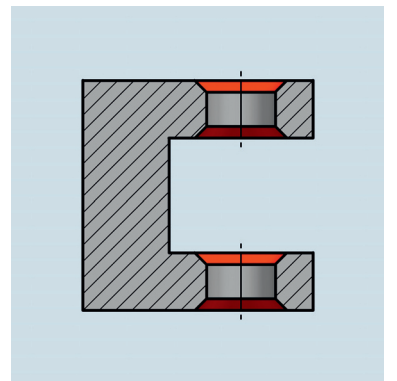
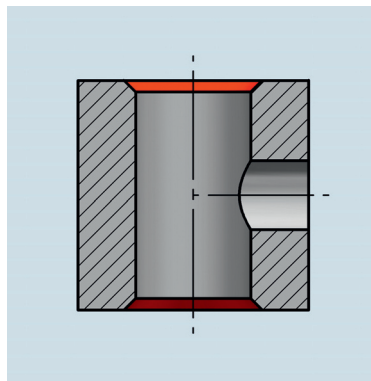
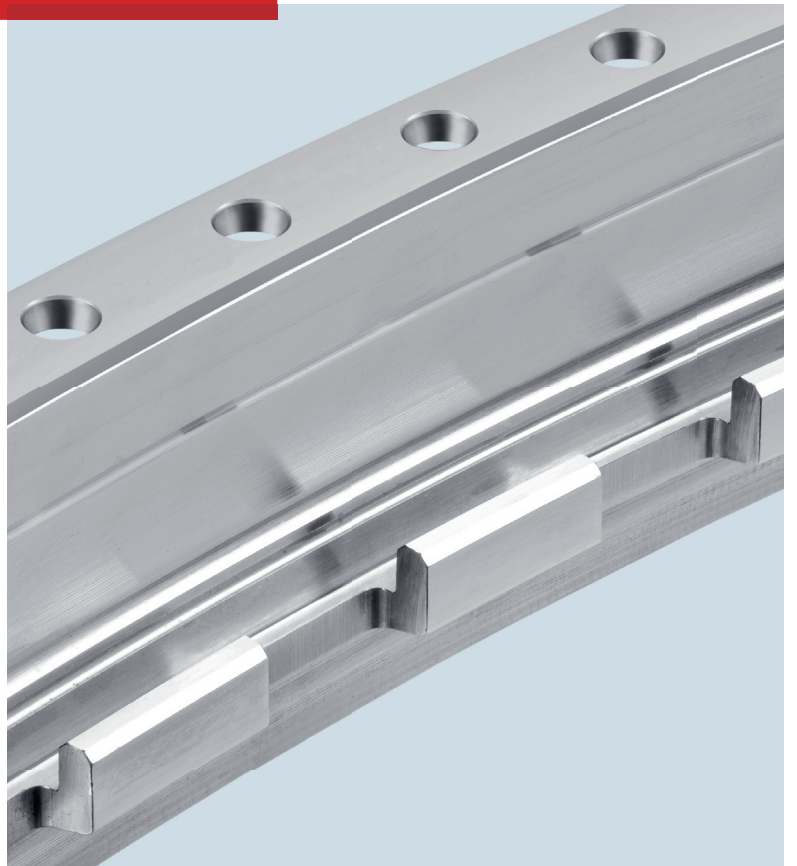
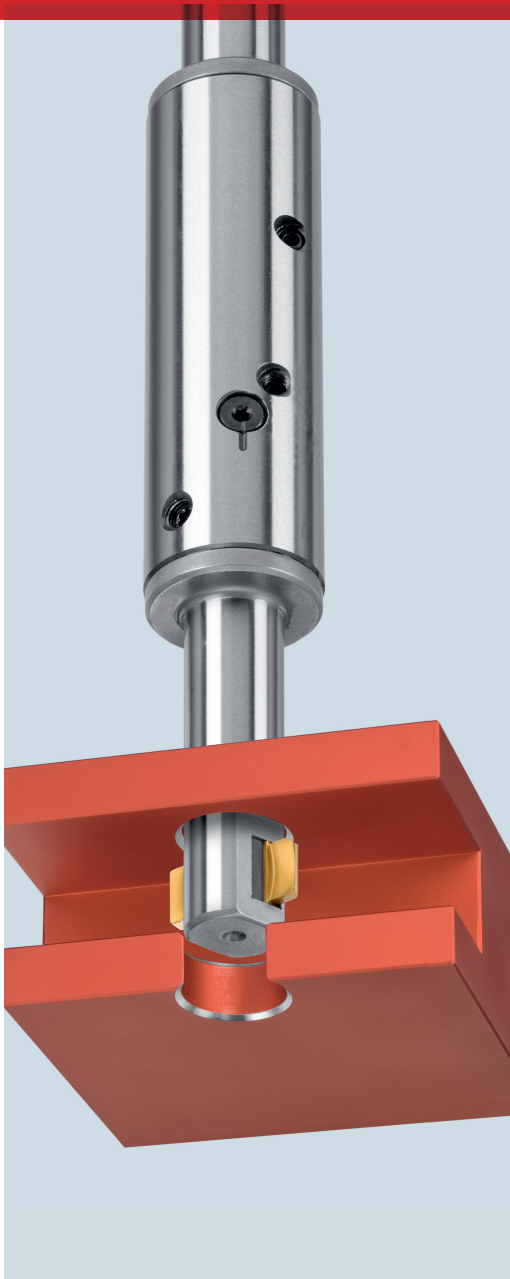
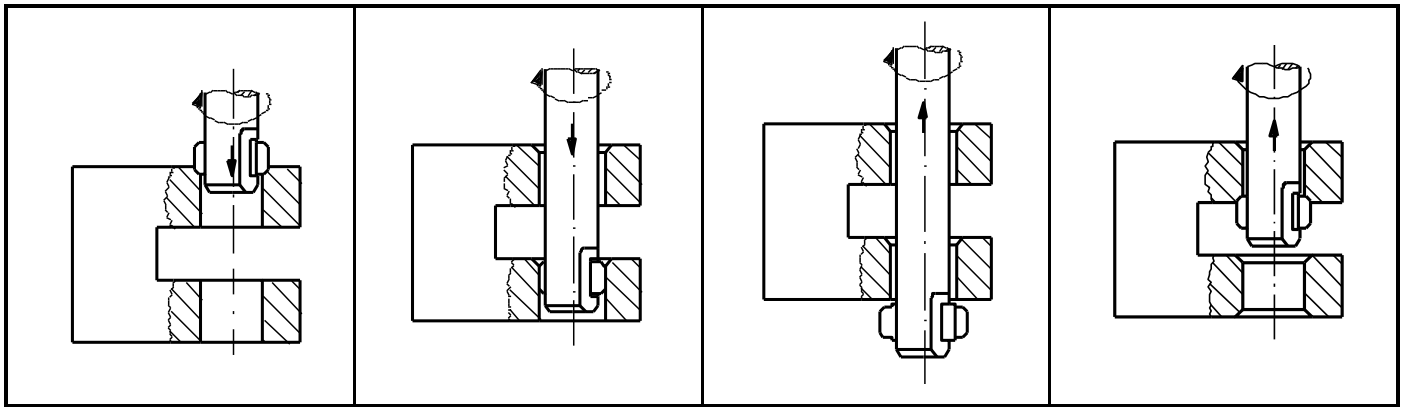


DEFA

单一工序内完成硬材料的正反面高精度倒角



1 刀具说明 / Tool Description



DEFA系列倒角刀具是专门设计用来加工各种尺寸的孔径中的正反向倒角的。

DEFA系列采用特殊的几何学原理使其刀片与其他刀具的设计有所区别。

切削刃沿着工件的表面从前到后依次去除所有的毛刺

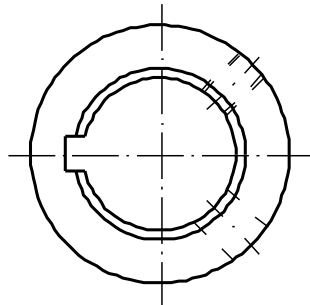
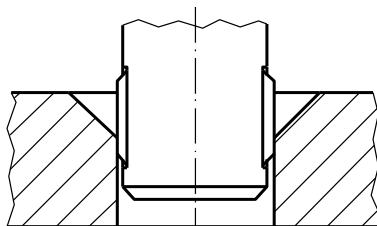
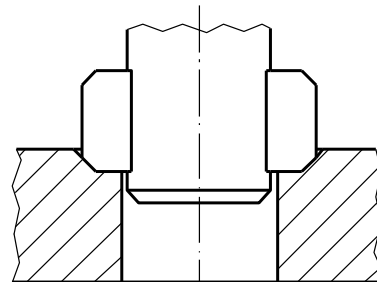
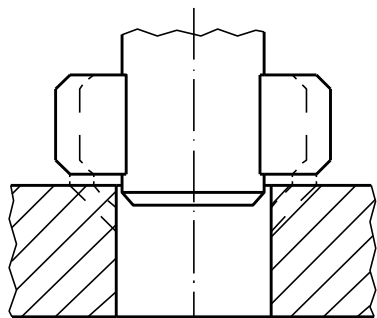
由于刀片的斜角部分没有切削刃，所以当这个部分接触工件材料时，使得刀片同时缩回刀杆中去，形成了预期的倒角直径。

在通过加工孔的时候，刀片末端的圆弧形表面可以防止对原有孔壁造成伤害。

在完全通过加工孔后，刀片再次伸出，回到初始位置。然后重复同样的过程来加工后侧的孔缘。

刀片组同步加工动作就意味着那些带有纵向键槽的孔也能够被加工，同时在通过孔的同时不会产生加工挠度。

通过调节螺钉，能够相应地调节刀片直径及设定倒角的尺寸。倒角的尺寸由刀片直径设定的大小来决定，而不是由弹簧弹力来决定的。



The DEFA chamfering tool is specially designed to chamfer a variety of bore sizes on both the front and back of the bore regardless of burr size.

DEFA's special blade geometry distinguishes it from other tool designs.

The cutting edges remove burrs of any size along the plane of the workpiece surface, front and back.

As the angular non-cutting definition surface of the blades touches the workpiece material, the blades are simultaneously collapsed back into the tool body, creating the pre-determined chamfer diameter.

In the bore the rounded surface geometry on the end of the blades prevents any damage to the bore surface.

After passing through the bore the blades extend again to the initial preset position and the same process is repeated on the back side of the bore.

The positive actuation of the blades means that bores can be machined with a longitudinal slot, or cross hole with no tool deflection.

By turning the set screw the blade diameter can be adjusted synchronously and linearly in order to preset the chamfer size. **The set blade diameter determines the chamfer size, not the spring force.**

2 刀具选型 / Tool Selection

刀具说明 Tool description	孔范围 Bore range	倒角范围 Chamfer range			刀片架 Blade Housing	
DEFA	$\varnothing d^*$	$\varnothing D$	max $\varnothing D2$	B (S)	$\varnothing D1$	LN
17 - 21/30	16.7-21.5	18.2-20.4	23.8	8 (1)	16.5	30
17 - 21/60		19.6-21.8**				60
17 - 21/100						100

完整的表格，请参照第8页

D = 倒角直径

Complete table, see page 8

D = Chamfer diameter

刀具说明:

这部分仅是对刀具的说明，并不包括刀具的应用范围。

加工孔直径范围:

刀具的应用范围可参照孔的直径来决定。

注意: 不得小于最小参照值。

倒角范围:

列出了可能的倒角直径范围。

注意: 对于有些刀具的尺寸(倒角范围用**标记) 调节螺钉已经设定在倒角范围的最大值(应使用较短的调节螺钉, 因为标准的调节螺钉会在刀杆的表面形成凸起。)

刀片架长度: (不适用于所有的刀具)

刀片架的长度决定了可加工工件的长度。在选型的时候根据孔的深度尽可能选用较短的刀片架(考虑稳定性的因素)。

订购信息:

订购一把刀具, 分别需要确定“刀杆(不带刀片, 带刀柄)”+“刀片”或者“刀杆(不带刀片, 不带刀柄)”+“刀柄”+“刀片”。

实例 1:

加工孔直径: 19毫米; 材质: 灰口铸铁; 倒角: $0.5 \times 45^\circ$ (倒角直径 \varnothing : 20毫米) 正反向; 工作长度: 30毫米; 转接器: $\varnothing 12$ 直柄

订购信息:

刀杆: DEFA 17-21/30 带直柄

刀片: DEFA 17-21 硬质合金 90°

订货号:

GH-S-D-1790

GH-S-M-3118

实例 2:

加工孔直径: 19毫米; 材质: 灰口铸铁; 倒角: $1.5 \times 45^\circ$ (倒角直径 \varnothing : 22毫米) 正反向; 工作长度: 30毫米; 转接器: $\varnothing 12$ 直柄

订购信息:

刀杆: DEFA 19-24/30 带直柄

刀片: DEFA 19-24 硬质合金 90°

订货号:

GH-S-D-1791

GH-S-M-3119

Tool description:

This is only the description of the tool and does not include information for its application range.

Bore range:

Defines the application range of the tool with reference to the bore diameter.

Note: Do not reference below minimum values.

Chamfer range:

Shows the range of possible chamfer diameters.

Note: For some tool sizes (chamfer range marked with **) the set screw has to be changed to reach the maximum chamfer range (shorter set screw is required, as the standard set screw would extrude from tool body).

Blade Housing LN: (does not apply to all tools)

The blade housing determines the working length of the tool. It is chosen as short as possible, depending on the bore depth (stability reasons).

Ordering information:

For a tool ready for operation you always need the "tool without blades, with shank" + "blades" **or** "tool without blades, without shank" + "shank" + "blades".

Example 1:

Bore dia.: 19mm; Material: grey cast; **Chamfer:** $0.5 \times 45^\circ$ (chamfer \varnothing : 20mm) forward and backward; Working length: 30mm; Adaption: cylindrical shank $\varnothing 12$.

Order information:

Tool: DEFA 17-21/30 w.cyl.shank

Blades: DEFA 17-21 carbide 90°

Order No.:

GH-S-D-1790

GH-S-M-3118

Example 2:

Bore dia.: 19mm; Material: grey cast; **Chamfer:** $1.5 \times 45^\circ$ (chamfer \varnothing : 22mm) forward and backward; Working length: 30mm; Adaption: cylindrical shank $\varnothing 12$.

