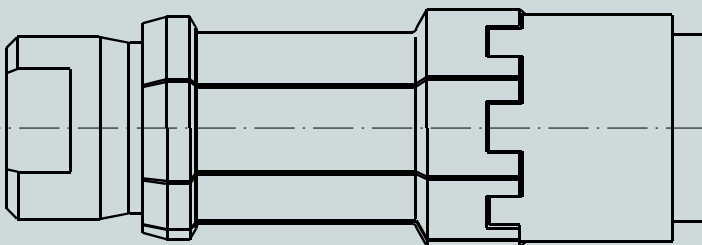


CLAMPING UNIT
HSK-K



LONG-LIFE
CLAMPING
TECHNOLOGY
INSIDE

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PRODUCT INFORMATION

CLAMPING UNIT HSK-K

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symbol explanation:



keep attention -
dangerous!

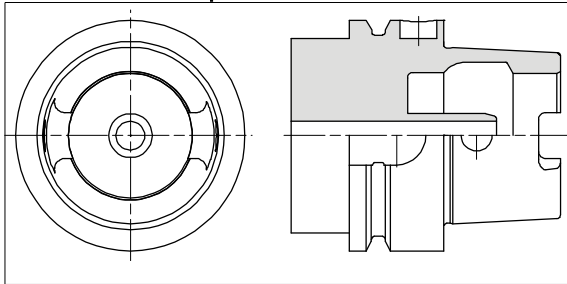


keep attention -
malfunction!

1 PRODUCT DESCRIPTION

1.1 STANDARD

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



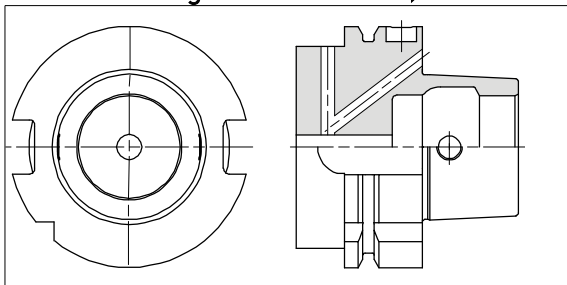
features:

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

application:

- Bearbeitungszentren, Fräsmaschinen

Hohlschaftkegel DIN 69893-2; Form **B**



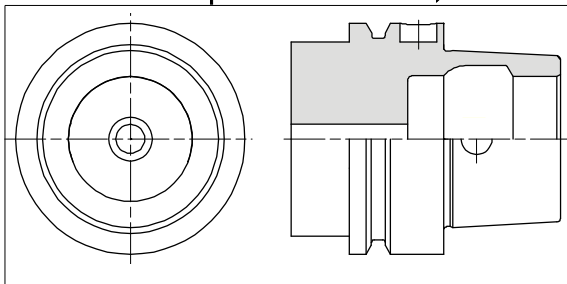
features:

- 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**



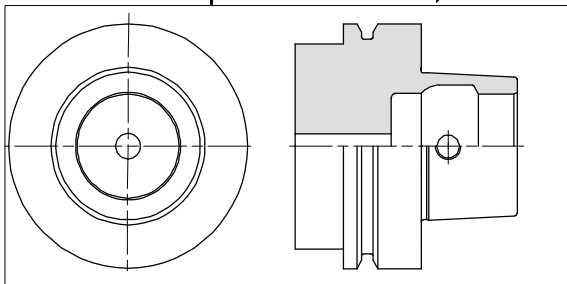
features:

- rotational symmetry without keyways

application:

- HSC-spindles

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



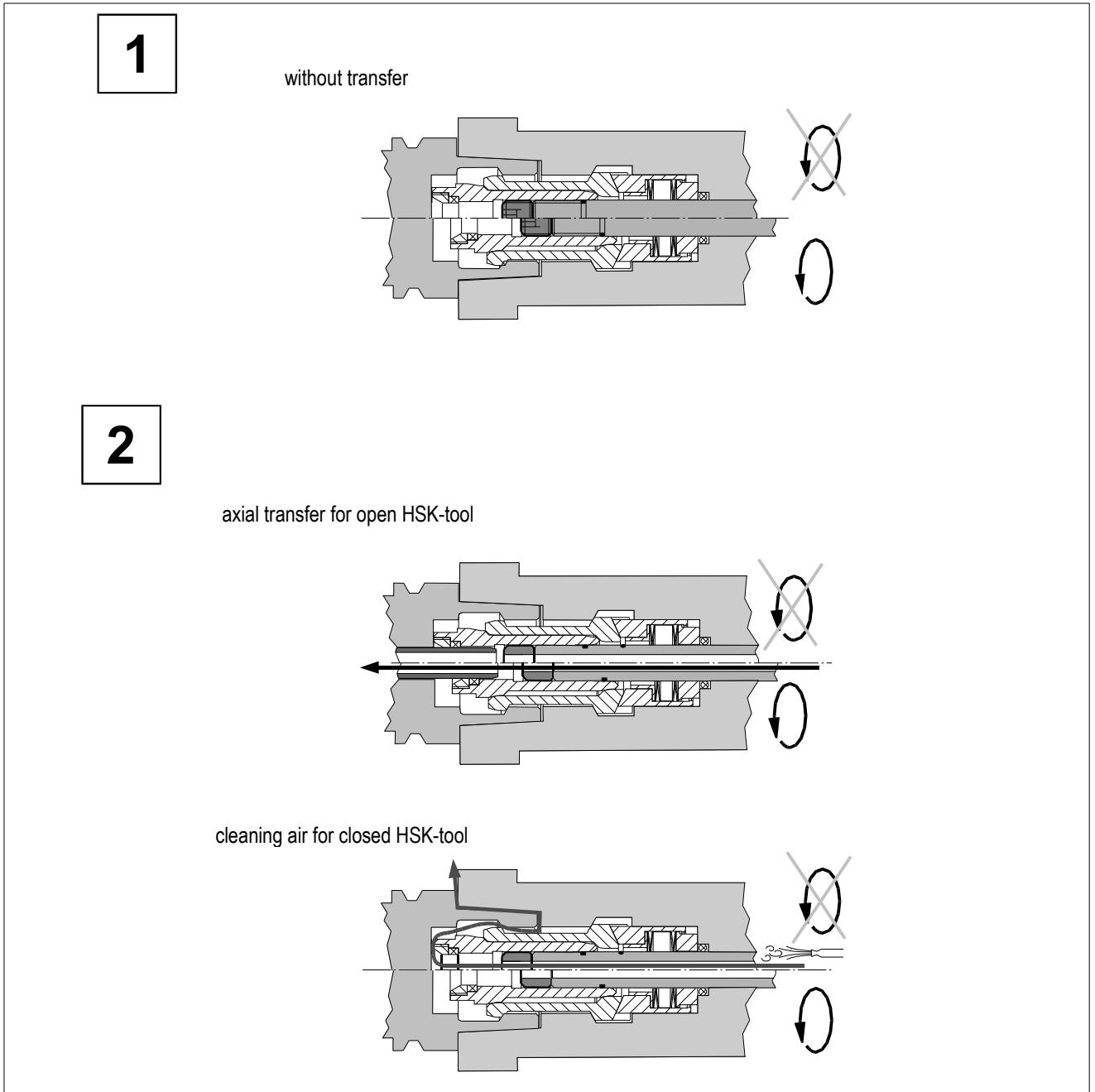
features:

- enlarged flange

application:

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

1.2 MEDIUM TRANSFER



PRODUCT INFORMATION

CLAMPING UNIT HSK-K



1.3 CEILING SPEED

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

1.4 TRANSFERABLE TORQUE

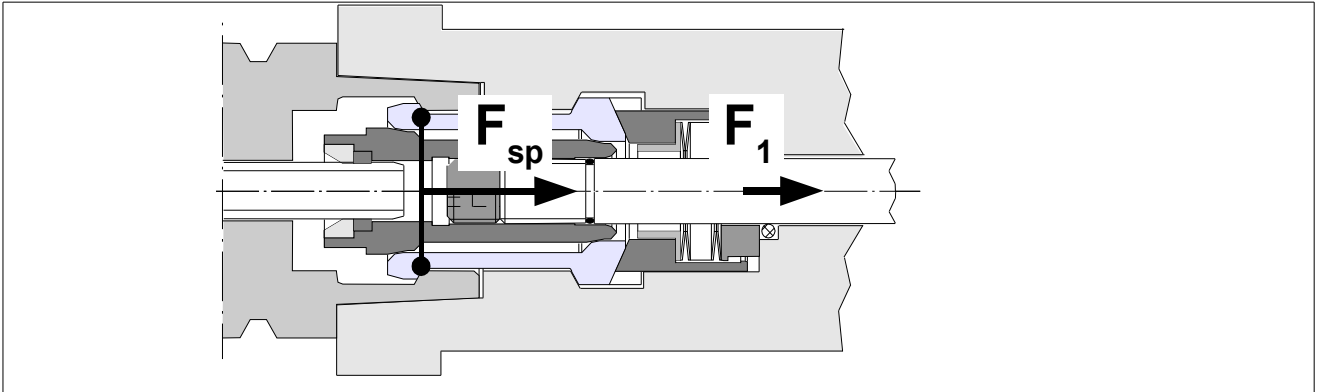
		nominal size									Nm	transferable torque without keyways
		25	32	40	50	63	80	100	125	160		
tool standard	A	-	14	24	48	97	190	365	710	1436		
	B	-	-	16	28	55	113	217	422	835		
	E	7	15	27	56	110	-	-	-	-		
	F	-	-	-	31	64	128	-	-	-		

