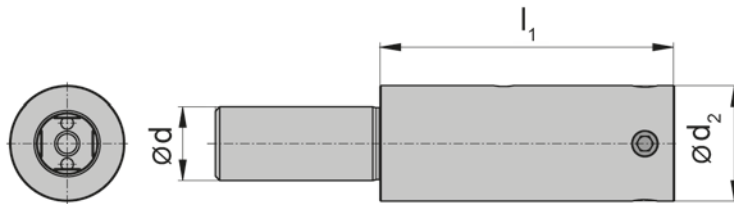
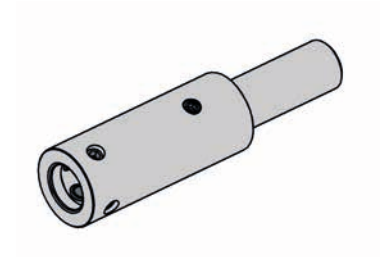
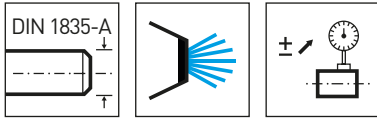


F

产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	$d_2$	形式 Form	尺寸规格 Size
VDR.044.32.55.32.BM	35,601	43,6	55	32	32	BM	044
VDR.044.32.80.32.BM	35,601	43,6	80	32	32	BM	044
VDR.052.39.100.40.BM	43,601	51,6	100	40	39	BM	052
VDR.052.39.60.40.BM	43,601	51,6	60	40	39	BM	052
VDR.061.46.120.50.BM	51,601	60,6	120	50	46	BM	061
VDR.061.46.70.50.BM	51,601	60,6	70	50	46	BM	061
VDR.081.56.140.50.BM	60,601	80,6	140	50	56	BM	081
VDR.081.56.80.50.BM	60,601	80,6	80	50	56	BM	081
VDR.101.76.100.63.BM	80,601	200,2	100	63	76	BM	101-200
VDR.101.76.160.63.BM	80,601	200,2	160	63	76	BM	101-200

配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR.044...	C009008
VDR.052...-061...	C009010
VDR.081...	C009012
VDR.101...	C009016

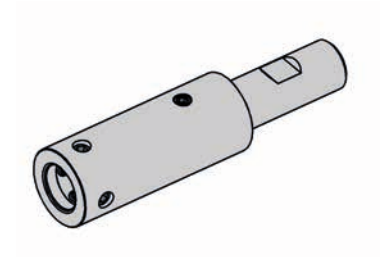
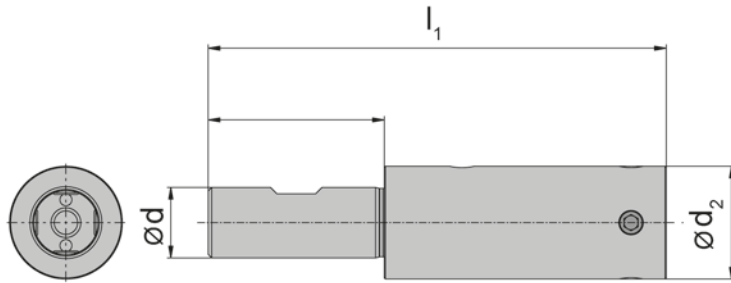
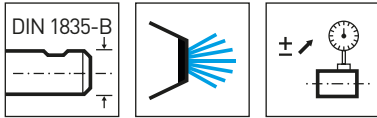


产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	$d$	$d_2$	形式 Form	尺寸规格 Size
VDR.044.32.55.20.A	35,601	43,6	55	20	32	A	044
VDR.044.32.80.20.A	35,601	43,6	80	20	32	A	044
VDR.052.39.100.25.A	43,601	51,6	100	25	39	A	052
VDR.052.39.60.25.A	43,601	51,6	60	25	39	A	052
VDR.061.46.120.32.A	51,601	60,6	120	32	46	A	061
VDR.061.46.70.32.A	51,601	60,6	70	32	46	A	061
VDR.081.56.140.40.A	60,601	80,6	140	40	56	A	081
VDR.081.56.80.40.A	60,601	80,6	80	40	56	A	081
VDR.101.76.100.40.A	80,601	200,2	100	40	76	A	101-200
VDR.101.76.160.40.A	80,601	200,2	160	40	76	A	101-200

配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR.044...	C009008
VDR.052...-061...	C009010
VDR.081...	C009012
VDR.101...	C009016

F



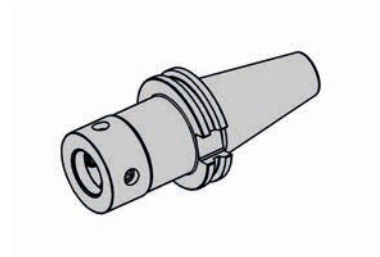
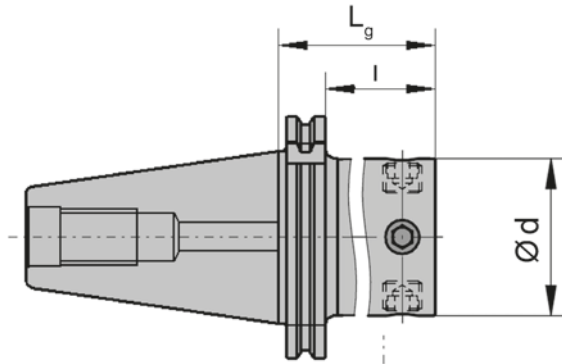
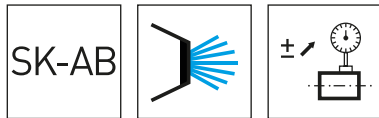
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产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	$d_2$	形式 Form	尺寸规格 Size
VDR.044.32.55.20.B	35,601	43,6	55	20	32	B	044
VDR.044.32.80.20.B	35,601	43,6	80	20	32	B	044
VDR.052.39.60.25.B	43,601	51,6	60	25	39	B	052
VDR.052.39.100.25.B	43,601	51,6	100	25	39	B	052
VDR.061.46.70.32.B	51,601	60,6	70	32	46	B	061
VDR.061.46.120.32.B	51,601	60,6	120	32	46	B	061
VDR.081.56.80.40.B	60,601	80,6	80	40	56	B	081
VDR.081.56.140.40.B	60,601	80,6	140	40	56	B	081
VDR.101.76.100.40.B	80,601	200,2	100	40	76	B	101-200
VDR.101.76.160.40.B	80,601	200,2	160	40	76	B	101-200

配件

Spare Parts

刀柄 Shank	螺钉 Screw
VDR.044...	C009008
VDR.052...-061...	C009010
VDR.081...	C009012
VDR.101...	C009016

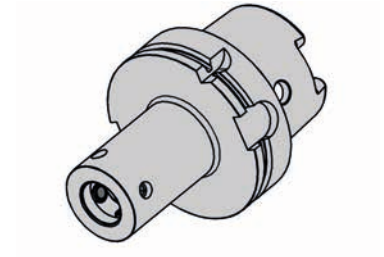
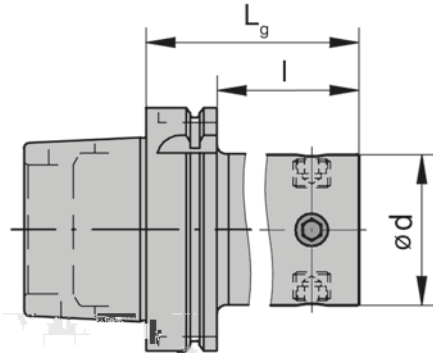
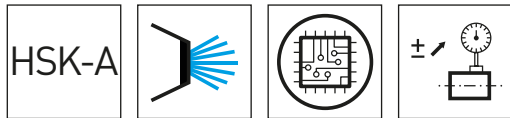


产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	l	Lg	d	尺寸规格 Size	系列 System	重量 [kg] Weight [kg]
VDR.044.065.40AD	35.601	43.6	46	65	32	044	SK 40	1.1
VDR.052.065.40AD	43.601	51.6	46	65	39	052	SK 40	1.2
VDR.061.075.40AD	51.601	60.6	56	75	46	061	SK 40	1.4
VDR.081.080.40AD	60.601	80.6	61	80	56	081	SK 40	1.6
VDR.101.095.40AD	80.601	140.6	76	95	76	101	SK 40	2.2
VDR.044.065.50AD	35.601	43.6	46	65	32	044	SK 50	2.9
VDR.052.065.50AD	43.601	51.6	46	65	39	052	SK 50	3
VDR.061.075.50AD	51.601	60.6	56	75	46	061	SK 50	3.2
VDR.081.085.50AD	60.601	80.6	66	85	56	081	SK 50	3.6
VDR.101.095.50AD	80.601	200.2	76	95	76	101	SK 50	4.6

配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR.044...	C009008
VDR.052...-061...	C009010
VDR.081...	C009012
VDR.101...	C009016

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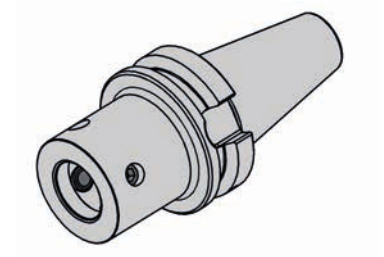
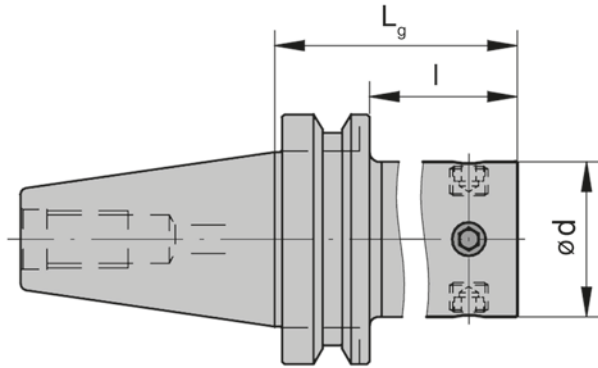
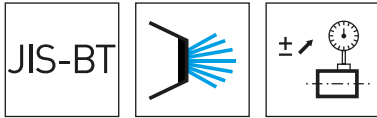
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产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	l	Lg	d	尺寸规格 Size	系列 System	重量 [kg] Weight [kg]
VDR.044.085.A063	35.601	43.6	59	85	32	044	HSK63	1
VDR.052.090.A063	43.601	51.6	64	90	39	052	HSK63	1.2
VDR.061.100.A063	51.601	60.6	74	100	46	061	HSK63	1.5
VDR.081.105.A063	60.601	80.6	79	105	56	081	HSK63	1.8
VDR.101.120.A063	80.601	140.6	94	120	76	101	HSK63	2.4
VDR.044.090.A100	35.601	43.6	61	90	32	044	HSK100	2.3
VDR.052.095.A100	43.601	51.6	66	95	39	052	HSK100	2.6
VDR.061.100.A100	51.601	60.6	71	100	46	061	HSK100	2.8
VDR.081.120.A100	60.601	80.6	91	120	56	081	HSK100	3.5
VDR.101.130.A100	80.601	200.2	101	130	76	101	HSK100	5

不包含冷却液管-需要单独订购!  
Coolant tube is not included - separate order required!

### 配件 Spare Parts

刀柄 Shank	螺钉 Screw
VDR.044...	C009008
VDR.052...-061...	C009010
VDR.081...	C009012
VDR.101...	C009016



产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	l	Lg	d	尺寸规格 Size	系列 System	重量 [kg] Weight [kg]
VDR.044.060.40BT	35.601	43.6	33	60	32	044	JIS-BT 40	1.1
VDR.052.065.40BT	43.601	51.6	38	65	39	052	JIS-BT 40	1.3
VDR.061.070.40BT	51.601	60.6	43	70	46	061	JIS-BT 40	1.4
VDR.081.080.40BT	60.601	80.6	53	80	56	081	JIS-BT 40	1.7
VDR.101.095.40BT	80.601	140.6	-	95	76	101	JIS-BT 40	2.5
VDR.044.065.50BT	35.601	43.6	27	65	32	044	JIS-BT 50	3.7
VDR.052.065.50BT	43.601	51.6	27	65	39	052	JIS-BT 50	3.8
VDR.061.075.50BT	51.601	60.6	37	75	46	061	JIS-BT 50	4
VDR.081.085.50BT	60.601	80.6	47	85	56	081	JIS-BT 50	4.3
VDR.101.095.50BT	80.601	200.2	57	95	76	101	JIS-BT 50	5.1

配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR.044...	C009008
VDR.052...-061...	C009010
VDR.081...	C009012
VDR.101...	C009016

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下面的信息解释了如何正确处理和设置铰孔工具。

The information below explains the proper handling and set up for reaming tools.



刀具调整应直接在机床/主轴上进行,以达到最高的精度。

Tool adjustments should be performed directly in the machine/spindle to achieve highest precision.

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将铰刀安装到液压刀柄或套筒,直至底部最低点。

Insert the reamer shaft into the Hydraulic Expansion Toolholder or reducer sleeve until it bottoms out.



用六角扳手拧紧液压刀柄的夹紧螺钉。

Tighten the clamping screw of the Hydraulic Expansion Toolholder with a hex wrench.





使用TORX-PLUS®扳手T15PQ调整四个螺丝直到接触,并用手旋转工具检查芯轴的 $\mu\text{m}$ 指示器对中性。

Turn the four adjusting screws with the TORX-PLUS® wrench T15PQ until contact, and check the runout with a  $\mu\text{m}$  indicator inside the arbor by hand rotating the tool.



通过转动轴线上的调节螺丝来调节同心度。

Adjust the runout by turning the adjustment screws on their axis.



将刀片放在轴上,定位孔盖在销上,轻轻拧紧螺丝。

Lay insert on shaft with positioning hole over the pin and tighten the screws lightly.



用扭矩调节扳手以十字形起子拧紧螺丝。

Tighten the screws with a torque setter screw driver in a crisscross pattern.

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### 调整

为了达到最好的铰孔效果，工具零跳动是可取的。为了补偿由于刀具支架或机床主轴跳动引起的任何误差，建议使用以下刀柄：补偿刀柄、液压刀柄或热胀刀柄。DR reamers可以用不同的方法测量：

### Adjusting

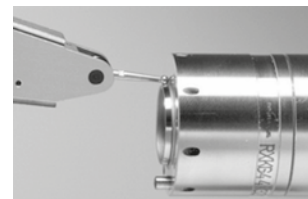
To achieve the best reaming results a tool with zero runout is desirable. In order to compensate for any errors due to runout from the tool holders or the machine spindle, the following holders are recommendend: compensation holders, hydraulic chucks, or shrink fit holders. DR reamers can be measured with different methods:

### 通过刀杆短锥

拆卸铰刀片后直接测量插入支架上的短锥度。精度高，操作简单。这是最精确和首选的方法。

### Through insert holder short taper

With the reamer disassembled measure directly on the insert holders short taper. High accuracy, simple handling. This is the most accurate and preferred method.

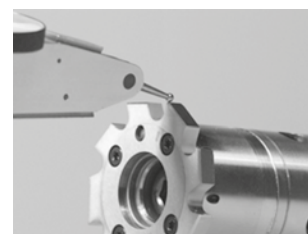


### 通过圆形刀片

直接测量刀片主切削刃后的外径。消除所有接口错误。这是小直径刀片的首选方法。

### Through circular land

Measuring directly behind chamfer angle on external insert diameter. All interface errors are eliminated. This is the preferred method for small diameter inserts.



### 通过现有刀杆外径

DR刀杆在所有直径上都制造得非常精确。一种易于操作的方法，提供合理的测量结果。

### On the external diameter of the insert holder

DR tool holders are manufactured very accurately on all diameters. A method easy to handle that offers reasonable measuring results.

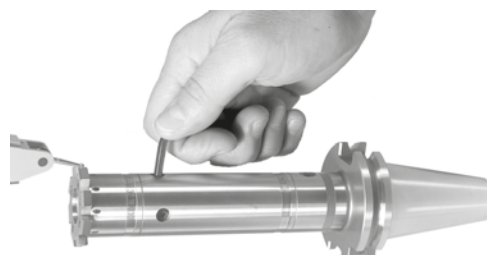


### 带补偿装置的刀杆

这些带整体接杆刀杆必须用于铰孔直径大于35毫米

### Shanks with integrated compensation device

These shanks with integrated comp. must be used for reaming diameters bigger than 35 mm



### 操作

安全锁紧中心螺钉(见值1)。测量跳动,并将刀片的切削刃设置到最高点。用调整螺丝补偿总跳动的一半。检查跳动,必要时重复调整。根据表中的值2锁定中心螺钉。

### Handling

Secure central locking screw (see value no 1). Measure runout and set the cutting edge of the insert to the highest point. Compensate half of the total runout by using the adjustment screws. Check runout and repeat the adjustment if necessary. Secure central locking screw according to value 2 in chart below.



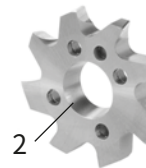
刀片尺寸 Md System size Md	1 Nm	2 Nm
DR 044	35	-
DR 052	35	-
DR 061	55	-
DR 081	60	85
DR 101	60	120
DR 121	60	120
DR 141	60	120

### 更换刀片

1. 不要将刀杆松开。松开夹紧螺丝及使用过的刀片
2. 仔细清洁刀片定位面,检查可能受损。
3. 安装新的刀片(注意定位销),旋紧夹紧螺丝
4. 如果可能,使用扭矩扳手(扭矩见表)

### Changing inserts

1. Don't take the shank out of the taper holder. Remove clamping screws and used insert.
2. Clean short taper of the shank carefully and check for possible damages.
3. Set new insert on position (pay attention to the positioning pin) and slightly tighten the clamping screws.
4. If available, use the torxtorque screw driver to tighten the screws crosswise (see torque chart)



刀片尺寸 Md System size Md	Nm	Torx
DR 016	0.7	6
DR 019	0.7	6
DR 024	1.5	8
DR 029	1.5	8
DR 036	1.5	8
DR 044	1.5	8
DR 052	1.5	8
DR 061	1.5	8
DR 081	3.5	15
DR 101	3.5	15
DR121	3.5	15
DR141	3.5	15

### 测量刀片直径

DR刀片是不等齿距的。测量直径线上的两个标记的切削刃。直接测量倒角,因为刀片是有倒角的。

### Measuring of insert diameter

DR inserts have an unequally spaced pitch. To measure the diameter line up the two marked cutting edges. Measure directly on the chamfered angle because the inserts are ground with taper.

