



SOB

Guide bushes

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!

Bushings with graphite

For a good distribution of the solid lubricant between the sliding element and the sliding partner, a small sliding gap is needed. This happens once by abrasion and by swelling from the depots in the micrometer range. As a result, pairing with clearance „0“ is not possible using our bronze lubricants with solid lubricant, which would inevitably result in jamming.

Bronze bushings with for example type SOB, narrows in the bore after insertion of the tolerance range F7 to a tolerance range H7. Prerequisites for this are:

- H7 *(the tolerance of the housing bore)*
- a corresponding wall thickness of the housing
- the control of the best wall strength of the socket
-

From the experience of the most diverse use cases, the following tolerance fields should be used when against run partner preferred:

- h6 *(for the highest precision in cutting tool / mold construction)*
- f7, e7 *(for highest accuracy in general engineering)*
- d8, e8 *(for highest accuracy in general engineering)*
- e8 + D9 *(for highest accuracy in general engineering)*

Attention

The graphite cannot be deposited on the entire surface with very small movements. Please contact the technical department if you want to realise very small movements.

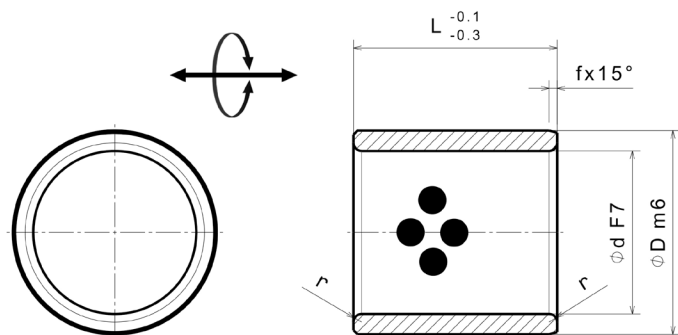
Sliding partners

Suitable sliding partners for Sankyo Oilless Bushes and Plates are **gas nitrated or hardened steel** alloys with **HRC > 35**.

In order to ensure an optimal sliding behaviour, the difference in hardness between the sliding material and sliding partner should at least be **100 HB**.

The surface roughness of the sliding partner should be **Rz = 3...6,3 µm (grinding)**.

If guides, like in large dies of punching tools, are continuously moved apart during operation, the counterpart partner should be provided with correspondingly generous centering chamfers.

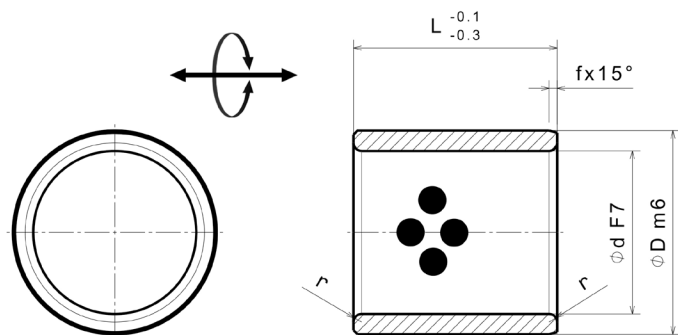


Properties:

Base material	Special brass (SO#50SP2)
Self-lubricating	Yes
Lubricant	Graphite
Max. surface pressure P	100 N/mm ²
Max. sliding speed v	30 m/min
Max. P*v-Wert	200 N/mm ² x m/min
Operating temperature	-50°C / +150°C (max. 300°C)
Friction coefficient	0,07