Order information:

Tool: DEFA 19-24/30 w.cyl.shank

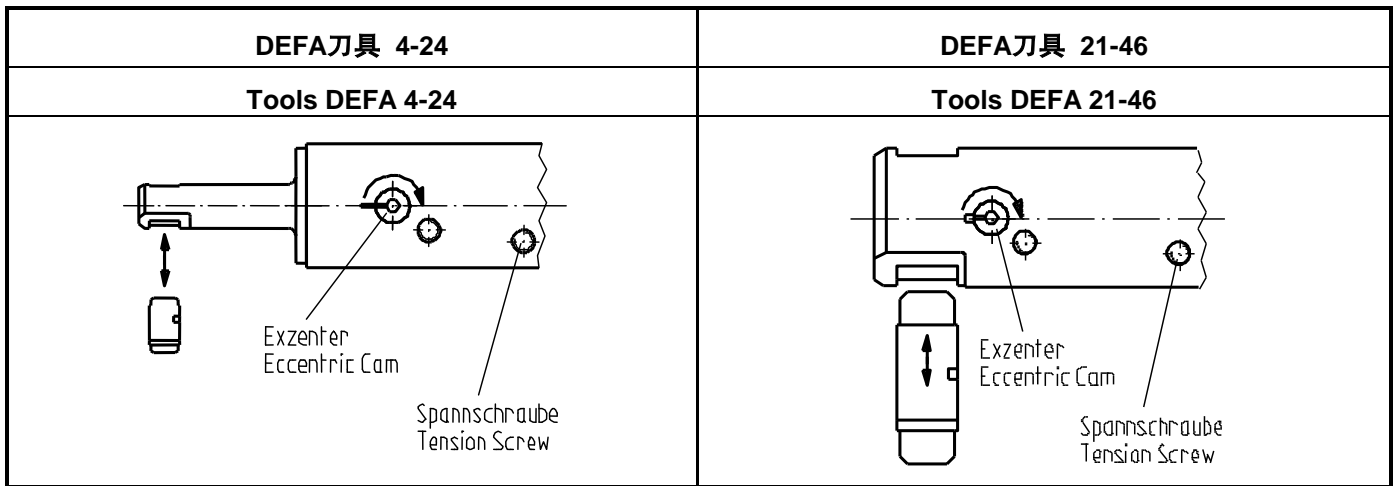
Blades: DEFA 19-24 carbide 90°

Order No.:

GH-S-D-1791

GH-S-M-3119

3 刀片更换 / Changing the blades



- | | |
|--|---|
| <ol style="list-style-type: none"> 1. 逆时针转动张力螺钉直至能够用手很轻松的捏动刀片。只有在刀片比较松，也就是没有张力作用的情况下才能更换刀片。 2. 将偏心凸轮旋转180度，直至凹口背朝着标记。 3. 将刀片从刀片架中推出。 4. 用作替换的刀片需先清洁及消磁处理，替换时需插入一对刀片组，这样才能使其与刀架外直径大致持平。 5. 将偏心凸轮向左旋转直到感觉到有细微阻力（调节）。 6. 移动已经插入的刀片到工作方向（箭头方向），直至刀片被自动咬合。 7. 注意检查：两片刀片需同步移动。 8. 顺时针旋转张力螺钉直至达到期望的刀片力。在更换刀片前后，原来刀具设定的倒角尺寸不会产生变化。（对于刀片力的参考信息，请查阅第4页的“刀片力的设定”）。 | <ol style="list-style-type: none"> 1. Continue to turn the tension screw counter-clockwise until it is possible to press the blades together easily by hand. Only change the blades when they are slack, i.e. when they are not under tension. 2. Turn the eccentric cam 180° until the notch is facing opposite of the index. 3. Remove blades from blade housing (by pushing). 4. Insert the replacement blades as a pair, cleaned and demagnetized, so that they are approximately flush with the outside diameter of the blade housing. 5. Turn the eccentric cam back to the left until a slight resistance is noticed (register). 6. Move the inserted blades in the working direction (arrow) until they engage automatically. 7. Check: Both blades must move synchronously. 8. Continue to turn tension screw clockwise until the desired blade force is attained. The previously set chamfer size remains the same before and after changing the blades. (Reference values for the blade force, please see in chapter "Setting the blade force" on page 4). |
|--|---|

4 DEFA系列切削参数 / Cutting data DEFA

标准值 / Standard values

材质 Material	切削速度 v (m/min.) 对应于 Cutting speed v (m/min.) for			进给速度 s (mm/rev.) Feed s (mm/rev.)
	HSS-E	HSS-E-TIN	HM / Carbide	
钢, 钢基合金 Steel, steel alloys	25-40	30-45	40-60	0.03-0.06
铸件, 铸铁材料 Cast, cast iron materials	25-35	30-40	40-60	Optimal理想范围:
有色金属 Non-ferrous metals	50-70	60-80	60-100	0.04-0.05

5 设定倒角尺寸 / Setting the chamfer size

刀片直径值D2决定了倒角直径的期望值D，其设定值不能超出D2最大值（详细数值请参考第7-11页的刀具表格）

D2 = 刀片直径设定值
 D = 倒角直径值
 s = 设定表面宽度
 （请参阅第7-19页）

详细步骤：

1. 用六边形扳手旋转调节螺钉直至达到刀片直径的期望值D2。（将红色的密封胶撕开）

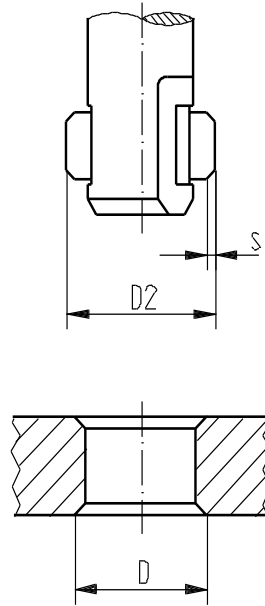
增大D2值=逆时针方向旋转调节螺钉
 减小D2值=顺时针方向旋转调节螺钉

2. 重新将调节螺钉孔密封。

3. 按照下面的数值设定刀片力。

假如倒角直径D与期望的直径有轻微的出入，可以相应调节刀片直径的设定值。（请注意D_{max}！）

$$D2 \approx D + 2s$$



The desired chamfer diameter **D** is set by means of the blade diameter setting **D2**. The maximum D2 (values, see tool tables on pages 7-11) must not be exceeded.

D2 = Blade diameter setting
 D = Chamfer diameter
 s = Definition surface width (see on pages 7-19)

Proceeding:

1. Turn set screw with hexagonal wrench until the desired blade diameter setting D2 is obtained. (remove the red sealant)

Increase D2 = Turn set screw counter-clockwise

Reduce D2 = Turn set screw clockwise

2. Re-seal the set screw.

3. Set blade force as per following point.

If the chamfer diameter D varies slightly from the desired diameter, the blade diameter setting can be adjusted accordingly. (pay attention to D_{max}!)

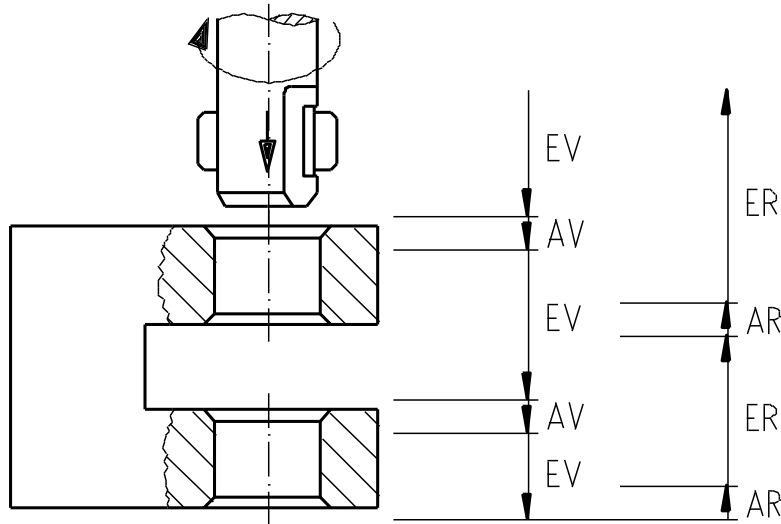
6 设定刀片力 / Setting the blade force

作用在刀片上的径向力必须足够强，这样刀片才能在各种的工作条件下完全的伸出，达到设定D2的直径值（包括使用冷却液和不使用冷却液等等）。

The radial force that acts on the blades has to be strong enough for the blades to fully extend to the set D2 diameter under working conditions (dirt, coolant, etc.).

DEFA刀具 4-24 Tools DEFA 4-24	DEFA刀具 21-46 Tools DEFA 21-46
<p>Einstellschraube Set Screw</p> <p>Spannschraube Tension Screw</p>	<p>Einstellschraube Set Screw</p> <p>Spannschraube Tension Screw</p>
增大刀片力： 顺时针方向旋转张力螺钉	Increase blade force: Turn tension screw clockwise
减小刀片力： 逆时针方向旋转张力螺钉	Reduce blade force: Turn tension screw counter-clockwise
标准数值 / standard value 8-10N	Richtwert / standard value 10-12 Newton

7 编程信息 / Programming information



加工过程中不需要改变主轴的转向或者停止主轴的旋转。

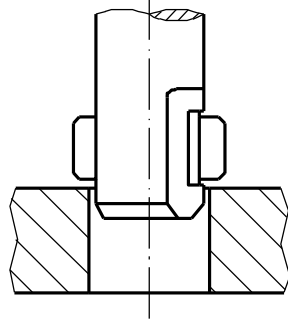
AV: 向前工进 AR: 向后工进
EV: 向前快进 ER: 向后快进

It is not necessary to change the sense of rotation or to stop the spindle.

AV: Working feed, forwards AR: Working feed, backwards
EV: Rapid feed, forwards ER: Rapid feed, backwards

1. EV向前快进:

将刀具的切削刃快速移动到加工孔或者毛刺表面的上方。

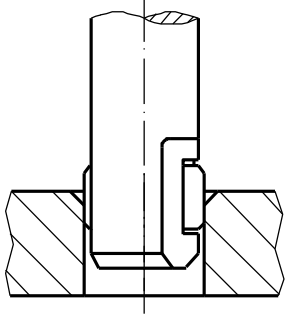


1. EV:

Rapid traverse of the cutting unit of the tool **above** the top material surface of the bore or burr.

2. AV向前工进:

在向前工进的过程中倒角被加工成形。继续以工进的速度移动直至刀片完全缩回刀片架内。



2. AV:

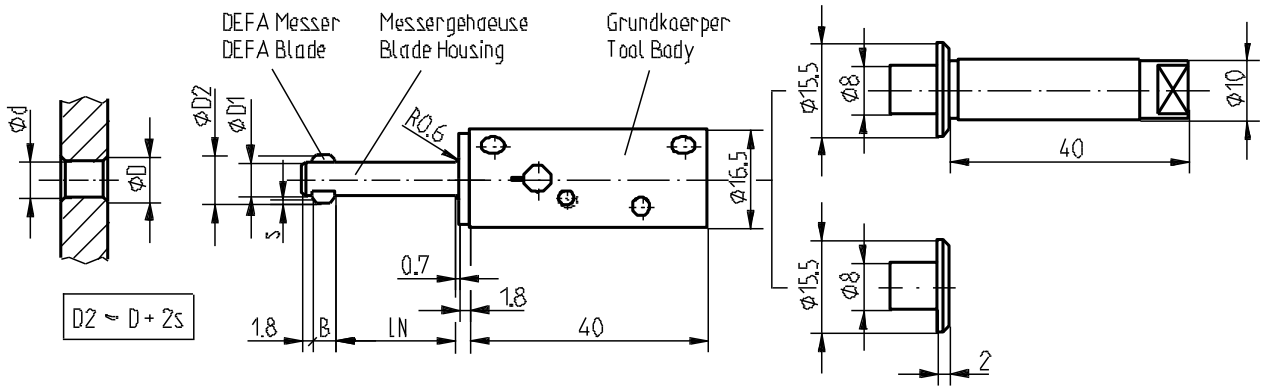
In forward working feed the chamfer is machined. Continue in working feed **to chamfer depth +1mm**, i.e. until the blades are completely retracted into the tool.

对于处理其他毛刺的方法同上述操作。

For following bores the next steps are the same as written above, forwards and backwards.

8 DEFA系列倒角刀具 / Chamfering Tools DEFA

8.1 DEFA 4-6 倒角刀具 / Chamfering Tools DEFA 4-6



刀具说明 Tool description	加工孔尺寸范围 Bore range	倒角尺寸范围 Chamfer range			刀片架 Blade Housing		订货号 不带刀片 不带刀柄 Order No. w/o blades w/o shank	订货号 不带刀片 带 $\phi 10$ 直柄 Order No. w/o blades w. cyl. shank $\phi 10$	订货号 不带刀片 带尾塞 Order No. w/o blades w. end plug
DEFA	ϕd^*	ϕD	max. $\phi D2$	B (S)	$\phi D1$	LN	GH-S-D-	GH-S-D-	GH-S-D-
4 - 4.8/15						15	5100	5120	5140
4 - 4.8/30	4.0-4.6	4.2-4.8	5.4	3.2	3.8	30	5101	5121	5141
4 - 4.8/60				(0.3)		60	5102	5122	5142
4.2 - 5.2/15						15	5103	5123	5143
4.2 - 5.2/30	4.2-5.0	4.4-5.2	5.8	3.2	4.1	30	5104	5124	5144
4.2 - 5.2/60				(0.3)		60	5105	5125	5145
4.6 - 5.8/15						15	5106	5126	5146
4.6 - 5.8/30	4.6-5.6	4.8-5.8	6.4	3.2	4.5	30	5107	5127	5147
4.6 - 5.8/60				(0.3)		60	5108	5128	5148
5 - 6.4/15						15	5109	5129	5149
5 - 6.4/30	5.0-6.2	5.2-6.4	7.0	3.2	4.8	30	5110	5130	5150
5 - 6.4/60				(0.3)		60	5111	5131	5151
5.5 - 6.8/15						15	5112	5132	5152
5.5 - 6.8/30	5.5-6.6	5.7-6.8	7.4	3.2	5.3	30	5113	5133	5153
5.5 - 6.8/60				(0.3)		60	5114	5134	5154

* 请勿低于上述数值

适用于以上DEFA刀具的刀片请参照第12-13页

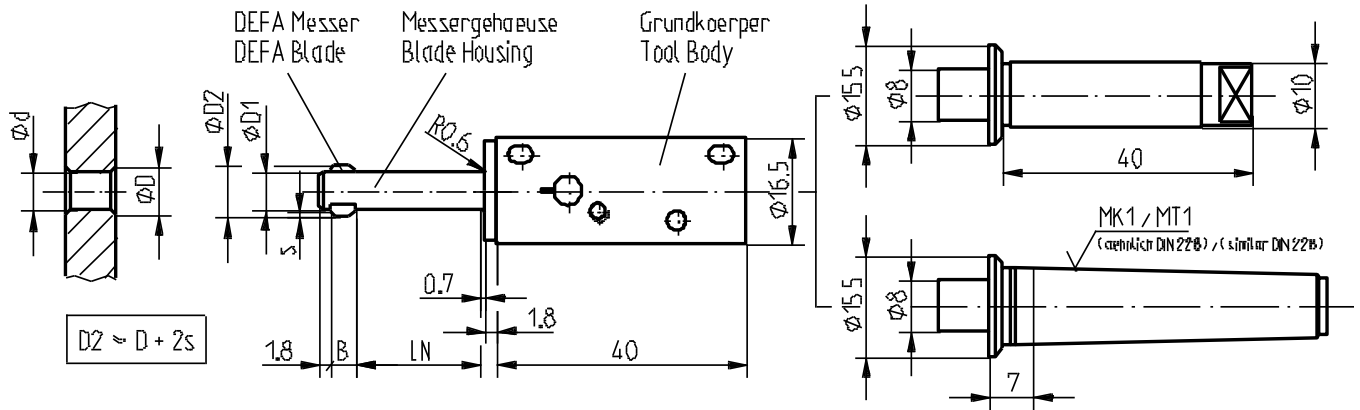
适用于以上DEFA刀具的刀柄请参照第20页

* Do not reference below this value

Blades for these DEFA tools please find on pages 12-13

Shanks for these DEFA tools please find on page 20

8.2 DEFA 6-10 倒角刀具 / Chamfering Tools DEFA 6-10



使用GH-S刀片组能够加工直径为4毫米的孔。

With the GH-S tool bores can be chamfered down to diameter 4mm.

