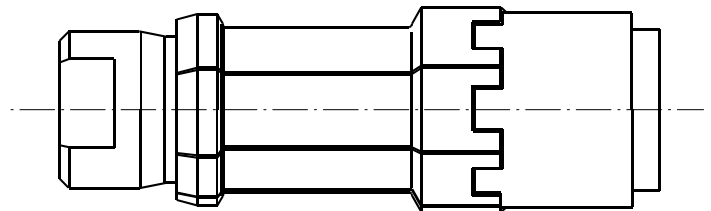


# Product Information

## HSK-Clamping-Units



95.600.019.D.E / 2006-03

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symbol explanation:



keep attention -  
dangerous

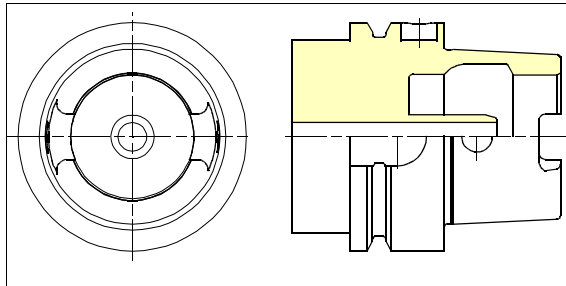


keep attention - malfunction

# 1 Product Description

## 1.1 Standard

### hollow shaft taper ISO / CD 12164-1; form **A**



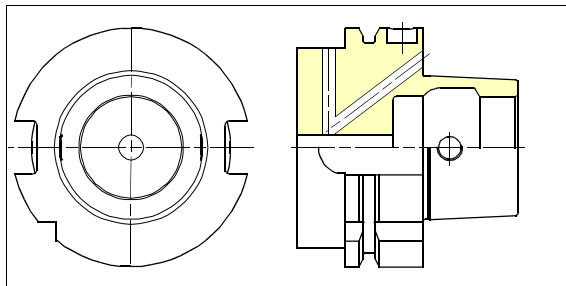
features:

- central, axial coolant supply with KSM-tube
- keyways at the taper end

application:

- machining centers, milling machines

### hollow shaft taper DIN 69893-2; form **B**



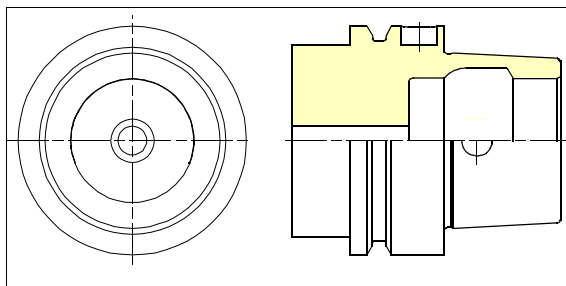
features:

- decentralized coolant supply over the flange or central coolant supply through coolant tube
- enlarged flange
- keyways at the flange

application:

- machining centers, heavy milling machines

### hollow shaft taper DIN 69893-5; form **E**



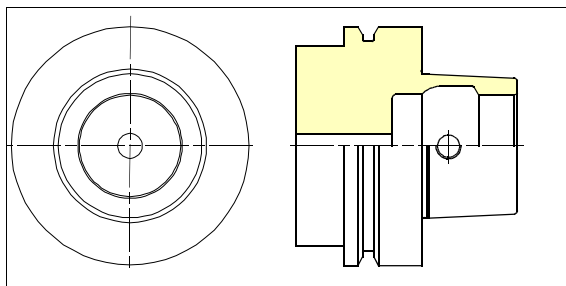
features:

- rotational symmetry without keyways

application:

- HSC-spindles

### hollow shaft taper DIN 69893-6; form **F**



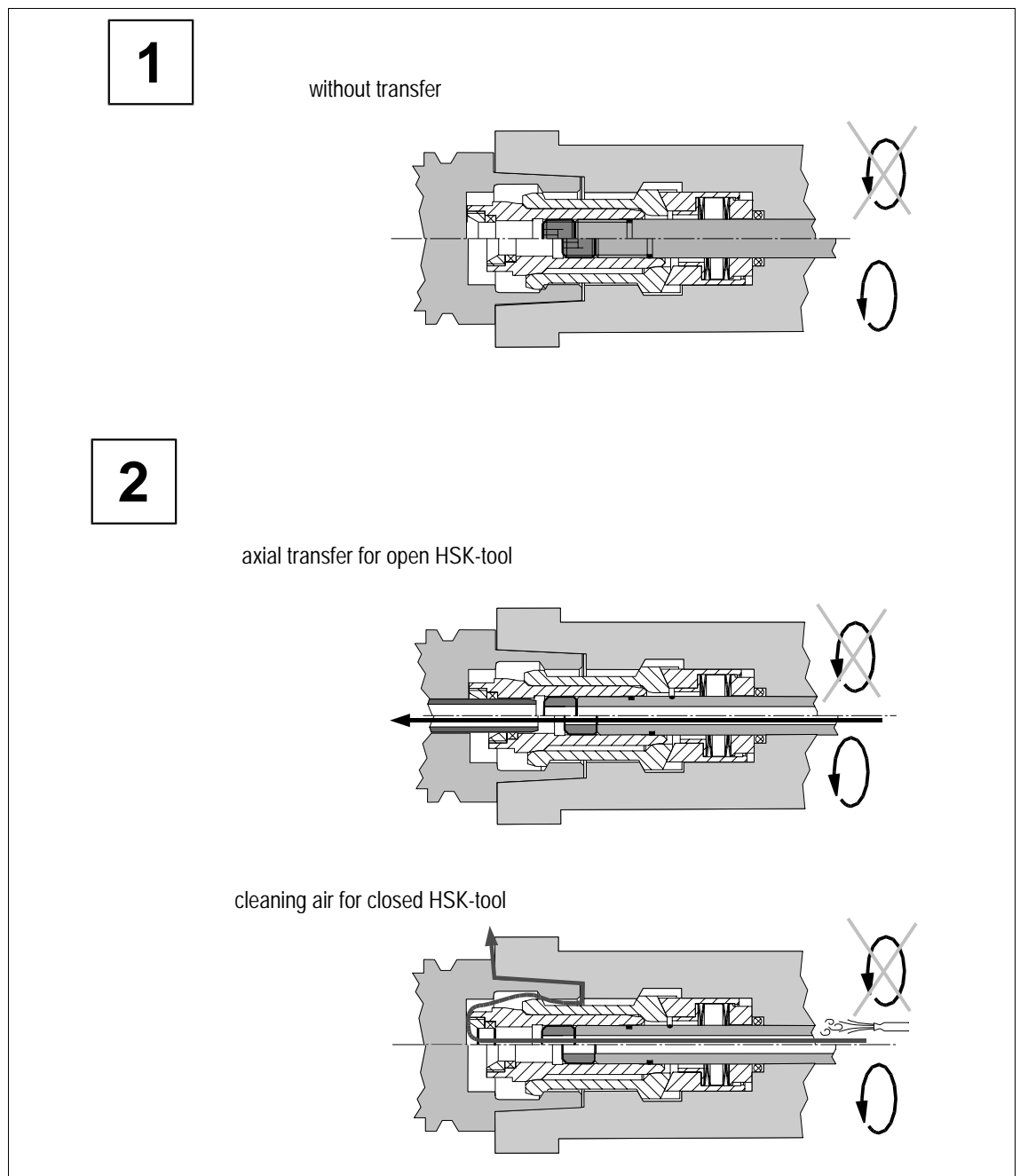
features:

- enlarged flange

application:

- HSC-spindles e. g. machining of wood and plastic

## 1.2 Medium transfer



### 1.3 Ceiling speed

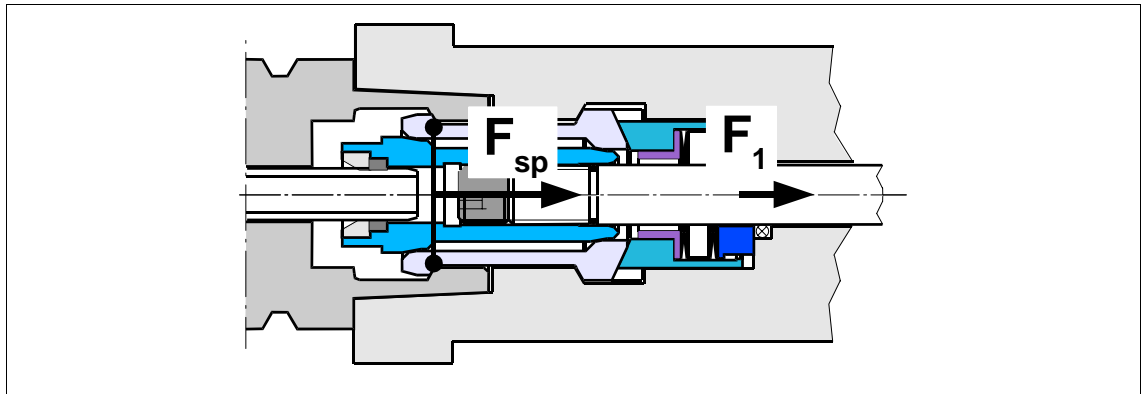
		nominal size									
		25	32	40	50	63	80	100	125		160
tool standard	<b>A</b>	-	57294	45989	37336	27201	20897	15466	12561	8596	min <sup>-1</sup>
	<b>B</b>	-	-	46787	33115	25535	19223	14698	11184	8560	
	<b>E</b>	80124	57279	45728	39367	32691	-	-	-	-	
	<b>F</b>	-	-	-	39170	31262	22967	-	-	-	

