

通过 **ISO9001:2000**  
质量管理体系认证



# JINTAI SLIDE BEARING

湖南锦泰五金机电有限公司

Hunan Jintai Hardware and Machinery Co., LTD



# JINTAI SLIDE BEARING INTRODUCTION

## COMPANY & CERTIFICATES



Hunan Jintai Hardware and Machinery Co.,Ltd is a professional manufacturer on various kind of bearings in China for over 15 years.We are making all kinds of slide bearings including DU PTFE composit bushing, DX POM composite bushing,bimetal bushing,wrapped bronze bushing, cast sliding bushings and wear plate bearing pad, sintered bronze bushing and sintering parts, graphite bearing, etc.

The shapes of bearings can be in sleeve, flanged, spherical, plate, washer, pad, ring, square, etc.

Base materials in carbon steel, harden steel, iron, stainless steel, bronze, brass, copper, bronze-steel alloy.Lubricant materials in PTFE, teflon, POM, nylon, plastic, oil, graphite, grease, MoS2,etc.



◇ SF-1



◇ SF-1F



◇ SF-WD



◇ SF-2



◇ JF-800



◇ FB090



◇ FB092



◇ FB08G



◇ FB09G



◇ JDB



◇ FZ

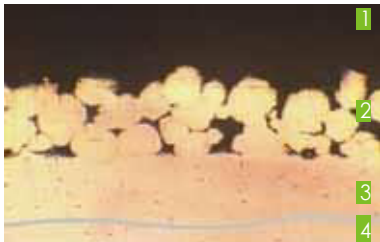


◇ FD

## SF-1 自润滑卷制轴承 SF-1 Self-Lubricatin Bearin s



1. 聚四氟乙烯与铅 PTFE with Iead
2. 球形青铜粉 Porous bronze sintere
3. 钢背 Steel backing
4. 镀铜/锡层 Copper-plating/tin-plating



注：SF-1 系列产品还可根据不同工况条件选择不同的基体材料，如：青铜基板

（SF-1B）、不锈钢基板（SF-1S）、以及无铅（SF-1W）等配方产品。

Note: Various materials are suitable for SF-1 Series products according to different working conditions, such as bronze backing (SF-1B), stainless steel backing (SF-1S) and lead-free material (SF-1W)...

### 技术参数 Tech.Data

|                   |                  |                           |
|-------------------|------------------|---------------------------|
| 最大荷载<br>Max.Load  | 静承载 Static       | 250N/mm <sup>2</sup>      |
|                   | 动承载 Dynamic      | 140N/mm <sup>2</sup>      |
|                   | 摇摆运动 Oscillating | 60N/mm <sup>2</sup>       |
| 最大PV值<br>PV limit | 干摩擦 Dry          | 3.6N/mm <sup>2</sup> ·m/s |
|                   | 油润滑 Oil          | 50N/mm <sup>2</sup> ·m/s  |
| 使用温度 Temp.limit   |                  | -195℃~+280℃               |

|                                  |         |                            |
|----------------------------------|---------|----------------------------|
| 摩擦系数 Friction Coeff.             |         | 0.03~0.20 μ                |
| 最大速率<br>Speed limit              | 干摩擦 Dry | 2mm <sup>2</sup>           |
|                                  | 油润滑 Oil | 5mm <sup>2</sup>           |
| 导热系数 Thermal conductivity        |         | 2.41Kcal/M.br.c            |
| 热膨胀系数 Coeff. of linear expansion |         | 27 × 10 <sup>-6</sup> per℃ |

### SF-1 应用特点 Product characteristics

◎无油润滑或少油润滑，适用于无法加油或很难加油的场所，可在使用时不保养或少保养。

◎耐磨性能好，摩擦系数小，使用寿命长。

◎有适量的弹塑性，能将应力分布在较宽的接触面上，提高轴承的承载能力。

◎静动摩擦系数相近，能消除低速下的爬行，从而保证机械的工作精度。

◎能使机械减少振动、降低噪音，防止污染，改善劳动条件。

◎在运转过程中能形成转移膜，起到保护对磨轴的使用，无咬轴现象。

◎对磨轴的硬度要求低，未经调质处理的轴都可使用，从而降低了相关零件的加工难度。

◎薄壁结构、质量轻，可减小机械体积。

◎钢背面可电镀多种金属，可在腐蚀介质中使用；目前已广泛应用于各种机械的滑动部分，例如：印刷机、纺织机、烟草机械、微电机，汽车、摩托车与农林机械等等。

◎It may be used where no oil can be applied or oil is difficult to be applied.

◎It has the advantage of low wear, low friction and with long life.

Load will spread over a wider area due to the bearing material' s elastic nature.

◎Low stick slip properties ensuring accuracy of machine operation under low sliding speeds.

◎Low vibration, low noise and non-pollution in operation.

◎PTFE and Lead film is transferred to the mating shaft to improve running properties.

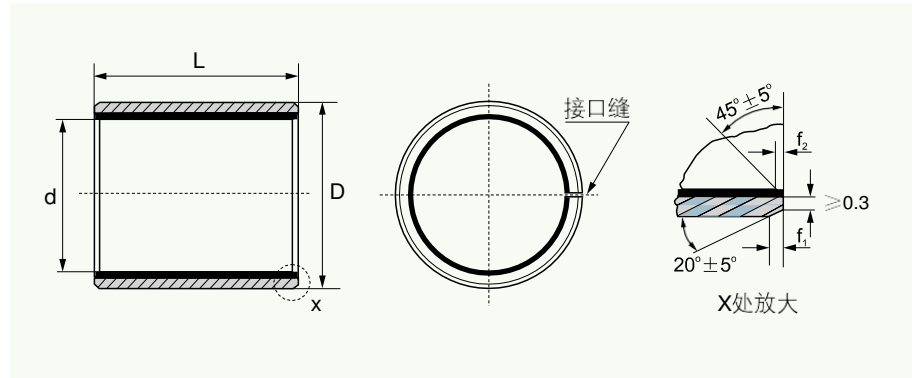
◎It can be used in low harness of mating shaft, so the shafts processing is easy.

◎The machine will be compact because of the thin thickness and low weight of the bush.

◎Electro plating is possible to prevent corrosion. It is widely used in various sliding motions of different kind of machines such as textile machine, tobacco machines, hydraulic vehicles Automobiles, agriculture machines and so on.

## SF-1 自润滑卷制轴承标准公制尺寸

## SF-1 Self-Lubricating Bearings Standard Metric Size



单位 Unit: mm

| d  | D  | 相配轴径<br>Shaft Dia.<br>f <sub>7</sub>   | 座孔<br>Housing<br>H7  | 壁厚<br>Wall Thickness |            | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> <sub>-0.40</sub> |      |      |      |      |      |      |      |      |      |
|----|----|----------------------------------------|----------------------|----------------------|------------|----------------|----------------|---------------------------------|------|------|------|------|------|------|------|------|------|
|    |    |                                        |                      | 最小<br>Min.           | 最大<br>Max. |                |                | 6                               | 8    | 10   | 12   | 15   | 20   | 25   | 30   | 40   | 50   |
| 6  | 8  | 6 <sup>-0.013</sup> <sub>-0.028</sub>  | 8 <sup>+0.015</sup>  |                      |            |                |                | 0606                            | 0608 | 0610 |      |      |      |      |      |      |      |
| 8  | 10 | 8 <sup>-0.013</sup> <sub>-0.028</sub>  | 10 <sup>+0.015</sup> |                      |            |                |                | 0806                            | 0808 | 0810 | 0812 | 0815 |      |      |      |      |      |
| 10 | 12 | 10 <sup>-0.016</sup> <sub>-0.034</sub> | 12 <sup>+0.018</sup> |                      |            |                |                | 1006                            | 1008 | 1010 | 1012 | 1015 | 1020 |      |      |      |      |
| 12 | 14 | 12 <sup>-0.016</sup> <sub>-0.034</sub> | 14 <sup>+0.018</sup> |                      |            |                |                | 1206                            | 1208 | 1210 | 1212 | 1215 | 1220 | 1225 |      |      |      |
| 13 | 15 | 13 <sup>-0.016</sup> <sub>-0.034</sub> | 15 <sup>+0.018</sup> | 0.980                | 1.005      | 0.6            | 0.3            |                                 |      | 1310 |      |      | 1320 |      |      |      |      |
| 14 | 16 | 14 <sup>-0.016</sup> <sub>-0.034</sub> | 16 <sup>+0.018</sup> |                      |            |                |                |                                 |      | 1410 | 1412 | 1415 | 1420 | 1425 |      |      |      |
| 15 | 17 | 15 <sup>-0.016</sup> <sub>-0.034</sub> | 17 <sup>+0.018</sup> |                      |            |                |                |                                 |      | 1510 | 1512 | 1515 | 1520 | 1525 |      |      |      |
| 16 | 18 | 16 <sup>-0.016</sup> <sub>-0.034</sub> | 18 <sup>+0.018</sup> |                      |            |                |                |                                 |      | 1610 | 1612 | 1615 | 1620 | 1625 |      |      |      |
| 17 | 19 | 17 <sup>-0.016</sup> <sub>-0.034</sub> | 19 <sup>+0.021</sup> |                      |            |                |                |                                 |      | 1710 | 1712 |      | 1720 |      |      |      |      |
| 18 | 20 | 18 <sup>-0.016</sup> <sub>-0.034</sub> | 20 <sup>+0.021</sup> |                      |            |                |                |                                 |      | 1810 | 1812 | 1815 | 1820 | 1825 |      |      |      |
| 20 | 23 | 20 <sup>-0.020</sup> <sub>-0.041</sub> | 23 <sup>+0.021</sup> |                      |            |                |                |                                 |      | 2010 | 2012 | 2015 | 2020 | 2025 | 2030 |      |      |
| 22 | 25 | 22 <sup>-0.020</sup> <sub>-0.041</sub> | 25 <sup>+0.021</sup> | 1.475                | 1.505      | 0.6            | 0.4            |                                 |      | 2210 | 2212 | 2215 | 2220 | 2225 | 2230 |      |      |
| 24 | 27 | 24 <sup>-0.020</sup> <sub>-0.041</sub> | 27 <sup>+0.021</sup> |                      |            |                |                |                                 |      |      |      | 2415 | 2420 | 2425 | 2430 |      |      |
| 25 | 28 | 25 <sup>-0.020</sup> <sub>-0.041</sub> | 28 <sup>+0.021</sup> |                      |            |                |                |                                 |      | 2510 | 2512 | 2515 | 2520 | 2525 | 2530 | 2540 | 2550 |
| 28 | 32 | 28 <sup>-0.020</sup> <sub>-0.041</sub> | 32 <sup>+0.025</sup> |                      |            |                |                |                                 |      |      |      | 2815 | 2820 | 2825 | 2830 | 2840 |      |
| 30 | 34 | 30 <sup>-0.020</sup> <sub>-0.041</sub> | 34 <sup>+0.025</sup> |                      |            |                |                |                                 |      |      | 3012 | 3015 | 3020 | 3025 | 3030 | 3040 |      |
| 32 | 36 | 32 <sup>-0.025</sup> <sub>-0.050</sub> | 36 <sup>+0.025</sup> | 1.970                | 2.005      | 1.2            | 0.4            |                                 |      |      |      |      | 3220 |      | 3230 | 3240 |      |
| 35 | 39 | 35 <sup>-0.025</sup> <sub>-0.050</sub> | 39 <sup>+0.025</sup> |                      |            |                |                |                                 |      |      | 3512 | 3515 | 3520 | 3525 | 3530 | 3540 | 3550 |
| 38 | 42 | 38 <sup>-0.025</sup> <sub>-0.050</sub> | 42 <sup>+0.025</sup> |                      |            |                |                |                                 |      |      |      | 3815 |      |      | 3830 | 3840 |      |
| 40 | 44 | 40 <sup>-0.025</sup> <sub>-0.050</sub> | 44 <sup>+0.025</sup> |                      |            |                |                |                                 |      |      | 4012 |      | 4020 | 4025 | 4030 | 4040 | 4050 |

注：孔径壁厚符合样本，宽度尺寸不在样本范围内客户提出要求，制造厂可定制加工。

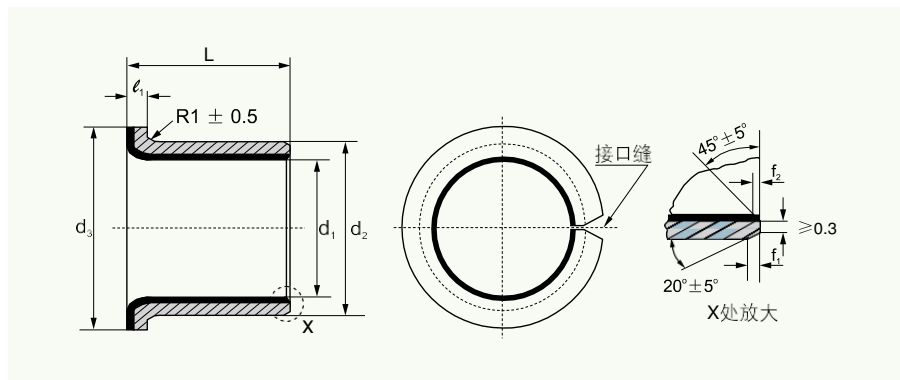
Note: Bearing size besides above mentioned sizes, can be customized and produced. Customer please offer us the dimensions.

单位Unit: mm

[illegible]

## SF-1F 自润滑卷制翻边轴承标准公制尺寸

## SF-1F Self-Lubricating Flanged Bearings Standard Metric Size



单位 Unit: mm

| 相配轴径<br>Shaft Dia.<br>$f_7$     | 座孔<br>Housing<br>H7  | 代号<br>Code number | 尺寸 Size |       |               |              |             | $f_1$ | $f_2$ |
|---------------------------------|----------------------|-------------------|---------|-------|---------------|--------------|-------------|-------|-------|
|                                 |                      |                   | $d_1$   | $d_2$ | $d_3 \pm 0.5$ | $L \pm 0.25$ | $l_1 - 0.2$ |       |       |
| 6 <sup>-0.013<br/>-0.028</sup>  | 8 <sup>+0.015</sup>  | 06040             | 6       | 8     | 12            | 4            |             |       |       |
|                                 |                      | 06070             |         |       |               | 7            |             |       |       |
| 8 <sup>-0.013<br/>-0.028</sup>  | 10 <sup>+0.015</sup> | 08055             | 8       | 10    | 15            | 5.5          |             |       |       |
|                                 |                      | 08075             |         |       |               | 7.5          |             |       |       |
| 10 <sup>-0.016<br/>-0.034</sup> | 12 <sup>+0.018</sup> | 10070             | 10      | 12    | 18            | 7            |             |       |       |
|                                 |                      | 10090             |         |       |               | 9            |             |       |       |
|                                 |                      | 10120             |         |       |               | 12           |             |       |       |
| 12 <sup>-0.016<br/>-0.034</sup> | 14 <sup>+0.018</sup> | 12070             | 12      | 14    | 20            | 7            |             |       |       |
|                                 |                      | 12090             |         |       |               | 9            |             |       |       |
|                                 |                      | 12120             |         |       |               | 12           | 1           | 0.6   | 0.3   |
| 14 <sup>-0.016<br/>-0.043</sup> | 16 <sup>+0.018</sup> | 14120             | 14      | 16    | 22            | 12           |             |       |       |
|                                 |                      | 14170             |         |       |               | 17           |             |       |       |
|                                 |                      | 15090             |         |       |               | 9            |             |       |       |
| 15 <sup>-0.016<br/>-0.034</sup> | 17 <sup>+0.018</sup> | 15120             | 15      | 17    | 23            | 12           |             |       |       |
|                                 |                      | 15170             |         |       |               | 17           |             |       |       |
|                                 |                      | 16120             | 16      | 18    | 24            | 12           |             |       |       |
| 16 <sup>-0.016<br/>-0.034</sup> | 18 <sup>+0.018</sup> | 16170             |         |       |               | 17           |             |       |       |
|                                 |                      | 18120             |         |       |               | 12           |             |       |       |
| 18 <sup>-0.016<br/>-0.034</sup> | 20 <sup>+0.021</sup> | 18170             | 18      | 20    | 26            | 17           |             |       |       |
|                                 |                      | 18200             |         |       |               | 20           |             |       |       |
|                                 |                      | 20115             | 20      | 23    | 30            | 11.5         |             |       |       |
| 20 <sup>-0.020<br/>-0.041</sup> | 23 <sup>+0.021</sup> | 20165             |         |       |               | 16.5         |             |       |       |
|                                 |                      | 20215             |         |       |               | 21.5         |             |       |       |
| 22 <sup>-0.020<br/>-0.041</sup> | 25 <sup>+0.021</sup> | 22150             | 22      | 25    | 32            | 15           | 1.5         | 0.6   | 0.4   |
|                                 |                      | 22200             |         |       |               | 20           |             |       |       |
|                                 |                      | 25115             |         |       |               | 11.5         |             |       |       |
| 25 <sup>-0.020<br/>-0.041</sup> | 28 <sup>+0.021</sup> | 25165             | 25      | 28    | 35            | 16.5         |             |       |       |
|                                 |                      | 25215             |         |       |               | 21.5         |             |       |       |
|                                 |                      | 30160             | 30      | 34    | 42            | 16           |             |       |       |
| 30 <sup>-0.025<br/>-0.050</sup> | 34 <sup>+0.025</sup> | 30260             |         |       |               | 26           |             |       |       |
| 35 <sup>-0.025<br/>-0.050</sup> | 39 <sup>+0.025</sup> | 35160             | 35      | 39    | 47            | 16           | 2           | 1.2   | 0.4   |
|                                 |                      | 35260             |         |       |               | 26           |             |       |       |
| 40 <sup>-0.025<br/>-0.050</sup> | 44 <sup>+0.025</sup> | 40260             | 40      | 44    | 53            | 26           |             |       |       |
|                                 |                      | 40400             |         |       |               | 40           |             |       |       |



JINTAI SF-1 Bearing similar as AST50 - Steel shell, Bronze powder with PTFE fiber Composite Self-Lubricating straight Bushings, We produce thrust washer as AST50-WC, bronze base bushing as AST11, Steel Bronze with PTFE/Fibre Bushing as AST40, AST40-F. AST40-WC. Inch Dimension bushing as AST50-IB AST50-FIB AST50-WC-IB.

## JINTAI SF-1 Bearing and AST50 Bearing Standard Metric Size

单位 Unit: mm

| JINTAI CODE | d*D*L(mm) | AST50 CODE | JINTAI CODE | d*D*L(mm)   | AST50 CODE   |
|-------------|-----------|------------|-------------|-------------|--------------|
| SF-1 0203   | 2x3.5x3   | AST50 0203 | SF-1 90100  | 90x95x100   | AST50 90100  |
| SF-1 0205   | 2x3.5x5   | AST50 0205 | SF-1 9530   | 95x100x30   | AST50 9530   |
| SF-1 0303   | 3x4.5x3   | AST50 0303 | SF-1 9540   | 95x100x40   | AST50 9540   |
| SF-1 0304   | 3x4.5x4   | AST50 0304 | SF-1 9550   | 95x100x50   | AST50 9550   |
| SF-1 0305   | 3x4.5x5   | AST50 0305 | SF-1 9560   | 95x100x60   | AST50 9560   |
| SF-1 0306   | 3x4.5x6   | AST50 0306 | SF-1 9570   | 95x100x70   | AST50 9570   |
| SF-1 0403   | 4x5.5x3   | AST50 0403 | SF-1 9580   | 95x100x80   | AST50 9580   |
| SF-1 0404   | 4x5.5x4   | AST50 0404 | SF-1 9590   | 95x100x90   | AST50 9590   |
| SF-1 0405   | 4x5.5x5   | AST50 0405 | SF-1 95100  | 95x100x100  | AST50 95100  |
| SF-1 0406   | 4x5.5x6   | AST50 0406 | SF-1 10030  | 100x105x30  | AST50 10030  |
| SF-1 0410   | 4x5.5x10  | AST50 0410 | SF-1 10040  | 100x105x40  | AST50 10040  |
| SF-1 0505   | 5x7x5     | AST50 0505 | SF-1 10050  | 100x105x50  | AST50 10050  |
| SF-1 0506   | 5x7x6     | AST50 0506 | SF-1 10060  | 100x105x60  | AST50 10060  |
| SF-1 0507   | 5x7x7     | AST50 0507 | SF-1 10070  | 100x105x70  | AST50 10070  |
| SF-1 0508   | 5x7x8     | AST50 0508 | SF-1 10080  | 100x105x80  | AST50 10080  |
| SF-1 0510   | 5x7x10    | AST50 0510 | SF-1 10090  | 100x105x90  | AST50 10090  |
| SF-1 0604   | 6x8x4     | AST50 0604 | SF-1 100100 | 100x105x100 | AST50 100100 |
| SF-1 0605   | 6x8x5     | AST50 0605 | SF-1 100115 | 100x105x115 | AST50 100115 |
| SF-1 0606   | 6x8x6     | AST50 0606 | SF-1 10550  | 105x110x50  | AST50 10550  |
| SF-1 0608   | 6x8x8     | AST50 0608 | SF-1 10560  | 105x110x60  | AST50 10560  |
| SF-1 0610   | 6x8x10    | AST50 0610 | SF-1 10570  | 105x110x70  | AST50 10570  |
| SF-1 0705   | 7x9x5     | AST50 0705 | SF-1 10580  | 105x110x80  | AST50 10580  |
| SF-1 0706   | 7x9x6     | AST50 0706 | SF-1 10590  | 105x110x90  | AST50 10590  |
| SF-1 0708   | 7x9x8     | AST50 0708 | SF-1 105100 | 105x110x100 | AST50 105100 |
| SF-1 0710   | 7x9x10    | AST50 0710 | SF-1 105115 | 105x110x115 | AST50 105115 |
| SF-1 0715   | 7x9x15    | AST50 0715 | SF-1 11050  | 110x115x50  | AST50 11050  |
| SF-1 0805   | 8x10x5    | AST50 0805 | SF-1 11060  | 110x115x60  | AST50 11060  |
| SF-1 0806   | 8x10x6    | AST50 0806 | SF-1 11070  | 110x115x70  | AST50 11070  |
| SF-1 0808   | 8x10x8    | AST50 0808 | SF-1 11080  | 110x115x80  | AST50 11080  |
| SF-1 0810   | 8x10x10   | AST50 0810 | SF-1 11090  | 110x115x90  | AST50 11090  |
| SF-1 0812   | 8x10x12   | AST50 0812 | SF-1 110100 | 110x115x100 | AST50 110100 |
| SF-1 0815   | 8x10x15   | AST50 0815 | SF-1 110115 | 110x115x115 | AST50 110115 |
| SF-1 0820   | 8x10x20   | AST50 0820 | SF-1 11550  | 115x120x50  | AST50 11550  |
| SF-1 0908   | 9x11x8    | AST50 0908 | SF-1 11560  | 115x120x60  | AST50 11560  |
| SF-1 0909   | 9x11x9    | AST50 0909 | SF-1 11570  | 115x120x70  | AST50 11570  |
| SF-1 0910   | 9x11x10   | AST50 0910 | SF-1 11580  | 115x120x80  | AST50 11580  |
| SF-1 1005   | 10x12x5   | AST50 1005 | SF-1 11590  | 115x120x90  | AST50 11590  |
| SF-1 1006   | 10x12x6   | AST50 1006 | SF-1 115100 | 115x120x100 | AST50 115100 |
| SF-1 1008   | 10x12x8   | AST50 1008 | SF-1 115115 | 115x120x115 | AST50 115115 |
| SF-1 1009   | 10x12x9   | AST50 1009 | SF-1 12050  | 120x125x50  | AST50 12050  |
| SF-1 1010   | 10x12x10  | AST50 1010 | SF-1 12060  | 120x125x60  | AST50 12060  |
| SF-1 1012   | 10x12x12  | AST50 1012 | SF-1 12070  | 120x125x70  | AST50 12070  |
| SF-1 1015   | 10x12x15  | AST50 1015 | SF-1 12080  | 120x125x80  | AST50 12080  |
| SF-1 1020   | 10x12x20  | AST50 1020 | SF-1 12090  | 120x125x90  | AST50 12090  |
| SF-1 1108   | 11x13x8   | AST50 1108 | SF-1 120100 | 120x125x100 | AST50 120100 |
| SF-1 1109   | 11x13x9   | AST50 1109 | SF-1 120120 | 120x125x120 | AST50 120120 |
| SF-1 1110   | 11x13x10  | AST50 1110 | SF-1 12550  | 125x130x50  | AST50 12550  |
| SF-1 1112   | 11x13x12  | AST50 1112 | SF-1 12560  | 125x130x60  | AST50 12560  |
| SF-1 1206   | 12x14x6   | AST50 1206 | SF-1 12570  | 125x130x70  | AST50 12570  |
| SF-1 1208   | 12x14x8   | AST50 1208 | SF-1 12580  | 125x130x80  | AST50 12580  |
| SF-1 1210   | 12x14x10  | AST50 1210 | SF-1 12590  | 125x130x90  | AST50 12590  |
| SF-1 1212   | 12x14x12  | AST50 1212 | SF-1 125100 | 125x130x100 | AST50 125100 |
| SF-1 1214   | 12x14x14  | AST50 1214 | SF-1 125115 | 125x130x115 | AST50 125115 |
| SF-1 1215   | 12x14x15  | AST50 1215 | SF-1 13060  | 130x135x60  | AST50 13060  |
| SF-1 1216   | 12x14x16  | AST50 1216 | SF-1 13070  | 130x135x70  | AST50 13070  |
| SF-1 1220   | 12x14x20  | AST50 1220 | SF-1 13080  | 130x135x80  | AST50 13080  |
| SF-1 1225   | 12x14x25  | AST50 1225 | SF-1 13090  | 130x135x90  | AST50 13090  |
| SF-1 1308   | 13x15x8   | AST50 1308 | SF-1 130100 | 130x135x100 | AST50 130100 |
| SF-1 1309   | 13x15x9   | AST50 1309 | SF-1 130120 | 130x135x120 | AST50 130120 |
| SF-1 1310   | 13x15x10  | AST50 1310 | SF-1 13560  | 135x140x60  | AST50 13560  |
| SF-1 1312   | 13x15x12  | AST50 1312 | SF-1 13570  | 135x140x70  | AST50 13570  |
| SF-1 1315   | 13x15x15  | AST50 1315 | SF-1 13580  | 135x140x80  | AST50 13580  |
| SF-1 1320   | 13x15x20  | AST50 1320 | SF-1 13590  | 135x140x90  | AST50 13590  |
| SF-1 1325   | 13x15x25  | AST50 1325 | SF-1 135100 | 135x140x100 | AST50 135100 |
| SF-1 1408   | 14x16x8   | AST50 1408 | SF-1 135120 | 135x140x120 | AST50 135120 |
| SF-1 1410   | 14x16x10  | AST50 1410 | SF-1 14060  | 140x145x60  | AST50 14060  |