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:
11006120	SOB 6-10-12	6	10	12	11015300	SOB 15-21-30	15	21	30
11008080	SOB 8-12-8	8	12	8	11016100	SOB 16-22-10	16	22	10
11008100	SOB 8-12-10			10	11016120	SOB 16-22-12			12
11008120	SOB 8-12-12			12	11016150	SOB 16-22-15			15
11008150	SOB 8-12-15	10	14	15	11016160	SOB 16-22-16			16
11010088	SOB 10-14-8			8	11016190	SOB 16-22-19			19
11010108	SOB 10-14-10			10	11016200	SOB 16-22-20			20
11010128	SOB 10-14-12			12	11016250	SOB 16-22-25			25
11010158	SOB 10-14-15			15	11016300	SOB 16-22-30			30
11010208	SOB 10-14-20			20	11016350	SOB 16-22-35			35
11010100	SOB 10-15-10	12	15	10	11016400	SOB 16-22-40			40
11012080	SOB 12-18-8		18	8	11017150	SOB 17-23-15	17	23	15
11012100	SOB 12-18-10			10	11018100	SOB 18-24-10	18	24	10
11012120	SOB 12-18-12			12	11018120	SOB 18-24-12			12
11012150	SOB 12-18-15			15	11018150	SOB 18-24-15			15
11012160	SOB 12-18-16			16	11018160	SOB 18-24-16			16
11012190	SOB 12-18-19			19	11018200	SOB 18-24-20			20
11012200	SOB 12-18-20			20	11018250	SOB 18-24-25			25
11012250	SOB 12-18-25			25	11018300	SOB 18-24-30			30
11012300	SOB 12-18-30			30	11018350	SOB 18-24-35			35
11013100	SOB 13-19-10	13	19	10	11018400	SOB 18-24-40			40
11013120	SOB 13-19-12			12	11019150	SOB 19-26-15	19	26	15
11013150	SOB 13-19-15			15	11019200	SOB 19-26-20			20
11013160	SOB 13-19-16			16	11020100	SOB 20-28-10	20	28	10
11013200	SOB 13-19-20			20	11020120	SOB 20-28-12			12
11013250	SOB 13-19-25	14	20	25	11020150	SOB 20-28-15			15
11014100	SOB 14-20-10			10	11020160	SOB 20-28-16			16
11014120	SOB 14-20-12			12	11020190	SOB 20-28-19			19
11014150	SOB 14-20-15			15	11020200	SOB 20-28-20			20
11014200	SOB 14-20-20			20	11020250	SOB 20-28-25			25
11014250	SOB 14-20-25			25	11020300	SOB 20-28-30			30
11014300	SOB 14-20-30	15	21	30	11020350	SOB 20-28-35			35
11015100	SOB 15-21-10			10	11020400	SOB 20-28-40			40
11015120	SOB 15-21-12			12	11020500	SOB 20-28-50			50
11015150	SOB 15-21-15			15	11020108	SOB 20-30-10	30		10
11015160	SOB 15-21-16			16	11020128	SOB 20-30-12			12
11015200	SOB 15-21-20			20	11020158	SOB 20-30-15			15
11015250	SOB 15-21-25			25	11020168	SOB 20-30-16			16