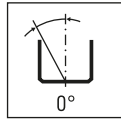


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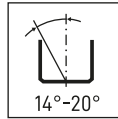
概述  
Overview

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铰刀刀头  
Reaming head  
DR large

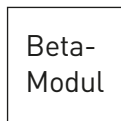


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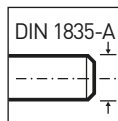


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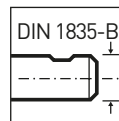
刀柄  
Shank  
VDR



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直接安装于系统  
Direct mounting  
VDR



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技术信息  
Technical Instructions

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# DR large



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模块化铰刀系统

Ø 139.8 - 200.2 mm

Modular Reaming System

Ø 139,8 - 200,2 mm

# 刀片尺寸 DR150 - DR200

## System Size DR150 - DR200

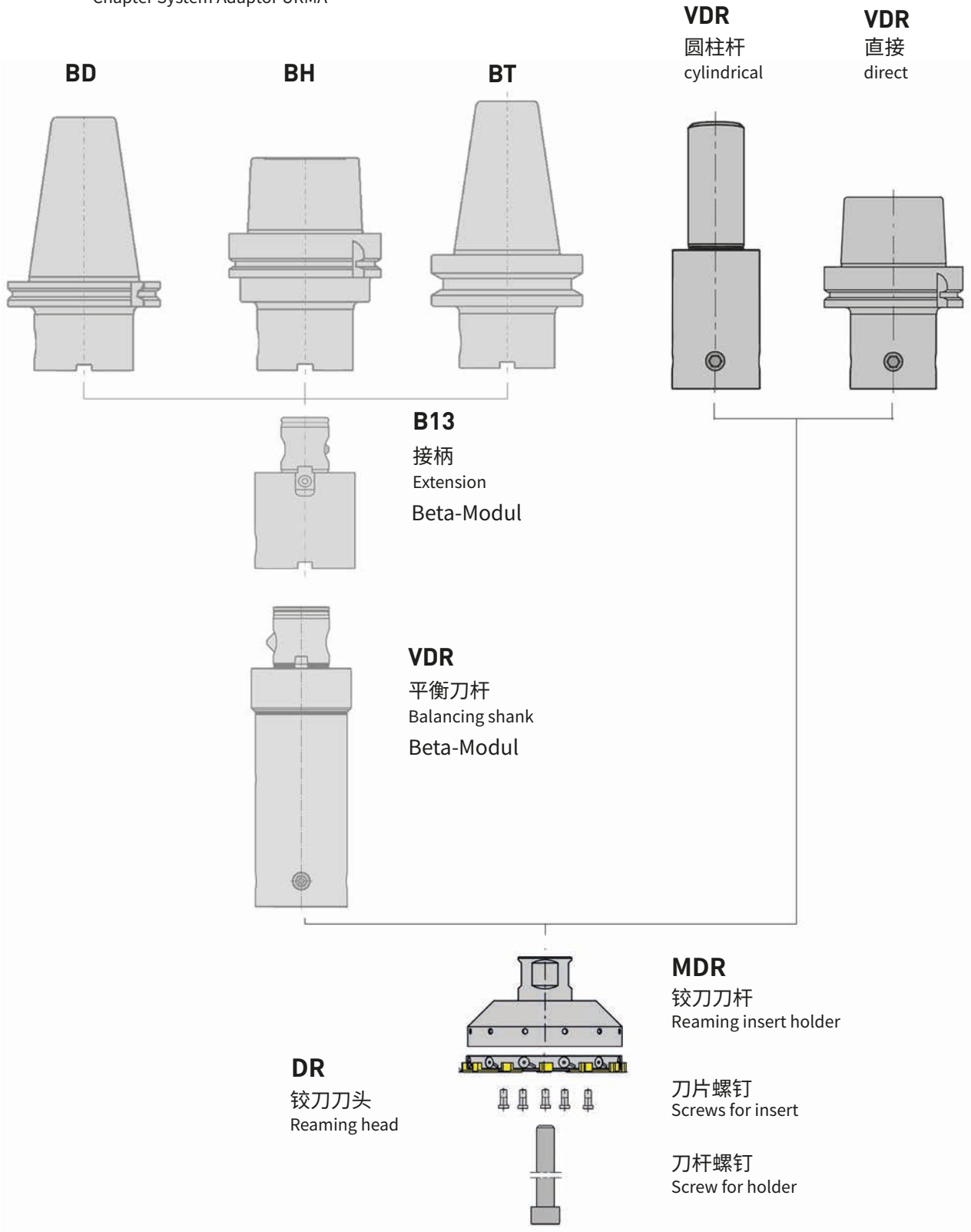


模块化系统 Ø 139.8 - 200.2 mm

Modular System for Ø 139.8 - 200.2 mm

Beta模块接头  
Adaptor with Beta-Module  
见章 系统接杆 URMA  
Chapter System Adaptor URMA

平衡刀杆  
Balancing shank



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对于有标准规格的内孔公差, 刀具直径由HORN标准定义。根据的孔径和公差范围, 标准品铰刀直径覆盖了孔径公差范围的65%至80%。

HORN标准规定的直径总是显示为一个目标的尺寸。

### 例 1:

要求具有ISO孔径公差。  
直径: 160H7

HORN标准目标直径  
直径160.033毫米

铰刀物料号:  
DR.160033.A01.L.S HL3M

### 例 2:

要求具有带孔径公差  
直径: 185 +0.030 -0.015 mm

HORN标准目标直径:  
直径: 185.021 mm

铰刀物料号:  
DR.185021.C01.G.S AN4M

### 例 3:

Anfrage mit definiertem Schneidringmaß  
直径: 193.158 mm

HORN标准目标直径:  
直径: 193.158 mm

铰刀物料号:  
DR.193158.B06.L.S HL3M

铰刀的制造公差始终为 $\pm 0.003$ 毫米

For requests with specifications of the bore tolerance, the reaming head diameter is defined by the HORN standard. Depending on the diameter and the tolerance range, the reaming head diameter will be within 65% to 80% of the total bore tolerance range.

The diameter specified by the HORN standard is always shown as a target size dimension.

### Example 1:

Request with ISO bore tolerance  
Diameter: 160H7

Target size diameter according to HORN standard: Diameter: 160,033 mm

Reaming head part number:  
DR.160033.A01.L.S HL3M

### Example 2:

Request with bore tolerance  
Diameter: 185 +0,030 -0,015 mm

Target size diameter according HORN standard: Diameter: 185,021 mm

Reaming head part number:  
DR.185021.C01.G.S AN4M

### Example 3:

Request with reaming head target size  
Diameter: 193,158 mm

Target size diameter according HORN-standard: Diameter: 193,158 mm

Reaming head part number:  
DR.193158.B06.L.S HL3M

The reaming head manufacturing tolerance is always  $\pm 0,003$  mm

### 确定尺寸的订单实例

Ordering example with fixed dimension

## DR.150033.G16.L.2 HL3M (N)

**DR**

DR系统名称

DR System designation

**150.033**

直径 单位:毫米

Diameter in mm

**G16**

切削刃槽型(更多槽型见 „标准铰刀“)

Cutting geometry (for more geometries see „Standard Reaming Heads“)

**L**

螺旋角(G=直槽, L=左旋)

Helix angle (G = straight, L = left-hand helix)

**2**

刃口处理(更多设计见下文)

Cutting edge preparation (for more versions see below)

**HL3**

涂层(更多涂层见 „标准铰刀“)

Coating (for more coatings see „Standard Reaming Heads“)

**M**

硬质合金基材

Carbide substrate

**(N)**

留待后处理(N)

Left out for reprocessing

### 更多刃口处理

More cutting edge preparations

**S**

无刃口处理

without cutting edge preparation

**2**

适中刃口处理

medium cutting edge preparation

**3**

大刃口处理

larger cutting edge preparation



# 标准铰刀

## Standard Reaming heads



刀具直径可以通过填写完整物料号从而自由确定  
切削参数可根据要求提供

The cutting edge diameter can be freely determined by completing the part number.  
Cutting data available upon request

### 直槽铰刀

用于盲孔和部分通孔

straight fluted reaming heads -  
for blind holes and partly for through holes

产品型号 Part number	主偏角 Firstcut angle	刃口处理 Preparation	倒锥 Backtaper	P	M	K	N
DR. _____ .A06.G.S HL3M	45°	-	x2	●	●	○	
DR. _____ .G16.G.S HL3M	60°/43°	-	x2	●	●	○	
DR. _____ .C16.G.S HL3M	45°/20°	-	x2	●	●	○	
DR. _____ .A06.G.2 HL3M	45°	2	x2	○		●	
DR. _____ .G16.G.2 HL3M	60°/43°	2	x2	○		●	
DR. _____ .C16.G.2 HL3M	45°/20°	2	x2	○		●	
DR. _____ .A01.G.3 AN4M	45°	3	x1	○		●	
DR. _____ .C11.G.3 AN4M	45°/20°	3	x1	○		●	
DR. _____ .C16.G.S NP1M	45°/20°	-	x2				●

在短切屑材料中也适用于通孔  
In short chipping material also suitable for through holes.

### 左旋铰刀

用于通孔

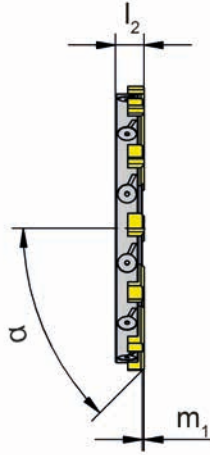
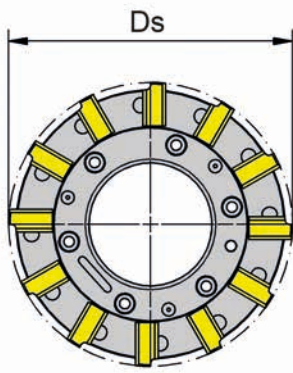
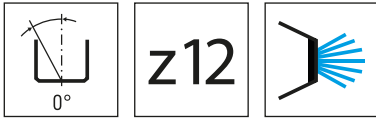
left hand fluted reaming heads -  
for through holes

产品型号 Part number	主偏角 Firstcut angle	刃口处理 Preparation	倒锥 Backtaper	P	M	K	N
DR. _____ .C16.L.S HL3M	45°/20°	-	x2	●	●	○	
DR. _____ .B06.L.S HL3M	25°	-	x2	●	●	○	
DR. _____ .C16.L.2 HL3M	45°/20°	2	x2	○		●	
DR. _____ .B06.L.2 HL3M	25°	2	x2	○		●	
DR. _____ .A06.L.S HL3M	45°	-	x2	●	●	○	
DR. _____ .C16.L.S NP1M	45°/20°	-	x2				●



# 铰刀刀头 Reaming head

# DR large



硬质合金牌号  
Carbide grades

▲ 库存  
on stock

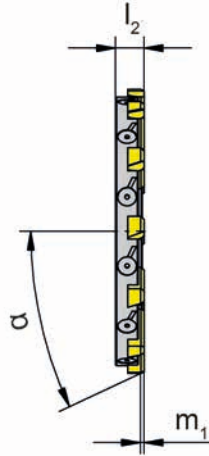
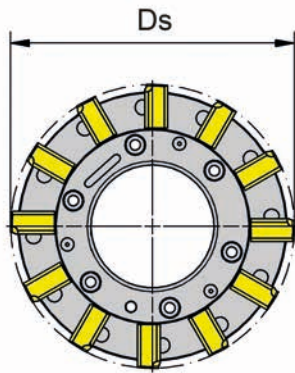
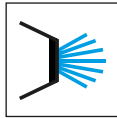
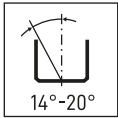
△ 4周  
4 weeks

F

产品型号 Part number	Ds	Ds <sub>min</sub>	Ds <sub>max</sub>	尺寸规格 Size	m <sub>1</sub>	α	l <sub>2</sub>	Z	HL3M
DR.140033.A06.G.S	140.033	139.801	149.8	150	0.85	45°	15	12	Δ
DR.150033.A06.G.S	150.033	149.801	159.8	160	0.85	45°	15	12	Δ
DR.160033.A06.G.S	160.033	159.801	169.8	170	0.85	45°	15	12	Δ
DR.170033.A06.G.S	170.033	169.801	179.8	180	0.85	45°	15	12	Δ
DR.180033.A06.G.S	180.033	179.801	189.8	190	0.85	45°	15	12	Δ
DR.190037.A06.G.S	190.037	189.801	200.2	200	0.85	45°	15	12	Δ
DR.200037.A06.G.S	200.037	189.801	200.2	200	0.85	45°	15	12	Δ
									P ●
									M ○
									K ●
									N -
									S ○
									H -

# 铰刀刀头 Reaming head

# DR large



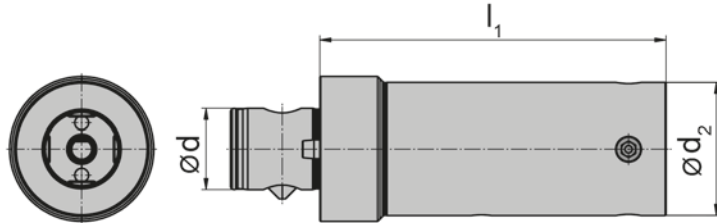
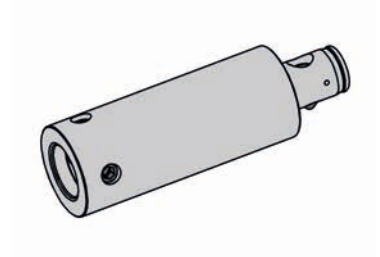
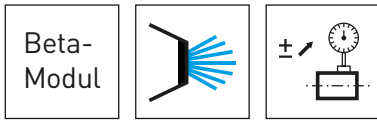
硬质合金牌号  
Carbide grades

▲ 库存  
on stock

△ 4周  
4 weeks

产品型号 Part number	Ds	Ds <sub>min</sub>	Ds <sub>max</sub>	尺寸规格 Size	m <sub>1</sub>	α	l <sub>2</sub>	Z	HL3M
DR.140033.B06.L.S	140.033	139.801	149.8	150	1.82	25°	15	12	Δ
DR.140033.B06.L.S	140.033	139.801	149.8	150	1.82	25°	15	12	Δ
DR.150033.B06.L.S	150.033	149.801	159.8	160	1.82	25°	15	12	Δ
DR.160033.B06.L.S	160.033	159.801	169.8	170	1.82	25°	15	12	Δ
DR.170033.B06.L.S	170.033	169.801	179.8	180	1.82	25°	15	12	Δ
DR.180033.B06.L.S	180.033	179.801	189.8	190	1.82	25°	15	12	Δ
DR.190037.B06.L.S	190.037	189.801	200.2	200	1.82	25°	15	12	Δ
DR.200037.B06.L.S	200.037	189.801	200.2	200	1.82	25°	15	12	Δ
									P ●
									M ○
									K ●
									N -
									S ○
									H -



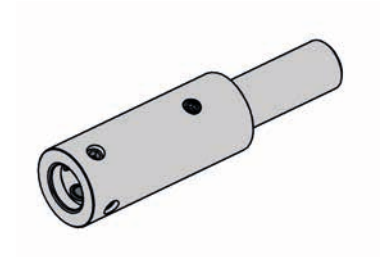
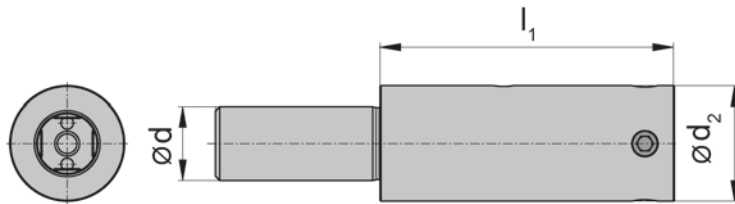
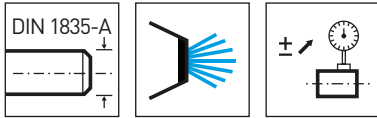


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产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	$d_2$	形式 Form	尺寸规格 Size
VDR.101.76.100.63.BM	80,601	200,2	100	63	76	BM	101-200
VDR.101.76.160.63.BM	80,601	200,2	160	63	76	BM	101-200

配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR...	C009016

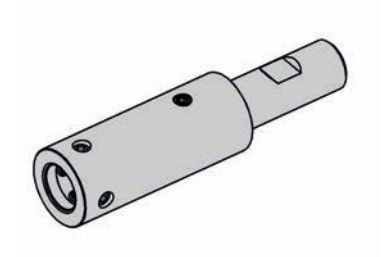
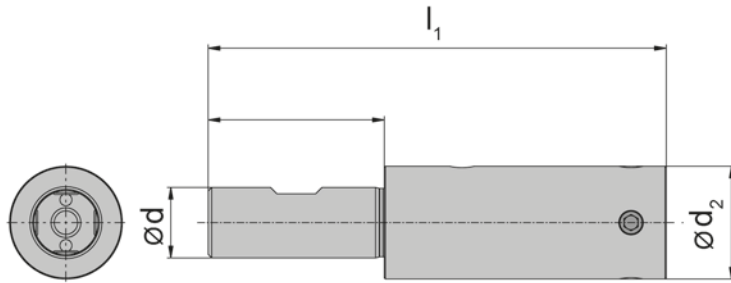
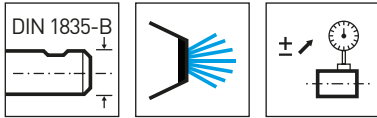


产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	$d_2$	形式 Form	尺寸规格 Size
VDR.101.76.100.40.A	80,601	200,2	100	40	76	A	101-200
VDR.101.76.160.40.A	80,601	200,2	160	40	76	A	101-200

配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR...	C009016

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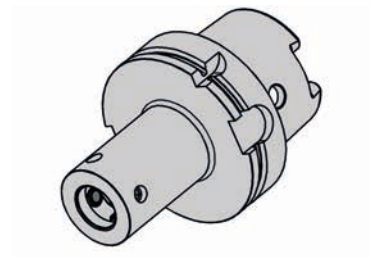
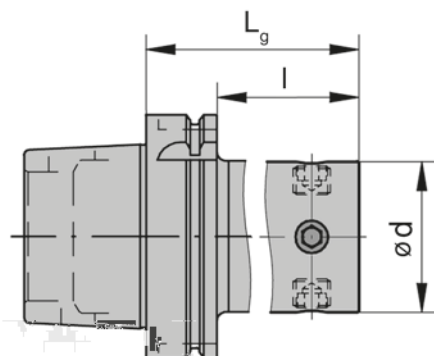
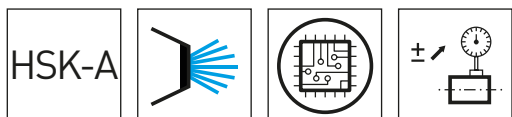


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产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	$l_1$	d	$d_2$	形式 Form	尺寸规格 Size
VDR.101.76.100.40.B	80,601	200,2	100	40	76	B	101-200
VDR.101.76.160.40.B	80,601	200,2	160	40	76	B	101-200

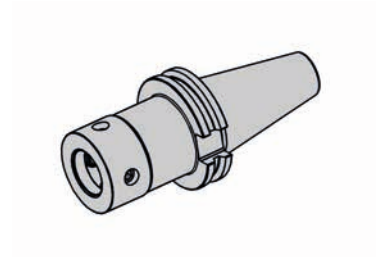
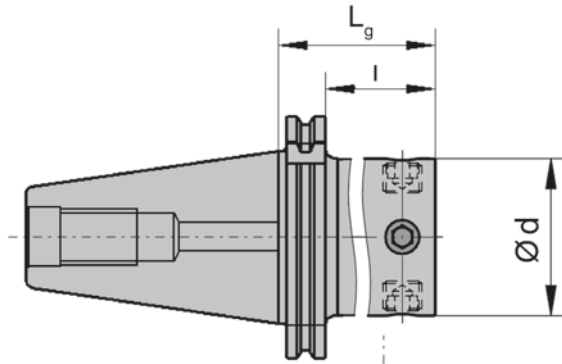
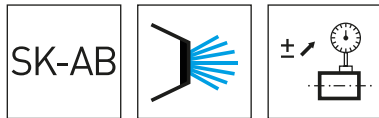
配件  
Spare Parts

刀柄 Shank	螺钉 Screw
VDR...	C009016



产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	l	$L_g$	d	尺寸规格 Size	系列 System	重量 [kg] Weight [kg]
<b>VDR.101.120.A063</b>	80,601	140,6	94	120	76	101 - 200	HSK63	2,4
<b>VDR.101.130.A100</b>	80,601	200,2	101	130	76	101 - 200	HSK100	5

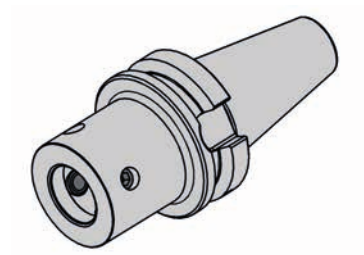
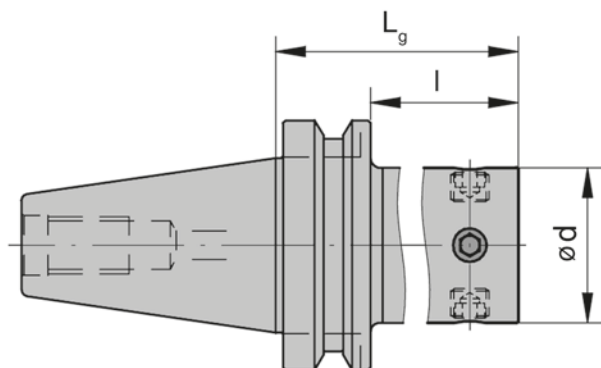
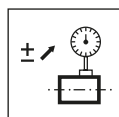
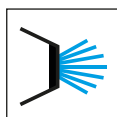
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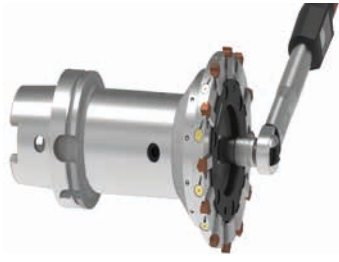
产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	l	Lg	d	尺寸规格 Size	系列 System	重量 [kg] Weight [kg]
VDR.101.095.40AD	80.601	140.6	76	95	76	101 - 200	SK 40	2.2
VDR.101.095.50AD	80.601	200.2	76	95	76	101 - 200	SK 50	4.6





产品型号 Part number	$D_{s_{min}}$	$D_{s_{max}}$	l	Lg	d	尺寸规格 Size	系列 System	重量 [kg] Weight [kg]
<b>VDR.101.095.40BT</b>	80.601	140.6	-	95	76	101 - 200	JIS-BT 40	2.5
<b>VDR.101.095.50BT</b>	80.601	200.2	57	95	76	101 - 200	JIS-BT 50	5.1





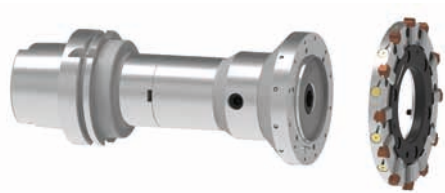
1. 组装刀具  
Assemble the tool



2. 调整同轴度  
Adjust run-out



3. 使用刀具  
Tool in use



4. 使用至寿命结束后拆除切削刃  
After tool life end disassemble used reaming head.



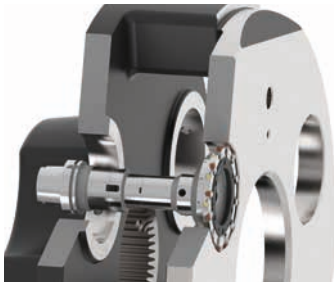
5. 安装新的切削刃  
Assembly new reaming head



6. 使用刀具  
Tool in use

F

1.



1. 使用刀具。在使用期限结束时,铰刀片可以返回到HORN进行重磨。

Tool in use. After tool life ends, the reaming head can be returned to HORN for reconditioning.

