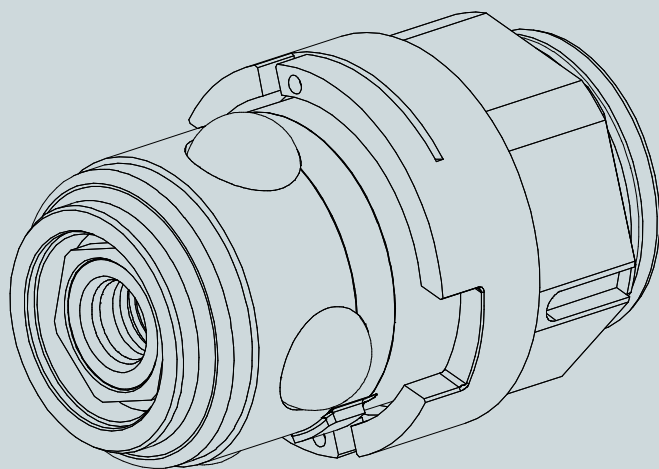


CLAMPING UNIT

KM4X



LONG-LIFE
CLAMPING
TECHNOLOGY
INSIDE

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symbol explanation:



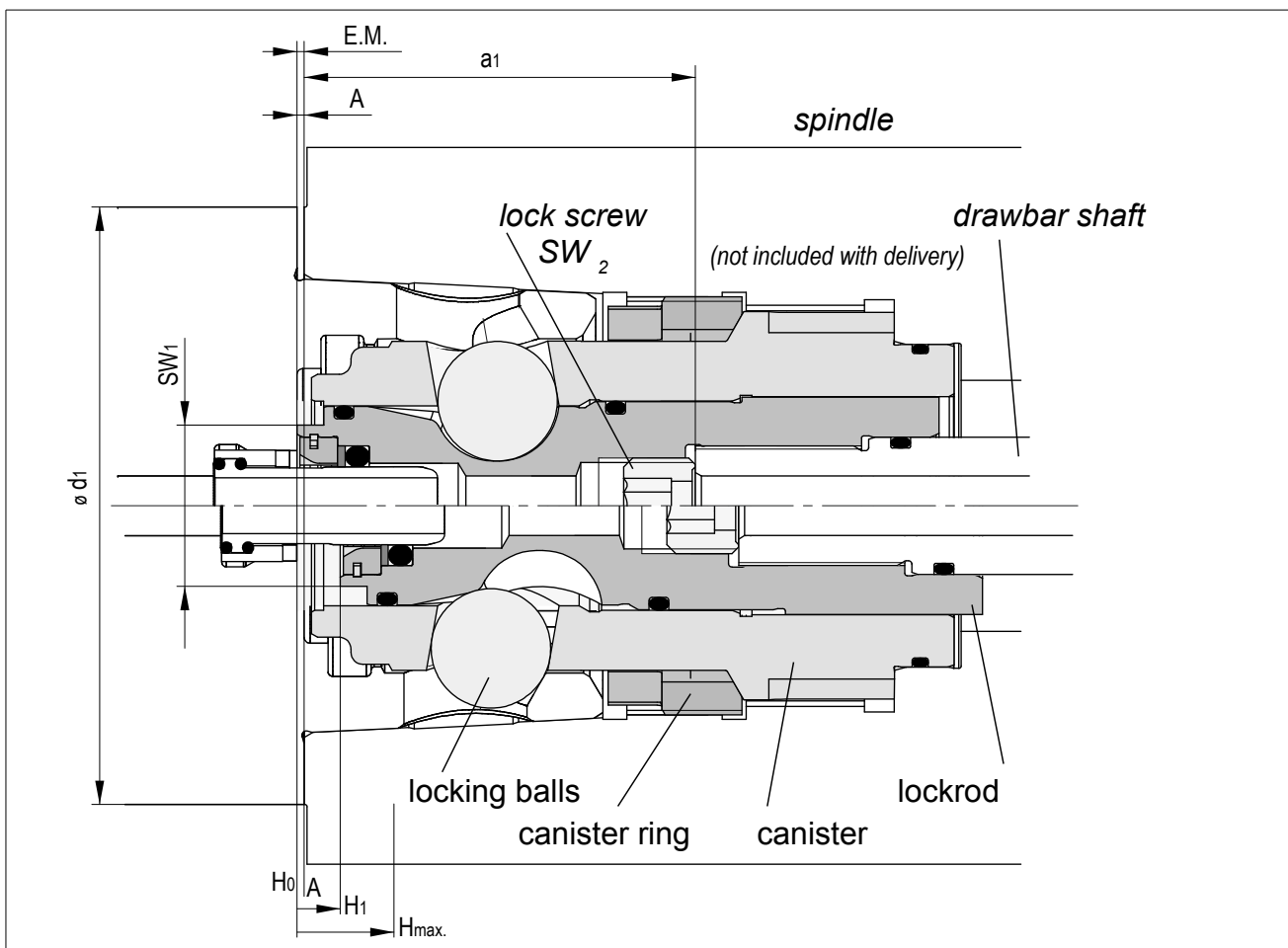
keep attention -
dangerous!