刀具说明 Tool description	加工孔尺寸范围 Bore range	倒角尺寸范围 Chamfer range			刀片架 Blade Housing	订货号 不带刀片 不带刀柄 Order No. w/o blades w/o shank	订货号 不带刀片 带 $\varnothing 10$ 直柄 Order No. w/o blades w.cyl. shank $\varnothing 10$	订货号 不带刀片 带MT1锥柄 Order No. w/o blades w. MT1 shank
DEFA	$\varnothing d^*$	$\varnothing D$	max. $\varnothing D2$	B (S)	$\varnothing D1$ LN	GH-S-D-	GH-S-D-	GH-S-D-
6 - 7/20	6.0-6.5	6.2-6.8	7.4	4	20	1690	1783	1763
6 - 7/34					34	1700	1740	1720
6 - 7/60					60	1679	1792	1772
6.5 - 7.5/20	6.3-7.3	6.5-7.6	8.2	4	20	1691	1784	1764
6.5 - 7.5/34					34	1701	1741	1721
6.5 - 7.5/60					60	1680	1793	1773
7 - 8/20	6.8-8.2	7.0-8.5	9.1	4	20	1692	1785	1765
7 - 8/34					34	1702	1742	1722
7 - 8/60					60	1681	1794	1774
8 - 9.5/20	7.7-9.3	8.1-9.1	10.4	6	20	1693	1786	1766
8 - 9.5/34					34	1703	1743	1723
8 - 9.5/60					60	1704	1744	1724
8.5 - 10/20	8.2-10.1	8.9-9.9	11.2	6	20	1694	1787	1767
8.5 - 10/34					34	1705	1745	1725
8.5 - 10/60					60	1706	1746	1726

* 请勿低于上述数值

** 上述倒角尺寸范围能够通过调节螺钉GH-H-S-0301来完成。

订购刀具: 订货号+ -EF (=倒角扩展尺寸)

例如: GH-S-D-1694-EF (更多的信息请查阅第33页)

适用于以上DEFA刀具的刀片请参照第14-15页

适用于以上DEFA刀具的刀柄请参照第20-21页

* Do not reference below this value

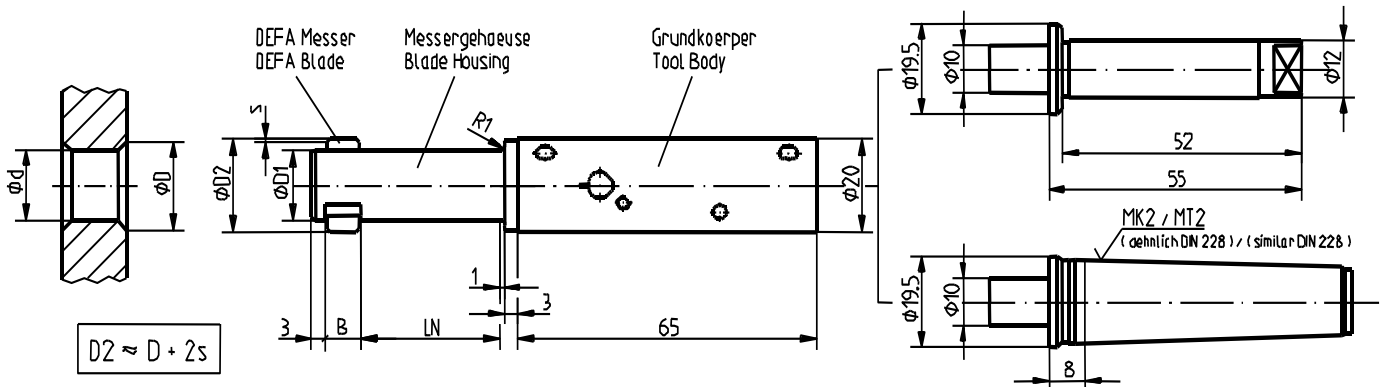
** This chamfer range can be attained by using the set screw GH-H-S-0301. Tool order: Order No. + -EF (= Extended chamfer range)

Example: GH-S-D-1694-EF (for further information see page 33)

Blades for these DEFA tools please find on pages 14-15

Shanks for these DEFA tools please find on pages 20-21

8.3 DEFA 9-24 倒角刀具 / Chamfering Tools DEFA 9-24



$$D2 \approx D + 2s$$

刀具说明 Tool description	加工孔尺寸范围 Bore range	倒角尺寸范围 Chamfer range			刀片架 Blade Housing		订货号 不带刀片 不带刀柄 Order No. w/o blades w/o shank	订货号 不带刀片 带ø12直柄 Order No. w/o blades w.cyl. shank ø 12	订货号 不带刀片 带MT2锥柄 Order No. w/o blades w. MT2 shank
DEFA	ø d *	ø D	max. ø D2	B (S)	ø D1	LN	GH-S-D-	GH-S-D-	GH-S-D-
9 - 12/30						30	1707	1747	1727
9 - 12/60	9.0-11.7	10.2-11.4	12.8	6	8.8	60	1708	1748	1728
9 - 12/100		11.1-12.0**		(0.4)		100	1682	1795	1775
10 - 13/30						30	1709	1749	1729
10 - 13/60	9.7-12.7	11.0-12.4	13.8	6	9.5	60	1710	1750	1730
10 - 13/100		12.1-13.0**		(0.4)		100	1683	1796	1776
12 - 14/30						30	1711	1751	1731
12 - 14/60	11.2-14.3	12.0-13.8	15.6	8	11	60	1712	1752	1732
12 - 14/100		13.4-14.6**		(0.5)		100	1684	1797	1777
13 - 16/30						30	1713	1753	1733
13 - 16/60	12.2-15.9	13.5-15.4	17.2	8	11	60	1714	1754	1734
13 - 16/100		15.0-16.2**		(0.5)		100	1685	1798	1778
14 - 17/30						30	1695	1788	1768
14 - 17/60	13.2-17.3	15.1-16.6	18.6	8	13	60	1715	1755	1735
14 - 17/100		16.4-17.6**		(0.5)		100	1686	1799	1779
16 - 19/30						30	1696	1789	1769
16 - 19/60	15.2-18.7	16.7-18.2	20	8	15	60	1716	1756	1736
16 - 19/100		17.8-19.0**		(0.5)		100	1687	1719	1780
17 - 21/30						30	1697	1790	1770
17 - 21/60	16.7-21.5	18.2-20.4	23.8	8	16.5	60	1717	1757	1737
17 - 21/100		19.6-21.8**		(1)		100	1688	1739	1781
19 - 24/30						30	1698	1791	1771
19 - 24/60	18.7-23.9	20.6-22.8	26.2	8	18.5	60	1718	1758	1738
19 - 24/100		22.0-24.2**		(1)		100	1689	1699	1782

* 请勿低于上述数值

** 上述倒角尺寸范围能够通过调节螺钉GH-H-S-0302来完成。

订购刀具: 订货号+ -EF (=倒角扩展尺寸)

例如: GH-S-D-1698-EF (更多的信息请查阅第33页)

适用于以上DEFA刀具的刀片请参照第16-17页

适用于以上DEFA刀具的刀柄请参照第22-23页

* Do not reference below this value

** This chamfer range can be attained by using the set screw GH-H-S-0302. Tool order: Order No. + -EF (= Extended chamfer range)

Example: GH-S-D-1698-EF (for further information see page 33)

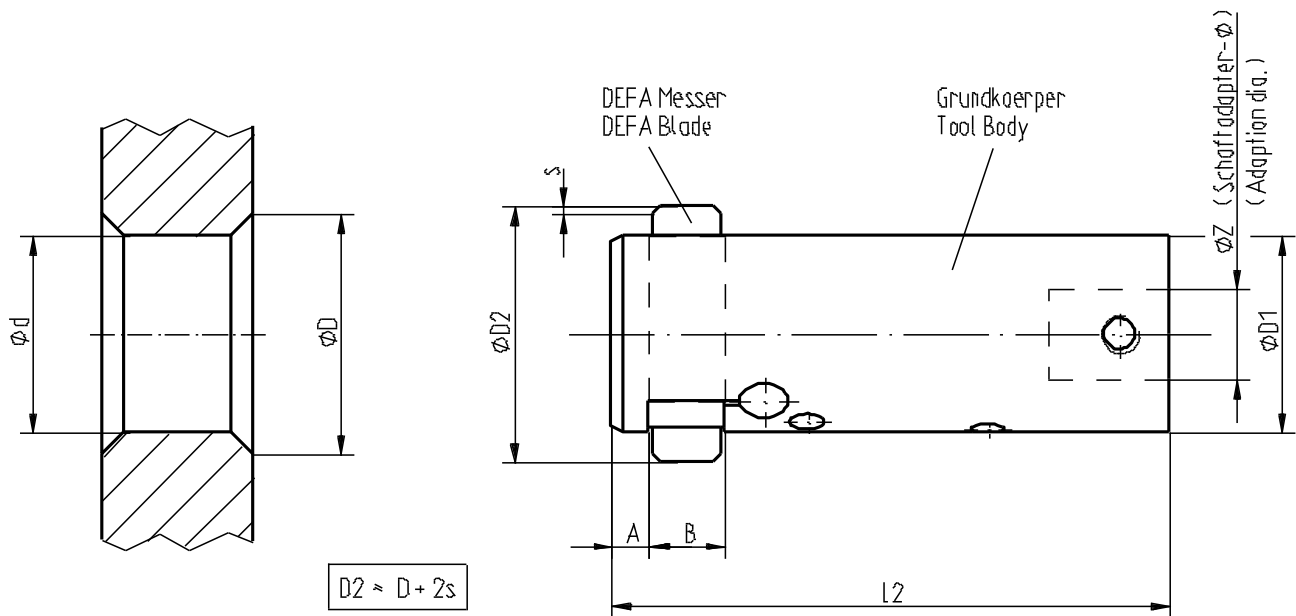
Blades for these DEFA tools please find on pages 16-17

Shanks for these DEFA tools please find on pages 22-23

8.4 DEFA 21-46 倒角刀具 / Chamfering Tools DEFA

8.4.1 DEFA 21-46 倒角刀具, 不带刀片, 不带刀柄

Chamfering Tools DEFA 21-46, w/o blades, w/o shank



刀具说明 Tool description DEFA	加工孔 尺寸范围 Bore range ϕd^*	倒角 尺寸范围 Chamfer range ϕD	max. $\phi D2$	A	B (S)	$\phi D1$	ϕZ	L2	订货号 Order No. GH-S-D-
21 - 25	20.7-24.9	20.7-23.6 23.6-25.2**	27.2	4	9 (1)	20.5	10	65	1665
23 - 28	23.2-27.2	23.2-27.5	29.5	4	9 (1)	23	10	65	1666
26 - 32	26.2-31.5	26.2-31.8	33.8	5	10 (1)	26	12	74	1667
29 - 35	29.2-34.5	29.2-34.8	36.8	5	10 (1)	29	12	74	1668
32 - 38	32.2-37.5	32.2-37.8	39.8	6	10 (1)	32	18	79	1669
36 - 42	36.2-41.5	36.2-41.8	43.8	6	10 (1)	36	18	79	1670
40 - 46	40.2-45.5	40.2-45.8	47.8	6	10 (1)	40	18	79	1671

* 请勿低于上述数值

** 上述倒角尺寸范围能够通过调节螺钉GH-H-S-0302来完成。

订购刀具: 订货号+ -EF (=倒角扩展尺寸)

例如: GH-S-D-1665-EF (更多的信息请查阅第33页)

适用于以上DEFA刀具的刀片请参照第18-19页

适用于以上DEFA刀具的刀柄请参照第24-26页

* Do not reference below this value

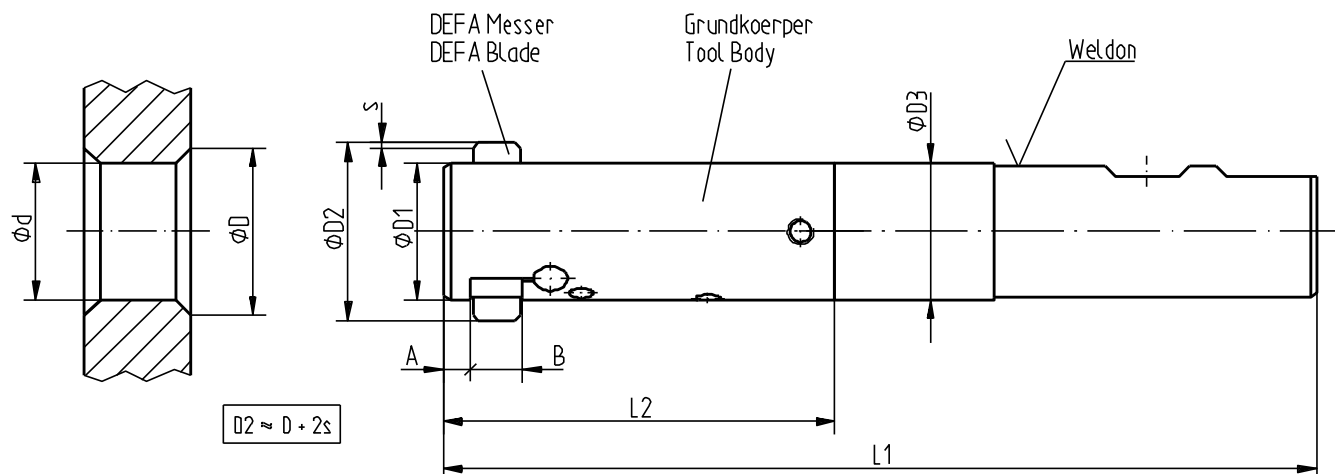
** This chamfer range can be attained by using the set screw GH-H-S-0302. Tool order: Order No. + -EF (= Extended chamfer range)

Example: GH-S-D-1665-EF (for further information see page 33)

Blades for these DEFA tools please find on pages 18-19

Shanks for these DEFA tools please find on pages 24-26

8.4.2 DEFA 21-46 倒角刀具, 不带刀片, 带Weldon刀柄 Chamfering Tools DEFA 21-46, w/o blades, with Weldon shank



刀具说明 Tool description DEFA	加工孔 尺寸范围 Bore range ϕd^*	倒角 尺寸范围 Chamfer range ϕD	max. $\phi D2$	A	B (S)	$\phi D1$	$\phi D3$	L1	L2	Weldon	订货号 Order No. GH-S-D-
21 - 25	20.7-24.9	20.7-23.6 23.6-25.2**	27.2	4	9 (1)	20.5	20.0	158	65	20	1658
23 - 28	23.2-27.2	23.2-27.5	29.5	4	9 (1)	23	20.0	158	65	20	1659
26 - 32	26.2-31.5	26.2-31.8	33.8	5	10 (1)	26	25.0	165	74	25	1660
29 - 35	29.2-34.5	29.2-34.8	36.8	5	10 (1)	29	25.0	165	74	25	1661
32 - 38	32.2-37.5	32.2-37.8	39.8	6	10 (1)	32	32.0	184	79	25	1662
36 - 42	36.2-41.5	36.2-41.8	43.8	6	10 (1)	36	32.0	184	79	25	1663
40 - 46	40.2-45.5	40.2-45.8	47.8	6	10 (1)	40	32.0	184	79	25	1664

* 请勿低于上述数值

** 上述倒角尺寸范围能够通过调节螺钉GH-H-S-0302来完成。

订购刀具: 订货号+ -EF (=倒角扩展尺寸)

例如: GH-S-D-1658-EF (更多的信息请查阅第33页)

适用于以上DEFA刀具的刀片请参照第18-19页

适用于以上DEFA刀具的刀柄请参照第24-26页

* Do not reference below this value

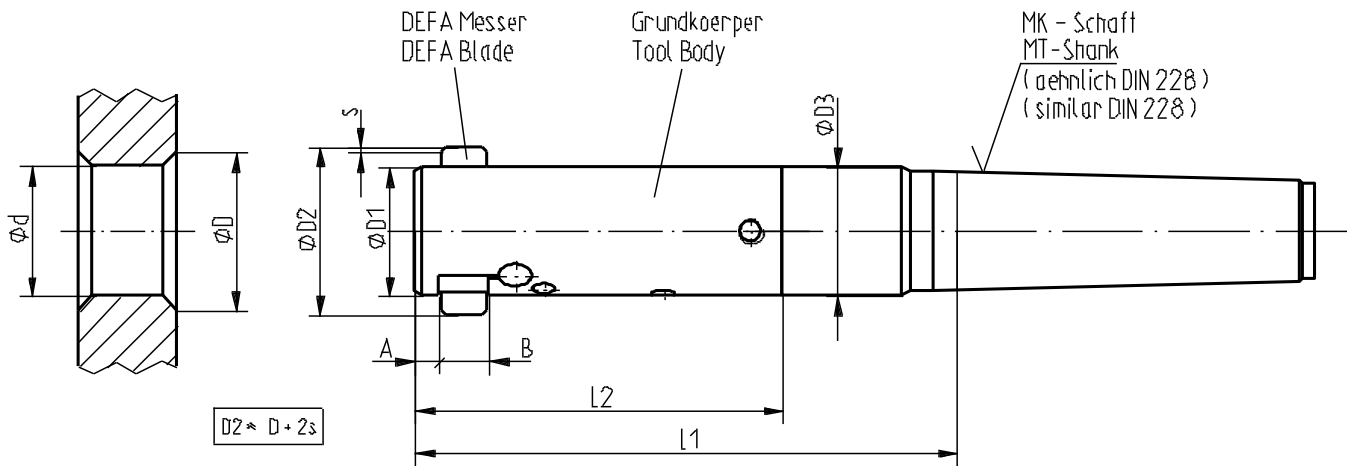
** This chamfer range can be attained by using the set screw GH-H-S-0302. Tool order: Order No. + -EF (= Extended chamfer range)

Example: GH-S-D-1658-EF (for further information see page 33)

Blades for these DEFA tools please find on pages 18-19

Shanks for these DEFA tools please find on pages 24-26

8.4.3 DEFA 21-46 倒角刀具, 不带刀片, 带MT锥柄 Chamfering Tools DEFA 21-46, w/o blades, with MT shank



刀具说明 Tool description DEFA	加工孔 尺寸范围 Bore range $\varnothing d^*$	倒角 尺寸范围 Chamfer range $\varnothing D$								刀柄 Shank MT MT	订货号 Order No. GH-S-D-
			max. $\varnothing D2$	A	B (S)	$\varnothing D1$	$\varnothing D3$	L1	L2		
21 - 25	20.7-24.9	20.7-23.6 23.6-25.2**	27.2	4	9 (1)	20.5	20.5	108	101	2	1672
23 - 28	23.2-27.2	23.2-27.5	29.5	4	9 (1)	23	20.5	108	101	2	1673
26 - 32	26.2-31.5	26.2-31.8	33.8	5	10 (1)	26	26.0	109	101	3	1674
29 - 35	29.2-34.5	29.2-34.8	36.8	5	10 (1)	29	26.0	109	101	3	1675
32 - 38	32.2-37.5	32.2-37.8	39.8	6	10 (1)	32	32.0	126	115	3	1676
36 - 42	36.2-41.5	36.2-41.8	43.8	6	10 (1)	36	32.0	126	115	3	1677
40 - 46	40.2-45.5	40.2-45.8	47.8	6	10 (1)	40	32.0	126	115	3	1678

