



KOCU-F

Inclined ejector units with angeled sliding surface

Stepping forward together with our customers

For more than 50 years, **SANKYO OILLESS** has been one of the leading manufacturers of maintenance-free sliding elements. As a leading supplier and pioneer in the production of stamping and press tool components for the automotive industry, **SANKYO OILLESS** supplies an products for many other applications such as mold making, engineering, packaging, heavy industry, aerospace and many more.

The technologies developed by **SANKYO OILLESS** have reduced or eliminated friction, wear and tear. In addition, **SANKYO OILLESS** provides services and quality products to offer you the best possible solutions for your requirements at all times.

The benefits of slide bearings versus roller bearings

In a variety of applications, designers are increasingly replacing roller bearings with slide bearings. In addition to ease of installation and cost effectiveness, slide bearings offer a number of distinct advantages. Slide bearings require less installation space, have a larger load bearing capacity, are maintenance-free or require little maintenance, are easier to assemble and are less susceptible to noise and vibration.

The following list gives an overview of the general advantages of bearings compared to bearings.

Slide bearing

- Higher load bearing capacity and reduced footprint
- Higher resistance to vibration and increased lifetime
- Easier installation
- Lower installation costs
- Increased shaft tolerances possible
- Compensates misalignment and reduces the edge load

Roller bearing

- sensitive to shock, vibration and edge load
- high costs for bearings, housings, counterfaces and - fixing materials
- large space required
- is prone to noise development

Technologies for top performance

SANKYO products are manufactured in our own plants and distributed worldwide.

We offer high quality maintenance-free sliding elements acc. to international standards and standards for use in

- pressing tools
- injection molds
- general engineering

As an experienced specialist, we have the appropriate know-how in tribology to always offer the best solutions for your needs. We supply a large portfolio of lubrication-free sliding elements and also offer custom products acc. to customer drawing.

Quality and performance are our constant commitment!

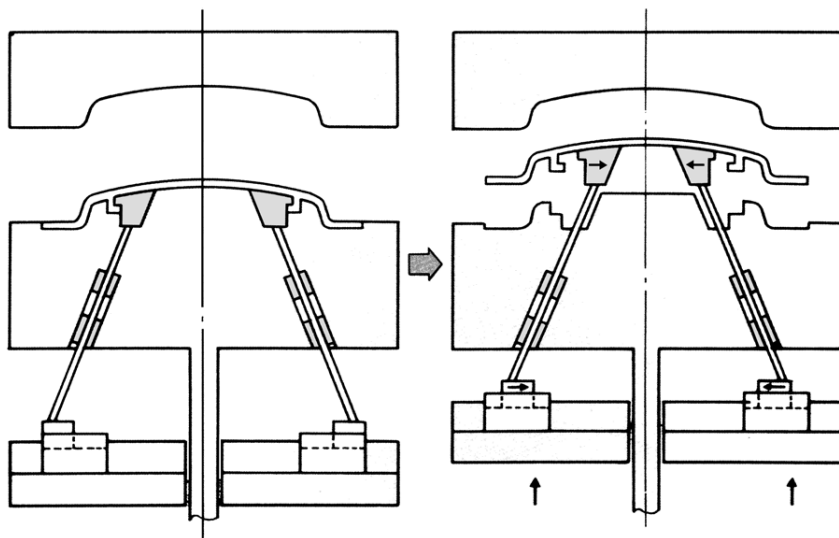
KOCU-Ejector core unit

Maintenance-free inclined core units for easy removing of moldings with undercuts.

All inclined ejector core units are self-lubricating till 300°C. The shaft is fixed with screws and dowel pins or clamping between ejector plates.