keep attention -
malfunction!

1 PRODUCT DESCRIPTION

1.1 DIMENSIONS



	d_1	63	100	125
	A	1	1,2	1,5
	E.M.	$1 \pm 0,2 / -0,1$	$1,2 \pm 0,15$	$1,5 \pm 0,2$
	$H_{max.}$	9,5	13	16,3
	H_1	5,8	8,45	11,5
	SW_1	19	27	38
	a_1	45,9	65,5	81
[mm]				

PRODUCT INFORMATION

CLAMPING UNIT KM4X



1.2 TECHNICAL DATA

		KM4X 63	KM4X 100	KM4X 125
limiting speed n_{max} .		30000	21400	16700
pull force	[kN]	36 - 58	90 - 110	135 - 165
coolant pressure max.	[bar]	250	250	250

1.3 ORDER NUMBER

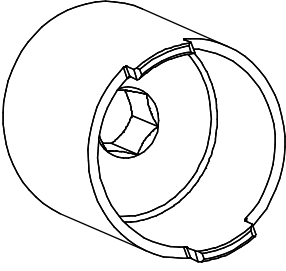
d_1	order number
63	95.600.193.2.6
100	95.600.192.2.6
125	95.600.211.2.6

PRODUCT INFORMATION

CLAMPING UNIT KM4X

1.3.1 Assembly tool

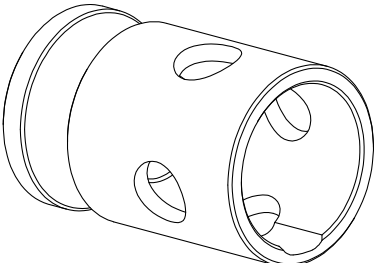
Not included with delivery!

	d1	order number
	63	95.605.065.3.1
	100	95.604.837.3.1
	125	95.606.020.3.1

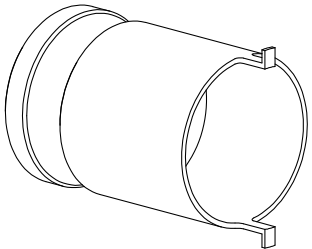
1.3.2 Disassembly Tools

Not included with delivery!

