

SLIDING BEARINGS DIVISION

HYDRAULIC, ENERGY AND METAL INDUSTRY



TECHNICAL HANDBOOK - INDUSTRIAL APPLICATIONS

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Sealing



SLIDING BEARINGS DIVISION

HYDRAULIC, ENERGY AND METAL INDUSTRY

Slib Italy is specialized in the manufacturing of pressed sliding bearings and washers with thin wall-thickness, dry self-lubricating, or with grease or oil lubrication, produced in accordance to the ISO 3547 directive. We produce both standard items, as much as special and custom-made ones, and for high pressure applications. Our articles can be provided as thrust washer in cylindrical shape, as flat washers or as sliding strips. Other possible variables can be produced according to specific requests or to customers' drawings. Diameters range from a min. of 10 mm to a max. of 1.000 mm, both for standard sizes and for special ones.

These bearings and washers guarantee superior performances in terms of:

- Wear resistance;
- Load capacity, both static and dynamic;
- Maximum flexibility of usage in the most different applications;
- Less space requirement in the application;
- Resistance to impacts and to vibrations;
- Possibility to be used both at low and high temperatures;
- Chemical resistance in contact with various substances.

With this new production department started with experienced employees in the production of sliding bearings and washers •FP• F.lli Paris is aiming to become a worldwide reference for these products focusing its strength on the achievement, the maintenance and the improvement of the following prerogatives:

- Strong team work to reach the maximum satisfaction of the client;
- Flexible manufacturing capability for all the different applications;
- Competitive prices;
- Guaranty of the agreed lead times;
- Technology and constant high quality of the products.



SB-00

SB-01 / SB-03 / SB-04

MATERIAL WITH A SELF-LUBRICATING FILLED PTFE LAYER

SB-00 is a composite material made of one layer of self-lubricating PTFE compound and one layer of tin-sintered bronze on a low-carbon steel support. Thanks to its structure the type SB-00 perfectly combines the mechanical strength of the steel with the low friction PTFE layer. The bronze guarantees a solid grip to the self-lubricating layer and increases the thermal dispersion of the heat generated during use. It is lead free in accordance to the European directive 2000/53/EC.

MAIN FEATURES:

- High load capacity
- Dry self-lubrication
- Low static and dynamic friction coefficient (no stick-slip effect)
- Minimum wear and excellent service life
- Good chemical inertness and compatibility with fluids
- Wide range of operating temperatures
- Good thermal conductivity
- Good electrical conductivity
- Reduced housing size
- Easy assembly

SB-01 is a composite material made of one layer of self-lubricating PTFE compound and one layer of tin-sintered bronze on an AISI 304 stainless steel support. Thanks to its structure the type SB-01 perfectly combines the mechanical strength of the stainless steel with the low friction PTFE layer. The bronze layer guarantees a solid grip to the self-lubricating layer and increases the thermal dispersion of the heat generated

during use. It is lead free in accordance to the European directive 2000/53/EC.

MAIN FEATURES:

- High load capacity
- Dry self-lubrication
- Low static and dynamic friction coefficient (no stick-slip effect)
- Minimum wear and excellent service life
- Good chemical inertness and compatibility with fluids
- Wide range of operating temperatures
- Good thermal conductivity
- Good electrical conductivity
- Reduced housing size
- Easy assembly

SB-03 is a composite material made of one layer of self-lubricating PTFE compound and one layer of tin-sintered bronze on a solid bronze support to be used in environment with water presence. Thanks to its structure the type SB-03 perfectly combines the mechanical strength of CuSn6 bronze with the low friction PTFE layer. The bronze layer guarantees a solid grip to the self-lubricating layer and increases the thermal dispersion of the heat generated during use. It is lead free, in accordance to the European directive 2000/53/EC.

MAIN FEATURES:

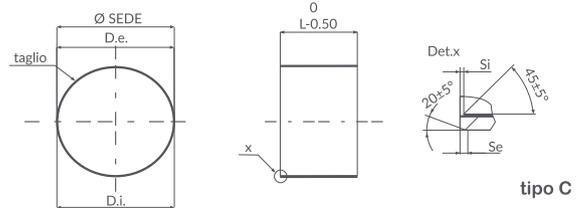
- High load capacity
- Dry self-lubrication
- Low static and dynamic friction coefficient (No stick-slip effect)
- Minimum wear and excellent service life
- Good chemical inertness and compatibility with water-based fluids
- Wide range of operating temperatures

- Good thermal conductivity
- Good electrical conductivity
- Reduced housing size
- Easy assembly