					
Model	KOCU-S	KOCU-K	KOCU-KE	KOCU-F	KOCU-M
Diameter	Ø8 - Ø45mm	Ø12 - Ø45mm	Ø16 - Ø30mm	Ø8 - Ø40mm	Ø16 - Ø40mm
Working angle	max. 30°	max. 20°	max. 30°	max. 30°	max. 30°
Feature	Variant with double width	with twin wall pin for directing cooling of the slide core	cooling water connections inside the mould	inclined slideway (0° - 20°)	inclined slideway (0° - 20°) with adjustment screw

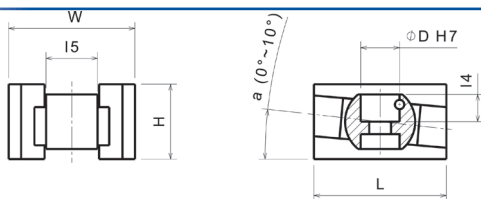
Application example



KOCU-F - Inclined ejector units with angeled surface

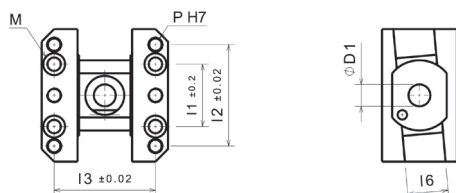


Article informationen



Properties:

Base material	Special brass (SO#50SP2)
Self-lubricating	Yes
Lubricant	Graphite



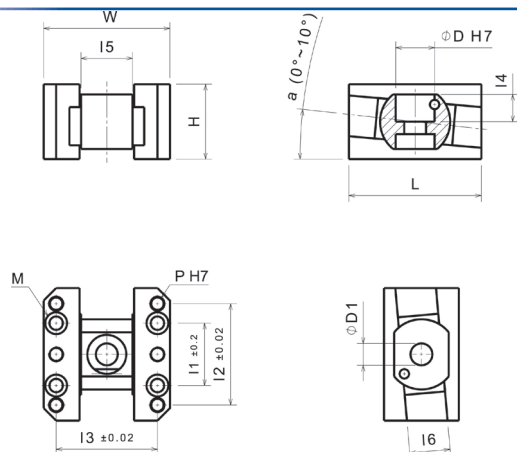
Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	M (ISO 4762):	P (ISO 8734):
260000085	KOCU-F 8-0	8	0	41	24	44	12	25	33	8	12	13	4xM4	4
2600000851	KOCU-F 8-1		1											
2600000852	KOCU-F 8-2		2											
2600000853	KOCU-F 8-3		3											
2600000854	KOCU-F 8-4		4											
2600000855	KOCU-F 8-5		5											
2600000856	KOCU-F 8-6		6											
2600000857	KOCU-F 8-7		7											
2600000858	KOCU-F 8-8		8											
2600000859	KOCU-F 8-9		9											
2600000860	KOCU-F 8-10		10											
2600000861	KOCU-F 8-11		11		29									
2600000862	KOCU-F 8-12		12											
2600000863	KOCU-F 8-13		13											
2600000864	KOCU-F 8-14		14											
2600000865	KOCU-F 8-15		15											
2600000866	KOCU-F 8-16		16		35									
2600000867	KOCU-F 8-17		17											
2600000868	KOCU-F 8-18		18											
2600000869	KOCU-F 8-19		19											
2600000870	KOCU-F 8-20		20											

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	M (ISO 4762):	P (ISO 8734):
260000105	KOCU-F 10-0	10	0	47	28	50	16	30	38	8	14	17	4xM5	5
2600001051	KOCU-F 10-1		1											
2600001052	KOCU-F 10-2		2											
2600001053	KOCU-F 10-3		3											
2600001054	KOCU-F 10-4		4											
2600001055	KOCU-F 10-5		5											
2600001056	KOCU-F 10-6		6											
2600001057	KOCU-F 10-7		7											
2600001058	KOCU-F 10-8		8											
2600001059	KOCU-F 10-9		9											
2600001060	KOCU-F 10-10		10											
2600001061	KOCU-F 10-11		11		36									
2600001062	KOCU-F 10-12		12											
2600001063	KOCU-F 10-13		13											
2600001064	KOCU-F 10-14		14											
2600001065	KOCU-F 10-15		15											
2600001066	KOCU-F 10-16		16		40									
2600001067	KOCU-F 10-17		17											
2600001068	KOCU-F 10-18		18											
2600001069	KOCU-F 10-19		19											
2600001070	KOCU-F 10-20		20											
260000125	KOCU-F 12-0	12	0	53	36	60	20	40	42	10	17	20	4xM8	6
2600001251	KOCU-F 12-1		1											
2600001252	KOCU-F 12-2		2											
2600001253	KOCU-F 12-3		3											
2600001254	KOCU-F 12-4		4											
2600001255	KOCU-F 12-5		5											
2600001256	KOCU-F 12-6		6											
2600001257	KOCU-F 12-7		7											
2600001258	KOCU-F 12-8		8											
2600001259	KOCU-F 12-9		9											
2600001260	KOCU-F 12-10		10											
2600001261	KOCU-F 12-11		11		45									
2600001262	KOCU-F 12-12		12											
2600001263	KOCU-F 12-13		13											
2600001264	KOCU-F 12-14		14											
2600001265	KOCU-F 12-15		15											
2600001266	KOCU-F 12-16		16		48									
2600001267	KOCU-F 12-17		17											
2600001268	KOCU-F 12-18		18											
2600001269	KOCU-F 12-19		19											
2600001270	KOCU-F 12-20		20											