Removal Tool - Canister

	d1	order number
	63	95.605.697.2.1
	100	95.605.698.2.1
	125	95.606.563.2.1

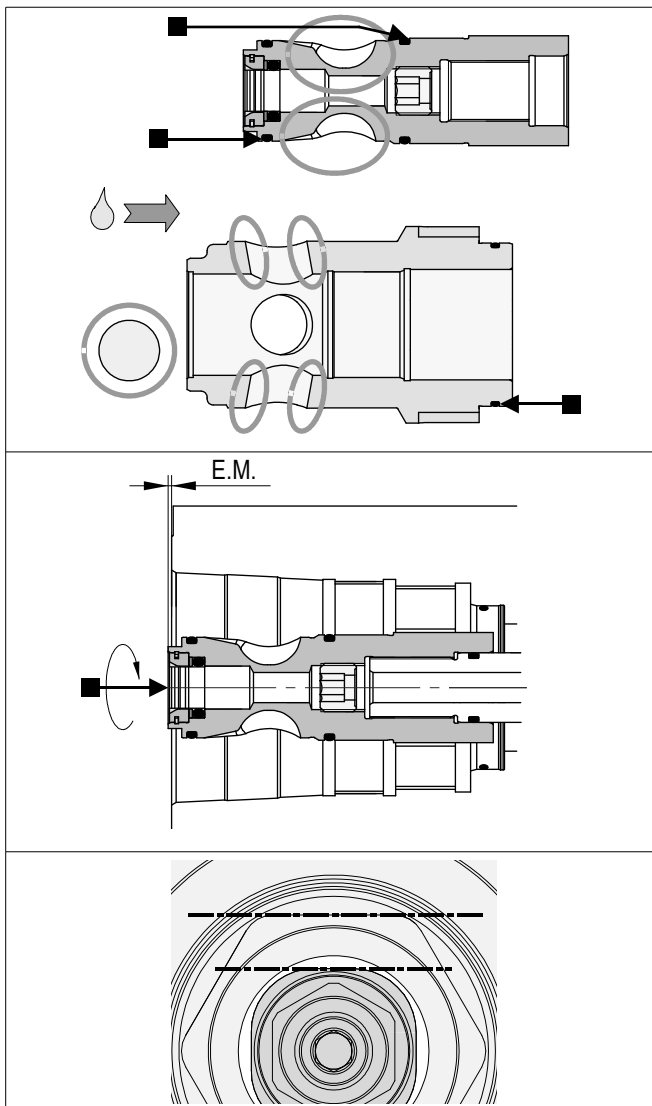
Removal Tool - Canister Ring

	d1	order number
	100	95.605.700.3.1
	125	95.606.564.2.1

2 ASSEMBLY

2.1 CLAMPING UNIT KM4X

- ▲ Move drawbar shaft in unclamped position
- ▲ grease O-rings
- ▲ KM4X63: mount support ring at drawbar
- ▲ mount =-ring at drawbar



- ▲ mount o-rings
- ▲ grease locking balls (4x), the sliding surface and the ball cage of the canister with KLÜBER-Fett-Paste ME 31-52

- ▲ screw locking screw into the lock rod up to the stop
- ▲ screw lock rod on drawbar shaft and adjust gauge dimension

gauge dimension E.M.:

KM4X63: 1,0 +0,2/-0,1 [mm]

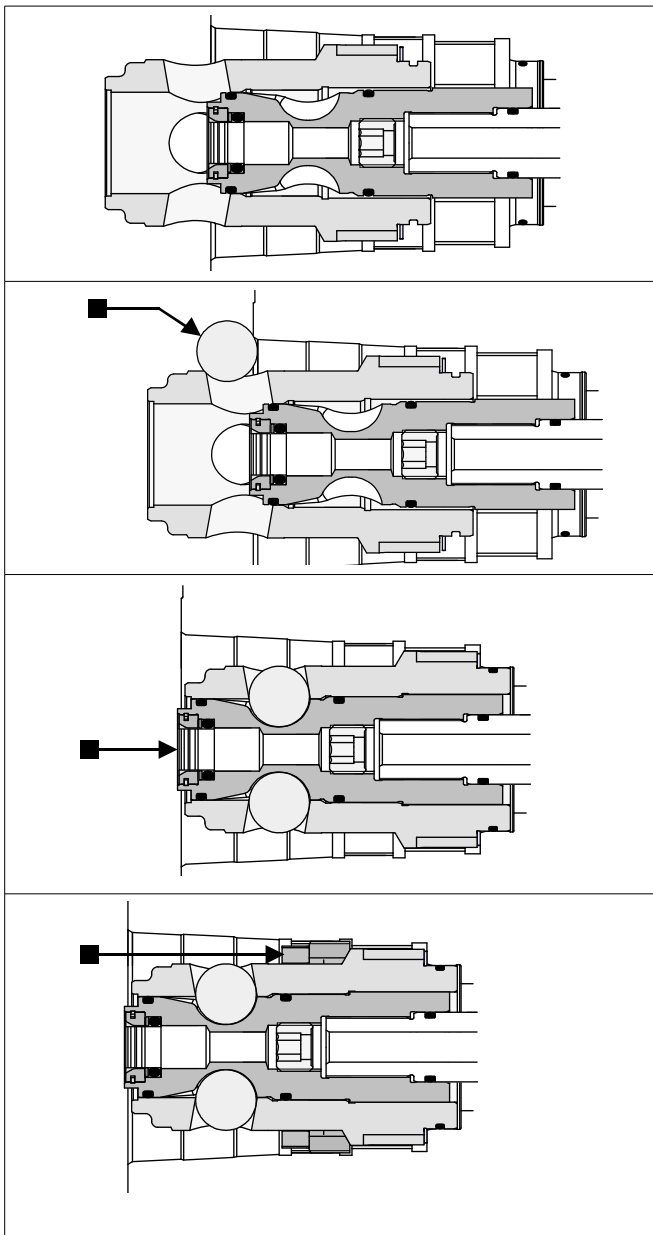
KM4X100: 1,20 ±0,15 [mm]

