



BOS-21, BOS-22 & BOS-23

Spherical bearings

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!

Bushes with PTFE sliding layer

The lead-free composite material SO#936FR is used for maintenance-free plain bearings that preferably run dry, i.e. without lubricant. The rolled and calibrated bushings are made of thin-walled strip material. The butt joint runs parallel to the bushing axis.

Properties

- Good sliding properties of the maintenance-free bronze / PTFE sliding layer
- Suitable for dry running and clean operation
- Smooth movement, without stick-slip effect
- For oscillating and rotating movements, even at low speed
- Low friction, low wear and long service life
- High specific load, even shock-wise
- Temperature resistant between -200 and +280 °C
- Temperature resistant between -200 and +280 °C

An adaptation process takes place on the sliding surfaces of the shaft and bushing during the first hours of operation. The surface structure of the shaft smoothes out and absorbs part of the PTFE sliding layer.

Running-in characteristic

Dadurch werden die tragenden Kontaktflächen und die Tragfähigkeit zwischen den Elementen verbessert. Der Einlaufverschleiß nach Abb. 1 stabilisiert sich je nach Belastung schon in kurzer Zeit und führt zu einem günstigen Reibwert.

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**.

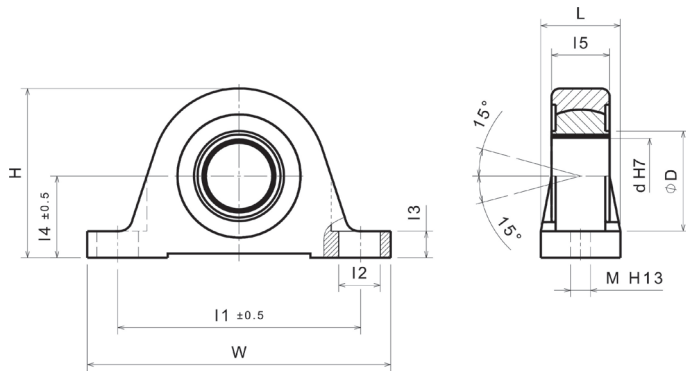
The surface roughness of the sliding partner should be **Rz = 3...6,3 µm (grinding)**.

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.

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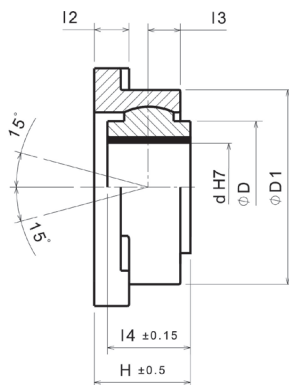
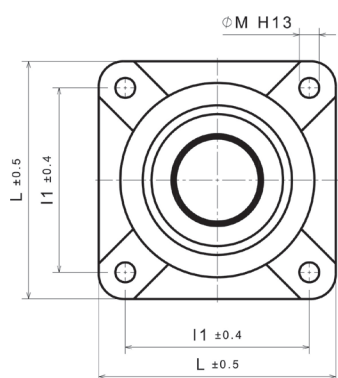
Article informationen



Properties:

Base material		Steel
Self-lubricating		Yes
Lubricant		PTFE
Max. surface pressure P	<100.000 load cases	29 N/mm ²
	>10 Mio. load cases	15 N/mm ²
	rotating, oscillating, gliding	59 N/mm ²
	very slow movement	147 N/mm ²
Max. sliding speed v		120 m/min
Operating temperature		-200°C / +280°C

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Width W:	Height H:	Length L:	I1:	I2:	I3:	I4:	I5:	M (DIN EN 20273):	Max. load (kN):		
63521010	BOS-21-10	10	33,3	102	56	25	76	13	10	28,6	15	M8	4,32		
63521012	BOS-21-12	12													
63521015	BOS-21-15	15													
63521020	BOS-21-20	20	39,7	124	65	32	95	16	13	33,3	20	M10	7,7		
63521025	BOS-21-25	25									25				
63521030	BOS-21-30	30	51	159	81	41	122	22	16	41,3	30	M12	9,55		
63521035	BOS-21-35	35	60,3	183	102	48	127			49,2	35		17,3		
63521040	BOS-21-40	40					137				40				
63521045	BOS-21-45	45					73			194	113		54	152	54
63521050	BOS-21-50	50	79,3	214	122	57	168		19	61,9	50	M16	25		
63521055	BOS-21-55	55	83	251	135	64	197		22	66,7	55		30,5		
63521060	BOS-21-60	60									60				
63521065	BOS-21-65	65							65	60					
63521070	BOS-21-70	70	89	254	143	70	200	25	71,4	65		M16	28		
63521075	BOS-21-75	75													
63521080	BOS-21-80	80	108	295	175	89	235	27	32	87,3	80	M20	45,5		
63521085	BOS-21-85	85								101,6	80		74,5		
63521090	BOS-21-90	90	130	330	206	102	279	30							
63521100	BOS-21-100	100													