KOCU-F - Inclined ejector units with angeled surface



Article informationen



Properties:

Base material	Special brass (SO#50SP2)
Self-lubricating	Yes
Lubricant	Graphite

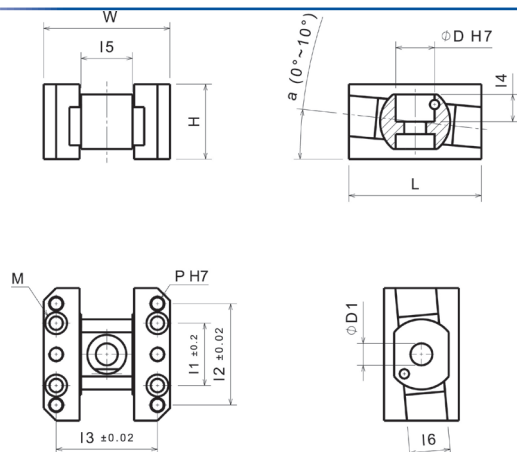
Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	M (ISO 4762):	P (ISO 8734):
260000165	KOCU-F 16-0	16	0	64	40	70	25	50	50	12	21	24	4xM8	6
2600001651	KOCU-F 16-1		1											
2600001652	KOCU-F 16-2		2											
2600001653	KOCU-F 16-3		3											
2600001654	KOCU-F 16-4		4											
2600001655	KOCU-F 16-5		5											
2600001656	KOCU-F 16-6		6											
2600001657	KOCU-F 16-7		7											
2600001658	KOCU-F 16-8		8											
2600001659	KOCU-F 16-9		9											
2600001660	KOCU-F 16-10		10											
2600001661	KOCU-F 16-11		11	48	56									
2600001662	KOCU-F 16-12		12											
2600001663	KOCU-F 16-13		13											
2600001664	KOCU-F 16-14		14											
2600001665	KOCU-F 16-15		15											
2600001666	KOCU-F 16-16		16											
2600001667	KOCU-F 16-17		17											
2600001668	KOCU-F 16-18		18											
2600001669	KOCU-F 16-19		19											
2600001670	KOCU-F 16-20		20											

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	M (ISO 4762):	P (ISO 8734):
260000205	KOCU-F 20-0	20	0	76	46	75	30	55	60	15	28	24	4xM10	8
2600002051	KOCU-F 20-1		1											
2600002052	KOCU-F 20-2		2											
2600002053	KOCU-F 20-3		3											
2600002054	KOCU-F 20-4		4											
2600002055	KOCU-F 20-5		5											
2600002056	KOCU-F 20-6		6											
2600002057	KOCU-F 20-7		7											
2600002058	KOCU-F 20-8		8											
2600002059	KOCU-F 20-9		9											
2600002060	KOCU-F 20-10		10											
2600002061	KOCU-F 20-11		11		50									
2600002062	KOCU-F 20-12		12											
2600002063	KOCU-F 20-13		13											
2600002064	KOCU-F 20-14		14											
2600002065	KOCU-F 20-15		15		60									
2600002066	KOCU-F 20-16		16											
2600002067	KOCU-F 20-17		17											
2600002068	KOCU-F 20-18		18											
2600002069	KOCU-F 20-19		19											
2600002070	KOCU-F 20-20		20											
260000255	KOCU-F 25-0	25	0	81	48	85	40	65	65	17,5	33	26		
2600002551	KOCU-F 25-1		1											
2600002552	KOCU-F 25-2		2											
2600002553	KOCU-F 25-3		3											
2600002554	KOCU-F 25-4		4											
2600002555	KOCU-F 25-5		5											
2600002556	KOCU-F 25-6		6											
2600002557	KOCU-F 25-7		7											
2600002558	KOCU-F 25-8		8											
2600002559	KOCU-F 25-9		9											
2600002560	KOCU-F 25-10		10											
2600002561	KOCU-F 25-11		11		54									
2600002562	KOCU-F 25-12		12											
2600002563	KOCU-F 25-13		13											
2600002564	KOCU-F 25-14		14											
2600002565	KOCU-F 25-15		15		64									
2600002566	KOCU-F 25-16		16											
2600002567	KOCU-F 25-17		17											
2600002568	KOCU-F 25-18		18											
2600002569	KOCU-F 25-19		19											
2600002570	KOCU-F 25-20		20											