|            |          |             |             |             |              |
|------------|----------|-------------|-------------|-------------|--------------|
| SF-1 1412  | 14x16x12 | AST50 1412  | SF-1 14070  | 140x145x70  | AST50 14070  |
| SF-1 1415  | 14x16x15 | AST50 1415  | SF-1 14080  | 140x145x80  | AST50 14080  |
| SF-1 1420  | 14x16x20 | AST50 1420  | SF-1 14090  | 140x145x90  | AST50 14090  |
| SF-1 1422  | 14x16x22 | AST50 1422  | SF-1 140100 | 140x145x100 | AST50 140100 |
| SF-1 1425  | 14x16x25 | AST50 1425  | SF-1 14560  | 145x150x60  | AST50 14560  |
| SF-1 1508  | 15x17x8  | AST50 1508  | SF-1 14570  | 145x150x70  | AST50 14570  |
| SF-1 1510  | 15x17x10 | AST50 1510  | SF-1 14580  | 145x150x80  | AST50 14580  |
| SF-1 1512  | 15x17x12 | AST50 1512  | SF-1 14590  | 145x150x90  | AST50 14590  |
| SF-1 1515  | 15x17x15 | AST50 1515  | SF-1 145100 | 145x150x100 | AST50 145100 |
| SF-1 1518  | 15x17x18 | AST50 1518  | SF-1 145120 | 145x150x120 | AST50 145120 |
| SF-1 1520  | 15x17x20 | AST50 1520  | SF-1 15060  | 150x155x60  | AST50 15060  |
| SF-1 1525  | 15x17x25 | AST50 1525  | SF-1 15070  | 150x155x70  | AST50 15070  |
| SF-1 1608  | 16x18x8  | AST50 1608  | SF-1 15080  | 150x155x80  | AST50 15080  |
| SF-1 1610  | 16x18x10 | AST50 1610  | SF-1 15090  | 150x155x90  | AST50 15090  |
| SF-1 1612  | 16x18x12 | AST50 1612  | SF-1 150100 | 150x155x100 | AST50 150100 |
| SF-1 1615  | 16x18x15 | AST50 1615  | SF-1 15550  | 155x160x50  | AST50 15550  |
| SF-1 1618  | 16x18x18 | AST50 1618  | SF-1 15560  | 155x160x60  | AST50 15560  |
| SF-1 1620  | 16x18x20 | AST50 1620  | SF-1 15570  | 155x160x70  | AST50 15570  |
| SF-1 1625  | 16x18x25 | AST50 1625  | SF-1 15580  | 155x160x80  | AST50 15580  |
| SF-1 1630  | 16x18x30 | AST50 1630  | SF-1 15590  | 155x160x90  | AST50 15590  |
| SF-1 1708  | 17x19x8  | AST50 1708  | SF-1 155100 | 155x160x100 | AST50 155100 |
| SF-1 1710  | 17x19x10 | AST50 1710  | SF-1 16050  | 160x165x50  | AST50 16050  |
| SF-1 1712  | 17x19x12 | AST50 1712  | SF-1 16060  | 160x165x60  | AST50 16060  |
| SF-1 1715  | 17x19x15 | AST50 1715  | SF-1 16070  | 160x165x70  | AST50 16070  |
| SF-1 1718  | 17x19x18 | AST50 1718  | SF-1 16080  | 160x165x80  | AST50 16080  |
| SF-1 1720  | 17x19x20 | AST50 1720  | SF-1 16090  | 160x165x90  | AST50 16090  |
| SF-1 1725  | 17x19x25 | AST50 1725  | SF-1 160100 | 160x165x100 | AST50 160100 |
| SF-1 1808  | 18x20x8  | AST50 1808  | SF-1 160110 | 160x165x110 | AST50 160110 |
| SF-1 1810  | 18x20x10 | AST50 1810  | SF-1 160120 | 160x165x120 | AST50 160120 |
| SF-1 1812  | 18x20x12 | AST50 1812  | SF-1 160130 | 160x165x130 | AST50 160130 |
| SF-1 1815  | 18x20x15 | AST50 1815  | SF-1 160140 | 160x165x140 | AST50 160140 |
| SF-1 1820  | 18x20x20 | AST50 1820  | SF-1 160150 | 160x165x150 | AST50 160150 |
| SF-1 1825  | 18x20x25 | AST50 1825  | SF-1 16560  | 165x170x60  | AST50 16560  |
| SF-1 1830  | 18x20x30 | AST50 1830  | SF-1 16570  | 165x170x70  | AST50 16570  |
| SF-1 2010a | 20x22x10 | AST50 2010a | SF-1 16580  | 165x170x80  | AST50 16580  |
| SF-1 2012a | 20x22x12 | AST50 2012a | SF-1 16590  | 165x170x90  | AST50 16590  |
| SF-1 2015a | 20x22x15 | AST50 2015a | SF-1 165100 | 165x170x100 | AST50 165100 |
| SF-1 2020a | 20x22x20 | AST50 2020a | SF-1 165110 | 165x170x110 | AST50 165110 |
| SF-1 2025a | 20x22x25 | AST50 2025a | SF-1 165120 | 165x170x120 | AST50 165120 |
| SF-1 2030a | 20x22x30 | AST50 2030a | SF-1 165130 | 165x170x130 | AST50 165130 |
| SF-1 2035a | 20x22x35 | AST50 2035a | SF-1 165140 | 165x170x140 | AST50 165140 |
| SF-1 2040a | 20x22x40 | AST50 2040a | SF-1 165150 | 165x170x150 | AST50 165150 |
| SF-1 2008  | 20x23x8  | AST50 2008b | SF-1 17060  | 170x175x60  | AST50 17060  |
| SF-1 2010  | 20x23x10 | AST50 2010b | SF-1 17070  | 170x175x70  | AST50 17070  |
| SF-1 2012  | 20x23x12 | AST50 2012b | SF-1 17080  | 170x175x80  | AST50 17080  |
| SF-1 2015  | 20x23x15 | AST50 2015b | SF-1 17090  | 170x175x90  | AST50 17090  |
| SF-1 2020  | 20x23x20 | AST50 2020b | SF-1 170100 | 170x175x100 | AST50 170100 |
| SF-1 2025  | 20x23x25 | AST50 2025b | SF-1 170110 | 170x175x110 | AST50 170110 |
| SF-1 2030  | 20x23x30 | AST50 2030b | SF-1 170120 | 170x175x120 | AST50 170120 |
| SF-1 2035  | 20x23x35 | AST50 2035b | SF-1 170130 | 170x175x130 | AST50 170130 |
| SF-1 2040  | 20x23x40 | AST50 2040b | SF-1 170140 | 170x175x140 | AST50 170140 |
| SF-1 2210  | 22x25x10 | AST50 2210  | SF-1 170150 | 170x175x150 | AST50 170150 |
| SF-1 2212  | 22x25x12 | AST50 2212  | SF-1 17560  | 175x180x60  | AST50 17560  |
| SF-1 2215  | 22x25x15 | AST50 2215  | SF-1 17570  | 175x180x70  | AST50 17570  |
| SF-1 2220  | 22x25x20 | AST50 2220  | SF-1 17580  | 175x180x80  | AST50 17580  |
| SF-1 2225  | 22x25x25 | AST50 2225  | SF-1 17590  | 175x180x90  | AST50 17590  |
| SF-1 2230  | 22x25x30 | AST50 2230  | SF-1 175100 | 175x180x100 | AST50 175100 |
| SF-1 2235  | 22x25x35 | AST50 2235  | SF-1 175110 | 175x180x110 | AST50 175110 |
| SF-1 2238  | 22x25x38 | AST50 2238  | SF-1 175120 | 175x180x120 | AST50 175120 |
| SF-1 2240  | 22x25x40 | AST50 2240  | SF-1 175130 | 175x180x130 | AST50 175130 |
| SF-1 2245  | 22x25x45 | AST50 2245  | SF-1 175140 | 175x180x140 | AST50 175140 |
| SF-1 2250  | 22x25x50 | AST50 2250  | SF-1 175150 | 175x180x150 | AST50 175150 |
| SF-1 2410  | 24x27x10 | AST50 2410a | SF-1 18060  | 180x185x60  | AST50 18060  |
| SF-1 2412  | 24x27x12 | AST50 2412a | SF-1 18070  | 180x185x70  | AST50 18070  |
| SF-1 2415  | 24x27x15 | AST50 2415a | SF-1 18080  | 180x185x80  | AST50 18080  |
| SF-1 2420  | 24x27x20 | AST50 2420a | SF-1 18090  | 180x185x90  | AST50 18090  |
| SF-1 2425  | 24x27x25 | AST50 2425a | SF-1 180100 | 180x185x100 | AST50 180100 |
| SF-1 2428  | 24x27x28 | AST50 2428a | SF-1 180110 | 180x185x110 | AST50 180110 |
| SF-1 2430  | 24x27x30 | AST50 2430a | SF-1 180120 | 180x185x120 | AST50 180120 |
| SF-1 2432  | 24x27x32 | AST50 2432a | SF-1 180130 | 180x185x130 | AST50 180130 |
| SF-1 2435  | 24x27x35 | AST50 2435a | SF-1 180140 | 180x185x140 | AST50 180140 |
| SF-1 2438  | 24x27x38 | AST50 2438a | SF-1 180150 | 180x185x150 | AST50 180150 |
| SF-1 2440  | 24x27x40 | AST50 2440a | SF-1 18560  | 185x190x60  | AST50 18560  |
| SF-1 2450  | 24x27x50 | AST50 2450a | SF-1 18570  | 185x190x70  | AST50 18570  |
| SF-1 2410b | 24x28x10 | AST50 2410b | SF-1 18580  | 185x190x80  | AST50 18580  |
| SF-1 2412b | 24x28x12 | AST50 2412b | SF-1 18590  | 185x190x90  | AST50 18590  |
| SF-1 2415b | 24x28x15 | AST50 2415b | SF-1 185100 | 185x190x100 | AST50 185100 |
| SF-1 2420b | 24x28x20 | AST50 2420b | SF-1 185110 | 185x190x110 | AST50 185110 |
| SF-1 2425b | 24x28x25 | AST50 2425b | SF-1 185120 | 185x190x120 | AST50 185120 |
| SF-1 2428b | 24x28x28 | AST50 2428b | SF-1 185130 | 185x190x130 | AST50 185130 |
| SF-1 2430b | 24x28x30 | AST50 2430b | SF-1 185140 | 185x190x140 | AST50 185140 |
| SF-1 2432b | 24x28x32 | AST50 2432b | SF-1 185150 | 185x190x150 | AST50 185150 |
| SF-1 2435b | 24x28x35 | AST50 2435b | SF-1 19060  | 190x195x60  | AST50 19060  |
| SF-1 2438b | 24x28x38 | AST50 2438b | SF-1 19070  | 190x195x70  | AST50 19070  |
| SF-1 2440b | 24x28x40 | AST50 2440b | SF-1 19080  | 190x195x80  | AST50 19080  |
| SF-1 2450b | 24x28x50 | AST50 2450b | SF-1 19090  | 190x195x90  | AST50 19090  |
| SF-1 2510  | 25x28x10 | AST50 2510  | SF-1 190100 | 190x195x100 | AST50 190100 |
| SF-1 2512  | 25x28x12 | AST50 2512  | SF-1 190110 | 190x195x110 | AST50 190110 |

|           |          |            |             |             |              |
|-----------|----------|------------|-------------|-------------|--------------|
| SF-1 2515 | 25x28x15 | AST50 2515 | SF-1 190120 | 190x195x120 | AST50 190120 |
| SF-1 2520 | 25x28x20 | AST50 2520 | SF-1 190130 | 190x195x130 | AST50 190130 |
| SF-1 2525 | 25x28x25 | AST50 2525 | SF-1 190140 | 190x195x140 | AST50 190140 |
| SF-1 2528 | 25x28x28 | AST50 2528 | SF-1 190150 | 190x195x150 | AST50 190150 |
| SF-1 2530 | 25x28x30 | AST50 2530 | SF-1 19560  | 195x200x60  | AST50 19560  |
| SF-1 2532 | 25x28x32 | AST50 2532 | SF-1 19570  | 195x200x70  | AST50 19570  |
| SF-1 2535 | 25x28x35 | AST50 2535 | SF-1 19580  | 195x200x80  | AST50 19580  |
| SF-1 2540 | 25x28x40 | AST50 2540 | SF-1 19590  | 195x200x90  | AST50 19590  |
| SF-1 2550 | 25x28x50 | AST50 2550 | SF-1 195100 | 195x200x100 | AST50 195100 |
| SF-1 2560 | 25x28x60 | AST50 2560 | SF-1 195110 | 195x200x110 | AST50 195110 |
| SF-1 2610 | 26x30x10 | AST50 2610 | SF-1 195120 | 195x200x120 | AST50 195120 |
| SF-1 2612 | 26x30x12 | AST50 2612 | SF-1 195130 | 195x200x130 | AST50 195130 |
| SF-1 2615 | 26x30x15 | AST50 2615 | SF-1 195140 | 195x200x140 | AST50 195140 |
| SF-1 2620 | 26x30x20 | AST50 2620 | SF-1 195150 | 195x200x150 | AST50 195150 |
| SF-1 2625 | 26x30x25 | AST50 2625 | SF-1 20060  | 200x205x60  | AST50 20060  |
| SF-1 2630 | 26x30x30 | AST50 2630 | SF-1 20070  | 200x205x70  | AST50 20070  |
| SF-1 2635 | 26x30x35 | AST50 2635 | SF-1 20080  | 200x205x80  | AST50 20080  |
| SF-1 2640 | 26x30x40 | AST50 2640 | SF-1 20090  | 200x205x90  | AST50 20090  |
| SF-1 2650 | 26x30x50 | AST50 2650 | SF-1 200100 | 200x205x100 | AST50 200100 |
| SF-1 2810 | 28x32x10 | AST50 2810 | SF-1 200110 | 200x205x110 | AST50 200110 |
| SF-1 2812 | 28x32x12 | AST50 2812 | SF-1 200120 | 200x205x120 | AST50 200120 |
| SF-1 2815 | 28x32x15 | AST50 2815 | SF-1 200130 | 200x205x130 | AST50 200130 |
| SF-1 2820 | 28x32x20 | AST50 2820 | SF-1 200140 | 200x205x140 | AST50 200140 |
| SF-1 2825 | 28x32x25 | AST50 2825 | SF-1 200150 | 200x205x150 | AST50 200150 |
| SF-1 2830 | 28x32x30 | AST50 2830 | SF-1 20560  | 205x210x60  | AST50 20560  |
| SF-1 2832 | 28x32x32 | AST50 2832 | SF-1 20570  | 205x210x70  | AST50 20570  |
| SF-1 2835 | 28x32x35 | AST50 2835 | SF-1 20580  | 205x210x80  | AST50 20580  |
| SF-1 2840 | 28x32x40 | AST50 2840 | SF-1 20590  | 205x210x90  | AST50 20590  |
| SF-1 3010 | 30x34x10 | AST50 3010 | SF-1 205100 | 205x210x100 | AST50 205100 |
| SF-1 3012 | 30x34x12 | AST50 3012 | SF-1 205110 | 205x210x110 | AST50 205110 |
| SF-1 3015 | 30x34x15 | AST50 3015 | SF-1 205120 | 205x210x120 | AST50 205120 |
| SF-1 3020 | 30x34x20 | AST50 3020 | SF-1 205130 | 205x210x130 | AST50 205130 |
| SF-1 3025 | 30x34x25 | AST50 3025 | SF-1 205140 | 205x210x140 | AST50 205140 |
| SF-1 3028 | 30x34x28 | AST50 3028 | SF-1 205150 | 205x210x150 | AST50 205150 |
| SF-1 3030 | 30x34x30 | AST50 3030 | SF-1 21060  | 210x215x60  | AST50 21060  |
| SF-1 3032 | 30x34x32 | AST50 3032 | SF-1 21070  | 210x215x70  | AST50 21070  |
| SF-1 3035 | 30x34x35 | AST50 3035 | SF-1 21080  | 210x215x80  | AST50 21080  |
| SF-1 3038 | 30x34x38 | AST50 3038 | SF-1 21090  | 210x215x90  | AST50 21090  |
| SF-1 3040 | 30x34x40 | AST50 3040 | SF-1 210100 | 210x215x100 | AST50 210100 |
| SF-1 3045 | 30x34x45 | AST50 3045 | SF-1 210110 | 210x215x110 | AST50 210110 |
| SF-1 3050 | 30x34x50 | AST50 3050 | SF-1 210120 | 210x215x120 | AST50 210120 |
| SF-1 3210 | 32x36x10 | AST50 3210 | SF-1 210130 | 210x215x130 | AST50 210130 |
| SF-1 3212 | 32x36x12 | AST50 3212 | SF-1 210140 | 210x215x140 | AST50 210140 |
| SF-1 3215 | 32x36x15 | AST50 3215 | SF-1 210150 | 210x215x150 | AST50 210150 |
| SF-1 3218 | 32x36x18 | AST50 3218 | SF-1 21560  | 215x220x60  | AST50 21560  |
| SF-1 3220 | 32x36x20 | AST50 3220 | SF-1 21570  | 215x220x70  | AST50 21570  |
| SF-1 3225 | 32x36x25 | AST50 3225 | SF-1 21580  | 215x220x80  | AST50 21580  |
| SF-1 3230 | 32x36x30 | AST50 3230 | SF-1 21590  | 215x220x90  | AST50 21590  |
| SF-1 3235 | 32x36x35 | AST50 3235 | SF-1 215100 | 215x220x100 | AST50 215100 |
| SF-1 3240 | 32x36x40 | AST50 3240 | SF-1 215110 | 215x220x110 | AST50 215110 |
| SF-1 3245 | 32x36x45 | AST50 3245 | SF-1 215120 | 215x220x120 | AST50 215120 |
| SF-1 3250 | 32x36x50 | AST50 3250 | SF-1 215130 | 215x220x130 | AST50 215130 |
| SF-1 3410 | 34x38x10 | AST50 3410 | SF-1 215140 | 215x220x140 | AST50 215140 |
| SF-1 3412 | 34x38x12 | AST50 3412 | SF-1 215150 | 215x220x150 | AST50 215150 |
| SF-1 3415 | 34x38x15 | AST50 3415 | SF-1 22060  | 220x225x60  | AST50 22060  |
| SF-1 3420 | 34x38x20 | AST50 3420 | SF-1 22070  | 220x225x70  | AST50 22070  |
| SF-1 3425 | 34x38x25 | AST50 3425 | SF-1 22080  | 220x225x80  | AST50 22080  |
| SF-1 3430 | 34x38x30 | AST50 3430 | SF-1 22090  | 220x225x90  | AST50 22090  |
| SF-1 3435 | 34x38x35 | AST50 3435 | SF-1 220100 | 220x225x100 | AST50 220100 |
| SF-1 3440 | 34x38x40 | AST50 3440 | SF-1 220110 | 220x225x110 | AST50 220110 |
| SF-1 3445 | 34x38x45 | AST50 3445 | SF-1 220120 | 220x225x120 | AST50 220120 |
| SF-1 3510 | 35x39x10 | AST50 3510 | SF-1 220130 | 220x225x130 | AST50 220130 |
| SF-1 3512 | 35x39x12 | AST50 3512 | SF-1 220140 | 220x225x140 | AST50 220140 |
| SF-1 3515 | 35x39x15 | AST50 3515 | SF-1 220150 | 220x225x150 | AST50 220150 |
| SF-1 3520 | 35x39x20 | AST50 3520 | SF-1 22560  | 225x230x60  | AST50 22560  |
| SF-1 3525 | 35x39x25 | AST50 3525 | SF-1 22570  | 225x230x70  | AST50 22570  |
| SF-1 3530 | 35x39x30 | AST50 3530 | SF-1 22580  | 225x230x80  | AST50 22580  |
| SF-1 3535 | 35x39x35 | AST50 3535 | SF-1 22590  | 225x230x90  | AST50 22590  |
| SF-1 3540 | 35x39x40 | AST50 3540 | SF-1 225100 | 225x230x100 | AST50 225100 |
| SF-1 3545 | 35x39x45 | AST50 3545 | SF-1 225110 | 225x230x110 | AST50 225110 |
| SF-1 3550 | 35x39x50 | AST50 3550 | SF-1 225120 | 225x230x120 | AST50 225120 |
| SF-1 3610 | 36x40x10 | AST50 3610 | SF-1 225130 | 225x230x130 | AST50 225130 |
| SF-1 3612 | 36x40x12 | AST50 3612 | SF-1 225140 | 225x230x140 | AST50 225140 |
| SF-1 3615 | 36x40x15 | AST50 3615 | SF-1 23060  | 230x235x60  | AST50 23060  |
| SF-1 3620 | 36x40x20 | AST50 3620 | SF-1 23070  | 230x235x70  | AST50 23070  |
| SF-1 3625 | 36x40x25 | AST50 3625 | SF-1 23080  | 230x235x80  | AST50 23080  |
| SF-1 3630 | 36x40x30 | AST50 3630 | SF-1 23090  | 230x235x90  | AST50 23090  |
| SF-1 3635 | 36x40x35 | AST50 3635 | SF-1 230100 | 230x235x100 | AST50 230100 |
| SF-1 3640 | 36x40x40 | AST50 3640 | SF-1 230110 | 230x235x110 | AST50 230110 |
| SF-1 3645 | 36x40x45 | AST50 3645 | SF-1 230120 | 230x235x120 | AST50 230120 |
| SF-1 3650 | 36x40x50 | AST50 3650 | SF-1 230130 | 230x235x130 | AST50 230130 |
| SF-1 3812 | 38x42x12 | AST50 3812 | SF-1 230140 | 230x235x140 | AST50 230140 |
| SF-1 3815 | 38x42x15 | AST50 3815 | SF-1 230150 | 230x235x150 | AST50 230150 |
| SF-1 3820 | 38x42x20 | AST50 3820 | SF-1 23560  | 235x240x60  | AST50 23560  |
| SF-1 3825 | 38x42x25 | AST50 3825 | SF-1 23570  | 235x240x70  | AST50 23570  |
| SF-1 3830 | 38x42x30 | AST50 3830 | SF-1 23580  | 235x240x80  | AST50 23580  |

|           |          |            |             |             |              |
|-----------|----------|------------|-------------|-------------|--------------|
| SF-1 3835 | 38x42x35 | AST50 3835 | SF-1 23590  | 235x240x90  | AST50 23590  |
| SF-1 3840 | 38x42x40 | AST50 3840 | SF-1 235100 | 235x240x100 | AST50 235100 |
| SF-1 3845 | 38x42x45 | AST50 3845 | SF-1 235110 | 235x240x110 | AST50 235110 |
| SF-1 3850 | 38x42x50 | AST50 3850 | SF-1 235120 | 235x240x120 | AST50 235120 |
| SF-1 3855 | 38x42x55 | AST50 3855 | SF-1 235130 | 235x240x130 | AST50 235130 |
| SF-1 3860 | 38x42x60 | AST50 3860 | SF-1 235140 | 235x240x140 | AST50 235140 |
| SF-1 4012 | 40x44x12 | AST50 4012 | SF-1 235150 | 235x240x150 | AST50 235150 |
| SF-1 4015 | 40x44x15 | AST50 4015 | SF-1 24060  | 240x245x60  | AST50 24060  |
| SF-1 4020 | 40x44x20 | AST50 4020 | SF-1 24070  | 240x245x70  | AST50 24070  |
| SF-1 4025 | 40x44x25 | AST50 4025 | SF-1 24080  | 240x245x80  | AST50 24080  |
| SF-1 4030 | 40x44x30 | AST50 4030 | SF-1 24090  | 240x245x90  | AST50 24090  |
| SF-1 4035 | 40x44x35 | AST50 4035 | SF-1 240100 | 240x245x100 | AST50 240100 |
| SF-1 4040 | 40x44x40 | AST50 4040 | SF-1 240110 | 240x245x110 | AST50 240110 |
| SF-1 4045 | 40x44x45 | AST50 4045 | SF-1 240120 | 240x245x120 | AST50 240120 |
| SF-1 4050 | 40x44x50 | AST50 4050 | SF-1 240130 | 240x245x130 | AST50 240130 |
| SF-1 4055 | 40x44x55 | AST50 4055 | SF-1 240140 | 240x245x140 | AST50 240140 |
| SF-1 4060 | 40x44x60 | AST50 4060 | SF-1 240150 | 240x245x150 | AST50 240150 |
| SF-1 4212 | 42x46x12 | AST50 4212 | SF-1 24560  | 245x250x60  | AST50 24560  |
| SF-1 4215 | 42x46x15 | AST50 4215 | SF-1 24570  | 245x250x70  | AST50 24570  |
| SF-1 4220 | 42x46x20 | AST50 4220 | SF-1 24580  | 245x250x80  | AST50 24580  |
| SF-1 4225 | 42x46x25 | AST50 4225 | SF-1 24590  | 245x250x90  | AST50 24590  |
| SF-1 4230 | 42x46x30 | AST50 4230 | SF-1 245100 | 245x250x100 | AST50 245100 |
| SF-1 4235 | 42x46x35 | AST50 4235 | SF-1 245110 | 245x250x110 | AST50 245110 |
| SF-1 4240 | 42x46x40 | AST50 4240 | SF-1 245120 | 245x250x120 | AST50 245120 |
| SF-1 4245 | 42x46x45 | AST50 4245 | SF-1 245130 | 245x250x130 | AST50 245130 |
| SF-1 4250 | 42x46x50 | AST50 4250 | SF-1 245140 | 245x250x140 | AST50 245140 |
| SF-1 4255 | 42x46x55 | AST50 4255 | SF-1 245150 | 245x250x150 | AST50 245150 |
| SF-1 4260 | 42x46x60 | AST50 4260 | SF-1 25060  | 250x255x60  | AST50 25060  |
| SF-1 4412 | 44x48x12 | AST50 4412 | SF-1 25070  | 250x255x70  | AST50 25070  |
| SF-1 4415 | 44x48x15 | AST50 4415 | SF-1 25080  | 250x255x80  | AST50 25080  |
| SF-1 4420 | 44x48x20 | AST50 4420 | SF-1 25090  | 250x255x90  | AST50 25090  |
| SF-1 4425 | 44x48x25 | AST50 4425 | SF-1 250100 | 250x255x100 | AST50 250100 |
| SF-1 4430 | 44x48x30 | AST50 4430 | SF-1 250110 | 250x255x110 | AST50 250110 |
| SF-1 4435 | 44x48x35 | AST50 4435 | SF-1 250120 | 250x255x120 | AST50 250120 |
| SF-1 4440 | 44x48x40 | AST50 4440 | SF-1 250130 | 250x255x130 | AST50 250130 |
| SF-1 4445 | 44x48x45 | AST50 4445 | SF-1 250140 | 250x255x140 | AST50 250140 |
| SF-1 4450 | 44x48x50 | AST50 4450 | SF-1 250150 | 250x255x150 | AST50 250150 |
| SF-1 4455 | 44x48x55 | AST50 4455 | SF-1 25560  | 255x260x60  | AST50 25560  |
| SF-1 4460 | 44x48x60 | AST50 4460 | SF-1 25570  | 255x260x70  | AST50 25570  |
| SF-1 4515 | 45x50x15 | AST50 4515 | SF-1 25580  | 255x260x80  | AST50 25580  |
| SF-1 4520 | 45x50x20 | AST50 4520 | SF-1 25590  | 255x260x90  | AST50 25590  |
| SF-1 4525 | 45x50x25 | AST50 4525 | SF-1 255100 | 255x260x100 | AST50 255100 |
| SF-1 4530 | 45x50x30 | AST50 4530 | SF-1 255110 | 255x260x110 | AST50 255110 |
| SF-1 4535 | 45x50x35 | AST50 4535 | SF-1 255120 | 255x260x120 | AST50 255120 |
| SF-1 4540 | 45x50x40 | AST50 4540 | SF-1 255130 | 255x260x130 | AST50 255130 |
| SF-1 4545 | 45x50x45 | AST50 4545 | SF-1 255140 | 255x260x140 | AST50 255140 |
| SF-1 4550 | 45x50x50 | AST50 4550 | SF-1 255150 | 255x260x150 | AST50 255150 |
| SF-1 4555 | 45x50x55 | AST50 4555 | SF-1 26060  | 260x265x60  | AST50 26060  |
| SF-1 4560 | 45x50x60 | AST50 4560 | SF-1 26070  | 260x265x70  | AST50 26070  |
| SF-1 5015 | 50x55x15 | AST50 5015 | SF-1 26080  | 260x265x80  | AST50 26080  |
| SF-1 5020 | 50x55x20 | AST50 5020 | SF-1 26090  | 260x265x90  | AST50 26090  |
| SF-1 5025 | 50x55x25 | AST50 5025 | SF-1 260100 | 260x265x100 | AST50 260100 |
| SF-1 5030 | 50x55x30 | AST50 5030 | SF-1 260110 | 260x265x110 | AST50 260110 |
| SF-1 5035 | 50x55x35 | AST50 5035 | SF-1 260120 | 260x265x120 | AST50 260120 |
| SF-1 5040 | 50x55x40 | AST50 5040 | SF-1 260130 | 260x265x130 | AST50 260130 |
| SF-1 5045 | 50x55x45 | AST50 5045 | SF-1 260140 | 260x265x140 | AST50 260140 |
| SF-1 5050 | 50x55x50 | AST50 5050 | SF-1 260150 | 260x265x150 | AST50 260150 |
| SF-1 5055 | 50x55x55 | AST50 5055 | SF-1 26560  | 265x270x60  | AST50 26560  |
| SF-1 5060 | 50x55x60 | AST50 5060 | SF-1 26570  | 265x270x70  | AST50 26570  |
| SF-1 5065 | 50x55x65 | AST50 5065 | SF-1 26580  | 265x270x80  | AST50 26580  |
| SF-1 5070 | 50x55x70 | AST50 5070 | SF-1 26590  | 265x270x90  | AST50 26590  |
| SF-1 5515 | 55x60x15 | AST50 5515 | SF-1 265100 | 265x270x100 | AST50 265100 |
| SF-1 5520 | 55x60x20 | AST50 5520 | SF-1 265110 | 265x270x110 | AST50 265110 |
| SF-1 5525 | 55x60x25 | AST50 5525 | SF-1 265120 | 265x270x120 | AST50 265120 |
| SF-1 5530 | 55x60x30 | AST50 5530 | SF-1 265130 | 265x270x130 | AST50 265130 |
| SF-1 5535 | 55x60x35 | AST50 5535 | SF-1 265140 | 265x270x140 | AST50 265140 |
| SF-1 5540 | 55x60x40 | AST50 5540 | SF-1 265150 | 265x270x150 | AST50 265150 |
| SF-1 5545 | 55x60x45 | AST50 5545 | SF-1 27060  | 270x275x60  | AST50 27060  |
| SF-1 5550 | 55x60x50 | AST50 5550 | SF-1 27070  | 270x275x70  | AST50 27070  |
| SF-1 5555 | 55x60x55 | AST50 5555 | SF-1 27080  | 270x275x80  | AST50 27080  |
| SF-1 5560 | 55x60x60 | AST50 5560 | SF-1 27090  | 270x275x90  | AST50 27090  |
| SF-1 5565 | 55x60x65 | AST50 5565 | SF-1 270100 | 270x275x100 | AST50 270100 |
| SF-1 5570 | 55x60x70 | AST50 5570 | SF-1 270110 | 270x275x110 | AST50 270110 |
| SF-1 6015 | 60x65x15 | AST50 6015 | SF-1 270120 | 270x275x120 | AST50 270120 |
| SF-1 6020 | 60x65x20 | AST50 6020 | SF-1 270130 | 270x275x130 | AST50 270130 |
| SF-1 6025 | 60x65x25 | AST50 6025 | SF-1 270140 | 270x275x140 | AST50 270140 |
| SF-1 6030 | 60x65x30 | AST50 6030 | SF-1 270150 | 270x275x150 | AST50 270150 |
| SF-1 6035 | 60x65x35 | AST50 6035 | SF-1 27560  | 275x280x60  | AST50 27560  |
| SF-1 6040 | 60x65x40 | AST50 6040 | SF-1 27570  | 275x280x70  | AST50 27570  |
| SF-1 6045 | 60x65x45 | AST50 6045 | SF-1 27580  | 275x280x80  | AST50 27580  |
| SF-1 6050 | 60x65x50 | AST50 6050 | SF-1 27590  | 275x280x90  | AST50 27590  |
| SF-1 6055 | 60x65x55 | AST50 6055 | SF-1 275100 | 275x280x100 | AST50 275100 |
| SF-1 6060 | 60x65x60 | AST50 6060 | SF-1 275110 | 275x280x110 | AST50 275110 |
| SF-1 6065 | 60x65x65 | AST50 6065 | SF-1 275120 | 275x280x120 | AST50 275120 |
| SF-1 6070 | 60x65x70 | AST50 6070 | SF-1 275130 | 275x280x130 | AST50 275130 |
| SF-1 6075 | 60x65x75 | AST50 6075 | SF-1 275140 | 275x280x140 | AST50 275140 |
| SF-1 6080 | 60x65x80 | AST50 6080 | SF-1 275150 | 275x280x150 | AST50 275150 |
| SF-1 6085 | 60x65x85 | AST50 6085 | SF-1 28060  | 280x285x60  | AST50 28060  |