* 请勿低于上述数值

** 上述倒角尺寸范围能够通过调节螺钉GH-H-S-0302来完成。

订购刀具: 订货号+ -EF (=倒角扩展尺寸)

例如: GH-S-D-1672-EF (更多的信息请查阅第33页)

适用于以上DEFA刀具的刀片请参照第18-19页

适用于以上DEFA刀柄的刀柄请参照第24-26页

* Do not reference below this value

** This chamfer range can be attained by using the set screw GH-H-S-0302. Tool order: Order No. + -EF (= Extended chamfer range)

Example: GH-S-D-1672-EF (for further information see page 33)

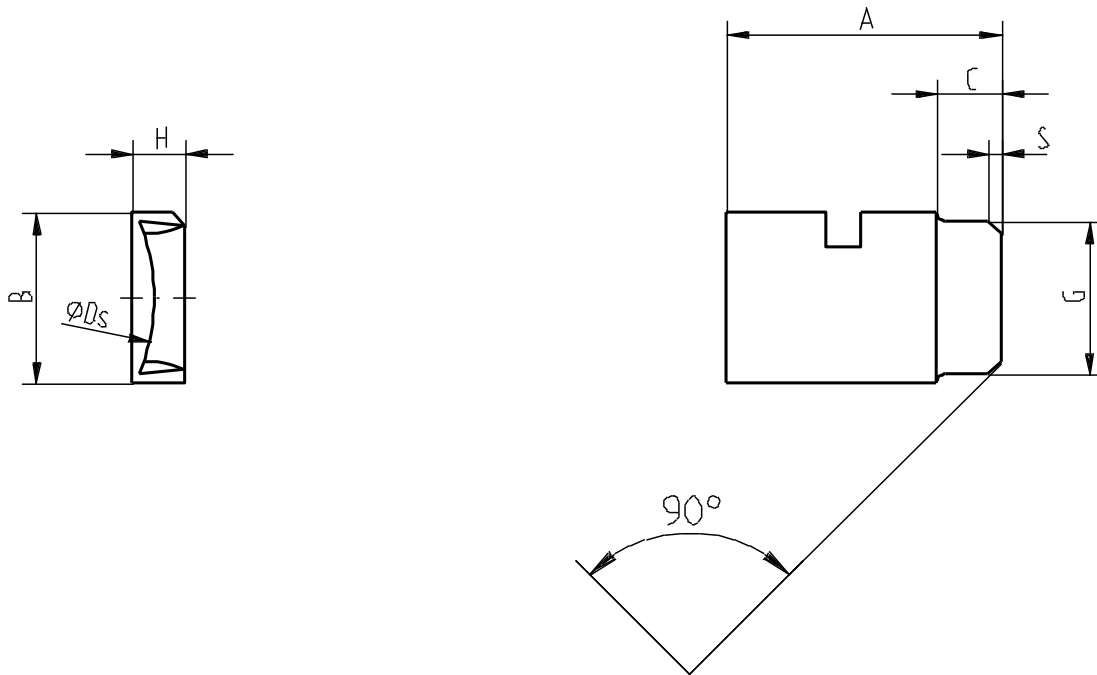
Blades for these DEFA tools please find on pages 18-19

Shanks for these DEFA tools please find on pages 24-26

9 DEFA系列刀具配套刀片 / Blades for DEFA

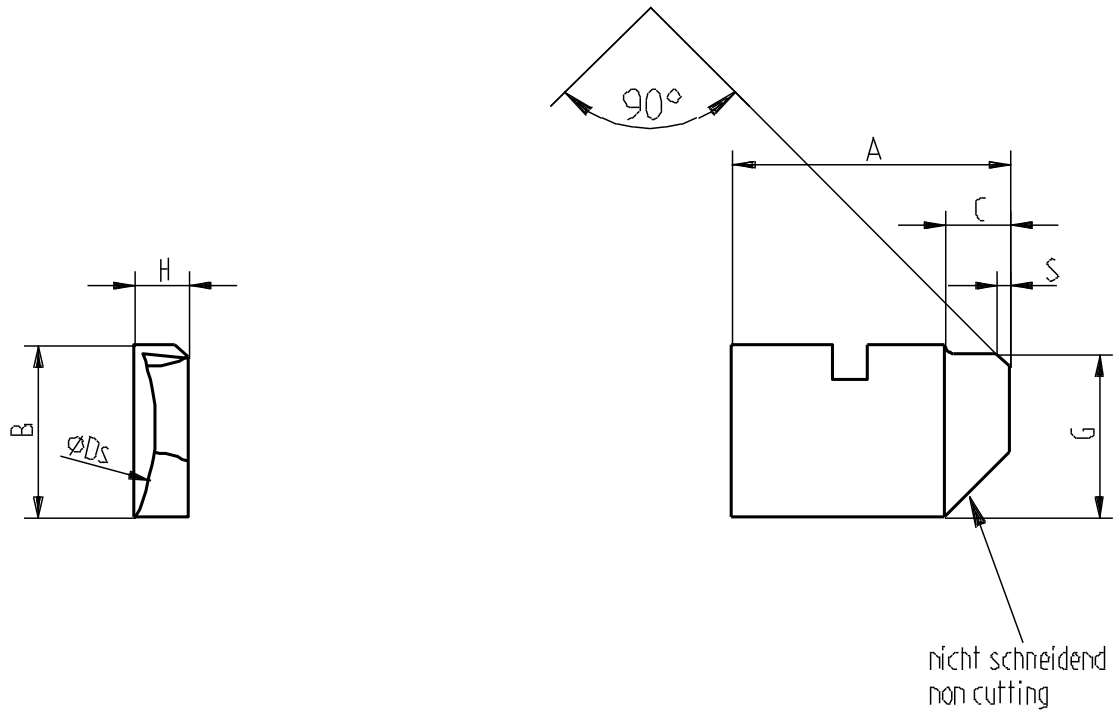
9.1 DEFA 4-6 90°刀片, 正反向切削刃

Blades for DEFA 4-6 90°, forward and backward cutting



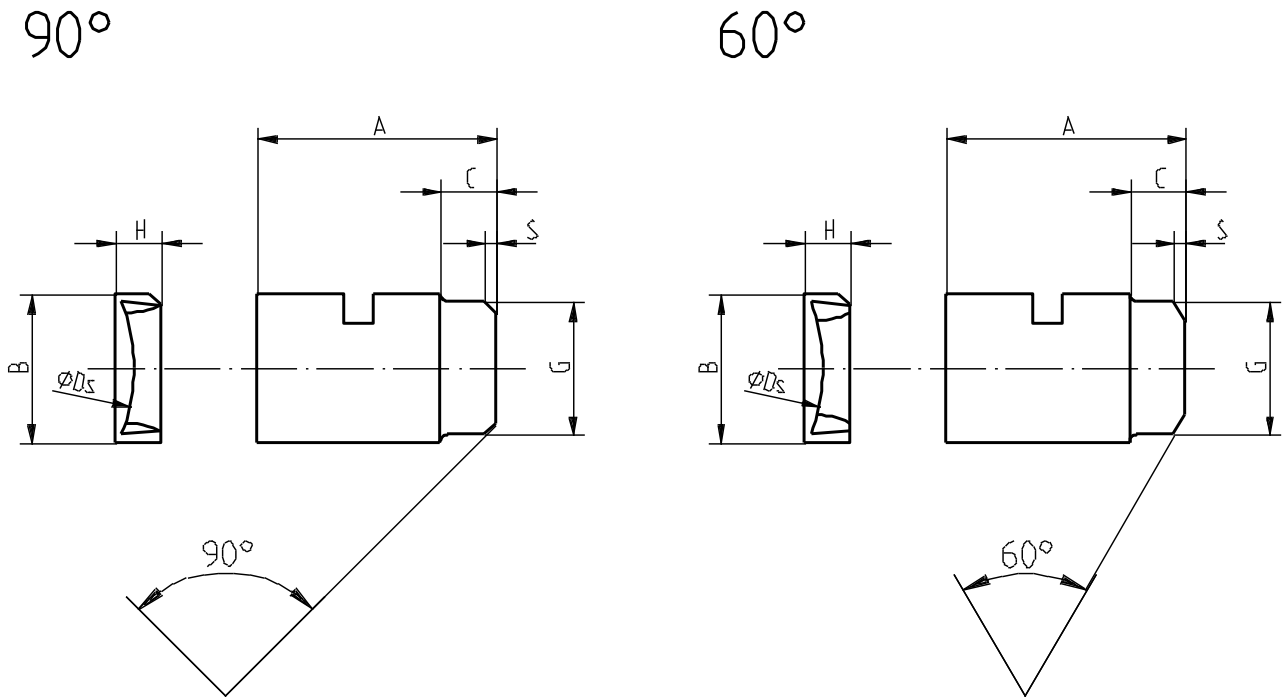
刀片说明 Blade description	DEFA 90° 刀片 (正反向切削刃) 订货号 Order numbers for DEFA blades 90° forward and backward cutting				外形尺寸 Dimensions								
	HSS-E	硬质合金	HSS-E-TIN	TIN涂层 硬质合金	倒角直径 Ø Chamø								
	HSS-E	Carbide	HSS-E-TIN	Carbide-TIN	S	A	min-max.	C	G	B	H	ØDs	
DEFA	GH-S-M-	GH-S-M-	GH-S-M-	GH-S-M-									
4 - 4.8	3002	3102	3502	3902	0.3	3.8	4.2 - 4.8	0.8	2.8	3.2	1	8	
4.2 - 5.2	3003	3103	3503	3903	0.3	3.95	4.4 - 5.2	1.0	2.8	3.2	1	8	
4.6 - 5.8	3004	3104	3504	3904	0.3	4.35	4.8 - 5.8	1.1	2.8	3.2	1	8	
5 - 6.4	3005	3105	3505	3905	0.4	4.8	5.2 - 6.4	1.2	2.8	3.2	1	8	
5.5 - 6.8	3006	3106	3506	3906	0.4	5.0	5.7 - 6.8	1.2	2.8	3.2	1	8	

9.2 DEFA 4-6 90°刀片, 反向切削刃 Blades for DEFA 4-6 90°, backward cutting only



刀片说明 Blade description	DEFA 90° 刀片 (反向切削刃) 订货号 Order numbers for DEFA blades 90° backward cutting only				外形尺寸 Dimensions							
	HSS-E	硬质合金 Carbide	HSS-E-TIN	TIN涂层 硬质合金 Carbide-TIN	S	A	倒角直径 Ø Chamø	C	G	B	H	ØDs
DEFA	GH-S-M-	GH-S-M-	GH-S-M-	GH-S-M-			min-max.					
4 - 4.8	4002	4102	4502	4902	0.3	3.8	4.2 - 4.8	0.8	3	3.2	1	8
4.2 - 5.2	4003	4103	4503	4903	0.3	3.95	4.4 - 5.2	1.0	3	3.2	1	8
4.6 - 5.8	4004	4104	4504	4904	0.3	4.35	4.8 - 5.8	1.1	3	3.2	1	8
5 - 6.4	4005	4105	4505	4905	0.4	4.8	5.2 - 6.4	1.2	3	3.2	1	8
5.5 - 6.8	4006	4106	4506	4906	0.4	5.0	5.7 - 6.8	1.2	3	3.2	1	8

9.3 DEFA 6-10刀片, 正反向切削刃 Blades for DEFA 6-10, forward and backward cutting

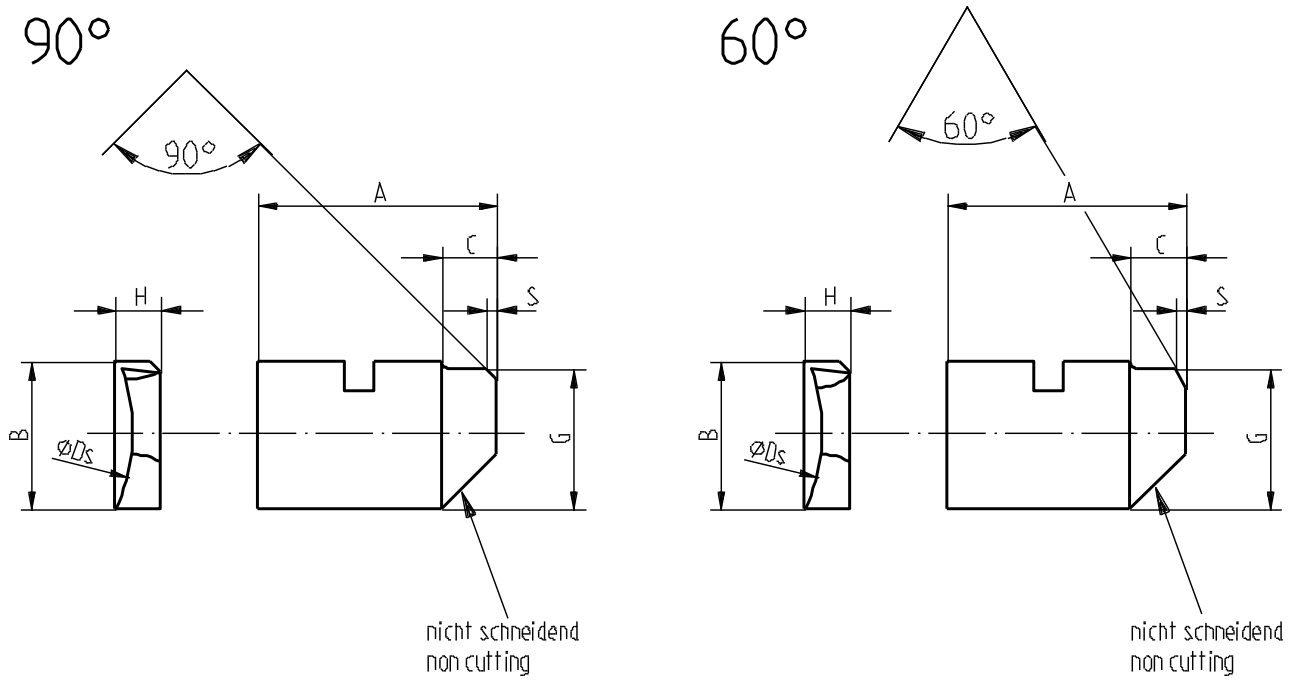


刀片说明 Blade description	倒角角度 Chamfer angle	DEFA刀片 (正反向切削刃) 订货号 Order numbers for DEFA blades forward and backward cutting				外形尺寸 Dimensions						
		HSS-E	硬质合金 Carbide	HSS-E-TIN	TIN涂层 硬质合金 Carbide-TIN	S	A	倒角直径 Chamø		G	H	øDs
		GH-S-M-	GH-S-M-	GH-S-M-	GH-S-M-			min.	max.			
DEFA 6 - 7	90°	3007	3107	3507	3907	0.3	5.6	6.2 -	1.1	4	10	
	60°	3607	3707	3807	3407			6.8	3.6	1.25		
DEFA 6.5 - 7.5	90°	3008	3108	3508	3908	0.3	6.0	6.5 -	1.4	4	10	
	60°	3608	3708	3808	3408			7.6	3.6	1.25		
DEFA 7 - 8	90°	3009	3109	3509	3909	0.3	6.45	7.0 -	1.5	4	10	
	60°	3609	3709	3809	3409			8.5	3.6	1.25		
DEFA 8 - 9.5	90°	3010	3110	3510	3910	0.4	7.05	8.1 -	1.8	6	16	
	60°	3610	3710	3810	3410			9.6	5.4	1.5		
DEFA 8.5 - 10	90°	3011	3111	3511	3911	0.4	7.45	8.9 -	2	6	16	
	60°	3611	3711	3811	3411			10.4	5.4	1.5		