### 1.4 Transferable torque

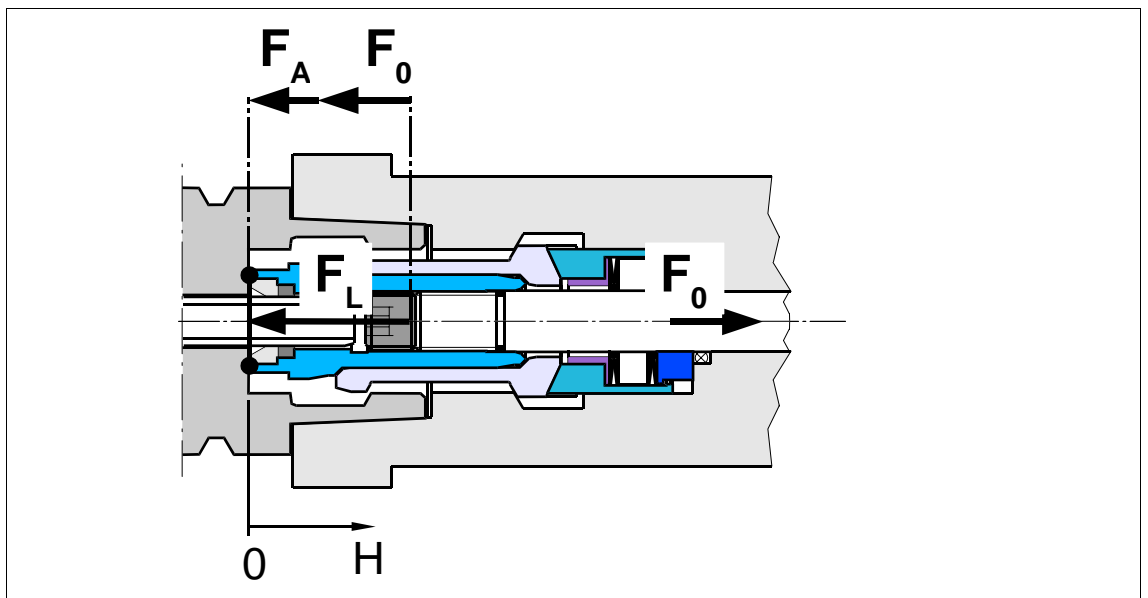
		nominal size										
		25	32	40	50	63	80	100	125			160
tool standard	<b>A</b>	-	14	24	48	97	190	365	710	1436	Nm	transferable torque without keyways
	<b>B</b>	-	-	16	28	55	113	217	422	835		
	<b>E</b>	7	15	27	56	110	-	-	-	-		
	<b>F</b>	-	-	-	31	64	128	-	-	-		

## 1.5 Forces at the HSK-clamping unit

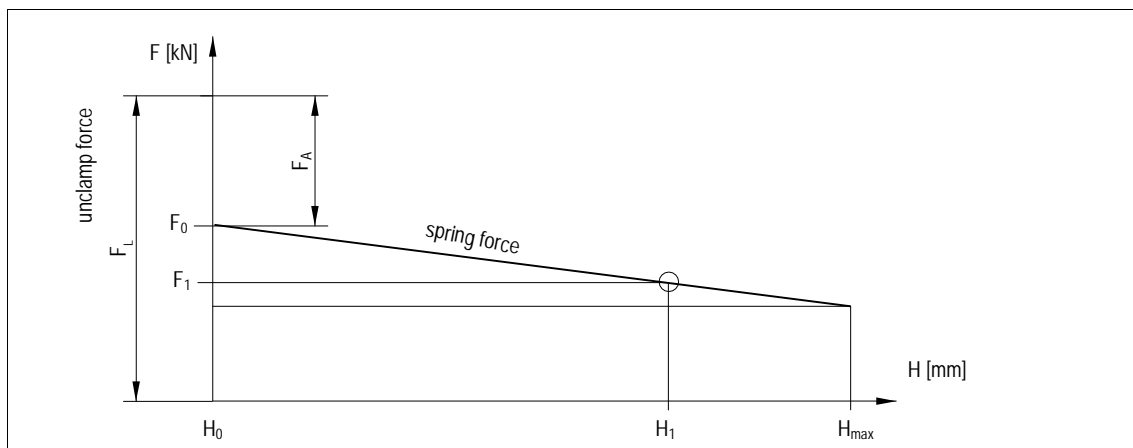
### 1.5.1 Clamped position



### 1.5.2 Unclamped position



**1.5.3 Diagram**

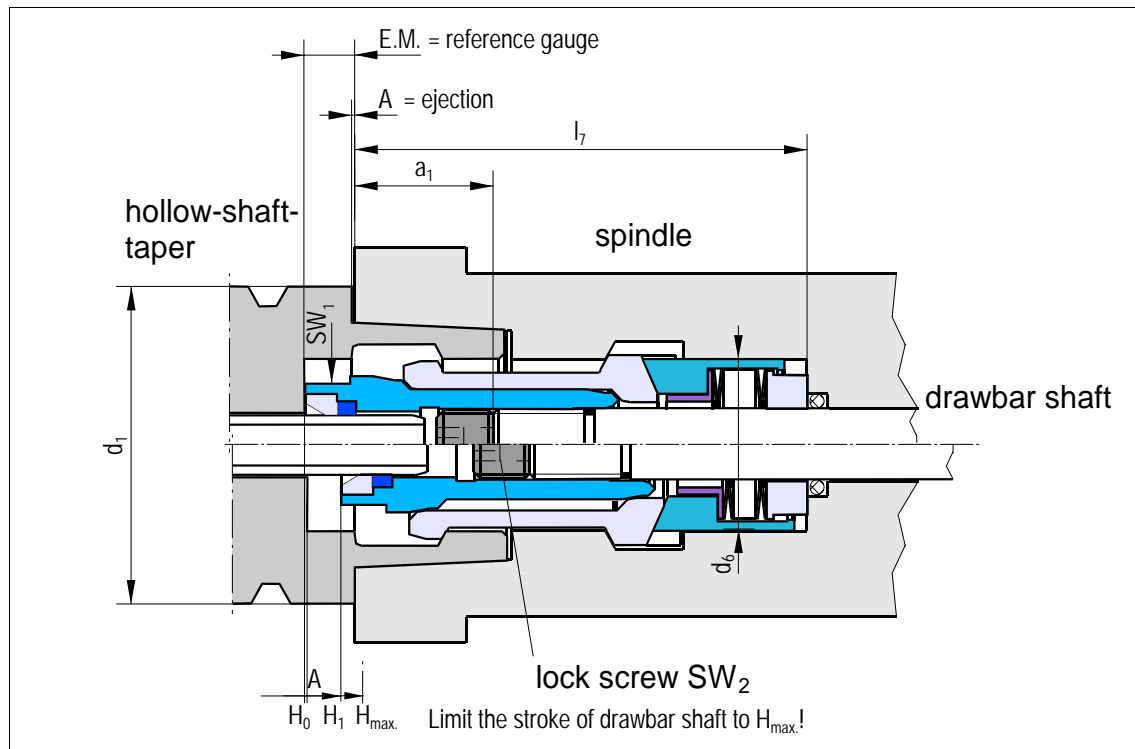


**1.5.4 Table**

		nominal size									kN	
		25	32	40	50	63	80	100	125	160		
tool standard	<b>A</b>	$F_{sp}$		5	6,8	11	18	28	45	70	115	
		$F_1$ max.		1,75	2,4	3,85	6	9,2	15	24,5	40	
		$F_A$		0,9	1,3	2,2	3,2	5,2	7	10,3	14,4	
	<b>B</b>	$F_{sp}$			5	6,8	11	18	28	45	70	
		$F_1$ max.			1,75	2,4	3,85	6,3	9,8	15,8	24,5	
		$F_A$			1	1,7	2,9	4,6	6,9	10	14,4	
	<b>E</b>	$F_{sp}$	2,8	5	6,8	11	18					
		$F_1$ max.	0,98	1,75	2,4	3,85	6,3					
		$F_A$	0,9	1,1	1,7	2,9	4,7					
	<b>F</b>	$F_{sp}$				6,8	11	18				
		$F_1$ max.				2,4	3,85	6,3				
		$F_A$				1,9	3,4	5,6				

## 1.6 HSK-clamping unit form A

### 1.6.1 Dimension

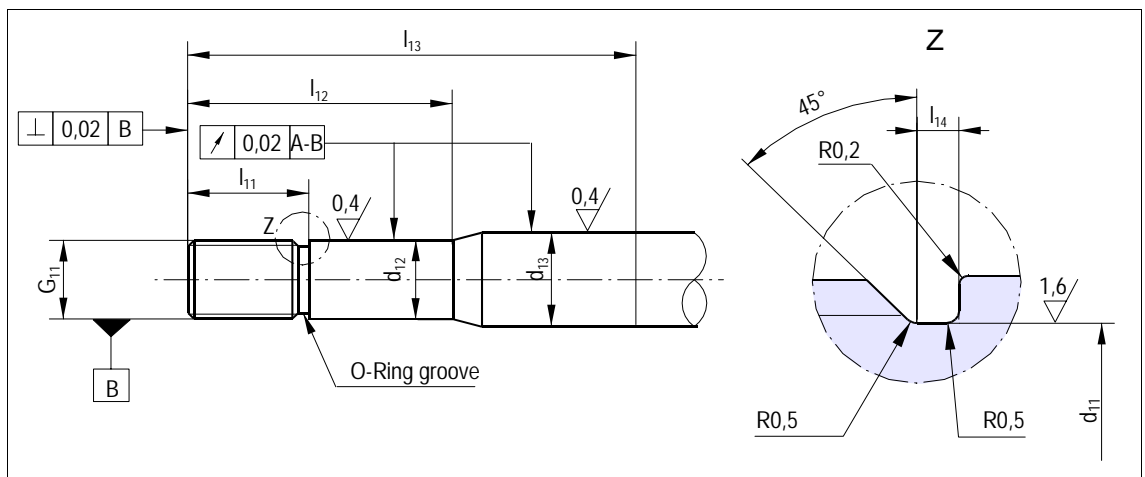


		$d_1$	32	40	50	63	80	100	125	160
[mm]	<b>A</b>		0,5	0,5	0,5	0,5	0,5	0,5	0,5	1
	<b>E.M.</b>	$\pm 0,1$	8,5	8,5	10,5	10,5	13	13	16,5	17
	<b>H<sub>max.</sub></b>		7,5	8	9	10	11	12,5	15,8	24,5
	<b>H<sub>1</sub></b>		5,1	5,6	6,4	7,4	8,3	9,15	10,8	17,5
	<b>SW<sub>1</sub></b>		12	15	18	22	27	36	46	55
	<b>SW<sub>2</sub></b>		3	4	4	5	6	6	14	16
	<b>a<sub>1</sub></b>		19,5	27	26,5	31,5	31,5	34,5	40,5	56