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11020208	SOB 20-30-20	20	30	20	11030608	SOB 30-40-60	30	40	60			
11020258	SOB 20-30-25			25	11031300	SOB 31,5-40-30	31,5		30			
11020308	SOB 20-30-30			30	11031400	SOB 31,5-40-40			40			
11020358	SOB 20-30-35			35	11032150	SOB 32-42-15	32	42	15			
11020408	SOB 20-30-40			40	11032200	SOB 32-42-20			20			
11020708	SOB 20-30-70			70	11032300	SOB 32-42-30			30			
11022120	SOB 22-32-12	12	11032400	SOB 32-42-40	40							
11022150	SOB 22-32-15	22	32	15	11035200	SOB 35-44-20	35	44	20			
11022200	SOB 22-32-20			20	11035250	SOB 35-44-25			25			
11022250	SOB 22-32-25			25	11035300	SOB 35-44-30			30			
11025120	SOB 25-33-12	25	33	12	11035350	SOB 35-44-35			35	45	35	
11025150	SOB 25-33-15			15	11035400	SOB 35-44-40					40	
11025160	SOB 25-33-16			16	11035500	SOB 35-44-50					50	
11025200	SOB 25-33-20			20	11035600	SOB 35-44-60					60	
11025250	SOB 25-33-25			25	11035158	SOB 35-45-15	15					
11025300	SOB 25-33-30			30	11035208	SOB 35-45-20	20					
11025350	SOB 25-33-35			35	11035258	SOB 35-45-25	25					
11025400	SOB 25-33-40			40	11035308	SOB 35-45-30	30					
11025500	SOB 25-33-50			50	11035358	SOB 35-45-35	35					
11025600	SOB 25-33-60			60	11035408	SOB 35-45-40	40					
11025128	SOB 25-35-12		35	35	12	11035508	SOB 35-45-50	38	45	50		
11025158	SOB 25-35-15				15	11035608	SOB 35-45-60			60		
11025168	SOB 25-35-16				16	11038300	SOB 38-48-30			30		
11025208	SOB 25-35-20				20	11038400	SOB 38-48-40			40		
11025258	SOB 25-35-25				25	11040150	SOB 40-50-15			40	50	15
11025308	SOB 25-35-30				30	11040200	SOB 40-50-20					20
11025358	SOB 25-35-35				35	11040250	SOB 40-50-25					25
11025408	SOB 25-35-40				40	11040300	SOB 40-50-30					30
11025508	SOB 25-35-50				50	11040350	SOB 40-50-35					35
11028200	SOB 28-38-20				28	38	20					11040400
11028250	SOB 28-38-25	25	11040500	SOB 40-50-50			50					
11028300	SOB 28-38-30	30	11040600	SOB 40-50-60			60					
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11030120	SOB 30-38-12	30	40	12	11040800		SOB 40-50-80	45	56			80
11030150	SOB 30-38-15			15	11040158		SOB 40-55-15			15		
11030200	SOB 30-38-20			20	11040258		SOB 40-55-25			25		
11030250	SOB 30-38-25			25	11040308		SOB 40-55-30			30		
11030300	SOB 30-38-30			30	11040358		SOB 40-55-35			35		
11030350	SOB 30-38-35			35	11040408		SOB 40-55-40			40		
11030400	SOB 30-38-40			40	11040508		SOB 40-55-50			50		
11030500	SOB 30-38-50			50	11040608		SOB 40-55-60			60		
11030600	SOB 30-38-60		40	40	60		11045308	SOB 45-55-30	45	56	30	
11030128	SOB 30-40-12				12	11045358	SOB 45-55-35	35				
11030158	SOB 30-40-15				15	11045408	SOB 45-55-40	40				
11030208	SOB 30-40-20				20	11045508	SOB 45-55-50	50				
11030258	SOB 30-40-25				25	11045608	SOB 45-55-60	60				
11030308	SOB 30-40-30				30	11045300	SOB 45-56-30	30				
11030358	SOB 30-40-35				35	11045350	SOB 45-56-35	35				
11030408	SOB 30-40-40				40	11045400	SOB 45-56-40	40				
11030508	SOB 30-40-50	50	11045500	SOB 45-56-50	50							



Properties:

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Lubricant	Graphite
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Max. sliding speed v	30 m/min
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Friction coefficient	0,07