|            |           |             |             |             |              |
|------------|-----------|-------------|-------------|-------------|--------------|
| SF-1 6090  | 60x65x90  | AST50 6090  | SF-1 28070  | 280x285x70  | AST50 28070  |
| SF-1 6515  | 65x70x15  | AST50 6515  | SF-1 28080  | 280x285x80  | AST50 28080  |
| SF-1 6520  | 65x70x20  | AST50 6520  | SF-1 28090  | 280x285x90  | AST50 28090  |
| SF-1 6530  | 65x70x30  | AST50 6530  | SF-1 280100 | 280x285x100 | AST50 280100 |
| SF-1 6535  | 65x70x35  | AST50 6535  | SF-1 280110 | 280x285x110 | AST50 280110 |
| SF-1 6540  | 65x70x40  | AST50 6540  | SF-1 280120 | 280x285x120 | AST50 280120 |
| SF-1 6550  | 65x70x50  | AST50 6550  | SF-1 280130 | 280x285x130 | AST50 280130 |
| SF-1 6560  | 65x70x60  | AST50 6560  | SF-1 280140 | 280x285x140 | AST50 280140 |
| SF-1 6570  | 65x70x70  | AST50 6570  | SF-1 280150 | 280x285x150 | AST50 280150 |
| SF-1 6580  | 65x70x80  | AST50 6580  | SF-1 28560  | 285x290x60  | AST50 28560  |
| SF-1 6590  | 65x70x90  | AST50 6590  | SF-1 28570  | 285x290x70  | AST50 28570  |
| SF-1 7020  | 70x75x20  | AST50 7020  | SF-1 28580  | 285x290x80  | AST50 28580  |
| SF-1 7030  | 70x75x30  | AST50 7030  | SF-1 28590  | 285x290x90  | AST50 28590  |
| SF-1 7040  | 70x75x40  | AST50 7040  | SF-1 285100 | 285x290x100 | AST50 285100 |
| SF-1 7050  | 70x75x50  | AST50 7050  | SF-1 285110 | 285x290x110 | AST50 285110 |
| SF-1 7060  | 70x75x60  | AST50 7060  | SF-1 285120 | 285x290x120 | AST50 285120 |
| SF-1 7070  | 70x75x70  | AST50 7070  | SF-1 285130 | 285x290x130 | AST50 285130 |
| SF-1 7080  | 70x75x80  | AST50 7080  | SF-1 285140 | 285x290x140 | AST50 285140 |
| SF-1 7090  | 70x75x90  | AST50 7090  | SF-1 285150 | 285x290x150 | AST50 285150 |
| SF-1 7530  | 75x80x30  | AST50 7530  | SF-1 29060  | 290x295x60  | AST50 29060  |
| SF-1 7540  | 75x80x40  | AST50 7540  | SF-1 29070  | 290x295x70  | AST50 29070  |
| SF-1 7550  | 75x80x50  | AST50 7550  | SF-1 29080  | 290x295x80  | AST50 29080  |
| SF-1 7560  | 75x80x60  | AST50 7560  | SF-1 29090  | 290x295x90  | AST50 29090  |
| SF-1 7570  | 75x80x70  | AST50 7570  | SF-1 290100 | 290x295x100 | AST50 290100 |
| SF-1 7580  | 75x80x80  | AST50 7580  | SF-1 290110 | 290x295x110 | AST50 290110 |
| SF-1 7590  | 75x80x90  | AST50 7590  | SF-1 290120 | 290x295x120 | AST50 290120 |
| SF-1 8030  | 80x85x30  | AST50 8030  | SF-1 290130 | 290x295x130 | AST50 290130 |
| SF-1 8040  | 80x85x40  | AST50 8040  | SF-1 290140 | 290x295x140 | AST50 290140 |
| SF-1 8050  | 80x85x50  | AST50 8050  | SF-1 290150 | 290x295x150 | AST50 290150 |
| SF-1 8060  | 80x85x60  | AST50 8060  | SF-1 29560  | 295x300x60  | AST50 29560  |
| SF-1 8070  | 80x85x70  | AST50 8070  | SF-1 29570  | 295x300x70  | AST50 29570  |
| SF-1 8080  | 80x85x80  | AST50 8080  | SF-1 29580  | 295x300x80  | AST50 29580  |
| SF-1 8090  | 80x85x90  | AST50 8090  | SF-1 29590  | 295x300x90  | AST50 29590  |
| SF-1 80100 | 80x85x100 | AST50 80100 | SF-1 295100 | 295x300x100 | AST50 295100 |
| SF-1 8530  | 85x90x30  | AST50 8530  | SF-1 295110 | 295x300x110 | AST50 295110 |
| SF-1 8540  | 85x90x40  | AST50 8540  | SF-1 295120 | 295x300x120 | AST50 295120 |
| SF-1 8550  | 85x90x50  | AST50 8550  | SF-1 295130 | 295x300x130 | AST50 295130 |
| SF-1 8560  | 85x90x60  | AST50 8560  | SF-1 295140 | 295x300x140 | AST50 295140 |
| SF-1 8570  | 85x90x70  | AST50 8570  | SF-1 295150 | 295x300x150 | AST50 295150 |
| SF-1 8580  | 85x90x80  | AST50 8580  | SF-1 30060  | 300x305x60  | AST50 30060  |
| SF-1 8590  | 85x90x90  | AST50 8590  | SF-1 30070  | 300x305x70  | AST50 30070  |
| SF-1 85100 | 85x90x100 | AST50 85100 | SF-1 30080  | 300x305x80  | AST50 30080  |
| SF-1 9030  | 90x95x30  | AST50 9030  | SF-1 30090  | 300x305x90  | AST50 30090  |
| SF-1 9040  | 90x95x40  | AST50 9040  | SF-1 300100 | 300x305x100 | AST50 300100 |
| SF-1 9050  | 90x95x50  | AST50 9050  | SF-1 300110 | 300x305x110 | AST50 300110 |
| SF-1 9060  | 90x95x60  | AST50 9060  | SF-1 300120 | 300x305x120 | AST50 300120 |
| SF-1 9070  | 90x95x70  | AST50 9070  | SF-1 300130 | 300x305x130 | AST50 300130 |
| SF-1 9080  | 90x95x80  | AST50 9080  | SF-1 300140 | 300x305x140 | AST50 300140 |
| SF-1 9090  | 90x95x90  | AST50 9090  | SF-1 300150 | 300x305x150 | AST50 300150 |

## JINTAI SLIDE BEARING INTRODUCTION

Tel: 86-731-84770165  
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JINTAI SF-1F bearing similar as AST50 - Steel shell, Bronze powder with PTFE fiber Composite Self-Lubricating flanged Bushings

## JINTAI SF-1F Bearing and AST50 Bearing Standard Metric Size

单位 Unit: mm

| JINTAI CODE  | d1*d2/d3*L(mm) | AST50 CODE   | JINTAI CODE  | d1*d2/d3*L(mm) | AST50 CODE   |
|--------------|----------------|--------------|--------------|----------------|--------------|
| SF-1F 0304   | 3x4.5x7x4      | AST50 F03040 | SF-1F 2211.5 | 22x25x33x11.5  | AST50 F22115 |
| SF-1F 0404   | 4x5.5x9x4      | AST50 F04040 | SF-1F 2213.5 | 22x25x33x13.5  | AST50 F22135 |
| SF-1F 0505   | 5x7x10x5       | AST50 F05050 | SF-1F 2216.5 | 22x25x33x16.5  | AST50 F22165 |
| SF-1F 0506   | 5x7x10x6       | AST50 F05060 | SF-1F 2221.5 | 22x25x33x21.5  | AST50 F22215 |
| SF-1F 0604   | 6x8x12x4       | AST50 F06040 | SF-1F 2416.5 | 24x27x35x16.5  | AST50 F24165 |
| SF-1F 0606   | 6x8x12x6       | AST50 F06060 | SF-1F 2421.5 | 24x27x35x21.5  | AST50 F24215 |
| SF-1F 0607   | 6x8x12x7       | AST50 F06070 | SF-1F 2426.5 | 24x27x35x26.5  | AST50 F24265 |
| SF-1F 0608   | 6x8x12x8       | AST50 F06080 | SF-1F 2511.5 | 25x28x35x11.5  | AST50 F25115 |
| SF-1F 0706   | 7x9x13x6       | AST50 F07060 | SF-1F 2513.5 | 25x28x35x13.5  | AST50 F25135 |
| SF-1F 0708   | 7x9x13x8       | AST50 F07080 | SF-1F 2516.5 | 25x28x35x16.5  | AST50 F25165 |
| SF-1F 0805.5 | 8x10x15x5.5    | AST50 F08055 | SF-1F 2521.5 | 25x28x35x21.5  | AST50 F25215 |
| SF-1F 0807.5 | 8x10x15x7.5    | AST50 F08075 | SF-1F 2526.5 | 25x28x35x26.5  | AST50 F25265 |
| SF-1F 0809.5 | 8x10x15x9.5    | AST50 F08095 | SF-1F 3014   | 30x34x42x14    | AST50 F30140 |
| SF-1F 1007   | 10x12x18x7     | AST50 F10070 | SF-1F 3016   | 30x34x42x16    | AST50 F30160 |
| SF-1F 1008   | 10x12x18x8     | AST50 F10080 | SF-1F 3022   | 30x34x42x22    | AST50 F30220 |
| SF-1F 1009   | 10x12x18x9     | AST50 F10090 | SF-1F 3026   | 30x34x42x26    | AST50 F30260 |
| SF-1F 1011   | 10x12x18x11    | AST50 F10110 | SF-1F 3032   | 30x34x42x32    | AST50 F30320 |
| SF-1F 1012   | 10x12x18x12    | AST50 F10120 | SF-1F 3222   | 32x36x46x22    | AST50 F32220 |
| SF-1F 1015   | 10x12x18x15    | AST50 F10150 | SF-1F 3227   | 32x36x46x27    | AST50 F32270 |
| SF-1F 1017   | 10x12x18x17    | AST50 F10170 | SF-1F 3232   | 32x36x46x32    | AST50 F32320 |
| SF-1F 1207   | 12x14x20x7     | AST50 F12070 | SF-1F 3514   | 35x39x47x14    | AST50 F35140 |
| SF-1F 1209   | 12x14x20x9     | AST50 F12090 | SF-1F 3516   | 35x39x47x16    | AST50 F35160 |
| SF-1F 1212   | 12x14x20x12    | AST50 F12120 | SF-1F 3522   | 35x39x47x22    | AST50 F35220 |
| SF-1F 1215   | 12x14x20x15    | AST50 F12150 | SF-1F 3526   | 35x39x47x26    | AST50 F35260 |
| SF-1F 1217   | 12x14x20x17    | AST50 F12170 | SF-1F 3532   | 35x39x47x32    | AST50 F35320 |
| SF-1F 1410   | 14x16x22x10    | AST50 F14100 | SF-1F 3542   | 35x39x47x42    | AST50 F35420 |
| SF-1F 1412   | 14x16x22x12    | AST50 F14120 | SF-1F 4014   | 40x44x53x14    | AST50 F40140 |
| SF-1F 1415   | 14x16x22x15    | AST50 F14150 | SF-1F 4016   | 40x44x53x16    | AST50 F40160 |
| SF-1F 1417   | 14x16x22x17    | AST50 F14170 | SF-1F 4022   | 40x44x53x22    | AST50 F40220 |
| SF-1F 1509   | 15x17x23x9     | AST50 F15090 | SF-1F 4026   | 40x44x53x26    | AST50 F40260 |
| SF-1F 1512   | 15x17x23x12    | AST50 F15120 | SF-1F 4032   | 40x44x53x32    | AST50 F40320 |
| SF-1F 1515   | 15x17x23x15    | AST50 F15150 | SF-1F 4042   | 40x44x53x42    | AST50 F40420 |
| SF-1F 1517   | 15x17x23x17    | AST50 F15170 | SF-1F 4516   | 45x50x58x16    | AST50 F45160 |
| SF-1F 1521   | 15x17x23x21    | AST50 F15210 | SF-1F 4522   | 45x50x58x22    | AST50 F45220 |
| SF-1F 1612   | 16x18x24x12    | AST50 F16120 | SF-1F 4526   | 45x50x58x26    | AST50 F45260 |
| SF-1F 1617   | 16x18x24x17    | AST50 F16170 | SF-1F 4532   | 45x50x58x32    | AST50 F45320 |
| SF-1F 1621   | 16x18x24x21    | AST50 F16210 | SF-1F 4542   | 45x50x58x42    | AST50 F45420 |
| SF-1F 1812   | 18x20x26x12    | AST50 F18120 | SF-1F 5016   | 50x55x65x16    | AST50 F50160 |
| SF-1F 1815   | 18x20x26x15    | AST50 F18150 | SF-1F 5022   | 50x55x65x22    | AST50 F50220 |
| SF-1F 1817   | 18x20x26x17    | AST50 F18170 | SF-1F 5026   | 50x55x65x26    | AST50 F50260 |
| SF-1F 1822   | 18x20x26x22    | AST50 F18220 | SF-1F 5532   | 55x60x70x32    | AST50 F55320 |
| SF-1F 2011.5 | 20x23x30x11.5  | AST50 F20115 | SF-1F 5542   | 55x60x70x42    | AST50 F55420 |
| SF-1F 2013.5 | 20x23x30x13.5  | AST50 F20135 | SF-1F 6032   | 60x65x75x32    | AST50 F60320 |
| SF-1F 2015   | 20x23x30x15    | AST50 F20150 | SF-1F 6042   | 60x65x75x42    | AST50 F60420 |
| SF-1F 2016.5 | 20x23x30x16.5  | AST50 F20165 |              |                |              |
| SF-1F 2021.5 | 20x23x30x21.5  | AST50 F20215 |              |                |              |
| SF-1F 2026.5 | 20x23x30x26.5  | AST50 F20265 |              |                |              |

## SF-2 边界润滑轴承 SF-2 Marginal-Lubrication Bearings

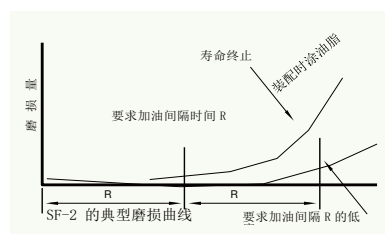


1. 改性聚甲醛 POM with lead 0.3-0.5mm
2. 球形青铜粉 Porous bronze sintere
3. 钢背 Steel backaking
4. 镀铜层 Copper plating



注：SF-2 系列产品还可根据  
不同工况条件选择不同的基  
体材料，如：青铜基板、不  
锈钢基板、以及“无铅”等  
配方产品。SF-2Y 属环保无  
铅产品，颜色为桔黄色。

Note: Various materials  
are suitable for SF- 2  
series products  
according to different  
working conditions,  
such as bronze-  
backing, stainless steel  
backing and lead-free  
material. SF-2Y is an  
environmental friendly  
lead-free product and its  
color is orange.



### 技术参数 Tech.Data

|                                                        |                  |                           |
|--------------------------------------------------------|------------------|---------------------------|
| 最大何载<br>Max load                                       | 静承载 Static       | 250N/mm <sup>2</sup>      |
|                                                        | 动承载 Dynamic      | 140N/mm <sup>2</sup>      |
|                                                        | 摇摆运动 Oscillating | 60N/mm <sup>2</sup>       |
| 最大 PV 值<br>PV limit                                    | 干摩擦 Dry          | 2.8N/mm <sup>2</sup> ·m/s |
|                                                        | 润滑油 Oil          | 22N/mm <sup>2</sup> ·m/s  |
| 使用温度 Temp.limit                                        |                  | -40℃~+130℃                |
| 摩擦系数 Friction Coeff.                                   |                  | 0.05~0.25 μ               |
| 最大速率 Speed limit                                       |                  | 0.25m/s                   |
| 导热系数 Thermal conductivity                              |                  | 2.03Kcal/M.br.C           |
| 热膨胀系数 Coeff. of linear expansion                       |                  | 51×10 <sup>-6</sup> per℃  |
| 装配时内孔涂润滑油 Initial pre-lubrication at assembly required |                  |                           |

### SF-2 应用特点 Characteristic of preformance

◎SF-2 型材料是以填充四氟改性的聚甲醛塑料为表面层三层复合自润滑材料，它是一种良性的边界润滑材料，因此特别适用与高载低速下的旋转运动，摇摆运动以及经常在载荷下启闭而不易形成流体动力润滑的轴承，止推垫片、滑块、球座等摩擦零件。SF-2 能够充分地利用微量润滑脂，在边界润滑条件下可以长期的不用加油保养。在完全无油润滑条件下，SF-2 磨擦性能及允许 PV 值较低，因此通常在塑料表面轧出储油坑，装配时涂上锂基润滑油或硅脂等。

◎SF-2 is triple-layer self lubricating material that can fill modified POM plastic as surface layer; it is benignant boundary lubrication material, therefore, it is particularly applicable high-load low-speed rotating and wing movement, as well as in the condition that frequent loaded start-stop is the requirement while hydrodynamic lubrication membrane is difficult to form, in the parts such as bearing, thrust washer, sliding block, ball socket and so on. SF-2 can take full advantage of less grease to work long time without lubrication maintenance under boundary lubrication condition. But under oil-free condition, SF-2 the frictional behavior and permissible PV value is relatively low, so generally storage pit can be formed on the plastic surface, where lithium-based lubricant grease or silicone grease and so on should be applied when being installed.

### SF-2 磨损规律 Wear and tear a law

◎SF-2 型材料有其特殊的磨损规律，如图 4 所示在安装时涂油脂的情况下，能在 R 阶段内极微量的磨损。经过 R 阶段时间后失去边界油润滑条件，磨损就开始加剧。如果在此时重新加油，可保持无显著磨损，其寿命亦可以大大地延长。所以 SF-2 材料的优点就在于需要间融 R 阶段时间加油一次，其间隔时间 R 较其它材料特别是金属材料的间隔时间显著地长。约为五倍左右。

◎SF-2 material follows special wearing rule as shown in Fig. 4, infinitesimal abrasion can occur in R phase when being applied with grease and then being installed. But after the R phase, the boundary lubrication condition will disappear and wearing will be exaggerated. If you do refill with oil, the product can be drastically held by non-remarkable wearing and its life will also be greatly extended. Therefore the advantage of SF-2 material is that oil should be added with an interval of R, which is remarkably longer than that of other metal materials. It is approximately five times as long.

◎当装配时涂以润滑脂(如锂基脂或硅脂等)，SF-2 衬套的使用寿命，随工作时所处的 PV 值而上下，如当 PV 值在 2.5MPa·m/s 左右时，其使用寿命约为 200 小时，而当 PV 值在 0.1MPa·m/s 时，其使用寿命可在 10000 小时以上(详见表)

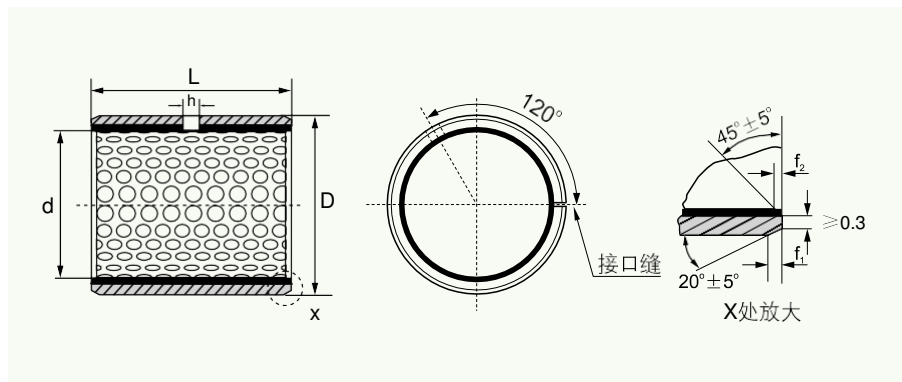
SF-2 衬套的加油保养周期 R 约为寿命的一半左右。例如当 PV=2.5MPa·m/s 时，要求每隔 100 小时必须加油保养一次。

◎When SF-2 bush is installed with application of grease such as lithium-based or silicone grease, its service life varies from the PV value under working condition, for instance, when PV value is about 2.5MPa·m/s, its service life will be about 200hr; when PV value is 0.1MPa·m/s, its service life can be above 10,000hr (see the table for details)

The cycle R of lubrication maintenance of SF-2 bush is about the half of its service life. For instance, when PV=25MPa·m/s, it is required to be oil-lubricated every 100hr.