**1.6.2 Order number HSK form A**

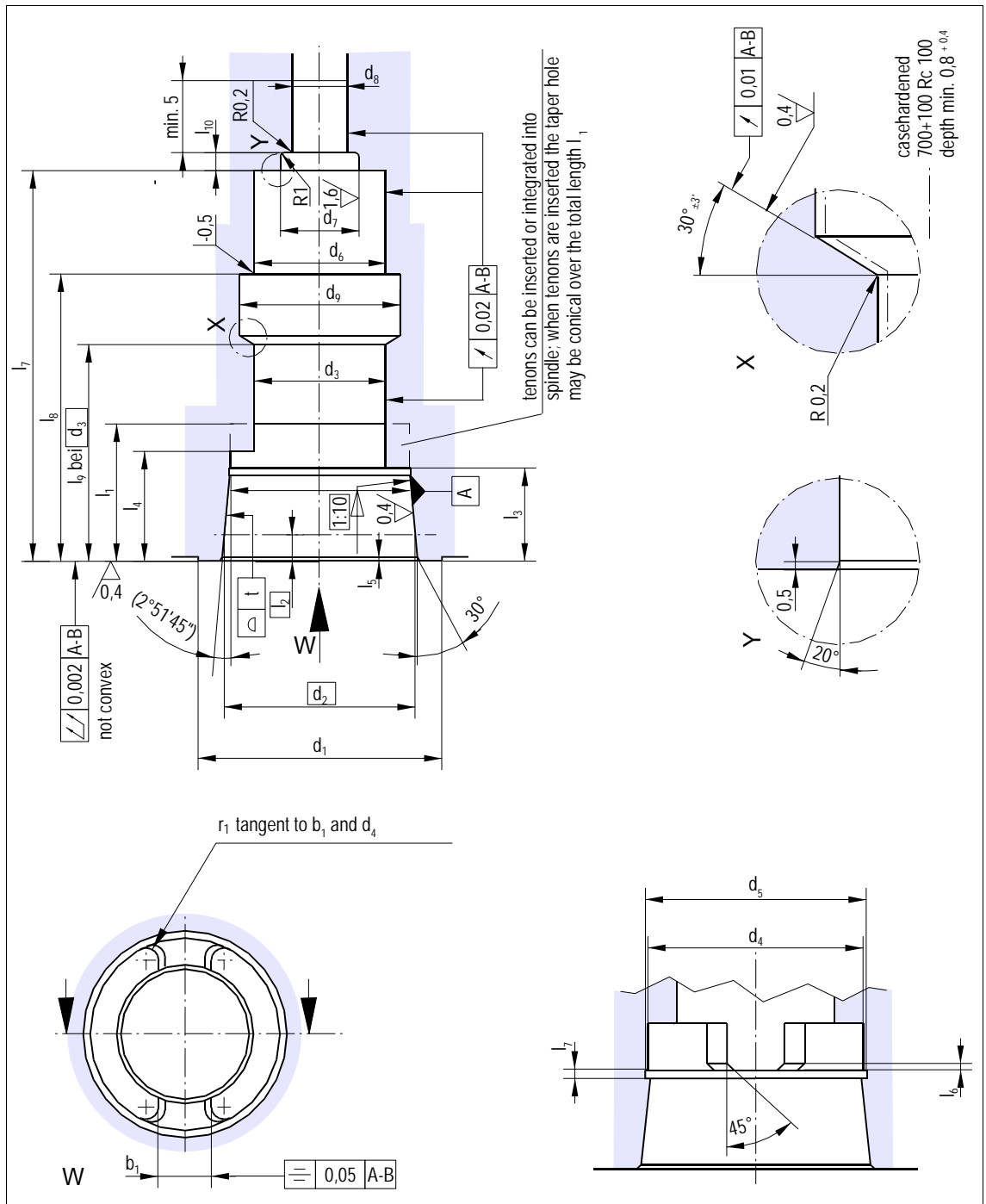
d <sub>1</sub>	clamping unit for axial medium transfer	clamping unit without medium transfer; air is possible; without picture	mounting tool
32	95.600.008.3.6		95.601.111.3.1
40	95.600.007.3.6	95.600.016.3.6	95.601.112.3.1
50	95.600.004.3.6	95.600.083.3.2	95.601.113.3.1
63	95.600.001.3.6	95.600.015.3.6	95.601.114.3.1
80	95.600.002.3.6		95.601.115.2.1
100	95.600.003.3.6		95.601.116.2.1
125	95.600.009.3.6		95.601.117.2.1
160	95.600.010.3.6		95.601.118.2.1

**1.6.3 Draw bar HSK form A**



	d <sub>1</sub>		32	40	50	63	80	100	125	160
[mm]	d <sub>11</sub>	-0,1	4,6	6	7,9	11,9	13,9	13,9	21,2	27,1
	d <sub>12</sub>		6,2 <sub>g7</sub>	8,2 <sub>g7</sub>	10,2 <sub>g7</sub>	14,2 <sub>g7</sub>	16,2 <sub>g7</sub>	16,2 <sub>h8</sub>	24,2 <sub>h8</sub>	30,4 <sub>h8</sub>
	d <sub>13</sub>		-	-	-	-	-	18 <sub>g7</sub>	25 <sub>g7</sub>	32 <sub>g7</sub>
	G <sub>11</sub>	-4g	M6	M8	M10	M14x1,5	M16x1,5	M16x1,5	M24x1,5	M30x1,5
	l <sub>11</sub>		9	14	16	18,5	21,5	32	38	52
	l <sub>12</sub>		50	60	67	76	80	50	60	75
	l <sub>13</sub>		-	-	-	-	-	101	115	145
	l <sub>14</sub>		1 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,9 <sup>+0,2</sup>	1,9 <sup>+0,2</sup>

**1.6.4 Spindle inside contour HSK form A**



		<b>d<sub>1</sub></b>		<b>32</b>	<b>40</b>	<b>50</b>	<b>63</b>	<b>80</b>	<b>100</b>	<b>125</b>	<b>160</b>
ISO / CD 12164-2 *	[mm]	<b>b<sub>1</sub></b>	±0,05	6,8	7,8	10,3	12,3	15,8	19,78	24,78	29,78
		<b>d<sub>2</sub></b>		23,998	29,998	37,998	47,998	59,997	74,997	94,996	119,996
		<b>d<sub>3</sub></b>	H10	17	21	26	34	42	53	67	85
		<b>d<sub>4</sub></b>	+0,1	23,28	29,06	36,85	46,53	58,1	72,6	92,05	116,1
		<b>d<sub>5</sub></b>	+0,2	23,8	29,6	37,5	47,2	58,8	73,4	93,0	118,0
		<b>l<sub>1</sub></b>	+0,2	16,5	20,5	25,5	33	41	51	64	81
		<b>l<sub>2</sub></b>		3,2	4	5	6,3	8	10	12,5	16
		<b>l<sub>3</sub></b>	+0,2	11,4	14,4	17,9	22,4	28,4	35,4	44,4	57,4
		<b>l<sub>4</sub></b>	+0,2	13,4	16,9	20,9	26,4	32,4	40,4	51,4	64,4
		<b>l<sub>5</sub></b>		0,8	0,8	1	1	1,5	1,5	2	2
		<b>l<sub>6</sub></b>	+0,1	1	1	1,5	1,5	2	2	2,5	2,5
		<b>l<sub>7</sub></b>	±0,1	2,0	2,0	2,0	2,5	3,0	3,0	4,0	4,0
		<b>r<sub>1</sub></b>	-0,05	1,5	2	2,5	3	4	5	6	8
		<b>t **</b>		0,0015	0,0015	0,0020	0,0020	0,0025	0,0030	0,0035	0,0035
clamping unit	[mm]	<b>d<sub>6</sub></b>	H6	17	21	26	34	42	53	67	85
		<b>d<sub>7</sub></b>	+0,1	10,3	13,2	15,2	20,4	22,4	24,2	32	37,2
		<b>d<sub>8</sub></b>	+0,1	6,6	8,6	10,6	14,6	16,6	18,4	25,4	32,4
		<b>d<sub>9</sub></b>	+0,2	22,5	26,5	33	41,6	50	63	79	104
		<b>l<sub>7</sub></b>	-0,2	62,5	78	84	94	98	124	149	188
		<b>l<sub>8</sub></b>	±0,1	43	58	61	69	72	93	112,5	148
		<b>l<sub>9</sub></b>	js8 bei d <sub>3</sub>	30	44	45	52	56	70	86	113
		<b>l<sub>10</sub></b>	+0,2	3	3,6	3,6	4,2	4,2	4,2	4,7	4

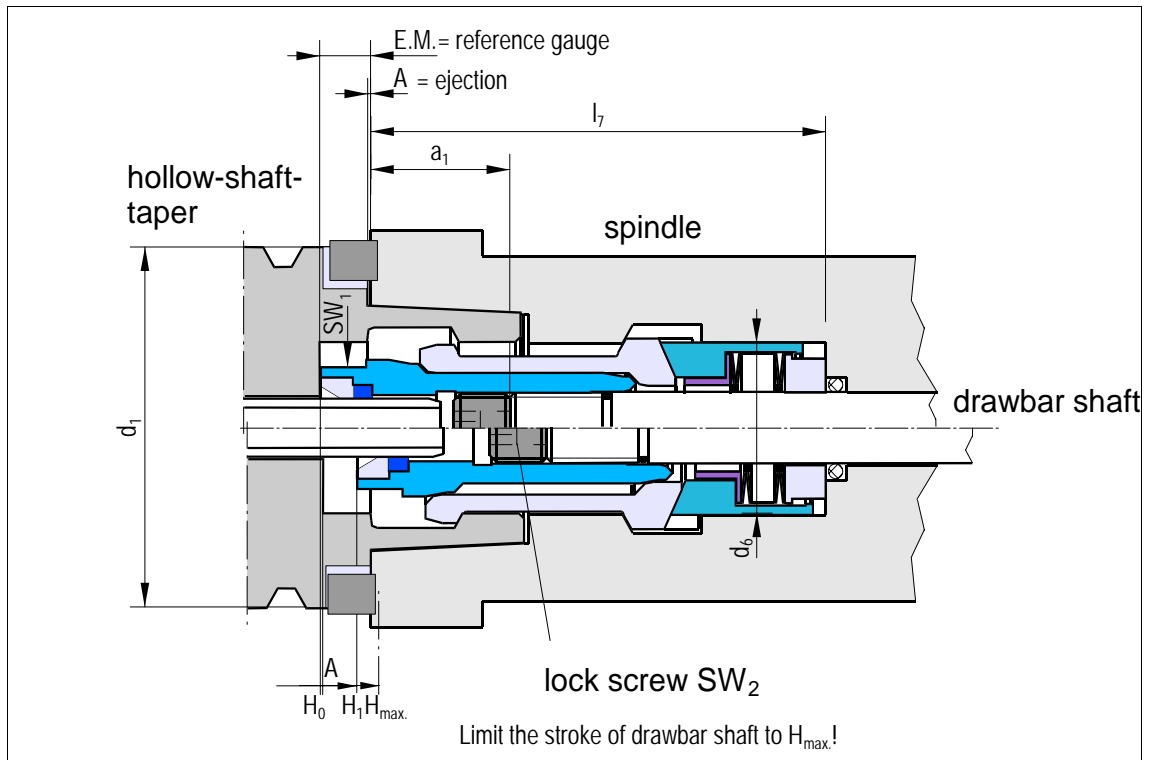
The dimensions in the clamping unit section are for spindle speeds up to 10000 rpm. For higher spindle speeds we recommend to reduce the tolerance of dimension d<sub>8</sub> and the runout. Please let us know if you need additional information.