2. a) 铰刀刀片可以重磨成相同的直径和槽型。

Reaming head can be reconditioned to same size and geometry.

b) 铰刀刀片也可以重磨成不同的直径和槽型。

Reaming head can be reconditioned to other size and/or geometry.

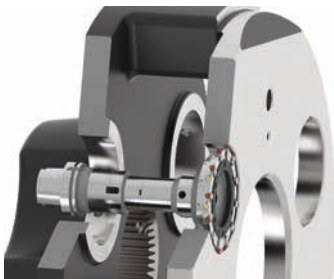
2.  
a)



b)



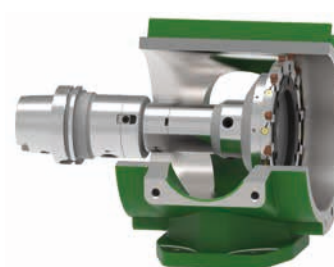
3.  
a)



3. a) 使用刀具加工相同的直径。

Use tool in the same bore.

b)



b) 使用刀具加工不同的直径。

Use tool in a different bore.



**需求**

- 精度
- 过程可靠性
- 操作简便
- 加工效率

**Requirements**

- Precision
- Process reliability
- Simple handling
- Productivity

**应用实例 „行星架“**

工件材质: EN-GJS 400

**Example of a „Planet Carrier“ Application**

Material: EN-GJS 400

**切削速度**

**Cutting Data**

$v_c$	125 m/min
$f_z$	0.20 mm
$z$	12
$v_f$	530 mm/min
$a_p$	0.15 mm
$\varnothing$	180 N6 mm
L	2x120 mm
XS	650 mm





### 需求

- 精度
- 过程可靠性
- 低成本
- 操作简便

### Requirements

- Precision
- Process reliability
- Low costs
- Simple handling

### 应用实例 „泵壳“

工件材质: GG25

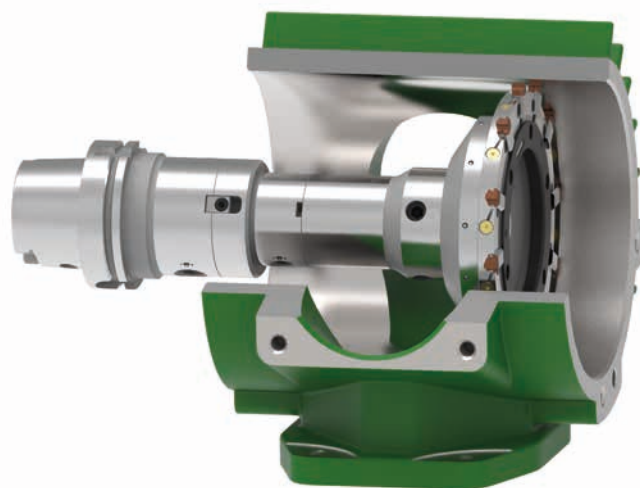
### Example of a „Pump Housing“ Application

Material: GG25

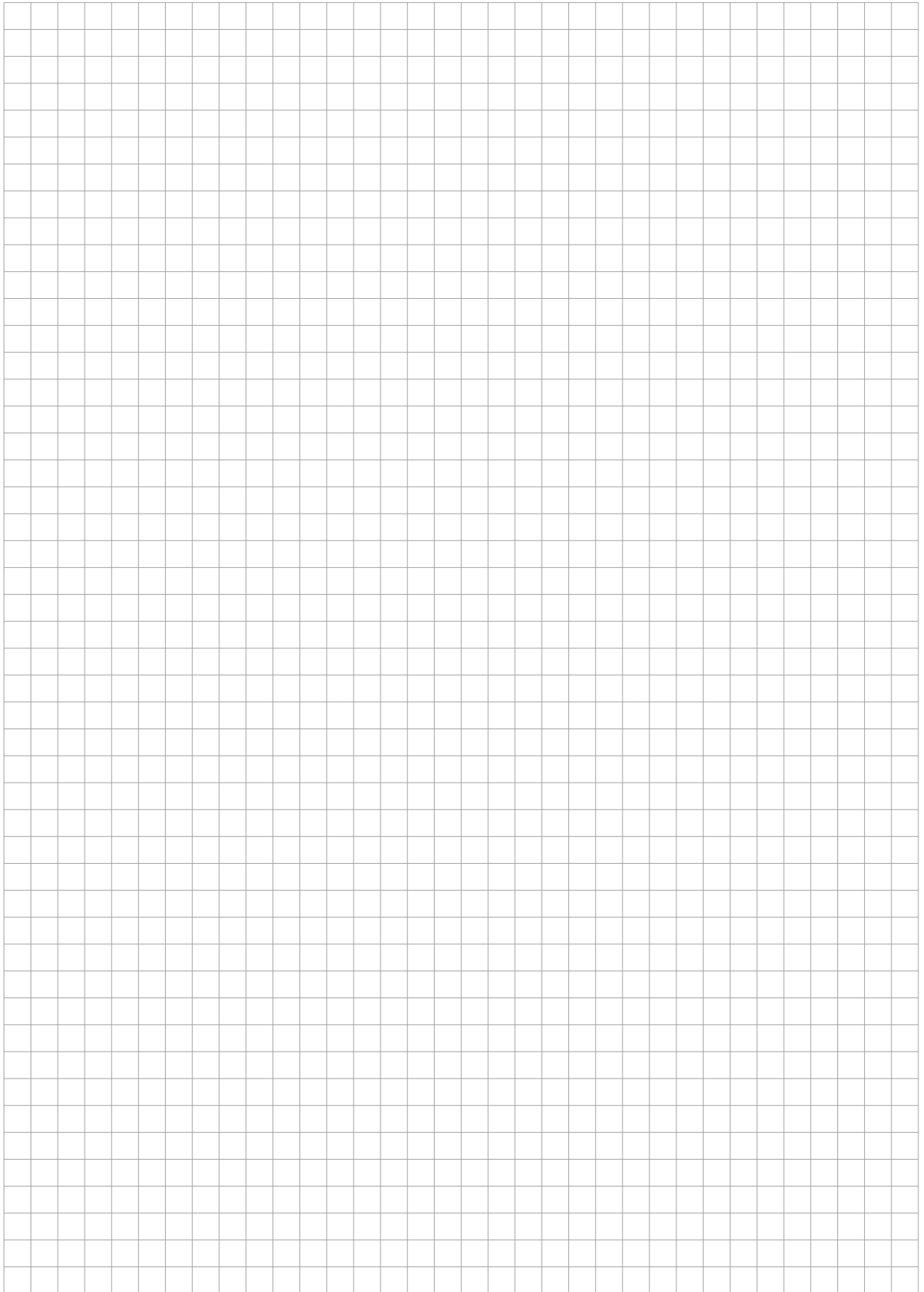
### 切削速度

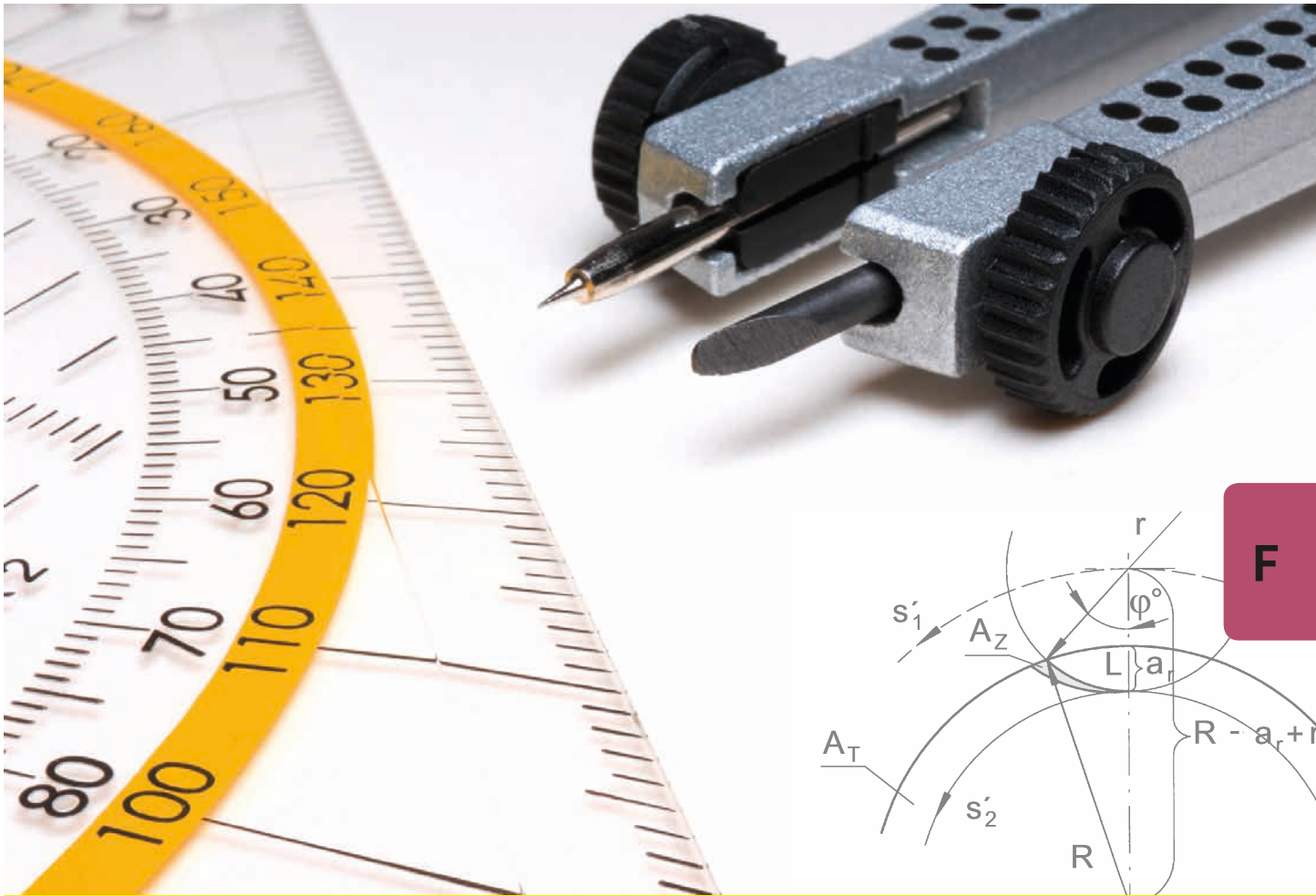
Cutting Data

$v_c$	100 m/min
$f_z$	0.15 mm
$z$	12
$v_f$	353 mm/min
$a_p$	0.15 mm
$\varnothing$	162 H8 mm
L	300 mm
Ra	1.2 $\mu$ m
XS	350 mm



F





概要/Summary	页/Page
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槽型 Geometries	185
切削参数 Cutting Data	186-191
技术信息 Technical Instructions	192-197

# 涂层概览

## Coating Overview



材料组 Material group	涂层方程式 Coating structure	推荐 Recommendation						应用 Application
		P05	M05	K05	N05	S05	H05	
HL3_	AlCrN	P10	M10	K10	N10	S10	H10	适用于中高切削速度，也适用于间断切削 For medium to high cutting speeds, also suitable for interrupted cut
		<b>P20</b>	<b>M20</b>	<b>K20</b>	N20	<b>S20</b>	H20	
		<b>P30</b>	<b>M30</b>	<b>K30</b>	N30	S30	H30	
		<b>P40</b>	M40	<b>K40</b>	N40			
		P50	M50					
AN2_ AN4_	AlCrSiN	P10	M10	<b>K10</b>	N10	S10	H10	高切割速度，也适用于轻微间断切削 For high cutting speed, also suitable for low cutting interruptions
		<b>P20</b>	M20	<b>K20</b>	N20	S20	H20	
		P30	M30	<b>K30</b>	N30	S30	H30	
		P40	M40	K40	N40			
		P50	M50					
DT2_	DLC	P10	M10	K10	N10	S10	H10	铝锻合金的首选。适用于中高切削速度，也适用于间断切削 First choice for Al-wrought alloys. For medium to high cutting speeds, also suitable for interrupted cut
		P20	M20	K20	<b>N20</b>	S20	H20	
		P30	M30	K30	<b>N30</b>	S30	H30	
		P40	M40	K40	N40			
		P50	M50					
NP1_	ta-C	P10	M10	K10	<b>N10</b>	S10	H10	铝合金首选 (Si含量<5%)也适用于间断切削 First choice for Al (Si < 5%) also suitable for interrupted cut
		P20	M20	K20	<b>N20</b>	S20	H20	
		P30	M30	K30	N30	S30	H30	
		P40	M40	K40	N40			
		P50	M50					
H20	金属陶瓷, 非涂层 Cermet, uncoated	P10	M10	<b>K10</b>	N10	S10	H10	仅DR016 - DR101系列，适用于中高切削速度钢件加工(Ni含量<2%最大)。抗拉强度为1200n /mm²。仅推荐GGG40铸铁。不适合间断切削。 System DR016 - DR101 only, for medium to high cutting speed in steel (Ni< 2%), with max. tensile strength of 1200 N/mm². Cast iron only GGG40 recommended. Not suitable for interrupted cut
		<b>P20</b>	M20	K20	N20	S20	H20	
		P30	M30	K30	N30	S30	H30	
		P40	M40	K40	N40			
		P50	M50					
AD3_ AD4_	TiAlN+AlCrN	P10	M10	K10	N10	S10	H10	对于淬硬钢，最大可达63 HRC，在低切削速度，进给量和去除率 For hardened steels up to max. 63 HRC, at low cutting speeds, feed rates and stock removal
		P20	M20	K20	N20	S20	<b>H20</b>	
		P30	M30	K30	N30	S30	H30	
		P40	M40	K40	N40			
		P50	M50					

ISO 513		P	M	K	N	S	H
+ 韧性/Tenacity - - 耐磨性/Wear resistance +	05	05	05	05	05	05	05
	10	10	10	10	10	10	10
	20	20	20	20	20	20	20
	30	30	30	30	30	30	30
	40	40	40	40	40		
	50	50					



# 标准槽型 DR small, DR medium

## Standard Geometries DR small, DR medium



直槽铰刀  
用于盲孔和部分通孔

straight fluted reaming inserts -  
for blind holes and partly for through holes

槽型 Geometry	主偏角 Firstcut angle	刃口处理 Preparation	倒锥 Backtaper	P	M	K	N	H
A1	45°	x1	x1	●	○	●	○	○
A6	45°	x2	x1	●	○	●	○	●
A7	45°	x2	x1.5	●	●	○	●	-

左旋铰刀  
用于通孔

left hand fluted reaming inserts -  
for through holes

槽型 Geometry	主偏角 Firstcut angle	刃口处理 Preparation	倒锥 Backtaper	P	M	K	N	H
B1	25°	x1	x1	●	○	●	○	-
B6	25°	x2	x1	●	○	●	○	-
B7	25°	x2	x1.5	●	●	○	●	-

F

# 切削参数 DR small, medium

## Cutting Data DR small, medium



材料 Material		材料组 Material group	硬度 (HB) Hardness Brinell	抗拉强度 R <sub>m</sub> [N/mm <sup>2</sup> ] Tensile Strength	材料示例 Example Material	
P	碳钢 Carbon steel	~ 0,2 % C	P1.1	125	430	CK15
		~ 0,4% C 退火 annealed	P1.2	190	610	19Mn6
		~ 0,4% C 淬火 quenched	P1.3	210	640	36Mn5
		~ 0,6% C 退火 annealed	P1.4	190	610	C55
		~ 0,6% C 调质 quenched	P1.5	300	1000	CK60
		易切钢 Free cutting steel	P1.6	220	750	9SMn28
	合金钢 (<5%) Alloyed steel	退火 annealed	P2.1	180	590	100Cr6
		调质 quenched	P2.2	280	960	14NiCr10
		调质 quenched	P2.3	350	1250	34CrMo4
		调质 quenched	P2.4	430	1450	55Cr3
	高合金钢 (>5%) high alloyed steel	退火 annealed	P3.1	200	680	X10CrAl18
		硬化 hardened	P3.2	350	1200	X210Cr2
	铸钢 Cast steel	非合金 unalloyed	P4.1	180	590	GE200
		合金 alloyed	P4.2	220	750	GX40CrSi28
	粉末冶金钢 Sintered steel	软质 soft	P5.1	220	570	Sint-D39
M	不锈钢 Stainless steel	马氏体,铁素体 martensitic ferritic	M1.1	200	680	X16Cr13
		奥氏体 austenitic	M1.2	300	1000	X6CrNiMo-Ti17-12-2
		奥氏体,铁素体 austenitic ferritic	M1.3	230	780	X2CrNi-Mo-N17-13-3
H	淬硬钢 Hardened steels	50-55 HRC	H1.1	-	-	
		55-60 HRC	H1.2	-	-	
		60-63 HRC	H1.3	-	-	
		> 63HRC	H1.4	-	-	

# 切削参数 DR small, medium

## Cutting Data DR small, medium



切削速度 vc (m/min) / 起始值 mit IK Cutting speed vc (m/min) / Start values with IC								
	MG10	HL3H	AN2H AN4H	AD3H AD4H	DT2H	NP1H	H20	
	35-25	220-140	220-140				240-150	
	30-20	190-130	190-130				220-140	
	30-18	180-120	180-120				200-130	
	25-15	160-100	160-100				170-110	
	18-12	190-50	190-50				160-100	
	30-20	180-120	180-120				190-130	
	30-20	180-120	180-120				190-130	
	15-9	160-100	160-100				170-110	
	10-6	120-80	120-80					
	9-5	100-60	100-60					
	8-4	120-80	120-80					
	5-3	90-50	90-50					
	25-15	160-100	160-100				170-110	
	18-12	140-80	140-80				190-50	
		190-50	190-50					
	8-4	90-50	90-50					
		50-30						
		25-15	25-15					
				30-20				
				18-12				
				12-8				
				6-10				



# 切削参数 DR small, medium

## Cutting Data DR small, medium



材料 Material		材料组 Material group	硬度 (HB) Hardness Brinell	抗拉强度 R <sub>m</sub> [N/mm <sup>2</sup> ] Tensile Strength	材料示例 Example Material	
K	灰铸铁 Grey cast iron	低拉伸强度 low tensile strength	K1.1	180	250	GG-25
		高拉伸强度 high tensile strength	K1.2	250	350	GG-40
	球磨铸铁 Spheroidal graphite cast iron	铁素体 ferritic	K2.1	160	400	GGG-40
		珠光体 perlitic	K2.1	260	700	GGG-60
	可锻铸铁 Malleable cast iron	铁素体 ferritic	K3.1	200	400	GTW-45
		珠光体 perlitic	K3.2	260	700	GTS-55-04
	奥氏体球墨铸 铁 / ADI Ausferritic spheroidal cast iron / ADI	调质 quenched	K4.1	260	800	
		调质 quenched	K4.2	350	1050	
		调质 quenched	K4.3	450	1400	
	N	铝合金 Al-alloys	非热处理 not heat treatable	N1.1	30	
热处理 heat treatable			N1.2	100	340	AlMgSi1
铸铝合金 Al-cast-alloy		< 6% Si	N2.1	80	300	AlMgSi6
		6-10% Si	N2.2	100	320	AlSi7Mg
		10-15 % Si	N2.3	130	450	AlSi12
铜合金 Copper-alloys		纯铜 Pure copper	N3.1	100	340	Cu
		黄铜, 青铜 Brass	N3.2	90	310	CuZn40Pb
		无铅黄铜 Lead-free brass	N3.3	110	430	CuZn40
		高强度 high strength	N3.4	300	1000	CuZn25Al5- Mn4Fe3
石墨 Graphite			N4.1			
S	耐热合金(铁基) Heat resistant alloy	退火 annealed	S1.1	200	670	
		硬化 hardened	S1.2	275	930	
	耐热合金 (镍基, 钴基) Heat resistant alloy	退火 annealed	S2.1	250	840	Inconel 600
		硬化 hardened	S2.2	350	1200	Inconel 713

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# 切削参数 DR small, medium

## Cutting Data DR small, medium



切削速度 vc (m/min) / 起始值 mit IK Cutting speed vc (m/min) / Start values with IC								
	MG10	HL3H	AN2H AN4H	AD3H AD4H	DT2H	NP1H	H20	
	30-20	170-110	170-110					
	30-20	170-110	170-110					
	25-15	170-110	170-110				170-110	
	22-14	140-80	140-80					
	25-15	170-110	170-110					
	22-14	140-80	140-80					
		90-50	90-50					
		60-40	60-40					
	60-40				300-200			
	50-30				270-170			
	40-25				220-140	300-200		
	25-15				170-110	250-150		
						220-140		
					70-50			
	100-60	220-140	220-140		160-100	190-130		
	100-60	170-110	170-110		160-100	190-130		
						80-60		
						90-50		
		40-25						
		35-25						
		22-14						
		18-12						