未列出的倒角角度可以根据实际需要定制

Other chamfer angles are available on request

9.4 DEFA 6-10刀片, 反向切削刃 Blades for DEFA 6-10, backward cutting only

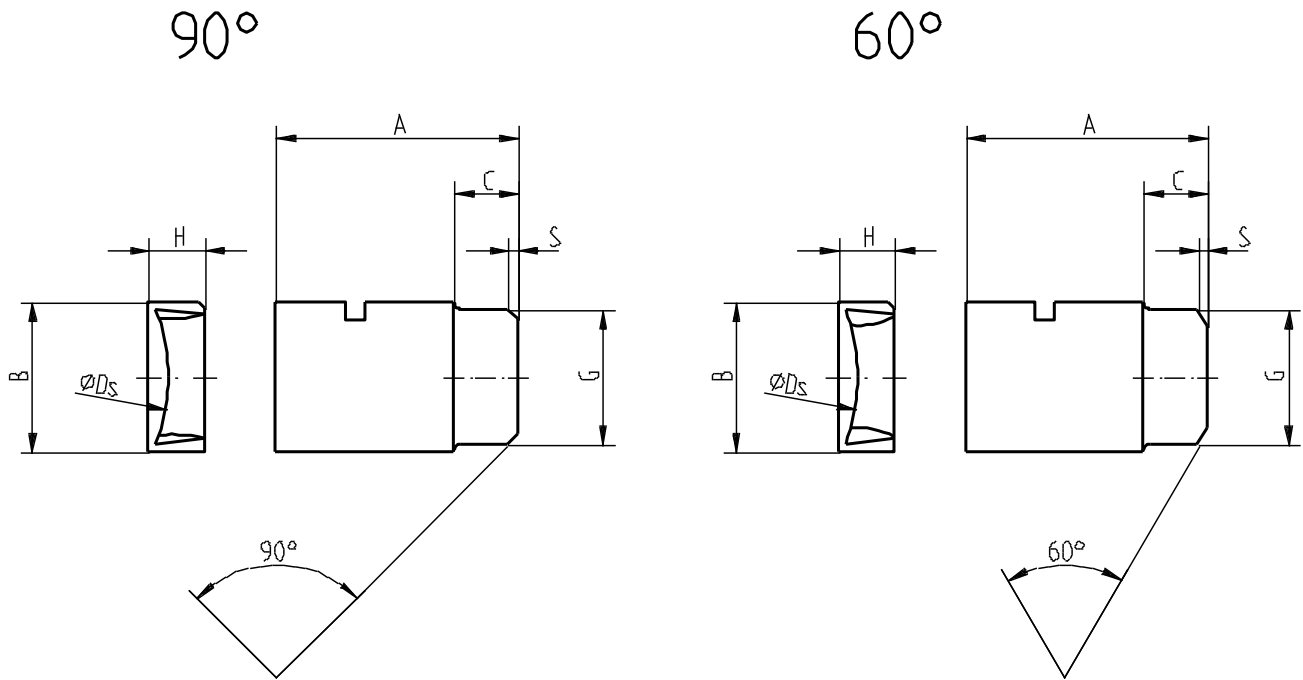


刀片说明 Blade description	倒角角度 Chamfer angle	DEFA刀片 (反向切削刃) 订货号 Order numbers for DEFA blades backward cutting only				外形尺寸 Dimensions					
		HSS-E GH-S-M-	硬质合金 Carbide GH-S-M-	HSS-E-TIN GH-S-M-	TIN涂层 硬质合金 Carbide-TIN GH-S-M-	S	A	倒角直径 Chamfer min. max.		C G	B H
6 - 7	90°	4007	4107	4507	4907			0.3	5.6		
	60°	4607	4707	4807	4407	6.8	3.8			1.25	
6.5 - 7.5	90°	4008	4108	4508	4908	0.3	6.0	6.5 -	1.4	4	10
	60°	4608	4708	4808	4408			7.6	3.8	1.25	
7 - 8	90°	4009	4109	4509	4909	0.3	6.45	7.0 -	1.5	4	10
	60°	4609	4709	4809	4409			8.5	3.8	1.25	
8 - 9.5	90°	4010	4110	4510	4910	0.4	7.05	8.1 -	1.8	6	10
	60°	4610	4710	4810	4410			9.6	5.7	1.5	
8.5 - 10	90°	4011	4111	4511	4911	0.4	7.45	8.9 -	2	6	10
	60°	4611	4711	4811	4411			10.4	5.7	1.5	

未列出的倒角角度可以根据实际需要定制

Other chamfer angles are available on request

9.5 DEFA 9-24刀片, 正反向切削刃 Blades for DEFA 9-24, forward and backward cutting

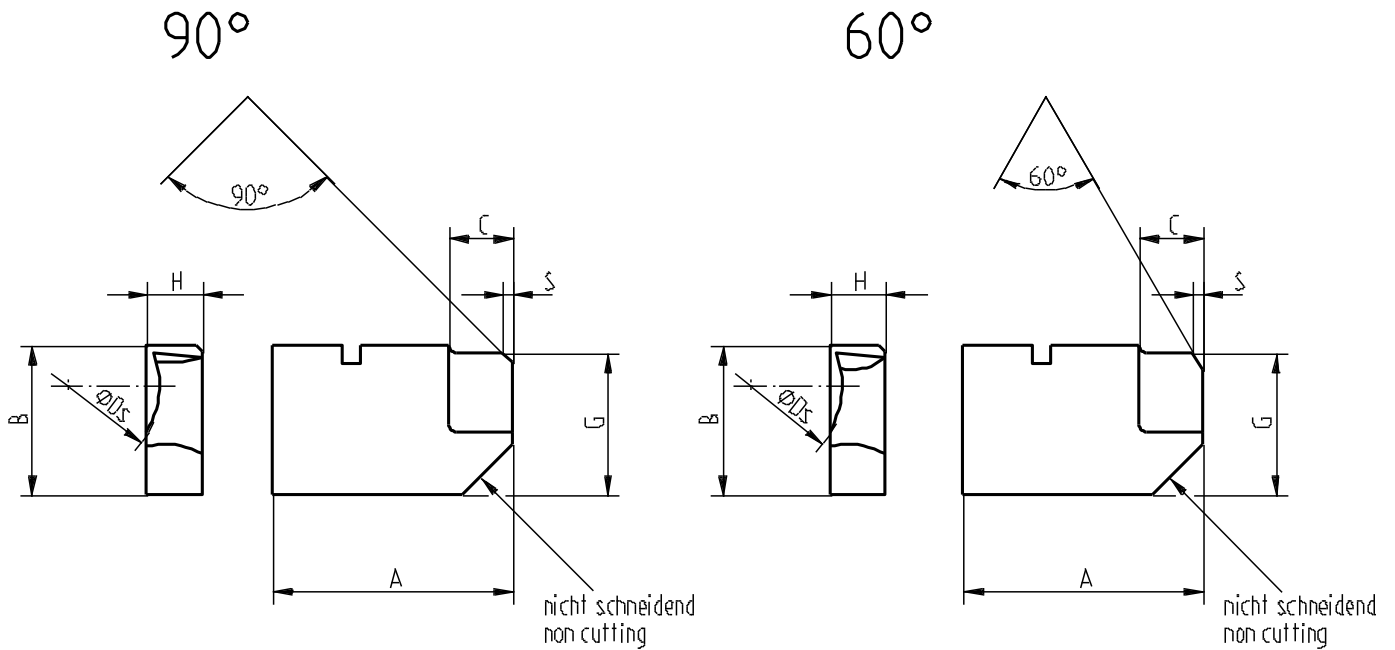


刀片说明 Blade description	倒角角度 Chamfer angle	DEFA刀片 (正反向切削刃) 订货号 Order numbers for DEFA blades forward and backward cutting				外形尺寸 Dimensions					
		HSS-E	硬质合金 Carbide	HSS-E-TIN	TIN涂层 硬质合金 Carbide-TIN	S	A	倒角直径 Chamø min. max.		C G	B H
DEFA	HSS-E GH-S-M-	GH-S-M-	HSS-E-TIN GH-S-M-	GH-S-M-							
9 - 12	90°	3012	3112	3512	3912	0.4	8.75	10.2 -	2.3	6	16
	60°	3612	3712	3812	3412			12.0	5.4	1.5	
10 - 13	90°	3013	3113	3513	3913	0.4	9.25	11.0 -	2.5	6	16
	60°	3613	3713	3813	3413			13.0	5.4	1.5	
12 - 14	90°	3014	3114	3514	3914	0.5	10.7	12.0 -	2.6	8	20
	60°	3614	3714	3814	3414			14.6	7.2	2	
13 - 16	90°	3015	3115	3515	3915	0.5	11.5	13.5 -	3	8	20
	60°	3615	3715	3815	3415			16.2	7.2	2	
14 - 17	90°	3016	3116	3516	3916	0.5	12.2	15.1 -	3.4	8	20
	60°	3616	3716	3816	3416			17.6	7.2	3	
16 - 19	90°	3017	3117	3517	3917	0.5	12.9	16.7 -	3.4	8	20
	60°	3617	3717	3817	3417			19.0	7.2	3	
17 - 21	90°	3018	3118	3518	3918	1.0	15.9	18.2 -	4.3	8	20
	60°	3618	3718	3818	3418			21.8	7.2	4	
19 - 24	90°	3019	3119	3519	3919	1.0	17.1	20.6 -	4.5	8	20
	60°	3619	3719	3819	3419			24.2	7.2	4	

未列出的倒角角度可以根据实际需要定制

Other chamfer angles are available on request

9.6 DEFA 9-24刀片, 反向切削刃 Blades for DEFA 9-24, backward cutting only

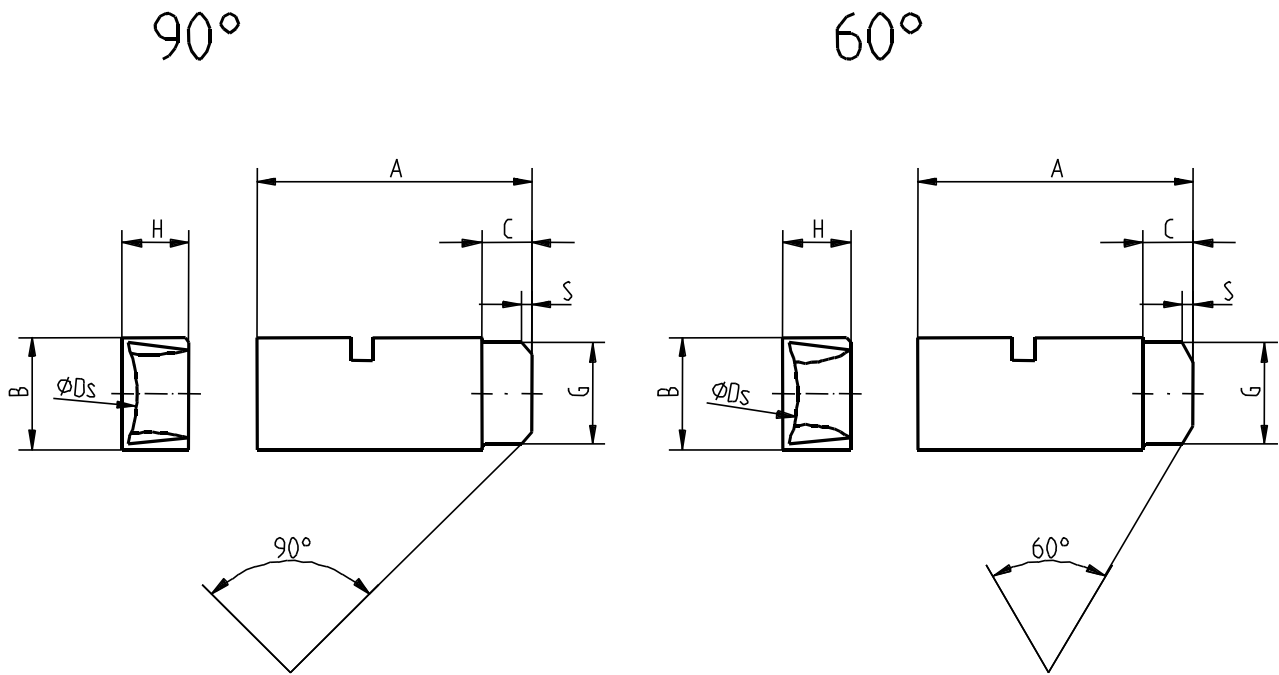


刀片说明 Blade description	倒角角度 Chamfer angle	DEFA刀片 (反向切削刃) 订货号 Order numbers for DEFA blades backward cutting only				外形尺寸 Dimensions					
		HSS-E	硬质合金 Carbide	HSS-E-TIN	TIN涂层 硬质合金 Carbide-TIN	S	A	倒角直 径 Chamφ min. max.	C G	B H	øDs
DEFA	HSS-E GH-S-M-	GH-S-M-	HSS-E-TIN GH-S-M-	GH-S-M-	GH-S-M-						
9 - 12	90°	4012	4112	4512	4912	0.4	8.75	10.2 -	2.3	6	10
	60°	4612	4712	4812	4412			12.0	5.7	1.5	
10 - 13	90°	4013	4113	4513	4913	0.4	9.25	11.0 -	2.5	6	10
	60°	4613	4713	4813	4413			13.0	5.7	1.5	
12 - 14	90°	4014	4114	4514	4914	0.5	10.7	12.0 -	2.6	8	10
	60°	4614	4714	4814	4414			14.6	7.6	2	
13 - 16	90°	4015	4115	4515	4915	0.5	11.5	13.5 -	3	8	10
	60°	4615	4715	4815	4415			16.2	7.6	2	
14 - 17	90°	4016	4116	4516	4916	0.5	12.2	15.1 -	3.4	8	10
	60°	4616	4716	4816	4416			17.6	7.6	3	
16 - 19	90°	4017	4117	4517	4917	0.5	12.9	16.7 -	3.4	8	10
	60°	4617	4717	4817	4417			19.0	7.6	3	
17 - 21	90°	4018	4118	4518	4918	1.0	15.9	18.2 -	4.3	8	10
	60°	4618	4718	4818	4418			21.8	7.6	4	
19 - 24	90°	4019	4119	4519	4919	1.0	17.1	20.6 -	4.5	8	10
	60°	4619	4719	4819	4419			24.2	7.6	4	

未列出的倒角角度可以根据实际需要定制

Other chamfer angles are available on request

9.7 DEFA 21-46刀片, 正反向切削刃 Blades for DEFA 21-46, forward and backward cutting

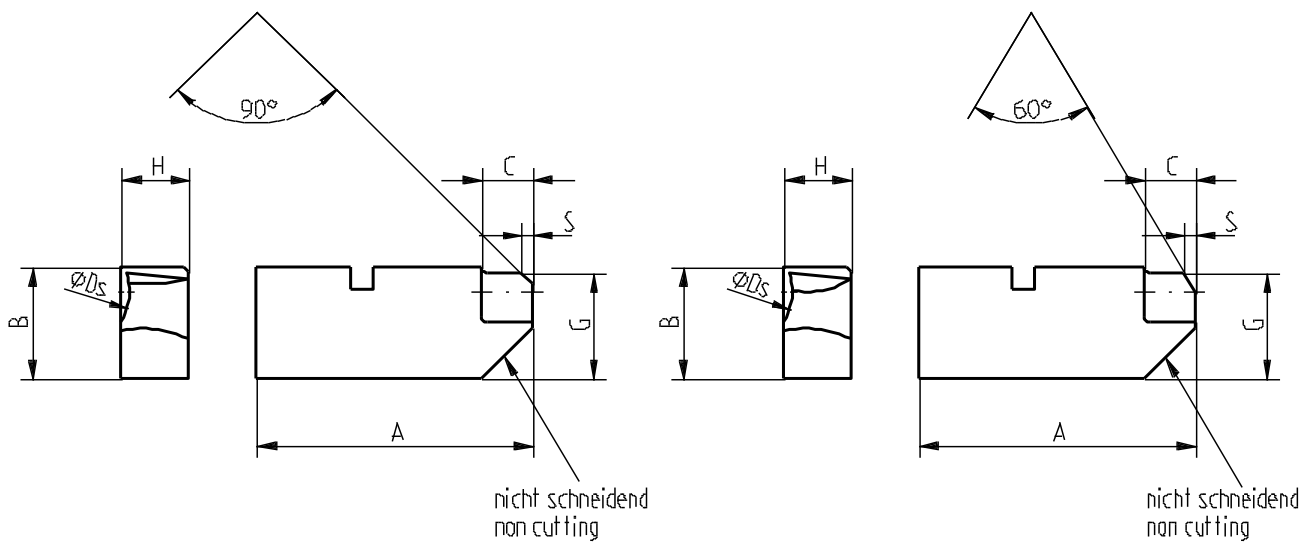


刀片说明 Blade description	倒角角度 Chamfer angle	DEFA刀片 (正反向切削刃) 订货号 Order numbers for DEFA blades forward and backward cutting				外形尺寸 Dimensions					
		HSS-E	硬质合金 Carbide	HSS-E-TIN	TIN涂层 硬质合金 Carbide-TIN	S	A	倒角直径 Chamø		C G	B H
DEFA	HSS-E	GH-S-M-	GH-S-M-	GH-S-M-	GH-S-M-			min.	max.		
21 - 25	90°	3022	3122	3522	3922	1	19.3	20.7 -	3.8	9	26
	60°	3622	3722	3822	3422			25.2	8	5	
23 - 28	90°	3024	3124	3524	3924	1	20.4	23.2 -	4	9	26
	60°	3624	3724	3824	3424			27.5	8	5	
26 - 32	90°	3026	3126	3526	3926	1	23.0	26.2 -	4.5	10	26
	60°	3626	3726	3826	3426			31.8	9	6	
29 - 35	90°	3028	3128	3528	3928	1	24.6	29.2 -	4.5	10	26
	60°	3628	3728	3828	3428			34.8	9	6	
32 - 38	90°	3030	3130	3530	3930	1	26.0	32.2 -	4.5	10	26
	60°	3630	3730	3830	3430			37.8	9	6	
36 - 42	90°	3032	3132	3532	3932	1	28.1	36.2 -	4.5	10	26
	60°	3632	3732	3832	3432			41.8	9	6	
40 - 46	90°	3034	3134	3534	3934	1	30.2	40.2 -	4.5	10	26
	60°	3634	3734	3834	3434			45.8	9	6	