PRODUCT INFORMATION

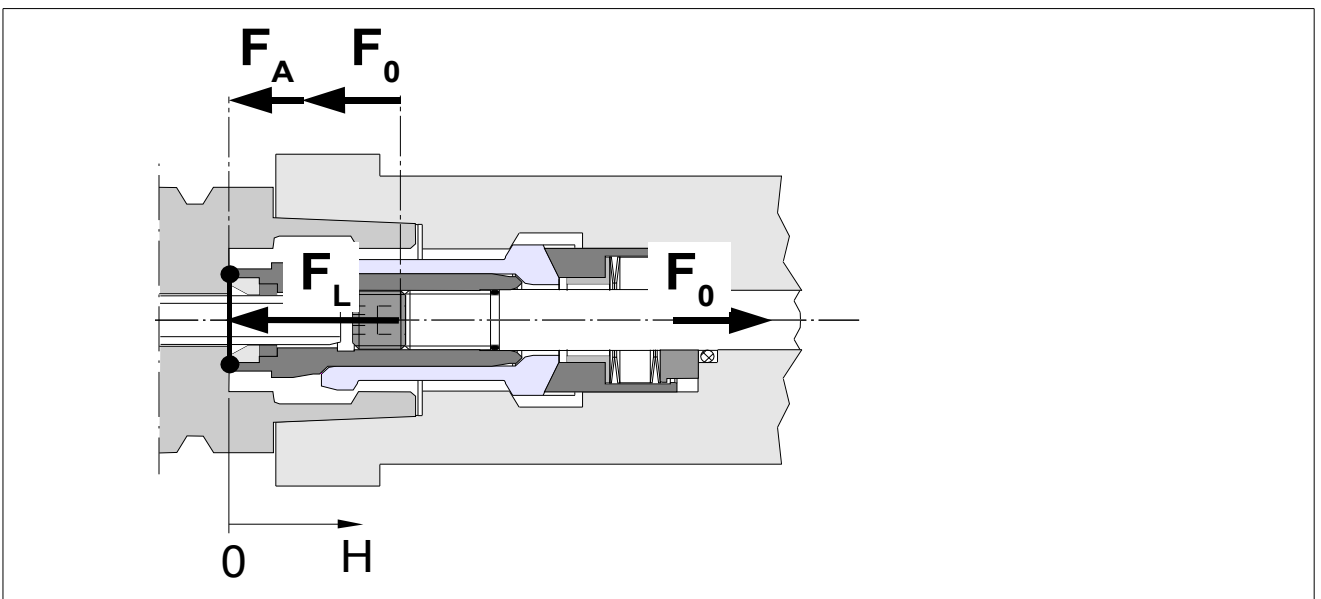
CLAMPING UNIT HSK-K

1.5 FORCES AT THE HSK-CLAMPING UNIT

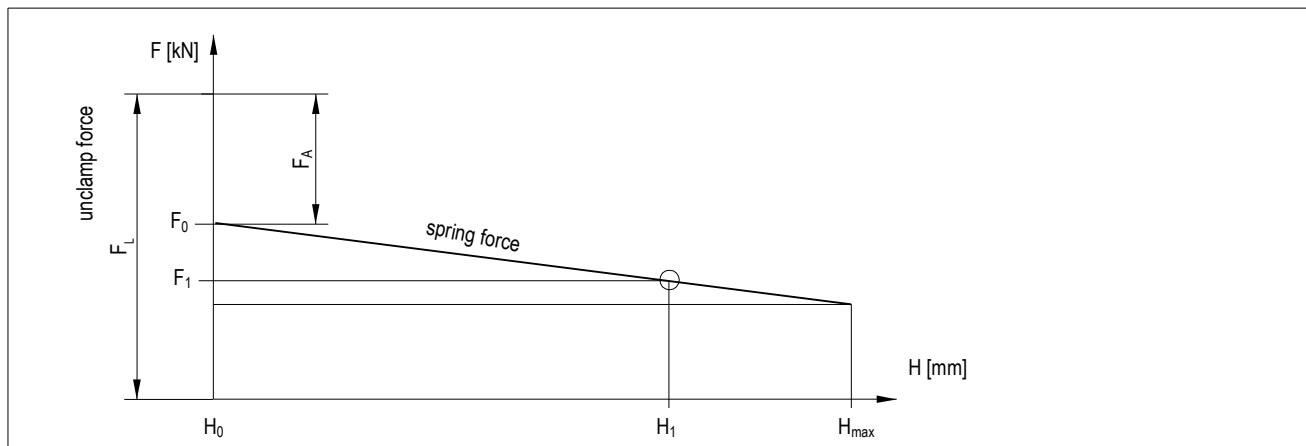
1.5.1 Clamped position



1.5.2 Unclamped position



1.5.3 Diagram

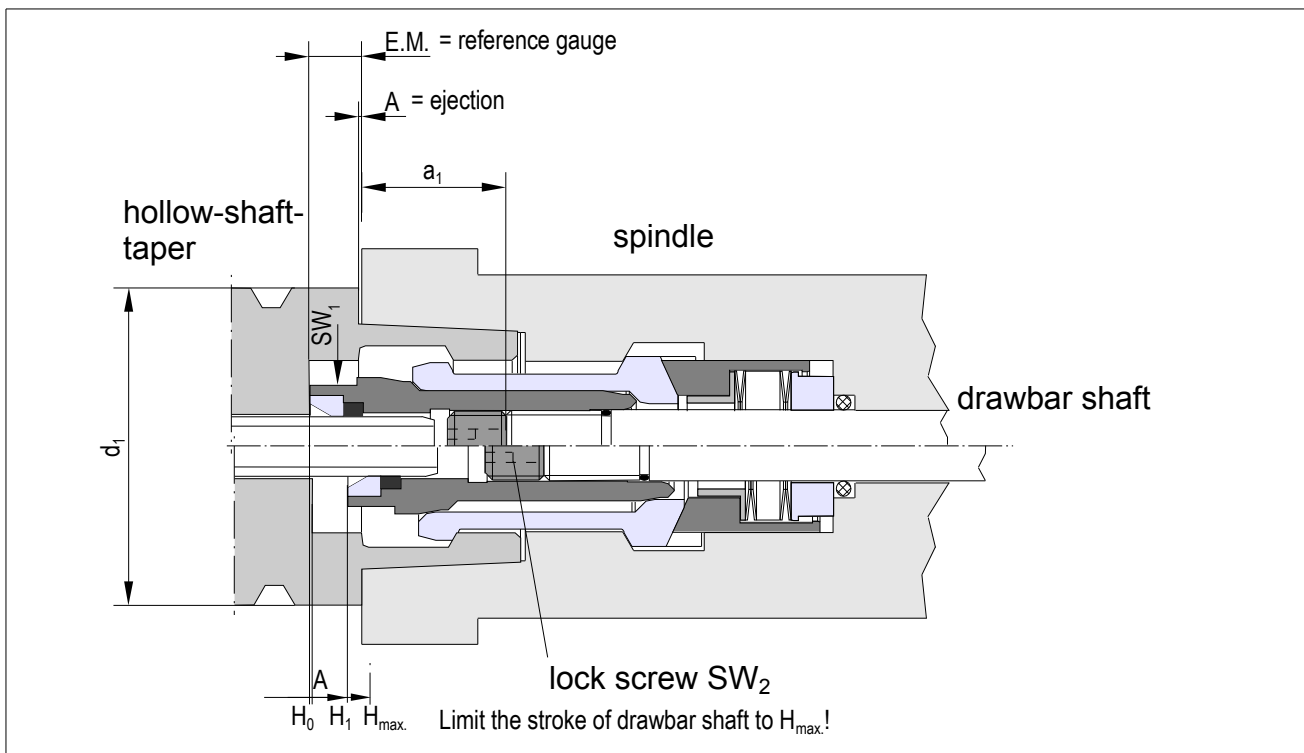


1.5.4 Table

		nominal size									Z		
		25	32	40	50	63	80	100	125	160			
tool standard	A	F _{sp}		5	6,8	11	18	28	45	70	115	Z	
		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	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		
	E	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						
	F	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 DIMENSION

