

# CLAMPING UNIT

## HSK-B-K



## TABLE OF CONTENTS

1	PRODUCT DESCRIPTION.....	3
1.1	DIMENSIONS.....	3
1.2	ORDER NUMBERS.....	4
1.3	FEATURES.....	5
2	ASSEMBLY.....	5
3	OPERATION.....	8
3.1	TOOL INSERTING.....	8
3.2	OPERATING CONDITIONS.....	9
3.3	INTERN COOLING SUPPLY.....	9
3.4	COOLANT.....	10
3.5	GENERAL.....	10
4	MAINTENANCE.....	11
4.1	MAINTENANCE INTERVALS.....	11
4.2	REGREASE CLAMPING UNIT.....	12
4.3	EXCHANGE OF THE LIP SEAL.....	13
4.4	BREAK OF A GRIPPER SEGMENT.....	13
4.5	SPARE PARTS.....	14
4.6	REPAIR CLAMPING UNIT HSK B-K-E.....	15
4.7	TROUBLE SHOOTING HSK.....	17

### symbol explanation



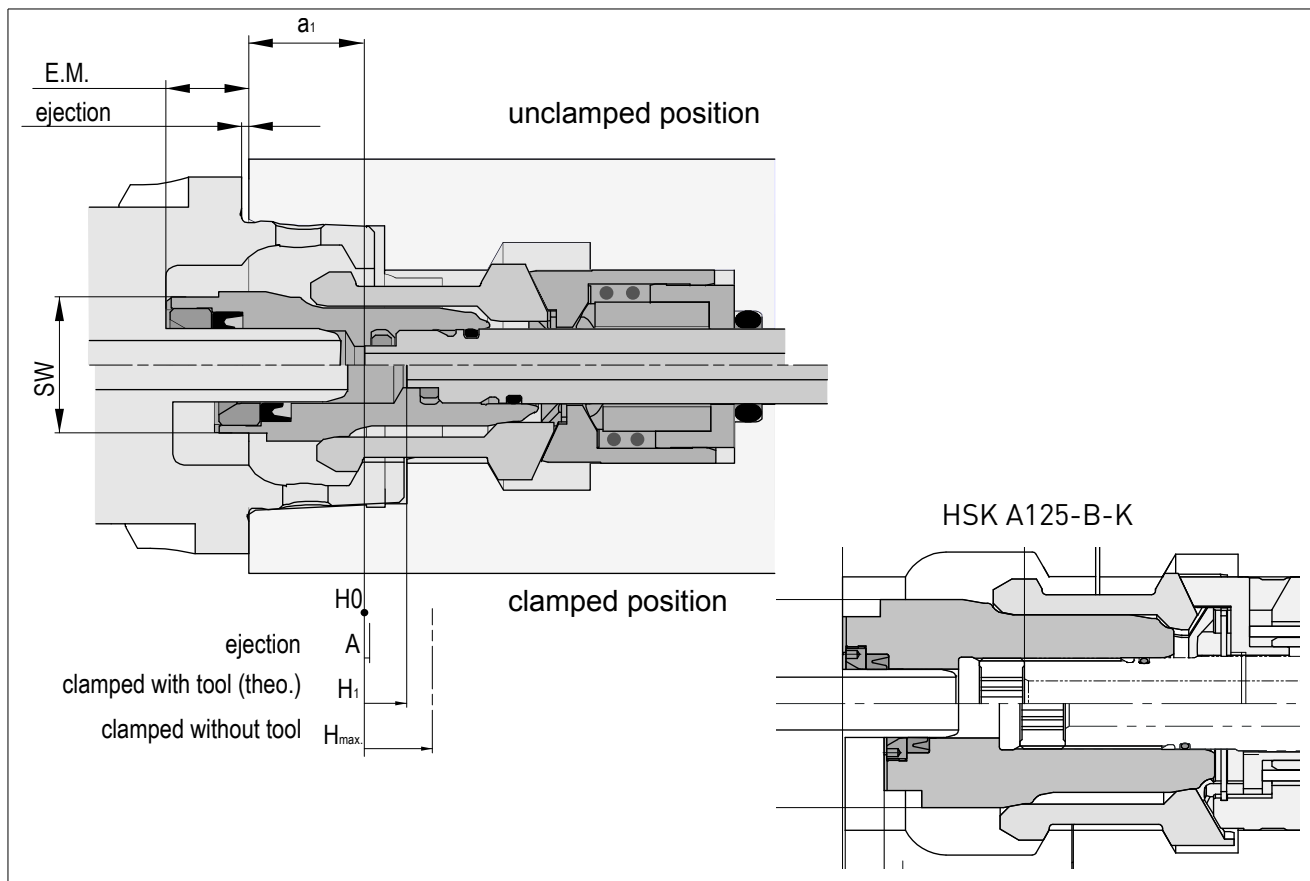
keep attention -  
dangerous!