未列出的倒角角度可以根据实际需要定制

Other chamfer angles are available on request

9.8 DEFA 21-46刀片, 反向切削刃 Blades for DEFA 21-46, backward cutting only



刀片说明 Blade description	倒角角度 Chamfer angle	DEFA刀片 (反向切削刃) 订货号 Order numbers for DEFA blades backward cutting only				外形尺寸 Dimensions						
		HSS-E	硬质合金 Carbide	HSS-E-TIN	TIN涂层 硬质合金 Carbide-TIN	S	A	倒角直 径Ø Chamø		C G	B H	ØDs
		GH-S-M-	GH-S-M-	GH-S-M-	GH-S-M-			min.	max.			
21 - 25	90°	4022	4122	4522	4922	1	19.3	20.7 -	3.8	9	10	
	60°	4622	4722	4822	4422			25.2				8.5
23 - 28	90°	4024	4124	4524	4924	1	20.4	23.2 -	4	9	10	
	60°	4624	4724	4824	4424			27.5				8.5
26 - 32	90°	4026	4126	4526	4926	1	23.0	26.2 -	4.5	10	10	
	60°	4626	4726	4826	4426			31.8				9.5
29 - 35	90°	4028	4128	4528	4928	1	24.6	29.2 -	4.5	10	10	
	60°	4628	4728	4828	4428			34.8				9.5
32 - 38	90°	4030	4130	4530	4930	1	26.0	32.2 -	4.5	10	10	
	60°	4630	4730	4830	4430			37.8				9.5
36 - 42	90°	4032	4132	4532	4932	1	28.1	36.2 -	4.5	10	10	
	60°	4632	4732	4832	4432			41.8				9.5
40 - 46	90°	4034	4134	4534	4934	1	30.2	40.2 -	4.5	10	10	
	60°	4634	4734	4834	4434			45.8				9.5

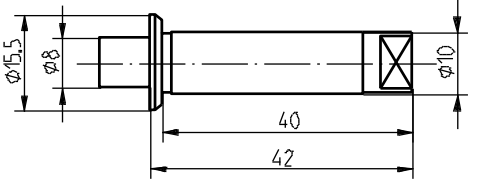
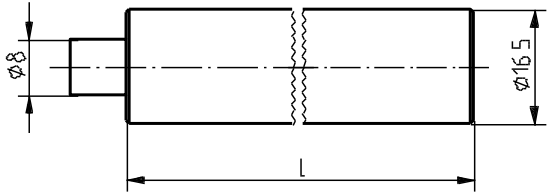
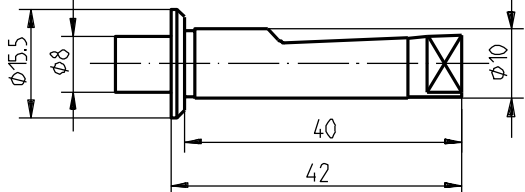
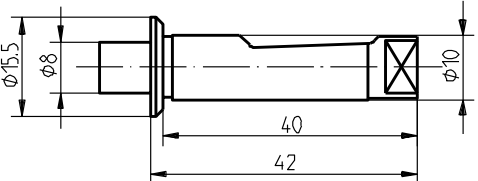
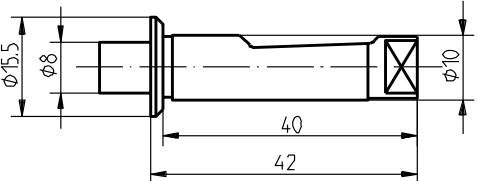
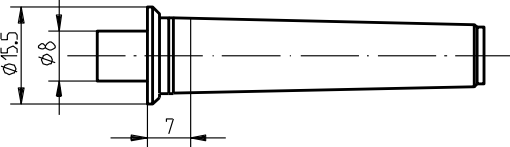
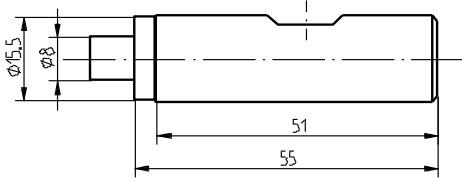
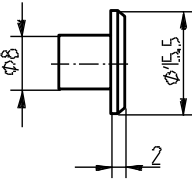
未列出的倒角角度可以根据实际需要定制

Other chamfer angles are available on request

10 DEFA系列刀具配套刀柄 / Shanks for DEFA

10.1 DEFA 4-10 配套刀柄

Shanks for Chamfering Tools DEFA 4-10

刀柄类型 Shank type	订货号 Order No.	刀柄类型 Shank type	订货号 Order No.
ø10圆柱形 cylindrical ø10 	GH-S-S-0001	加长型 Extension 	订货号 Order No. L 50mm GH-S-R-0076 100mm GH-S-R-0077 150mm GH-S-R-0078
ø10圆柱形 cylindrical ø10 与 DIN 1835 E 10 相似 	GH-S-S-0170	安全操作 所需的固定 螺母 Safety Crash Holder with Clamping Nut 	订货号 Order No. L D 124mm Tr 20x2 GH-A-O-0008 131mm Tr 25x2 GH-A-O-0010 131mm Tr 28x2 GH-A-O-0017
ø10圆柱形 cylindrical ø10 与 DIN 6535 HE 10 相似 	GH-S-S-0176	MT 1 MT 1 与 DIN 228 相似, 见表A 	GH-S-S-0002
Weldon 16 Weldon 16 	GH-S-S-0036	尾塞 End Plug 	如刀与刀体需要紧密嵌合 则必须使用 Required, if tool clamped into collet at tool body
ø ³ / ₈ "圆柱形 cylindrical ø ³ / ₈ " 	GH-S-S-0155		

DEFA 4-10 配套刀柄

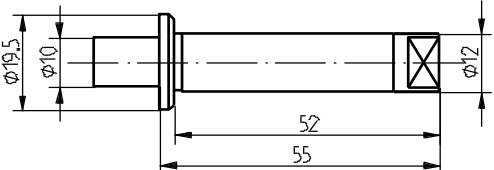
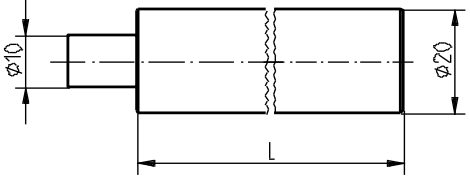
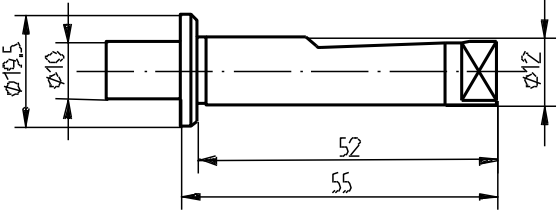
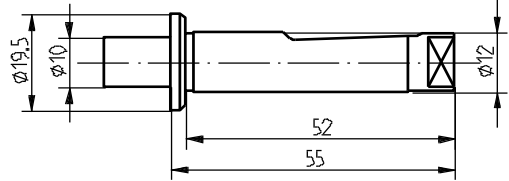
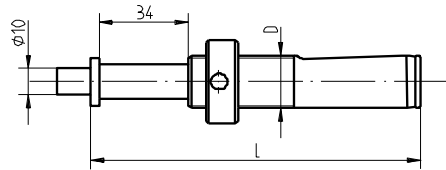
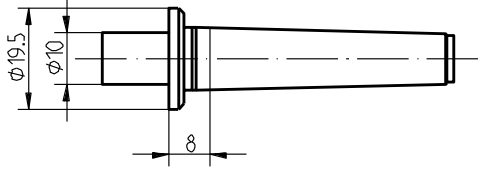
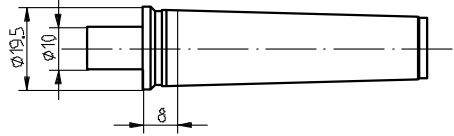
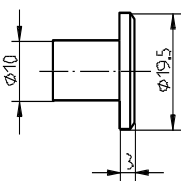
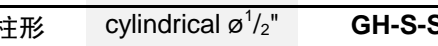
Shanks for Chamfering Tools DEFA 4-10

刀柄类型 Shank type	订货号 Order No.	刀柄类型 Shank type	订货号 Order No.
自动刀柄* Tr 16 x 1.5 Automotive Shank* Tr 16 x 1.5 与 DIN 6327 相似	GH-S-S-0101	ABS 25 ABS 25	GH-S-A-0014
自动刀柄* Tr 20 x 2 Automotive Shank* Tr 20 x 2 与 DIN 6327 相似	GH-S-S-0111	ABS 32 ABS 32	GH-S-A-0015
自动刀柄* Tr 25 x 2 Automotive Shank* Tr 25 x 2 与 DIN 6327 相似	GH-S-S-0107	ABS 40 ABS 40	GH-S-A-0010
自动刀柄* Tr 28 x 2 Automotive Shank* Tr 28 x 2 与 DIN 6327 相似	GH-S-S-0106	ABS 50 ABS 50	GH-S-A-0011

* 所有的自动刀柄都不带固定螺母
固定螺母相关信息, 请查阅第32页

* all automotive shanks without clamping nut
Clamping nut, see page 32

10.2 DEFA 9-24 配套刀柄 Shanks for Chamfering Tools DEFA 9-24

刀柄类型 Shank type	订货号 Order No.	刀柄类型 Shank type	订货号 Order No.
ø12圆柱形 cylindrical ø12 	GH-S-S-0013	加长型 Extension 	订货号 Order No. L 50mm GH-S-R-0016 100mm GH-S-R-0017 150mm GH-S-R-0003
ø12圆柱形 cylindrical ø12 与 DIN 1835 E 12 相似 	GH-S-S-0171		
ø12圆柱形 cylindrical ø12 与 DIN 6535 HE 12 相似 	GH-S-S-0175	安全操作 所需的 固定螺母 Safety Crash Holder with Clamping Nut 	订货号 Order No. L D 125mm Tr 20x2 GH-A-O-0009 132mm Tr 25x2 GH-A-O-0011 132mm Tr 28x2 GH-A-O-0016 132mm Tr 1 1/16"-12 GH-A-O-0015 excl. 压紧螺母
MT 1 MT 1 与 DIN 228 相似, 见表A 	GH-S-S-0016		
柄脚相关信息 请查阅第32页 Tang, see on page 32			
MT 2 MT 2 与 DIN 228 相似, 见表A 	GH-S-S-0017	尾塞 End Plug 	GH-S-S-0092 如刀与刀体需要能紧密嵌合 则必须使用 Required, if tool clamped into collet at tool body
ø1/2"圆柱形 cylindrical ø1/2" 	GH-S-S-0156		

DEFA 9-24 配套刀柄

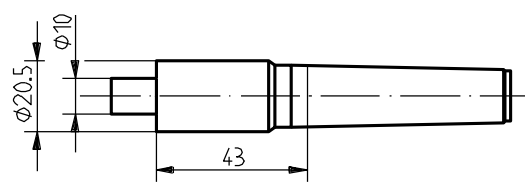
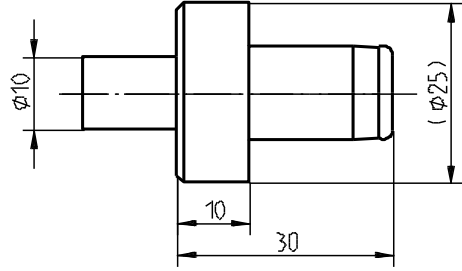
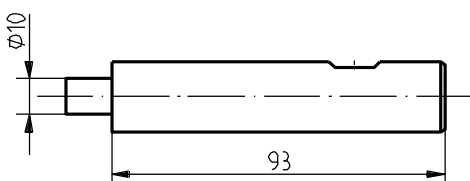
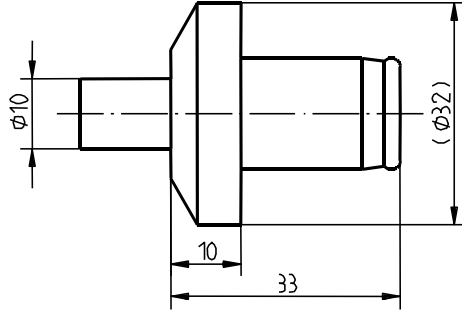
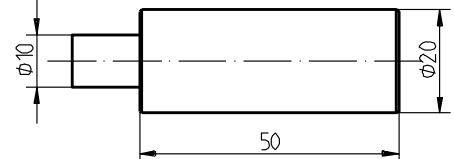
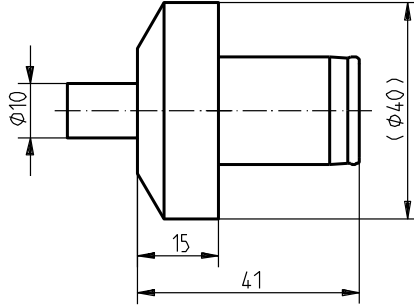
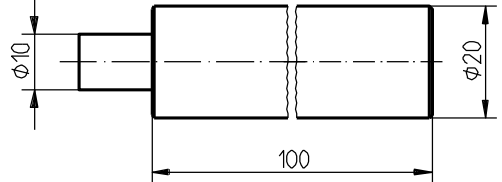
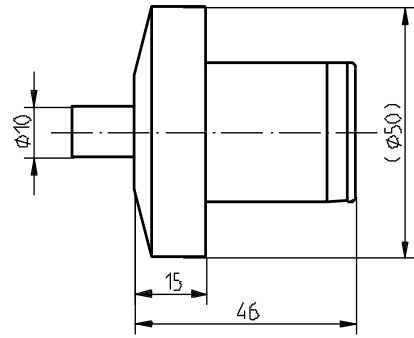
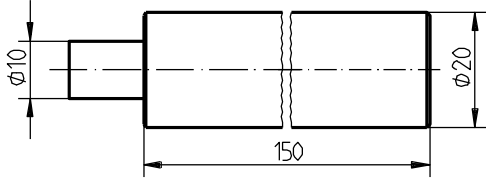
Shanks for Chamfering Tools DEFA 9-24

刀柄类型 Shank type			订货号 Order No.		
自动刀柄* Tr 16 x 1.5 与 DIN 6327 相似	Automotive Shank * Tr 16 x 1.5	GH-S-S-0103	ABS 25	ABS 25	GH-S-A-0012
自动刀柄* Tr 20 x 2 与 DIN 6327 相似	Automotive Shank * Tr 20 x 2	GH-S-S-0110	ABS 32	ABS 32	GH-S-A-0013
自动刀柄* Tr 25 x 2 与 DIN 6327 相似	Automotive Shank * Tr 25 x 2	GH-S-S-0108	ABS 50	ABS 50	GH-S-A-0017
自动刀柄* Tr 28 x 2 与 DIN 6327 相似	Automotive Shank* Tr 28 x 2	GH-S-S-0105	Weldon 16	Weldon 16	GH-S-S-0034
Weldon 20	Weldon 20	GH-S-S-0037			