## SF-2 边界润滑轴承标准公制尺寸

## SF-2 Marginal-Lubrication Bearings Standard Metric Size



单位 Unit: mm

| d  | D  | 相配轴径<br>Shaft Dia.<br>f <sub>7</sub> | 座孔<br>Housing<br>H7  | 壁厚<br>Wall Thickness |            | 油孔<br>Oil<br>bore<br>H | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> <sub>-0.40</sub> |      |      |      |      |      |      |      |      |      |
|----|----|--------------------------------------|----------------------|----------------------|------------|------------------------|----------------|----------------|---------------------------------|------|------|------|------|------|------|------|------|------|
|    |    |                                      |                      | 最小<br>Min.           | 最大<br>Max. |                        |                |                | 10                              | 15   | 20   | 25   | 30   | 35   | 40   | 45   | 50   | 60   |
| 10 | 12 | 10 <sub>-0.022</sub>                 | 12 <sup>+0.018</sup> |                      |            | 4                      |                |                | 1010                            | 1015 | 1020 |      |      |      |      |      |      |      |
| 12 | 14 | 12 <sub>-0.027</sub>                 | 14 <sup>+0.018</sup> |                      |            | 4                      |                |                | 1210                            | 1215 | 1220 |      |      |      |      |      |      |      |
| 14 | 16 | 14 <sub>-0.027</sub>                 | 16 <sup>+0.018</sup> | 0.955                | 0.980      | 4                      | 0.6            | 0.3            |                                 | 1415 | 1420 |      |      |      |      |      |      |      |
| 15 | 17 | 15 <sub>-0.027</sub>                 | 17 <sup>+0.018</sup> |                      |            | 4                      |                |                |                                 | 1515 | 1520 | 1525 |      |      |      |      |      |      |
| 16 | 18 | 16 <sub>-0.027</sub>                 | 18 <sup>+0.018</sup> |                      |            | 4                      |                |                |                                 | 1615 | 1620 | 1625 |      |      |      |      |      |      |
| 18 | 20 | 18 <sub>-0.027</sub>                 | 20 <sup>+0.021</sup> |                      |            | 4                      |                |                |                                 | 1815 | 1820 | 1825 |      |      |      |      |      |      |
| 20 | 23 | 20 <sub>-0.033</sub>                 | 23 <sup>+0.021</sup> |                      |            | 4                      |                |                |                                 | 2015 | 2020 | 2025 | 2030 |      |      |      |      |      |
| 22 | 25 | 22 <sub>-0.033</sub>                 | 25 <sup>+0.021</sup> | 1.445                | 1.475      | 6                      | 0.6            | 0.4            |                                 | 2215 |      | 2225 |      |      |      |      |      |      |
| 25 | 28 | 25 <sub>-0.033</sub>                 | 28 <sup>+0.021</sup> |                      |            | 6                      |                |                |                                 | 2515 | 2520 | 2525 | 2530 |      |      |      |      |      |
| 28 | 32 | 28 <sub>-0.033</sub>                 | 32 <sup>+0.025</sup> |                      |            | 6                      |                |                |                                 |      | 2820 |      | 2830 |      |      |      |      |      |
| 30 | 34 | 30 <sub>-0.033</sub>                 | 34 <sup>+0.025</sup> | 1.935                | 1.970      | 6                      | 1.2            | 0.4            |                                 |      | 3020 | 3025 | 3030 |      | 3040 |      |      |      |
| 35 | 39 | 35 <sub>-0.039</sub>                 | 39 <sup>+0.025</sup> |                      |            | 6                      |                |                |                                 |      | 3520 |      | 3530 | 3535 | 3540 |      |      |      |
| 40 | 44 | 40 <sub>-0.039</sub>                 | 44 <sup>+0.025</sup> |                      |            | 8                      |                |                |                                 |      | 4020 |      | 4030 |      | 4040 |      | 4050 |      |
| 45 | 50 | 45 <sub>-0.039</sub>                 | 50 <sup>+0.025</sup> |                      |            | 8                      |                |                |                                 |      | 4520 |      | 4530 |      | 4540 | 4545 | 4550 |      |
| 50 | 55 | 50 <sub>-0.039</sub>                 | 55 <sup>+0.030</sup> | 2.415                | 2.460      | 8                      | 1.8            | 0.6            |                                 |      |      |      | 5030 |      | 5040 |      | 5050 | 5060 |
| 55 | 60 | 55 <sub>-0.046</sub>                 | 60 <sup>+0.030</sup> |                      |            | 8                      |                |                |                                 |      |      | 5530 |      | 5540 |      | 5550 | 5560 |      |
| 60 | 65 | 60 <sub>-0.046</sub>                 | 65 <sup>+0.030</sup> |                      |            | 8                      |                |                |                                 |      |      |      | 6030 |      | 6040 |      | 6050 | 6060 |



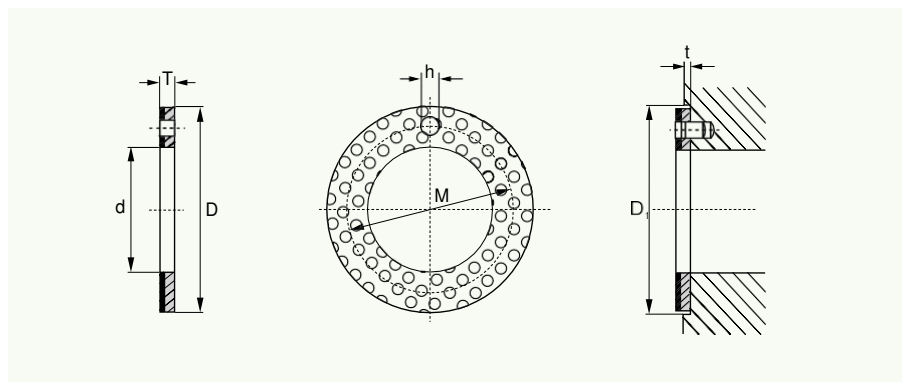
## SF-2 边界润滑轴承标准公制尺寸

## SF-2 Marginal-Lubrication Bearing Standard Metric Size

单位Unit: mm

| d   | D   | 相配轴径<br>Shaft Dia.<br>f <sub>7</sub> | 座孔<br>Housing<br>H7   | 壁厚<br>Wall Thickness |            | 油孔<br>Oil<br>bore<br>H | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> <sub>-0.40</sub> |       |       |       |      |       |        |        |        |
|-----|-----|--------------------------------------|-----------------------|----------------------|------------|------------------------|----------------|----------------|---------------------------------|-------|-------|-------|------|-------|--------|--------|--------|
|     |     |                                      |                       | 最小<br>Min.           | 最大<br>Max. |                        |                |                | 40                              | 50    | 60    | 80    | 90   | 95    | 100    | 110    | 120    |
| 65  | 70  | 65 <sup>-0.046</sup>                 | 70 <sup>+0.030</sup>  |                      |            | 8                      |                |                | 6540                            |       | 6560  |       |      |       |        |        |        |
| 70  | 75  | 70 <sup>-0.046</sup>                 | 75 <sup>+0.030</sup>  | 2.415                | 2.460      | 8                      | 1.8            | 0.6            | 7040                            | 7050  |       | 7080  |      |       |        |        |        |
| 75  | 80  | 75 <sup>-0.046</sup>                 | 80 <sup>+0.030</sup>  |                      |            | 8                      |                |                | 7540                            |       | 7560  | 7580  |      |       |        |        |        |
| 80  | 85  | 80 <sup>-0.046</sup>                 | 85 <sup>+0.035</sup>  |                      |            | 9.5                    |                |                | 8040                            |       | 8060  | 8080  |      |       |        |        |        |
| 85  | 90  | 85 <sup>-0.054</sup>                 | 90 <sup>+0.035</sup>  |                      |            | 9.5                    |                |                | 8540                            |       | 8560  | 8580  |      |       |        |        |        |
| 90  | 95  | 90 <sup>-0.054</sup>                 | 95 <sup>+0.035</sup>  |                      |            | 9.5                    |                |                | 9040                            |       | 9060  | 9080  | 9090 |       |        |        |        |
| 100 | 105 | 100 <sup>-0.054</sup>                | 105 <sup>+0.035</sup> |                      |            | 9.5                    | 1.8            | 0.6            |                                 | 10050 |       | 10080 |      | 10095 |        |        |        |
| 105 | 110 | 105 <sup>-0.054</sup>                | 110 <sup>+0.035</sup> |                      |            | 9.5                    |                |                |                                 |       | 10560 | 10580 |      | 10595 |        | 105110 |        |
| 110 | 115 | 110 <sup>-0.054</sup>                | 115 <sup>+0.035</sup> |                      |            | 9.5                    |                |                |                                 |       | 11060 | 11080 |      | 11095 |        | 110110 |        |
| 120 | 125 | 120 <sup>-0.054</sup>                | 125 <sup>+0.040</sup> |                      |            | 9.5                    |                |                |                                 |       | 12060 | 12080 |      |       |        | 120110 |        |
| 125 | 130 | 125 <sup>-0.063</sup>                | 130 <sup>+0.040</sup> |                      |            | 9.5                    |                |                |                                 |       | 12560 |       |      |       |        | 125110 |        |
| 130 | 135 | 130 <sup>-0.063</sup>                | 135 <sup>+0.040</sup> |                      |            | 9.5                    |                |                |                                 | 13050 | 13060 | 13080 |      |       | 130100 |        |        |
| 140 | 145 | 140 <sup>-0.063</sup>                | 145 <sup>+0.040</sup> |                      |            | 9.5                    |                |                |                                 | 14050 | 14060 | 14080 |      |       | 140100 |        |        |
| 150 | 155 | 150 <sup>-0.063</sup>                | 155 <sup>+0.040</sup> |                      |            | 9.5                    |                |                |                                 | 15050 | 15060 | 15080 |      |       | 150100 |        |        |
| 160 | 165 | 160 <sup>-0.063</sup>                | 165 <sup>+0.040</sup> | 2.385                | 2.450      | 9.5                    |                |                |                                 | 16050 | 16060 | 16080 |      |       | 160100 |        |        |
| 170 | 175 | 170 <sup>-0.063</sup>                | 175 <sup>+0.040</sup> |                      |            | 9.5                    |                |                |                                 | 17050 |       | 17080 |      |       | 170100 |        |        |
| 180 | 185 | 180 <sup>-0.063</sup>                | 185 <sup>+0.046</sup> |                      |            | 9.5                    |                |                |                                 | 18050 | 18060 | 18080 |      |       | 180100 |        |        |
| 190 | 195 | 190 <sup>-0.072</sup>                | 195 <sup>+0.046</sup> |                      |            | 9.5                    | 1.8            | 0.6            |                                 | 19050 | 19060 | 19080 |      |       | 190100 |        | 190120 |
| 200 | 205 | 200 <sup>-0.072</sup>                | 205 <sup>+0.046</sup> |                      |            | 9.5                    |                |                |                                 | 20050 | 20060 | 20080 |      |       | 200100 |        | 200120 |
| 220 | 225 | 220 <sup>-0.072</sup>                | 225 <sup>+0.046</sup> |                      |            | 9.5                    |                |                |                                 | 22050 | 22060 | 22080 |      |       | 220100 |        | 220120 |
| 240 | 245 | 240 <sup>-0.072</sup>                | 245 <sup>+0.046</sup> |                      |            | 9.5                    |                |                |                                 | 24050 | 24060 | 24080 |      |       | 240100 |        | 240120 |
| 250 | 255 | 250 <sup>-0.072</sup>                | 255 <sup>+0.052</sup> |                      |            | 9.5                    |                |                |                                 | 25050 | 25060 | 25080 |      |       | 250100 |        | 250120 |
| 260 | 265 | 260 <sup>-0.081</sup>                | 265 <sup>+0.052</sup> |                      |            | 9.5                    |                |                |                                 | 26050 | 26060 | 26080 |      |       | 260100 |        | 260120 |
| 280 | 285 | 280 <sup>-0.081</sup>                | 285 <sup>+0.052</sup> |                      |            | 9.5                    |                |                |                                 | 28050 | 28060 | 28080 |      |       | 280100 |        | 280120 |
| 300 | 305 | 300 <sup>-0.081</sup>                | 305 <sup>+0.052</sup> |                      |            | 9.5                    |                |                |                                 | 30050 | 30060 | 30080 |      |       | 300100 |        | 300120 |

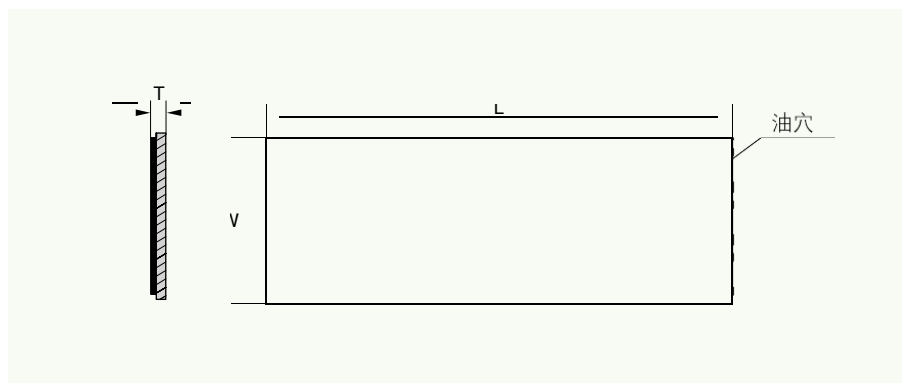
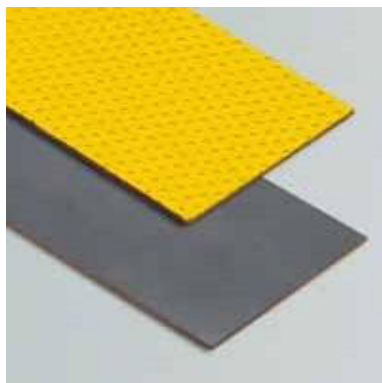
## SF-1WD/SF-2WD 止推垫片标准公制尺寸 SF-1WD/SF-2WD Thrust Washer Standard Metric Size



单位 Unit: mm

| 轴径<br>Axle | 型号规格<br>Designation | 垫片尺寸 Washer Dimension |         |         |           | 安装尺寸 Installation Size              |          |                      |
|------------|---------------------|-----------------------|---------|---------|-----------|-------------------------------------|----------|----------------------|
|            |                     | d +0.25               | D -0.25 | T -0.05 | M ± 0.125 | h <sup>+0.40</sup> <sub>+0.10</sub> | t ± 0.20 | D <sub>1</sub> +0.12 |
| 8          | WD 10               | 10                    | 20      | 1.5     | 15        | 1.5                                 | 1.0      | 20                   |
| 10         | WD 12               | 12                    | 24      |         | 18        |                                     |          | 24                   |
| 12         | WD 14               | 14                    | 26      |         | 20        |                                     |          | 26                   |
| 14         | WD 16               | 16                    | 30      |         | 23        | 2.0                                 |          | 30                   |
| 16         | WD 18               | 18                    | 32      | 25      | 32        |                                     |          |                      |
| 18         | WD 20               | 20                    | 36      | 2.0     | 28        | 3.0                                 |          | 36                   |
| 20         | WD 22               | 22                    | 38      |         | 30        |                                     |          | 38                   |
| 22         | WD 24               | 24                    | 42      |         | 33        |                                     |          | 42                   |
| 24         | WD 26               | 26                    | 44      |         | 35        |                                     |          | 44                   |
| 26         | WD 28               | 28                    | 48      |         | 38        |                                     |          | 48                   |
| 30         | WD 32               | 32                    | 54      | 2.0     | 43        | 4.0                                 | 54       |                      |
| 36         | WD 38               | 38                    | 62      |         | 50        |                                     | 62       |                      |
| 40         | WD 42               | 42                    | 66      |         | 54        |                                     | 66       |                      |
| 46         | WD 48               | 48                    | 74      |         | 61        |                                     | 74       |                      |
| 50         | WD 52               | 52                    | 78      | 2.0     | 65        |                                     | 1.5      | 78                   |
| 60         | WD 62               | 62                    | 90      |         | 76        | 90                                  |          |                      |

## SF-1/SF-2 板材标准公制尺寸 SF-1/SF-2 Strip Standard Metric Size



单位 Unit: mm

| 代号 Code number | 长度(L) ± 1 | 宽度(W) ± 1 | 壁厚(T)-0.05 |
|----------------|-----------|-----------|------------|
| SF-1/SF-2      | 500       | 150       | 1.0        |
| SF-1/SF-2      | 500       | 150       | 1.5        |
| SF-1/SF-2      | 500       | 150       | 2.0        |
| SF-1/SF-2      | 500       | 150       | 2.5        |

## JF-800 系列双金属轴承 JF-800 Bimetal Bearings



◎JF-800 以碳钢为基体，表面烧结铜粉，适用于高载低速下的旋 转、摇摆运动，铜粉面可根据要求加工出各种油孔、油槽。目前已 广泛使用于矿山机械、汽车、摩托车、建筑机械、农用机械、轧钢 机械等。

◎Steel backed Lead bronze lined bearing material for lubricated applications, high load capacity and good fatigue properties, have been widely used in automotive, common industrial like steering gear, power steering, pedal bushes, king-pin bushes, tailgate pivots, mechanical handling, lifting equipment, hydraulic motors, agricultural machines etc.

### 成分、特性、用途

### Chemical Compositions, Characteristics and Application

| 材料型号<br>Types of Material | 铜合金牌号<br>Specifications of Bronze alloy | 化学成分%<br>Chemical Compositions     | 合金层硬度<br>Alloy Hrdness | 特性与用途<br>Characteristics and Application                                 |
|---------------------------|-----------------------------------------|------------------------------------|------------------------|--------------------------------------------------------------------------|
| JF-930                    | CuSn6.5P0.1                             | 铜锡磷<br>Cu Sn P 93 6.0~7.0 0.1~0.25 | HB(60-90)              | 无铅<br>Lead Free                                                          |
| JF-850                    | CuSn6Zn6Pb3                             | 铜锡锌铅<br>Cu Sn Zn Pb 85 6 6 3       | HB(40-80)              | 启动电机<br>Starting Motor                                                   |
| JF-800                    | CuPb10Sn10                              | 铜铅锡<br>Cu Pb Sn Zn 80 10 10        | HB(60-90)              | 在铜合金中最强的一种，应用范围广<br>The strongest material type, wide application scope. |
| JF-750                    | CuPb24Sn1                               | 铜铅锡<br>Cu Pb Sn 75 24 1            | HB(45-70)              | 连杆摇臂<br>Link Arm                                                         |
| JF-720                    | CuPb24Sn4                               | 铜铅锡<br>Cu Pb Sn 72 24 4            | HB(45-70)              | 连杆摇臂<br>Link Arm                                                         |

### 技术参数 Tech.Data

|                                 |             |                           |                           |                                     |
|---------------------------------|-------------|---------------------------|---------------------------|-------------------------------------|
| 最大荷载<br>Max.Load                | 静承载 Static  | 250N/mm <sup>2</sup>      | 屈服强度 Yield strength       | 240N/mm <sup>2</sup>                |
|                                 | 动承载 Dynamic | 140N/mm <sup>2</sup>      | 使用温度 Temp.limit           | -40℃~+250℃                          |
| 最高线速度 Max. linear speed         |             | 2m/s                      | 摩擦系数 Friction Coeff.      | 0.08~0.20                           |
| 最大PV值 PV limit                  |             | 2.8N/mm <sup>2</sup> ·m/s | 导热系数 Thermal conductivity | 60W(m·k)-1                          |
| 抗剪切强度 Shear resistance strength |             | 350N/mm <sup>2</sup>      | 导热系数 Thermal conductivity | 14·10 <sup>-6</sup> K <sup>-1</sup> |

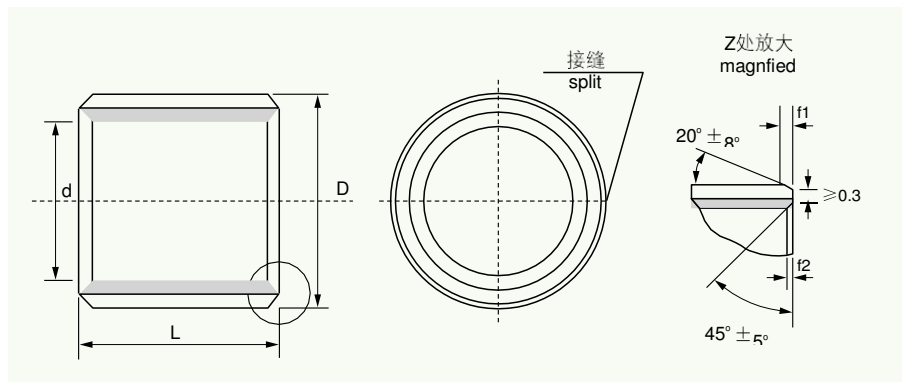
### JF-800 双金属内孔加工与不可加工厚度公差

### Wall Thickness of The Machinable and Non-machinable Bore of JF-800 Bearings and Their Tolerances

| 公称厚度<br>Nominal Thickness | 内孔不可加工厚度公差<br>Tolerances of Series B (non-machinable) | 内孔可加工厚度公差<br>Tolerances of Series C (non-machinable) |
|---------------------------|-------------------------------------------------------|------------------------------------------------------|
| 1                         | -0.025                                                | +0.25<br>+0.15<br>+0.25                              |
| 1.5                       | -0.030                                                | +0.15<br>+0.25<br>+0.15                              |
| 2                         | -0.035                                                | +0.25<br>+0.15<br>+0.30                              |
| 2.5                       | -0.040                                                | +0.15<br>+0.30<br>+0.15                              |
| 3                         | -0.045                                                | +0.30<br>+0.15<br>+0.30                              |
| 3.5                       | -0.050                                                | +0.30<br>+0.15                                       |

## JF-800 双金属轴承标准公制尺寸

## JF-800 Bimetal Bearings Standard Metric Size



单位 unit:mm

| d  | D  | 壁厚<br>Wall<br>Thickness | 外径<br>O.D<br>Tolerance | 内径公差<br>I.D.(H8)<br>Tolerance | 配合座孔<br>H7<br>Housing<br>Bore | 轴径<br>f <sub>7</sub><br>Journal<br>Diameter | f <sub>1</sub> | f <sub>2</sub> | L -0.40 |      |      |      |      |      |      |      |      |    |     |  |
|----|----|-------------------------|------------------------|-------------------------------|-------------------------------|---------------------------------------------|----------------|----------------|---------|------|------|------|------|------|------|------|------|----|-----|--|
|    |    |                         |                        |                               |                               |                                             |                |                | 10      | 15   | 20   | 25   | 30   | 40   | 50   | 60   | 80   | 90 | 100 |  |
| 10 | 12 | 1 -0.025                | 12 +0.065<br>+0.030    | 10 +0.022<br>+0.000           | 10 -0.013<br>-0.028           | 12 +0.018                                   | 0.5            | 0.3            | 1010    | 1015 | 1020 |      |      |      |      |      |      |    |     |  |
| 12 | 14 |                         | 14 +0.065<br>+0.030    | 12 +0.027<br>+0.000           | 12 -0.016<br>-0.034           | 14 +0.018                                   | 0.5            | 0.3            | 1210    | 1215 | 1220 |      |      |      |      |      |      |    |     |  |
| 14 | 16 |                         | 16 +0.065<br>+0.030    | 14 +0.027<br>+0.000           | 14 -0.016<br>-0.034           | 16 +0.018                                   | 0.5            | 0.3            | 1410    | 1415 | 1420 |      |      |      |      |      |      |    |     |  |
| 15 | 17 |                         | 17 +0.065<br>+0.030    | 15 +0.027<br>+0.000           | 15 -0.016<br>-0.034           | 17 +0.018                                   | 0.5            | 0.3            | 1510    | 1515 | 1520 |      |      |      |      |      |      |    |     |  |
| 16 | 18 | 1.5 -0.030              | 18 +0.075<br>+0.035    | 16 +0.027<br>+0.000           | 16 -0.016<br>-0.034           | 18 +0.018                                   | 0.8            | 0.4            | 1610    | 1615 | 1620 |      |      |      |      |      |      |    |     |  |
| 18 | 20 |                         | 20 +0.075<br>+0.035    | 18 +0.033<br>+0.000           | 18 -0.016<br>-0.034           | 20 +0.021                                   | 0.8            | 0.4            | 1810    | 1815 | 1820 | 1825 |      |      |      |      |      |    |     |  |
| 20 | 23 |                         | 23 +0.075<br>+0.035    | 20 +0.033<br>+0.000           | 20 -0.020<br>-0.041           | 23 +0.021                                   | 0.8            | 0.4            | 2010    | 2015 | 2020 | 2025 |      |      |      |      |      |    |     |  |
| 22 | 25 |                         | 25 +0.075<br>+0.035    | 22 +0.033<br>+0.000           | 22 -0.020<br>-0.041           | 25 +0.021                                   | 0.8            | 0.4            | 2210    | 2215 | 2220 | 2225 |      |      |      |      |      |    |     |  |
| 24 | 27 | 2 -0.035                | 27 +0.075<br>+0.035    | 24 +0.033<br>+0.000           | 24 -0.020<br>-0.041           | 27 +0.021                                   | 1.0            | 0.5            | 2410    | 2415 | 2420 |      | 2430 |      |      |      |      |    |     |  |
| 25 | 28 |                         | 28 +0.075<br>+0.035    | 25 +0.033<br>+0.000           | 25 -0.020<br>-0.041           | 28 +0.021                                   | 1.0            | 0.5            |         | 2515 | 2520 | 2525 | 2530 |      |      |      |      |    |     |  |
| 26 | 30 |                         | 30 +0.075<br>+0.035    | 26 +0.033<br>+0.000           | 26 -0.020<br>-0.041           | 30 +0.021                                   | 1.0            | 0.5            |         | 2615 | 2620 | 2625 | 2630 |      |      |      |      |    |     |  |
| 28 | 32 |                         | 32 +0.085<br>+0.045    | 28 +0.033<br>+0.000           | 28 -0.020<br>-0.041           | 32 +0.025                                   | 1.0            | 0.5            |         | 2815 | 2820 | 2825 | 2830 | 2840 |      |      |      |    |     |  |
| 30 | 34 | 2.5 -0.040              | 34 +0.085<br>+0.045    | 30 +0.039<br>+0.000           | 30 -0.020<br>-0.041           | 34 +0.025                                   | 1.2            | 0.6            |         | 3015 | 3020 | 3025 | 3030 | 3040 |      |      |      |    |     |  |
| 32 | 36 |                         | 36 +0.085<br>+0.045    | 32 +0.039<br>+0.000           | 32 -0.025<br>-0.050           | 36 +0.025                                   | 1.2            | 0.6            |         | 3215 | 3220 | 3225 | 3230 | 3240 |      |      |      |    |     |  |
| 35 | 39 |                         | 39 +0.085<br>+0.045    | 35 +0.039<br>+0.000           | 35 -0.025<br>-0.050           | 39 +0.025                                   | 1.2            | 0.6            |         |      | 3520 | 3525 | 3530 | 3540 | 3550 |      |      |    |     |  |
| 38 | 42 |                         | 42 +0.085<br>+0.045    | 38 +0.039<br>+0.000           | 38 -0.025<br>-0.050           | 42 +0.025                                   | 1.2            | 0.6            |         |      | 3825 | 3825 | 3830 | 3840 | 3850 |      |      |    |     |  |
| 40 | 44 | 3 -0.045                | 44 +0.085<br>+0.045    | 40 +0.039<br>+0.000           | 40 -0.025<br>-0.050           | 44 +0.025                                   | 1.2            | 0.6            |         |      | 4020 | 4025 | 4030 | 4040 | 4050 |      |      |    |     |  |
| 45 | 50 |                         | 50 +0.085<br>+0.045    | 45 +0.039<br>+0.000           | 45 -0.025<br>-0.050           | 50 +0.025                                   | 1.5            | 1.0            |         |      | 4520 | 4525 | 4530 | 4540 | 4550 |      |      |    |     |  |
| 50 | 55 |                         | 55 +0.100<br>+0.050    | 50 +0.039<br>+0.000           | 50 -0.025<br>-0.050           | 55 +0.030                                   | 1.5            | 1.0            |         |      |      |      | 5030 | 5040 | 5050 | 5060 |      |    |     |  |
| 55 | 60 |                         | 60 +0.100<br>+0.050    | 55 +0.046<br>+0.000           | 55 -0.030<br>-0.060           | 60 +0.030                                   | 1.5            | 1.0            |         |      |      |      | 5530 | 5540 | 5550 | 5560 |      |    |     |  |
| 60 | 65 | 3.5 -0.050              | 65 +0.100<br>+0.050    | 60 +0.046<br>+0.000           | 60 -0.030<br>-0.060           | 65 +0.030                                   | 1.5            | 1.0            |         |      |      |      | 6030 | 6040 | 6050 | 6060 |      |    |     |  |
| 65 | 70 |                         | 70 +0.100<br>+0.050    | 65 +0.046<br>+0.000           | 65 -0.030<br>-0.060           | 70 +0.030                                   | 1.5            | 1.0            |         |      |      |      | 6530 | 6540 | 6550 | 6560 |      |    |     |  |
| 70 | 75 |                         | 75 +0.100<br>+0.050    | 70 +0.046<br>+0.000           | 70 -0.030<br>-0.060           | 75 +0.030                                   | 1.5            | 1.0            |         |      |      |      | 7030 | 7040 | 7050 | 7060 | 7080 |    |     |  |
| 75 | 80 |                         | 80 +0.100<br>+0.050    | 75 +0.046<br>+0.000           | 75 -0.030<br>-0.060           | 80 +0.035                                   | 1.5            | 1.0            |         |      |      |      | 7530 | 7540 | 7550 | 7560 |      |    |     |  |
| 80 | 85 |                         | 85 +0.120<br>+0.070    | 80 +0.054<br>+0.000           | 80 -0.030<br>-0.060           | 85 +0.035                                   | 1.5            | 1.0            |         |      |      |      | 8040 | 8050 | 8060 | 8080 |      |    |     |  |

## **FB090 系列青铜卷制轴承** **FB090 Bronze-Wrapped Bearings**



### 产品概述

◎FB090 系列青铜卷制轴承套是我公司在钢-铜铅双金属轴套产品基础上开发设计的新一代轴套。该产品在国外应用十分普遍，随着我国引进机械的设备新机种的日益增多，设计师们寻找新型摩擦材料、轴套的要求也日益需要，因此该产品在我们机械制造中有着广泛应用领域和实用价值。

◎FB090 系列轴套最大特点是薄壁结构，不占据很大的装配空间。轴套材料采用特殊配方高密度铜合金带材。它与传统的铺型铜套相比，具有密度高、无气缩孔、承载能力大，又有耐磨耐疲劳等优点。轴套制造采用先进的工装模具，可在带材摩擦面上加工出适用各种工程条件的油穴、油坑、油槽，从而使轴套在使用可储存大量润滑油脂，延长加油间隔时间，有效的提高了使用寿命。

◎FB090 系列轴承广泛应用与农业机械、建筑机械、工程机械、汽车行业等。

### Product Overview

◎FB090 series bronze rolled bushing is our new generation bushing based upon steel-bronze lead double metal bushings. This product is widely applied overseas. With the increase of our country's introduction of foreign machineries, designer's requirements on new abrasive materials and bushings are accordingly increasing. Therefore, our products see a wide application scope and practical value in machinery production.