keep attention - malfunction!

## 1 PRODUCT DESCRIPTION

### 1.1 DIMENSIONS

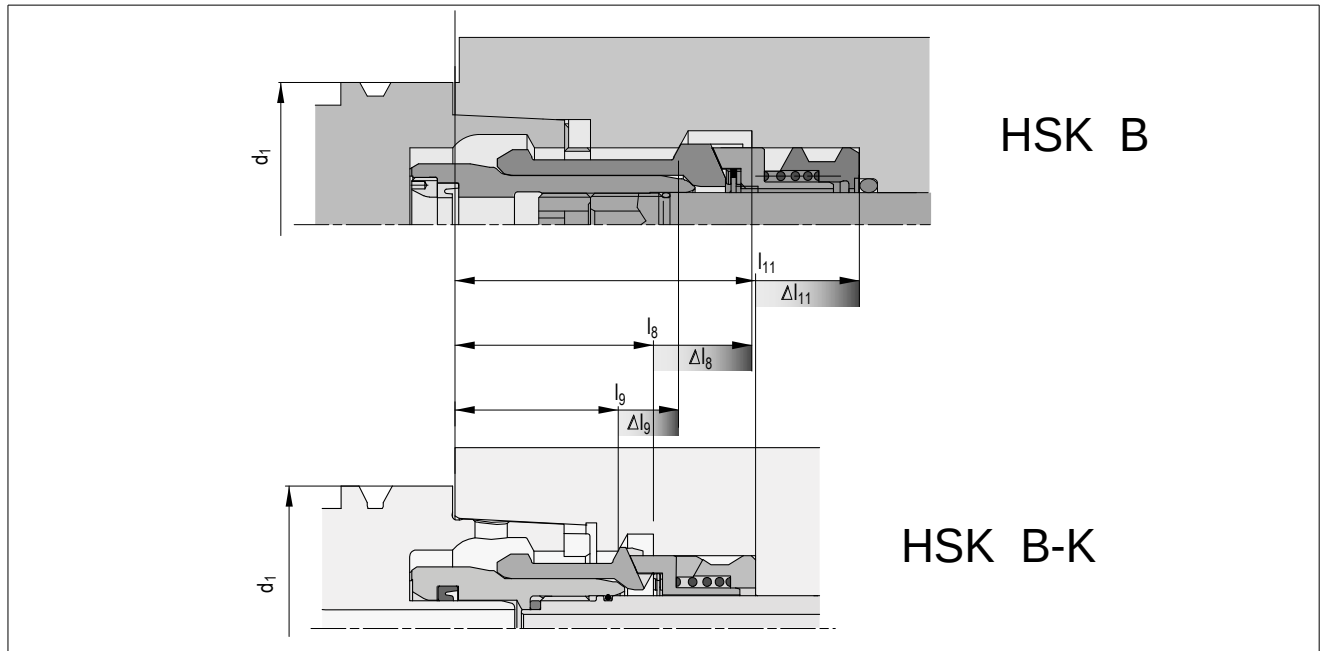


$d_1$	32	40	50	63	80	100	125 *
E.M. $\pm 0,1$	8,5	8,5	10,5	10,5	13	13	16,5
$a_1$ **	13	14	15,5 (L64) 13 (L53)	18,6 (L82) 15,5 (65)	14,5	16,5	31,5
A	0,5	0,5	0,5	0,5	0,5	0,5	0,5
$H_1$	5,1	5,6	6,4	7,4	8,3	9	10,8
$H_{max}$	7,5	8	9	10	11	12,5	15,8
SW	12	15	18	24	27	36	46