KM4X125: 1,50 ±0,2 [mm]

- ▲ rotate the lock rod so that the square area is parallel to an area of the spindle hexagon (63: square shaft)

PRODUCT INFORMATION

CLAMPING UNIT KM4X



▲ slide canister over the lock rod; make sure that the spanner flats of both parts align; do not fully slide the canister over the lock rod to ensure that the locking balls can still be inserted

▲ insert the four locking balls; start with the top balls

▲ now slide the canister into the final position; the anti-rotation flats must align

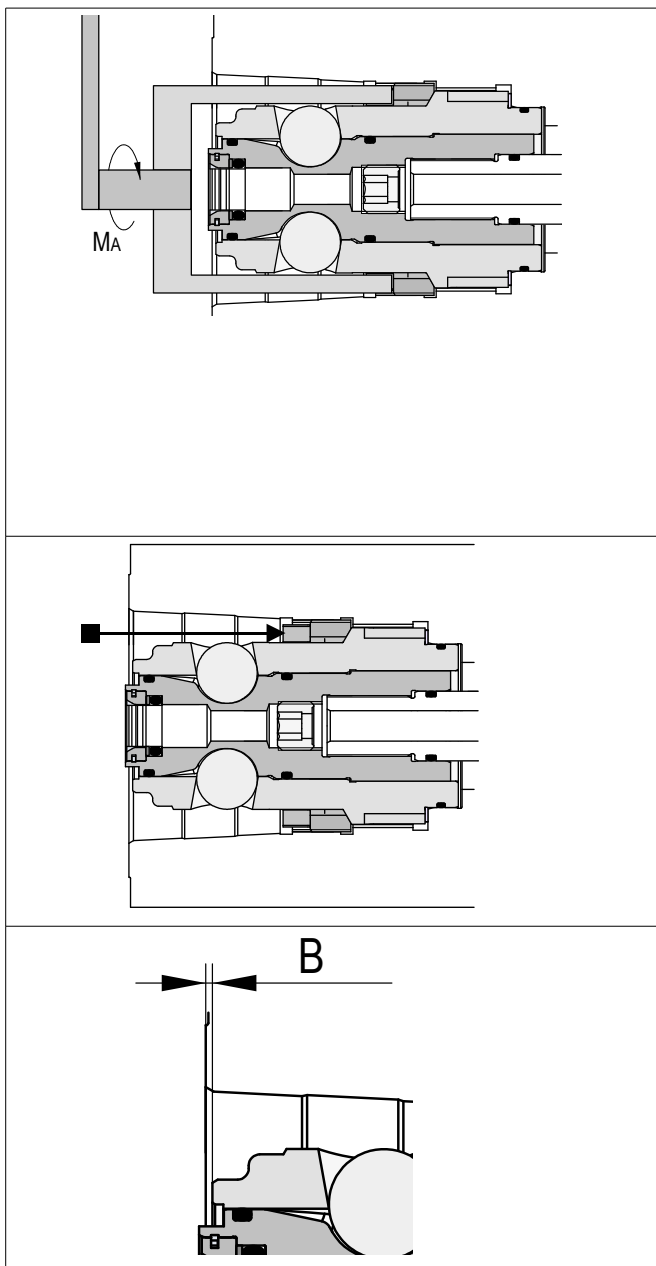
▲ unblock (not remove) set screws in the canister ring (not at KM4X 63)