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11045600	SOB 45-56-60	45	56	60	11060350	SOB 60-74-35	60	74	35	
11045309	SOB 45-60-30		60	30	11060400	SOB 60-74-40			40	
11045359	SOB 45-60-35			35	11060500	SOB 60-74-50			50	
11045409	SOB 45-60-40			40	11060600	SOB 60-74-60			60	
11045509	SOB 45-60-50			50	11060700	SOB 60-74-70			70	
11045609	SOB 45-60-60			60	11060800	SOB 60-74-80			80	
11045709	SOB 45-60-70			70	11061000	SOB 60-74-100			100	
11045809	SOB 45-60-80			80	11060308	SOB 60-75-30			30	
11050208	SOB 50-60-20	20		11060358	SOB 60-75-35	35				
11050258	SOB 50-60-25	25		11060408	SOB 60-75-40	40				
11050308	SOB 50-60-30	30		11060508	SOB 60-75-50	50				
11050358	SOB 50-60-35	35		11060608	SOB 60-75-60	60				
11050408	SOB 50-60-40	40		11060708	SOB 60-75-70	70				
11050508	SOB 50-60-50	50		11060808	SOB 60-75-80	80				
11050608	SOB 50-60-60	60		11061008	SOB 60-75-100	100				
11050708	SOB 50-60-70	70		11063600	SOB 63-75-60	60				
11050808	SOB 50-60-80	80		11063700	SOB 63-75-70	70				
11050300	SOB 50-62-30	50	30	11063800	SOB 63-75-80	80				
11050350	SOB 50-62-35		35	11065400	SOB 65-80-40	40				
11050400	SOB 50-62-40		40	11065500	SOB 65-80-50	50				
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11050800	SOB 50-62-80		80	11070300	SOB 70-85-30	30				
11050309	SOB 50-65-30		30	11070350	SOB 70-85-35	35				
11050409	SOB 50-65-40		40	11070400	SOB 70-85-40	40				
11050509	SOB 50-65-50		50	11070500	SOB 70-85-50	50				
11050609	SOB 50-65-60		60	11070600	SOB 70-85-60	60				
11050709	SOB 50-65-70		70	11070700	SOB 70-85-70	70				
11050809	SOB 50-65-80		80	11070800	SOB 70-85-80	80				
11051009	SOB 50-65-100		100	11071000	SOB 70-85-100	100				
11055309	SOB 55-70-30		55	70	30	11070508	SOB 70-90-50	70	90	50
11055359	SOB 55-70-35				35	11070608	SOB 70-90-60			60
11055409	SOB 55-70-40	40			11070708	SOB 70-90-70	70			
11055509	SOB 55-70-50	50			11070808	SOB 70-90-80	80			
11055609	SOB 55-70-60	60			11071008	SOB 70-90-100	100			
11055709	SOB 55-70-70	70			11075500	SOB 75-90-50	50			
11060300	SOB 60-74-30	60	74	30	11075600	SOB 75-90-60	75		60	

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	
11075700	SOB 75-90-70	75	90	70	11120800	SOB 120-140-80	120	140	80	
11075800	SOB 75-90-80			80	11120900	SOB 120-140-90			90	
11075100	SOB 75-90-100			100	11121000	SOB 120-140-100			100	
11075608	SOB 75-95-60		95	60	11121200	SOB 120-140-120			120	
11075708	SOB 75-95-70			70	11121400	SOB 120-140-140			140	
11075808	SOB 75-95-80			80	11125100	SOB 125-145-100	100			
11075108	SOB 75-95-100			100	11125120	SOB 125-145-120	120			
11080200	SOB 80-96-20		80	96	20	11130800	SOB 130-150-80	130	150	80
11080400	SOB 80-96-40	40			11131000	SOB 130-150-100	100			
11080500	SOB 80-96-50	50			11131300	SOB 130-150-130	130			
11080600	SOB 80-96-60	60			11141008	SOB 140-160-100	140	160	100	
11080700	SOB 80-96-70	70			11141408	SOB 140-160-140			140	
11080800	SOB 80-96-80	80			11151000	SOB 150-170-100	150	170	100	
11081000	SOB 80-96-100	100			11151500	SOB 150-170-150			150	
11081200	SOB 80-96-120	120			11160800	SOB 160-180-80	160	180	80	
11080408	SOB 80-100-40	40		11161000	SOB 160-180-100	100				
11080508	SOB 80-100-50	50		11161500	SOB 160-180-150	150				
11080608	SOB 80-100-60	60		11171000	SOB 170-190-100	170	190	100		
11080708	SOB 80-100-70	70		11171500	SOB 170-190-150			150		
11080808	SOB 80-100-80	80		11181000	SOB 180-200-100	180	200	100		
11081008	SOB 80-100-100	100		11181500	SOB 180-200-150			150		
11081208	SOB 80-100-120	120		11181910	SOB 190-210-100	190	210	100		
11081408	SOB 80-100-140	140		11181915	SOB 190-210-150			150		
11085250	SOB 85-100-25	85			25	11182015	SOB 200-230-150	200	230	150
11085600	SOB 85-100-60				60	11182020	SOB 200-230-200			200
11085800	SOB 85-100-80				80					
11090300	SOB 90-110-30	90		110	30					
11090500	SOB 90-110-50				50					
11090600	SOB 90-110-60				60					
11090700	SOB 90-110-70				70					
11090800	SOB 90-110-80				80					
11090900	SOB 90-110-90				90					
11091000	SOB 90-110-100				100					
11091200	SOB 90-110-120				120					
11101008	SOB 100-115-100	100		115	100					
11100400	SOB 100-120-40		120	40						
11100500	SOB 100-120-50			50						
11100600	SOB 100-120-60			60						
11100700	SOB 100-120-70			70						
11100800	SOB 100-120-80			80						
11100900	SOB 100-120-90			90						
11101000	SOB 100-120-100			100						
11101200	SOB 100-120-120			120						
11101400	SOB 100-120-140			140						
11110500	SOB 110-130-50	110	130	50						
11110700	SOB 110-130-70			70						
11110800	SOB 110-130-80			80						
11111000	SOB 110-130-100			100						
11111200	SOB 110-130-120			120						
11120700	SOB 120-140-70	120	140	70						