◎The major feature of FB090 series bushing is their thin-wall structure, which doesn't take up too large assembly space. Specially formulated high-density bronze alloy bands are used for the building of the bushing, which, compared with traditional bushings, is featured in the high

density, no shrinkage blowholes, high load sustainability and anti-wearing and anti-fatigue. The production of the bushing is by means of advanced fixture and molds, able to make oil holes, hole dents and grooves on the friction surfaces of the bands to suit various engineering applications, making it possible for the bushing to store large amount of lubricating grease when working. Therefore, the lubrication interval is prolonged and the service hours are effectively lengthened.

◎FB090 series bearings are widely used in applications such as agricultural machineries, construction machineries, engineering machineries and automobile industry.

### FB090 系列产品的优点

1. 节约大量铜材、节省车制铜套工时；
2. 与车制轴套、滚动轴承相比其重量轻、成本低；
3. 可在摩擦面加工出各种有穴、有坑、储存一定油脂，延长加油的时间是铜套的 5 倍
4. 极高的承载能力，特别是适用于粗糙的摩擦面： 可供产品：直套、止推垫片、翻边衬套、轴瓦、滑板、钢套组合件。

### FB090 Product Benefits

1. Saving large amount of bronze material and save the working hours normally spent for lathing the bronze bushing.
2. Compared with lathed bushings and roller bearings, it is lights and more cost-effective.
3. Various holes and dents can be made on the friction surface for grease storage, prolonging the lubrication interval to 5 times as long as required by the bronze bushing.

4. Extremely high load sustainability, especially suitable for coarse abrasion surfaces.

Standard products available: straight bushings, thrust plates and pressure bearings.

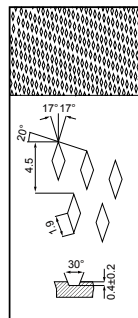
Non-standard products available: straight bushings, thrust plates, planks, bearing bushings, slide plates and steel bushing assembly.

## FB090 轴承简介 FB090 Bearing Introduction

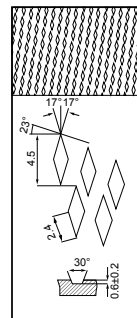
### 材料结构 Material Structure

◎采用高密度青铜卷制成形或球形油袋、油穴特殊合成内部表面以减少磨损延长使用时间并且很好的做到防腐功能。

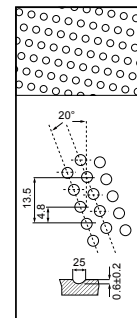
◎High-density bronze is rolled into shape or oil bags and oil holes are specially integrated into the inner surface to reduce the wearing and prolong the service hours. Besides, it has excellent anti-corrosion functions.



轴衬套内  
Inside the bush of the shaft  
菱形油穴  $r \leq \phi 22$   
Rhomb oil holes  $r \leq \phi 22$



轴衬套内  
Inside the bush of the shaft  
菱形油穴  $r > \phi 22$   
Rhomb oil holes  $r > \phi 22$



形成菱形  
Forming a rhomb

### 化学成分 Chemical Composition

| 材料Material | 铜 Cu  | 锡 Sn | 磷 P  | 铅 Pb | 锌 Zn |
|------------|-------|------|------|------|------|
| CuSn8      | 91.3% | 8.5% | 0.2% | -    | -    |

### 物理特性 Physical Property

| 型号Type | 密度Density            | 散热热胀Heat Emission and Expansion     | 热传导Heat Conducting | 硬度Hardness | 抗压强度Extensile        | 延伸率Extensile |
|--------|----------------------|-------------------------------------|--------------------|------------|----------------------|--------------|
| FB090  | 8.8g/cm <sup>3</sup> | $18.5 \times 10^{-2} \times K^{-1}$ | 58W(m·k)           | 90~120HB   | 470N/mm <sup>2</sup> | 40%          |

### 应用范围 Application scope

此系列轴承广泛应用与农用、建设机械以及工程机械等。

This series of bearing is widely applied to agricultural, construction and engineering machineries, etc.

油穴类别(依据 DIW1494/ISO3457)。

Categories of oil holes (As per to DIW1494/ISO3457)。

### 标准衬套公差 (依据 DIW W91/1503547) Standard tolerance for bushes (As per to DIW W91/1503547)

| 标准直径Standard Dia. | 衬套外径尺寸O.D.Size   | 相配座孔Housing Bore | 衬套内径尺寸I.D.Size | 相配轴径Matching Shaft Diameter |
|-------------------|------------------|------------------|----------------|-----------------------------|
| 10~18             | +0.065<br>+0.030 | +0.018<br>0      | +0.046<br>0    | - 0.016<br>- 0.043          |
| 18~30             | +0.075<br>+0.035 | +0.021<br>0      | +0.052<br>0    | - 0.020<br>- 0.020          |
| 30~50             | +0.085<br>+0.045 | +0.025<br>0      | +0.062<br>0    | - 0.025<br>- 0.064          |
| 50~80             | +0.100<br>+0.055 | +0.030<br>0      | +0.074<br>0    | - 0.030<br>- 0.076          |
| 80~120            | +0.120<br>+0.070 | +0.035<br>0      | +0.087<br>0    | - 0.036<br>- 0.090          |
| 120~180           | +0.170<br>+0.100 | +0.400<br>0      | +0.100<br>0    | - 0.043<br>- 0.106          |
| 180~250           | +0.210<br>+0.130 | +0.046<br>0      | +0.115<br>0    | - 0.050<br>- 0.122          |
| 250~315           | +0.260<br>+0.170 | +0.052<br>0      | +0.130<br>0    | - 0.056<br>- 0.137          |



## **FB092 系列青铜卷制轴承 FB092 Bronze-Wrapped Bearings**

### **产品概述**

◎FB092系列青铜卷制轴承是与FB090材料结构相同，我单位根据国外同类产品基础上开发出的新一代产品轴套，能改良产品设计、替代原有铜套,能降低采购成本，因此产品在我们机械制造中有着广泛实用价值和应用领域。

◎FB092系列轴套最大特点是薄壁结构，不占据很大的装配空间。轴套材料采用特殊配方高密度铜合金带材。它与传统的铺型铜套相

比，可在带材摩擦面上加工出适用各种工程条件的油穴、油坑、油槽，排列润滑通孔，从而使轴套在使用可储存大量润滑油脂，延长加油间隔时间，有效的提高了使用寿命。

◎FB092系列轴承广泛应用与农业机械、建筑机械、工程机械、高载低速场合等。

### **Product Overview**

◎FB092 series bronze rolled bushing is our new generation bushing based upon steel-bronze lead double metal bushings. This product is widely applied overseas. With the increase of our country' s introduction of foreign machineries, designer' s requirements on new abrasive materials and bushings are accordingly increasing. Therefore, our products see a wide application scope and practical value in machinery production.

◎The major feature of FB092 series bushing is their thin-wall structure, which doesn' t take up too large assembly space. Specially formulated high-density bronze alloy bands are used for the building of the bushing, which, compared with traditional bushings, is featured in the high

density, no shrinkage blowholes, high load sustainability and anti-wearing and anti-fatigue. The production of the bushing is by means of advanced fixture and molds, able to make oil holes, hole dents and grooves on the friction surfaces of the bands to suit various engineering applications, making it possible for the bushing to store large amount of lubricating grease when working. Therefore, the lubrication interval is prolonged and the service hours are effectively lengthened.

◎FB092 series bearings are widely used in applications such as agricultural machineries, construction machineries, engineering machineries and automobile industry.

### **FB092 系列产品的优点**

1. 节约大量铜材、节省车制铜套工时；
  2. 与车制轴套、滚动轴承相比其重量轻、成本低；
  3. 可在摩擦面加工出各种有穴、有坑、储存一定油脂，延长加油的时间是铜套的5倍
  4. 极高的承载能力，特别是适用于粗糙的摩擦面；
- 可供标准产品：直套、翻边衬套、组合钢套。

### **FB092 Product Benefits**

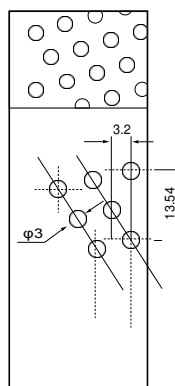
1. Saving large amount of bronze material and save the working hours normally spent for lathing the bronze bushing.
2. Compared with lathed bushings and roller bearings, it is lights and more cost-effective.
3. Various holes and dents can be made on the friction surface for grease storage, prolonging the lubrication interval to 5 times as long as required by the bronze bushing.

4. Extremely high load sustainability, especially suitable for coarse abrasion surfaces.

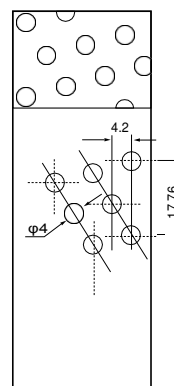
Standard products available: straight bushings, thrust plates and pressure bearings.

Non-standard products available: straight bushings, thrust plates, planks, bearing bushings, slide plates and steel bushing assembly.

## FB092 轴承简介 FB092 Bearing Introduction



轴承内部 球形  
内径  $r \leq 25$



轴承球形 内径  
 $r > 25$

## 化学成分 Chemical Composition

| 材料Material | 铜 Cu  | 锡 Sn | 磷 P  | 铅 Pb | 锌 Zn |
|------------|-------|------|------|------|------|
| CuSn8      | 91.3% | 8.5% | 0.2% | -    | -    |

## 物理特性 Physical Property

| 型号<br>Type | 密度<br>Density        | 散热热胀<br>Heat Emission<br>and Expansion | 热传导<br>Heat<br>Conducting | 硬度<br>Hardness | 抗压强度<br>Extensile    | 延伸率<br>Extensile |
|------------|----------------------|----------------------------------------|---------------------------|----------------|----------------------|------------------|
| FB092      | 8.8g/cm <sup>3</sup> | $18.5 \times 10^{-2} \times K^1$       | 58W(m·k)                  | 90~120HB       | 470N/mm <sup>2</sup> | 40%              |

## 应用范围 Application scope

此系列轴承广泛应用与农用、建设机械以及工程机械等。

This series of bearing is widely applied to agricultural, construction and engineering machineries, etc.

## 标准衬套公差 (依据 DIW W91/1503547) Standard tolerance for bushes (As per to DIW W91/1503547)

| 标准直径<br>Standard Dia. | 衬套外径尺寸<br>O.D.Size | 相配座孔<br>Housing Bore | 衬套内径尺寸<br>I.D.Size | 相配轴径<br>Matching Shaft Diameter |
|-----------------------|--------------------|----------------------|--------------------|---------------------------------|
| 10~18                 | +0.065<br>+0.030   | +0.018<br>0          | +0.046<br>0        | - 0.016<br>- 0.043              |
| 18~30                 | +0.075<br>+0.035   | +0.021<br>0          | +0.052<br>0        | - 0.020<br>- 0.020              |
| 30~50                 | +0.085<br>+0.045   | +0.025<br>0          | +0.062<br>0        | - 0.025<br>- 0.064              |
| 50~80                 | +0.100<br>+0.055   | +0.030<br>0          | +0.074<br>0        | - 0.030<br>- 0.076              |
| 80~120                | +0.120<br>+0.070   | +0.035<br>0          | +0.087<br>0        | - 0.036<br>- 0.090              |
| 120~180               | +0.170<br>+0.100   | +0.400<br>0          | +0.100<br>0        | - 0.043<br>- 0.106              |
| 180~250               | +0.210<br>+0.130   | +0.046<br>0          | +0.115<br>0        | - 0.050<br>- 0.122              |
| 250~315               | +0.260<br>+0.170   | +0.052<br>0          | +0.130<br>0        | - 0.056<br>- 0.137              |

## **FB09G 系列青铜卷制轴承** **FB09G Bronze-Wrapped Bearings**



### **材料结构 Material Structure**

◎与FB090具有相同的生产工艺及使用场合，其基体为青铜基板，在其菱形油穴内填充了以石墨为主的固体润滑剂，使产品在起始运用阶段及过程中能有更低的摩擦系数，在短时间断油的情况下仍能保持良好的工作状态。因此被广泛使用在工程机械、齿轮箱传动部件、汽机车离合器等高载中速部位、户外高空设备的转动部位。

◎The same produce process and application except overlay the solid lubricants into the diamond shaped lubrication indents on the bearing surface, which will offer good friction at the start and process works and keep good condition even no oil giving at short time. So can be used in construction machines, gears, automotive clutch pads etc.

### **技术参数 Tech.Data**

|            |                   |                           |
|------------|-------------------|---------------------------|
| 最大承载压力     | Load capacity     | 140N/mm <sup>2</sup>      |
| 适应温度范围     | Temperature limit | -100℃~+250℃               |
| 最高滑动速度     | Speed limit       | 1.5M/s                    |
| 摩擦系数       | Friction clef     | 0.06~0.25                 |
| 允许最高PV值(干) | PV limit (dry)    | 2.6N/mm <sup>2</sup> ·m/s |
| 允许最高PV值(油) | PV limit (oil)    | 15N/mm <sup>2</sup> ·m/s  |

### **可供形式 Availability**

直套、止推垫片、滑板及其它非标品部件等。

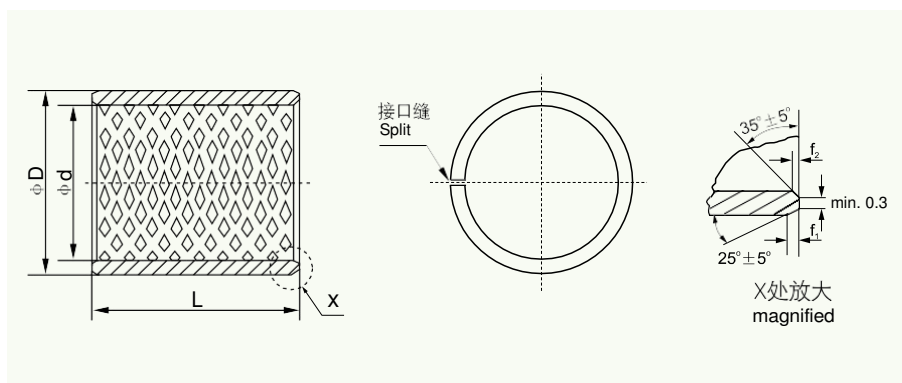
Cylindrical bushes, thrust washers, strip and non-standard parts as the clients supplied drawing etc.

### **公差 Tolerance**

一般推荐座孔公差为H7，轴径公差为f7。

Recommend housing tolerance H7 and the shaft as f7.

## FB090/FB092/FB09G 青铜卷制轴承标准公制尺寸 FB090/FB092/FB09G Bronze-Wrapped Bearings Standard Metric Size



单位 Unit: mm

| d  | D  | 相配轴径<br>Shaft Dia.<br>f <sub>7</sub>     | 座孔<br>Housing<br>H7 | 壁厚<br>Wall Thickness |            | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> / <sub>-0.40</sub> |      |      |      |      |      |      |      |      |      |
|----|----|------------------------------------------|---------------------|----------------------|------------|----------------|----------------|-----------------------------------|------|------|------|------|------|------|------|------|------|
|    |    |                                          |                     | 最小<br>Min.           | 最大<br>Max. |                |                | 6                                 | 8    | 10   | 12   | 15   | 20   | 25   | 30   | 40   | 50   |
| 6  | 8  | 6 <sup>-0.013</sup> / <sub>-0.028</sub>  | 8 +0.015            |                      |            |                |                | 0606                              | 0608 | 0610 |      |      |      |      |      |      |      |
| 8  | 10 | 8 <sup>-0.013</sup> / <sub>-0.028</sub>  | 10 +0.015           |                      |            |                |                | 0806                              | 0808 | 0810 | 0812 | 0815 |      |      |      |      |      |
| 10 | 12 | 10 <sup>-0.016</sup> / <sub>-0.034</sub> | 12 +0.018           |                      |            |                |                | 1006                              | 1008 | 1010 | 1012 | 1015 | 1020 |      |      |      |      |
| 12 | 14 | 12 <sup>-0.016</sup> / <sub>-0.034</sub> | 14 +0.018           |                      |            |                |                | 1206                              | 1208 | 1210 | 1212 | 1215 | 1220 | 1225 |      |      |      |
| 13 | 15 | 13 <sup>-0.016</sup> / <sub>-0.034</sub> | 15 +0.018           | 0.980                | 1.005      | 0.6            | 0.3            |                                   |      | 1310 |      |      | 1320 |      |      |      |      |
| 14 | 16 | 14 <sup>-0.016</sup> / <sub>-0.034</sub> | 16 +0.018           |                      |            |                |                |                                   |      | 1410 | 1412 | 1415 | 1420 | 1425 |      |      |      |
| 15 | 17 | 15 <sup>-0.016</sup> / <sub>-0.034</sub> | 17 +0.018           |                      |            |                |                |                                   |      | 1510 | 1512 | 1515 | 1520 | 1525 |      |      |      |
| 16 | 18 | 16 <sup>-0.016</sup> / <sub>-0.034</sub> | 18 +0.018           |                      |            |                |                |                                   |      | 1610 | 1612 | 1615 | 1620 | 1625 |      |      |      |
| 17 | 19 | 17 <sup>-0.016</sup> / <sub>-0.034</sub> | 19 +0.021           |                      |            |                |                |                                   |      | 1710 | 1712 |      | 1720 |      |      |      |      |
| 18 | 20 | 18 <sup>-0.016</sup> / <sub>-0.034</sub> | 20 +0.021           |                      |            |                |                |                                   |      | 1810 | 1812 | 1815 | 1820 | 1825 |      |      |      |
| 20 | 23 | 20 <sup>-0.020</sup> / <sub>-0.041</sub> | 23 +0.021           |                      |            |                |                |                                   |      | 2010 | 2012 | 2015 | 2020 | 2025 | 2030 |      |      |
| 22 | 25 | 22 <sup>-0.020</sup> / <sub>-0.041</sub> | 25 +0.021           | 1.475                | 1.505      | 0.6            | 0.4            |                                   |      | 2210 | 2212 | 2215 | 2220 | 2225 | 2230 |      |      |
| 24 | 27 | 24 <sup>-0.020</sup> / <sub>-0.041</sub> | 27 +0.021           |                      |            |                |                |                                   |      |      |      | 2415 | 2420 | 2425 | 2430 |      |      |
| 25 | 28 | 25 <sup>-0.020</sup> / <sub>-0.041</sub> | 28 +0.021           |                      |            |                |                |                                   |      | 2510 | 2512 | 2515 | 2520 | 2525 | 2530 | 2540 | 2550 |
| 28 | 32 | 28 <sup>-0.020</sup> / <sub>-0.041</sub> | 32 +0.025           |                      |            |                |                |                                   |      |      |      | 2815 | 2820 | 2825 | 2830 | 2840 |      |
| 30 | 34 | 30 <sup>-0.020</sup> / <sub>-0.041</sub> | 34 +0.025           |                      |            |                |                |                                   |      |      | 3012 | 3015 | 3020 | 3025 | 3030 | 3040 |      |
| 32 | 36 | 32 <sup>-0.025</sup> / <sub>-0.050</sub> | 36 +0.025           | 1.970                | 2.005      | 1.2            | 0.4            |                                   |      |      |      |      | 3220 |      | 3230 | 3240 |      |
| 35 | 39 | 35 <sup>-0.025</sup> / <sub>-0.050</sub> | 39 +0.025           |                      |            |                |                |                                   |      |      | 3512 | 3515 | 3520 | 3525 | 3530 | 3540 | 3550 |
| 38 | 42 | 38 <sup>-0.025</sup> / <sub>-0.050</sub> | 42 +0.025           |                      |            |                |                |                                   |      |      |      | 3815 |      |      | 3830 | 3840 |      |
| 40 | 44 | 40 <sup>-0.025</sup> / <sub>-0.050</sub> | 44 +0.025           |                      |            |                |                |                                   |      | 4012 |      |      | 4020 | 4025 | 4030 | 4040 | 4050 |



**FB090/FB092/FB09G 青铜卷制轴承标准公制尺寸**

**FB090/FB092/FB09G Bronze-Wrapped Bearings Standard Metric Size**

单位Unit: mm

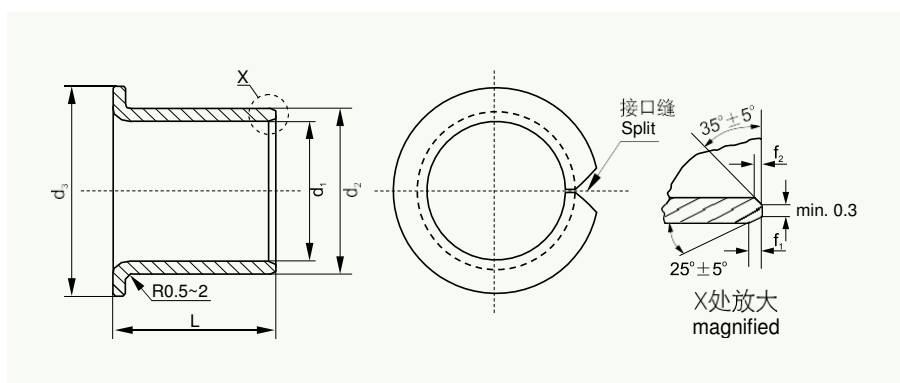
| d   | D   | 相配轴径<br>Shaft Dia.<br>f <sub>7</sub>   | 座孔<br>Housing<br>H7   | 壁厚<br>Wall Thickness |            | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> <sub>-0.40</sub> |      |      |      |       |       |      |       |        |        |        |
|-----|-----|----------------------------------------|-----------------------|----------------------|------------|----------------|----------------|---------------------------------|------|------|------|-------|-------|------|-------|--------|--------|--------|
|     |     |                                        |                       | 最小<br>Min.           | 最大<br>Max. |                |                | 20                              | 25   | 30   | 40   | 50    | 60    | 70   | 80    | 100    | 115    |        |
| 45  | 50  | 45 <sup>-0.025</sup> <sub>-0.050</sub> | 50 <sup>+0.025</sup>  |                      |            |                |                | 4520                            | 4525 | 4530 | 4540 | 4550  |       |      |       |        |        |        |
| 50  | 55  | 50 <sup>-0.025</sup> <sub>-0.050</sub> | 55 <sup>+0.030</sup>  |                      |            |                |                | 5020                            |      | 5030 | 5040 | 5050  | 5060  |      |       |        |        |        |
| 55  | 60  | 55 <sup>-0.030</sup> <sub>-0.060</sub> | 60 <sup>+0.030</sup>  |                      |            |                |                |                                 |      | 5530 | 5540 | 5550  | 5560  |      |       |        |        |        |
| 60  | 65  | 60 <sup>-0.030</sup> <sub>-0.060</sub> | 65 <sup>+0.030</sup>  | 2.460                | 2.505      | 1.8            | 0.6            |                                 |      | 6030 | 6040 | 6050  | 6060  | 6070 |       |        |        |        |
| 65  | 70  | 65 <sup>-0.030</sup> <sub>-0.060</sub> | 70 <sup>+0.030</sup>  |                      |            |                |                |                                 |      | 6530 | 6540 | 6550  | 6560  | 6570 |       |        |        |        |
| 70  | 75  | 70 <sup>-0.030</sup> <sub>-0.060</sub> | 75 <sup>+0.030</sup>  |                      |            |                |                |                                 |      |      | 7040 | 7050  | 7060  | 7070 | 7080  |        |        |        |
| 75  | 80  | 75 <sup>-0.030</sup>                   | 80 <sup>+0.030</sup>  |                      |            |                |                |                                 |      | 7530 | 7540 | 7550  | 7560  | 7570 | 7580  |        |        |        |
| 80  | 85  | 80 <sup>-0.035</sup>                   | 85 <sup>+0.035</sup>  |                      |            |                |                |                                 |      |      | 8040 | 8050  | 8060  | 8070 | 8080  | 80100  |        |        |
| 85  | 90  | 85 <sup>-0.035</sup>                   | 90 <sup>+0.035</sup>  |                      |            |                |                |                                 |      |      | 8540 |       | 8560  |      | 8580  | 85100  |        |        |
| 90  | 95  | 90 <sup>-0.035</sup>                   | 95 <sup>+0.035</sup>  |                      |            |                |                |                                 |      |      | 9040 | 9050  | 9060  |      | 9080  | 90100  |        |        |
| 95  | 100 | 95 <sup>-0.035</sup>                   | 100 <sup>+0.035</sup> | 2.440                | 2.490      | 1.8            | 0.6            |                                 |      |      |      | 9550  | 9560  |      | 9580  | 95100  |        |        |
| 100 | 105 | 100 <sup>-0.035</sup>                  | 105 <sup>+0.035</sup> |                      |            |                |                |                                 |      |      |      | 10050 | 10060 |      | 10080 |        | 100115 |        |
| 105 | 110 | 105 <sup>-0.035</sup>                  | 110 <sup>+0.035</sup> |                      |            |                |                |                                 |      |      |      |       | 10560 |      | 10580 |        | 105115 |        |
| 110 | 115 | 110 <sup>-0.035</sup>                  | 115 <sup>+0.035</sup> |                      |            |                |                |                                 |      |      |      |       | 11060 |      | 11080 |        | 110115 |        |
| 120 | 125 | 120 <sup>-0.035</sup>                  | 125 <sup>+0.040</sup> |                      |            |                |                |                                 |      |      |      |       | 12060 |      | 12080 | 120100 |        |        |
| 125 | 130 | 125 <sup>-0.040</sup>                  | 130 <sup>+0.040</sup> |                      |            |                |                |                                 |      |      |      |       | 12560 |      |       | 125100 | 125115 |        |
| 130 | 135 | 130 <sup>-0.040</sup>                  | 135 <sup>+0.040</sup> | 2.415                | 2.465      | 1.8            | 0.6            |                                 |      |      |      |       | 13060 |      | 13080 | 130100 |        |        |
| 140 | 145 | 140 <sup>-0.040</sup>                  | 145 <sup>+0.040</sup> |                      |            |                |                |                                 |      |      |      |       | 14060 |      | 14080 | 140100 |        |        |
| 150 | 155 | 150 <sup>-0.040</sup>                  | 155 <sup>+0.040</sup> |                      |            |                |                |                                 |      |      |      |       | 15060 |      | 15080 | 150100 |        |        |
| 160 | 165 | 160 <sup>-0.040</sup>                  | 165 <sup>+0.040</sup> |                      |            |                |                |                                 |      |      |      |       | 16060 |      | 16080 | 160100 | 160115 |        |
| 180 | 185 | 180 <sup>-0.040</sup>                  | 185 <sup>+0.046</sup> | 2.415                | 2.465      | 1.8            | 0.6            |                                 |      |      |      |       |       |      | 18080 | 180100 |        |        |
| 190 | 195 | 190 <sup>-0.046</sup>                  | 195 <sup>+0.046</sup> |                      |            |                |                |                                 |      |      |      |       |       |      |       | 19080  | 190100 |        |
| 200 | 205 | 200 <sup>-0.046</sup>                  | 205 <sup>+0.046</sup> |                      |            |                |                |                                 |      |      |      |       |       |      |       | 20080  | 200100 |        |
| 220 | 225 | 220 <sup>-0.046</sup>                  | 225 <sup>+0.046</sup> |                      |            |                |                |                                 |      |      |      |       |       |      | 20060 |        | 22080  | 220100 |
| 250 | 255 | 250 <sup>-0.046</sup>                  | 255 <sup>+0.052</sup> |                      |            |                |                |                                 |      |      |      |       |       |      | 25080 | 250100 |        |        |
| 260 | 265 | 260 <sup>-0.052</sup>                  | 265 <sup>+0.052</sup> | 2.415                | 2.465      | 1.8            | 0.6            |                                 |      |      |      |       |       |      | 26080 | 260100 |        |        |
| 280 | 285 | 280 <sup>-0.052</sup>                  | 285 <sup>+0.052</sup> |                      |            |                |                |                                 |      |      |      |       |       |      |       |        | 28080  | 280100 |
| 300 | 305 | 300 <sup>-0.052</sup>                  | 305 <sup>+0.052</sup> |                      |            |                |                |                                 |      |      |      |       |       |      |       |        |        |        |

注：要求相配轴孔H7，轴径f7，衬套压入座孔后内孔值为H8。

Note: Shaft hole is required to be H7. Shaft diameter is f7. After bearing is installed, the inner hole should be H8.