Properties:

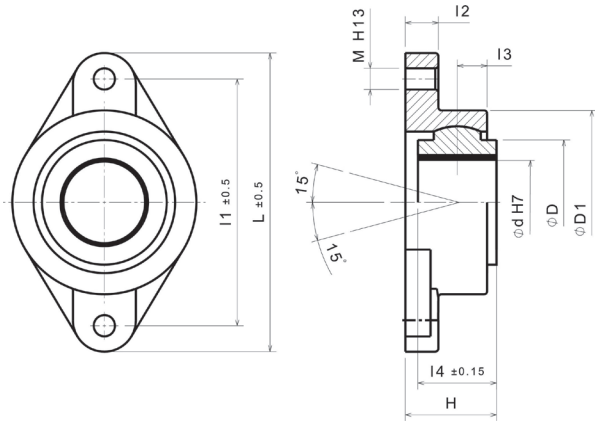
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63522010	BOS-22-10	10	33,3	76	54	57	8	6	15	23	4xM8	3,86
63522012	BOS-22-12	12										
63522015	BOS-22-15	15										
63522020	BOS-22-20	20	39,7	89	64	64	10	10	20	27	4xM10	5,9
63522025	BOS-22-25	25							25	30		
63522030	BOS-22-30	30	51	110	79	79	11	13	30	36	4xM12	8,18
63522035	BOS-22-35	35	60,3	121	95	92	14	16	35	43		11
63522040	BOS-22-40	40							40	45		12
63522045	BOS-22-45	45							45	51		14,5
63522050	BOS-22-50	50	79,3	143	117	111	16	21	50	58	4xM16	16
63522055	BOS-22-55	55	83	165	137	130	17	22	55	62		
63522060	BOS-22-60	60							60	65		
63522065	BOS-22-65	65										
63522070	BOS-22-70	70	89	175	143	143	19	25	65	71	4xM20	17,3
63522075	BOS-22-75	75										
63522080	BOS-22-80	80	108	197	171	152	22	29	80	81		
63522085	BOS-22-85	85										
63522090	BOS-22-90	90	130	241	210	197	25	32			27	
63522100	BOS-22-100	100									30,5	

BOS-21, BOS-22 & BOS-23 - Spherica bearings



Article informationen



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63523012	BOS-23-12	12	33,3	103	54	81	8	6	15	23	2xM8	3,86
63523015	BOS-23-15	15	33,3	103	54	81	8	6	15	23	2xM8	3,86
63523020	BOS-23-20	20	39,7	116	64	89	10	10	20	27	2xM10	5,9
63523025	BOS-23-25	25	39,7	116	64	89	10	10	25	30	2xM10	5,9
63523030	BOS-23-30	30	51	143	79	113	11	13	30	36	2xM12	8,18
63523035	BOS-23-35	35	60,3	159	95	130	14	16	35	43	2xM12	11
63523040	BOS-23-40	40	60,3	159	95	130	14	16	40	45	2xM12	11
63523045	BOS-23-45	45	73	175	108	144	16	16	45	51	2xM12	12
63523050	BOS-23-50	50	79,3	190	117	157	16	21	50	58	2xM12	14,5
63523055	BOS-23-55	55	83	216	137	184	17	22	55	62	2xM16	16
63523060	BOS-23-60	60	83	216	137	184	17	22	60	65	2xM16	16
63523065	BOS-23-65	65	83	216	137	184	17	22	60	65	2xM16	16
63523070	BOS-23-70	70	89	236	143	202	19	25	65	71	2xM16	17,3
63523075	BOS-23-75	75	89	236	143	202	19	25	65	71	2xM16	17,3
63523080	BOS-23-80	80	108	259	171	214	22	29	80	81	2xM20	27
63523085	BOS-23-85	85	108	259	171	214	22	29	80	81	2xM20	27
63523090	BOS-23-90	90	130	324	210	279	25	32	80	91	2xM20	30,5
63523100	BOS-23-100	100	130	324	210	279	25	32	80	91	2xM20	30,5

Installation note

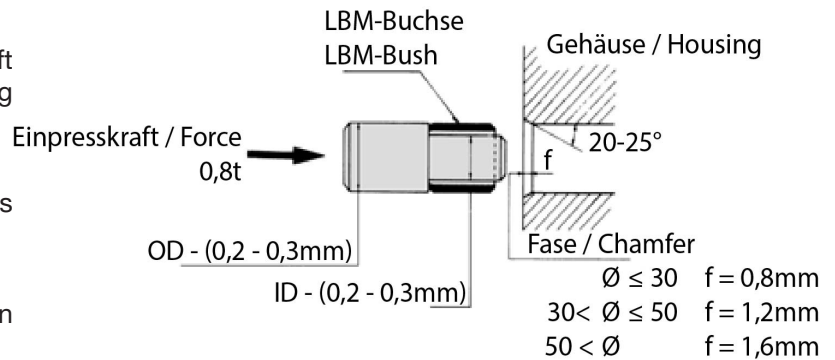
Bush

Observe tolerances of the press-in mandrel (shaft and calibrating mandrel diameter) and the housing when pressing in the bushing.