Finishing

SANKYO OILLESS - bronze is easy to machine. Basically, there is no great difference between the machining of our products and normal steel. No special tools are required but be sure to use sharp and preferably new tools.

Milling

The use of cooling lubricants is recommended by using HSS or carbide tools. First pre-roughing to approx. distance of 0,3mm to nominal. In general: Milling / rough machining with little effort, slow forward feed, at high rotation-speeds and small depths of cut.

Drilling

The use of cooling lubricants is recommended by using HSS or carbide tools. Drill as with normal steel and if it's necessary increase the forward feed with same rotation-speed. Flat plates have to be drilled from backside and countersink on the sliding surface if it's necessary to drill through a solid-lubricant depot.

Grinding

The use of cooling lubricants is recommended by working with grinding wheels.

Grain size	46 - 60
Material	Silicon carbid
Rotation speed	1500 U/min
Working speed	30 m/min

Reaming

The use of cooling lubricants is recommended by using HSS reamers. Proceed as with normal steel and if it's necessary increase the forward feed with same rotation-speed.

Turning

Example (up to 100mm)	External turning	Internal turning
Rotation speed	approx. 1000 U/min	approx. 500 U/min
Feed rate	ca. 0,1 m/min	approx. 0,07 m/min
Tool	Carbide	Carbide

Custom-made products

Beside to the big variety of standard products, we offer custom-made rotation- and milled-parts. We are producing these products out of steel or with our special Sankyo bronze with solid lubrication. Also, it is possible to get standard products with modifications. We only need your drawing or 3D-model with the assembly situation, like load cases and operating conditions, to prove the feasibility.

Our expert team will gladly advise you, also at your side. You can contact the department „Engineering“ by:

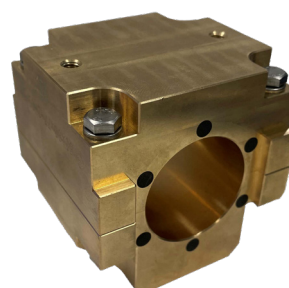
Tel.: [+49 2103 584 800](tel:+492103584800)

E-Mail: technik@de.sankyo-oilless.com

Examples



Custom-made products



Prefabricated dividable bush set to add a thread at the customer's site



Special design of a special spindle nut



Large bushings for all applications

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

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	

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.