# 切削参数 DR small, medium

## Cutting Data DR small, medium



材料 Material	材料组 Material group	硬度 (HB) Hardness Brinell	抗拉强度 R <sub>m</sub> [N/mm <sup>2</sup> ] Tensile Strength	材料示例 Example Material
S 钛 Titan	钛合金 α Titanium alloy α	S3.1	120	240
	钛合金 α-β Titanium alloy α-β	S3.2	360	1200
	钛合金 β Titanium alloy β	S3.3	410	1400
O 热塑性塑料 Thermoplastics		01.1		
	Duro塑料 Duro plaste	01.2		
	玻璃纤维增强塑料 Plastics glass fibre reinforced	GFK	01.3	
	碳纤维增强塑料 Plastics carbon fibre reinforced	CKF	01.4	

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# 切削参数 DR small, medium

## Cutting Data DR small, medium



切削速度 vc (m/min) / 起始值 mit IK Cutting speed vc (m/min) / Start values with IC								
	MG10	HL3H	AN2H AN4H	AD3H AD4H	DT2H	NP1H	H20	
		40-25						
		30-20						
		22-14						
	70-50				70-50		70-50	
	60-40				60-40		60-40	
						60-40		
						60-40		

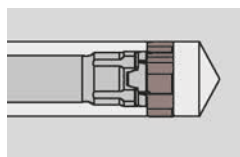


# 推荐 DR small Ø 7.6 - 13.1 mm

## Recommandation DR small



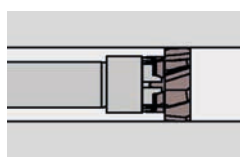
用于无断续加工的盲孔，使用内冷  
for blind holes without cutting interruption, used by IC



材料组 Material group	切削材料 Cutting maerial	槽型 Geometry	容屑槽 Flutes	
			G=直槽/straight L=左旋/left helical	
P1	HL3H	A7	G	
P2.1 - P2.2	HL3H	A1	G	
P2.3 - P3.2	HL3H	A6	G	
P4	HL3H	A1	G	
P5	HL3H	A7	G	
M	HL3H	A7	G	
K	HL3H	A1	G	
N1	DT2H	A7	G	
N2	NP1H	A7	G	
N3	DT2H	A7	G	
N4	NP1H	A7	G	
S	HL3H	A7	G	
H	AD3H	A6	G	
O	DT2H	A7	G	

F

用于无断续加工的通孔，使用内冷  
for through holes without Cutting Interruption, used by IC



材料组 Material group	切削材料 Cutting maerial	槽型 Geometry	容屑槽 Flutes	
			G=直槽/straight L=左旋/left helical	
P1	HL3H	B7	L	
P2.1 - P2.2	HL3H	B1	L	
P2.3 - P3.2	HL3H	B6	L	
P4	HL3H	B1	L	
P5	HL3H	B7	L	
M	HL3H	B7	L	
K	HL3H	A1	G	
N1	DT2H	B7	L	
N2	NP1H	B7	L	
N3	DT2H	A7	G	
N4	NP1H	A7	G	
S	HL3H	A7	L	
H	AD3H	A6	G	
O	DT2H	A7	L	



# 进给率和余量 DR small

## Feed rate and stock removal DR small



	DR08 Ø 7.6 - 8.1 mm		DR10 Ø 8.101 - 9.6 mm		DR11 Ø 9.601 - Ø 11.1 mm		DR13 Ø 11.101 - Ø 13.1 mm	
	ap	fz	ap	fz	ap	fz	ap	fz
	0.04 - 0.07	0.07 - 0.14	0.05 - 0.08	0.08 - 0.16	0.05 - 0.10	0.10 - 0.18	0.05 - 0.10	0.10 - 0.20
	0.04 - 0.07	0.06 - 0.12	0.05 - 0.08	0.07 - 0.14	0.05 - 0.10	0.08 - 0.16	0.05 - 0.10	0.09 - 0.18
	0.03 - 0.06	0.05 - 0.08	0.04 - 0.08	0.06 - 0.10	0.05 - 0.10	0.08 - 0.12	0.05 - 0.10	0.08 - 0.14
	0.04 - 0.07	0.07 - 0.14	0.05 - 0.08	0.08 - 0.16	0.05 - 0.10	0.10 - 0.18	0.05 - 0.10	0.10 - 0.20
	0.04 - 0.07	0.07 - 0.14	0.05 - 0.08	0.08 - 0.16	0.05 - 0.10	0.10 - 0.18	0.05 - 0.10	0.10 - 0.20
	0.04 - 0.07	0.06 - 0.08	0.05 - 0.08	0.07 - 0.09	0.05 - 0.08	0.08 - 0.10	0.05 - 0.10	0.09 - 0.11
	0.04 - 0.10	0.07 - 0.18	0.05 - 0.10	0.08 - 0.20	0.05 - 0.15	0.10 - 0.22	0.05 - 0.15	0.12 - 0.25
	0.05 - 0.10	0.06 - 0.15	0.05 - 0.12	0.08 - 0.18	0.08 - 0.15	0.1 - 0.22	0.10 - 0.20	0.12 - 0.25
	0.05 - 0.10	0.05 - 0.12	0.05 - 0.12	0.06 - 0.14	0.06 - 0.15	0.08 - 0.18	0.06 - 0.15	0.1 - 0.20
	0.04 - 0.10	0.07 - 0.14	0.04 - 0.10	0.08 - 0.18	0.05 - 0.10	0.08 - 0.20	0.05 - 0.10	0.1 - 0.20
	0.06 - 0.08	0.08 - 0.12	0.08 - 0.10	0.10 - 0.16	0.08 - 0.10	0.14 - 0.18	0.08 - 0.10	0.14 - 0.18
	0.03 - 0.05	0.05 - 0.08	0.03 - 0.06	0.05 - 0.08	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.05 - 0.12
	0.01 - 0.03	0.02 - 0.06	0.01 - 0.04	0.02 - 0.06	0.01 - 0.05	0.02 - 0.08	0.01 - 0.05	0.02 - 0.08
	0.05 - 0.08	0.06 - 0.12	0.05 - 0.08	0.06 - 0.12	0.08 - 0.12	0.06 - 0.12	0.08 - 0.12	0.06 - 0.12



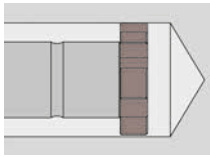
	DR08 Ø 7.6 - 8.1 mm		DR10 Ø 8.101 - 9.6 mm		DR11 Ø 9.601 - 11.1 mm		DR13 Ø 11.101 - Ø 13.1 mm	
	ap	fz	ap	fz	ap	fz	ap	fz
	0.04 - 0.07	0.08 - 0.16	0.05 - 0.08	0.09 - 0.18	0.05 - 0.10	0.11 - 0.20	0.05 - 0.10	0.12 - 0.22
	0.04 - 0.07	0.07 - 0.13	0.05 - 0.08	0.08 - 0.16	0.05 - 0.10	0.09 - 0.18	0.05 - 0.10	0.10 - 0.20
	0.03 - 0.06	0.06 - 0.09	0.04 - 0.08	0.07 - 0.11	0.05 - 0.10	0.09 - 0.13	0.05 - 0.10	0.09 - 0.16
	0.04 - 0.07	0.08 - 0.16	0.05 - 0.08	0.09 - 0.18	0.05 - 0.10	0.11 - 0.18	0.05 - 0.10	0.12 - 0.22
	0.04 - 0.07	0.08 - 0.16	0.05 - 0.08	0.09 - 0.18	0.05 - 0.10	0.11 - 0.20	0.05 - 0.10	0.11 - 0.22
	0.04 - 0.07	0.07 - 0.09	0.05 - 0.08	0.08 - 0.10	0.05 - 0.08	0.09 - 0.11	0.05 - 0.10	0.10 - 0.12
	0.04 - 0.10	0.07 - 0.18	0.05 - 0.10	0.08 - 0.20	0.05 - 0.15	0.10 - 0.22	0.05 - 0.15	0.12 - 0.25
	0.05 - 0.10	0.07 - 0.17	0.05 - 0.12	0.09 - 0.20	0.08 - 0.15	0.11 - 0.25	0.10 - 0.20	0.13 - 0.28
	0.05 - 0.10	0.06 - 0.13	0.05 - 0.12	0.07 - 0.16	0.06 - 0.15	0.09 - 0.20	0.06 - 0.15	0.11 - 0.22
	0.04 - 0.10	0.08 - 0.16	0.04 - 0.10	0.09 - 0.20	0.05 - 0.10	0.09 - 0.22	0.05 - 0.10	0.1 - 0.20
	0.06 - 0.08	0.09 - 0.13	0.08 - 0.10	0.11 - 0.18	0.08 - 0.10	0.16 - 0.20	0.08 - 0.10	0.16 - 0.20
	0.03 - 0.05	0.06 - 0.09	0.03 - 0.06	0.05 - 0.08	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.05 - 0.12
	0.01 - 0.03	0.02 - 0.06	0.01 - 0.04	0.02 - 0.06	0.01 - 0.05	0.02 - 0.08	0.01 - 0.05	0.02 - 0.08
	0.05 - 0.08	0.06 - 0.12	0.05 - 0.08	0.06 - 0.12	0.08 - 0.12	0.06 - 0.12	0.08 - 0.12	0.06 - 0.12

# 推荐 DR medium Ø11.9 - 140.6 mm

## Recommandation DR medium



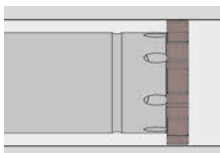
用于无断续加工的盲孔，使用内冷  
for blind holes without cutting interruption, used by IC



材料组 Material group	切削材料 Cutting maerial	槽型 Geometry	容屑槽 Flutes	
			G=直槽/straight L=左旋/left helical	
P1	HL3H	A7	G	
P2.1 - P2.2	HL3H	A1	G	
P2.3 - P3.2	HL3H	A6	G	
P4	HL3H	A1	G	
P5	HL3H	A7	G	
M	HL3H	A7	G	
K	HL3H	A1	G	
N1	DT2H	A7	G	
N2	NP1H	A7	G	
N3	DT2H	A7	G	
N4	NP1H	A7	G	
S	HL3H	A7	G	
H	AD3H	A6	G	
O	DT2H	A7	G	

F

用于无断续加工的通孔，使用内冷  
for through holes without Cutting Interruption, used by IC



材料组 Material group	切削材料 Cutting maerial	槽型 Geometry	容屑槽 Flutes	
			G=直槽/straight L=左旋/left helical	
P1	HL3H	B7	L	
P2.1 - P2.2	HL3H	B1	L	
P2.3 - P3.2	HL3H	B6	L	
P4	HL3H	B1	L	
P5	HL3H	B7	L	
M	HL3H	B7	L	
K	HL3H	A1	G	
N1	DT2H	B7	L	
N2	NP1H	B7	L	
N3	DT2H	A7	G	
N4	NP1H	A7	G	
S	HL3H	A7	L	
H	AD3H	A6	G	
O	DT2H	A7	L	

# 进给率和余量 DR medium

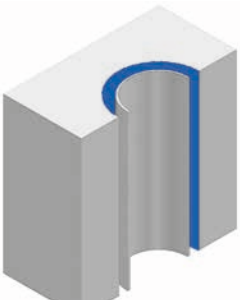
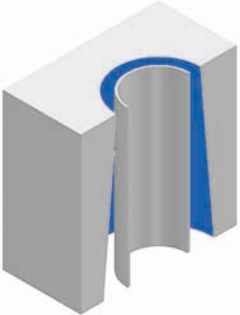
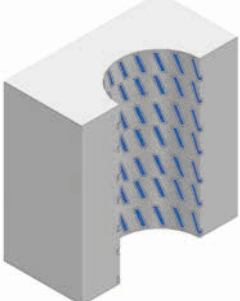
## Feed rate and stock removal DR medium

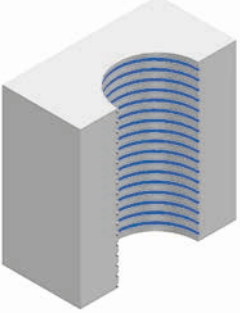
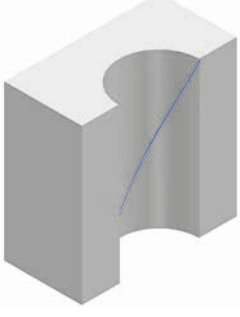
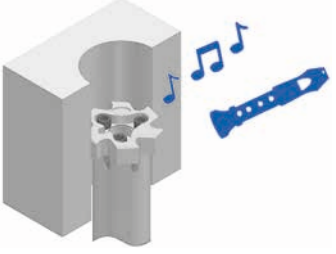



	DR016 Ø 11.9 - 15.6 mm		DR019 - DR024 Ø 15.601 - 23.6 mm		DR029 - DR036 Ø 23.601 - 35.6 mm		DR044 - DR141 Ø 35.601 - 140.6 mm	
	ap	fz	ap	fz	ap	fz	ap	fz
	0.04 - 0.10	0.07 - 0.18	0.06 - 0.12	0.10 - 0.20	0.08 - 0.15	0.12 - 0.20	0.10 - 0.18	0.12 - 0.20
	0.04 - 0.10	0.06 - 0.14	0.06 - 0.12	0.09 - 0.18	0.08 - 0.15	0.11 - 0.18	0.10 - 0.18	0.11 - 0.18
	0.03 - 0.08	0.05 - 0.12	0.04 - 0.10	0.08 - 0.14	0.05 - 0.12	0.10 - 0.14	0.10 - 0.15	0.10 - 0.14
	0.04 - 0.10	0.07 - 0.18	0.05 - 0.12	0.10 - 0.20	0.07 - 0.15	0.12 - 0.20	0.10 - 0.18	0.12 - 0.20
	0.04 - 0.10	0.07 - 0.18	0.05 - 0.12	0.10 - 0.20	0.06 - 0.13	0.12 - 0.20	0.07 - 0.15	0.12 - 0.20
	0.03 - 0.08	0.06 - 0.14	0.04 - 0.10	0.08 - 0.16	0.05 - 0.12	0.10 - 0.16	0.06 - 0.12	0.10 - 0.16
	0.06 - 0.15	0.10 - 0.25	0.10 - 0.20	0.12 - 0.25	0.10 - 0.25	0.12 - 0.25	0.12 - 0.25	0.12 - 0.25
	0.06 - 0.12	0.08 - 0.22	0.1 - 0.15	0.12 - 0.25	0.12 - 0.18	0.14 - 0.25	0.12 - 0.20	0.14 - 0.25
	0.06 - 0.12	0.07 - 0.18	0.1 - 0.15	0.10 - 0.20	0.12 - 0.18	0.12 - 0.20	0.12 - 0.20	0.12 - 0.20
	0.03 - 0.10	0.10 - 0.20	0.04 - 0.12	0.10 - 0.20	0.05 - 0.15	0.12 - 0.20	0.08 - 0.18	0.12 - 0.20
	0.05 - 0.10	0.12 - 0.18	0.06 - 0.12	0.14 - 0.18	0.08 - 0.14	0.14 - 0.18	0.10 - 0.18	0.14 - 0.18
	0.03 - 0.05	0.05 - 0.12	0.03 - 0.08	0.05 - 0.12	0.04 - 0.10	0.06 - 0.12	0.05 - 0.12	0.06 - 0.12
	0.01 - 0.03	0.02 - 0.08	0.01 - 0.04	0.02 - 0.08	0.02 - 0.05	0.02 - 0.08	0.02 - 0.05	0.02 - 0.08
	0.05 - 0.08	0.05 - 0.12	0.06 - 0.10	0.06 - 0.12	0.08 - 0.12	0.06 - 0.12	0.10 - 0.15	0.06 - 0.12



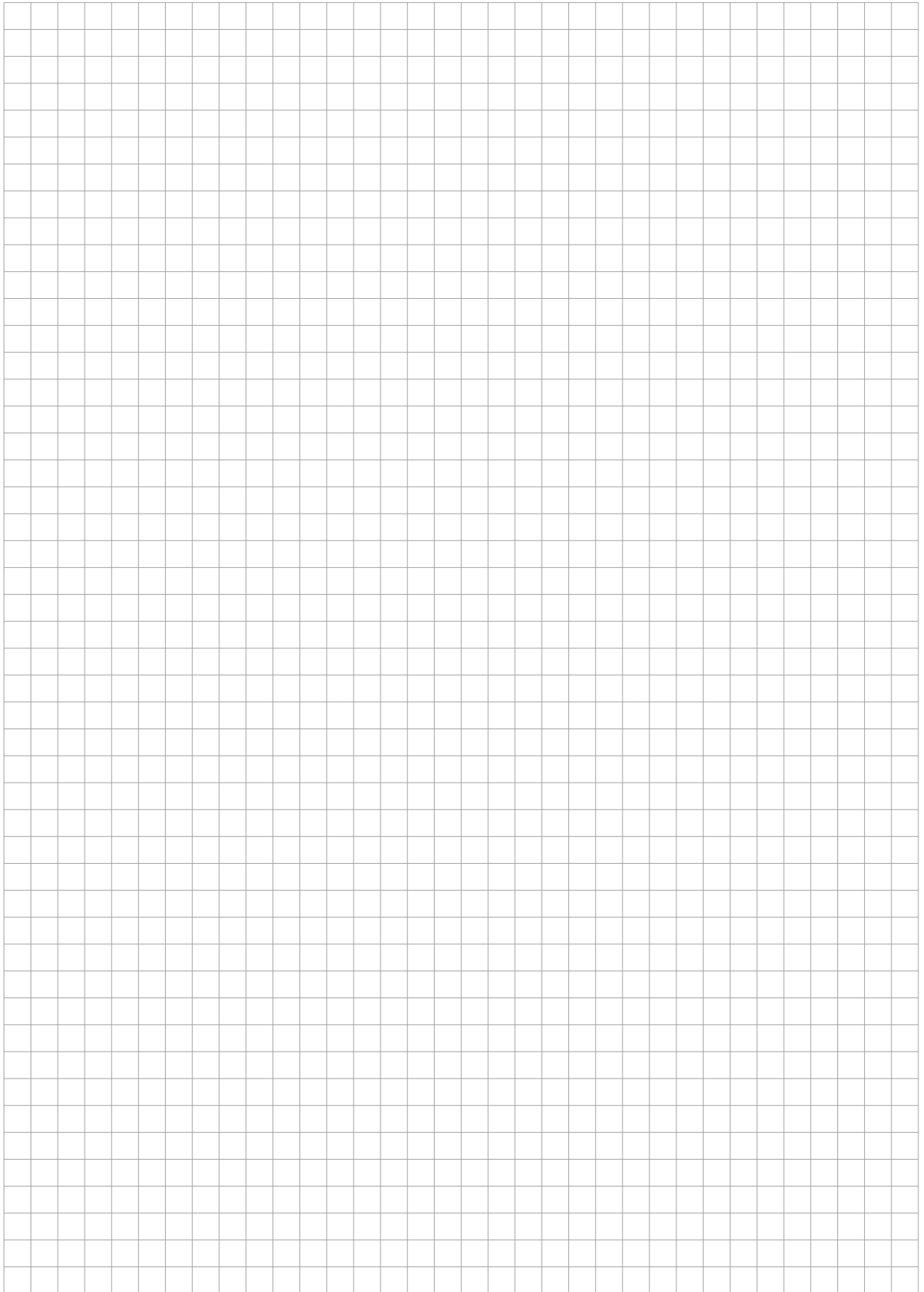
	DR016 Ø 11.9 - 15.6 mm		DR019 - DR024 Ø 15.601 - 23.6 mm		DR029 - DR036 Ø 23.601 - 35.6 mm		DR044 - DR141 Ø 35.601 - 140.6 mm	
	ap	fz	ap	fz	ap	fz	ap	fz
	0.04 - 0.10	0.08 - 0.20	0.06 - 0.12	0.11 - 0.22	0.08 - 0.15	0.14 - 0.22	0.10 - 0.18	0.14 - 0.22
	0.04 - 0.10	0.07 - 0.18	0.06 - 0.12	0.10 - 0.20	0.08 - 0.15	0.12 - 0.20	0.10 - 0.18	0.12 - 0.20
	0.03 - 0.08	0.06 - 0.14	0.04 - 0.10	0.09 - 0.16	0.05 - 0.12	0.11 - 0.16	0.10 - 0.15	0.11 - 0.16
	0.04 - 0.10	0.08 - 0.20	0.05 - 0.12	0.11 - 0.22	0.07 - 0.15	0.14 - 0.22	0.10 - 0.18	0.14 - 0.22
	0.04 - 0.10	0.08 - 0.20	0.05 - 0.12	0.11 - 0.22	0.06 - 0.13	0.14 - 0.22	0.07 - 0.15	0.14 - 0.22
	0.03 - 0.08	0.07 - 0.14	0.04 - 0.10	0.09 - 0.18	0.05 - 0.12	0.11 - 0.18	0.06 - 0.12	0.11 - 0.18
	0.06 - 0.15	0.10 - 0.25	0.10 - 0.20	0.12 - 0.25	0.10 - 0.25	0.12 - 0.25	0.12 - 0.25	0.12 - 0.25
	0.06 - 0.12	0.10 - 0.25	0.1 - 0.15	0.15 - 0.30	0.12 - 0.18	0.16 - 0.30	0.12 - 0.20	0.16 - 0.30
	0.06 - 0.12	0.10 - 0.20	0.1 - 0.15	0.11 - 0.22	0.12 - 0.18	0.14 - 0.22	0.12 - 0.20	0.14 - 0.22
	0.03 - 0.10	0.10 - 0.20	0.04 - 0.12	0.10 - 0.20	0.05 - 0.15	0.12 - 0.20	0.08 - 0.18	0.12 - 0.20
	0.05 - 0.10	0.12 - 0.18	0.06 - 0.12	0.16 - 0.20	0.08 - 0.14	0.16 - 0.20	0.10 - 0.18	0.16 - 0.20
	0.03 - 0.05	0.05 - 0.12	0.03 - 0.08	0.06 - 0.14	0.04 - 0.10	0.07 - 0.14	0.05 - 0.12	0.07 - 0.14
	0.01 - 0.03	0.02 - 0.08	0.01 - 0.04	0.02 - 0.08	0.02 - 0.05	0.02 - 0.08	0.02 - 0.05	0.02 - 0.08
	0.05 - 0.08	0.05 - 0.12	0.06 - 0.10	0.06 - 0.12	0.08 - 0.12	0.06 - 0.12	0.10 - 0.15	0.06 - 0.12