1.6.1 Clamping Unit

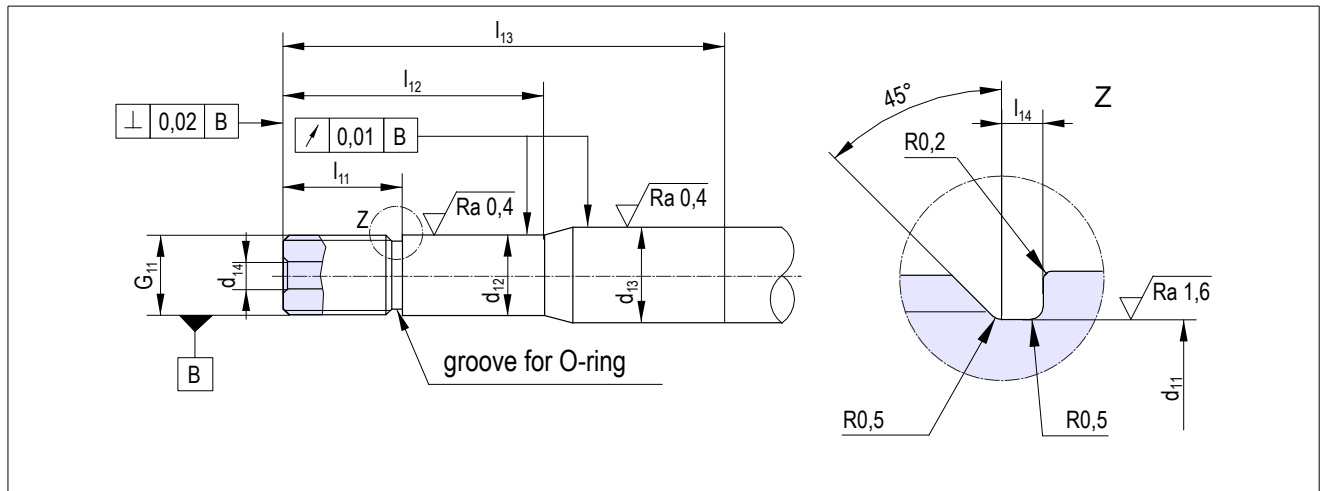


	d_1 form A		32	40	50	63	80	100	125	160
	d_1 form B		40	50	63	80	100	125	160	
	d_1 form E	25 *	32	40	50	63				
	d_1 form F			50	63	80				
[mm]	A	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	1
	E.M. $\pm 0,1$	6,5	8,5	8,5	10,5	10,5	13	13	16,5	17
	$H_{max.}$	7	7,5	8	9	10	11	12,5	15,8	24,5
	H_1	4,6	5,1	5,6	6,4	7,4	8,3	9,15	10,8	17,5
	SW_1	10	12	15	18	24	27	36	46	55
	SW_2	3	3	4	4	5	6	6	14	16
	a_1	5,5	19,5	27	26,5	31,5	31,5	34,5	40,5	56

(Information about form A / form B / form E / form F ⇒ # 1.1 // 4)

* without transfer

1.6.2 Drawbar



d_1 form A			32	40	50	63	80	100	125	160	
d_1 form B			40	50	63	80	100	125	160		
d_1 form E	25 *		32	40	50	63					
d_1 form F				50	63	80					
[mm]	d_{11}	^{-0,1}	4,6	4,6	6	7,9	11,9	13,9	13,9	21,2	27,1
	d_{12}		_{6,2_{g7}}	_{6,2_{g7}}	_{8,2_{g7}}	_{10,2_{g7}}	_{14,2_{g7}}	_{16,2_{g7}}	_{16,2_{h8}}	_{24,2_{h8}}	_{30,4_{h8}}
	d_{13}		-	-	-	-	-	-	_{18_{g7}}	_{25_{g7}}	_{32_{g7}}
	d_{14} max.		-	2,5	3	4	5	6	6	12	12
	G_{11}	^{-4g}	M6x0,5	M6	M8	M10	M14x1,5	M16x1,5	M16x1,5	M24x1,5	M30x1,5
	l_{11}		10,5	9	14	16	18,5	21,5	32	38	52
	l_{12}		45	50	60	67	76	80	50	60	75
	l_{13}		-	-	-	-	-	-	101	115	145
l_{14}		^{1^{+0,1}}	^{1^{+0,1}}	^{1,4^{+0,1}}	^{1,4^{+0,1}}	^{1,4^{+0,1}}	^{1,4^{+0,1}}	^{1,4^{+0,1}}	^{1,9^{+0,2}}	^{1,9^{+0,2}}	

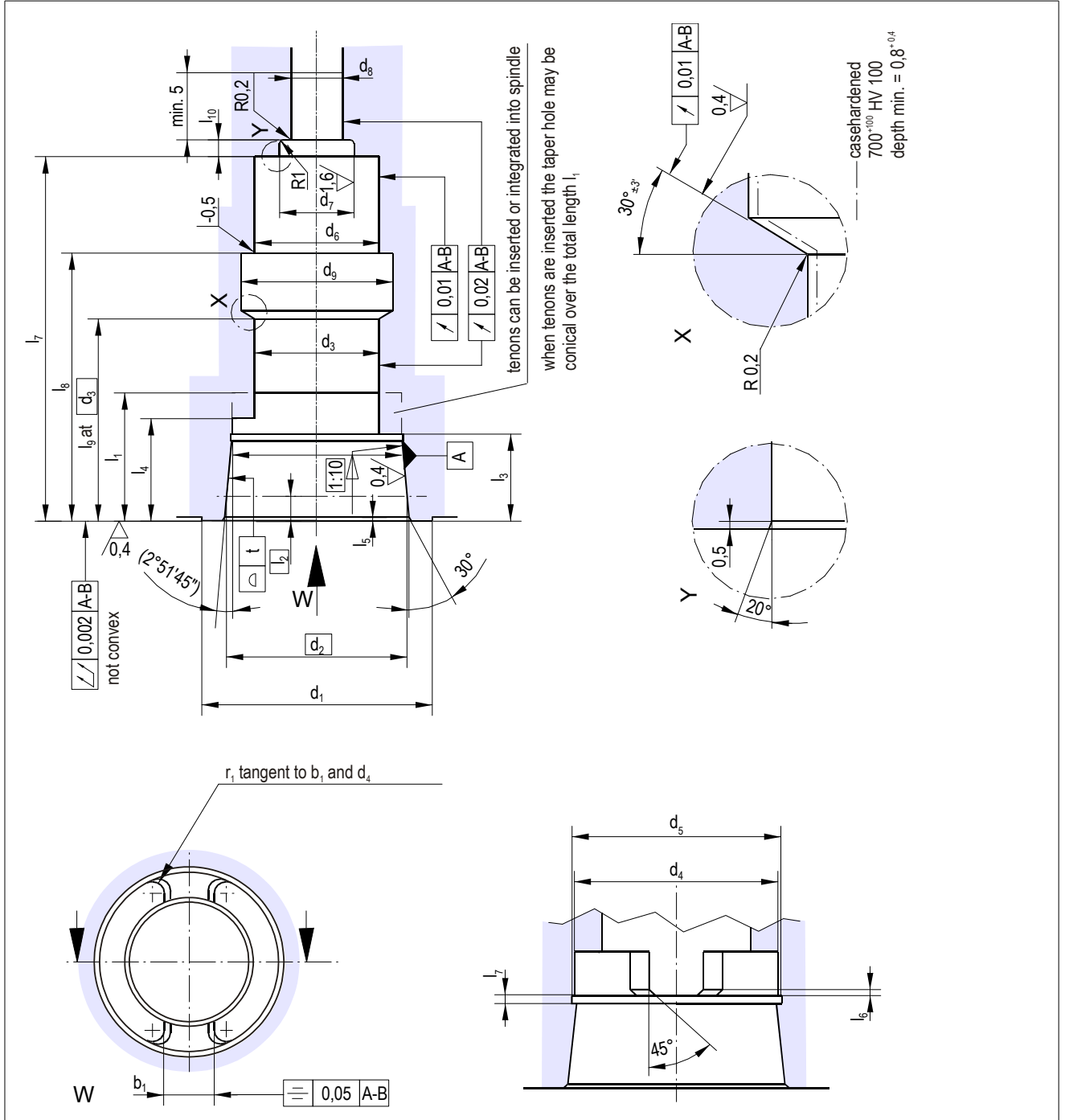
For information only; not a manufacturing drawing!

* without transfer

PRODUCT INFORMATION

CLAMPING UNIT HSK-K

1.6.3 Spindle inside contour HSK form A



		d₁		32	40	50	63	80	100	125	160
ISO / CD 12164-2 *	[mm]	b₁	±0,05	6,8	7,8	10,3	12,3	15,8	19,78	24,78	29,78
		d₂		23,998	29,998	37,998	47,998	59,997	74,997	94,996	119,996
		d₃	H10	17	21	26	34	42	53	67	85
		d₄	+0,1	23,28	29,06	36,85	46,53	58,1	72,6	92,05	116,1
		d₅	+0,2	23,8	29,6	37,5	47,2	58,8	73,4	93,0	118,0
		l₁	+0,2	16,5	20,5	25,5	33	41	51	64	81
		l₂		3,2	4	5	6,3	8	10	12,5	16
		l₃	+0,2	11,4	14,4	17,9	22,4	28,4	35,4	44,4	57,4
		l₄	+0,2	13,4	16,9	20,9	26,4	32,4	40,4	51,4	64,4
		l₅		0,8	0,8	1	1	1,5	1,5	2	2
		l₆	+0,1	1	1	1,5	1,5	2	2	2,5	2,5
		l₇	±0,1	2,0	2,0	2,0	2,5	3,0	3,0	4,0	4,0
		r₁	-0,05	1,5	2	2,5	3	4	5	6	8
		t **		0,0015	0,0015	0,0020	0,0020	0,0025	0,0030	0,0035	0,0035
clamping unit	[mm]	d₆	H6	17	21	26	34	42	53	67	85
		d₇	+0,1	10,3	13,2	15,2	20,4	22,4	24,2	32	37,2
		d₈	+0,1	6,6	8,6	10,6	14,6	16,6	18,4	25,4	32,4
		d₉	+0,2	22,5	26,5	33	41,6	50	63	79	104
		l₇	-0,2	62,5	78	84	94	98	124	149	188
		l₈	±0,1	43	58	61	69	72	93	112,5	148
		l₉	js8 at d ₃	30	44	45	52	56	70	86	113
		l₁₀	+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 d₈ and the runout. Please let us know if you need additional information.