KOCU-F - Inclined ejector units with angeled surface



Article informationen



Properties:

Base material	Special brass (SO#50SP2)
Self-lubricating	Yes
Lubricant	Graphite

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	M (ISO 4762):	P (ISO 8734):
260000305	KOCU-F 30-0	30	0	88	54	100	50	80	72	19	38	30	4xM10	8
2600003051	KOCU-F 30-1		1											
2600003052	KOCU-F 30-2		2											
2600003053	KOCU-F 30-3		3											
2600003054	KOCU-F 30-4		4											
2600003055	KOCU-F 30-5		5											
2600003056	KOCU-F 30-6		6											
2600003057	KOCU-F 30-7		7											
2600003058	KOCU-F 30-8		8											
2600003059	KOCU-F 30-9		9											
2600003060	KOCU-F 30-10		10											
2600003061	KOCU-F 30-11		11	64										
2600003062	KOCU-F 30-12		12											
2600003063	KOCU-F 30-13		13											
2600003064	KOCU-F 30-14		14											
2600003065	KOCU-F 30-15		15											
2600003066	KOCU-F 30-16		16	74										
2600003067	KOCU-F 30-17		17											
2600003068	KOCU-F 30-18		18											
2600003069	KOCU-F 30-19		19											
2600003070	KOCU-F 30-20		20											

Article no.:	Article name:	Bolt Ø D:	Angle a:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	I6:	M (ISO 4762):	P (ISO 8734):
260000355	KOCU-F 35-0	35	0	100	60	115	50	85	80	20	44	34	4xM12	10
2600003551	KOCU-F 35-1		1											
2600003552	KOCU-F 35-2		2											
2600003553	KOCU-F 35-3		3											
2600003554	KOCU-F 35-4		4											
2600003555	KOCU-F 35-5		5											
2600003556	KOCU-F 35-6		6											
2600003557	KOCU-F 35-7		7											
2600003558	KOCU-F 35-8		8											
2600003559	KOCU-F 35-9		9											
2600003560	KOCU-F 35-10		10											
2600003561	KOCU-F 35-11		11		75									
2600003562	KOCU-F 35-12		12											
2600003563	KOCU-F 35-13		13											
2600003564	KOCU-F 35-14		14											
2600003565	KOCU-F 35-15		15		85									
2600003566	KOCU-F 35-16		16											
2600003567	KOCU-F 35-17		17											
2600003568	KOCU-F 35-18		18											
2600003569	KOCU-F 35-19		19											
2600003570	KOCU-F 35-20		20											
260000405	KOCU-F 40-0	40	0	108	65	125	50	85	88	21,5	50	38	4xM12	10
2600004051	KOCU-F 40-1		1											
2600004052	KOCU-F 40-2		2											
2600004053	KOCU-F 40-3		3											
2600004054	KOCU-F 40-4		4											
2600004055	KOCU-F 40-5		5											
2600004056	KOCU-F 40-6		6											
2600004057	KOCU-F 40-7		7											
2600004058	KOCU-F 40-8		8											
2600004059	KOCU-F 40-9		9											
2600004060	KOCU-F 40-10		10											
2600004061	KOCU-F 40-11		11		80									
2600004062	KOCU-F 40-12		12											
2600004063	KOCU-F 40-13		13											
2600004064	KOCU-F 40-14		14											
2600004065	KOCU-F 40-15		15		92									
2600004066	KOCU-F 40-16		16											
2600004067	KOCU-F 40-17		17											
2600004068	KOCU-F 40-18		18											
2600004069	KOCU-F 40-19		19											
2600004070	KOCU-F 40-20		20											