故障 Fault	补救 Remedy
<p>孔过大 Hole too large</p> 	<ol style="list-style-type: none"> <li>1. 减少跳动及使用补偿刀柄</li> <li>2. 减小切削速度</li> <li>3. 增大进给率, 增大冷却液浓度</li> <li>4. 减小切深</li> <li>5. 检查刀具磨损 (积屑瘤)</li> <li>6. 控制铰刀片直径</li> </ol> <ol style="list-style-type: none"> <li>1. Reduce runout error and use compensation holder</li> <li>2. Reduce cutting speed</li> <li>3. Increase feed rate, increase coolant mix</li> <li>4. Reduce depth of cut</li> <li>5. Check tool wear (especiall build-up edges)</li> <li>6. Control reamer-<math>\varnothing</math></li> </ol>
<p>锥孔 Tapered hole</p> 	<ol style="list-style-type: none"> <li>1. 减少跳动及使用补偿刀柄</li> <li>2. 降低切削速度及进给, 检查冷却液浓度</li> <li>3. 改进前序加工</li> <li>4. 改进工件装夹</li> <li>5. 测量夹紧及非夹紧状态</li> <li>6. 检查铁屑</li> </ol> <ol style="list-style-type: none"> <li>1. Reduce runout error and use compensation holder</li> <li>2. Reduce cutting speed and feed, check coolant mix</li> <li>3. Improve pre-machining</li> <li>4. Improve workpiece clamping</li> <li>5. Measure bore in clamped and unclamped condition</li> <li>6. Check chip flow</li> </ol>
<p>震纹 Hole shows chatter marks</p> 	<ol style="list-style-type: none"> <li>1. 减小刀具跳动及使用补偿刀柄</li> <li>2. 改变倒角角度</li> <li>3. 改进工件装夹</li> <li>4. 减小切削速度</li> <li>5. 增加进给率</li> </ol> <ol style="list-style-type: none"> <li>1. Reduce runout error and use compensation holder</li> <li>2. Change chamfer angle</li> <li>3. Improve workpiece clamping</li> <li>4. Reduce cutting speed</li> <li>5. Increase feed rate</li> </ol>

故障 Fault	补救 Remedy
<p>表面质量差 Surface quality unsatisfactory</p> 	<ol style="list-style-type: none"> <li>1. 检查刀片磨损</li> <li>2. 减少跳动, 使用补偿刀柄, 检查切削参数</li> <li>3. 使用内冷</li> <li>4. 增加冷却液浓度</li> </ol> <ol style="list-style-type: none"> <li>1. Check insert wear</li> <li>2. Reduce runout error and use compensation holder, check cutting data</li> <li>3. Use tool with internal coolant supply</li> <li>4. Increase coolant mix</li> </ol>
<p>孔内印记 Retention marks in hole</p> 	<ol style="list-style-type: none"> <li>1. 降低跳动误差使用补偿刀柄</li> <li>2. 检查刀具磨损(积屑瘤)</li> <li>3. 降低切深</li> <li>4. 使用锋利的槽型</li> <li>5. 降低拔出进给</li> </ol> <ol style="list-style-type: none"> <li>1. Reduce runout error and use compensation holder</li> <li>2. Check insert wear (build-up edges)</li> <li>3. Reduce depth of cut</li> <li>4. Use a sharper geometry</li> <li>5. Reduce pull back feed</li> </ol>
<p>啸叫 Reamer jams</p> 	<ol style="list-style-type: none"> <li>1. 降低冷却液浓度</li> <li>2. 增大切深</li> <li>3. 检查刀片磨损</li> <li>4. 改变倒角角度</li> </ol> <ol style="list-style-type: none"> <li>1. Reduce coolant mix</li> <li>2. Increase depth of cut</li> <li>3. Check insert wear</li> <li>4. Change chamfer angle</li> </ol>
<p>孔过小 Hole too small</p> 	<ol style="list-style-type: none"> <li>1. 更换刀片</li> <li>2. 减小冷却液浓度</li> <li>3. 增大切深</li> <li>4. 增大切削速度</li> <li>5. 降低进给率</li> </ol> <ol style="list-style-type: none"> <li>1. Change insert</li> <li>2. Reduce coolant mix</li> <li>3. Increase depth of cut</li> <li>4. Increase cutting speed</li> <li>5. Reduce feed rate</li> </ol>

F

F



# URMA



## 接头系统 URMA

模块 Beta-Modul

## System Adaptors URMA

Modular Components  
Beta-Modul

概述  
Overview

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接头系统 URMA  
System Adaptors URMA  
BH/BD/BT

HSK-A

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SK-A

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JIS-BT

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接长杆  
Extension  
B13

Beta-  
Modul

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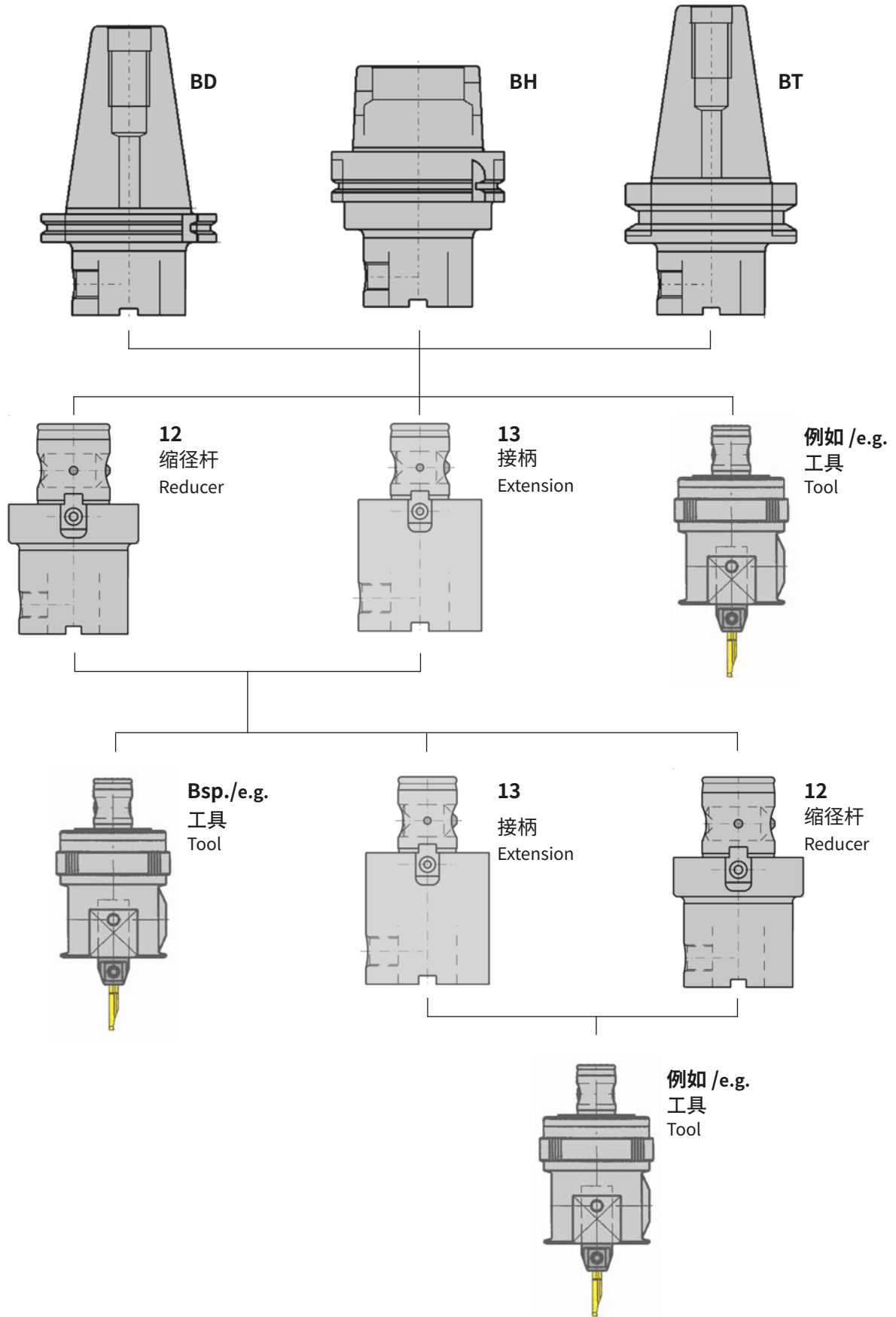
缩径杆  
Reducer  
B12

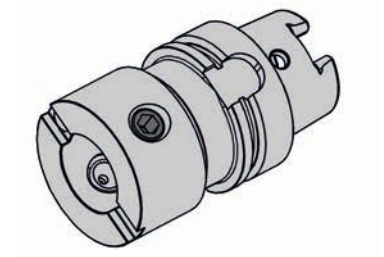
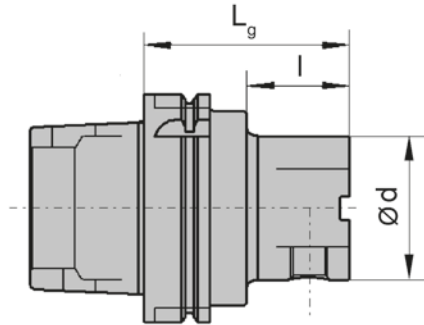
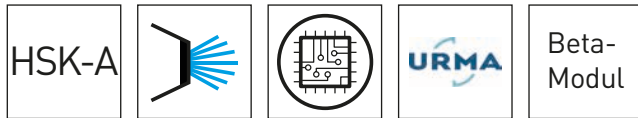
Beta-  
Modul

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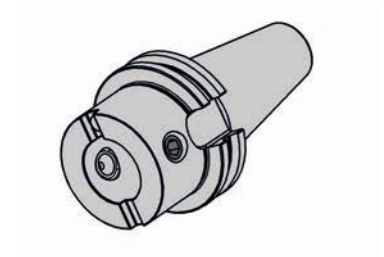
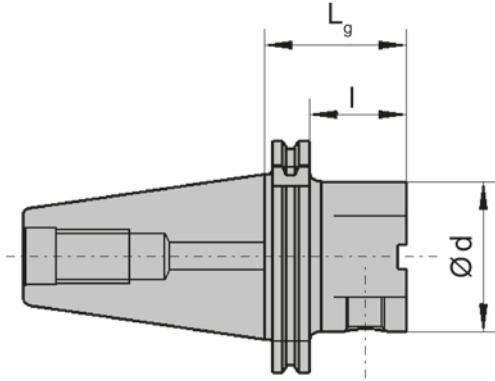
系统接杆 Beta-Modul  
System adaptor Beta-Modul





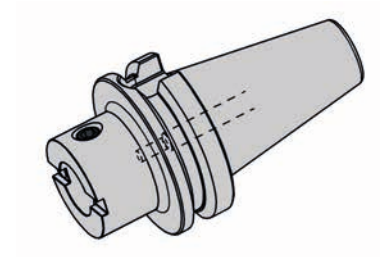
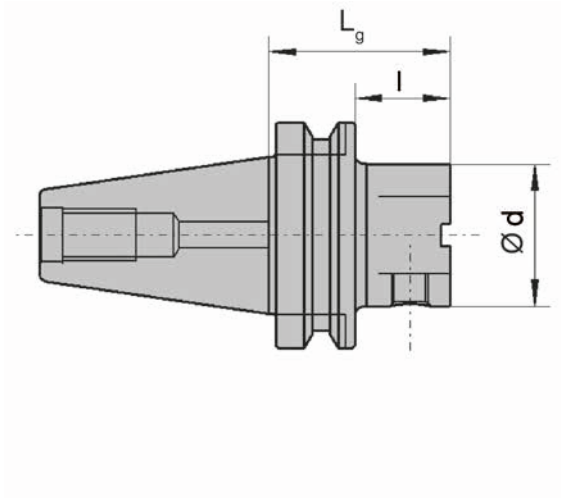
产品型号 Part number	Lg	l	d	Beta-Modul	重量 [kg] Weight [kg]	系列 System
BH10 63A 25 055	55	29	25	25	0.9	HSK-A 63
BH10 63A 32 060	60	34	32	32	1	HSK-A 63
BH10 63A 40 065	65	23	42	40	1.1	HSK-A 63
BH10 63A 50 070	70	28	50	50	1.5	HSK-A 63
BH10 63A 63 080	80	-	63	63	1.5	HSK-A 63
BH10 100A 32 060	60	31	32	32	2.3	HSK-A 100
BH10 100A 40 080	80	35	42	40	3.1	HSK-A 100
BH10 100A 50 080	80	35	50	50	3.2	HSK-A 100
BH10 100A 63 080	80	35	63	63	3.3	HSK-A 100
BH10 100A 80 090	90	45	80	80	4	HSK-A 100
BH10 100A 100 100	100	-	100	100	5	HSK-A 100

不包含冷却液管-需要单独订购!  
Coolant tube is not included - separate order required! Chapter Additional Equipment

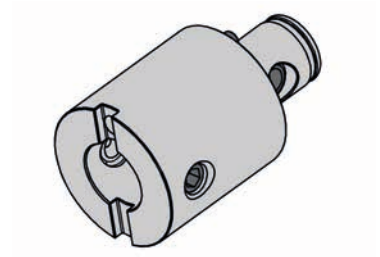
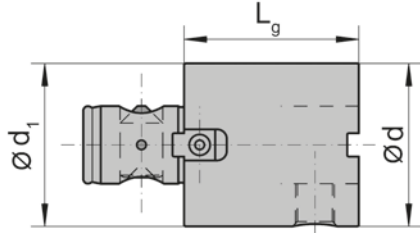
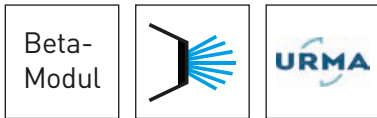


产品型号 Part number	Lg	l	d	Beta-Modul	重量 [kg] Weight [kg]	系列 System
BD10 40A 25 050	50	31	25	25	0.8	SK 40
BD10 40A 32 050	50	31	32	32	0.9	SK 40
BD10 40A 40 035	35	16	42	40	0.9	SK 40
BD10 40A 40 050	50	31	42	40	1.1	SK 40
BD10 40A 50 050	50	31	50	50	1.2	SK 40
BD10 40A 63 065	65	46	63	63	1.5	SK 40
BD10 40A 63 090	90	70	63	63	2	SK 40
BD10 50A 25 060	60	41	25	25	2.8	SK 50
BD10 50A 32 060	60	41	32	32	2.9	SK 50
BD10 50A 40 060	60	41	42	40	3	SK 50
BD10 50A 50 060	60	41	50	50	3.2	SK 50
BD10 50A 63 060	60	41	63	63	3.3	SK 50
BD10 50A 80 070	70	51	80	80	4	SK 50
BD10 50A 100 115	115	96	50	100	6.9	SK 50



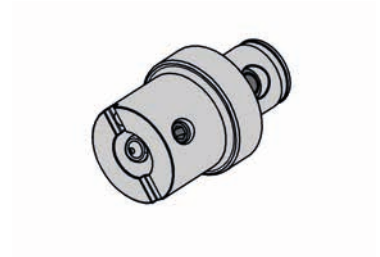
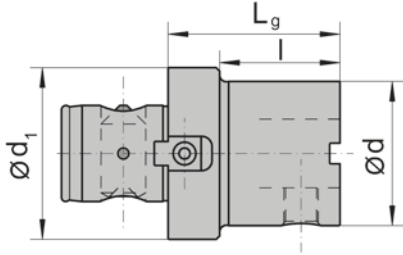
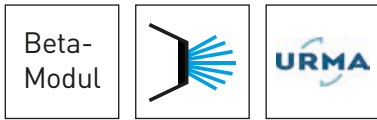


产品型号 Part number	Lg	l	d	Beta-Modul	重量 [kg] Weight [kg]	系列 System
BT10 40A 25 060	60	33	25	25	0.8	JIS-BT 40
BT10 40A 32 060	60	33	32	32	0.9	JIS-BT 40
BT10 40A 40 028	28	1	42	40	0.9	JIS-BT 40
BT10 40A 40 060	60	33	42	40	1.2	JIS-BT 40
BT10 40A 50 060	60	33	50	50	1.3	JIS-BT 40
BT10 40A 63 055	55	28	63	63	1.4	JIS-BT 40
BT10 40A 63 070	70	43	63	63	1.7	JIS-BT 40
BT10 50A 32 070	70	32	32	32	3.7	JIS-BT 50
BT10 50A 40 070	70	32	42	40	3.9	JIS-BT 50
BT10 50A 50 070	70	32	50	50	4.1	JIS-BT 50
BT10 50A 63 080	80	42	63	63	4.3	JIS-BT 50
BT10 50A 80 100	100	62	80	80	5.5	JIS-BT 50
BT10 50A 100 100	110	72	100	100	7	JIS-BT 50



产品型号 Part number	Lg	d	d <sub>1</sub>	Beta-Modul MS	Beta-Modul WS	重量 [kg] Weight [kg]
B13 25 25 045	45	25	25	25	25	0.2
B13 25 25 070	70	25	25	25	25	0.3
B13 32 32 035	35	32	32	32	32	0.2
B13 32 32 070	70	32	32	32	32	0.4
B13 40 40 045	45	42	42	40	40	0.4
B13 40 40 070	70	42	42	40	40	0.7
B13 50 50 065	65	50	50	50	50	1
B13 50 50 100	100	50	50	50	50	1.5
B13 63 63 060	60	63	63	63	63	1.3
B13 63 63 125	125	63	63	63	63	2.9





产品型号 Part number	Lg	l	d	d <sub>1</sub>	Beta-Modul MS	Beta-Modul WS	重量 [kg] Weight [kg]
B12 32 25 040	40	25	25	32	32	25	0.2
B12 40 25 040	40	25	25	42	40	25	0.3
B12 40 32 045	45	30	32	42	40	32	0.3
B12 50 40 050	50	35	42	50	50	40	0.5
B12 63 25 045	45	25	25	63	63	25	0.7
B12 63 32 050	50	30	32	63	63	32	0.9
B12 63 40 055	55	35	42	63	63	40	1.1

HD



H

## 液压刀柄

版本:

- HD classic
- HD Ecompact
- HD slim4X
- HD zero
- HD zero-K

## Hydraulic Expansion Toolholder

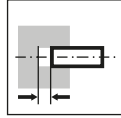
Version:

- HD classic
- HD Ecompact
- HD slim4X
- HD zero
- HD zero-K

概述  
Overview

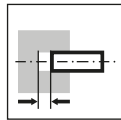
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液压刀柄 classic  
Hydraulic Expansion Tool-  
holder classic  
HDC



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212-213

液压刀柄 Ecompact  
Hydraulic Expansion Tool-  
holder Ecompact  
HDE



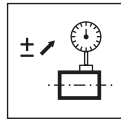
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液压刀柄 slim4X  
Hydraulic Expansion Tool-  
holder slim4X  
HDS4X



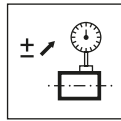
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液压刀柄 zero  
Hydraulic Expansion Tool-  
holder zero  
HDR



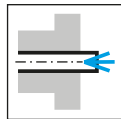
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液压刀柄 zero-K  
Hydraulic Expansion Tool-  
holder zero-K  
HDRK

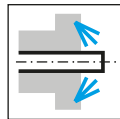


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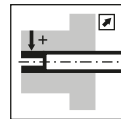
夹套  
Intermediate Sleeve  
HDZB



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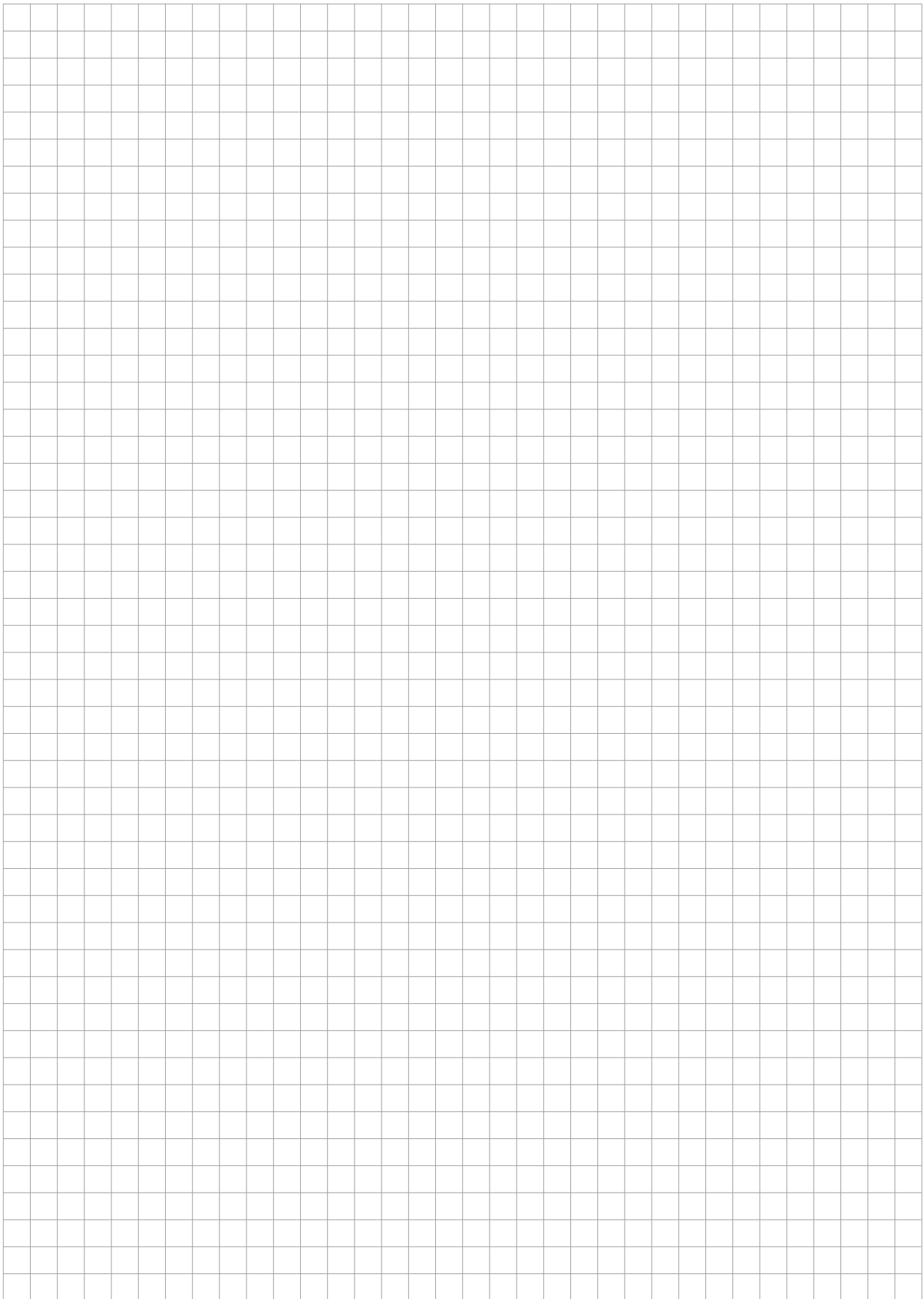
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H





H



## HDC

根据DIN标,原始‘修长设计  
多功能-铣削,铰孔,镗孔,倒角,螺纹铣,高进给.