* see update standard

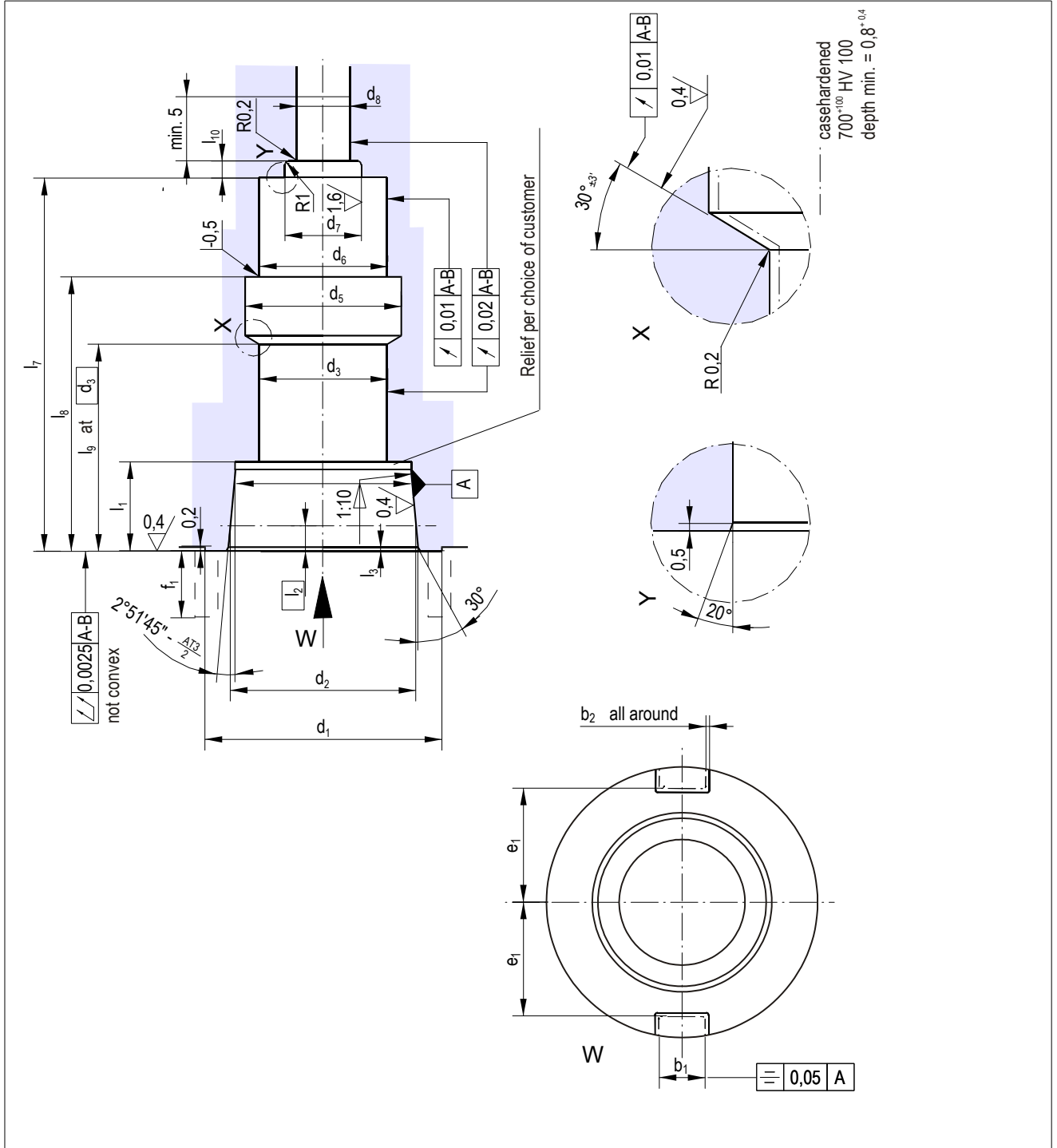
** see ISO 1101 and ISO 3040

For information only; not a manufacturing drawing!

PRODUCT INFORMATION

CLAMPING UNIT HSK-K

1.6.4 Spindle inside contour HSK form B



PRODUCT INFORMATION

CLAMPING UNIT HSK-K



		d_1		40	50	63	80	100	125
E DIN 69063-2 1997-04*	[mm]	b_1	$+0,05$ $-0,05$	9,9	11,9	15,9	17,9	19,9	24,9
		b_2		1	1	1	1	2	2
		d_2		24	30	38	48	60	75
				0	0	0	0	0	0
				-0,003	-0,003	-0,004	-0,004	-0,005	-0,006
		d_3	H10	17	21	26	34	42	53
		e_1	$+0,2$ 0	16,2	20,2	25,2	31,7	40,2	50,2
		f_1	max.	19,5	25,5	25,5	25,5	28,5	28,5
		l_1	$+0,3$ 0	16,5	20,5	25,5	33	41	51
		l_2		3,2	4	5	6,3	8	10
		l_3		0,8	0,8	1	1	1,5	1,5
clamping unit	[mm]	d_5	+0,2	22,5	26,5	33	41,6	50	63
		d_6	H6	17	21	26	34	42	53
		d_7	+0,1	10,3	13,2	15,2	20,4	22,4	24,2
		d_8	+0,1	6,6	8,6	10,6	14,6	16,6	18,4
		l_7	-0,2	62,5	78	84	94	98	124
		l_8	$\pm 0,1$	43	58	61	69	72	93
		l_9	js8 at d_3	30	44	45	52	56	70
		l_{10}	+0,2	3	3,6	3,6	4,2	4,2	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.

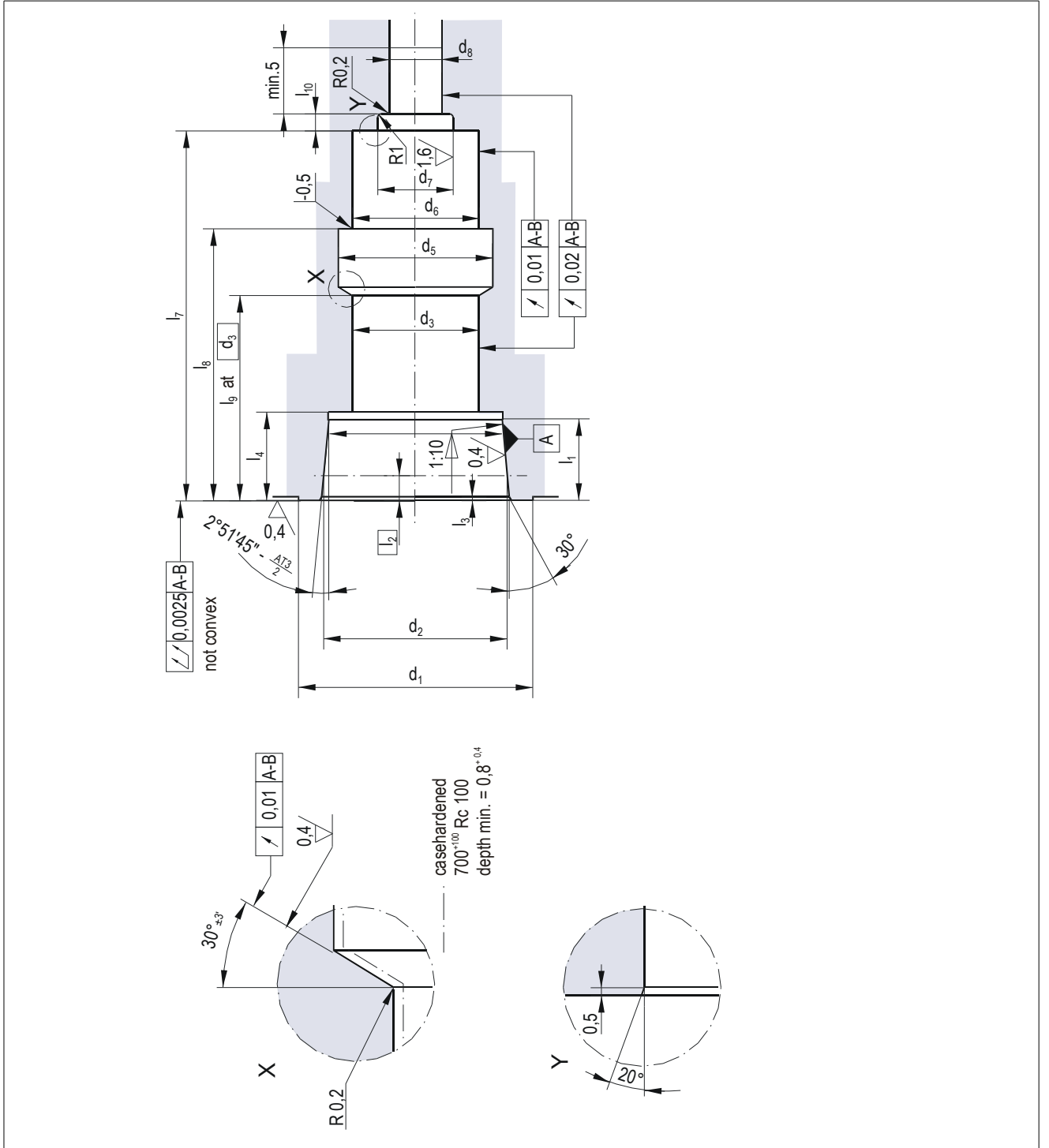
* see update standard

For information only; not a manufacturing drawing!