\* see update standard

\*\* see ISO 1101 and ISO 3040

## 1.7 HSK-clamping unit form B

### 1.7.1 Dimension

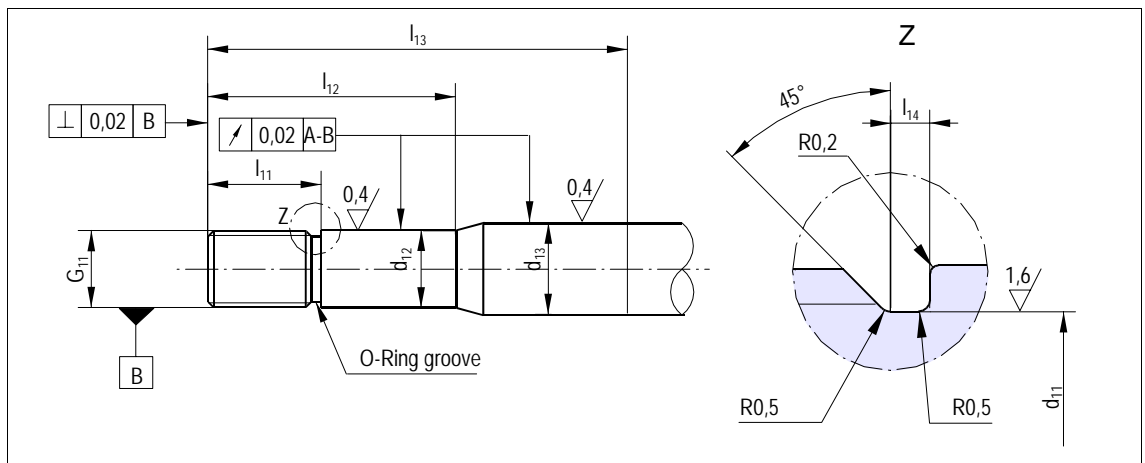


		$d_1$	40	50	63	80	100	125	160
[mm]	<b>A</b>		0,5	0,5	0,5	0,5	0,5	0,5	0,5
	<b>E.M.</b>	$\pm 0,1$	8,5	8,5	10,5	10,5	13	13	16,5
	<b>H<sub>max.</sub></b>		7,5	8	9	10	11	12,5	15,8
	<b>H<sub>1</sub></b>		5,1	5,6	6,4	7,4	8,3	9,15	10,8
	<b>SW<sub>1</sub></b>		12	15	18	22	27	36	46
	<b>SW<sub>2</sub></b>		3	4	4	5	6	6	14
	<b>a<sub>1</sub></b>		19,5	27	26,5	31,5	31,5	34,5	40,5

**1.7.2 Order number HSK form B**

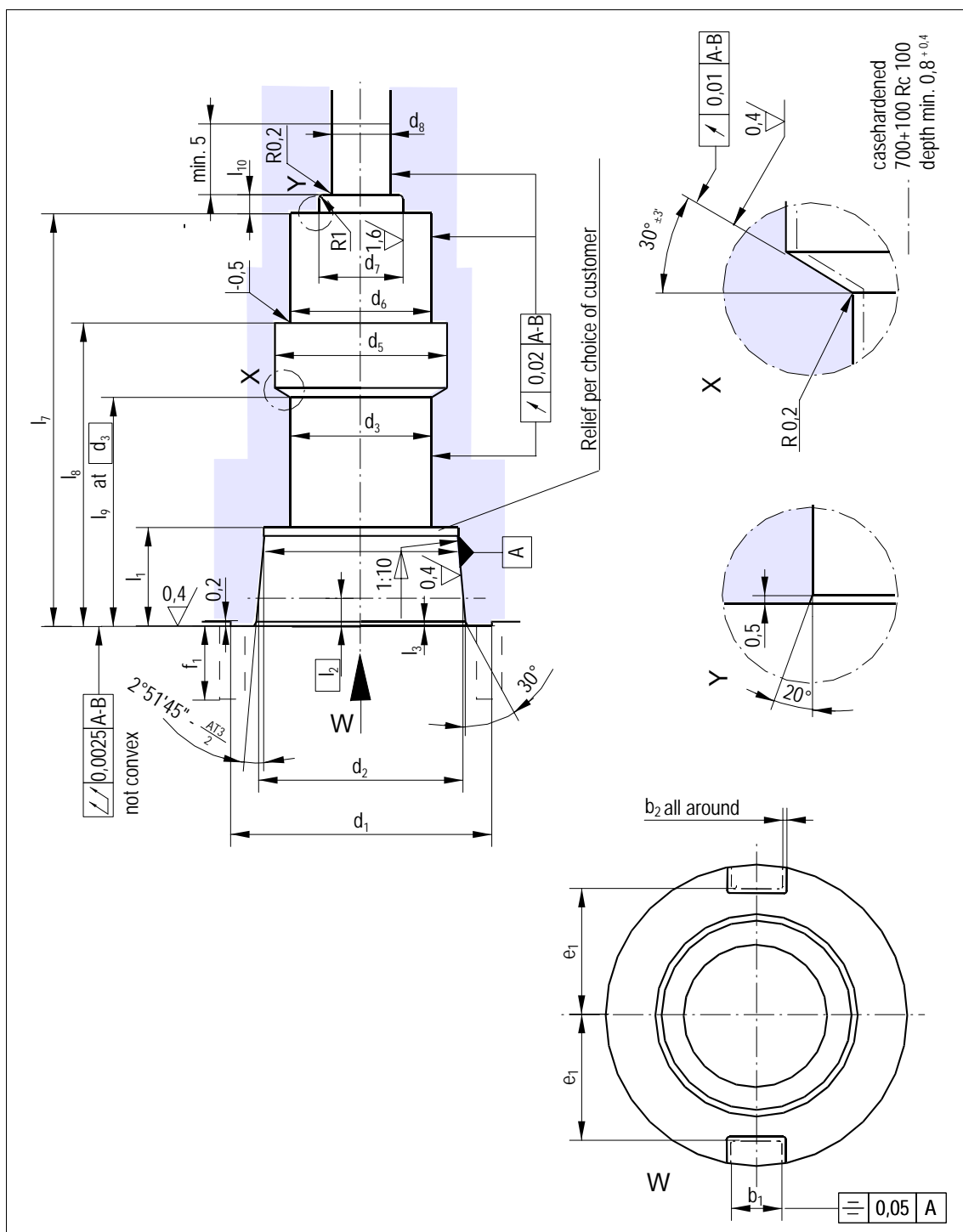
d <sub>1</sub>	clamping unit for axial medium transfer	clamping unit without medium transfer; air is possible; without picture	mounting tool
40	95.600.008.3.6		95.601.111.3.1
50	95.600.007.3.6	95.600.016.3.6	95.601.112.3.1
63	95.600.004.3.6	95.600.083.3.2	95.601.113.3.1
80	95.600.001.3.6	95.600.015.3.6	95.601.114.3.1
100	95.600.002.3.6		95.601.115.2.1
125	95.600.003.3.6		95.601.116.2.1
160	95.600.009.3.6		95.601.117.2.1

**1.7.3 Draw bar HSK form B**



d <sub>1</sub>		40	50	63	80	100	125	160
[mm]	d <sub>11</sub>	-0,1	4,6	6	7,9	11,9	13,9	21,2
	d <sub>12</sub>		6,2 <sub>g7</sub>	8,2 <sub>g7</sub>	10,2 <sub>g7</sub>	14,2 <sub>g7</sub>	16,2 <sub>g7</sub>	24,2 <sub>h8</sub>
	d <sub>13</sub>		-	-	-	-	18 <sub>g7</sub>	25 <sub>g7</sub>
	G <sub>11</sub>	-4g	M6	M8	M10	M14x1,5	M16x1,5	M24x1,5
	l <sub>11</sub>		9	14	16	18,5	21,5	38
	l <sub>12</sub>		50	60	67	76	80	60
	l <sub>13</sub>		-	-	-	-	-	101
	l <sub>14</sub>		1 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>

1.7.4 Spindle inside contour HSK form B



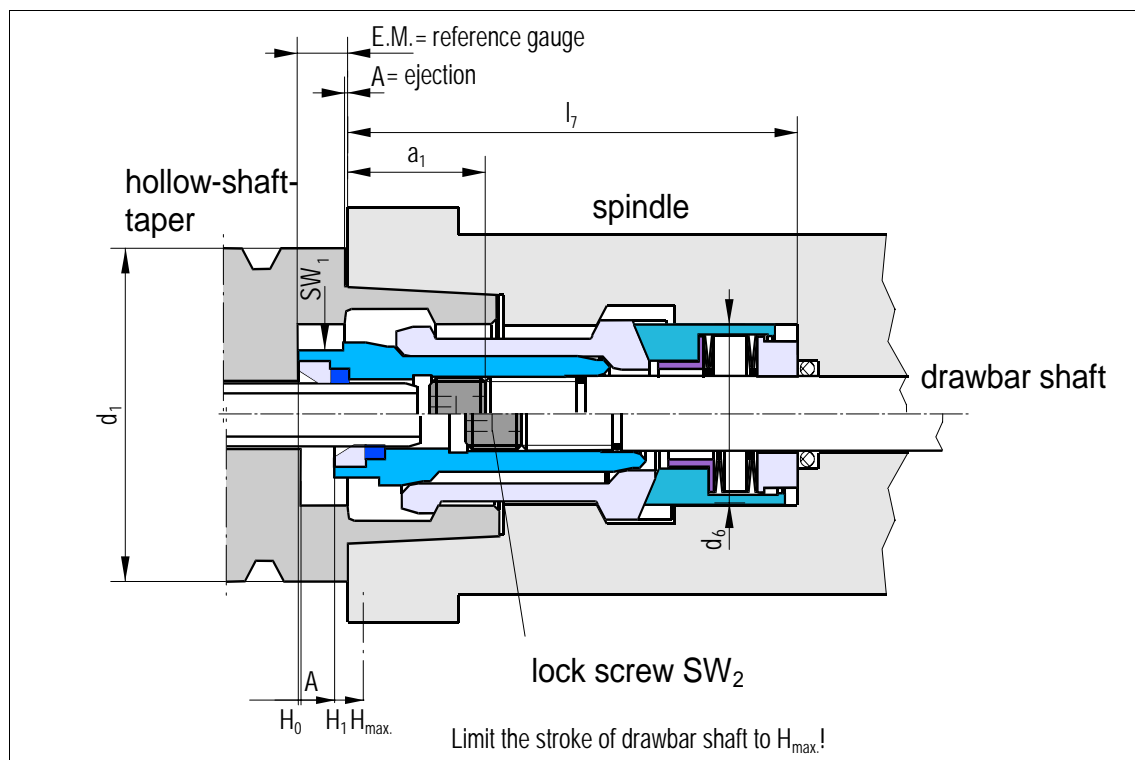
		<b>d<sub>1</sub></b>		<b>40</b>	<b>50</b>	<b>63</b>	<b>80</b>	<b>100</b>	<b>125</b>	<b>160</b>
E DIN 69063-2 1997-04*	[mm]	<b>b<sub>1</sub></b>	<sup>+0,05</sup> <sub>-0,05</sub>	9,9	11,9	15,9	17,9	19,9	24,9	31,9
		<b>b<sub>2</sub></b>		1	1	1	1	2	2	2
		<b>d<sub>2</sub></b>		24	30	38	48	60	75	95
				0	0	0	0	0	0	0
				-0,003	-0,003	-0,004	-0,004	-0,005	-0,006	-0,007
		<b>d<sub>3</sub></b>	H10	17	21	26	34	42	53	67
		<b>e<sub>1</sub></b>	<sup>+0,2</sup> <sub>0</sub>	16,2	20,2	25,2	31,7	40,2	50,2	62,7
		<b>f<sub>1</sub></b>	max.	19,5	25,5	25,5	25,5	28,5	28,5	30,5
		<b>l<sub>1</sub></b>	<sup>+0,3</sup> <sub>0</sub>	16,5	20,5	25,5	33	41	51	64
		<b>l<sub>2</sub></b>		3,2	4	5	6,3	8	10	12,5
<b>l<sub>3</sub></b>		0,8	0,8	1	1	1,5	1,5	2		
clamping unit	[mm]	<b>d<sub>5</sub></b>	+0,2	22,5	26,5	33	41,6	50	63	79
		<b>d<sub>6</sub></b>	H6	17	21	26	34	42	53	67
		<b>d<sub>7</sub></b>	+0,1	10,3	13,2	15,2	20,4	22,4	24,2	32
		<b>d<sub>8</sub></b>	+0,1	6,6	8,6	10,6	14,6	16,6	18,4	25,4
		<b>l<sub>7</sub></b>	-0,2	62,5	78	84	94	98	124	149
		<b>l<sub>8</sub></b>	±0,1	43	58	61	69	72	93	112,5
		<b>l<sub>9</sub></b>	js8 bei d <sub>3</sub>	30	44	45	52	56	70	86
		<b>l<sub>10</sub></b>	+0,2	3	3,6	3,6	4,2	4,2	4,2	4,7