KOCU-F - Inclined ejector units with angeled surface



General and technical information

Material data

Material		SO#50SP2*	SO#50SP5	SO#50SP7	SO#50SP8	SO#50SP13	SO#50B
		<i>Hard brass with graphite</i>	<i>Alu-bronze with graphite</i>	<i>Alu-bronze with graphite</i>	<i>Hard brass with graphite</i>	<i>Bronze with graphite</i>	<i>Red brass with graphite</i>
Self-lubricating		Yes	Yes	Yes	Yes	Yes	Yes
Lubricant		Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
Max. surface pressure [N/mm ²]		100	100	120	130	120	50
Max. sliding speed [m/min]		30	10	10	15	10	50
Max. P*v-Wert [N/mm ² * m/min]		200	150	200	200	200	100
Temperature [°C]	<i>Standard Max</i>	-50 / +150 +300	-50 / +150 +300	-50 / +150 +300	-50 / +150 +300	-50 / +150 +300	-50 / +150 +400
Friction coefficient**	<i>initial long term</i>	0,15 0,07	0,15 0,07	0,15 0,07	0,15 0,07	0,2 0,15	0,15 0,07
Brinell hardness [HB]		>210	>210	>260	220 ~ 260	>280	>60
Further information							
Elongation [%]		>12	>18	>2	>3	>0,5	>15
Density [kg/dm ³]		7,9	7,7	7,8	7,8	7,2	8,7
Tensile strength [N/mm ²]		>755	>686	>833	>700	>550	>195
Yield strength [N/mm ²]		>412	>372	>509	-	-	>105
E-Module [N/mm ²]		97000	108000	123600	108000	145000	96000
Thermal expansion [10 ⁻⁵ * grd.-1]		1,9	1,6	1,6	1,9	1,71	1,8

*: Material used according to SANKYO OILLESS standards

**: against steel, hardened and grinded

Tin bronze	Sinter-bronze	SO#50PB	CuSn8	SO#50S45C	SO#50F	Polyacetal
		<i>Ton bronze</i>	<i>acc. to DIN 17662</i>	<i>Steel with graphite</i>	<i>Grey cast iron with graphite</i>	<i>Plastic</i>
No	Yes	No	No	Yes	Yes	No
-	Oil	-	-	Graphite	Graphite	Graphite
80	50	80	40	30	5	25 35 (with oil)
20	300	50	120	10	10	50 200 (with oil)
-	96	100	-	80	50	100 200 (with oil)
-50 / +200	-12 / +90	-50 / +150 +300	-200 / +200	-50 / +150	-50 / +150	-50 / +80
0,16	0,09	0,15 0,07	-	0,01	-	-
>80	>25	>80	-	>375	160 ~ 220	115 (HRR)
n						
>6	-	>5	-	19	-	73
8,7	6,5 ~ 7,0	8,2	8,8	7,8	7,1 ~ 7,3	1,4
>295	-	>295	-	>690	>250	69
>161	-	>161	-	-	-	-
108000	-	108000	115000	-	-	-
1,8	-	1,8	-	1,1	1	7,7

KOCU-F - Inclined ejector units with angeled surface



General and technical information

Chemical resistance

Water

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	<i>Red brass mit FSS</i>
Fresh Water	○	◎	◎	X	◎	○
Sea Water	△	○	○	X	◎	○

Acid

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Alcohol	◎	◎	◎	-	◎	-
Formic acid	-	-	-	-	-	X
Chlorine (dry)	◎	◎	◎	-	◎	-
Chlorine (wet)	X	△	△	-	-	-
Chromic acid	X	X	X	X	-	-
Acetic acid	X	X	◎ (20°C) △ (118°C)	X	◎	○
Hydrochloric acid	-	○	○	X	-	X
Concentrated hydrochloric acid	X	X	△	X	X	-
Lactic acid	X	X	X	X	○	X
Phenol	-	-	-	-	-	X
Phosphoric acid	X	○	○	X	△	X
Nitric acid	X	X	X	X	○	-
Sulfuric acid (40-80%)	X	△	△	X	△	X* △**
Sulfuric acid (80-95%)	X	○	○	X	△	X* △**
Diluted hydrochloric acid	△	-	-	-	-	X
Hydrogen peroxide	△	○	○	X	○	-