## FB090/FB092 青铜卷制翻边轴承标准公制尺寸

## FB090/FB092 Bronze-Wrapped Flange Bearing Standard Metric Size



单位Unit: mm

| d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> / <sub>-0.40</sub> |      |      |      |      |      |       |       |       |       |       |
|----------------|----------------|----------------|----------------|----------------|-----------------------------------|------|------|------|------|------|-------|-------|-------|-------|-------|
|                |                |                |                |                | 15                                | 20   | 25   | 30   | 35   | 40   | 50    | 60    | 70    | 80    | 90    |
| 25             | 28             | 35             | 0.8            | 0.4            | 2515                              | 2520 | 2525 |      |      |      |       |       |       |       |       |
| 30             | 34             | 45             |                |                |                                   | 3020 | 3025 | 3030 |      |      |       |       |       |       |       |
| 35             | 39             | 50             | 1.0            | 0.6            |                                   | 3520 | 3525 | 3530 | 3535 |      |       |       |       |       |       |
| 40             | 44             | 55             |                |                |                                   |      | 4025 | 4030 | 4035 | 4040 |       |       |       |       |       |
| 45             | 50             | 60             |                |                |                                   |      |      | 4530 | 4535 | 4540 | 4550  |       |       |       |       |
| 50             | 55             | 65             |                |                |                                   |      |      | 5030 | 5035 | 5040 | 5050  |       |       |       |       |
| 55             | 60             | 70             |                |                |                                   |      |      | 5530 | 5535 | 5540 | 5550  |       |       |       |       |
| 60             | 65             | 75             | 1.2            | 0.8            |                                   |      |      | 6030 | 6035 | 6040 | 6050  | 6060  |       |       |       |
| 65             | 70             | 80             |                |                |                                   |      |      | 6530 | 6535 | 6540 | 6550  | 6560  |       |       |       |
| 70             | 75             | 85             |                |                |                                   |      |      |      | 7035 | 7040 | 7050  | 7060  | 7070  |       |       |
| 75             | 80             | 90             |                |                |                                   |      |      |      | 7535 | 7540 | 7550  | 7560  | 7570  |       |       |
| 80             | 85             | 100            |                |                |                                   |      |      |      | 8035 | 8040 | 8050  | 8060  | 8070  | 8080  |       |
| 90             | 95             | 110            |                |                |                                   |      |      |      |      |      | 9050  | 9060  | 9070  | 9080  | 9090  |
| 100            | 105            | 120            |                |                |                                   |      |      |      |      |      | 10050 | 10060 | 10070 | 10080 | 10090 |
| 110            | 115            | 130            |                |                |                                   |      |      |      |      |      | 11050 | 11060 | 11070 | 11080 | 11090 |
| 120            | 125            | 140            |                |                |                                   |      |      |      |      |      | 12050 | 12060 | 12070 | 12080 | 12090 |
| 130            | 135            | 155            |                |                |                                   |      |      |      |      |      |       | 13060 | 13070 | 13080 | 13090 |
| 140            | 145            | 165            |                |                |                                   |      |      |      |      |      |       | 14060 | 14070 | 14080 | 14090 |
| 150            | 155            | 180            |                |                |                                   |      |      |      |      |      |       | 15060 | 15070 | 15080 | 15090 |
| 160            | 165            | 190            |                |                |                                   |      |      |      |      |      |       | 16060 | 16070 | 16080 | 16090 |
| 170            | 175            | 200            | 1.4            | 0.8            |                                   |      |      |      |      |      |       | 17060 | 17070 | 17080 | 17090 |
| 180            | 185            | 215            |                |                |                                   |      |      |      |      |      |       | 18060 | 18070 | 18080 | 18090 |
| 190            | 195            | 225            |                |                |                                   |      |      |      |      |      |       | 19060 | 19070 | 19080 | 19090 |
| 200            | 205            | 235            |                |                |                                   |      |      |      |      |      |       | 20060 | 20070 | 20080 | 20090 |
| 225            | 230            | 260            |                |                |                                   |      |      |      |      |      |       | 22560 | 22570 | 22580 | 22590 |
| 250            | 255            | 290            |                |                |                                   |      |      |      |      |      |       | 25060 | 25070 | 25080 | 25090 |
| 265            | 270            | 305            |                |                |                                   |      |      |      |      |      |       | 26560 | 26570 | 26580 | 26590 |
| 285            | 290            | 325            |                |                |                                   |      |      |      |      |      |       | 28560 | 28570 | 28580 | 28590 |
| 300            | 305            | 340            |                |                |                                   |      |      |      |      |      |       | 30060 | 30070 | 30080 | 30090 |

## **FB08G 固体润滑卷制轴承**

## **FB08G Solid-Lubricant-Embedded Wrapped Bearings**



### **材料结构 Material Structure**

◎FB08G固体润滑轴承是以JF-800双金属材料为基体，再埋入特殊固体润滑剂制作成的新型滑动轴承。由于高强度承载的合金材料作基体，并经过严格选择的高分子填充材料为耐磨剂，合理的螺旋角度菱形块状均布的润滑面，润滑面积达25%，因此，能发挥超群的低摩擦，良好的润滑性和抗磨损性免除加油。该产品已广泛应用于起重起、微型电机、升降机、吊车及冶金机械等行业。

◎FB08G is a kind of steel-lead bronze alloys based bearing, which is embedded with particular formulation of solid lubricants. Owing to the high strength, high load capacity and the spirally distributed diamond type of the embedded solid lubricant, the high temperature

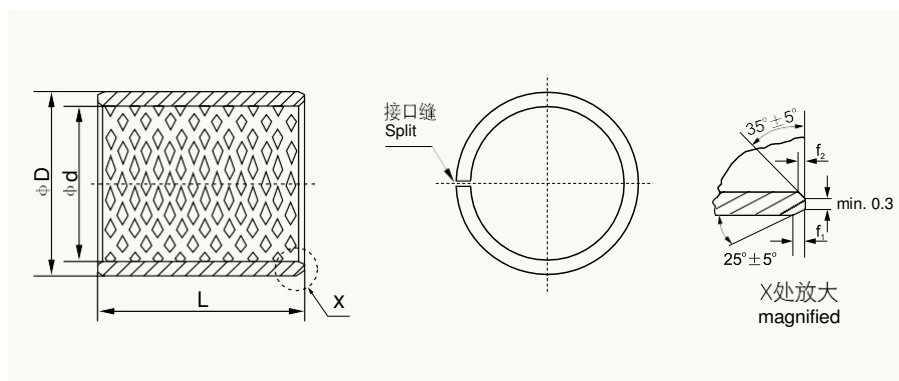
resistant action as extraordinary exploited. The lubrication area of the bearing surface is being about 25%. This type of bearing is particularly applied in starting motor for automobiles, generators cranes and those machines in metallurgical industry.

### **技术参数 Tech.Data**

|            |                   |                           |
|------------|-------------------|---------------------------|
| 最大承载压力     | Load capacity     | 150N/mm <sup>2</sup>      |
| 适应温度范围     | Temperature limit | -100℃~+200℃               |
| 最高滑动速度     | Speed limit       | 1.5M/s                    |
| 摩擦系数       | Friction clef     | 0.06~0.25                 |
| 允许最高PV值(干) | PV limit (dry)    | 2.5N/mm <sup>2</sup> ·m/s |
| 允许最高PV值(油) | PV limit (oil)    | 15N/mm <sup>2</sup> ·m/s  |

## FB08G 固体润滑卷制轴承标准公制尺寸

## FB08G Solid-Lubricant-Embedded Wrapped Bearings Standard Metric Size



单位 Unit: mm

| d   | D   | f <sub>1</sub> | f <sub>2</sub> | L <sup>0</sup> <sub>-0.40</sub> |      |      |      |      |      |       |       |       |       |       |        |        |        |  |
|-----|-----|----------------|----------------|---------------------------------|------|------|------|------|------|-------|-------|-------|-------|-------|--------|--------|--------|--|
|     |     |                |                | 10                              | 15   | 20   | 25   | 30   | 35   | 40    | 50    | 60    | 70    | 80    | 90     | 100    |        |  |
| 10  | 12  | 0.3            | 0.5            | 1010                            | 1015 | 1020 |      |      |      |       |       |       |       |       |        |        |        |  |
| 12  | 14  |                |                | 1210                            | 1215 | 1220 |      |      |      |       |       |       |       |       |        |        |        |  |
| 14  | 16  |                |                | 1410                            | 1415 | 1420 | 1425 |      |      |       |       |       |       |       |        |        |        |  |
| 15  | 17  |                |                | 1510                            | 1515 | 1520 | 1525 |      |      |       |       |       |       |       |        |        |        |  |
| 16  | 18  |                |                | 1610                            | 1615 | 1620 | 1625 |      |      |       |       |       |       |       |        |        |        |  |
| 18  | 20  |                |                | 1810                            | 1815 | 1820 | 1825 |      |      |       |       |       |       |       |        |        |        |  |
| 20  | 23  | 0.8            | 0.4            | 2210                            | 2015 | 2020 | 2025 |      |      |       |       |       |       |       |        |        |        |  |
| 22  | 25  |                |                | 2010                            | 2215 | 2220 | 2225 | 2230 |      |       |       |       |       |       |        |        |        |  |
| 24  | 27  |                |                |                                 | 2415 | 2420 | 2425 | 2430 |      |       |       |       |       |       |        |        |        |  |
| 25  | 28  |                |                |                                 | 2515 | 2520 | 2525 | 2530 |      |       |       |       |       |       |        |        |        |  |
| 28  | 32  |                |                |                                 | 2815 | 2820 | 2825 | 2830 |      |       |       |       |       |       |        |        |        |  |
| 30  | 34  | 1.0            | 0.6            |                                 | 3015 | 3020 | 3025 | 3030 | 3035 | 3040  |       |       |       |       |        |        |        |  |
| 32  | 36  |                |                |                                 | 3215 | 3220 | 3225 | 3230 | 3235 | 3240  |       |       |       |       |        |        |        |  |
| 35  | 39  |                |                |                                 | 3515 | 3520 | 3525 | 3530 | 3535 | 3540  |       |       |       |       |        |        |        |  |
| 40  | 44  |                |                |                                 |      | 4020 | 4025 | 4030 | 4035 | 4040  | 4050  |       |       |       |        |        |        |  |
| 45  | 50  |                |                |                                 |      | 4520 | 4525 | 4530 | 4535 | 4540  | 4550  |       |       |       |        |        |        |  |
| 50  | 55  |                |                |                                 |      | 5020 | 5025 | 5030 | 5035 | 5040  | 5050  | 5060  |       |       |        |        |        |  |
| 55  | 60  | 1.2            |                |                                 |      | 5520 | 5525 | 5530 | 5535 | 5540  | 5550  | 5560  |       |       |        |        |        |  |
| 60  | 65  |                |                |                                 |      |      | 6025 | 6030 | 6035 | 6040  | 6050  | 6060  | 6070  |       |        |        |        |  |
| 65  | 70  |                |                |                                 |      |      |      | 6530 | 6535 | 6540  | 6560  | 6560  | 6570  |       |        |        |        |  |
| 70  | 75  |                |                |                                 |      |      |      | 7030 | 7035 | 7040  | 7050  | 7060  | 7070  | 7080  |        |        |        |  |
| 75  | 80  |                |                |                                 |      |      |      | 7530 | 7535 | 7540  | 7550  | 7560  | 7570  | 7580  |        |        |        |  |
| 80  | 85  |                |                |                                 |      |      | 8030 | 8035 | 8040 | 8050  | 8060  | 8070  | 8080  |       |        |        |        |  |
| 85  | 90  |                |                |                                 |      |      |      |      |      | 7550  | 8560  | 8570  | 8580  | 9590  |        |        |        |  |
| 90  | 95  |                |                |                                 |      |      |      |      |      | 9050  | 9060  | 9070  | 9080  | 9090  |        |        |        |  |
| 95  | 100 | 0.8            |                |                                 |      |      |      |      |      | 9550  | 9560  | 9570  | 9580  | 9590  | 951000 |        |        |  |
| 100 | 105 |                |                |                                 |      |      |      |      |      |       | 10050 | 10060 | 10070 | 10080 | 10090  | 100100 |        |  |
| 105 | 110 |                |                |                                 |      |      |      |      |      |       | 10550 | 10560 | 10570 | 10580 | 10590  | 105100 |        |  |
| 110 | 115 |                |                |                                 |      |      |      |      |      | 11050 | 11060 | 11070 | 11080 | 11090 | 110100 |        |        |  |
| 115 | 120 | 1.4            |                |                                 |      |      |      |      |      | 11550 | 11560 | 11570 | 11580 | 11590 | 115100 |        |        |  |
| 120 | 125 |                |                |                                 |      |      |      |      |      |       |       | 12060 | 12070 | 12080 | 12090  | 120100 |        |  |
| 125 | 130 |                |                |                                 |      |      |      |      |      |       |       | 12560 | 12570 | 12580 | 12590  | 125100 |        |  |
| 130 | 135 |                |                |                                 |      |      |      |      |      |       |       |       | 13060 | 13070 | 13080  | 13090  | 130100 |  |
| 135 | 140 |                |                |                                 |      |      |      |      |      |       |       |       | 13560 | 13570 | 13580  | 13590  | 135100 |  |
| 140 | 145 |                |                |                                 |      |      |      |      |      |       | 14060 | 14070 | 14080 | 14090 | 140100 |        |        |  |
| 145 | 150 |                |                |                                 |      |      |      |      |      |       | 14560 | 14570 | 14580 | 14590 | 145100 |        |        |  |
| 150 | 155 |                |                |                                 |      |      |      |      |      |       | 15060 | 15070 | 15080 | 15090 | 150100 |        |        |  |
| 155 | 160 |                |                |                                 |      |      |      |      |      |       | 15560 | 15570 | 15580 | 15590 | 155100 |        |        |  |
| 160 | 165 |                |                |                                 |      |      |      |      |      |       | 16060 | 16070 | 16080 | 16090 | 160100 |        |        |  |

## JDB 固体镶嵌轴承 JDB Solid-lubricant-Inlaid Bearings



### 材料结构 Material Structure

铜合金镶嵌式固体润滑剂自润滑轴承，结合了铜合金的耐磨性及固体润滑剂的自润滑性能，使其在使用过程中无需加油维护。产品被广泛应用于高载、间歇性或摇摆运动，如汽机车生产流水线、水轮机、水库工作/事故门、塑胶机械、冲床周边设备等。根据使用的工况，可以提供各种类型的铜合金。

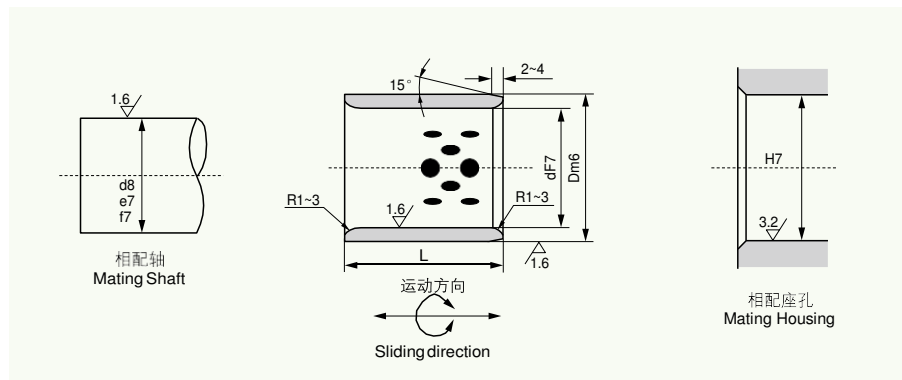
This material provides a maintenance-free bearing solution, particularly for high load, intermittent of oscillating motion. Solid lubricants within a bronze combines the strength of the bronze with the wear resistance and low friction. The application including automotive products line, water engineering, dam gate, plastic industries etc. Different bronze alloy type can be available according to the work condition.

### 技术参数 Tech.Data

|                       |                  |                            |
|-----------------------|------------------|----------------------------|
| 最大承载                  | 静承载 Static Load  | 250N/mm <sup>2</sup>       |
| Max. Load             | 动承载 Dynamic Load | 100N/mm <sup>2</sup>       |
| 最高线速度                 | 干摩擦 Dry Friction | 0.3m/s                     |
| Max linear speed      | 油摩擦 Oil Friction | 1.0m/s                     |
| 最大PV值 PV limit        |                  | 1.65N/mm <sup>2</sup> ·m/s |
| 抗拉强度 Tensile strength |                  | 750N/mm <sup>2</sup>       |

|                                  |                                     |
|----------------------------------|-------------------------------------|
| 使用温度 Working temperature         | -100℃~+300℃                         |
| 摩擦系数 Abrasion coefficient        | 0.03~0.20                           |
| 导热系数 Heat conducting coefficient | 60W/(m·K) <sup>-1</sup>             |
| 热膨胀系数 Heat expansion coefficient | 19·10 <sup>-6</sup> K <sup>-1</sup> |
| 延伸率 Extensile rate               | 12%                                 |
| 硬度 Hardness                      | HB < 210                            |

## JDB 直固体镶嵌轴承标准公制尺寸 JDB Solid-lubricant-Inlaid Bearings Standard Metric Size



单位Unit: mm

| d  | D  | 内径<br>I.D. F7 |                  | 外径<br>O.D. m6 |                  | L <sup>-0.10<br/>-0.30</sup> |        |        |        |        |        |        |        |        |        |        |        |        |        |
|----|----|---------------|------------------|---------------|------------------|------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|    |    |               |                  |               |                  | 8                            | 10     | 12     | 15     | 16     | 20     | 25     | 30     | 35     | 40     | 50     | 60     | 70     | 80     |
| 8  | 12 | 8             | +0.028<br>+0.013 | 12            | +0.018<br>+0.007 | 081208                       | 081210 | 081212 | 081215 |        |        |        |        |        |        |        |        |        |        |
| 10 | 14 | 10            |                  | 14            |                  | 101408                       | 101410 | 101412 | 101415 |        | 101420 |        |        |        |        |        |        |        |        |
| 12 | 18 | 12            |                  | 18            |                  |                              | 121810 | 121812 | 121815 | 121816 | 121820 | 121825 | 121830 |        |        |        |        |        |        |
| 13 | 19 | 13            | +0.034<br>+0.016 | 19            |                  |                              | 131910 |        | 131915 | 131916 |        |        |        |        |        |        |        |        |        |
| 14 | 20 | 14            |                  | 20            |                  |                              | 142010 | 142012 | 142015 |        | 142020 | 142025 | 142030 |        |        |        |        |        |        |
| 15 | 21 | 15            |                  | 21            |                  |                              | 152110 | 152112 | 152115 | 152116 | 152120 | 152125 | 152130 |        |        |        |        |        |        |
| 16 | 22 | 16            |                  | 22            | +0.021<br>+0.008 |                              | 162210 | 162212 | 162215 | 162216 | 162220 | 162225 | 162230 | 162235 | 162240 |        |        |        |        |
| 18 | 24 | 18            |                  | 24            |                  |                              |        | 182412 | 182415 | 182416 | 182420 | 182425 | 182430 | 182435 | 182440 |        |        |        |        |
| 20 | 28 | 20            |                  | 28            |                  |                              | 202810 | 202812 | 202815 | 202816 | 202820 | 202825 | 202830 | 202835 | 202840 | 202850 |        |        |        |
| 22 | 32 | 22            |                  | 32            |                  |                              |        | 223212 | 223215 |        | 223220 | 223225 |        |        |        |        |        |        |        |
| 25 | 33 | 25            | +0.041<br>+0.020 | 33            |                  |                              |        | 253312 | 253315 | 253316 | 253320 | 253325 | 253330 | 253335 | 253340 | 253350 | 253360 |        |        |
| 30 | 38 | 30            |                  | 38            |                  |                              |        | 303812 | 303815 |        | 303820 | 303825 | 303830 | 303835 | 303840 | 303850 | 303860 |        |        |
| 35 | 45 | 35            |                  | 45            |                  | +0.025<br>+0.009             |        |        |        |        |        | 354520 | 354525 | 354530 | 354535 | 354540 | 354550 | 354560 |        |
| 40 | 50 | 40            | 50               |               |                  |                              |        |        |        |        | 405020 | 405025 | 405030 | 405035 | 405040 | 405050 | 405060 | 405070 | 405080 |
| 45 | 55 | 45            | 55               |               |                  |                              |        |        |        |        |        |        | 455530 | 455535 | 455540 | 455550 | 455560 |        |        |
| 50 | 60 | 50            |                  | 60            |                  |                              |        |        |        |        |        |        | 506030 | 506035 | 506040 | 506050 | 506060 | 506070 | 506080 |



## JDB 直固体镶嵌轴承标准公制尺寸

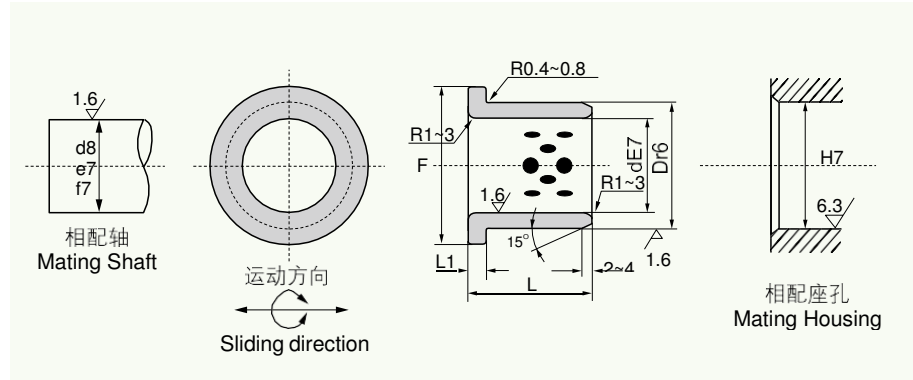
## JDB Solid-lubricant-Inlaid Bearings Standard Metric Size

单位Unit: mm

| d   | D   | 内径<br>I.D. F7 |                  | 外径<br>O.D. m6 |                  | L <sup>-0.10</sup> <sub>-0.30</sub> |        |         |         |          |          |          |           |           |           |           |           |
|-----|-----|---------------|------------------|---------------|------------------|-------------------------------------|--------|---------|---------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
|     |     |               |                  |               |                  | 30                                  | 35     | 40      | 50      | 60       | 70       | 80       | 100       | 120       | 130       | 140       | 150       |
| 50  | 62  | 50            | +0.050<br>+0.025 | 62            |                  | 506230                              | 506235 | 506240  | 506250  | 506260   | 506270   |          |           |           |           |           |           |
| 50  | 65  | 50            |                  | 65            |                  | 506530                              |        | 506540  | 506550  | 506560   | 506570   | 506580   | 5065100   |           |           |           |           |
| 55  | 70  | 55            |                  | 70            |                  |                                     |        | 557040  | 557050  | 557060   | 557070   |          |           |           |           |           |           |
| 60  | 75  | 60            |                  | 75            | +0.030<br>+0.011 | 607430                              | 607435 | 607440  | 607540  | 607460   | 607470   | 607480   |           |           |           |           |           |
| 60  | 75  | 60            |                  | 75            |                  | 607530                              | 607535 | 607540  | 607550  | 607560   | 607570   | 607580   | 6075100   |           |           |           |           |
| 63  | 75  | 63            |                  | 75            |                  |                                     |        |         |         | 637560   | 637570   | 637580   |           |           |           |           |           |
| 65  | 80  | 65            |                  | 80            |                  |                                     |        |         | 658050  | 658060   | 658070   | 658080   |           |           |           |           |           |
| 70  | 85  | 70            | +0.060<br>+0.030 | 85            |                  |                                     | 708535 | 708540  | 708550  | 708560   | 708570   | 708580   | 7085100   |           |           |           |           |
| 70  | 90  | 70            |                  | 90            |                  |                                     |        |         | 709050  | 709060   | 709070   | 709080   |           |           |           |           |           |
| 75  | 90  | 75            |                  | 90            |                  |                                     |        |         |         | 759060   | 759070   | 759080   | 7590100   |           |           |           |           |
| 75  | 95  | 75            |                  | 95            | +0.035<br>+0.013 |                                     |        |         |         | 759560   | 759570   | 759580   | 7595100   |           |           |           |           |
| 80  | 96  | 80            |                  | 96            |                  |                                     |        | 809640  | 809560  | 809660   | 809670   | 809680   | 8096100   | 8096120   |           |           |           |
| 80  | 100 | 80            |                  | 100           |                  |                                     |        | 8010040 | 8010050 | 8010060  | 8010070  | 8010080  | 80100100  | 80100120  |           | 80100140  |           |
| 90  | 110 | 90            |                  | 110           |                  | 9011030                             |        |         | 9011050 | 9011060  | 9011070  | 9011080  | 90110100  | 90110120  |           |           |           |
| 100 | 120 | 100           | +0.071<br>+0.036 | 120           |                  |                                     |        |         |         | 10012060 | 10012070 | 10012080 | 100120100 | 100120120 |           | 100120140 |           |
| 110 | 130 | 110           |                  | 130           |                  |                                     |        |         |         |          |          | 11013080 | 110130100 | 110130120 |           |           |           |
| 120 | 140 | 120           |                  | 140           |                  |                                     |        |         |         |          |          | 12014080 | 120140100 | 120140120 |           | 120140140 |           |
| 125 | 145 | 125           |                  | 145           |                  |                                     |        |         |         |          |          |          | 125145100 | 125145120 |           |           |           |
| 130 | 150 | 130           |                  | 150           | +0.040<br>+0.015 |                                     |        |         |         |          |          |          | 130150100 |           | 130150130 |           |           |
| 140 | 160 | 140           | +0.083<br>+0.043 | 160           |                  |                                     |        |         |         |          |          |          | 140160100 |           |           | 140160140 |           |
| 150 | 170 | 150           |                  | 170           |                  |                                     |        |         |         |          |          |          | 150170100 |           |           |           | 150170150 |
| 160 | 180 | 160           |                  | 180           |                  |                                     |        |         |         |          |          |          | 160180100 |           |           |           | 160180150 |