PRODUCT INFORMATION

CLAMPING UNIT HSK-K

1.6.5 Spindle inside contour HSK form E



PRODUCT INFORMATION

CLAMPING UNIT HSK-K

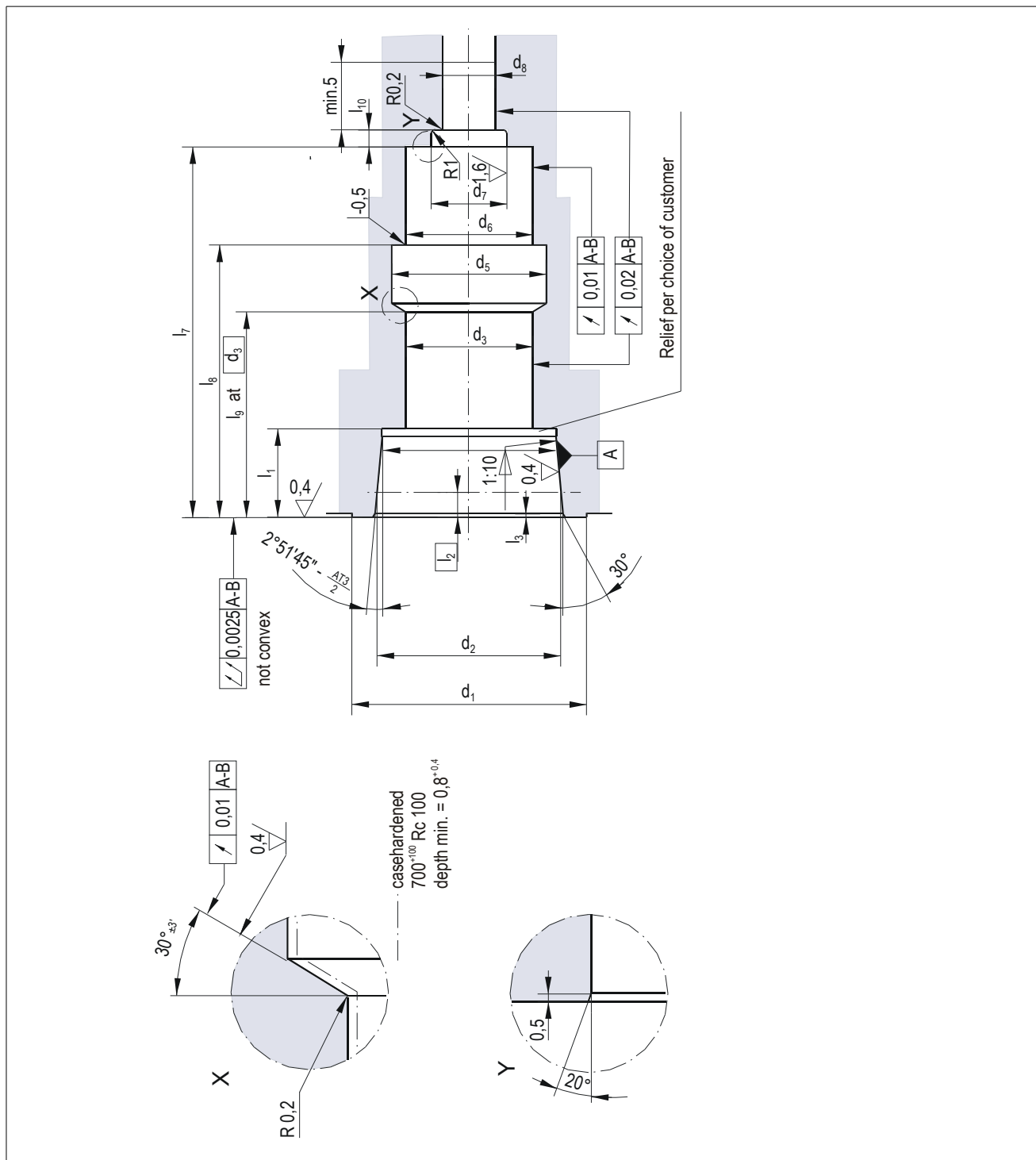
		d_1	25	32	40	50	63		
DIN V 69063-5 1996-01 *	[mm]	d_2	19	24	30	38	48		
			-0,001	-0,001	-0,002	-0,003	-0,003		
			-0,003	-0,003	-0,004	-0,006	-0,007		
		l_1	13	16	20	25	32		
	l_2	2,5	3,2	4	5	6,3			
	l_3	0,5	0,8	0,85	1	1			
	l_4	13,5	16,5	20,5	25,5	33			
	clamping unit	[mm]	d_3	H10	14	17	21	26	34
			d_5	+0,2	18	22,5	26,5	33	41,6
			d_6	H6	14	17	21	26	34
d_7			+0,1	-	10,3	13,2	15,2	20,4	
d_8			+0,1	6,4	6,6	8,6	10,6	14,6	
l_7			-0,2	40	62,5	78	84	94	
l_8			$\pm 0,1$	25,5	43	58	61	69	
l_9			js8 at d_3	18,5	30	44	45	52	
l_{10}			+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_8 and the runout. Please let us know if you need additional information.

* see update standard

For information only; not a manufacturing drawing!

1.6.6 Spindle inside contour HSK form F



PRODUCT INFORMATION

CLAMPING UNIT HSK-K

		d_1	50	63	80	
DIN V 69063-6 1996-01 *	[mm]	d_2	30	38	48	
			-0,002	-0,003	-0,003	
			-0,004	-0,006	-0,007	
		d_3	H10	21	26	34
		l_1	+0,2	20,5	25,5	33
		l_2		4	5	6,3
		l_3	+0,2	0,8	1	1
clamping unit	[mm]	d_5	+0,2	26,5	33	41,6
		d_6	H6	21	26	34
		d_7	+0,1	13,2	15,2	20,4
		d_8	+0,1	8,6	10,6	14,6
		l_7	-0,2	78	84	94
		l_8	$\pm 0,1$	58	61	69
		l_9	js8 at d_3	44	45	52
		l_{10}	+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

For information only; not a manufacturing drawing!

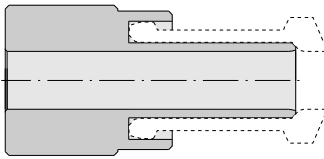
1.7 ORDER NUMBER

d ₁ form A	d ₁ form B	d ₁ form E	d ₁ form F	clamping unit for axial medium transfer	lock screw
32	40	32		95.600.008.3.6	95.600.121.4.1
40	50	40	50	95.600.007.3.6	95.600.122.4.1
50	63	50	63	95.600.004.3.6	95.101.597.5.1
63	80	63	80	95.600.001.3.6	95.601.475.4.1
80	100			95.600.002.3.6	95.103.636.5.1
100	125			95.600.003.3.6	95.103.636.5.1
125				95.600.009.3.6	95.600.101.4.1
160				95.600.010.3.6	95.600.372.4.1

d ₁ form A	d ₁ form B	d ₁ form E	d ₁ form F	clamping unit without medium transfer; air is possible; without picture	lock screw
		25		95.600.011.3.6	95.600.271.4.1
40	50	40	50	95.600.016.3.6	95.600.122.4.1
50	63	50	63	95.600.083.3.2	95.101.597.5.1
63	80	63	80	95.600.015.3.6	95.601.475.4.1