*: High concentration

**: Low concentration

Explanation		
◎: Preferred	○: no problem in use	△: Affected
X: Not allowed for use	-: unknown	

Chemical resistance

Alkali

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Ammonia (dry)	◎	◎	◎	O	◎ (20°C) X (Gas)	X
Ammonia (wet)	X	X	X	O	◎ (20°C) X (Gas)	X
Ammonia (liquid)	X	X	X	-	◎	X
Iron chloride	X	O	O	X	△	-
Potassium hydroxide	O	O	O	-	-	-
Calcium chloride	X	O	O	△	O	-
Calcium hydroxide	O	◎	◎	O	-	O
Sodium hydroxide	O	O	O	-	◎	-
Sulfur (dry)	◎	O	O	△	-	O
Sulfur (wet)	X	X	X	△	-	O

Solvent

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Acetone	◎	◎	◎	O	◎	△
Benzene	-	-	-	-	-	△
Ethylene glycol	O	◎	◎	△	-	-
Carbon tetrachloride (dry)	◎	◎	◎	X	◎	-
Carbon tetrachloride (wet)	X	O	O	X	-	-
Methyl alcohol	◎	◎	◎	O	O	△
Toluene	◎	◎	◎	O	-	-

Explanation		
◎: Preferred	O: no problem in use	△: Affected
X: Not allowed for use	-: unknown	

KOCU-F - Inclined ejector units with angeled surface



General and technical information

Chemical resistance

Grease and others

Material	SO#50SP2 SO#50SP8	SO#50B	SO#50SP5 SO#50SP7 SO#50SP13 SO#50AIB	SO#50F	SO#50S45C	Polyacetal
	<i>High strength brass casting</i>	<i>Red brass</i>	<i>Alu-bronze</i>	<i>Grey cast</i>	<i>Steel</i>	
Gasoline	◎	◎	◎	○	◎	○
Diesel	-	-	-	-	-	○
Crude oil	△	○	○	○	○	-
Lacquer	◎	◎	◎	△	-	-
Kerosene	◎	◎	◎	○	◎	-
Vegetable oil	◎	◎	◎	△	-	-
Lubricants	◎	◎	◎	◎	◎	○
Heavy oil	○	◎	◎	○	○	-
Animal oil	◎	◎	◎	-	-	-

Explanation		
◎: Preferred	○: no problem in use	△: Affected
X: Not allowed for use	-: unknown	

Maintenance and lubrication

Before inserting the sliding elements, clear the mounting surfaces of the housing. An oil film on the back surface will make it easier to mount the bearing. Before mounting the axle, lubricate the sliding surfaces with a light greasy film to avoid wear of the inlet and to activate the solid lubricant.

The following greases should be preferred:

ELKALUB GLS 364	ELKALUB	120°C	For the food industry
ELKALUB GLS 595/N2	ELKALUB	300°C	For the food industry
ELKALUB GLS 993 H1	ELKALUB	150°C	For the food industry
GLEITMO 805	FUCHS	110°C	
ALTEMP QNB 50	KLÜBER	150°C	
Klüberalfa DH 3-350	KLÜBER	230°C	
Klüberfood NH1 CH 2-150	KLÜBER	250°C	For the food & pharmaceutical industry
Klübertemp GR AR 555	KLÜBER	250°C	
PARALIQ P 68	KLÜBER	100°C	For the food & pharmaceutical industry
Gadus S2 V100 2	SHELL	130°C	
Gadus S3 V100 2	SHELL	160°C	
Multi-purpose grease Nr.12511	PRESSOL	80°C	

The greases have to be free of Additives like MoS₂ (molybdenum disulfide) and EP.

The work to be carried out is usually limited to an inspection of the wear in the period from ½ to 2 years, depending on the duration of use and load. After each disassembly, a single re-greasing should be carried out, but the sintered sliding film of solid lubricant should not be removed. Continuous introduction of lubricant is not necessary, as the parts are maintenance-free under consideration of the application criteria for sliding elements made of bronze with solid lubricant.

Transport and storage

The parts are to be stored dust-free and dry, mechanical damages during transport and storage are to be avoided. Contact with organic and inorganic solvents must also be prevented, as this may destroy the solid lubricant.