In large diameter range, use calibrating mandrels if necessary!

Avoid damage to the running surface when mounting the bearings.

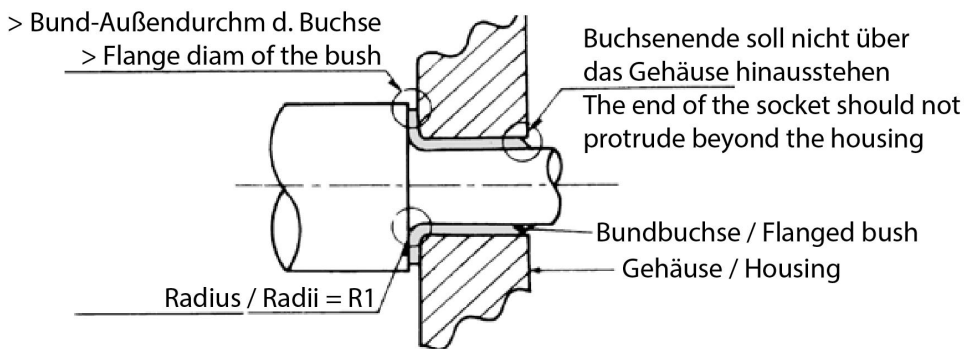
Design of the shaft journal (mating surface): For dry running, surface roughness = Rz2 - Rz3 (ground), for secondary bearing points also drawn material is permissible.



Flanged bush

The mandrel shank diameter should be larger than the collar outside diameter of the bushing when pressing in.

The shaft outside diameter of the shaft should be larger than the collar outside diameter of the bushing.



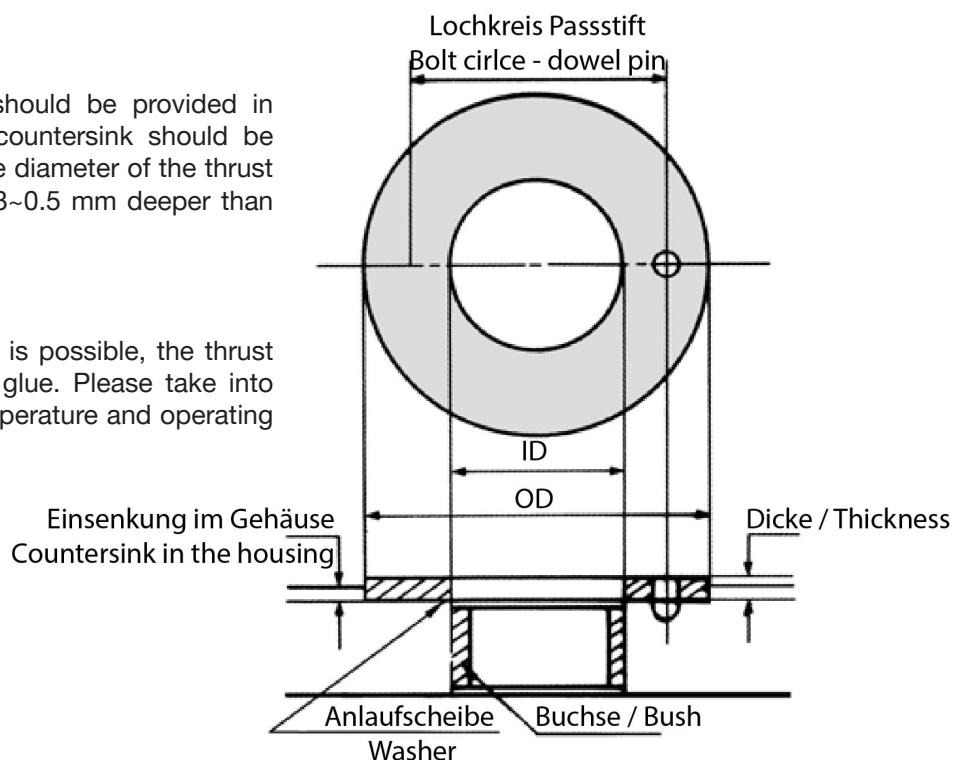
Thrust washer

In case of locking by dowel pin:

If possible, a countersink (cavity) should be provided in the housing. The diameter of the countersink should be 0.05~0.15 mm larger than the outside diameter of the thrust washer. The dowel pin should be 0.3~0.5 mm deeper than the top edge - thrust surface.

Glue in place:

If no dowel pin or screw connection is possible, the thrust washer can also be fixed by using glue. Please take into account the maximum operating temperature and operating conditions of the glue.



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	

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General and technical information

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	