\* HSK A125-B-K: with lock screw (without distance piece)

\*\*  $a_1$  can be adjusted in individual cases

### 1.2 ORDER NUMBERS



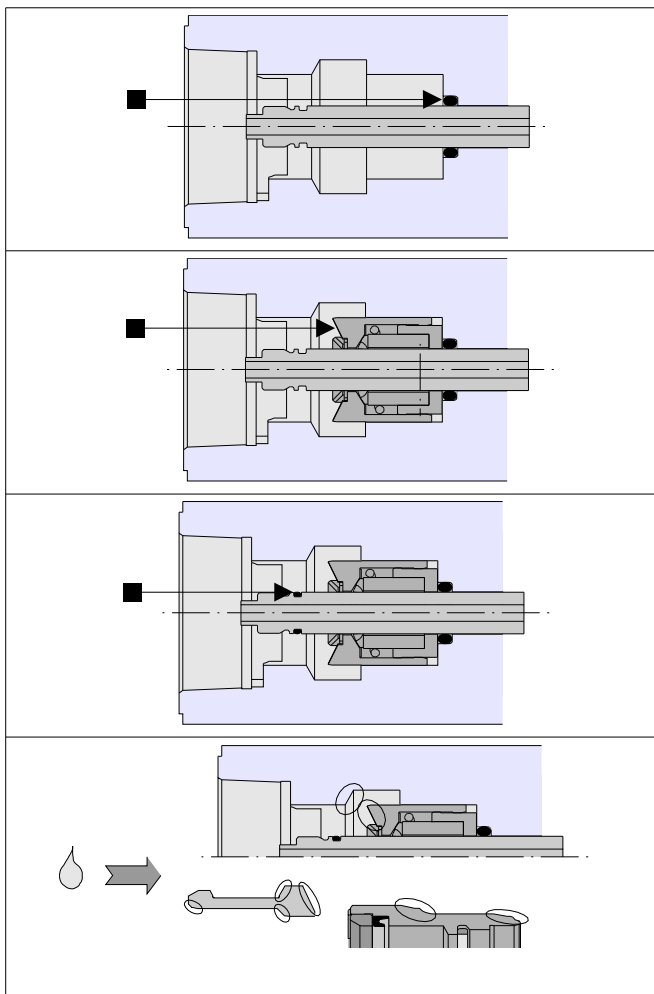
clamping unit	$l_9$	$l_8$	$l_{11}$	order-no.
HSK A32-B	30	43	62,5	9560011336
HSK A32-B-K	25	38	57,5	9560004536
HSK A40-B	44	58	78	9560003436
HSK A40-B-K	25,5	35	50	9560017326
HSK A50-B	45	61	84	9560003536
HSK A50-B-K L64	31,5	45	64	9560011836
HSK A50-B-K L53	30	37,5	53	9560017626
HSK A63-B	52	69	94	9560003326
HSK A63-B-K L82	40	57	82	9560005126
HSK A63-B-K L65	38	46,5	65	9560017226
HSK A80-B	56	72	98	9560003626
HSK A80-B-K	45	59	77	9560015216
HSK A100-B	70	93	124	9560003726
HSK A100-B-K	55	73,5	92	9560015616
HSK A125-B	86	112,5	149	9560018216
HSK A125-B-K	70	88	107	9560015916

## 1.3 FEATURES

- Parallel moving gripper segments
- High static and dynamic stiffness
- Locking geometry
- high life expectancy
- short version

## 2 ASSEMBLY

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



- ▲ mount o-ring in the spindle

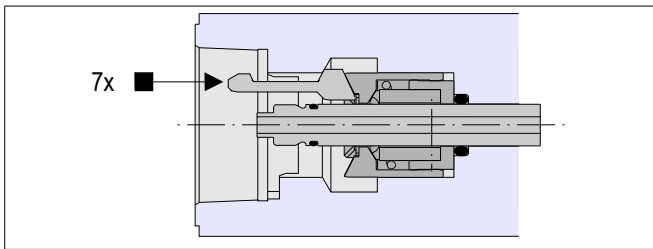
- ▲ grease spacer with mounting grease
- ▲ push spacer into spindle and check for ease of movement

- ▲ mount o-ring on the drawbar; use protective sleeve for threaded drawbar end

- ▲ grease area of contact
- ➔ METAFLUX-Paste 70-8508
- or
- ➔ KLÜBER-Paste ME 31-52
- do not mix the grease!