▲ grease thread on canister ring

▲ slide the canister ring over the canister; the alignment key (canister) and the gap (canister ring) must align

PRODUCT INFORMATION

CLAMPING UNIT KM4X



- ▲ screw in canister ring and tighten them; use mounting tool (→ # 1.3.1 // 5) and torque wrench

tightening torque:

KM4X63: 75 Nm

KM4X100: 200 Nm

KM4X125: 350 Nm

KM4X63: After disassembly of the clamping unit, screw in the thread ring again max. 4 times. Then the plastic thread locks must be changed → # 4.2.2 // 16

- ▲ screw in set screws (2x) and tighten it; (not at KM4X 63)

- ▲ check the correct installation of the canister:

check reference dimension B:

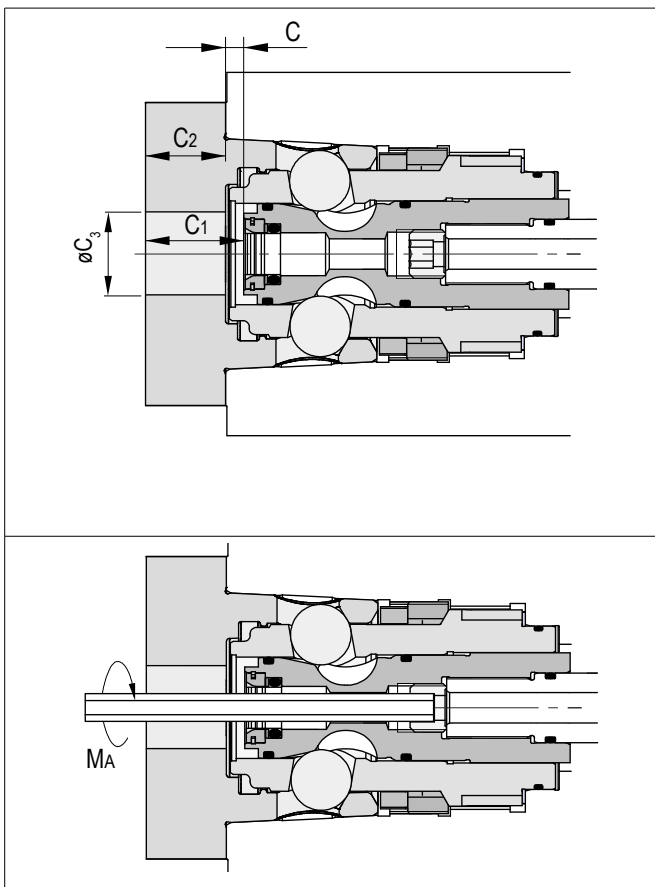
KM4X63: 1,5 ±0,15 [mm]

KM4X100: 1,25 ±0,15 [mm]

KM4X125: 1,56 ±0,15 [mm]

PRODUCT INFORMATION

CLAMPING UNIT KM4X



- ▲ clamp the tool
- ▲ check the correct installation of the clamping unit:

check reference dimension C ($C_1 - C_2$):

KM4X63: 4,5 – 6,0 mm

KM4X100: 7,3 – 9,0 mm

KM4X125: 9 – 11 mm

C_3 max.:

KM4X 63: 16,8

KM4X 100: 24

KM4X 125: 33

through a clamped tool:

- ▲ tighten lock screw;