The dimensions in the clamping unit section are for spindle speeds up to 10000 rpm. For higher spindle speeds we recommend to reduce the tolerance of dimension d<sub>8</sub> and the runout. Please let us know if you need additional information.

\* see update standard

## 1.8 HSK-clamping unit form E

### 1.8.1 Dimension

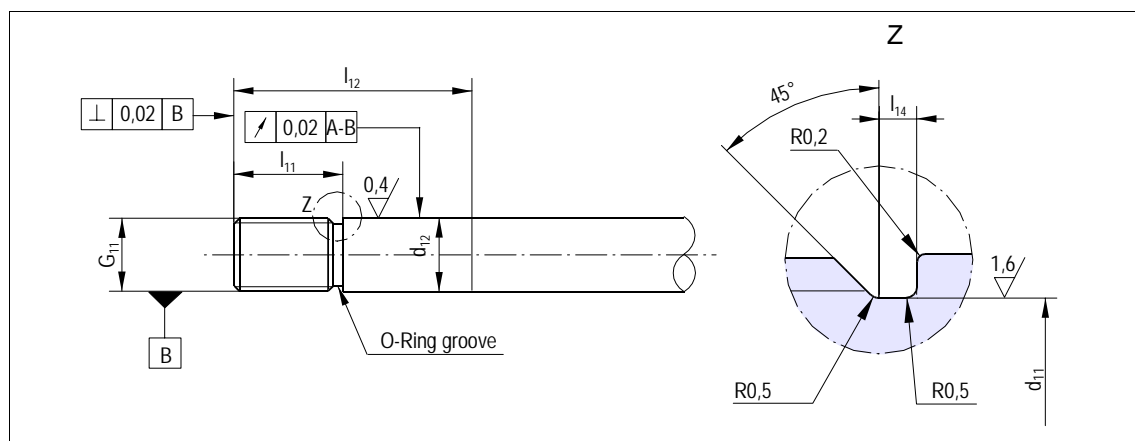


		<b>d<sub>1</sub></b>	<b>25</b>	<b>32</b>	<b>40</b>	<b>50</b>	<b>63</b>
[mm]	<b>A</b>		0,5	0,5	0,5	0,5	0,5
	<b>E.M.</b>	±0,1	6,5	8,5	8,5	10,5	10,5
	<b>H<sub>max.</sub></b>		7	7,5	8	9	10
	<b>H<sub>1</sub></b>		4,6	5,1	5,6	6,4	7,4
	<b>SW<sub>1</sub></b>		10	12	15	18	22
	<b>SW<sub>2</sub></b>		3	3	4	4	5
	<b>a<sub>1</sub></b>		5,5	19,5	27	26,5	31,5

**1.8.2 Order number HSK form E**

d <sub>1</sub>	clamping unit for axial medium transfer	clamping unit without medium transfer; air is possible; without picture	mounting tool
25	95.600.011.3.6		95.601.110.3.1
32	95.600.008.3.6		95.601.111.3.1
40	95.600.007.3.6	95.600.016.3.6	95.601.112.3.1
50	95.600.004.3.6	95.600.083.3.2	95.601.113.3.1
63	95.600.001.3.6	95.600.015.3.6	95.601.114.3.1

**1.8.3 Draw bar HSK form E**



		d <sub>1</sub>	25	32	40	50	63
[mm]	d <sub>11</sub>	-0,1	4,6	4,6	6	7,9	11,9
	d <sub>12</sub>	g7	6,2	6,2	8,2	10,2	14,2
	G <sub>11</sub>	-4g	M6x0,5	M6	M8	M10	M14x1,5
	l <sub>11</sub>		10,5	9	14	16	18,5
	l <sub>12</sub>		45	50	60	67	76
	l <sub>14</sub>	+0,1	1	1	1,4	1,4	1,4



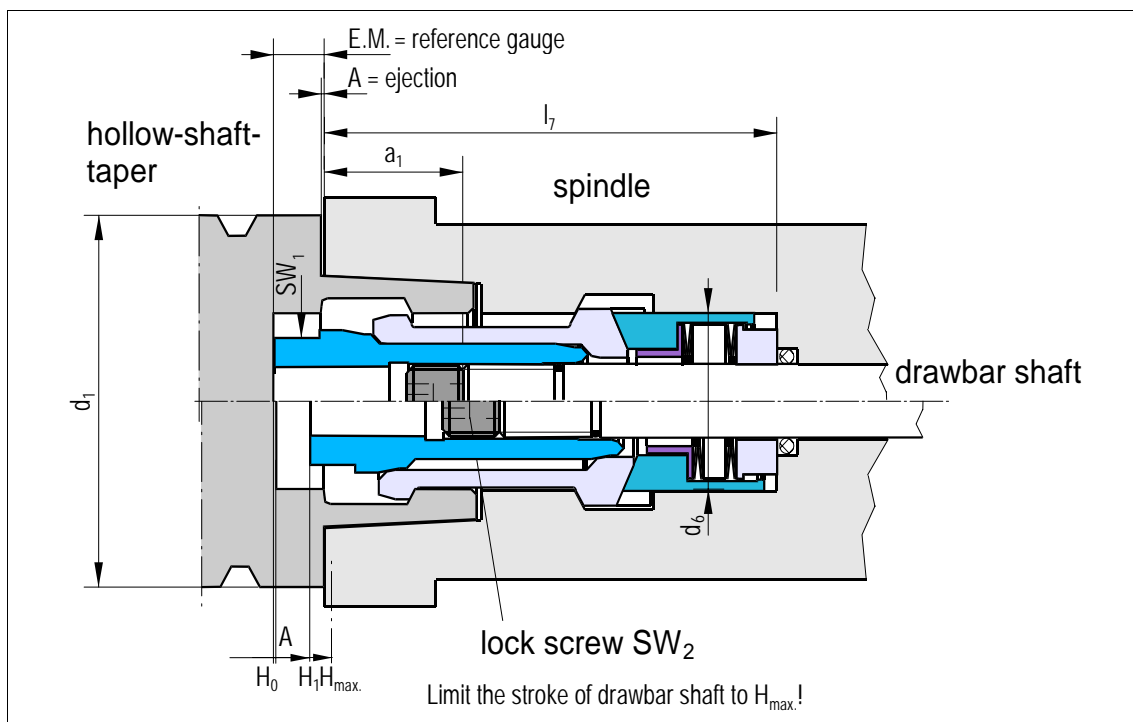
		<b>d<sub>1</sub></b>		<b>25</b>	<b>32</b>	<b>40</b>	<b>50</b>	<b>63</b>
DIN V 69063-5 1996-01 *	[mm]	<b>d<sub>2</sub></b>		19	24	30	38	48
				-0,001	-0,001	-0,002	-0,003	-0,003
				-0,003	-0,003	-0,004	-0,006	-0,007
		<b>l<sub>1</sub></b>		13	16	20	25	32
		<b>l<sub>2</sub></b>		2,5	3,2	4	5	6,3
		<b>l<sub>3</sub></b>		0,5	0,8	0,85	1	1
clamping unit	[mm]	<b>d<sub>3</sub></b>	H10	14	17	21	26	34
		<b>d<sub>5</sub></b>	+0,2	18	22,5	26,5	33	41,6
		<b>d<sub>6</sub></b>	H6	14	17	21	26	34
		<b>d<sub>7</sub></b>	+0,1	-	10,3	13,2	15,2	20,4
		<b>d<sub>8</sub></b>	+0,1	6,4	6,6	8,6	10,6	14,6
		<b>l<sub>7</sub></b>	-0,2	40	62,5	78	84	94
		<b>l<sub>8</sub></b>	±0,1	25,5	43	58	61	69
		<b>l<sub>9</sub></b>	js8 bei d <sub>3</sub>	18,5	30	44	45	52
		<b>l<sub>10</sub></b>	+0,2	-	3	3,6	3,6	4,2

The dimensions in the clamping unit section are for spindle speeds up to 10000 rpm. For higher spindle speeds we recommend to reduce the tolerance of dimension d<sub>8</sub> and the runout. Please let us know if you need additional information.