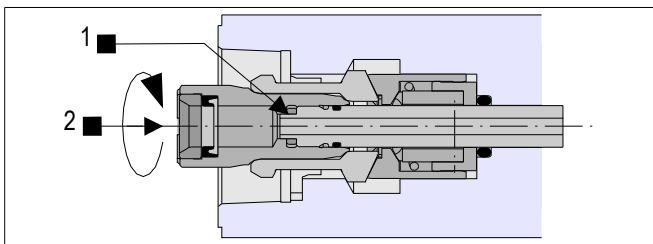
# PRODUCT INFORMATION

HSK-B-K

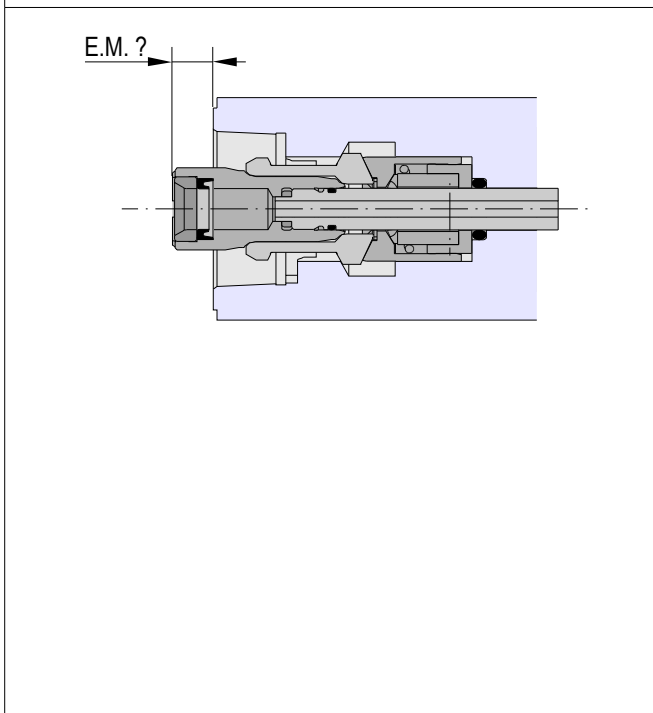


- ▲ snap gripper segments in the spacer;  
ensure that the numbers match

with HSK A125-B-K: next step see next page



- ▲ put the distance piece / disc kit  
into the clamping cone
- ▲ screw the clamping cone onto the drawbar  
and tighten it



In unclamped position:

- ▲ detect the difference to the gauge  
dimension E.M.

gauge dimension:

- A32: 8,5 mm
- A40: 8,5 mm
- A50: 10,5 mm
- A63: 10,5 mm
- A80: 13 mm
- A100: 13 mm
- A125: 16,5 mm

- ▲ screw out the clamping cone
- ▲ match up the distance piece
- ▲ screw the clamping cone with the distance  
piece onto the drawbar again and tighten it

tightening torque:

- A32: 10 Nm
- A40: 10 Nm
- A50: 20 Nm
- A63: 30 Nm
- A80: 30 Nm
- A100: 50 Nm

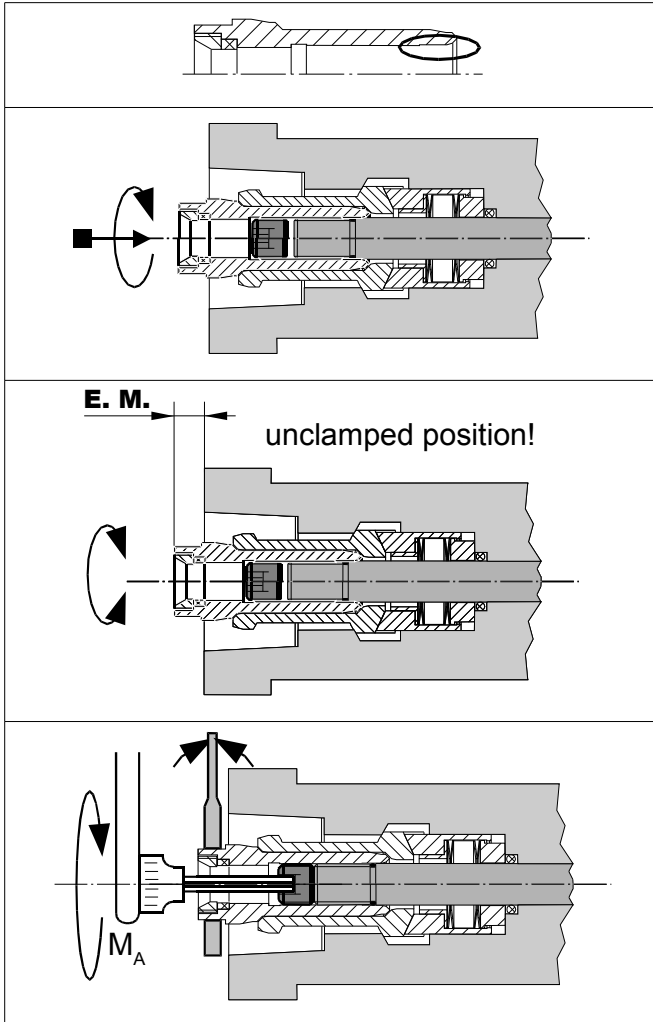
- ▲ check the gauge dimension E.M.

## Check after approx. 100 strokes

In unclamped position:

- ▲ Check dimension gauge E.M.
- ▲ check the lock of the clamping cone

## Different with HSK A125-B-K



- ▲ 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!

- ▲ adjust gauge dimension E.M.

gauge dimension:

- A125: 16,5 mm

- ▲ tighten the lock screw

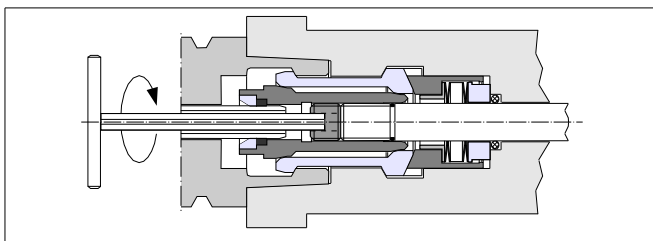
tightening torque::

- A125: 100 Nm

## Check after approx. 100 strokes

In unclamped position:

- ▲ Check dimension gauge E.M.



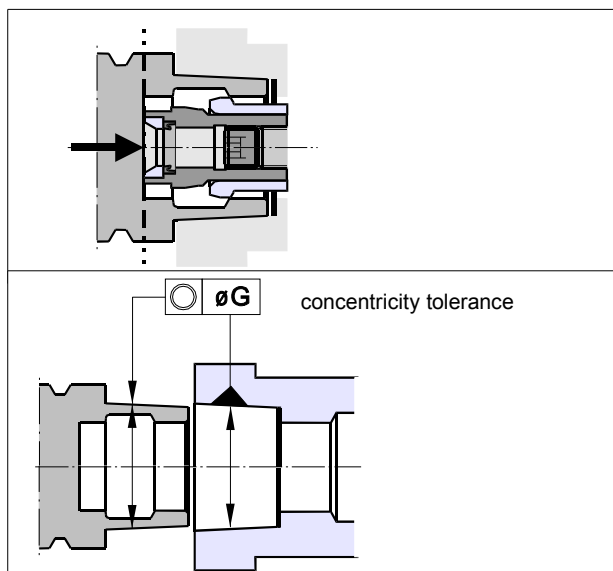
- ▲ re-tighten through a clamped tool

## 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 clamping unit 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 // 12

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

- ▲ In unclamped position: Check dimension gauge E.M.
- ▲ check the lock of the clamping cone
- ▲ 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 // 12 ) and test pull-in force again
  - exchange clamping unit and test again
  - exchange drawbar completely