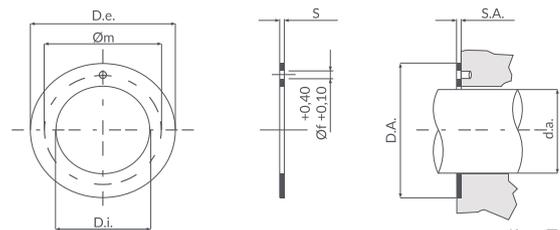
SB-04 is a composite material made of one layer of PTFE special PLUS with an excellent coefficient of friction and an optimal resistance to wear both with dry or with hydrodynamic use, and one layer of tin-sintered bronze on a low-carbon steel support. Thanks to its structure the type SB-04 perfectly combines the mechanical strength of the steel with the low friction PTFE special PLUS layer. The bronze layer guarantees a solid grip to the self-lubricating layer and increases the thermal dispersion of the heat generated during use.

MAIN FEATURES:

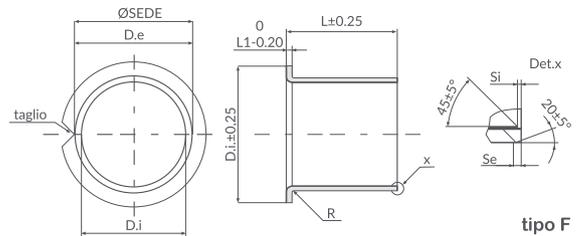
- High load capacity
- Excellent dry self-lubrication
- Low static and dynamic friction coefficient (no stick-slip effect)
- Minimum wear and excellent service life
- Good chemical inertness and compatibility with fluids
- Wide range of operating temperatures
- Good thermal conductivity
- Good electrical conductivity
- Reduced housing size
- Easy assembly



tipo C



tipo T



tipo F

SB-01

SB-02

SB-03

SB-04

MAXIMUM DRY LOAD FACTOR (pv)	Alternating load	0,9 N/mm ² ·m/s			
	Continuous load	1,8 N/mm ² ·m/s	1,8 N/mm ² ·m/s	1,8 N/mm ² ·m/s	2 N/mm ² ·m/s
	Limit for short periods	3,6 N/mm ² ·m/s			
MAXIMUM SPECIFIC LOAD (pv)	Static	250 N/mm ²	250 N/mm ²	250 N/mm ²	250 N/mm ²
	Reduced movements	140 N/mm ²	140 N/mm ²	140 N/mm ²	150 N/mm ²
	Rotating and swinging	60 N/mm ²	60 N/mm ²	60 N/mm ²	80 N/mm ²
MAXIMUM SPEED (v)	Dry	2,5 m/s	2,5 m/s	2,5 m/s	2,5 m/s
	Hydrodynamic system	<10 m/s	<10 m/s	<10 m/s	6 m/s
DRY FRICTION COEFFICIENT (µm)	Minimum	0,03	0,03	0,03	0,03
	Maximum	0,20	0,20	0,20	0,06
WORKING TEMPERATURE (t)	Minimum	-200°C	-200°C	-200°C	-190°C
	Maximum	+280°C	+280°C	+280°C	+280°C
MAXIMUM LOAD FACTOR IN HYDRODYNAMIC SYSTEM (pv)	Continuous load	-	-	-	10 N/mm ² ·m/s



SB-10

SB-11 / SB-12 / SB-13 / SB-14

MATERIAL WITH SINTERED BRONZE LAYER NON-SELF-LUBRICATING

The **SB-10** type identifies the bimetallic composite bearing family made of a low-carbon steel shell and an internal layer of sintered bronze (CuSn10Pb10). These type of bearings are used with oil or grease lubrication. The sliding surface is available with several design such as:

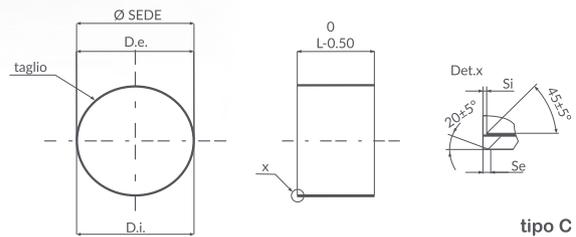
SB-10 = even bronze layer

SB-11 = bronze layer with spherical dimples

SB-12 = bronze layer with diamond-shaped dimples

SB-13 = bronze layer with extra-metal for finishing of the inside diameter before the fitting in in the housing

SB-14 = bronze layer with lubrication grooves per customer drawings



MAXIMUM SPECIFIC LOAD (pv)	Static	260 N/mm ²	SB-10, SB-11, SB-12, SB-13, SB-14 <ul style="list-style-type: none"> • Optimal load capacity • Easy assembly and lubrication • High thermal conductivity • Minimum wear and excellent service life • Wide range of operating temperatures • Reduced housing size • Possibility to have special articles
	Dynamic	150 N/mm ²	
MAXIMUM SPEED (v)	With lubricants	2,5 m/s	
WORKING TEMPERATURE (t)	Minimum	-40°C	
	Maximum	+200°C	