1.7.1 Assembly tool for HSK clamping unit

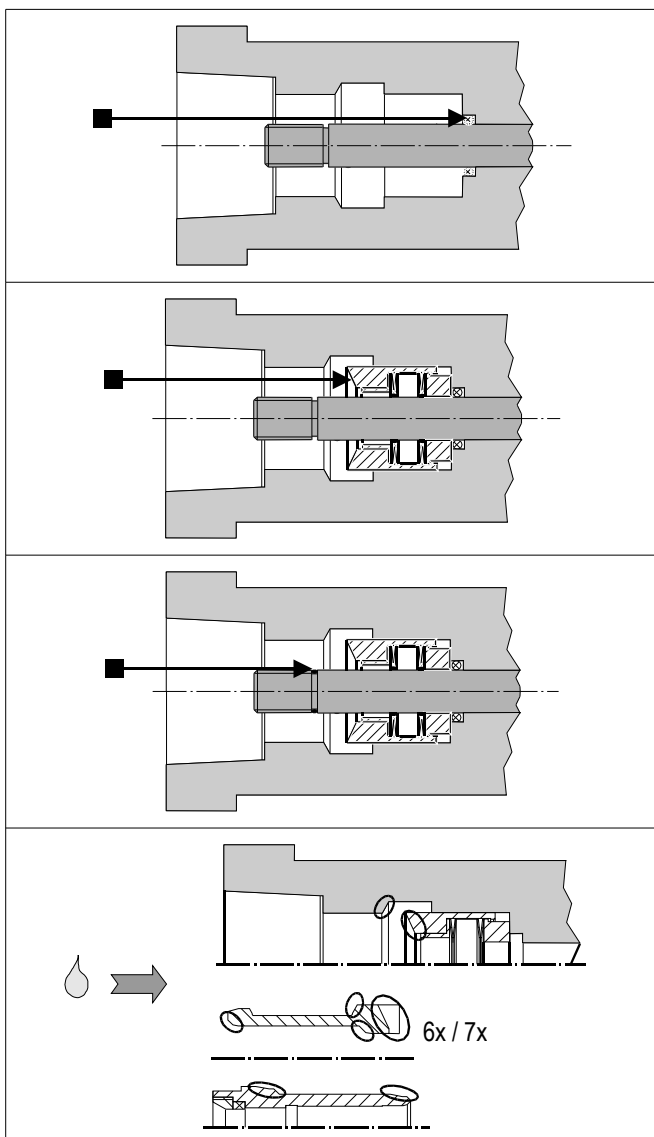
for easier assembly of the HSK gripper unit; not included with delivery!

	size	order-no.
	E25 (without figure)	95.601.561.3.2
	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 ASSEMBLY

2.1 CLAMPING UNIT HSK-K

- ▲ Clean spindle inside contour
- ▲ make sure that edges are properly rounded
- ▲ grease O-rings

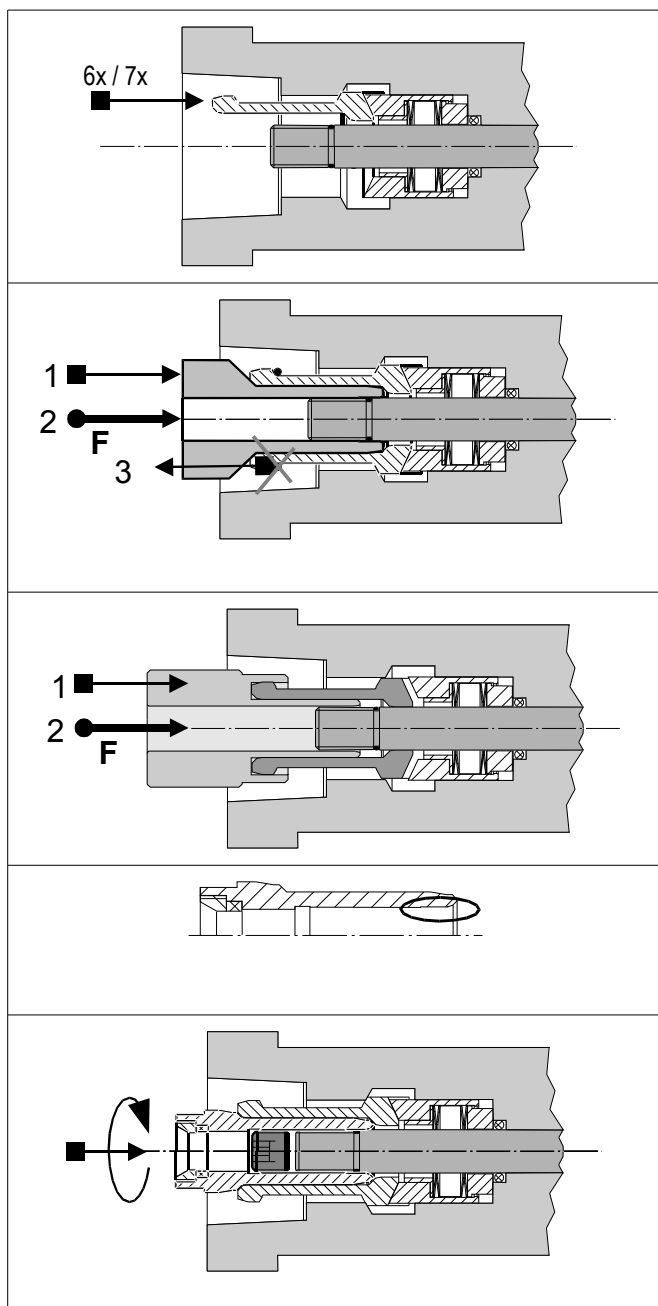


if necessary

- ▲ mount o-ring in the spindle
- ▲ grease spacer with mounting grease
- ▲ push spacer into spindle and check for ease of movement
- ▲ mount o-ring on the drawbar
Protective sleeve obtainable
- ▲ grease area of contact
→ METAFLUX-Paste 70-8508
or
→ KLÜBER-Paste ME 31-52
do not mix the grease!

PRODUCT INFORMATION

CLAMPING UNIT HSK-K



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

When using assembly fixture:

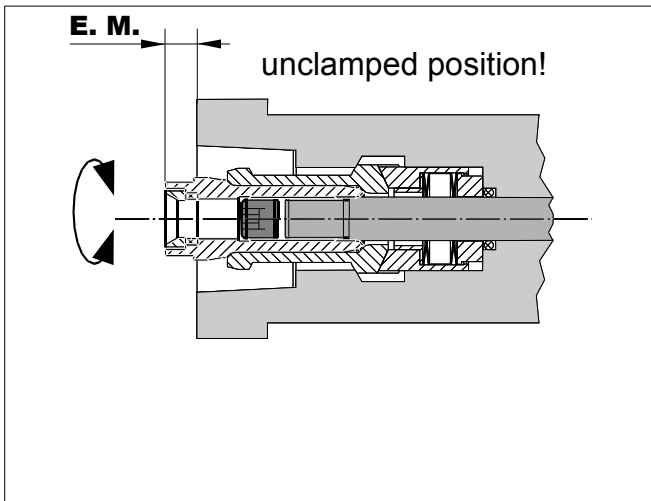
- ▲ assemble the segments on the fixture by using an o-ring, insert complete fixture with segments into the spindle; give it a good push until the segments click in place, remove the o-ring

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!

PRODUCT INFORMATION

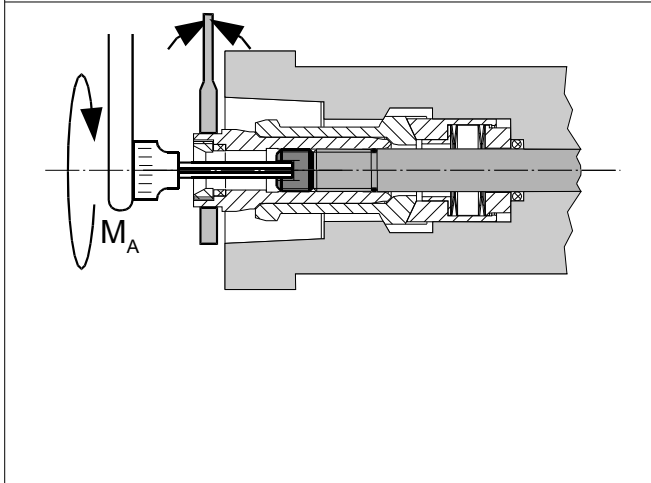
CLAMPING UNIT HSK-K



▲ adjust gauge dimension E.M.

gauge dimension:

- E25: 6,5 mm
- A32 / B40 / E32: 8,5 mm
- A40 / B50 / E40 / F50: 8,5 mm
- A50 / B63 / E50/ F63: 10,5 mm
- A63 / B80 / E63 / F80: 10,5 mm
- A80 / B100: 13 mm
- A100 / B125: 13 mm
- A125 / B160: 16,5 mm
- A160: 17 mm

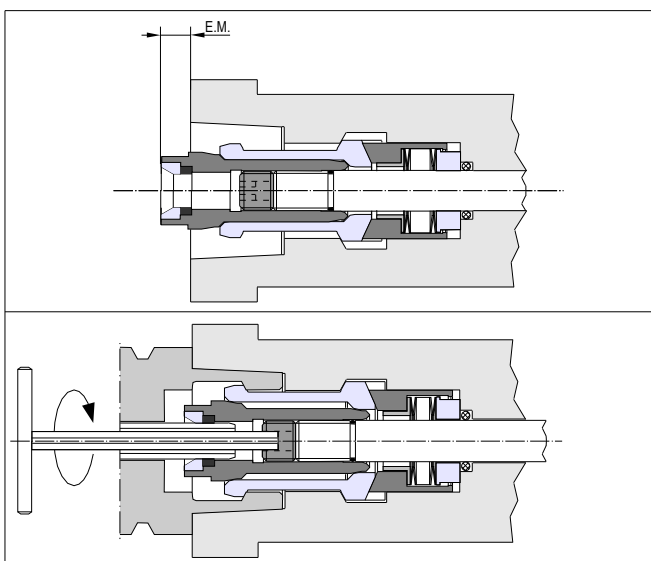


▲ tighten the lock screw

tightening 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 / B125: 50 Nm
- A125 / B160: 100 Nm
- A160: 150 Nm

2.1.1 Check after approx. 100 strokes



In unclamped position

▲ Check dimension gauge E.M.