- 可提供多用途应用
- 跳动及重复精度 $<0.003\text{mm}$
- 优秀的减震
- 利用夹套扩大夹持范围
- 轴向长度可预调
- 优秀的动平衡

"The original" in slim design according DIN.

Versatile use - whether milling, reaming, boring, chamfering, thread milling, or high-speed machining.

- Offering exceptional versatility for a wide range of applications
- Runout and repeat accuracy  $<0.003\text{ mm}$
- Excellent vibration damping
- Versatile clamping range due to intermediate sleeves
- Axial length pre-adjustment
- Standard fine-balanced



## HDE

粗壮设计多功能-铣削,铰孔,镗孔,倒角,螺纹铣,高进给.

- 高扭矩,在直径小于20mm干式冷却下,最高可夹紧力900Nm,在油(液)式冷却下可以达到520Nm.
- 高性价比
- 跳动及重复精度 $<0.003\text{ mm}$

Robust and short design for universal use in volume machining, milling, boring, reaming, and thread-milling

- Highest torques, now up to 900 Nm on  $\varnothing 20\text{ mm}$  under dry clamping conditions, 520 Nm on oily tool shanks
- Excellent price/performance ratio
- Constant runout and repeat accuracy  $<0.003\text{ mm}$
- Axial length pre-adjustment



## HDS4X

超薄设计,推荐用于轴向加工。外部尺寸符合DIN 69882-8的热收缩刀柄标准。

- 不使用热缩仪
- 细杆设计
- 短版本和长版本
- 优异的减振性能
- 轴向长度预调节

Slim design, recommended for axial machining. Outer dimensions are corresponding to heat shrink chucks according to DIN 69882-8.

- Do not use in shrink machines
- Slim design
- Short and long version
- Excellent vibration damping
- Axial length pre-adjustment



## HDR

微米精确!跳动可调液压刀柄HDR型是专业级刀杆,用于紧公差的镗孔、铰孔或任何需要完美跳动精度的地方。这使得即使最小的同心度误差与工具,主轴安装,主轴都可以单独补偿。

- 恒定跳动精度可以调整到 $0\mu\text{m}$
- 易于操作
- 完美减振

Micron precise! The runout adjustable hydraulic expansion tool holder Type HDR is the professional tool holder for tight tolerances for boring, reaming or wherever perfect runout accuracy is a must. This enables even minimal concentricity errors with tools, spindle mounts, and the spindles to be individually compensated.

- Constant runout accuracy can be adjusted to  $0\mu\text{m}$
- Easy handling
- Perfect vibration damping



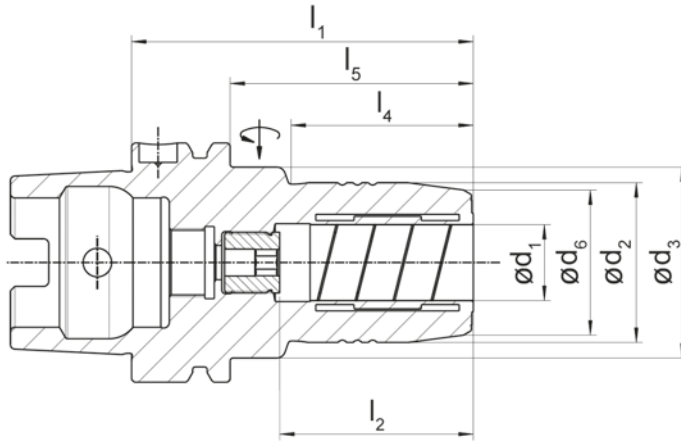
## HDRK

超短带圆定向功能的HDR型。省去长度调整,设计更短。HSK-C63型也有助于缩短长度。一种替代方案,尤其适用于狭小空间和不利的振动

- 恒定跳动精度可以调整到 $0\mu\text{m}$
- 易于操作
- 完美减振
- 无长度调整

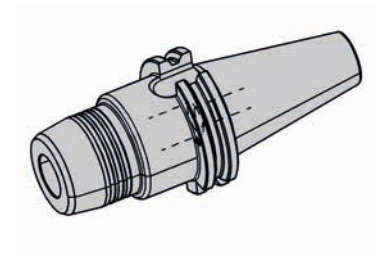
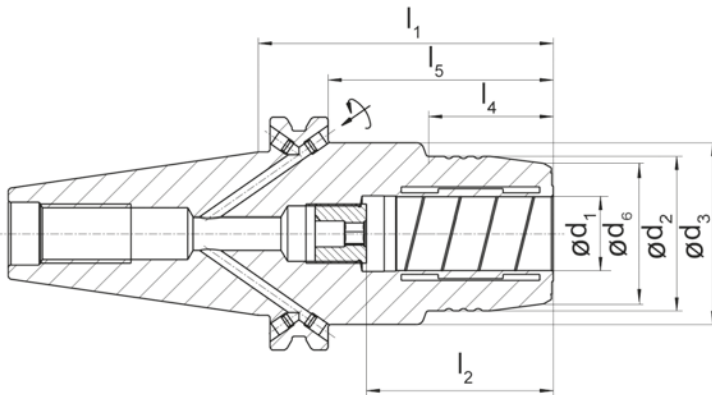
Extra short with circular directional function of type HDR. Shorter design by omitting the length adjustment. Type HSK-C63 also contributes to the length reduction. An alternative, especially for tight spaces and unfavourable vibrations

- Constant runout accuracy can be adjusted to  $0\mu\text{m}$
- Easy handling
- Perfect vibration damping
- Without length adjustment



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
HDC.HSKA050.06.070	6	26	40	22	70	37	28	44	0.7	16	HSK-A 50
HDC.HSKA050.08.070	8	28	40	24	70	37	28	44	0.7	23	HSK-A 50
HDC.HSKA050.10.075	10	30	40	26	75	41	34	49	0.7	45	HSK-A 50
HDC.HSKA050.12.085	12	32	40	28	85	46	44	59	0.8	90	HSK-A 50
HDC.HSKA050.16.090	16	38	53	34	90	49	30	64	1.1	185	HSK-A 50
HDC.HSKA050.20.090	20	42	60	38	90	51	29	64	1.1	330	HSK-A 50
HDC.HSKA063.06.070	6	26	50	22	70	37	24	44	1	16	HSK-A 63
HDC.HSKA063.08.070	8	28	50	24	70	37	25	44	1	23	HSK-A 63
HDC.HSKA063.10.080	10	30	50	26	80	41	35	54	1.1	45	HSK-A 63
HDC.HSKA063.12.085	12	32	50	28	85	46	40	59	1.1	90	HSK-A 63
HDC.HSKA063.16.090	16	38	50	34	90	49	46	64	1.2	185	HSK-A 63
HDC.HSKA063.20.090	20	42	50	38	90	51	48	64	1.3	330	HSK-A 63
HDC.HSKA063.25.120	25	57	63	51	120	57	-	94	2.2	400	HSK-A 63
HDC.HSKA100.06.075	6	26	50	22	75	37	26	46	2.5	16	HSK-A 100
HDC.HSKA100.08.075	8	28	50	24	75	37	26	46	2.5	23	HSK-A 100
HDC.HSKA100.10.090	10	30	50	26	90	41	42	61	2.5	45	HSK-A 100
HDC.HSKA100.12.095	12	32	50	28	95	46	47	66	2.6	90	HSK-A 100
HDC.HSKA100.16.100	16	38	50	34	100	49	53	71	2.7	185	HSK-A 100
HDC.HSKA100.20.105	20	42	50	38	105	51	59	76	2.8	330	HSK-A 100
HDC.HSKA100.25.110	25	57	63	51	110	57	62.5	81	3.7	400	HSK-A 100

不包含冷却液管-需要单独订购!  
Coolant tube is not included - separate order required! Chapter Additional Equipment

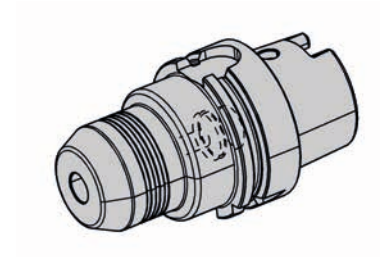
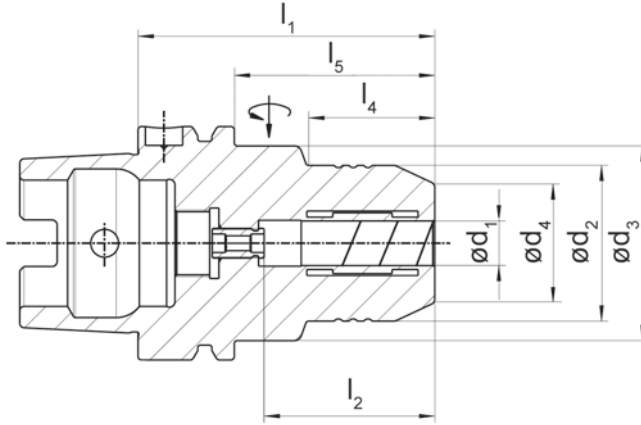


产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
HDC.SK40.06.080	6	26	49.5	22	80.5	37	29.5	61.5	1.4	16	SK 40
HDC.SK40.08.080	8	28	49.5	24	80.5	37	30	61.5	1.4	23	SK 40
HDC.SK40.10.080	10	30	49.5	26	80.5	41	31	61.5	1.4	45	SK 40
HDC.SK40.12.080	12	32	49.5	28	80.5	46	31.5	61.5	1.4	90	SK 40
HDC.SK40.16.080	16	38	49.5	34	80.5	49	33	61.5	1.4	185	SK 40
HDC.SK40.20.080	20	42	49.5	38	80.5	51	34	61.5	1.4	330	SK 40
HDC.SK40.25.080	25	55	66	53	80.5	57	22	61.5	1.8	330	SK 40
HDC.SK50.20.080	20	42	49.5	38	80.5	51	34	61.5	3.3	330	SK 50

# 液压刀柄 Ecompact

## Hydraulic Expansion Toolholder Ecompact

HDE



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
HDE.HSKA063.12.080	12	42	52.5	32	80	46	34	54	1.25	110	HSK-A 63
HDE.HSKA063.16.080	16	53	-	38	80	51	-	54	1.3	350	HSK-A 63
HDE.HSKA063.20.080	20	52.5	-	38	80	51	-	54	1.32	520	HSK-A 63
HDE.HSKA100.20.090	20	52.5	-	38	90	51	-	54	2.8	520	HSK-A 100
HDE.HSKA100.32.100	32	72	-	58.5	100	61	-	71.05	3.8	900	HSK-A 100

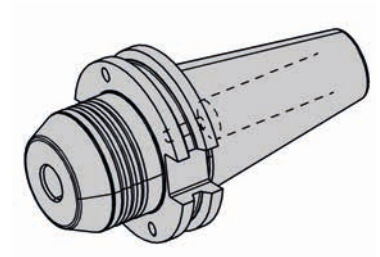
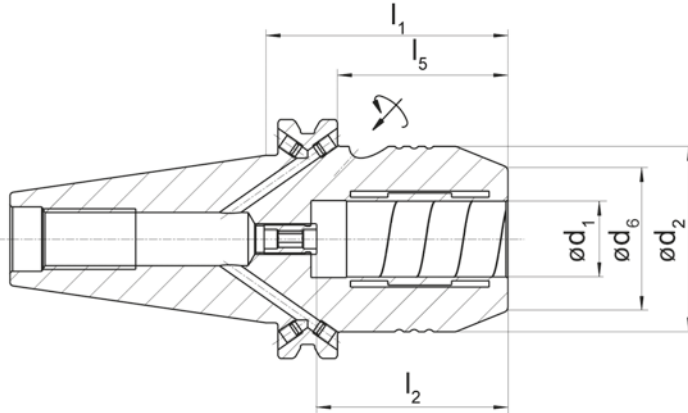
不包含冷却液管-需要单独订购!  
Coolant tube is not included - separate order required!

H

# 液压刀柄 Ecompact

## Hydraulic Expansion Toolholder Ecompact

HDE



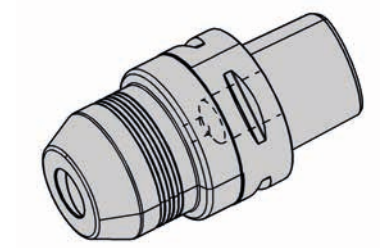
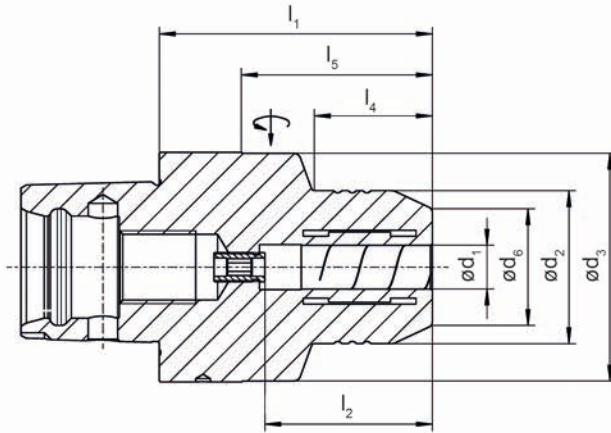
产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
HDE.SK40.12.050	12	42	32	50	46	31	1.1	110	SK 40
HDE.SK40.16.064	16	49.25	38	64.5	51	45.45	1.2	350	SK 40
HDE.SK40.20.064	20	49.25	38	64.5	51	45.5	1.3	520	SK 40
HDE.SK50.12.050	12	42	32	50	46	31	2.8	110	SK 50
HDE.SK50.20.064	20	49.25	38	64.5	51	45.5	3.1	520	SK 50
HDE.SK50.32.081	32	72	58.5	81	61	62	4.1	900	SK 50

H

# 液压刀柄 Ecompact

## Hydraulic Expansion Toolholder Ecompact

HDE



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
HDE.C4.12.065	12	39.5	39.5	32	65	46	-	44	0.65	110	C4
HDE.C4.20.083	20	45.5	45.5	38	83	51	-	62.4	0.85	440	C4
HDE.C5.12.070	12	42	49.5	32	70	46	33	50	0.9	110	C5
HDE.C5.20.075	20	49.5	49.5	38	75	51	-	54	1	440	C5
HDE.C6.12.075	12	42	62.5	32	75	46	33	53	1.5	110	C6
HDE.C6.20.080	20	52.5	62.5	38	80	51	41	57.4	1.6	440	C6
HDE.C6.32.090	32	62.5	62.5	58.5	90	61	-	67	1.95	800	C6

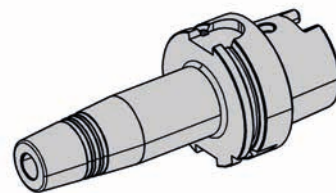
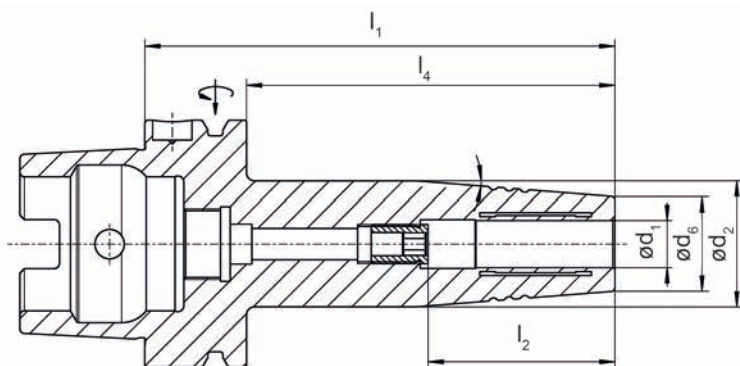
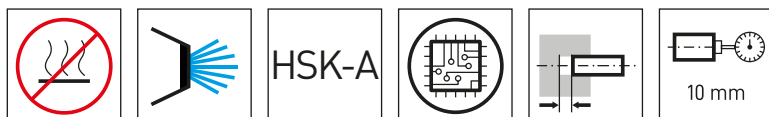
H



# 液压刀柄 slim4X

## Hydraulic Expansion Toolholder slim4X

# HDS4X



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
HDS4X.HSKA063.06.080	6	27	27	21	80	38.2	54	0.9	16	HSK-A 63
HDS4X.HSKA063.06.120	6	27	27	21	120	38.2	94	1	16	HSK-A 63
HDS4X.HSKA063.08.080	8	27	27	21	80	38.2	54	0.9	23	HSK-A 63
HDS4X.HSKA063.08.120	8	27	27	21	120	38.2	94	1	23	HSK-A 63
HDS4X.HSKA063.10.085	10	32	32	24	85	42.7	59	0.9	45	HSK-A 63
HDS4X.HSKA063.10.120	10	32	32	24	120	43.2	94	1.1	45	HSK-A 63
HDS4X.HSKA063.12.090	12	32	32	24	90	47.7	64	0.9	90	HSK-A 63
HDS4X.HSKA063.12.120	12	32	32	24	120	47.7	94	1.1	90	HSK-A 63
HDS4X.HSKA063.14.090	14	34	34	27	90	48.7	64	1	110	HSK-A 63
HDS4X.HSKA063.14.120	14	34	34	27	120	48.7	94	1.2	110	HSK-A 63
HDS4X.HSKA063.16.095	16	34	34	27	95	53.2	69	1	185	HSK-A 63
HDS4X.HSKA063.16.120	16	34	34	27	120	53.2	94	1.2	185	HSK-A 63
HDS4X.HSKA063.20.100	20	42	42	33	100	55.7	74	1.2	330	HSK-A 63
HDS4X.HSKA063.20.120	20	42	42	33	120	55.7	94	1.4	330	HSK-A 63

不包含冷却液管-需要单独订购!