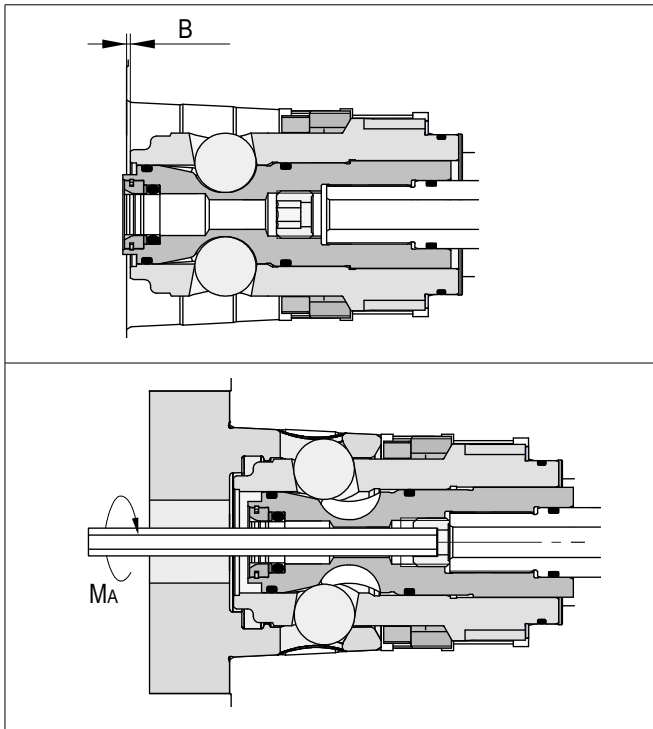
tightening torque:

KM4X63: 20 Nm

KM4X100: 50 Nm

KM4X125: 50 Nm

2.1.1 Check after approx. 100 tool changes



In unclamped position:

- ▲ check reference dimension B:
KM4X63: $1,5 \pm 0,15$ mm
KM4X100: $1,25 \pm 0,15$ mm
KM4X125: $1,56 \pm 0,15$ mm

through a clamped tool:

- ▲ retightening lock screw;
- tightening torque:
KM4X63: 20 Nm
KM4X100: 50 Nm
KM4X125: 50 Nm

2.2 DISASSEMBLY

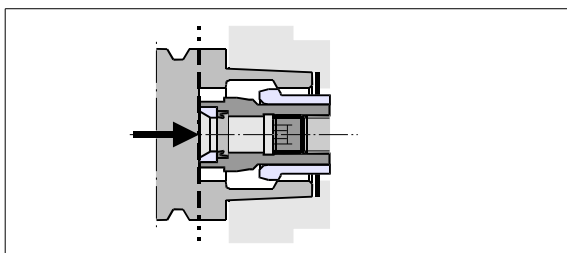
- ▲ unscrew set screws (not at KM4X 63)
- ▲ loosen canister ring; use disassembly tool → # 1.3.2 // 5
- ▲ at KM4X 63: pull off canister ring; use 2x threaded rods M3
- ▲ disassembly canister; use disassembly tool → # 1.3.2 // 5

3 OPERATION

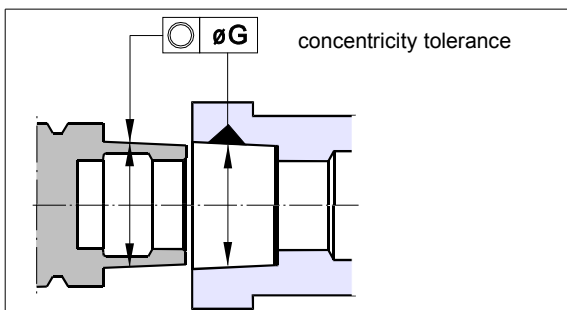


No rotation without clamped tool!
Only use technically perfect tools!

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	63	100	125
concentricity ($\varnothing G$) [mm]	0,8	1,0	1,0
tool changer force max. [kN]	3,6	9	9

3.2 OPERATING CONDITIONS



- 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 $p < 0,5$ 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
 - 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 O-ring (transfer coolant tube) in the lockrod (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 lockrod is defective
- Type of medium used can desolve grease
- Cleaning spray from outside directly on the clamping unit etc

Regrease clamping unit → # 2.1 // 6; Abb. 1

Every six month or after 100.000 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)
advice: read value after one-minute waiting period
If the pull-in-force is smaller than 70% of the nominal value, following procedures have to be performed in the following sequence:
 - regrease (→ # 2.1 // 6; Abb. 1) and test pull-in force again
 - exchange clamping unit and test again
 - exchange drawbar completely

Every year or after 250.000 tool changes at the latest

- ▲ Exchange the O-ring (transfer coolant tube)

PRODUCT INFORMATION

CLAMPING UNIT KM4X

4.2 SPARE PARTS LIST FOR WEAR PARTS

4.2.1 Grease for clamping unit KM4X

designation	quantum	order number
KLÜBER-Fett-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!