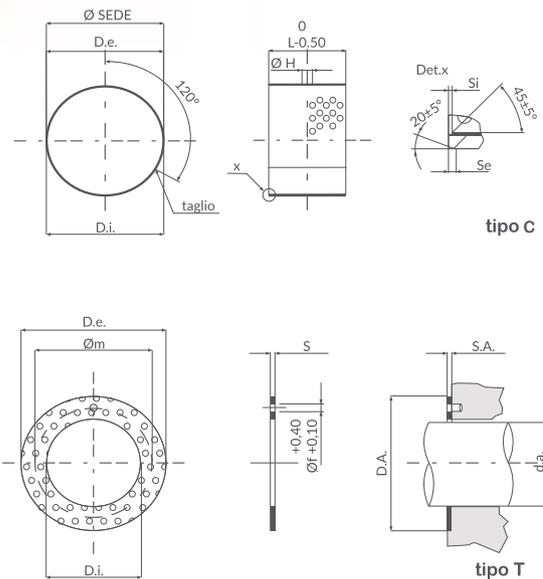
SB-20

SB-21

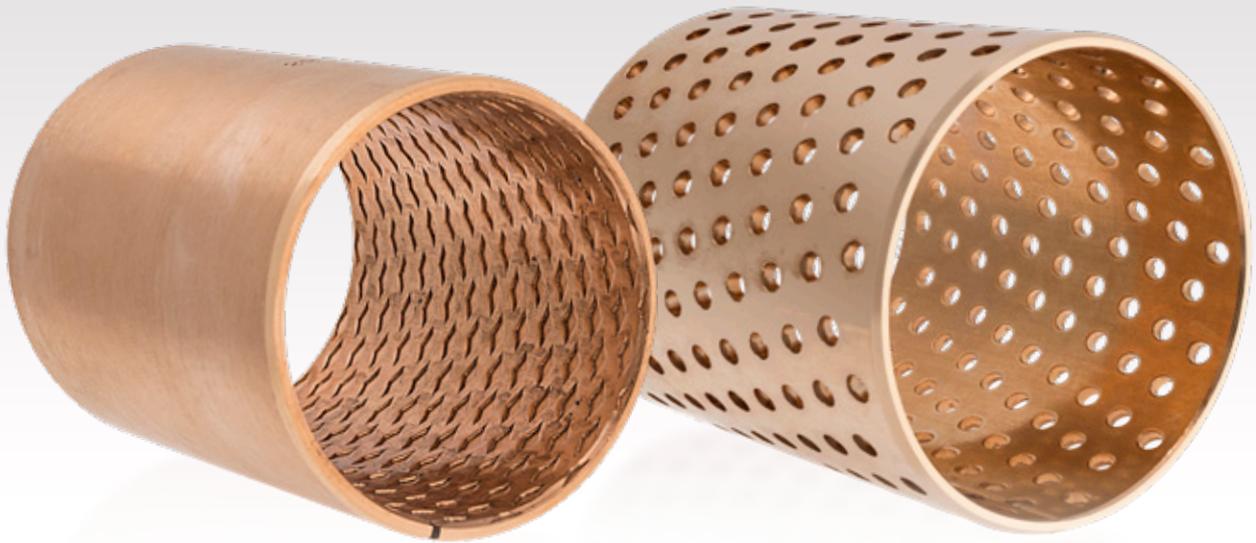
MATERIAL WITH ACETALIC RESIN (POM) LAYER NON-SELF-LUBRICATING

The **SB-20** type is a composite material. It is made of a low-carbon steel shell to which a layer of porous bronze is sintered on, then impregnated with a layer of acetalic resin (POM). The sliding surface is machined with dimples, which will gradually release the lubricant loaded during the installation. The range of application for the SB-20 type is wide: from industrial and civil vehicles to construction machines and anywhere there is a mechanical joint needing continuous lubrication. The family of the SB-20 type offers sliding bearings, washers and strips in both metric and imperial (inch) dimensions.

The SB-21 type has an extra layer of acetalic resin (POM) to allow the mechanical finishing of inside diameter before the assembly in the housing guaranteeing a higher precision and better tolerances.