## JFB 翻边轴承标准公制尺寸

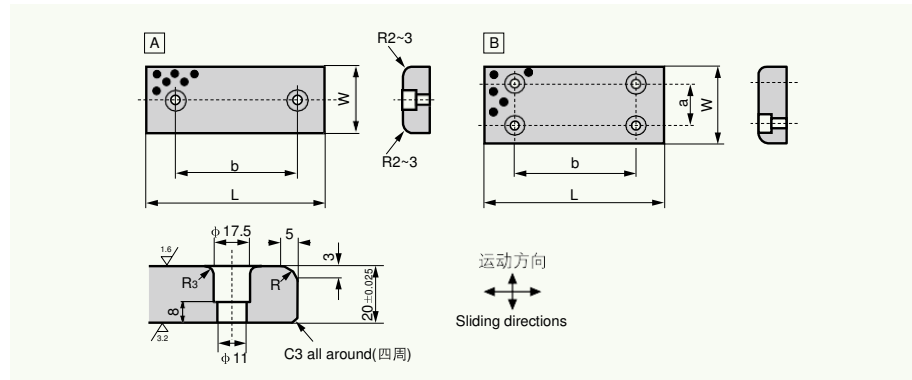
## JFB Flange Bearings Standard Metric Size



单位Unit: mm

| d   | D   | 内径<br>I.D. F7 |                  | 外径<br>O.D. m6 |                  | F   | L <sub>1</sub> | L <sup>-0.10<br/>-0.30</sup> |      |      |      |      |      |      |       |       |        |
|-----|-----|---------------|------------------|---------------|------------------|-----|----------------|------------------------------|------|------|------|------|------|------|-------|-------|--------|
|     |     |               |                  |               |                  |     |                | 15                           | 20   | 25   | 30   | 35   | 40   | 50   | 60    | 80    | 100    |
| 10  | 14  | 10            | +0.040<br>+0.025 | 14            | +0.034<br>+0.023 | 22  | 2              | 1015                         | 1020 |      |      |      |      |      |       |       |        |
| 12  | 18  | 12            |                  | 18            |                  | 25  |                | 1215                         | 1220 |      |      |      |      |      |       |       |        |
| 13  | 19  | 13            |                  | 19            |                  | 26  |                | 1315                         | 1320 |      |      |      |      |      |       |       |        |
| 14  | 20  | 14            | +0.050<br>+0.032 | 20            |                  | 27  | 3              | 1415                         | 1420 |      |      |      |      |      |       |       |        |
| 15  | 21  | 15            |                  | 21            | +0.041<br>+0.028 | 28  |                | 1515                         | 1520 | 1525 | 1530 |      |      |      |       |       |        |
| 16  | 22  | 16            |                  | 22            |                  | 29  |                | 1615                         | 1620 | 1625 | 1630 |      |      |      |       |       |        |
| 20  | 30  | 20            |                  | 30            |                  | 40  |                |                              | 2020 | 2025 | 2030 | 2035 |      |      |       |       |        |
| 25  | 35  | 25            | +0.061<br>+0.040 | 35            |                  | 45  |                |                              | 2520 | 2525 | 2530 | 2535 |      |      |       |       |        |
| 30  | 40  | 30            |                  | 40            | +0.050<br>+0.034 | 50  |                |                              | 3020 | 3025 | 3030 | 3035 | 3040 | 3050 |       |       |        |
| 35  | 45  | 35            |                  | 45            |                  | 60  | 5              |                              |      | 3525 | 3530 | 3535 | 3540 | 3550 |       |       |        |
| 40  | 50  | 40            |                  | 50            |                  | 65  |                |                              |      |      | 4030 | 4035 | 4040 | 4050 |       |       |        |
| 45  | 55  | 45            | +0.075<br>+0.050 | 55            |                  | 70  |                |                              |      |      | 4530 | 4535 | 4540 | 4550 | 4560  |       |        |
| 50  | 60  | 50            |                  | 60            | +0.060<br>+0.041 | 75  |                |                              |      |      |      |      | 5050 | 5050 | 5060  |       |        |
| 55  | 65  | 55            |                  | 65            |                  | 80  |                |                              |      |      |      |      | 5540 | 5550 | 5560  |       |        |
| 60  | 75  | 60            |                  | 75            | +0.062<br>+0.043 | 90  |                |                              |      |      |      |      | 6040 | 6050 | 6060  | 6080  |        |
| 70  | 85  | 70            | +0.090<br>+0.060 | 85            |                  | 105 | 7.5            |                              |      |      |      |      |      | 7050 | 7060  | 7080  |        |
| 75  | 90  | 75            |                  | 90            | +0.073<br>+0.051 | 110 |                |                              |      |      |      |      |      | 7550 | 7560  |       |        |
| 80  | 100 | 80            |                  | 100           |                  | 120 |                |                              |      |      |      |      |      |      | 8060  | 8080  | 80100  |
| 100 | 120 | 100           |                  | 120           | +0.076<br>+0.054 | 150 | 10             |                              |      |      |      |      |      |      | 10060 | 10080 | 100100 |
| 120 | 140 | 120           | +0.107<br>+0.072 | 140           | +0.088<br>+0.063 | 170 |                |                              |      |      |      |      |      |      | 12060 | 12080 | 120100 |

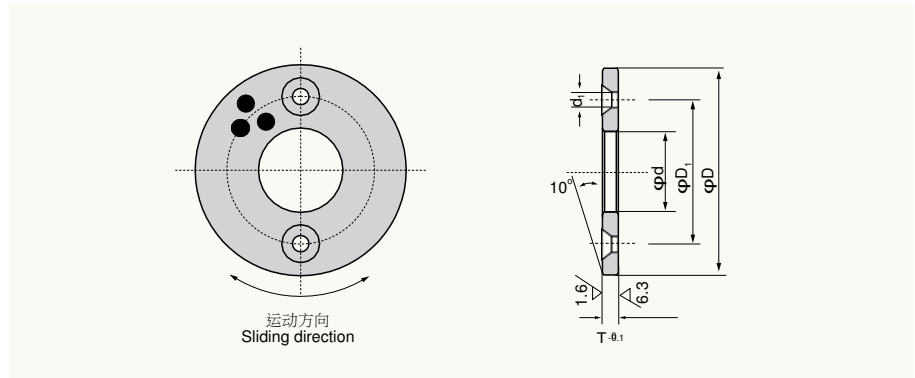
## JSP 滑块标准公制尺寸 JSP Sliding Plate Standard Metric Size



单位Unit: mm

| 型号规格<br>Designation | W   | L   | a   | b   | Sketch<br>图示 |
|---------------------|-----|-----|-----|-----|--------------|
| JSP 28 × 75         | 28  | 75  | -   | 45  | A            |
| JSP 28 × 100        |     | 100 |     | 50  |              |
| JSP 28 × 150        |     | 150 |     | 100 |              |
| JSP 38 × 75         | 38  | 75  | -   | 45  | A            |
| JSP 38 × 100        |     | 100 |     | 50  |              |
| JSP 38 × 150        |     | 150 |     | 100 |              |
| JSP 48 × 75         | 48  | 75  | -   | 45  | A            |
| JSP 48 × 100        |     | 100 |     | 50  |              |
| JSP 48 × 125        |     | 125 |     | 75  |              |
| JSP 48 × 150        | 58  | 150 | -   | 100 | A            |
| JSP 48 × 200        |     | 200 |     | 150 |              |
| JSP 58 × 75         |     | 75  |     | 45  |              |
| JSP 58 × 100        | 58  | 100 | -   | 50  | A            |
| JSP 58 × 150        |     | 150 |     | 100 |              |
| JSP 75 × 75         | 75  | 75  | -   | 25  | A            |
| JSP 75 × 100        |     | 100 |     | 50  |              |
| JSP 75 × 125        |     | 125 |     | 75  |              |
| JSP 75 × 150        | 100 | 150 | 50  | 100 | A            |
| JSP 75 × 200        |     | 200 |     | 150 |              |
| JSP 100 × 100       |     | 100 |     | 50  |              |
| JSP 100 × 125       | 100 | 125 | 50  | 75  | A            |
| JSP 100 × 150       |     | 150 |     | 100 |              |
| JSP 100 × 200       |     | 200 |     | 150 |              |
| JSP 100 × 250       | 125 | 250 | 50  | 200 | B            |
| JSP 100 × 300       |     | 300 |     | 200 |              |
| JSP 125 × 125       |     | 125 |     | 75  |              |
| JSP 125 × 150       | 125 | 150 | 50  | 100 | B            |
| JSP 125 × 200       |     | 200 |     | 150 |              |
| JSP 125 × 250       |     | 250 |     | 200 |              |
| JSP 125 × 300       | 150 | 300 | 100 | 200 | B            |
| JSP 125 × 350       |     | 350 |     | 200 |              |
| JSP 150 × 150       |     | 150 |     | 100 |              |
| JSP 150 × 200       | 150 | 200 | 100 | 150 | B            |
| JSP 150 × 250       |     | 250 |     | 200 |              |

## JTW 止推垫片标准公制尺寸 JTW Thrust Washer Standard Metric Size



单位Unit: mm

| 型号规格<br>Designation | $\phi d$ | $\phi D$ | $T_{-0.10}^0$ | 螺孔 Bolt Hole |                   |            |                   |
|---------------------|----------|----------|---------------|--------------|-------------------|------------|-------------------|
|                     |          |          |               | $\phi D_1$   | 平头螺钉<br>Crop Bolt | $\phi d_1$ | 孔数<br>Bore Number |
| JTW 10              | 10.2     | 30       |               | 20           |                   |            |                   |
| JTW 12              | 12.2     |          |               |              |                   |            |                   |
| JTW 13              | 13.2     | 40       |               | 28           |                   |            |                   |
| JTW 14              | 14.2     |          | 3             |              | M3                | 3.5        |                   |
| JTW 15              | 15.2     |          |               |              |                   |            |                   |
| JTW 16              | 16.2     | 50       |               | 35           |                   |            |                   |
| JTW 18              | 18.2     |          |               |              |                   |            | 2                 |
| JTW 20              | 20.2     |          |               |              |                   |            |                   |
| JTW 25              | 25.2     | 55       | 5             | 40           | M5                | 6          |                   |
| JTW 30              | 30.2     | 60       |               | 45           |                   |            |                   |
| JTW 35              | 35.2     | 70       |               | 50           |                   |            |                   |
| JTW 40              | 40.2     | 80       | 7             | 60           |                   |            |                   |
| JTW 45              | 45.3     | 90       |               | 70           | M6                | 7          |                   |
| JTW 50              | 50.3     | 100      |               | 75           |                   |            |                   |
| JTW 55              | 55.3     | 110      | 8             | 85           |                   |            |                   |
| JTW 60              | 60.3     | 120      |               | 90           |                   |            |                   |
| JTW 70              | 70.3     | 130      |               | 100          |                   |            |                   |
| JTW 75              | 75.3     | 140      |               | 110          | M8                | 9          | 4                 |
| JTW 80              | 80.3     | 150      | 10            | 120          |                   |            |                   |
| JTW 90              | 90.5     | 170      |               | 140          |                   |            |                   |
| JTW 100             | 100.5    | 190      |               | 160          | M10               | 11         |                   |
| JTW 120             | 120.5    | 200      |               | 175          |                   |            |                   |

## FZ 直线轴承 FZ Ball Retainer Bearings



### 产品简介 Intruduction

◎FZH (铜基)、FZL (铝基)、FZP (树脂基) 钢球保持圈, 分别以铜合金、硬铝合金、POM 树脂为基体, 并在其外圆表面上, 加工出排列有序、大小适当, 形状特殊的孔 穴, 在其孔穴中镶入滚动轴承钢球。口采用最新的沟槽圆周锁球工艺, 有效地解决了传统 式锁球和压痕式锁球不能完全防止钢球脱落的难题。孔底加工出 90° 止口使钢球在孔内自 由转动而不脱落。由于钢球的直径大于保持圈的壁厚, 所以在使用时钢球高出保持圈内、 外圆表面, 直接与相配的孔与轴接触, 使基体(保持圈)浮于中间, 并且相配的孔与轴半径 之差小于钢球直径, 即钢球与之配合为过盈配合, 配合精度高, 轴与孔相对运动灵活。是 保持圈的更新换代产品。

◎FZH. FZL. FZP. ball retainer are as copper, aluminium, POM base. they are machined some regular holes and embedded the steel-ball into. The new work-craft will prevent the ball getting out of as old. as the ball diameter is larger than the retainer s thickness, so it will face to face directly with 90° guide bushing, that will bring high precision match now the ball retainer series items are designed to rotate on the post, as well as maintainits vertical motion. we believe this will give you the benefit of increasing accijracy.

### 优点与用途 Advantage And Use

◎传统的具有相对运动的孔与轴是有一定间隙的, 并孔与轴之间运动磨擦系数较大, 使用钢球保持圈后, 使轴与孔不直接接触, 而是通过中间微量过盈的钢球, 因而运动精度高, 滚动摩擦代替滑动摩擦, 滚动灵活, 摩擦系数小, 使用寿命长, 在既有转动、又有移动的场合, 用无油或加油的轴套与轴相配合, 虽然能满足, 但运动精度较低, 用滚动轴承, 只能满足轴相对转动的场合, 而钢球保持圈, 则上述二个条件均得到满足, 目前已广泛应用于冷冲模滚动模架、高精度机床、机床附件以及要求高精度轴向或轴径向同时运动场合。

◎As the traditional work-craft has some grudge between bushing with posts, and the coefficient of friction is larger. now we have changed the work-ways to steel-ball directly face to face guide bushing, so the precision is improved. it composes of both active roll and lower friction coefficient, now they have been widely used in punching machine, die machine, high precision machine which need rotation and vertical motion.

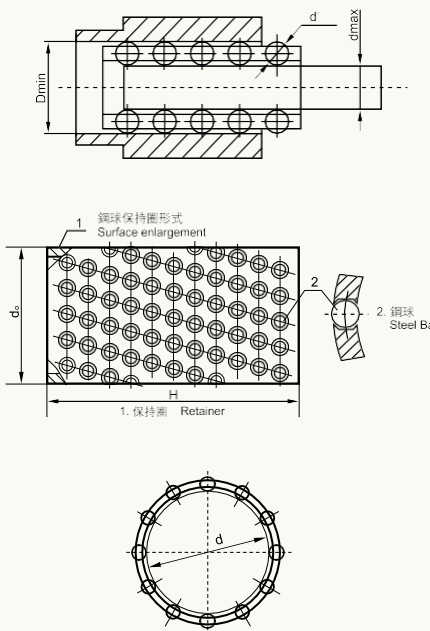
### 相配零件的要求 Installed Spares Requested

1. 导套: 材料 GCr15、YB9, 热处理, 硬度 HRC62~66, 技术条件按 GB/T12446 与轴配合应具有 0.01-0.02 径向过盈量, 表面粗糙度为<sup>0.05</sup> 2. 轴: 材料 GCr15、YB9, 热处理, 硬度 HRC62~66, 技术条件按 GB/T12446, 轴的公差采用 h5, 表面粗糙度为<sup>0.05</sup> 3. 测量: 用通用的测量手段 (气动量仪、外径千分尺、内径千分表等) 测量轴套和钢球 的尺寸偏差值, 即可求出配合后的过盈量, 即  $Y_{max} = d_{max} + 2d' - D_{min}$ , 要求过盈量为 0.01-0.02mm

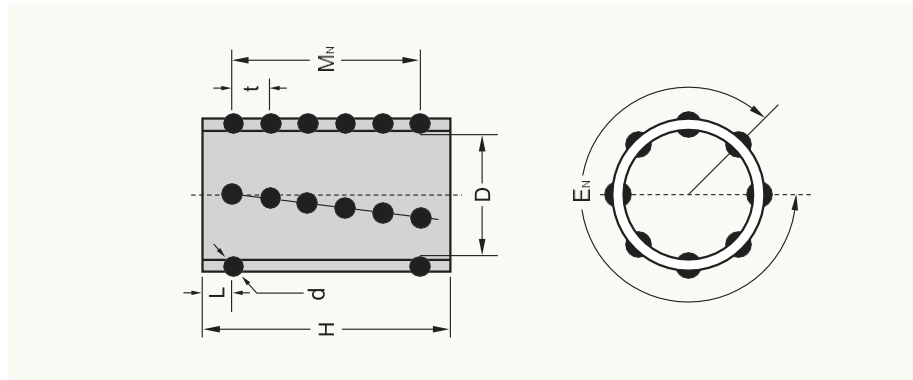
1. GUIDE BUSHING: MATERIAL GCr15, YB9, HEAT TREATMENT HRC62-66, TECHNIQUE CONDITION ACCORDING TO GB/T1 2446. REQUEST 0.01-0.02mm THE SURFACE ROUGHNESS IS<sup>0.05</sup>

2. GUIDIE POSTS: MATRIAL GCr15, YB9, HEAT TREATMENT HRC62-66, THE TOLERANCE OF SHAFT IS h5, THE SURFACE ROUGHNESS IS<sup>0.05</sup>

3. SIZE TEST: IT IS TESTED BY OUTSIDE MICROMETER & DIAL GAUGE AS USUAL. THE  $Y_{max} (Y_{max} + 2d' - D_{min})$  REQUEST 0.01-0.02mm



## FZ 钢球保持圈标准公制尺寸 FZ Ball Retainers Standard Metric Size



单位unit:mm

| 型号规格<br>Designation | D  | H   | d | E <sub>N</sub> | M <sub>N</sub> | 球<br>BALLS | t   | L    |
|---------------------|----|-----|---|----------------|----------------|------------|-----|------|
| FZ(*)1950           | 19 | 50  |   | 12             | 8              | 96         |     | 5.75 |
| FZ(*)1960           |    | 60  |   |                | 10             | 120        |     | 5.25 |
| FZ(*)2050           | 20 | 50  |   |                | 8              | 96         |     | 5.75 |
| FZ(*)2060           |    | 60  |   |                | 10             | 120        |     | 5.25 |
| FZ(*) 2250          | 22 | 50  | 3 | 14             | 8              | 112        | 5.5 | 5.75 |
| FZ(*) 2260          |    | 60  |   |                | 10             | 140        |     | 5.25 |
| FZ(*)2360           | 23 | 60  |   |                | 10             | 208        |     | 5.25 |
| FZ(*)2475           | 24 | 75  |   |                | 13             | 128        |     | 4.50 |
| FZ(*)2550           | 25 | 50  |   | 16             | 8              | 112        |     | 5.75 |
| FZ(*)2560           |    | 60  |   |                | 10             | 160        |     | 5.25 |
| FZ(*)2575           |    | 75  |   |                | 13             | 208        |     | 4.50 |
| FZ(*)2775           | 27 | 75  |   |                | 13             | 208        |     | 4.50 |
| FZ(*)2860           | 28 | 60  |   | 14             | 8              | 112        |     | 7.25 |
| FZ(*)2875           |    | 75  |   |                | 11             | 154        |     | 5.00 |
| FZ(*)3060           | 30 | 60  | 4 |                | 8              | 112        | 6.5 | 7.25 |
| FZ(*)3075           |    | 75  |   |                | 11             | 154        |     | 5.00 |
| FZ(*)3260           | 32 | 60  |   |                | 8              | 128        |     | 7.25 |
| FZ(*)3275           |    | 75  |   |                | 11             | 192        |     | 5.00 |
| FZ(*)3390           | 36 | 90  |   | 16             | 13             | 208        |     | 6.00 |
| FZ(*)3685           |    | 85  |   |                | 12             | 192        |     | 6.75 |
| FZ(*)3690           |    | 90  |   |                | 13             | 208        |     | 6.00 |
| FZ(*)3870           | 38 | 70  |   |                | 8              | 128        |     | 7.00 |
| FZ(*)3890           |    | 90  |   |                | 11             | 176        |     | 5.00 |
| FZ(*)4090           | 40 | 90  |   |                | 11             | 176        |     | 5.00 |
| FZ(*)4590           | 45 | 90  | 5 | 18             | 11             | 198        | 8.0 | 5.00 |
| FZ(*)45110          |    | 110 |   |                | 13             | 234        |     | 7.00 |
| FZ(*)5090           | 50 | 90  |   | 20             | 11             | 220        |     | 5.00 |
| FZ(*)50110          |    | 110 |   |                | 13             | 260        |     | 7.00 |
| FZ(*)6090           | 60 | 90  |   | 22             | 11             | 242        |     | 5.00 |
| FZ(*)60110          |    | 110 |   |                | 13             | 286        |     | 7.00 |
| FZ(*)80130          | 80 | 130 |   | 28             | 15             | 420        |     | 9.00 |

注：FZ(\*)为：FZH(铜基)、FZL(铝基)、FZP(树脂基)

Notes: FZ(\*)： FZH (Bronze based) FZL (Aluminum based) FZP (Resin based)

## **FD 四氟软带** **FD PTFE Soft Strips**



### **材料结构 Material Structure**

◎FD以PTFE为主材，以铜粉及其它高分子添加剂为辅的耐磨性材料。产品广泛运用化工行业、油压、油缸、汽摩减振器、机床导轨、印刷机械、纺织机械等轻载但需要自润滑的场合。产品如经过特殊处理，可粘帖于钢质或者橡胶面上，产品在使用过程中无爬行现象。

◎FD consist of PTFE with bronze powder and additive material, This material structure enables the final goods have more light and easy for install. It is widely been used in chemica lindustries, medicalindustries, fluid hydraulic industries, textile machines, OA machines, Door/window hinges etc.

### **技术参数 Tech.Data**

|                         |                  |                            |
|-------------------------|------------------|----------------------------|
| 最大承载                    | 静承载 Static Load  | 30N/mm <sup>2</sup>        |
| Max. Load               | 动承载 Dynamic Load | 20N/mm <sup>2</sup>        |
| 使用温度 Temp. Limit        |                  | -40℃~+250℃                 |
| 最高滑动速度                  | 干摩擦 Dry Friction | 0.5m/s                     |
| Tiptop Sliding Velocity | 油摩擦 Oil Friction | 2m/s                       |
| 摩擦系数 Friction Coeff.    |                  | 0.10-0.20                  |
| 允许最高PV值 PV limit        | 干摩擦 Dry Friction | 1.65N/mm <sup>2</sup> ·m/s |

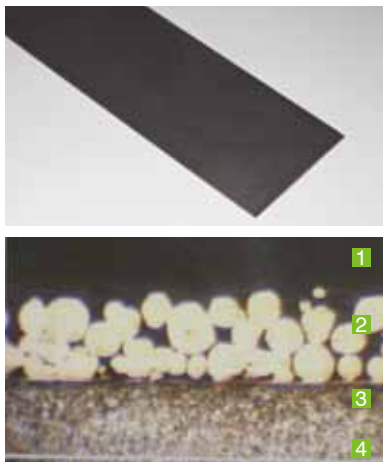
### **FD 产品活塞环尺寸 Size of The Products**

|            |           |              |
|------------|-----------|--------------|
| 20×18×2    | 25×23.2×8 | 30×38.2×8    |
| 20×18×3    | 25×23×8   | 30×28×8      |
| 5×22.2×2.5 | 27×25×8   | 30×38.2×11.4 |
| 25×22×2.5  | 30×28×9   | 32×30.2×8    |

### **FD 产品带材尺寸** **Strip Measurement of The Products**

|          |          |          |
|----------|----------|----------|
| 100×1.5  | 100×1    | 200×0.5  |
| 8×2.5    | 12×2.5   | 25×2.5   |
| 6.1×2.5  | 7.9×2.5  | 14.8×2.5 |
| 19.5×2.5 | 24.5×2.5 | 29.5×2.5 |

## SF-1X 无油润滑材料



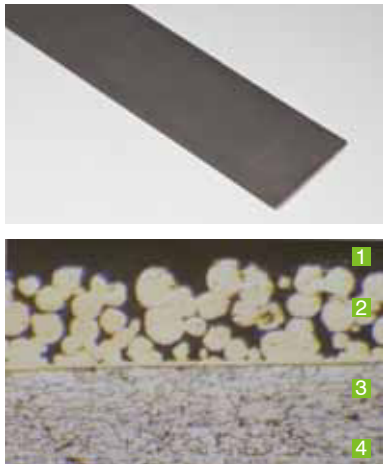
### 材料组织结构:

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1、聚四氟乙烯与铅的混合物 0.01~0.03mm         | ■ 摩擦系数: 0.04~0.20                   |
| 2、球形青铜粉: 0.2~0.3mm                | ■ 导热系数: 13W/MK                      |
| 3、钢背: 0.5~3.03mm                  | ■ 使用温度范围: -195℃~270℃                |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} K^{-1}$ |

### 应用特点:

- 1、无油润滑或少油润滑场合, 耐磨性能好, 摩擦系数小, 使用寿命长。
- 2、有适量的弹塑性, 能将应力分布在较宽的接触面上。
- 3、静动摩擦系数相近, 能消除低速下的爬行。
- 4、对于对磨轴的硬度要求低, 未经调质处理的轴都可使用, 在运转构成中能形成转移膜, 起到保护对磨轴的作用, 无咬轴现象。
- 5、钢背可电镀多种金属, 可在腐蚀介质中使用, 目前已广泛应用于各种机械的滑动部位, 例如: 印刷机、纺织机、烟草机械、微电机、汽车、摩托车与农林机械等等。

## SF-1T 齿轮石泵专用材料



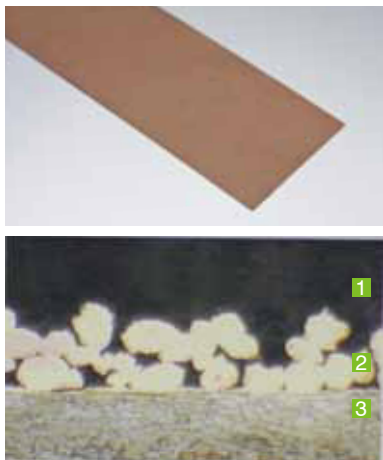
### 材料组织结构:

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1、聚四氟乙烯与铅及其他填充混合物 0.01~0.03mm     | ■ 摩擦系数: 0.03~0.18                   |
| 2、球形青铜粉: 0.2~0.3mm                | ■ 导热系数: 13W/MK                      |
| 3、钢背: 0.5~3.3mm                   | ■ 使用温度范围: -195℃~260℃                |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} K^{-1}$ |