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

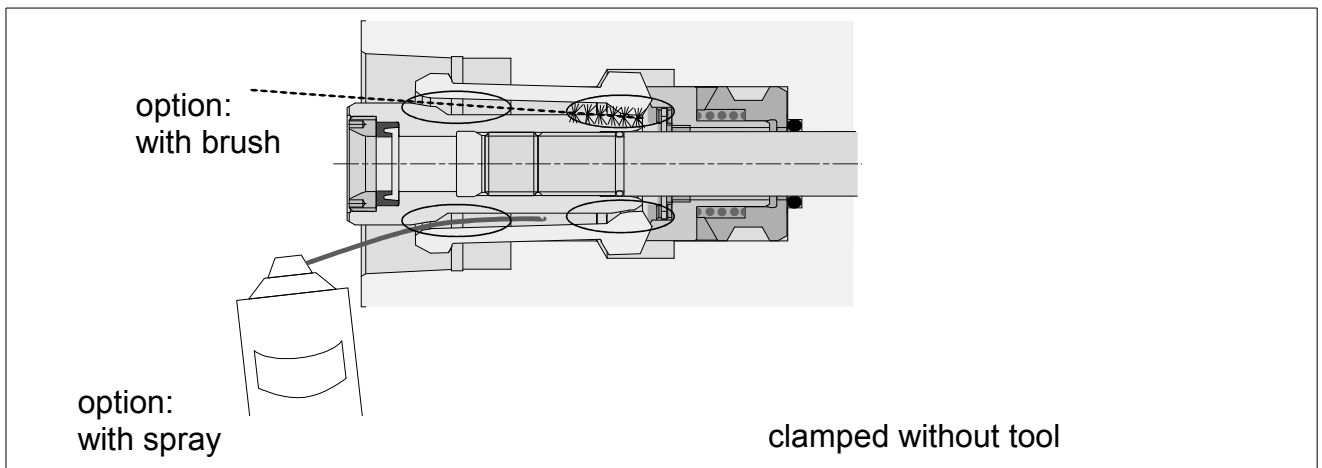
- ▲ Exchange the packing ring → #4.3 // 13

## 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 // 5

Grease for HSK-clamping unit

designation	quantum	order-no.
* METAFLUX-Fett-Paste Nr. 70-8508	4 g	0929100012
METAFLUX-Moly-Spray Nr. 70-81	400 ml	0621001017
METAFLUX-Moly-Spray Nr. 70-82	400 ml	0621001010
KLÜBER-Fett-Paste ME 31-52	10 g	0621001014
KLÜBER-Spray ALTEMP Q NB 50	400 ml	0621001015

\* first equipment



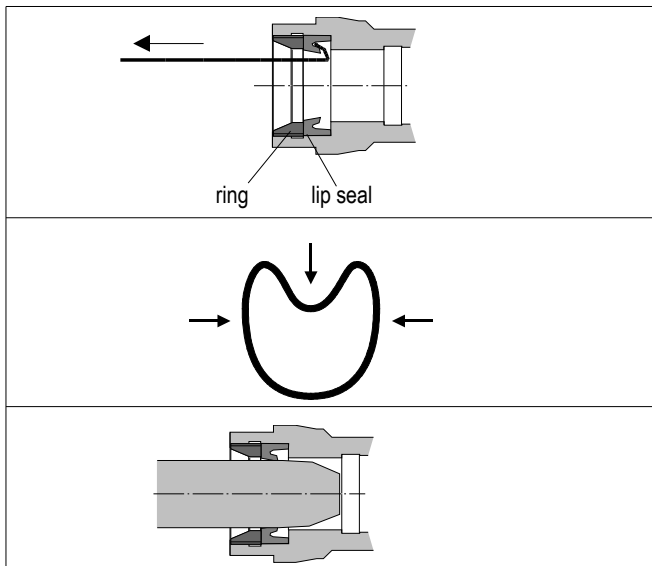
Note: take only grease of one company; do not mix the grease!