\* see update standard

## 1.9 HSK-clamping unit form F

### 1.9.1 Dimension

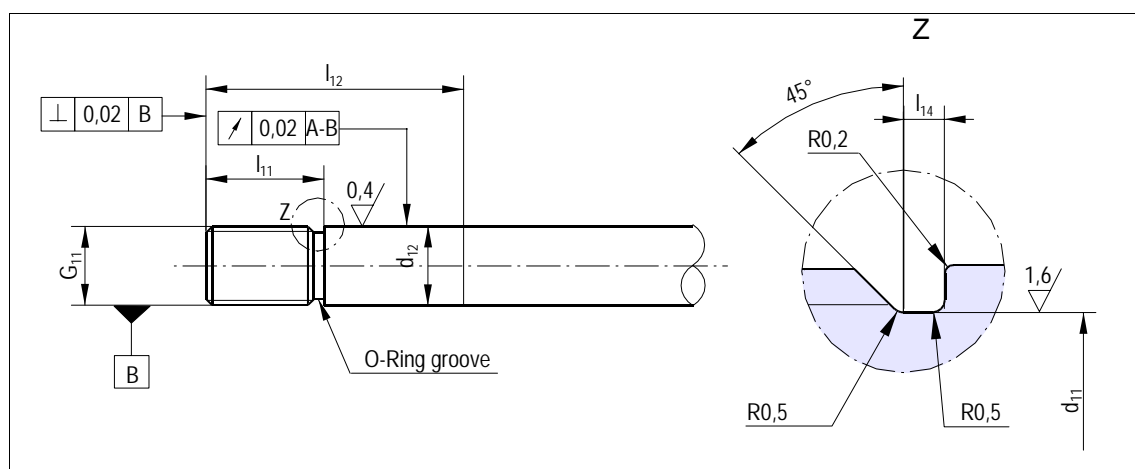


		$d_1$	50	63	80
[mm]	A		0,5	0,5	0,5
	E.M.	$\pm 0,1$	8,5	10,5	10,5
	$H_{max.}$		8	9	10
	$H_1$		5,6	6,4	7,4
	$SW_1$		15	18	22
	$SW_2$		4	4	5
	$a_1$		27	26,5	31,5

**1.9.2 Order number HSK form F**

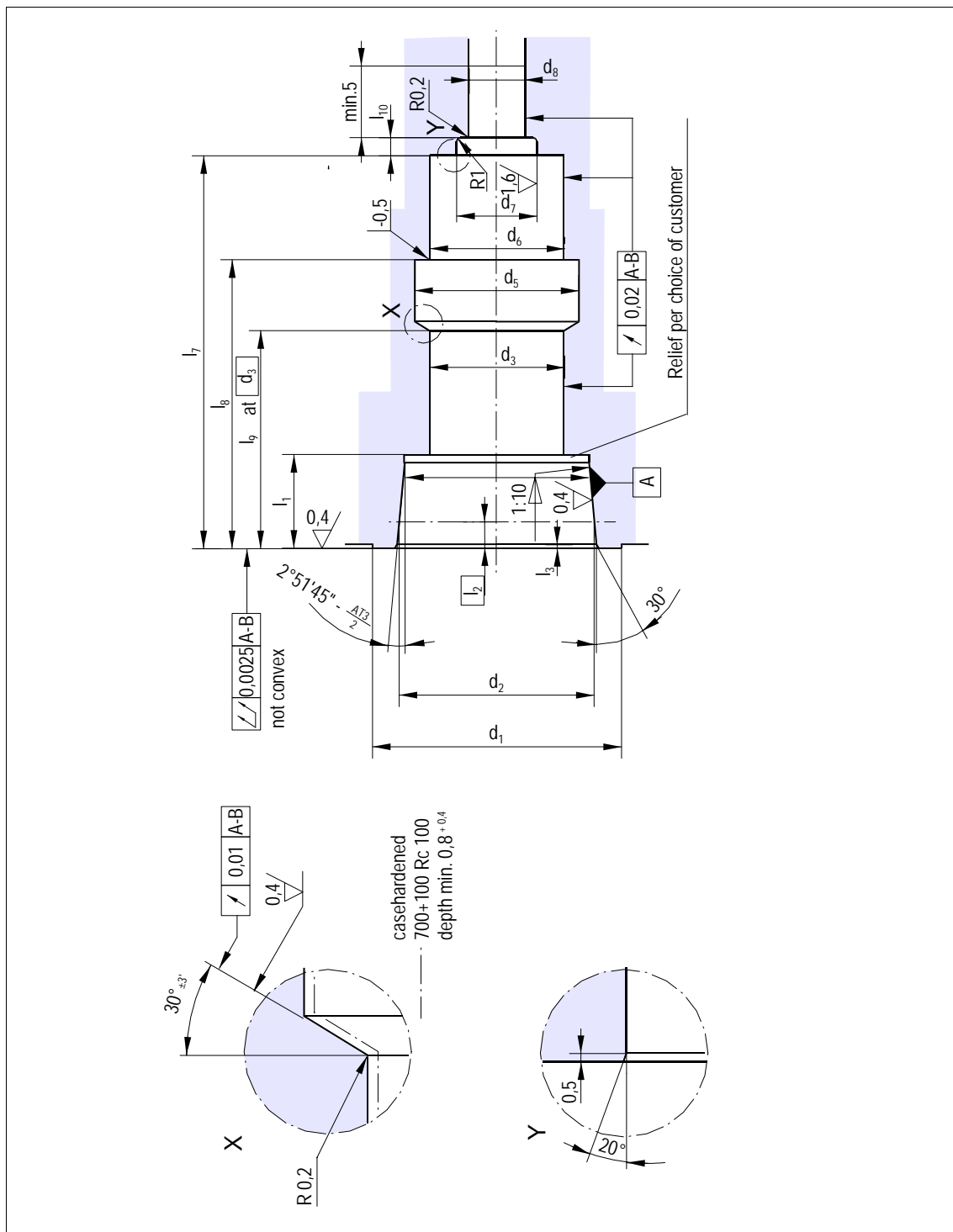
d <sub>1</sub>	clamping unit without medium transfer; air is possible	clamping unit with seal; without picture	mounting tool
50	95.600.016.3.6	95.600.007.3.6	95.601.112.3.1
63	95.600.083.3.2	95.600.004.3.6	95.601.113.3.1
80	95.600.015.3.6	95.600.001.3.6	95.601.114.3.1

**1.9.3 Draw bar HSK form F**



		d <sub>1</sub>	50	63	80
[mm]	d <sub>11</sub>	-0,1	6	7,9	11,9
	d <sub>12</sub>	g7	8,2	10,2	14,2
	G <sub>11</sub>	-4g	M8	M10	M14x1,5
	l <sub>11</sub>		14	16	18,5
	l <sub>12</sub>		60	67	76
	l <sub>14</sub>		1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>	1,4 <sup>+0,1</sup>

### 1.9.4 Spindle inside contour HSK form F



		<b>d<sub>1</sub></b>		<b>50</b>	<b>63</b>	<b>80</b>
DIN V 69063-6 1996-01 *	[mm]	<b>d<sub>2</sub></b>		30	38	48
				-0,002 -0,004	-0,003 -0,006	-0,003 -0,007
		<b>d<sub>3</sub></b>	H10	21	26	34
		<b>l<sub>1</sub></b>	+0,2	20,5	25,5	33
		<b>l<sub>2</sub></b>		4	5	6,3
		<b>l<sub>3</sub></b>	+0,2	0,8	1	1
		clamping unit	[mm]	<b>d<sub>5</sub></b>	+0,2	26,5
<b>d<sub>6</sub></b>	H6			21	26	34
<b>d<sub>7</sub></b>	+0,1			13,2	15,2	20,4
<b>d<sub>8</sub></b>	+0,1			8,6	10,6	14,6
<b>l<sub>7</sub></b>	-0,2			78	84	94
<b>l<sub>8</sub></b>	±0,1			58	61	69
<b>l<sub>9</sub></b>	js8 bei d <sub>3</sub>			44	45	52
<b>l<sub>10</sub></b>	+0,2			3,6	3,6	4,2

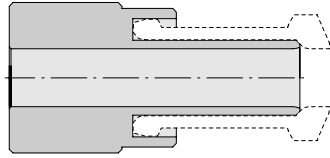
The dimensions in the clamping unit section are for spindle speeds up to 10000 rpm. For higher spindle speeds we recommend to reduce the tolerance of dimension  $d_8$  and the runout. Please let us know if you need additional information.

\* see update standard

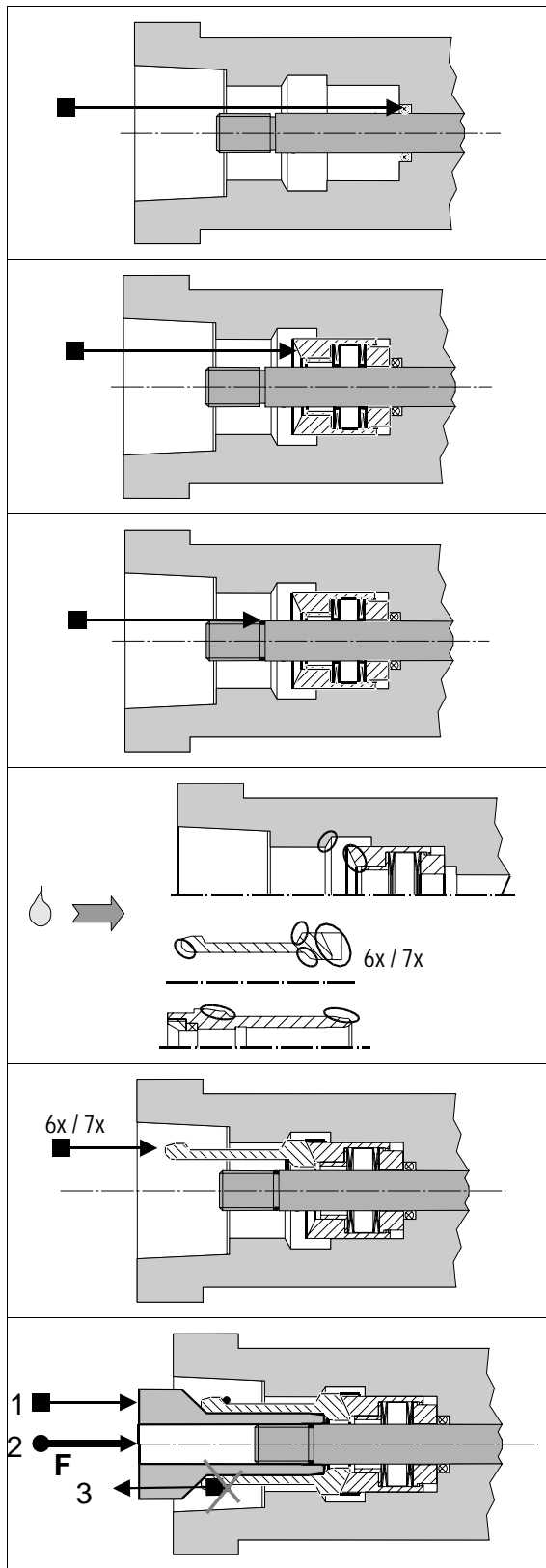
## 2 Assembly

### 2.1 Assembly tool for HSK clamping unit

for easier assembly of the HSK gripper unit  
 (not included with delivery of HSK clamping unit!)

	size	order-no.
	E25	95.601.110.3.1
	A32 / B40 / E32	95.601.111.3.1
	A40 / B50 / E40 / F50	95.601.112.3.1
	A50 / B63 / E50 / F63	95.601.113.3.1
	A63 / B80 / E63 / F80	95.601.114.3.1
	A80 / B100	95.601.115.2.1
	A100 / B125	95.601.116.2.1
	A125 / B160	95.601.117.2.1
	A160	95.601.118.2.1