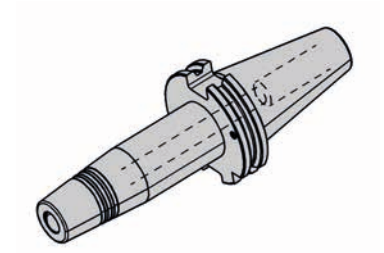
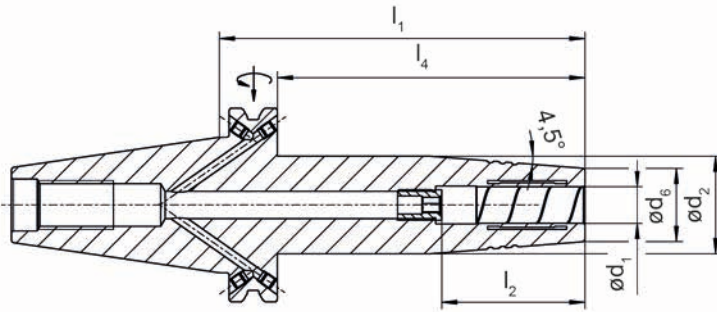
Coolant tube is not included - separate order required! Chapter Additional Equipment



# 液压刀柄 slim4X

## Hydraulic Expansion Toolholder slim4X

# HDS4X



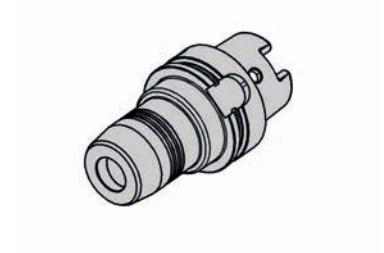
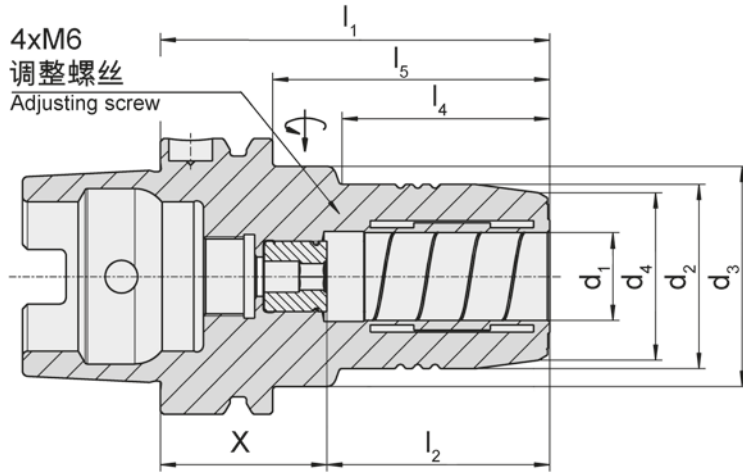
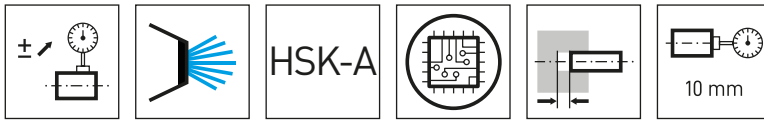
产品型号 Part number	$d_1$	$d_2$	$d_6$	$l_1$	$l_2$	$l_4$	重量 [kg] Weight [kg]	$M_{min}$ [Nm]	系列 System
HDS4X.SK40.06.080	6	27	21	80	36	61	1	16	SK 40
HDS4X.SK40.06.120	6	27	21	120	36	101	1.2	16	SK 40
HDS4X.SK40.08.080	8	27	21	80	36	61	1	23	SK 40
HDS4X.SK40.08.120	8	27	21	120	36	101	1.2	23	SK 40
HDS4X.SK40.12.080	12	32	24	80	47	61	1	90	SK 40
HDS4X.SK40.12.120	12	32	24	120	47	101	1.3	90	SK 40
HDS4X.SK40.20.080	20	42	33	80	52	61	1.2	330	SK 40
HDS4X.SK40.20.120	20	42	33	120	52	101	1.3	330	SK 40

H

# 液压刀柄 zero

## Hydraulic Expansion Toolholder zero

# HDR



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	系列 System
HDR.HSKA040.12.080	12	32	33.5	28	80	46	48	60	0.5	HSK-A 40
HDR.HSKA040.20.100	20	42	53	38	100	51	47	-	1	HSK-A 40
HDR.HSKA050.12.085	12	32	40	28	85	46	44	59	0.8	HSK-A 50
HDR.HSKA063.12.085	12	32	50	28	85	46	40	59	1.1	HSK-A 63
HDR.HSKA063.20.090	20	42	50	38	90	51	48	64	1.3	HSK-A 63
HDR.HSKA063.32.125	32	64	75	60	125	61	63	99	2.7	HSK-A 63
HDR.HSKA100.12.095	12	32	50	28	95	46	47	66	2.6	HSK-A 100
HDR.HSKA100.20.105	20	42	50	38	105	51	59	76	2.8	HSK-A 100
HDR.HSKA100.32.110	32	64	75	60	110	61	62	81	3.8	HSK-A 100

不包含冷却液管-需要单独订购!  
Coolant tube is not included - separate order required! Chapter Additional Equipment

### 配件 Spare Parts

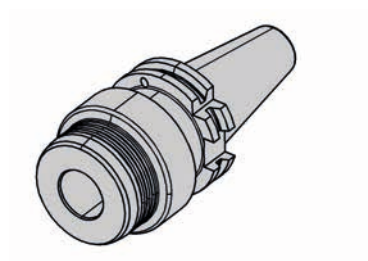
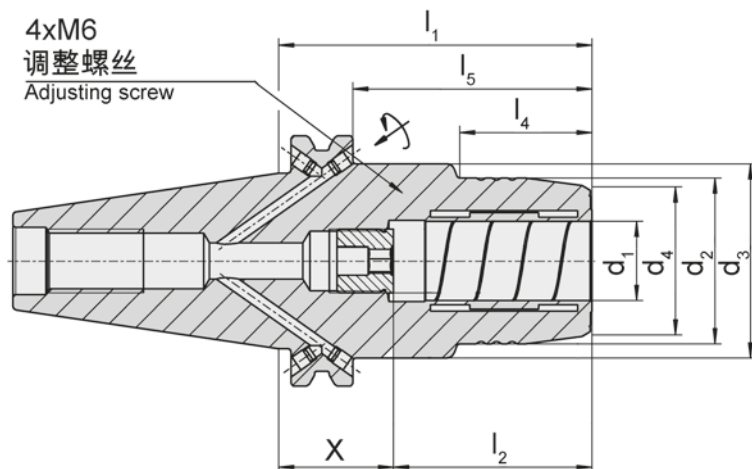
液压刀柄 zero Hydraulic Expansion Toolholder zero	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
HDR.HSK...	6.075T15P	T15PQ



# 液压刀柄 zero

## Hydraulic Expansion Toolholder zero

# HDR



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	系列 System
HDR.SK40.12.081	12	32	49.5	28	80.5	46	31.5	61.5	1.4	SK 40
HDR.SK40.20.081	20	42	49.5	38	80.5	51	34	61.5	1.4	SK 40
HDR.SK40.32.081	32	63	80	60	80.5	61	25.5	61.5	2	SK 40
HDR.SK50.12.081	12	32	49.5	27.5	80.5	46	40	61.5	3.3	SK 50
HDR.SK50.20.081	20	42	49.5	38	80.5	51	34	61.5	3.3	SK 50
HDR.SK50.32.103	32	64	70	60	103.2	-	61	81	4.4	SK 50

# H

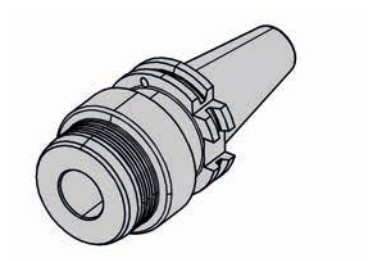
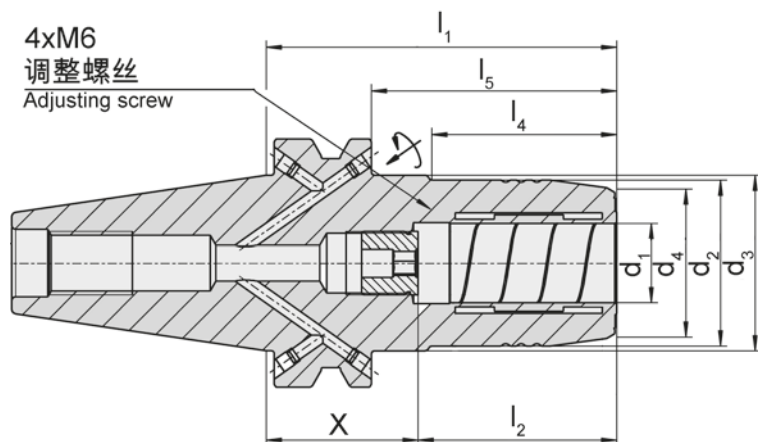
### 配件 Spare Parts

液压刀柄 zero Hydraulic Expansion Toolholder zero	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
HDR...	6.075T15P	T15PQ

# 液压刀柄 zero

## Hydraulic Expansion Toolholder zero

# HDR



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	系列 System
HDR.BT30.20.090	20	42	44.5	37.5	90	51	47.5	67	1.5	JIS-BT 30
HDR.BT40.12.090	12	32	44.5	28	90	46	44.5	63	1.4	JIS-BT 40
HDR.BT40.20.090	20	42	44.5	38	90	51	47.5	63	1.5	JIS-BT 40
HDR.BT50.12.090	12	32	44.5	28	90	46	34	52	4	JIS-BT 50
HDR.BT50.20.090	20	42	44.5	38	90	51	34	52	4	JIS-BT 50
HDR.BT50.32.120	32	64	70.5	60	120	61	62.5	82	5.3	JIS-BT 50

### 配件 Spare Parts

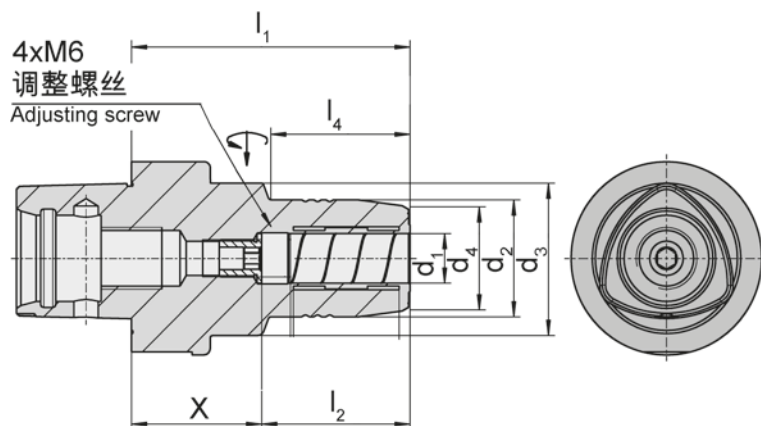
液压刀柄 zero Hydraulic Expansion Toolholder zero	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
HDR.B...	6.075T15P	T15PQ

H

# 液压刀柄 zero

## Hydraulic Expansion Toolholder zero

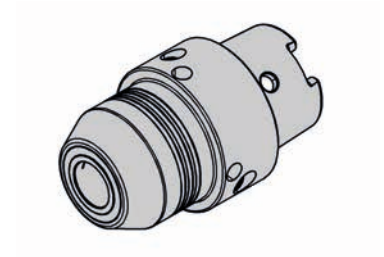
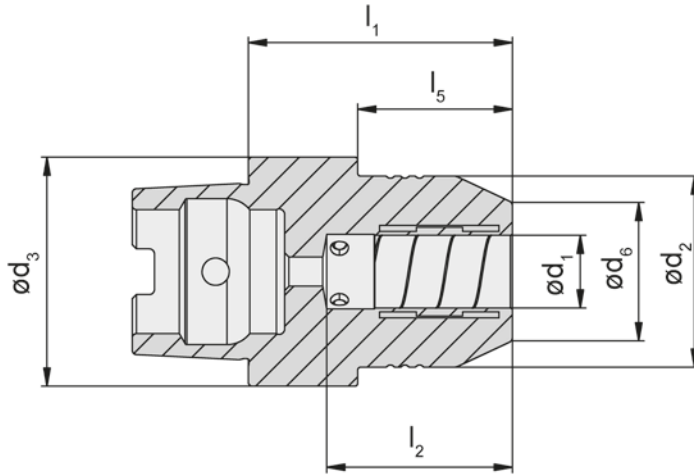
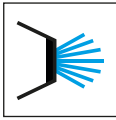
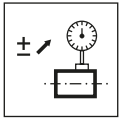
# HDR



产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	重量 [kg] Weight [kg]	系列 System
HDR.C4.12.081	12	32	32	28	81	46	47	0.7	C4
HDR.C4.20.095	20	40	-	35	95	51.5	-	0.7	C4
HDR.C5.12.085	12	32	32	28	85	46	44	0.9	C5
HDR.C5.20.090	20	42	42	38	90	51	52	1.05	C5
HDR.C5.32.110	32	62.5	63	59	110	61	62.5	2.1	C5
HDR.C6.12.087	12	32	50	28	87	46	39	1.3	C6
HDR.C6.20.097	20	42	42	38	97	51	55	1.6	C6
HDR.C6.32.110	32	62.5	62.5	59	110	61	62	2.8	C6

### 配件 Spare Parts

液压刀柄 zero Hydraulic Expansion Toolholder zero	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
HDR...	6.075T15P	T15PQ

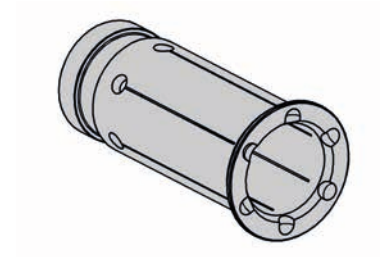
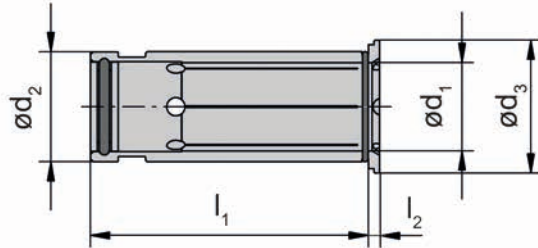
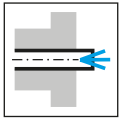


产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>6</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>5</sub>	重量 [kg] Weight [kg]	M <sub>min</sub> [Nm]	系列 System
<b>HDRK.HSKC063.20.073</b>	20	52.5	52.5	38	72.5	51	42.5	1.25	82	HSK-C 63

### 配件

Spare Parts

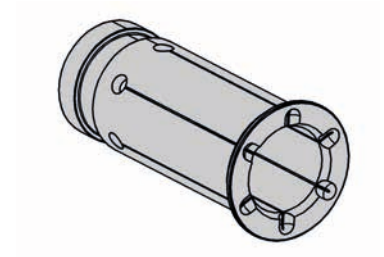
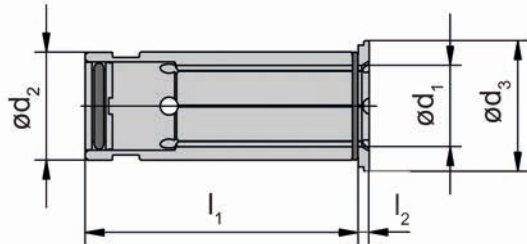
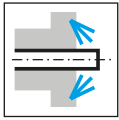
液压刀柄 zero-K Hydraulic Expansion Toolholder zero-K	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
<b>HDRK.HSKC063.20.073</b>	<b>6.075T15P</b>	<b>T15PQ</b>



产品型号 Part number	$d_1$	$d_2$	$l_1$	$l_2$	$d_3$	重量 [kg] Weight [kg]
HDZB.1203.KD	3	12	45	2	16.5	0.1
HDZB.1204.KD	4	12	45	2	16.5	0.1
HDZB.1205.KD	5	12	45	2	16.5	0.1
HDZB.1206.KD	6	12	45	2	16.5	0.1
HDZB.1208.KD	8	12	45	2	16.5	0.1
HDZB.2003.KD	3	20	50.5	2	24	0.1
HDZB.2004.KD	4	20	50.5	2	24	0.1
HDZB.2005.KD	5	20	50.5	2	24	0.1
HDZB.2006.KD	6	20	50.5	2	24	0.1
HDZB.2007.KD	7	20	50.5	2	24	0.1
HDZB.2008.KD	8	20	50.5	2	24	0.1
HDZB.2009.KD	9	20	50.5	2	24	0.1
HDZB.2010.KD	10	20	50.5	2	24	0.1
HDZB.2011.KD	11	20	50.5	2	24	0.1
HDZB.2012.KD	12	20	50.5	2	24	0.1
HDZB.2013.KD	13	20	50.5	2	24	0.1
HDZB.2014.KD	14	20	50.5	2	24	0.1
HDZB.2015.KD	15	20	50.5	2	24	0.1
HDZB.2016.KD	16	20	50.5	2	24	0.1
HDZB.3206.KD	6	32	60.5	3	35.5	0.3
HDZB.3208.KD	8	32	60.5	3	35.5	0.3
HDZB.3210.KD	10	32	60.5	3	35.5	0.3
HDZB.3212.KD	12	32	60.5	3	35.5	0.3
HDZB.3214.KD	14	32	60.5	3	35.5	0.3
HDZB.3216.KD	16	32	60.5	3	35.5	0.3
HDZB.3218.KD	18	32	60.5	3	35.5	0.3
HDZB.3220.KD	20	32	60.5	3	35.5	0.3
HDZB.3225.KD	25	32	60.5	3	35.5	0.3

标准中间套筒  $d_2 \leq 12\text{mm}$  不用于圆校直  
Standard intermediate sleeve  $d_2 \leq 12\text{ mm}$  do not use for round-straightening

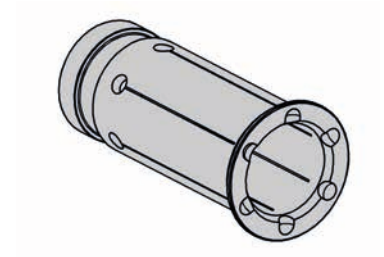
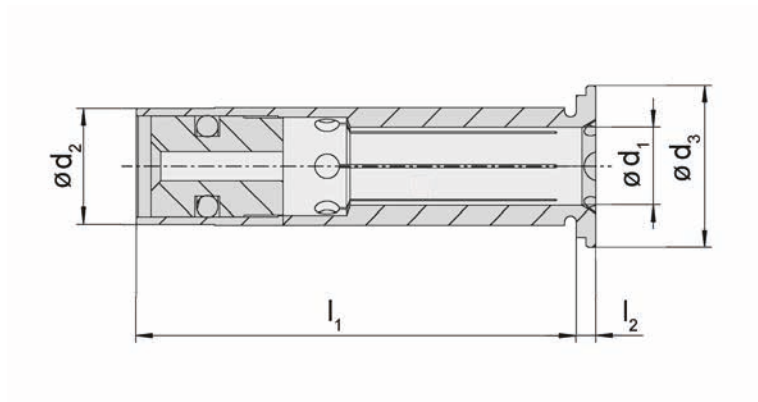
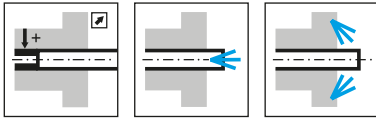




产品型号 Part number	d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	d <sub>3</sub>	重量 [kg] Weight [kg]
HDZB.1203.PK	3	12	45	2	16.5	0.1
HDZB.1204.PK	4	12	45	2	16.5	0.1
HDZB.1205.PK	5	12	45	2	16.5	0.1
HDZB.1206.PK	6	12	45	2	16.5	0.1
HDZB.1208.PK	8	12	45	2	16.5	0.1
HDZB.2003.PK	3	20	50.5	2	24	0.1
HDZB.2004.PK	4	20	50.5	2	24	0.1
HDZB.2005.PK	5	20	50.5	2	24	0.1
HDZB.2006.PK	6	20	50.5	2	24	0.1
HDZB.2007.PK	7	20	50.5	2	24	0.1
HDZB.2008.PK	8	20	50.5	2	24	0.1
HDZB.2009.PK	9	20	50.5	2	24	0.1
HDZB.2010.PK	10	20	50.5	2	24	0.1
HDZB.2011.PK	11	20	50.5	2	24	0.1
HDZB.2012.PK	12	20	50.5	2	24	0.1
HDZB.2013.PK	13	20	50.5	2	24	0.1
HDZB.2014.PK	14	20	50.5	2	24	0.1
HDZB.2015.PK	15	20	50.5	2	24	0.1
HDZB.2016.PK	16	20	50.5	2	24	0.1
HDZB.3206.PK	6	32	60.5	3	35.5	0.3
HDZB.3208.PK	8	32	60.5	3	35.5	0.3
HDZB.3210.PK	10	32	60.5	3	35.5	0.3
HDZB.3212.PK	12	32	60.5	3	35.5	0.3
HDZB.3214.PK	14	32	60.5	3	35.5	0.3
HDZB.3216.PK	16	32	60.5	3	35.5	0.3
HDZB.3218.PK	18	32	60.5	3	35.5	0.3
HDZB.3220.PK	20	32	60.5	3	35.5	0.3
HDZB.3225.PK	25	32	60.5	3	35.5	0.3

标准中间套筒d<sub>2</sub> ≤ 12mm不用于圆校直  
Standard intermediate sleeve d<sub>2</sub> ≤ 12 mm do not use for round-straightening





产品型号 Part number	$d_1$	$d_2$	$l_1$	$l_2$	$d_3$	重量 [kg] Weight [kg]
HDZB.1206.KDV	6	12	45	2	16.5	0.1
HDZB.1206.PKV	6	12	45	2	16.5	0.1
HDZB.1208.KDV	8	12	45	2	16.5	0.1
HDZB.1208.PKV	8	12	45	2	16.5	0.1

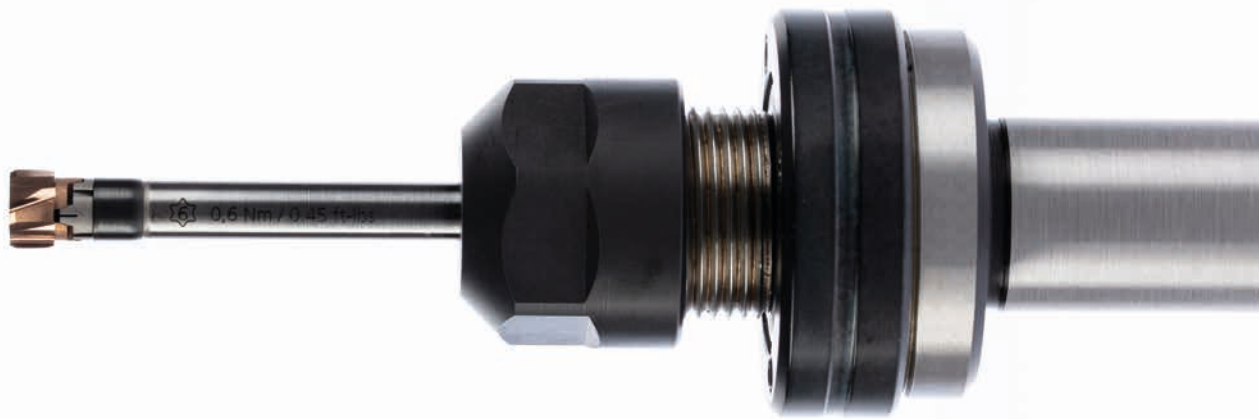
由于安装了夹头，不能使用液压膨胀刀柄的长度调整

由于加强圈也适用于 $d_2 \leq 12\text{mm}$ 的可调跳动液压刀柄HDR型

Due to the fitted collet, the length adjustment of the hydraulic expansion toolholder cannot be used.