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

designation	HSK-size	order-no.
brush	A32 - A100	0616001001

## 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

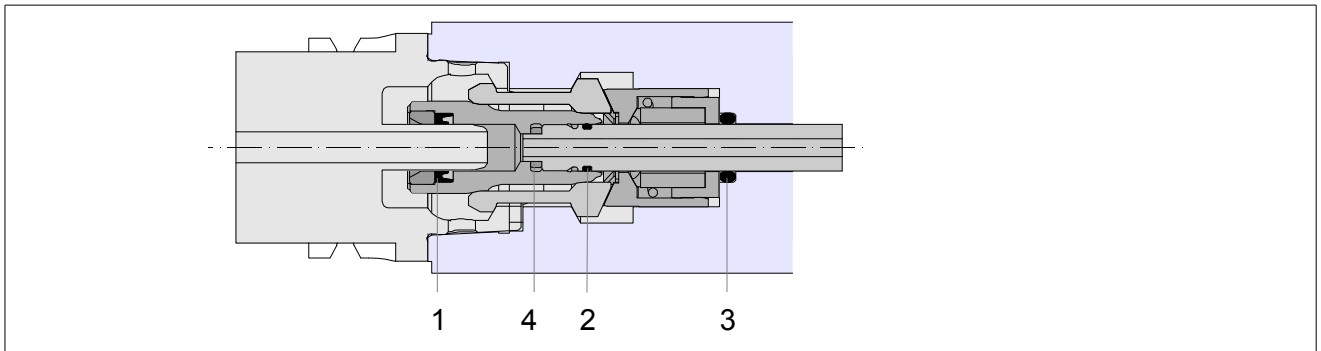
▲ press the seal with a blunt object against the lining