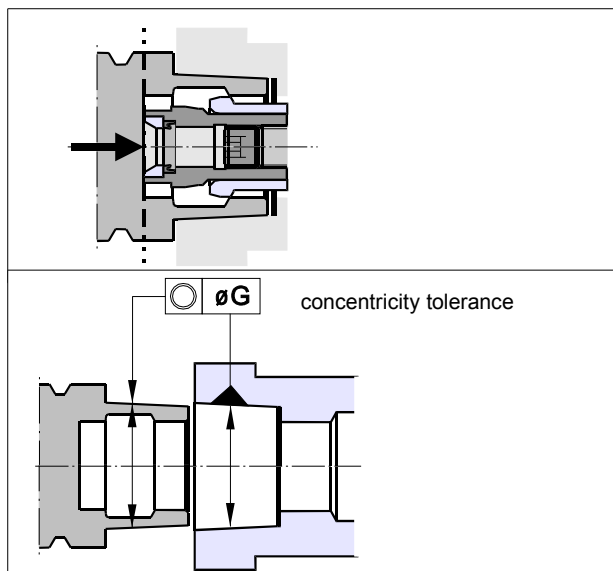
▲ re-tighten through a clamped tool

3 OPERATION



No rotation without clamped tool!
Only use technically perfect tools!

3.1 TOOL INSERTING



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

3.2 OPERATING CONDITIONS



- Avoid additional stress contributed to force from brackets or any other connection and or support, proximity switches
- impact loads < 25 g
- the spring must be protected against corrosive media and dirt exposure
- the tool interface must be free of chips and substantial cooling lubricant residue
- allowable temperature 10° C (on the inside of the spindle)

3.3 INTERN COOLING SUPPLY



- Because of possible damage at the coolant tube interface (tube/seal) we recommend drainage holes in the tool interface area
- during installation of tool:
pressure in clamp chamber $p < 0,5 \text{ bar}$
- 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 12164-1)
 - ground
- Operation with coolant is only permitted if free flow is guaranteed. Therefore, you must only use tool holders with coolant tubes and tools with coolant thru holes. Otherwise, it is possible that the spindle gets flooded or the seals are damaged by the pressure spikes.

3.4 COOLANT



Guidelines and technical specifications for the coolant use in the machine:

Coolant use must conform to the current regulations of the legislation and the professional association.

Our products are to the greatest possible extent protected by the materials used or by means of a passivated surface against corrosion and therefore suited for use with water. The rate of corrosion is strongly dependent on the contents of the media (e.g. chlorine is very much increasing the rate of corrosion), as well as the environment in which the products are being operated (e.g. the difference in electrical potential between rotor and stator in spindles).

Suitable protective measures such as the utilization of corrosion inhibitors will extend the service life in every way.

Furthermore, you must only use coolants which conform with the specs listed on the table below.

Parameter / test procedure	Limited values
Corrosion protection according to DIN 51360 section 2	No corrosion after 2 hours
Elastomer compatibility	No change of the shore hardness and/or the elongation OTT-JAKOB applies FKM (VITON®)
Nonferrous metal compatibility	No corrosion on copper, brass and aluminum parts
Glue residue after slow evaporation at 50 degrees	Non sticky! No residue! Easily removable.

3.5 GENERAL



- Recommendation: install a limit switch for the drawbar
- Follow maintenance intervals!

4 MAINTENANCE

4.1 MAINTENANCE INTERVALS

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

Every week

- ▲ Check the packing ring in the clamping unit (visual check)
- ▲ Check the gripper if it is polluted or damaged; is it sufficient greased? (visual check)

Please see below:

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

Regrease clamping unit → #4.2 // 27

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 (→ #4.2 // 27) 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

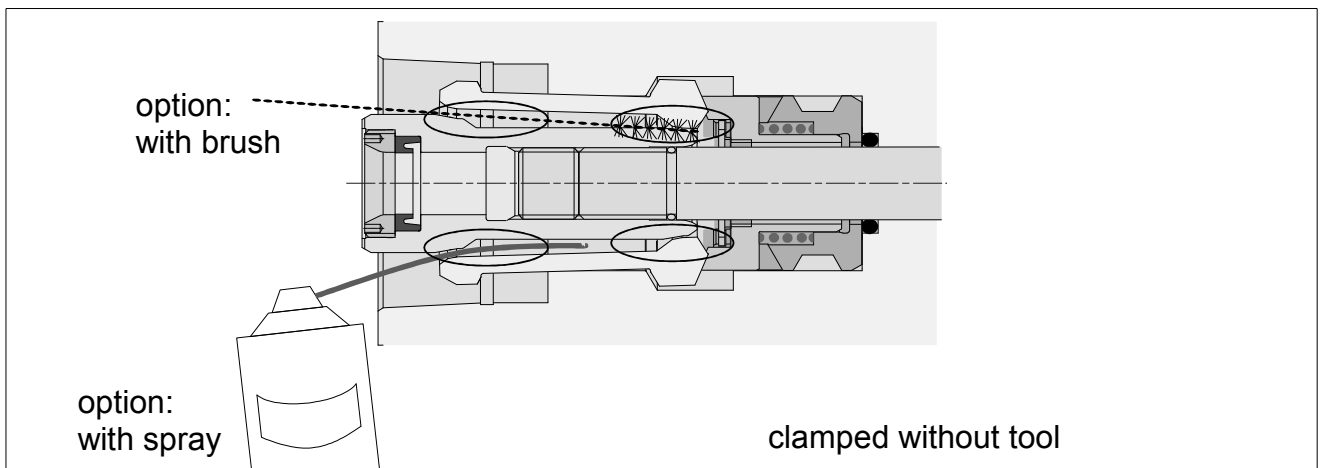
- ▲ Exchange the packing ring → #4.4 // 28

4.2 REGREASE CLAMPING UNIT



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

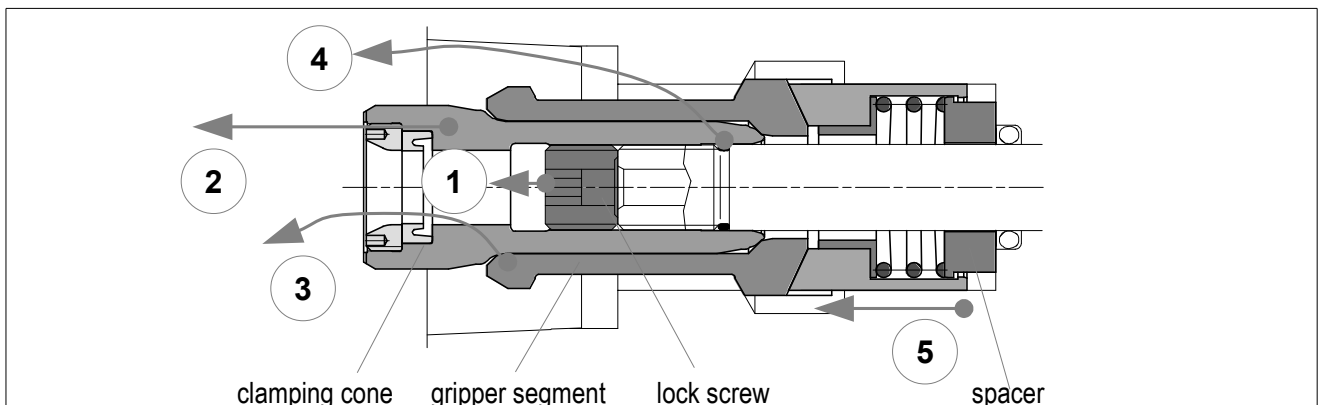
Regrease in assembled condition



If very dirty: take clamping unit out and clean.