## 2.2 Clamping unit



- Clean spindle inside contour
- make sure that edges are properly rounded
- grease O-rings
- mount o-ring in the spindle
- push spacer into spindle and check for ease of movement

- mount o-ring on the drawbar

Protective sleeve obtainable:  
HSK A 63: 95.601.169.4.1

- grease area of contact
- ➔ METAFLUX-Paste 70-8508
- or

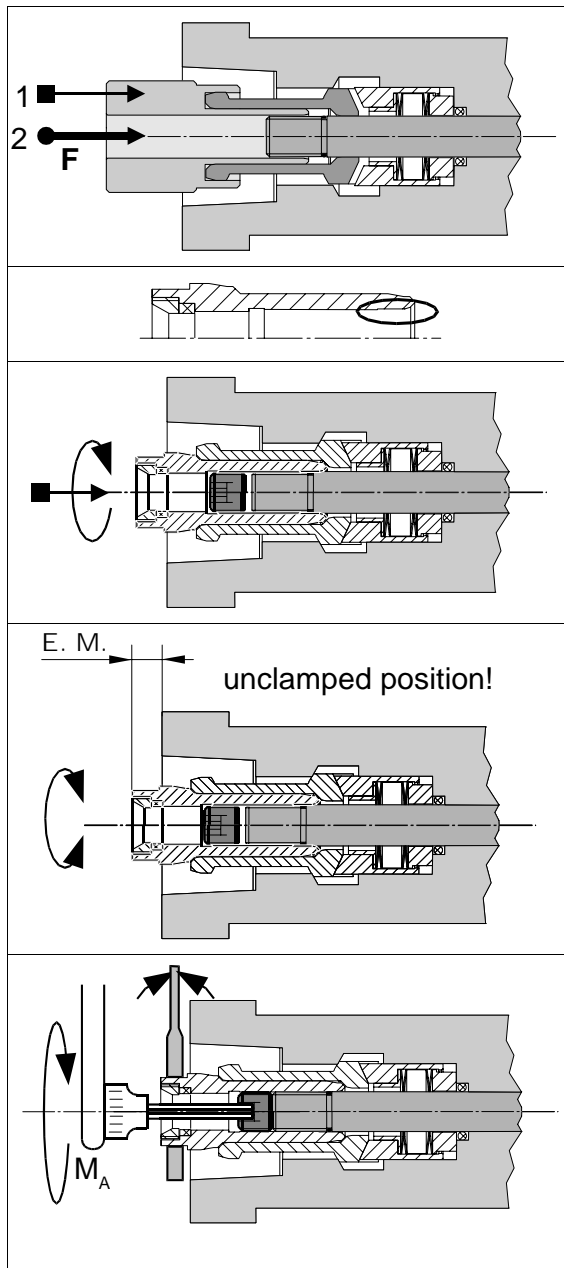
➔ KLÜBER-Paste ME 31-52

do not mix the grease!

- snap gripper segments in the spacer; ensure that the numbers match

When using assembly fixture:

- assemble the segments on the fixture by using an o-ring, insert complete fixture with segments into the spindle; give it a good push until the segments click in place, remove the o-ring



alternatively:

- put the segments into the fixture; insert the complete unit; give the fixture a good push until the segments click in place
- grease clamping cone with mounting grease
- screw clamping cone (pre-assembled with seal, protective sleeve and lock screw) onto the drawbar shaft at maximum to the setting dimension; do not continue to turn since otherwise the o-ring on the drawbar shaft will be damaged!

in unclamped position:

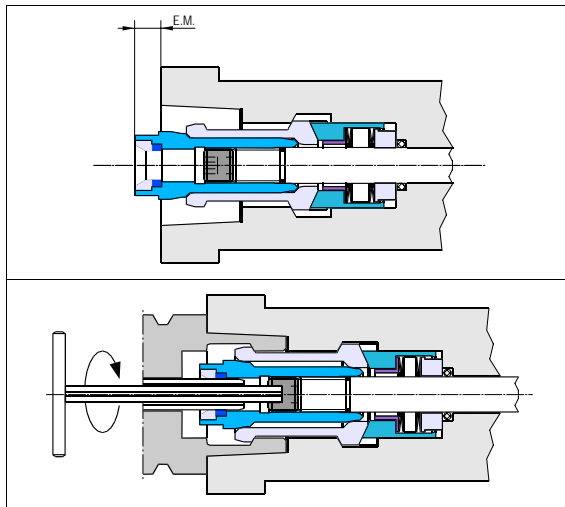
- adjust gauge dimension E.M.

- tighten the lock nut

starting torque::

- E25: 7 Nm
- A32 / B40 / E32: 10 Nm
- A40 / B50 / E40 / F50: 15 Nm
- A50 / B63 / E50 / F63: 20 Nm
- A63 / B80 / E63 / F80: 30 Nm
- A80 / B100: 30 Nm
- A100: 50 Nm

**2.2.1 Check after approx. 100 strokes**



In unclamped position

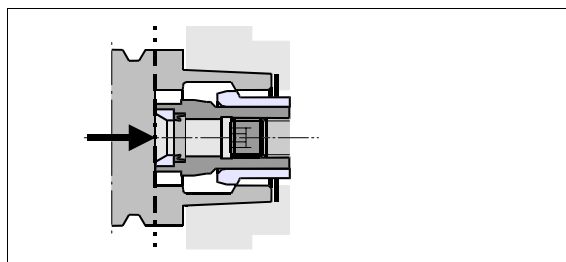
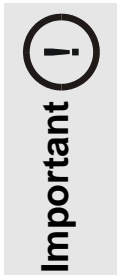
➤ Check dimension gauge E.M.

➤ re-tighten through a clamped tool

### 3 Operation

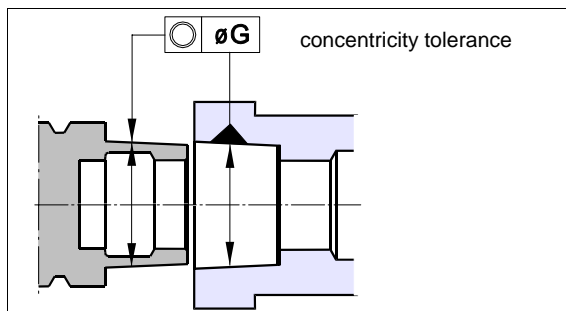


**No rotation without clamped tool!**



Do not insert tool into the spindle taper when rotating!

The tool has to be inserted all the way to the plane surface of the clamping cone to prevent misclamping!



Our recommendation for the concentricity tolerance for tool changing as well as the maximum force on the plane surface on the clamping cone is shown in the table below:

standard size	E 25	A 32 B 40 E 32	A 40 B 50 E 40 F 50	A 50 B 63 E 50 F 63	A 63 B 80 E 63 F 80	A 80 B 100	A 100 B 125	A 125 B 160	A 160
concentricity (øG) [mm]	0,6	0,7	0,7	0,8	0,8	1,0	1,0	1,0	1,2
tool changer force max. [kN]	1	1	1,4	2,2	3,6	5,6	9	9	9

Recommendation: install a limit switch for the drawbar

In order to minimize wear, the coolant tube at the interface of the gripper assembly and tool should be shaped as follows:

- minimum and easy going and angular flexing (per ISO/DIS 12164-1)
- ground

Follow preventive maintenance schedule!

## 4 Maintenance

### 4.1 Preventive maintenance schedule

To guarantee the function of the power drawbar the following preventive maintenance schedule must be adhered to.

#### Every week

- Check the packing ring in the clamping unit (visual check)
- Check the gripper, is it damaged or dirty, is it sufficient greased (visual check) ?  
Pay attention to:  
The regrease cycle depends on the loss of lubrication of the clamping unit.  
Cause for the loss of lubrication:
  - Seal in the clamping cone is defective
  - Type of medium used can desolve grease
  - Cleaning spray from outside directly on the clamping unit etc
- Note: METAFLEX Moly-Spray No.70-82 is recommended for a quick regreasing of the clamping unit without gripper-disassembly .

#### Every six month or after 200.000 tool changes at the latest

- In unclamped position: Check dimension gauge E.M.
- counter through a clamped tool again.
- Test Pull-in-force (we recommend:use Power-Check):  
If the pull-in-force is smaller than 70% of the nominal value, following procedures have to be performed in the following sequence:
  - regrease and test pull-in force again
  - exchange gripper and test again
  - exchange drawbar completely

#### Every year or after 500.000 tool changes at the latest

- Exchange the packing ring ⇒ 4.3 / S.35

## 4.2 Wearing part list

### 4.2.1 Grease for HSK-clamping unit

<i>name</i>	<i>quantity</i>	<i>order-no.</i>
* METAFLUX-grease-paste Nr. 70-8508	4 g	0.929100.012
METAFLUX-moly-spray Nr. 70-82	400 ml	06.21001.010
KLÜBER-grease-paste ME 31-52	10 g	06.21001.014
KLÜBER-spray ALTEMP Q NB 50	400 ml	06.21001.015

\* original lubrication and first equipment



**Important**

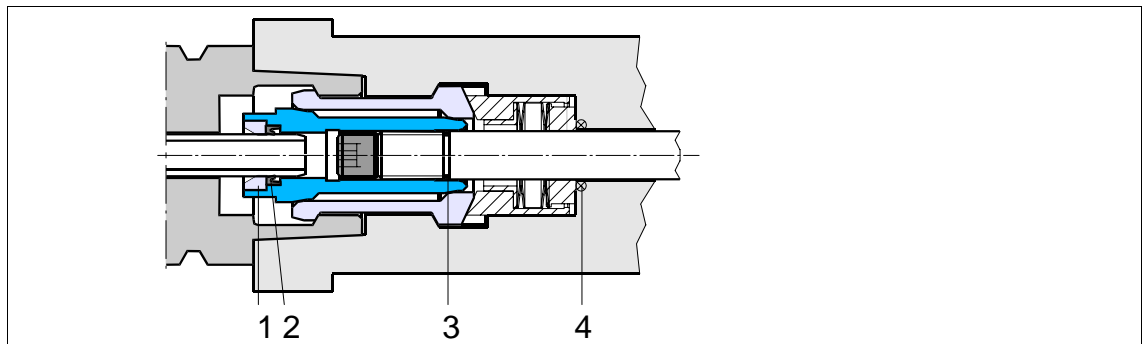
Note: take only grease of one company; do not mix the grease!