Due to reinforced collar also applicable at  $d_2 \leq 12\text{ mm}$  for adjustable runout hydraulic expansion toolholder type HDR.

PZ



浮动刀柄

带 ER筒夹的

Floating holder

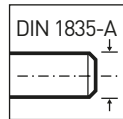
with Collet ER

I

技术信息  
Technical Instructions

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浮动刀柄  
Floating holder  
PZ

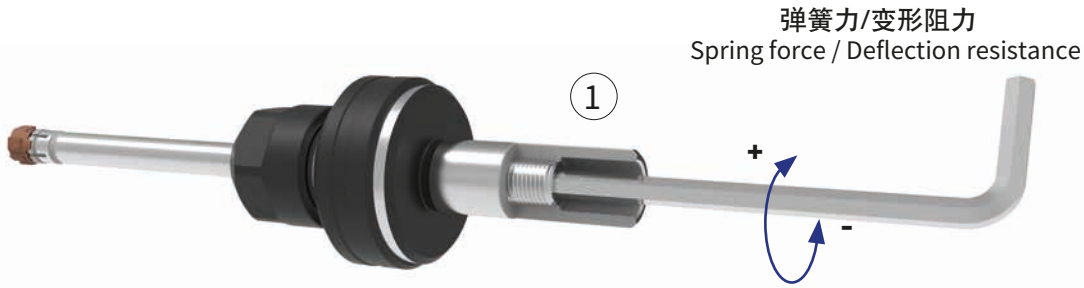


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筒夹的  
Collet  
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垫片  
Sealing disc  
20

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车床使用  
for use on lathe



工件和刀具之间的位置误差可以通过浮子调节功能进行补偿。  
Positional errors between workpiece and tool can be compensated by means of a float adjustment feature.

### 调整弹簧力方法

顺时针转动调节螺钉(1)，弹簧力增大，浮子行程受限。转动到末端位置，浮动支架是刚性的。结束位置是下面描述的设置的起始点。

### Procedure for adjusting the spring force

By turning the adjusting screw (1) clockwise, the spring force increases and the float travel is limited. Turned to the end position, the floating holder is rigid. The end position is the starting point for the settings described below.

### 从中止位置开始调节调节螺钉

刚性： 调整螺钉至中止位置

硬： 回调  $\frac{1}{4}$  至  $\frac{1}{2}$

中等： 回调  $1 \pm \frac{1}{4}$

软： 拿起的工具应自动弹回中心轴，补偿阻力尽可能小。采用软设置时，必须考虑刀具重量的影响。

### Adjusting the adjusting screw starting from the end position

Rigid: Turn the adjustment screw to the end position

Hard: Turn back  $\frac{1}{4}$  to  $\frac{1}{2}$  turn

Medium: Turn back  $1 \pm \frac{1}{4}$  turns

Soft: The picked-up tool should automatically spring back to the central axis with as little compensation resistance as possible. With a soft setting, the influence of the tool weight must be taken into account.

### 注意

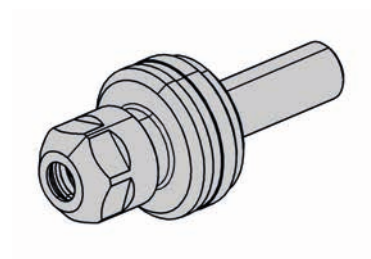
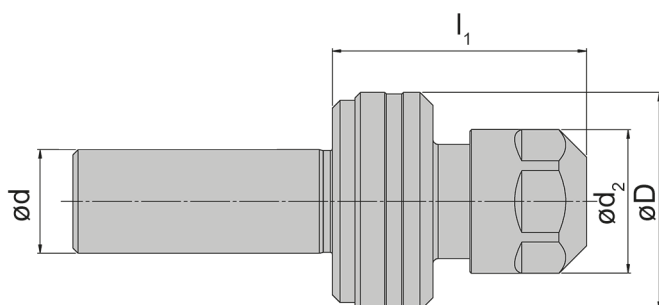
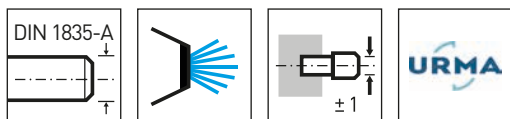
- 加工孔径直径不大于 $\varnothing 15$ ，我们推荐软设置。
- 如果有y轴，建议距主轴轴线的同心度设置为 $<10\mu\text{m}$ 。
- 使用URMA浮动刀柄，铰孔刀具的主偏角不应超过 $45^\circ$ 。
- 浮动机制的设置取决于应用，可能会有所不同。
- 切削参数可能需要使用浮动刀柄进行调整。
- 所有数据均为近似值，以URMA浮动卡盘为准。

### Notes

- For small bore diameters up to approx.  $\varnothing 15$  mm, we recommend a soft setting.
- If a Y-axis is available, we recommend tconcentricity is set  $<10\ \mu\text{m}$  to the spindle axis.
- The taper lead angle of reaming tools for URMA floating holder should not over  $45^\circ$ .
- The setting of the floating mechanism depends on the application and may vary.
- Cutting data may have to be adjusted with the floating holder.
- All data are approximate values and refer to the URMA floating chuck.

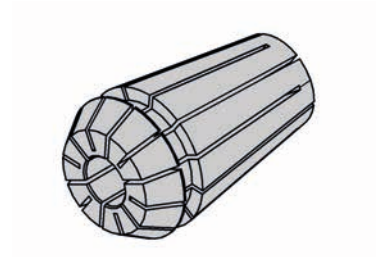
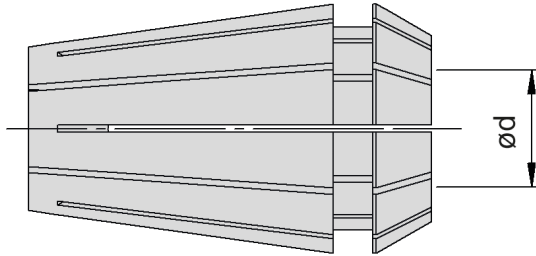
# 浮动刀柄 Floating holder

## PZ



产品型号 Part number	$l_1$	d	D	$d_2$	尺寸规格 Size
<b>PZ60.16.16.044</b>	44	16	42	28	16
<b>PZ60.16.20.044</b>	44	20	42	28	16

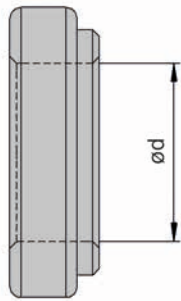




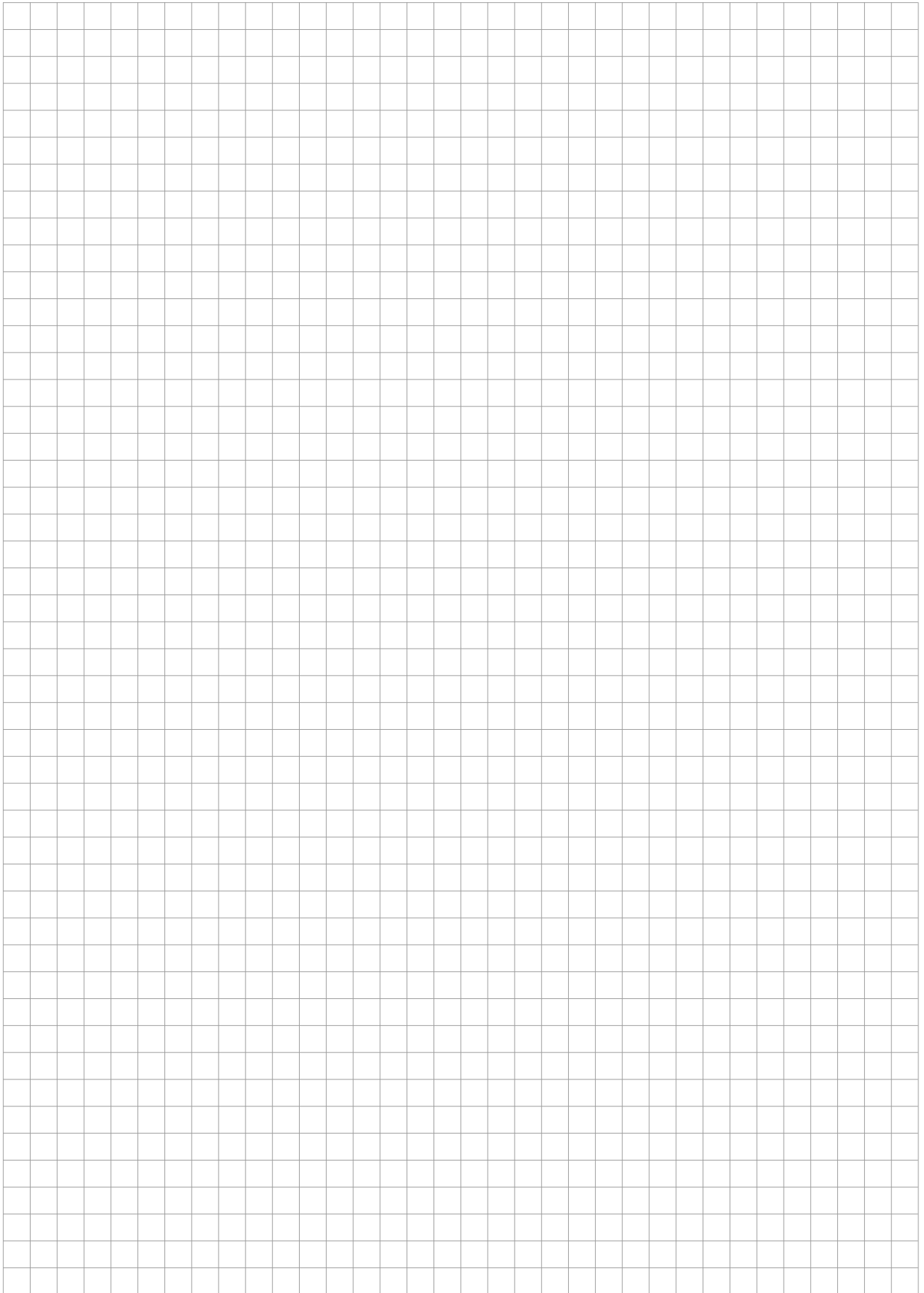
产品型号 Part number	d	尺寸规格 Size
62 16 06	6	16
62 16 08	8	16
62 16 10	10	16

垫片  
Sealing disc

20



产品型号 Part number	d	尺寸规格 Size
20 10721 060	6	16
20 10721 080	8	16
20 10721 100	10	16







概要/Summary

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螺钉扭矩

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Torque of Screws

附加设备

235-237

Additional Equipment

以下扭矩适用于刀片的螺钉，我们建议对螺钉不要额外使用润滑剂（如铜膏）。

Following torques are allowed for screws of inserts. We do not recommend using any additional lubricants such as copper paste or similar for the screws.

型号 Type	螺钉 Screw	M <sub>d</sub> Nm	尺寸规格 Size	夹紧扳手 Clamping wrench	刀板 Blade	扭矩扳手 Torque wrench
B105	6.075T15P	5	T15P	T15PQ	D T15 PK	D 28 VL
B110	6.075T15P	5	T15P	T15PQ	D T15 PK	D 28 VL
B117.DD...3	5.12T20P	6	T20P	T20PQ	DT20PK	D 515 QL
B117.DD...4-6	6.17T20P	7	T20P	T20PQ	DT20PK	D 515 QL
BKT105	6.075T15P	5	T15P	T15PQ	D T15 PK	D 28 VL
BKT110	6.075T15P	5	T15P	T15PQ	D T15 PK	D 28 VL
BKT356	5.12T20P	5.5	T20P	T20PQ	D T15 PK	D 515 QL
MDR016	C009000	0.7	T6	T6L	D T6 K	D 041 VL
MDR016...Z	C009022	4	T15	T15Q	D T15 K	D 28 VL
MDR019	C009000	0.7	T6	T6L	D T6 K	D 041 VL
MDR019...Z	C009023	6	T20	T20Q	D T20 Q	D515QL
MDR024	C009001	1.5	T8	T8L	D T8 K	D 15 VL
MDR024...Z	C009024	16	T30	T30Q	-	-
MDR029	C009001	1.5	T8	T8L	D T8 K	D 15 VL
MDR029-036...Z	C009025	18	T30	T30Q	-	-
MDR036	C009001	1.5	T8	T8L	D T8 K	D 15 VL
MDR044	C009002	1.5	T8	T8L	D T8 K	D 15 VL
MDR052	C009002	1.5	T8	T8L	D T8 K	D 15 VL
MDR061	C009002	1.5	T8	T8L	D T8 K	D 15 VL
MDR08	C009051	0.6	T6	T6L	D T6 K	D 041 VL
MDR081	C009004	3.5	T15	T15Q	D T15 K	D 15 VL
MDR10	C009052	0.9	T7	T7L	D T7 K	D 041 VL
MDR101	C009004	3.5	T15	T15Q	D T15 K	D 15 VL
MDR11...D	C009053...	1.4	T9	T9L	D T9 K	D 15 VL
MDR11...S	C009053B	1.4	T9	T9L	D T9 K	D 15 VL
MDR121	C009004	3.5	T15	T15Q	D T15 K	D 15 VL
MDR13...D	C009054...	2	T10	T10L	D T10 K	D 15 VL
MDR13...S	C009054B	2	T10	T10L	D T10 K	D 15 VL
MDR141	C009004	3.5	T15	T15Q	D T15 K	D 15 VL
MDR150	C002207	8	4	SW4DIN911	D SW 4.0 K	D 28 VL
MDR170	C002207	8	4	SW4DIN911	D SW 4.0 K	D 28 VL
MDR190	C002207	8	4	SW4DIN911	D SW 4.0 K	D 28 VL



**D 041 VL**  
0,4-1 Nm

**带刻度的扭矩扳手**

- 扭矩可调
- 屏幕显示调整扭矩

扭矩无极调节,符合人体工程学的多组件手柄,轻而紧凑的设计,当达到设定扭矩时单击信号按钮。  
(标准: EN ISO 6798, BS EN 26789, ASME B 107.14.M.)  
(精度:  $\pm 6\%$ )



**D 15 VL**  
1-5 Nm

**Torque screw driver with scale**

- variable torque setting
- adjusted torque is shown on display

The Torque can be adjusted with a special torque setter (included)  
**Handle:** Ergonomical form gives perfect handling abilities. Audible signal when set torque is reached.

**Standard:** EN ISO 6798, BS EN 26789, ASME B 107.14.M.

**Precision:**  $\pm 6\%$



**D 28 VL**  
2-8 Nm



**ED 28 VL**  
配 / for  
D 041 VL / D 15 VL / D 28 VL

**设定扭矩的设备**

**柄部:** 醋酸纤维材质, 表面为细微结构

**刃部:** 八角形, 硬化处理, 镀锌

**Device for setting the required torque**

**Handle:** Celluloseacetat with micro structured surface

**Blade:** Octogonal (8 flats) blade, hardened galvanized



**D T6 K**  
**D T7 K**  
**D T8 K**  
**D T9 K**  
**D T10 K**  
**D T15 K**

配 / for  
D 041 VL / D 15 VL / D 28 VL



**刀头-Torx螺钉**

**刀头:** 高品质铬钒钢, 硬化处理, 镀铬, Wiha镀铬刀头保证了最好的精密度。颜色代码为绿色

**用途:** 拧紧螺钉到指定扭矩, 和Wiha扭矩扳手刀柄组合。

**Blade for Torx screws**

**Blade:** High quality Chrome-Vanadium steel, through hardened, chrome plated.

Wiha Chrome Blade guarantees maximum precision. Colored code dark green

**Utilization:** Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.





**D 515 QL**  
5-15 Nm

**带刻度的扭矩扳手**

-扭矩可调

-屏幕显示调整扭矩

扭矩无极调节,符合人体工程学的多组件手柄,轻而紧凑的设计,当达到设定扭矩时单击信号按钮。

(标准: EN ISO 6798, BS EN 26789, ASME B 107.14.M.)

(精度:  $\pm 6\%$ )

**Torque screw driver with scale**

- variable torque setting

- adjusted torque is shown on display

The Torque can be adjusted with a special torque setter (included)  
**Handle:** Ergonomical form gives perfect handling abilities. Audible signal when set torque is reached.

**Standard:** EN ISO 6798, BS EN 26789, ASME B 107.14.M.

**Precision:**  $\pm 6\%$



**ED 515 QL**

配 / for  
D 515 QL

**扭矩调整扳手**

**柄部:** 纤维素乙酸酯微观结构表面

**刃部:** 8角形状,经过硬化处理,镀铬.

**Device for setting the required torque.**

**Handle:** Celluloseacetat with micro structured surface

**Blade:** Octogonal (8 flats) blade, hardened galvanized



**DT 15 Q**

**DT 20 Q**

**DT 30 Q**

配 / for  
D515QL



**扳手刀头配 TORX 螺钉**

**刀头:** 高品质铬钒钢,经过硬化处理,镀铬。Wiha镀铬刀片保证了最好的精密度。使用深绿色代码

**应用:** 使用给定的扭紧扭矩,结合一个Wiha扭矩扳手。

**Blade for TORX screws**

**Blade:** High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precision. Colored code dark green

**Utilization:** Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.



### DT 20 PQ

配 / for  
D 515 QL



Plus

#### 扳手刀头配 TORX PLUS® 螺钉

**刀头:** 高品质铬钒钢, 经过硬化处理, 镀铬。Wiha镀铬刀片保证了最好的精密度。使用深绿色代码

**应用:** 使用给定的扭紧扭矩, 结合一个Wiha扭矩扳手。

#### Blade for TORX PLUS® screws

**Blade:** High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precision. Colored code dark green

**Utilization:** Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.



### T15PW T20PW T25PW



Plus

#### TORX PLUS® 螺钉扳手

**应用:** 适用于各种使用TORX PLUS®螺钉

**注意:** TORX PLUS®-扳手不适用于 Torx-螺钉

#### Wrench for TORX PLUS® Screws

**Utilization:** For all kind of using TORX PLUS® Screws

**Attention:** TORX PLUS®-Wrench does NOT fit for Torx-Screws



### HDZBZ

#### 筒夹取出器

取出中间筒夹的分离工具

外径尺寸d1从 Ø12 mm 至 Ø32 mm  
(HDZB.12... bis HDZB.32...)

#### Sleeve Remover

Disassembly tool for intermediate sleeves  
outer diameter d<sub>1</sub> from Ø12 mm to Ø32 mm  
(HDZB.12... to HDZB.32...)



#### 内冷管对于接头系统

Coolant tube for System Holer

020.4012.1306

HSK-A 40

020.5016.1307

HSK-A 50

020.6318.1308

HSK-A 63

020.0024.1310

HSK-A 100

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**找到您合适的刀具解决方案。**

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TOOLING SOLUTION NOW.

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**DEUTSCHLAND, STAMMSITZ**

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