▲ take a mandrel to bring it in the final position

## 4.4 BREAK OF A GRIPPER SEGMENT

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

## 4.5 SPARE PARTS

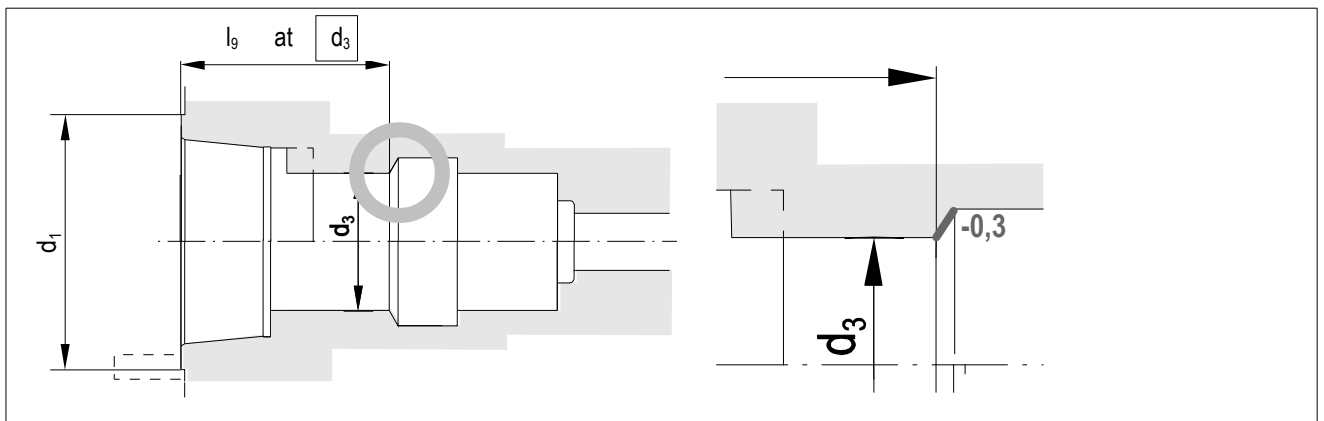


clamping unit	HSK	lip seal	O- ring			distance piece
						disc kit
nominal size	complete	1	2	3	4	
A32	9560004536	0926030110 6 x 10 x 3,0	0926010205 4,5 x 1,0	0926010233 6,3 x 2,4		9560197141
A40	9560017326	0926030112 8 x 14 x 4,0	0926010044 6,0 x 1,5	0926010047 8,0 x 3,0		9560371892
A50	9560011836 & 9560017626	0926030111 10 x 15 x 3,5	0926010170 8,0 x 1,5	0926010172 10,0 x 3,0		9560142641
A63 L82	9560005126	0926030117 12 x 18,5 x 4,5	0926010321 11,5 x 1,5	0926010164 13,87 x 3,53		9560217641
A63 L65	9560017226	0926030117 12 x 18,5 x 4,5	0926010104 11,0 x 1,5	0926010164 13,87 x 3,53		9560217641
A80	9560015216	0926030108 14 x 20 x 4,8	0926010260 13 x 1,5	not included in delivery volume!		9560343741
A100	9560015616	0926030109 16 x 24 x 5,5	0926010168 16 x 2,5	not included in delivery volume!		9560337341
A125	9560015916	0926030114 18 x 26 x 5,5	0926010145 20,0 x 2	0926010295 20,0 x 2,5		---
material: Viton, 80 SHORE A						

## 4.6 REPAIR CLAMPING UNIT HSK B-K-E

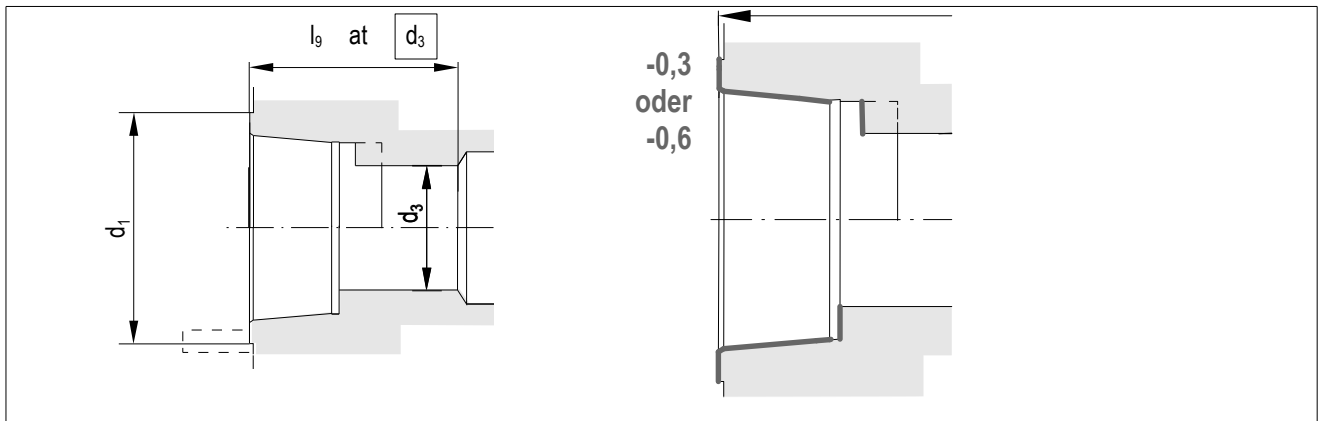
If fashioning necessary, we have repair-clamping-units.

### Fashioning edge



nominal size	clamping unit HSK		repair-clamping-unit HSK B-K-E1	
	complete	$l_9$	complete	$l_9$
HSK A32-B-K	9560004536	25	9560007996	24,7
HSK A50-B-K L64	9560011836	31,5	9560008196	31,2
HSK A63-B-K L82	9560005126	40	9560008396	39,7
HSK A80-B-K	9560015216	45	9560015396	44,7
HSK A125-B-K	9560015916	70	9560016896	69,7

### Fashioning receiver



nominal size	clamping unit HSK		repair-clamping-unit HSK B-K-E 0,3		repair-clamping-unit HSK B-K-E 0,6	
	complete	$l_9$	complete	$l_9$	complete	$l_9$
HSK A32-B-K	9560004536	25	9560008096	24,7	9560008996	24,4
HSK A50-B-K L64	9560011836	31,5	9560008296	31,2	9560006896	30,9
HSK A63-B-K L82	9560005126	40	9560008496	39,7	9560006996	39,4
HSK A80-B-K	9560015216	45	9560015496	44,7	-	



## 4.7 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