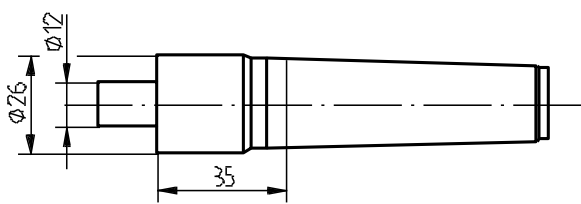
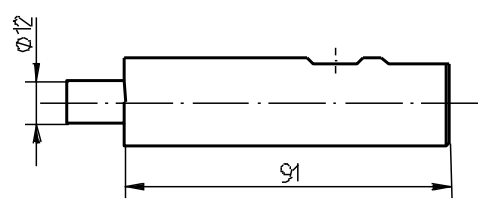
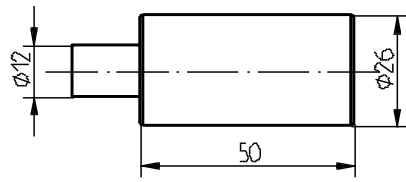
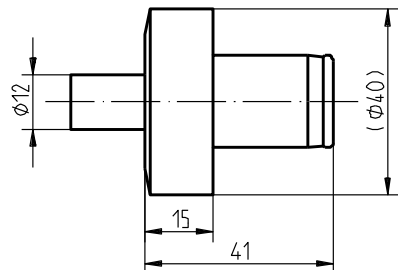
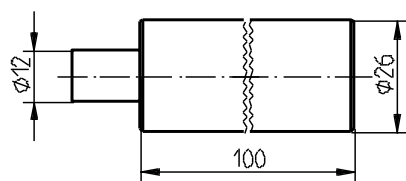
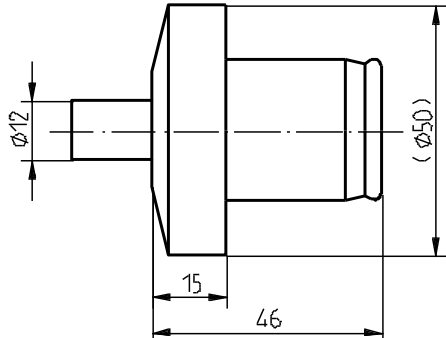
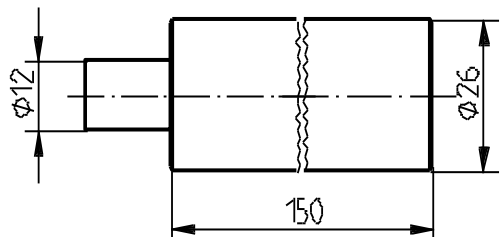
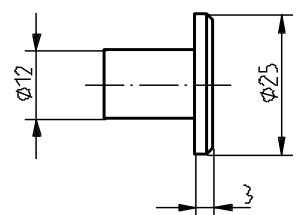
* 所有的自动刀柄都不带固定螺母
固定螺母相关信息，请查阅第32页

* all automotive shanks without clamping nut
Clamping nut, see page 32

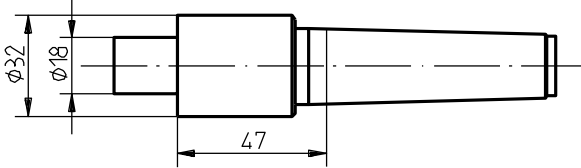
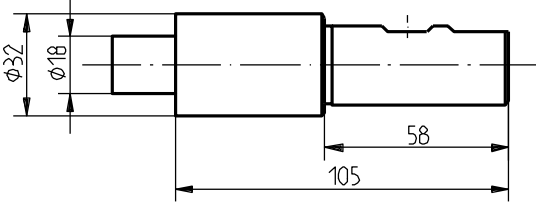
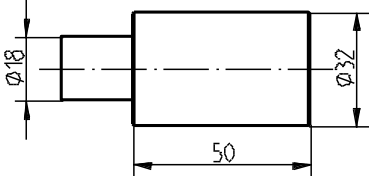
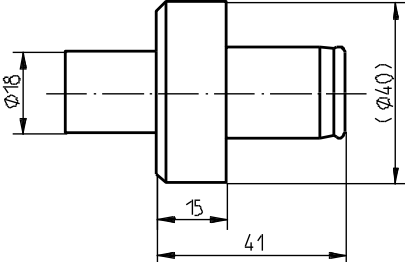
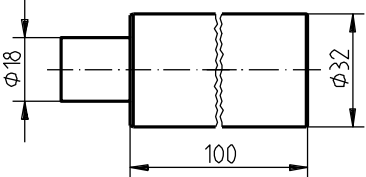
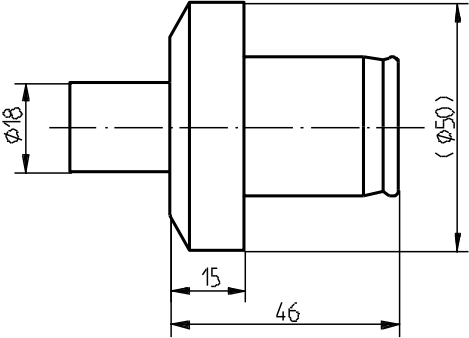
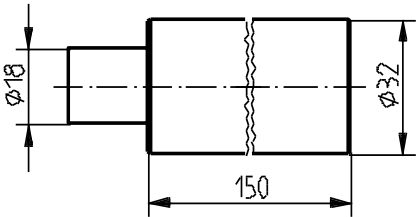
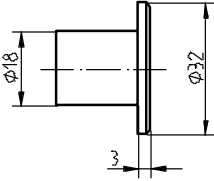
10.3 DEFA 21-28 配套刀柄 Shanks for Chamfering Tools DEFA 21-28

刀柄类型 Shank type	订货号 Order No.	刀柄类型 Shank type	订货号 Order No.
MT 2 MT 2 与 DIN 228 相似, 见表A 	GH-S-S-0038	ABS 25 ABS 25 	GH-S-A-0012
柄脚相关信息 请查阅第32页	Tang, see on page 32		
Weldon 20 Weldon 20 	GH-S-S-0037	ABS 32 ABS 32 	GH-S-A-0013
加长杆 50 mm Extension 50 mm 	GH-S-R-0016	ABS 40 ABS 40 	GH-S-A-0016
加长杆 100 mm Extension 100 mm 	GH-S-R-0017	ABS 50 ABS 50 	GH-S-A-0017
加长杆 150 mm Extension 150 mm 	GH-S-R-0003		

10.4 DEFA 26-35 配套刀柄 Shanks for Chamfering Tools DEFA 26-35

刀柄类型 Shank type	订货号 Order No.	刀柄类型 Shank type	订货号 Order No.
MT 3 MT 3 与 DIN 228 相似, 见表A 	GH-S-S-0043	Weldon 25 Weldon 25 	GH-S-S-0042
柄脚相关信息 请查阅第32页	Tang, see on page 32		
加长杆 50 mm Extension 50 mm 	GH-S-R-0020	ABS 40 ABS 40 	GH-S-A-0036
加长杆 100 mm Extension 100 mm 	GH-S-R-0021	ABS 50 ABS 50 	GH-S-A-0029
加长杆 150 mm Extension 150 mm 	GH-S-R-0005	尾塞 End Plug 	GH-S-S-0093 如刀与刀体需要能紧密嵌合 则必须使用 Required, if tool clamped into collet at tool body

10.5 DEFA 32-46 配套刀柄 Shanks for Chamfering Tools DEFA 32-46

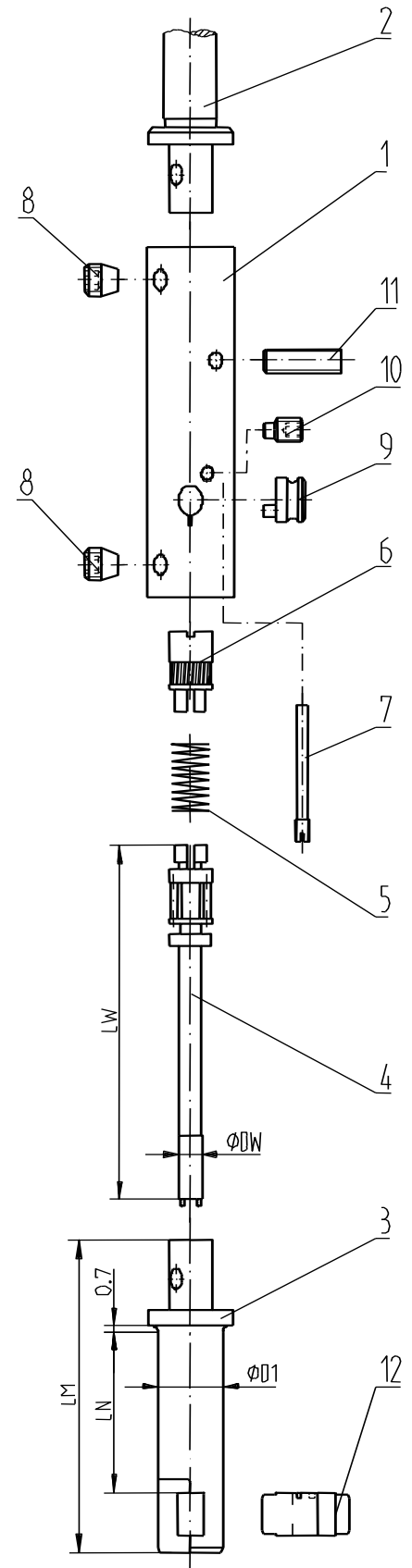
刀柄类型 Shank type	订货号 Order No.	刀柄类型 Shank type	订货号 Order No.
MT 3 与 DIN 228 相似, 见表A	MT 3 GH-S-S-0049	Weldon 25 Weldon 25	Weldon 25 GH-S-S-0048
		柄脚相关信息 请查阅第32页	
加长杆 50 mm	Extension 50 mm GH-S-R-0024	ABS 40 ABS 40	ABS 40 GH-S-A-0037
		柄脚相关信息 请查阅第32页	
加长杆 100 mm	Extension 100 mm GH-S-R-0025	ABS 50 ABS 50	ABS 50 GH-S-A-0038
		柄脚相关信息 请查阅第32页	
加长杆 150 mm	Extension 150 mm GH-S-R-0007	尾塞 End Plug	End Plug GH-S-S-0094
		如刀与刀体需要能紧密嵌合 则必须使用 Required, if tool clamped into collet at tool body	

11 DEFA系列刀具备件 / Spare parts for DEFA

11.1 DEFA 4-6 刀具备件

Spare parts for Chamfering Tools DEFA 4-6

Pos.	说明	Description	订货号	Order No.
1	刀身4-6 (标记:4-10)	Tool Body 4-6 (marked: 4-10)	GH-S-G-0001	
2	Ø10直柄 尾塞	Shank cyl. Ø10 End Plug	GH-S-S-0001 GH-S-S-0090	
3	刀片架	Blade Housing	请查阅下面表格 see table below	
4	刀片控制杆	Blade Control	请查阅下面表格 see table below	
5	扭簧	Torsion Spring	GH-S-T-0001	
6	大齿轮	Gear Wheel	GH-S-C-0001	
7	定位螺钉	Positioning Screw	GH-S-X-0001	
8	固定螺钉	Clamping Screw	GH-H-S-0201	
9	偏心凸轮	Eccentric Cam	GH-S-E-0001	
10	调节螺钉	Set Screw	GH-H-S-0322	
11	张力螺钉	Tension Screw	GH-H-S-0101	
12	刀片组	Blades	请查阅第12-13页 see pages 12-13	

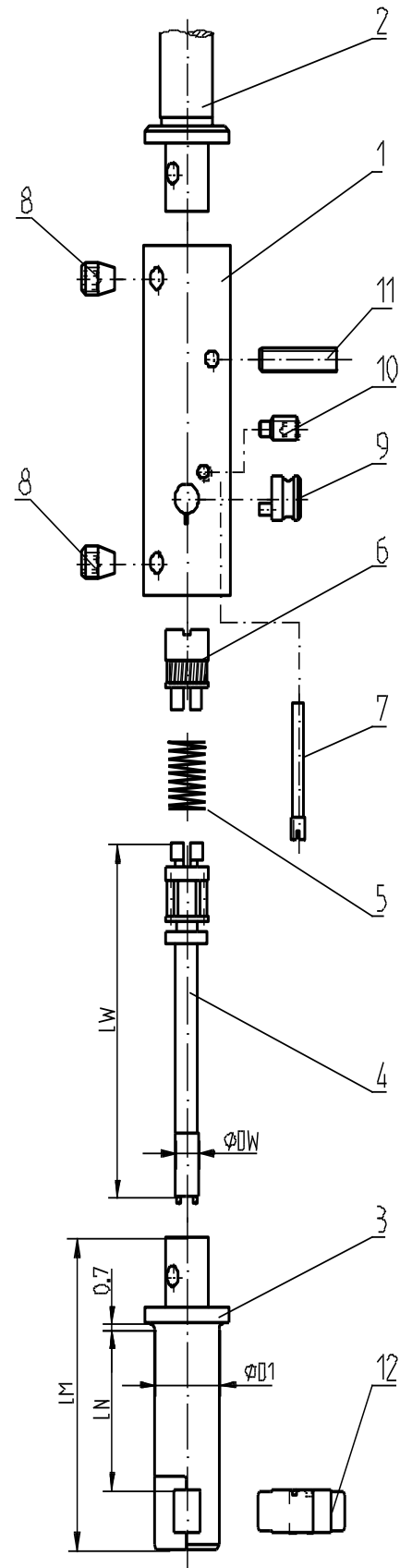


刀具说明 Tool description	Pos. 3 标准D1尺寸的刀片架 Blade Housing with standard D1				Pos. 4 刀片控制杆 Blade Control		
	订货号 Order No.				订货号 Order No.		
	DEFA	LN	D1	LM	GH-S-N-	DW	LW
4-4.8/15	15	3.8	30.5	0101	2	38.5	0002
4-4.8/30	30		45.5	0102	2	53.5	0003
4-4.8/60	60		75.5	0132	2	83.5	0027
4.2-5.2/15	15	4.1	30.5	0150	2	38.5	0002
4.2-5.2/30	30		45.5	0151	2	53.5	0003
4.2-5.2/60	60		75.5	0152	2	83.5	0027
4.6-5.8/15	15	4.5	30.5	0153	2	38.5	0002
4.6-5.8/30	30		45.5	0154	2	53.5	0003
4.6-5.8/60	60		75.5	0155	2	83.5	0027
5-6.4/15	15	4.8	30.5	0106	2	38.5	0002
5-6.4/30	30		45.5	0107	2	53.5	0003
5-6.4/60	60		75.5	0134	2	83.5	0027
5.5-6.8/15	15	5.3	30.5	0108	2	38.5	0002
5.5-6.8/30	30		45.5	0109	2	53.5	0003
5.5-6.8/60	60		75.5	0135	2	83.5	0027

11.2 DEFA 6-10 刀具备件

Spare parts for Chamfering Tools DEFA 6-10

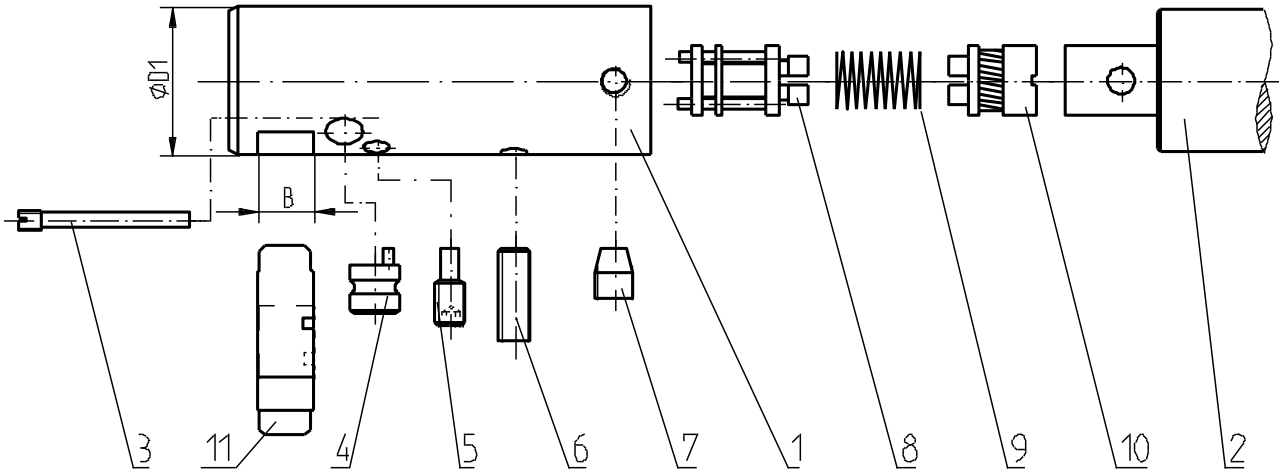
Pos.	说明	Description	订货号	Order No.
1	刀身6-10 (标记:4-10)	Tool Body 6-10 (marked: 4-10)	GH-S-G-0001	
2	刀柄	Shank	请查阅第20-21页 see pages 20-21	
3	刀片架	Blade Housing	请查阅下面表格 see table below	
4	刀片控制杆	Blade Control	请查阅下面表格 see table below	
5	扭簧	Torsion Spring	GH-S-T-0001	
6	大齿轮	Gear Wheel	GH-S-C-0001	
7	定位螺钉	Positioning Screw	GH-S-X-0001	
8	固定螺钉	Clamping Screw	GH-H-S-0201	
9	偏心凸轮	Eccentric Cam	GH-S-E-0001	
10	调节螺钉 (倒角扩展尺寸 ϕ)	Set Screw (extended chamfer ϕ)	GH-H-S-0322 GH-H-S-0301	
11	张力螺钉	Tension Screw	GH-H-S-0101	
12	刀片组	Blades	请查阅第14-15页 see pages 14-15	