Then grease clamping unit and reassemble → #2.1 // 20

4.3 DISASSEMBLE CLAMPING UNIT HSK

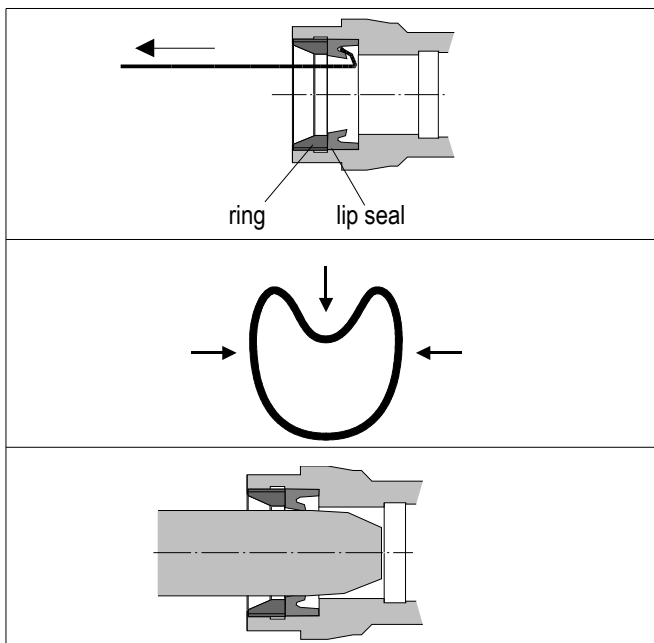


In unclamped position:

1. loosen lock screw
2. unscrew clamping cone
3. remove gripper segments with light tilting movements
4. remove O-ring from drawbar
5. remove spacer with it use 2 long nose pliers or tweezers

4.4 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 final position

4.5 BREAK OF A GRIPPER SEGMENT

- ▲ If one of the gripper segments should break, the complete clamping unit needs to be replaced!

PRODUCT INFORMATION

CLAMPING UNIT HSK-K



4.6 WEARING PART LIST

name	quantity	order-no.
* METAFLUX-grease-paste Nr. 70-8508	4 g	0.929100.012
METAFLUX-Moly-spray Nr. 70-81	400 ml	06.21001.017
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

* first equipment



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

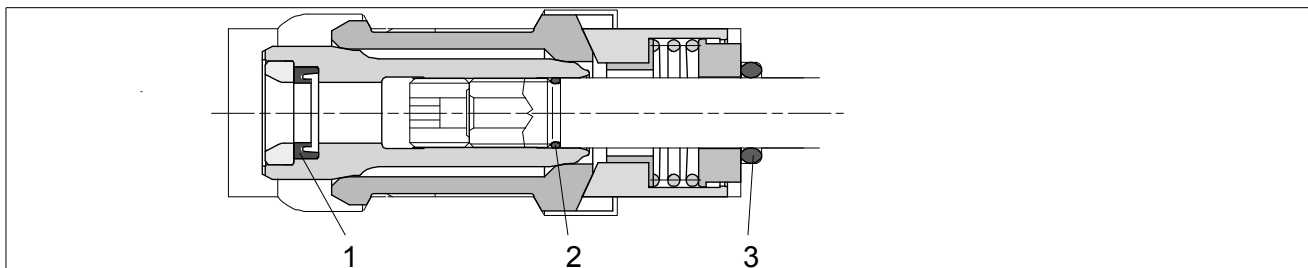
METAFLUX	Metaflux AG Industriestraße 11 CH-4313 Möhlin Tel.: +41-61-851 08 00 Fax: +41-61-851 08 08	KLÜBER	Klüber Lubrication München KG Postfach 701047 D-81310 München Tel.: (0 89) 78 76 -0 Fax: (0 89) 78 76 -333
	TECHNO-SERVICE GmbH Detmolder Straße 515 D-33605 Bielefeld Tel.: (05 21) 9 24 44 -0 Fax: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

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

name	HSK-size	order-no.
brush	A32 - A100	06.16001.001

4.7 SPARE PARTS

Lip seal / O-rings

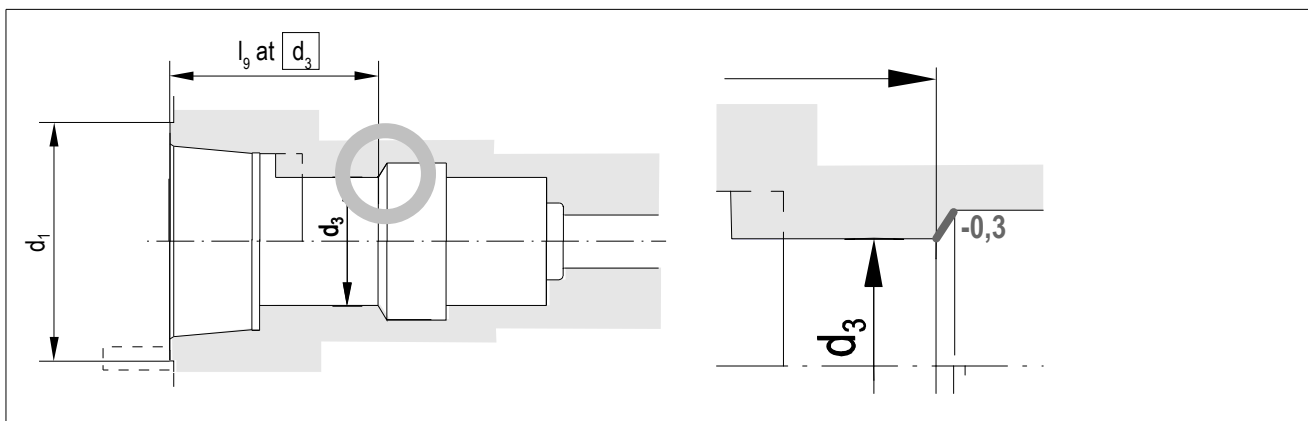


clamping unit HSK		lip seal	O-rings	
nominal size	complete	1	2	3
E25	95.600.011.3.6	-	0.926010.166 <i>4,5 x 1,0</i>	-
A32 / B40 / E32	95.600.008.3.6	0.926030.110 <i>6 x 10 x 3</i>	0.926010.205 <i>4,5 x 1,0</i>	0.926010.233 <i>6,3 x 2,4</i>
A40 / B50 / E40	95.600.007.3.6	0.926030.112 <i>8 x 14 x 4</i>	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	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	0.926030.103 <i>12 x 18,5 x 4,5</i>	0.926010.321 <i>11,5 x 1,5</i>	0.926010.164 <i>13,87 x 3,53</i>
F80	95.600.015.3.6	-	0.926010.321 <i>11,5 x 1,5</i>	0.926010.164 <i>13,87 x 3,53</i>
A80 / B100	95.600.002.3.6	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	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	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				

4.8 REPAIR CLAMPING UNIT HSK B-E

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

Fashioning edge

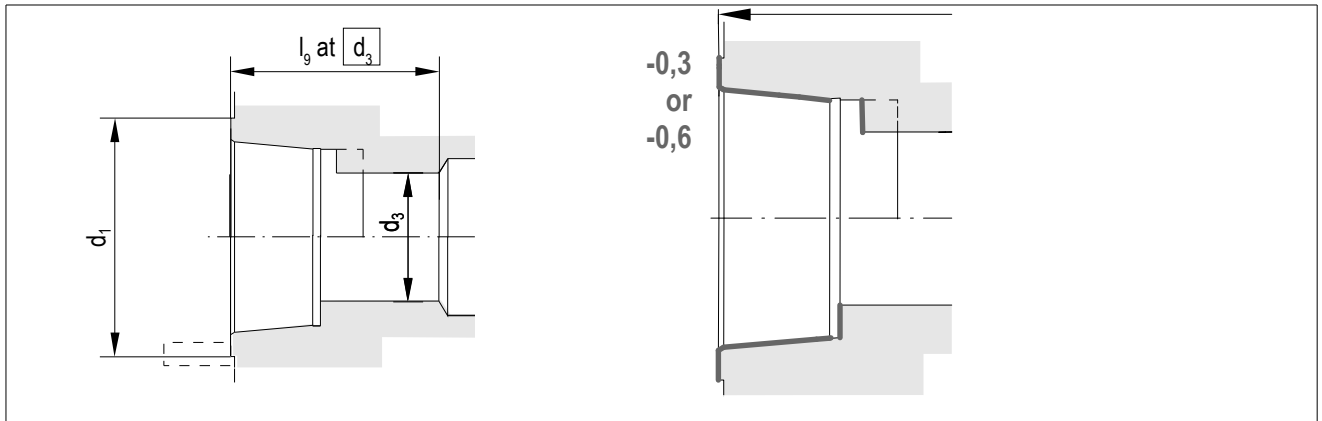


nominal size	clamping-unit HSK		repair-clamping-unit HSK B-E1	
	complete	l_9	complete	l_9
E25	95.600.011.3.6	18,5	95.600.120.9.6	18,2
A32 / B40 / E32	95.600.008.3.6	30	95.600.121.9.6	29,7
A40 / B50 / E40	95.600.007.3.6	44	95.600.122.9.6	43,7
F50	95.600.016.3.6	44	95.600.122.9.6	43,7
A50 / B63 / E50	95.600.004.3.6	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
A125 / B160	95.600.009.3.6	86	95.600.183.9.6	85,7

PRODUCT INFORMATION

CLAMPING UNIT HSK-K

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
A125 / B160	95.600.009.3.6	86	95.600.180.9.6	85,7	95.600.181.9.6	85,4

4.9 TROUBLE SHOOTING HSK

trouble	reason
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)
	clamping unit worn out
	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