### 应用特点:

- 1、在有油润滑条件下摩擦系数小而稳定。
- 2、耐磨性能好, 抗冲击性能好。
- 3、由此材料制作的衬套, 在流体润滑条件下 PV 值可达到 120N/mm<sup>2</sup>\*m/s
- 4、目前已广泛运用于各种齿轮油泵、柱塞泵、叶片泵等场合, 对流体润滑或境界润滑条件下的中高压齿轮泵尤其使用。

## SF-1P 往复运动材料



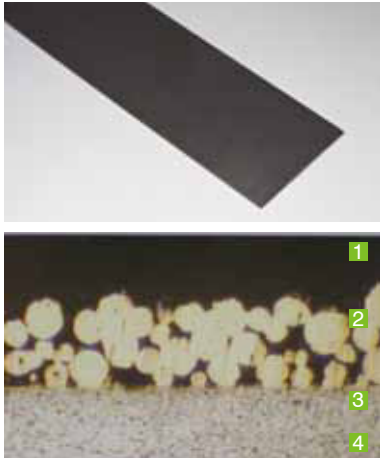
### 材料组织结构:

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1、聚四氟乙烯与铜混合物 0.02~0.04mm          | ■ 摩擦系数: 0.04~0.20                   |
| 2、球形青铜粉: 0.2~0.3mm                | ■ 导热系数: 13W/MK                      |
| 3、钢背: 0.5~3.3mm                   | ■ 使用温度范围: -195℃~270℃                |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} K^{-1}$ |

### 应用特点:

- 1、具有在沾油情况下润滑能力强、耐磨性能好、保护油膜清晰的特点。
- 2、能较好的保护对轴表面不受磨损, 对往复运动场合较能适用。
- 3、应其含铅量很少, 故迎合了环保要求。
- 4、适用于摩托车减震器、各种液压油缸、液压马达、气动元件等领域。

## SF-1W 无铅材料



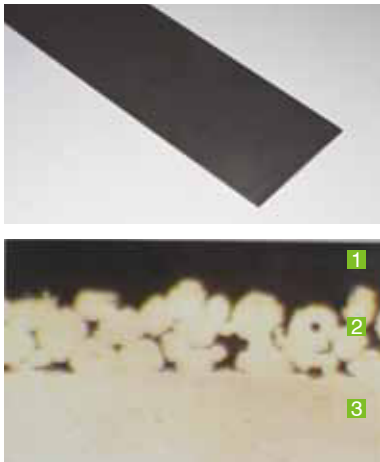
### 材料组织结构:

- |                                   |                                            |
|-----------------------------------|--------------------------------------------|
| 1、聚四氟乙烯与纤维混合物 0.01~0.03mm         | ■ 摩擦系数: 0.04~0.20                          |
| 2、球形青铜粉: 0.2~0.3mm                | ■ 导热系数: 13W/MK                             |
| 3、钢背: 0.5~3.3mm                   | ■ 使用温度范围: -195℃ ~270℃                      |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $11 \times 10^{-6} \text{K}^{-1}$ |

### 应用特点:

- 1、PTFE、纤维的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、因其不含铅, 故对于人体无害。铜和钢板具有良好的导热性能, 表面的电镀层具有较好的耐腐蚀性。
- 3、已广泛运用于食品机械、医疗机械、烟草机械、饮料机械及其他绿色机械上。随着国际环保的逐步发展, SF-1W 将是 SF-1 产品的替代品。

## SF-1B 青铜基材料



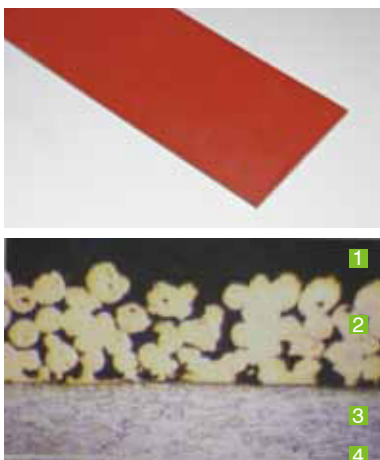
### 材料组织结构:

- |                           |                                            |
|---------------------------|--------------------------------------------|
| 1、聚四氟乙烯与铅的混合物 0.01~0.03mm | ■ 摩擦系数: 0.04~0.18                          |
| 2、球形青铜粉: 0.2~0.3mm        | ■ 导热系数: 18W/MK                             |
| 3、钢背: 0.5~3.3mm           | ■ 使用温度范围: -195℃ ~300℃                      |
|                           | ■ 线膨胀系数: $21 \times 10^{-6} \text{K}^{-1}$ |

### 应用特点:

- 1、PTFE、铅的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、烧结层和铜基板具有良好的导热性, 可迅速转移运作过程中产生的热量。
- 3、铜具有自润滑性能, 可运用于长期运作而无法停机检修的部位。
- 4、基体铜具有良好的抗腐蚀能力, 可运用于弱酸、强碱场合。
- 5、已广泛运用于冶金钢铁工业、高温炉钢环部位、水泥灌浆泵、螺旋式输送机、港口机械及船舶机械上等。
- 6、可在外部组合钢套, 或制成翻边, 达到内孔、端面同时使用的效果。

## SF-1D 液压专用材料



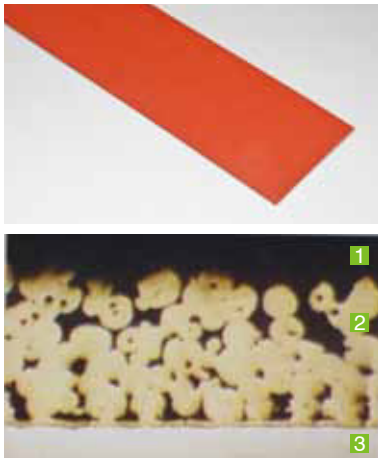
### 材料组织结构:

- |                                   |                                            |
|-----------------------------------|--------------------------------------------|
| 1、聚四氟乙烯与亲油性纤维混合物 0.01~0.03mm      | ■ 摩擦系数: 0.04~0.18                          |
| 2、球形青铜粉: 0.2~0.3mm                | ■ 导热系数: 16W/MK                             |
| 3、钢背: 0.5~3.3mm                   | ■ 使用温度范围: -195℃ ~270℃                      |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: $15 \times 10^{-6} \text{K}^{-1}$ |

### 应用特点:

- 1、PTFE、亲油性纤维的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、抗冲击能力强, 耐磨性能好, 摩擦系数低, 走合性能好, 无咬轴现象。
- 3、可用于旋转、摇摆、往复运动之中。
- 4、由于不含铅, 故可用于食品机械、医疗机械等绿色环保设备。
- 5、除具有 SF-1P 的特点小, 特别适合于往复运动频繁、大侧向力的场合, 适用于液压马达、汽车、摩托车减震器及各类液压油缸等领域。

## SF-1S 不锈钢耐蚀材料



### 材料组织结构:

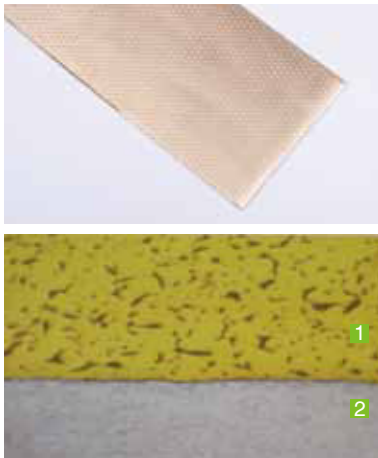
- 1、聚四氟乙烯与亲油性纤维混合物 0.01~0.03mm
- 2、球形青铜粉 :0.2~0.3mm
- 3、钢背: 0.5~3.3mm

- 摩擦系数: 0.04~0.20
- 导热系数: 16W/MK
- 使用温度范围: -195℃ ~270℃
- 线膨胀系数:  $15 \times 10^{-6} \text{K}^{-1}$

### 应用特点:

- 1、PTFE、亲油性纤维的混合物在运动时可形成很好的转移膜保护对磨轴。
- 2、耐磨性能好, 摩擦系数低, 走合性能好, 无咬轴现象。
- 3、可用于旋转、摇摆、往复运动之中。
- 4、耐腐蚀性能好。
- 5、由于不含铅, 故适用于食品饮料机械、医疗机械等绿色环保设备。
- 6、典型用途: 主要运用于中酸、强碱场合、例如: 化工中酸碱流量计、泵、阀、印染机械、海洋工业耐腐蚀滑动部位。

## JF-800 双金属材料



### 材料组织结构:

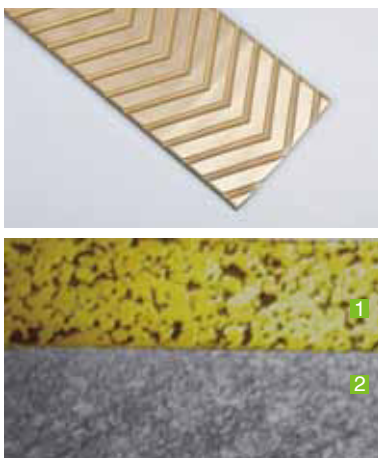
- 1、合金层: CuPb10Sn10
- 2、钢背: 0.6~5mm

- 合金层材质: CuPb10Sn10
- 摩擦系数:  $\leq 0.12$
- 最高使用温度: 260℃
- 合金层硬度: ( 60~90 ) HB

### 应用特点:

- 1、双金属合金材料中承载能力最强的一种。
- 2、适用于低速高载场合。
- 3、可在摩擦面加工各种油槽、油穴及油孔, 满足不同工况条件的需要。
- 4、产品性能稳定, 已通过“蓝宝石实验”, 疲劳强度达 125MPa 以上。
- 5、广泛运用于重型车的平衡桥衬套、垫片; 推土机的重动轮、支动轮、汽车钢板衬套等。

## JF-850 双金属材料



### 材料组织结构:

- 1、合金层: CuSn6Zn6Pb3
- 2、钢背: 0.6~5mm

- 合金层材质: CuSn6Zn6Pb3
- 摩擦系数:  $\leq 0.13$
- 最高使用温度: 170℃
- 合金层硬度: ( 40~80 ) HB

### 应用特点:

- 1、双金属合金材料中承载能力较强的一种。
- 2、适用于低速高载场合。
- 3、可在摩擦面加工各种油槽、油穴及油孔。
- 4、广泛运用于汽车发动机、底盘、摩托车离合器、齿轮摩擦板和起重设备领域。

## JF-930 双金属材料



### 材料组织结构:

- 1、合金层: CuSn6.5P0.1
- 2、钢背: 0.6~5mm

- 合金层材质: CuSn6.5P0.1
- 摩擦系数:  $\leq 0.13$
- 最高使用温度: 260℃
- 合金层硬度: (60~90) HB

### 应用特点:

- 1、结合强度高, 承载能力大, 耐磨性能好。
- 2、适用于低速高载场合。
- 3、可在摩擦面加工各种油槽、油穴及油孔。
- 4、具有无铅特点, 可以是其他有铅产品的替代产品。
- 5、广泛运用于矿山机械、汽机车、建筑机械、农用机械、轧钢机械等。



## SF-2X 边界润滑材料



### 材料组织结构:

- 1、聚四氟乙烯与铅混合物 0.3~0.5mm
- 2、球形青铜粉: 0.2~0.3mm
- 3、钢背: 0.4~2.7mm
- 4、电镀层: 镀铜层 0.008mm

- 摩擦系数: 0.05~0.25
- 导热系数: 13W/MK
- 使用温度范围: -40℃ ~130℃
- 线膨胀系数: 11\*10-6K-1

### 应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于高载低速下的旋转运动, 摇摆运动及经常在载荷下启闭频繁而不易形成流体动力润滑的场合。
- 3、表面的塑料层在加工成型时可留一定的余量, 装配压入座孔后可自行加工, 以达到更好的装配尺寸。
- 4、主要运用于汽车底盘、冶金机械、矿山机械、水利机械、建筑机械、农用机械、轧钢设备等。



## SF-2Y 边界润滑材料



### 材料组织结构:

- 1、缩醛树脂与亲油性纤维混合物 0.3~0.5mm
- 2、球形青铜粉: 0.2~0.3mm
- 3、钢背: 0.4~2.7mm
- 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm

- 摩擦系数: 0.05~0.25
- 导热系数: 13W/MK
- 使用温度范围: -40℃ ~130℃
- 线膨胀系数: 11\*10-6K-1

### 应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于高载低速下的旋转运动, 摇摆运动及经常在载荷下启闭频繁而不易形成流体动力润滑的场合。
- 3、表面的塑料层在加工成型时可留一定的余量, 装配压入座孔后可自行加工, 以达到更好的装配尺寸。
- 4、主要运用于进口纺织设备、柱塞泵摆动部位、汽车操纵杆部位等。
- 5、因其不含铅, 故可广泛运用于无铅领域。



## SF-2S 边界润滑材料



### 材料组织结构:

- |                                   |                      |
|-----------------------------------|----------------------|
| 1、缩醛树脂与亲油性纤维混合物 0.3~0.5mm         | ■ 摩擦系数: 0.05~0.20    |
| 2、球形青铜粉: 0.2~0.3mm                | ■ 导热系数: 13W/MK       |
| 3、钢背: 0.4~2.7mm                   | ■ 使用温度范围: -40℃ ~130℃ |
| 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm | ■ 线膨胀系数: 11*10-6K-1  |

### 应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于干摩擦和少油润滑的场合。
- 3、目前产品已应用在摇摆运动、易磨损、易腐蚀的场合, 如卷扬机、推土机、印染机、采煤机及吊车、行车高空作业机等场合。



## FB090 无油润滑材料



FB090 无油润滑材料是采用高密度铜合金带材为基体, 表面轧制菱形或半球形油穴。具有密度高、承载能力大、耐磨性能好、使用寿命长等优点, 该材料已广泛应用于起重机械、建筑机械、汽车拖拉机底盘、机床工业及采矿机械中, 还可以制成轴瓦、翻边轴套、止推垫片和球碗等。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB110~140
- 使用温度范围: -80℃ ~200℃
- 摩擦系数:  $\leq 0.15$
- 磨损量:  $\leq 0.008$

## FB092 无油润滑材料



FB092 无油润滑材料是以青铜材料为基体。具有耐磨性能好, 使用寿命长等优点, 该产品在卷制成轴承前, 应布置  $\phi 4\text{mm} \sim \phi 6\text{mm}$  的油孔, 面积达到 25%, 使油脂润滑充足。目前该产品已应用于输送机、升降机、卷扬机、校平机等中载、低速的场合。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB90~120
- 使用温度范围: -100℃ ~200℃
- 摩擦系数:  $\leq 0.12$
- 磨损量:  $\leq 0.008$

## FB09G 青铜固体润滑材料



FB09G 青铜固体润滑材料是以青铜材料为基体，表面埋入固体润滑剂制作而成。由于此材料是以延伸率较高的铜合金材料为基体，所以可以制作特薄的卷制轴套，再加上理想的填充材料为耐磨剂，因此适用于汽车传动轴内作为耐磨的轴套使用，也可在无油润滑的场合使用。

- 基体材质: CuSn10P10+ 石墨
- 硬度: HB80~110
- 使用温度范围: -100℃ ~260℃
- 摩擦系数:  $\leq 0.12$
- 磨损量:  $\leq 0.008$

## FB08G 固体润滑材料



FB08G 固体润滑材料是以 JF-800 双金属材料为基体，合金层埋入特殊固体润滑剂制作而成的新颖薄壁固体润滑材料。由于高强度承载的合金材料作基体，理想的填充材料为耐磨剂，合理的菱形块状润滑设计，使润滑面积达 25% 以上，因此，能发挥良好的润滑性和抗磨损性能。该材料主要应用于汽车变速齿轮箱、发电机、升降机、起重机械及冶金机械行业。

- 基体材质: CuSn10P10+ 石墨
- 硬度: HB60~90
- 使用温度范围: -100℃ ~260℃
- 摩擦系数:  $\leq 0.15$
- 磨损量:  $\leq 0.01$

## FR 四氟软带材料



FR 四氟软带材料是以青铜丝网为基体，通过特殊烧结工艺，表面轧制聚四氟乙烯（PTFE）和其他填充减摩材料的混合物。它具有较低的摩擦系数，较好的耐磨特性。由于它的柔软性能好，所以可作为钢与钢对磨的隔离膜，实现无间隙、无噪音、无油润滑、无需保养、无污染的理想目的。目前该材料广泛用于纺织机械、关节轴承、汽车门铰链等场合。

- 使用温度范围: -40℃ ~280℃
- 摩擦系数: 0.05~0.20

## SF-2S 边界润滑材料



### 材料组织结构:

- 1、缩醛树脂与亲油性纤维混合物 0.3~0.5mm
- 2、球形青铜粉: 0.2~0.3mm
- 3、钢背: 0.4~2.7mm
- 4、电镀层: 镀锡层厚 0.005mm 或镀铜层厚 0.008mm

- 摩擦系数: 0.05~0.20
- 导热系数: 13W/MK
- 使用温度范围: -40℃ ~130℃
- 线膨胀系数: 11\*10-6K-1

### 应用特点:

- 1、承载好, 耐磨性能好。
- 2、适用于干摩擦和少油润滑的场合。
- 3、目前产品已应用在摇摆运动、易磨损、易腐蚀的场合, 如卷扬机、推土机、印染机、采煤机及吊车、行车高空作业机等场合。



## FB090 无油润滑材料



FB090 无油润滑材料是采用高密度铜合金带材为基体, 表面轧制菱形或半球形油穴。具有密度高、承载能力大、耐磨性能好、使用寿命长等优点, 该材料已广泛应用于起重机械、建筑机械、汽车拖拉机底盘、机床工业及采矿机械中, 还可以制成轴瓦、翻边轴套、止推垫片和球碗等。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB110~140
- 使用温度范围: -80℃ ~200℃
- 摩擦系数:  $\leq 0.15$
- 磨损量:  $\leq 0.008$

## FB092 无油润滑材料



FB092 无油润滑材料是以青铜材料为基体。具有耐磨性能好, 使用寿命长等优点, 该产品在卷制成轴承前, 应布置  $\phi 4\text{mm} \sim \phi 6\text{mm}$  的油孔, 面积达到 25%, 使油脂润滑充足。目前该产品已应用于输送机、升降机、卷扬机、校平等中载、低速的场合。

- 基体材质: CuSn8P0.3 或 CuSn6.5P0.1
- 硬度: HB90~120
- 使用温度范围: -100℃ ~200℃
- 摩擦系数:  $\leq 0.12$
- 磨损量:  $\leq 0.008$

## 轴承的选择与计算

### 轴承的选型 Bearing Selection

杰盛无油轴承根据不同的工况条件设计了不少的轴承材料。用户在使用和设计时应当根据轴承的使用温度、轴承的承载面压、线速度、耐磨性能要求、运动类型、安装情况、轴承成本等各方面因素综合考虑。

SF bush have developed kinds of bearing material according to difference work condition, the user can select the material base on bearing work environment, load, speed, wear, resistance request, moving method, installation, the cost of the material etc.

### 面压计算 Bearing Load

直套、翻边轴承 Cylindrical bushes, flange bushes

$$P = \frac{F}{dL} \quad (\text{N/mm}^2)$$

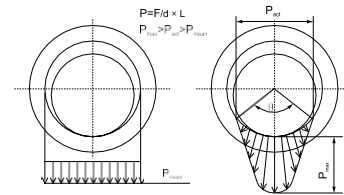
F = 轴承载值 Load (N)  
d = 轴径 Shaft (mm)  
L = 轴承长度 Bearing Length (mm)

止推垫片 Thrust Washer

$$P = \frac{4F}{(D^2 - d^2)\pi} \quad (\text{N/mm}^2)$$

F = 垫片承载值 Load (N)  
d = 垫片外径 Washer OD (mm)  
L = 垫片内径 Washer ID (mm)

由于受配合间隙、材料强度、轴承倒角、内部油槽等原因的影响，轴承的真正承载面压（ $P_{act}$ ）会大于理论计算值（ $P_{mean}$ ）。  
As the factor of clearance, bushes chamfer, oil groove etc. The actually load ( $P_{act}$ ) is higher than theory of calculation ( $P_{mean}$ ).



### 线速度计算 Velocity

旋转运动 Rotating motion

$$V = \frac{dn\pi}{1000 \times 60} \quad (\text{m/s})$$

D = 轴径 Shaft (mm)  
n = 转速/分 Rpm

摇摆运动 Oscillating motion

$$V = \frac{Dc\theta\pi}{1000 \times 360 \times 60} \quad (\text{m/s})$$

d = 轴径 Shaft (mm)  
c = 摇摆频率 Frequency (次数/分)  $\theta$   
= 摇摆角度 Oscillating angle

往复运动 Reciprocating motion

$$V = \frac{2sc}{60} \quad (\text{m/s})$$

s = 行程长度 (mm)  
c = 往复频率 Frequency (次数/分)

### PV 值计算 $PV = PXV \quad (\text{N/mm}^2 \times \text{m/s})$

PV 是指轴承在一定的承载和线速度条件下的乘积之和。设备的 PV 值与轴承的使用寿命成反比关系，因此建议设计时设备的 PV 取值尽量使用比较低的安全 PV 值，以确保轴承会有更长的使用寿命。同时也要考虑设备上轴承实际的承载、线速度、使用温度等不能超过所选择材料的极限值，并尽可能地小。

PV is the product of the specific bearing load P and the sliding speed V which is very important design data. We recommend design lower PV value will lead to longer service life. Also don't exceed the max. Of material load, speed, temp. And lower if possible.

## 滑动轴承与座孔的装配 The Installation of The Sliding Bushing And The Housing

◎SF 系列轴承在装配前宜先用煤油或柴油清洗干净，然后在机油内浸油、沥干。轴承与座孔装配时，即要保证轴承在座孔中不发生转动和轴向移动，要使轴承外表面与座孔充分接触，一般应保证接触面积大于 70% 以上，以利于承受载荷和传导摩擦热，SF 系列轴承内表面是自润滑塑料，外表面是铜背，钢对钢的摩擦系数比钢对塑料的摩擦系数大，因此采用较轻盈配合，既保证使用时衬套不会在座孔内发生相对移动，又不会使衬套外径过大致使衬套内孔变形较大。

◎对于工作压力较高的场合为避免轴套走外圆，推荐用以下二方法：

1、加大轴套外径尺寸，内孔变形用较正棒校正。

2、安装时，座孔涂 ZY801 厌氧胶，增强轴套与座孔的结合强度。

◎对于外 < 55mm 的轴承可按图 A 所示，利用一个带有手柄的压头轴芯，小心操作，轻轻压力座孔中。

◎当轴承外径 > 55mm 时可按图 B 所示，利用带台肩的手柄以及一个“O”形圈和一个辅助圈小心操作，将轴承压入座孔中。

◎The Installation of SF Bush

◎SF bushes should be cleaned in kerosene or diesel oil first, immersed in engine oil and then dried up. When the bush is installed into housing, make sure the bush not rotating in the housing or moving in the axial direction and at the same time make the outer surface surface fully contact to the base hole, generally

guarantee the contact area over 70%, thus to improve load capacity and transmission of friction heat. The inner surface of SF bush is made of self-lubricating plastic, the outer surface steel backing, The friction coefficient of steel to steel is bigger than that of steel to plastic, So we should choose the light-graded tight fit, preventing the axle sleeve from moving in the base when working, and also preventing the inner holes from getting deformed and too big because of the large tight fit of the outer diameter.

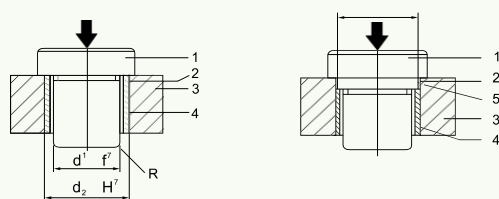
◎Out circle of the axle sleeve should be avoided in the high-pressure working conditions. Two methods are recommended here:

1. Increase the outer diameter of the axle sleeve, and the deformation of inner holes can be calibrated with calibrating core stick.

2. When installing, apply ZY 801 Oxygen-hatred glue in the housing to streng then the combination strength between the axle sleeve and base hole.

◎For bush (outer diameter < 55mm), press the bush into the housing gently and carefully using an core axle with a handle. Fig A.

◎For bush (outer diameter > 55mm), press the bush into the housing gently and carefully using a handle with a shoulder, an “O” ring and an assisting circle. Fig B.

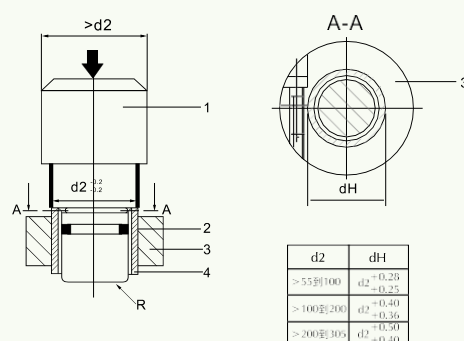


(图A a) 平面式安装  
(Fig A a) Plane Installation

- 1、压入芯轴
- 2、轴承座孔倒角  $0.8 \times 15^\circ$
- 3、轴承座
- 4、JS-F 轴承
- 5、嵌入肩直径
- R、芯轴端圆角半径

(b) 嵌入式安装  
(B) Inset Installation

- 1、Press the core axle into bushing
- 2、Housing chamfer at end:  $0.8 \times 15^\circ$
- 3、Housing
- 4、JS-F bush
- 5、Diameter of inset shoulder
- R、Radius of the round angle of the core axle end

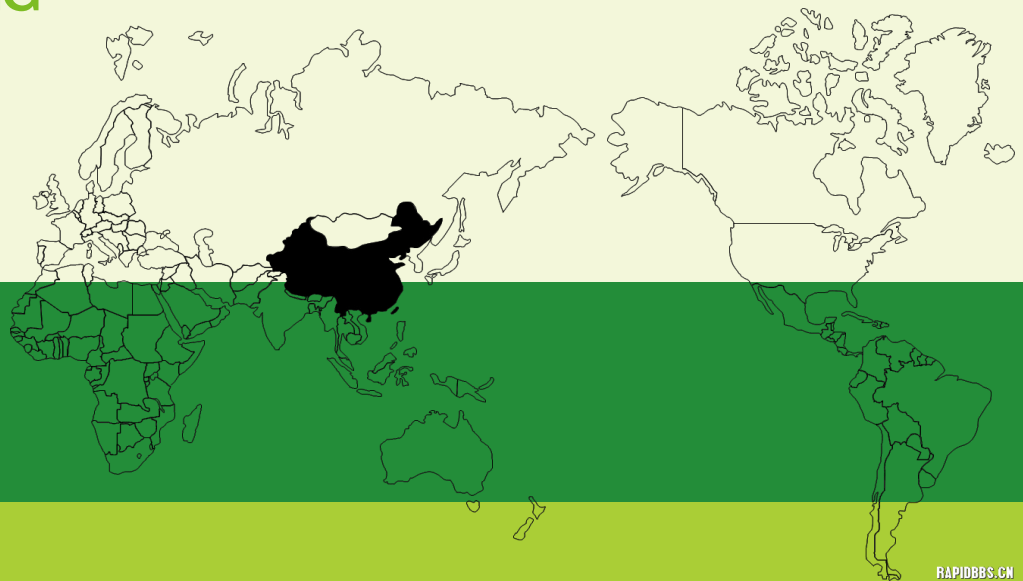


| d2          | dH        |
|-------------|-----------|
| > 55 到 100  | d2 + 0.25 |
| > 100 到 200 | d2 + 0.40 |
| > 200 到 300 | d2 + 0.50 |
| > 300 到 400 | d2 + 0.60 |



**JINTAI  
BEARING**

SENDOO DESIGN  
13957330053 滑动平面设计



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