刀具说明 Tool description	Pos. 3 标准D1尺寸的刀片架 Blade Housing with standard D1				Pos. 4 刀片控制杆 Blade Control		
	订货号 Order No.				订货号 Order No.		
	DEFA	LN	D1	LM	GH-S-N-	DW	LW
6 - 7/20	20	5.8	36.3	0010	3.6	43.4	0504
6 - 7/34	34		50.3	0011	3.6	57.4	0505
6 - 7/60	60		76.3	0036	3.6	83.4	0528
6.5 - 7.5/20	20	5.8	36.3	0110	3.6	43.4	0504
6.5 - 7.5/34	34		50.3	0111	3.6	57.4	0505
6.5 - 7.5/60	60		76.3	0136	3.6	83.4	0528
7 - 8/20	20	6.5	36.3	0012	3.6	43.4	0504
7 - 8/34	34		50.3	0013	3.6	57.4	0505
7 - 8/60	60		76.3	0037	3.6	83.4	0528
8 - 9.5/20	20	7.5	38.3	0116	3.6	43.4	0504
8 - 9.5/34	34		52.3	0117	3.6	57.4	0505
8 - 9.5/60	60		78.3	0138	3.6	83.4	0528
8.5 - 10/20	20	7.5	38.3	0083	3.6	43.4	0504
8.5 - 10/34	34		52.3	0084	3.6	57.4	0505
8.5 - 10/60	60		78.3	0085	3.6	83.4	0528

11.4 DEFA 21-46 刀具备件

Spare parts for Chamfering Tools DEFA 21-46



刀具说明 Tool description	Pos. 1 标准D1尺寸的刀身 Tool Body with standard D1			Pos. 2 刀柄 Shanks	Pos. 3 定位螺钉 Positioning Screw	Pos. 4 偏心凸轮 Eccentric Cam
	订货号 Order No.			请查阅 第24-26页	订货号 Order No.	订货号 Order No.
	D1	B	GH-S-G-		GH-S-X-	GH-S-E-
DEFA	D1	B	GH-S-G-	请查阅 第24-26页	GH-S-X-	GH-S-E-
21 - 25	20.5	9	0023		0006	0003
23 - 28	23	9	0024		0006	0004
26 - 32	26	10	0025		0007	0005
29 - 35	29	10	0026		0007	0006
32 - 38	32	10	0027		0007	0007
36 - 42	36	10	0028		0007	0008
40 - 46	40	10	0117	see pages 24-26	0007	0008

刀具说明 Tool description	Pos.5 调节螺钉 Set Screw	Pos.6 张力螺钉 Tension Screw	Pos.7 固定螺钉 Clamping Screw	Pos. 8 刀片控制杆 Blade Control	Pos. 9 扭簧 Torsion Spring	Pos. 10 大齿轮 Gear Wheel
	订货号 Order No.	订货号 Order No.	订货号 Order No.	订货号 Order No.	订货号 Order No.	订货号 Order No.
	GH-H-S-	GH-H-S-	GH-H-S-	GH-S-W-	GH-S-T-	GH-S-C-
DEFA	GH-H-S-	GH-H-S-	GH-H-S-	GH-S-W-	GH-S-T-	GH-S-C-
21 - 25	0325*	0102	0201	0014	0006	0008
23 - 28	0325	0103	0201	0014	0006	0008
26 - 32	0327	0105	0202	0015	0007	0009
29 - 35	0327	0106	0202	0015	0007	0009
32 - 38	0327	0107	0203	0015	0007	0009
36 - 42	0327	0107	0203	0015	0007	0009
40 - 46	0327	0107	0203	0015	0007	0009

Pos. 11 关于刀片组, 请参阅第18-19页

* 关于倒角扩展尺寸范围,
请使用GH-H-S-0302调整螺钉

Pos. 11 Blades, see pages 18-19

* for the extended chamfer range please use set screw
GH-H-S-0302

12 DEFA系列刀具附件 / Accessories for DEFA

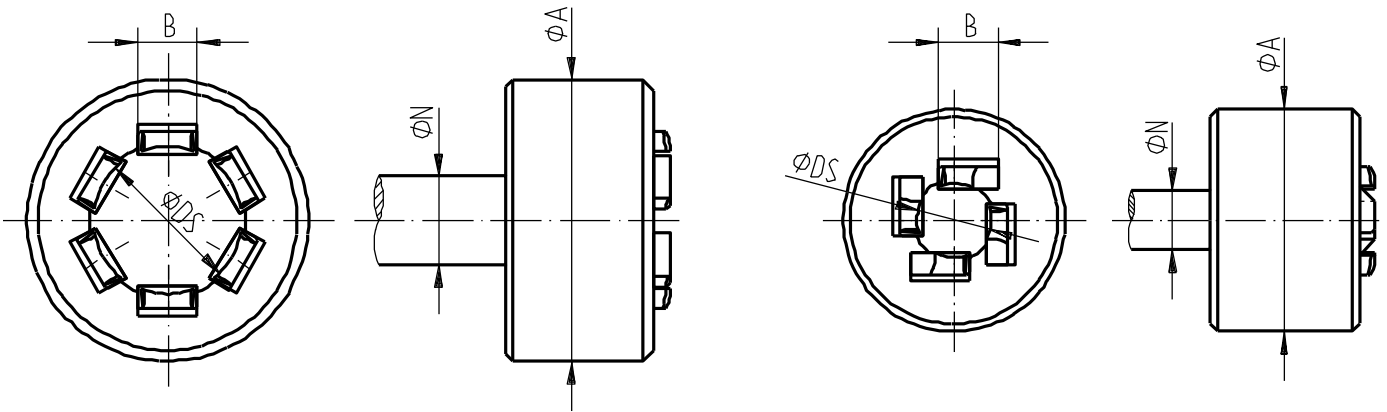
12.1 DEFA系列刀具刀片组再研磨装置 Regrinding devices for DEFA Blades

在排屑槽上能够同时固定多把刀片来进行再磨。并且通过使用内磨的方式可对刀片进行再磨操作。

注意：将重新研磨的DEFA刀片组先分开，然后将它们插入刀具装置中去！

Several DEFA blades can be clamped and reground at the chip groove at the same time. For the regrinding of the blades the internal grinding method is used.

Note: Separate all regrinded DEFA blades and insert them in sets into the tool!

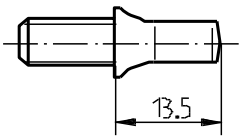
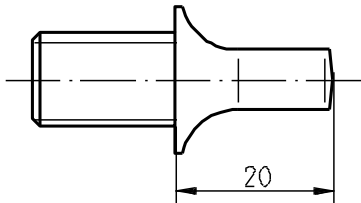
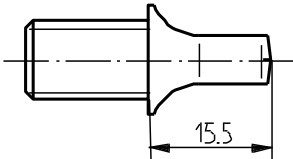
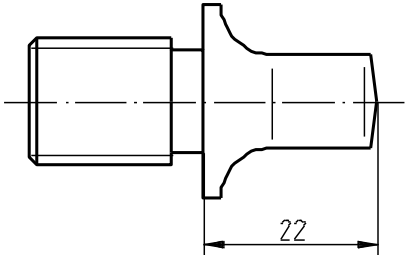


刀具说明 Tool description		正反向切削刃的 DEFA刀片组 DEFA blades forward and backward cutting			适用 HSS-E刀片组 砂轮 Grinding wheel for HSS-E blades	适用硬质 合金刀片组 砂轮 Grinding wheel for carbide blades	反向切削刃的 DEFA刀片组 DEFA blades backward cutting only		
		再研磨装置 Regrinding devices					再研磨装置 Regrinding devices		
DEFA	B	GH-S-V-	ϕDs	ϕN ϕA	GH-S-V-	GH-S-V-	GH-S-V-	ϕDs	ϕN ϕA
6 - 7 bis / to 7 - 8	4	0412	10	8 28	1030	1027	0660	10	8 24
8 - 9.5 bis / to 10 - 13	6	0406	16	12 28			0661	10	8 24
12 - 14 bis / to 19 - 24	8	0415	20	12 38			0664	10	8 30
21 - 25 23 - 28	9	0416	26	12 48			0665	10	8 30
26 - 32 bis / to 40 - 46	10	0438	26	12 48			0667	10	8 33

12.2 自动刀柄配套的压紧螺母(DIN 6327) Clamping Nut (DIN 6327) for Automotive Shank

梯形thread	for trapezoid thread	订货号	Order No.
	Tr 16 x 1.5		GH-H-M-0201
	Tr 20 x 2		GH-H-M-0202
	Tr 25 x 2		GH-H-M-0204
	Tr 28 x 2		GH-H-M-0203

12.3 MT刀柄配套柄脚 / Tang for MT Shanks

配套柄脚 对应于	Tang for	订货号 Order No.	配套柄脚 对应于	Tang for	订货号 Order No.
MT 1	MT 1	GH-S-L-0001	MT 3	MT 3	GH-S-L-0003
					
MT 2	MT 2	GH-S-L-0002	MT 4	MT 4	GH-S-L-0004
					

13 附加信息 / Additional Information

13.1 倒角扩展尺寸 / Extended Chamfer Range

对于DEFA 8-9.5以及DEFA 21-25两种刀具，如果要获得表中列出的所有倒角尺寸，必须使用两种不同的调节螺钉（请参阅第7-11页的“倒角尺寸”列中数据）

刀具在交付时将以较长的调节螺钉作为标准件（小的倒角尺寸）。假如刀具要加工更大的倒角，如在倒角扩展尺寸范围，必须在刀具的订货号后面添加-**EF**（在列表中以**标记的数值）。这样，刀具在交付时将提供较短的调节螺钉。

实例：

加工孔直径d：9毫米；倒角直径D：10毫米；加工孔深度：25毫米；刀具配件：直柄

⇒ 刀具订货号：GH-S-D-1745-**EF**

假如在上面的实例中倒角扩展尺寸使用较长的调节螺钉来设置，会在刀具刀身上造成轻微突出，但是不会对刀具的功能产生任何影响。操作员本人同样也能更换调节螺钉。

特别提醒：

建议在每次操作过后将调节螺钉密封起来。

Two different set screws must be used for the tool types DEFA 8-9.5 to DEFA 21-25 to cover the whole chamfer range (see column "Chamfer range" on pages 7-11).

The tool is delivered with the longer set screw as a standard (small chamfer range). If the tool is used with in the larger chamfer range, i.e. the Extended Chamfer Range, **-EF** has to be added to the tool order number (marked with ** in the table). In this case the tool will be delivered with the shorter set screw.

Example:

Bore dia. d: 9mm; Chamfer dia. D: 10mm; Bore depth: 25mm; Tool adaption: cylindrical shank

⇒ Tool order number: GH-S-D-1745-**EF**

If the upper, i.e. the Extended Chamfer Range is set with the longer standard set screw, the set screw protrudes slightly from the tool body of the tool. This does however not influence the actual tool function. The set screw can also be changed by the operator himself.

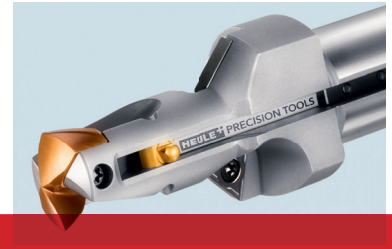
Important:

We recommend to seal the set screw again after every manipulation.

14 如何解决操作故障 / Operational faults, how to rectify

故障现象	产生原因	解决方法
倒角尺寸 ϕ 太小	<ul style="list-style-type: none"> • D2尺寸ϕ设定太小 	<ul style="list-style-type: none"> • 逆时针旋转调节螺钉 • 请查阅第4页有关设定倒角尺寸的信息
倒角尺寸 ϕ 太大	<ul style="list-style-type: none"> • D2尺寸ϕ设定太大 	<ul style="list-style-type: none"> • 顺时针旋转调节螺钉 • 请查阅第4页有关设定倒角尺寸的信息
倒角尺寸不恒定	<ul style="list-style-type: none"> • 刀片力太小 • 刀具与加工孔中心没有对准 	<ul style="list-style-type: none"> • 顺时针旋转张力螺钉 • 请查阅第4页有关设定刀片力的信息 • 将刀具对准加工孔中心
倒角表面不平整	<ul style="list-style-type: none"> • 进给速度太高 • 刀片组磨损严重 	<ul style="list-style-type: none"> • 降低进给速度 • 重新研磨刀片组或者更换新的刀片组
出现二次毛刺	<ul style="list-style-type: none"> • 进给速度太高 • 刀片力太大 • 刀具与加工孔中心没有对准 • 刀片组磨损严重 • 切削速度太小 	<ul style="list-style-type: none"> • 降低进给速度 • 逆时针旋转张力螺钉 • 请查阅第4页有关设定刀片力的信息 • 将刀具对准加工孔中心 • 重新研磨刀片组或者更换新的刀片组 • 增加切削速度

Problem	Reasons	Solution
Chamfer ϕ too small	<ul style="list-style-type: none"> • D2 ϕ set too small 	<ul style="list-style-type: none"> • Turn set screw counter-clockwise • see setting the chamfer size on page 4
Chamfer ϕ too large	<ul style="list-style-type: none"> • D2 ϕ set too large 	<ul style="list-style-type: none"> • Turn set screw clockwise • see setting the chamfer size on page 4
Chamfer not constant	<ul style="list-style-type: none"> • Blade force too small • Tool not concentric to bore 	<ul style="list-style-type: none"> • Turn tension screw clockwise • see setting the blade force on page 4 • Center tool to bore
Bad chamfer surface	<ul style="list-style-type: none"> • Feed rate too high • Blades worn out 	<ul style="list-style-type: none"> • Reduce feed rate • Regrind, TiN-coating or new set of blades
Secondary burr	<ul style="list-style-type: none"> • Feed rate too high • Blade force too high • Tool not concentric to bore • Blades worn out • Cutting speed too slow 	<ul style="list-style-type: none"> • Reduce feed rate • Turn tension screw counter-clockwise • see setting the blade force on page 4 • Center tool to bore • Regrind, TiN-coating or new set of blades • Increase cutting speed

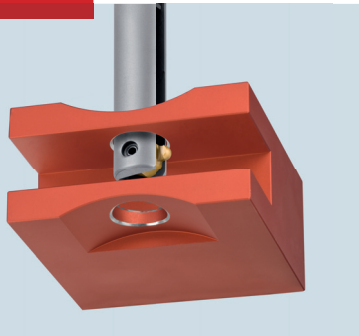


单次工序

好优利公司的刀具在单次的操作工序内，即可去除正反两面的毛刺

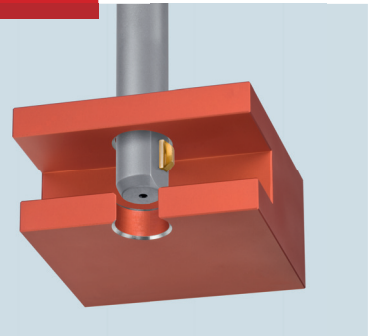
去毛刺

- COFA
- SNAP



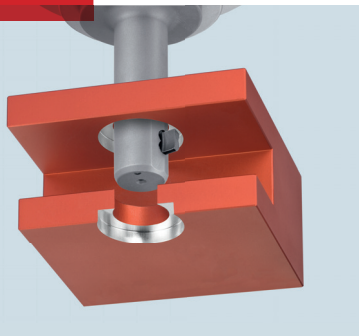
倒角

- SNAP
- GH-S
- DEFA



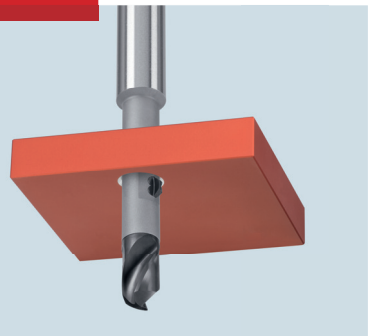
沉毛孔

- SOLO
- GH-Z/E
- GH-K



钻孔

- VEX-P
- VEX-S



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