SPECIFIC MAXIMUM LOAD (pv)	Static	140 N/mm ²	SB-20, SB-21 <ul style="list-style-type: none"> • Good load capacity • Particularly suitable for rotation movements • Water-repellent (no swelling) • Minimum wear and excellent working life • Requiring little maintenance • Impact resistant • Wide range of operating temperatures • Reduced housing size • Easy assembly
	Dynamic	70 N/mm ²	
MAXIMUM SPEED (v)	With lubricants	2.5 m/s	
WORKING TEMPERATURE (t)	Minimum	-40°C	
	Maximum	+130°C	



SB-30

MATERIAL - CUSN8 BRONZE NON-SELF-LUBRICATING

The bearings from the **SB-30** family are made of a full bronze CuSn8 body. This alloy is particularly suitable for sliding couplings lubricated with oil or grease, and very resistant to chemical and environmental agents. The sliding surface is machined with several diamond-shaped dimples so that the lubricants can fill them and be gradually released during use. The range of products is available as cylindrical bearings, flanged bearings, washers, strips and custom-shaped items. The most common SB-30 applications are for earth moving machines (excavators, dumping-tracks, etc..) and agricultural machines.

SB-31

MATERIAL - CUSN8 BRONZE NON-SELF-LUBRICATING

The bearings from the **SB-31** family are made of a full bronze CuSn8 and designed after the SB-30 type. The main difference is given by the lubricating system made of through-holes in the body of the bearing instead of dimples on the sliding surface. This provides a higher capacity of storing lubricant. The SB-31 is mainly used with paste and grease lubricants, where the maintenance frequency is lower. The range of products is available as cylindrical bearings, flanged bearings, washers, strips and custom-shaped items.

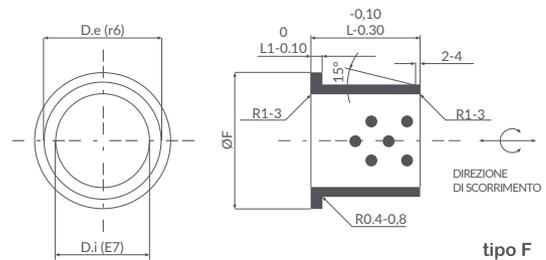
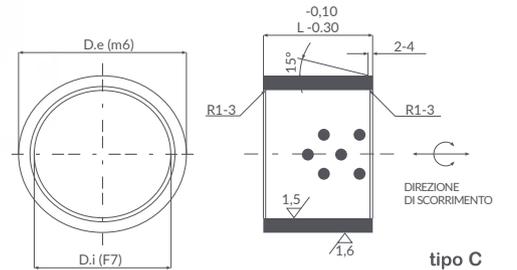
SPECIFIC MAXIMUM LOAD (pv)	Static	150 N/mm ²	SB-30 <ul style="list-style-type: none"> • High load capacity • Easy lubrication • Good chemical inertness to corrosive agents • High thermal conductivity • Reduced housing size • Easy assembly • Wide range of standard articles • Possibility to have special articles 	SB-31 <ul style="list-style-type: none"> • High load capacity • Easy assembly and lubrication • Good chemical inertness to corrosive agents • High thermal conductivity • Allows long maintenance intervals (greasing) • Wide range of operating temperatures • Reduced housing size • Possibility to have special articles
	Dynamic	60 N/mm ²		
MAXIMUM SPEED (v)	With lubricants	2 m/s		
WORKING TEMPERATURE (t)	Minimum	-40°C		
	Maximum	+150°C		



SB-40

SELF-LUBRICATING BRONZE MATERIAL WITH GRAPHITE POKETS

The **SB-40** type is an ideal material for low speed and high loads applications. The shell material is made of bronze, specifically CuZn25Al5, with poecket in the body filled with solid lubricants, or with graphite or PTFE. The lubricant is released on the shaft during the sliding movements and coats it assuring the use without maintenance. The standard base material is a an alloy made of bronze-brass but there are other available alloys to be used in accordance to the customer needs. The range of products is available as cylindrical bearings, flanged bearings, washers, strips and custom-shaped items.



SPECIFIC MAXIMUM LOAD (pv)	Static	200 N/mm ²	<p>SB-40</p> <ul style="list-style-type: none"> • High load capacity • Usable immersed in fluids • Good chemical inertness to corrosive agents • Wide range of operating temperatures • Not inflammable • Easy assembly • Wide range of standard articles • Possibility to have special articles
	Dynamic	120 N/mm ²	
MAXIMUM SPEED (v)	Dry	0,4 m/s	
WORKING TEMPERATURE (t)	Minimum	-40°C	
	Maximum	+300°C	
Max. Surface Bardness (HB)	/	280	
Friction Coefficien (μm)	Dry	0,16	

Applications



AXLE



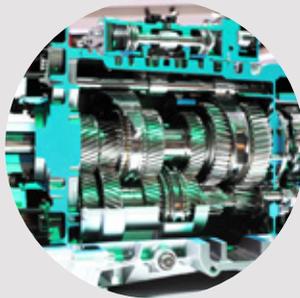
PUMPS AND MOTORS



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