METAFLUX	Metaflux AG Industriestraße 11 CH-4313 Möhlin Tel.: +41-61-851 08 00 Fax: +41-61-851 08 08	KLÜBER	Klüber Lubrication München KG Postfach 701047 D-81310 München Tel.: (0 89) 78 76 –0 Fax: (0 89) 78 76 -333
	TECHNO-SERVICE GmbH Detmolder Straße 515 D-33605 Bielefeld Tel.: (05 21) 9 24 44 –0 Fax: (05 21) 20 74 32		

Aid for regreasing with paste in mounted state (clamped without tool):

<i>name</i>	<i>HSK-size</i>	<i>order-no.</i>
Bürste	A50 - A100	06.16001.001

#### 4.2.2 O-rings and lip seal parts



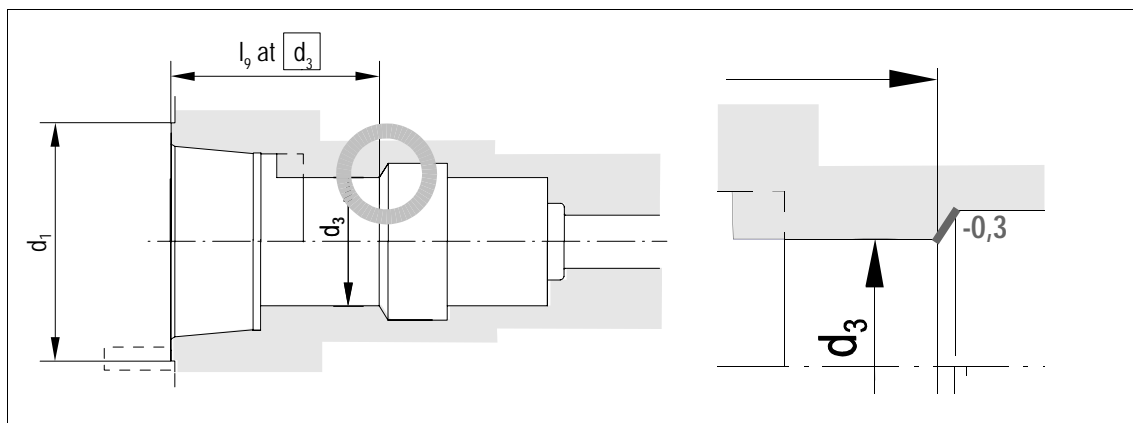
clamping unit	HSK	ring	lip seal	O-rings	
		1	2	3	4
nominal size	complete	1	2	3	4
E25	95.600.011.3.6	-	-	0.926010.166 <i>4,5 x 1,0</i>	-
A32 / B40 / E32	95.600.008.3.6	95.601.246.4.1 -	0.926030.110 <i>6 x 10 x 3</i>	0.926010.205 <i>4,5 x 1,0</i>	0.926010.233 <i>6,3 x 2,4</i>
A40 / B50 / E40	95.600.007.3.6	95.601.271.4.1 -	0.926030.112 <i>8 x 14 x 4</i>	0.926010.044 <i>6,0 x 1,5</i>	0.926010.047 <i>8,0 x 3,0</i>
F50	95.600.016.3.6	-	-	0.926010.044 <i>6,0 x 1,5</i>	0.926010.047 <i>8,0 x 3,0</i>
A50 / B63 / E50	95.600.004.3.6	95.600.334.4.1 -	0.926030.111 <i>10 x 15 x 3,5</i>	0.926010.170 <i>8,0 x 1,5</i>	0.926010.172 <i>10,0 x 3,0</i>
F63	95.600.083.3.2	-	-	0.926010.170 <i>8,0 x 1,5</i>	0.926010.172 <i>10,0 x 3,0</i>
A63 / B80 / E63	95.600.001.3.6	95.600.850.4.1 -	0.926030.103 <i>12 x 18,5 x 4,5</i>	0.926010.156 <i>12,0 x 1,5</i>	0.926010.164 <i>13,87 x 3,53</i>
F80	95.600.015.3.6	-	-	0.926010.156 <i>12,0 x 1,5</i>	0.926010.164 <i>13,87 x 3,53</i>
A80 / B100	95.600.002.3.6	95.601.050.4.1 -	0.926030.108 <i>14 x 20 x 4,8</i>	0.926010.167 <i>14,0 x 1,5</i>	0.926010.173 <i>16,0 x 3,5</i>
A100 / B125	95.600.003.3.6	95.601.189.4.1 -	0.926030.109 <i>16 x 24 x 5,5</i>	0.926010.167 <i>14,0 x 1,5</i>	0.926010.169 <i>18,0 x 3,5</i>
A125 / B160	95.600.009.3.6	95.600.236.4.1	0.926030.114 <i>18 x 26 x 5,5</i>	0.926010.145 <i>20,0 x 2,0</i>	0.926010.124 <i>25,0 x 4,0</i>

material: Viton, hardness 80 SHORE A

### 4.2.3 Repair clamping unit HSK B-E

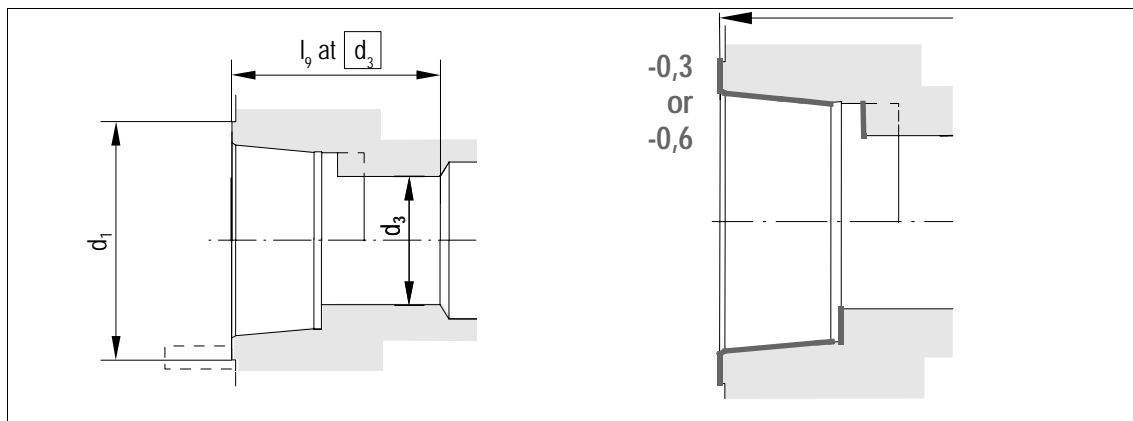
If fashioning necessary, we have repair-clamping-units.

#### Fashioning edge



nominal size	clamping-unit HSK		repair-clamping-unit HSK B-E1	
	complete	$l_9$	complete	$l_9$
E25	95.600.011.3.6	18,5	95.600.120.9.6	18,2
A32 / B40 / E32	95.600.008.3.6	30	95.600.121.9.6	29,7
A40 / B50 / E40	95.600.007.3.6	44	95.600.122.9.6	43,7
F50	95.600.016.3.6	44	95.600.122.9.6	43,7
A50 / B63 / E50	95.600.004.3.6	45	95.600.123.9.6	44,7
F63	95.600.083.3.6	45	95.600.123.9.6	44,7
A63 / B80 / E63	95.600.001.3.6	52	95.600.124.9.6	51,7
F80	95.600.015.3.6	52	95.600.124.9.6	51,7
A80 / B100	95.600.002.3.6	56	95.600.125.9.6	55,7
A100 / B125	95.600.003.3.6	70	95.600.126.9.6	69,7

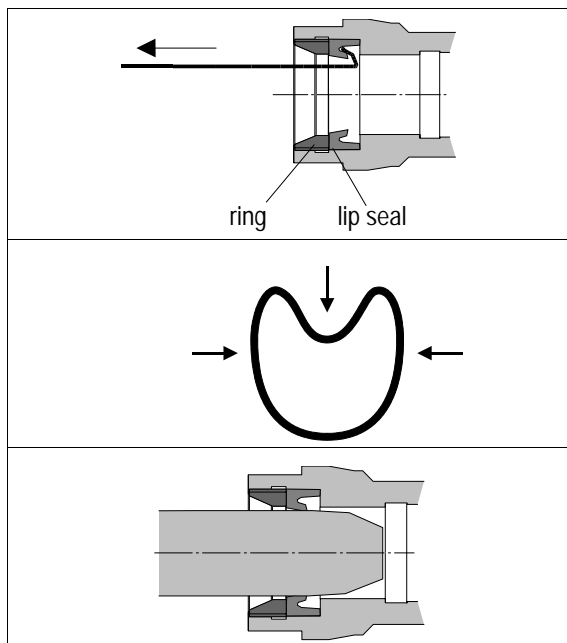
**Fashioning receiver**



nominal size	clamping-unit HSK		repair-clamping-unit HSK B-E 0,3		repair-clamping-unit HSK B-E 0,6	
	complete	$l_9$	complete	$l_9$	complete	$l_9$
E25	95.600.011.3.6	18,5	95.600.071.9.6	18,2	95.600.087.9.6	17,9
A32 / B40 / E32	95.600.008.3.6	30	95.600.072.9.6	29,7	95.600.088.9.6	29,4
A40 / B50 / E40	95.600.007.3.6	44	95.600.073.9.6	43,7	95.600.090.9.6	43,4
F50	95.600.016.3.6	44	95.600.073.9.6	43,7	95.600.090.9.6	43,4
A50 / B63 / E50	95.600.004.3.6	45	95.600.074.9.6	44,7	95.600.091.9.6	44,4
F63	95.600.083.3.6	45	95.600.074.9.6	44,7	95.600.091.9.6	44,4
A63 / B80 / E63	95.600.001.3.6	52	95.600.075.9.6	51,7	95.600.095.9.6	51,4
F80	95.600.015.3.6	52	95.600.075.9.6	51,7	95.600.095.9.6	51,4
A80 / B100	95.600.002.3.6	56	95.600.076.9.6	55,7	95.600.096.9.6	55,4
A100 / B125	95.600.003.3.6	70	95.600.077.9.6	69,7	95.600.097.9.6	69,4

### 4.3 Exchange of the lip seal

For dismounting the lip seal it is not necessary to take away the ring. Only when the ring is damaged it must be exchanged.



➤ Take away the damaged lip seal with a hook or pliers

➤ Compress the lip ring and build in; look for the build in position

➤ press the seal with a blunt object against the lining

➤ take a mandrel to bring it in the finally position

### 4.4 Break of a gripper segment

➤ If one of the gripper segments should break, the complete set of grippers needs to be replaced (we recommend: replace the complete clamping unit) !

## 4.5 Trouble shooting HSK

<b>trouble</b>	<b>reason</b>
tool is not pulled in correctly:	gage dimension out of adjustment
	lock screw got loose
	wrong or faulty spindle-inside-contour
	wrong or faulty tool-inside-contour
	spring stack broken (travel not sufficient)
	wear of clamping unit
	tool feed not correct
	air blow off prevents tool from seating during tool change
tool is pulled out during work cycle:	gripper segments, clamping cone or drawbar broken
	tool shank broken
	springs broken
	pull-in force not sufficient
Loss of pull force:	lack of lubrication on clamping set
recommendation: check pull-in force!	