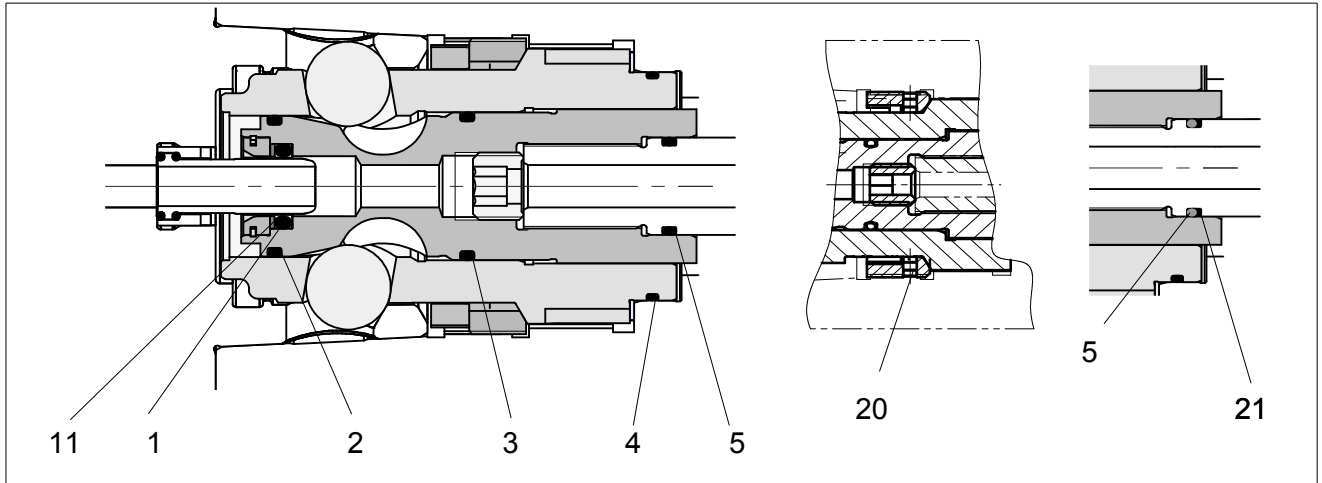
KLÜBER

Klüber Lubrication München KG
Postfach 701047
D-81310 München
Tel.: (0 89) 78 76 -0
Fax: (0 89) 78 76 -333

Aid for regreasing with paste

designation	order number
brush	06.16001.001

4.2.2 Wear Parts KM4X



		KM4X 63	KM4X 100	KM4X 125
1	O-Ring	0.926010.350 9,5 x 3	0.926010.164 13,87 x 3,53	0.926010.173 16,0 x 3,5
2	O-Ring	0.926010.266 17,5 x 1,50	0.926010.118 28,0 x 2,5	0.926010.057 35,0 x 3,0
3	O-Ring	0.926010.146 18 x 2	0.926010.066 30,0 x 2,5	0.926010.038 38,0 x 2,5
4	O-Ring	0.926010.028 28 x 2	0.926010.153 50,0 x 2,0	0.926010.081 62,0 x 2,5
5	O-Ring	0.926010.293 10,82 x 1,78	0.926010.304 18,0 x 2,5	0.926010.041 23,3 x 2,4
11	support ring	0.926014.083 9,60-14,1-0,8	0.926014.082 14,1-20-1	0.926014.110 16,0-21,6-1,4
20	pin (4 pieces required)	95.605.870.4.1		
21	support ring	0.926014.044 11,9-14,3-1,0		

Material O-Rings: FKM 80 SHORE A

4.3 TROUBLE SHOOTING KM4X

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