

KSOB-10 金属塑料自润滑复合轴承 Metal-polymer self-lubricating composite bearings



金属塑料自润滑复合轴承

Metal-polymer self-lubricating composite bearings



结构特性 Structure Characteristics

KSOB 金属复合自润滑材料以优质低碳钢为基板，中间烧结球形多孔铜粉层，表面轧制以 PTFE 为主的耐磨润滑材料作为轴承工作层，这种材料具有优异的机械承载能力，中间铜粉层不但可以及时传递轴承运行过程中产生的热量，同时也提高了塑料层与基板的结合强度。PTFE 设计适用于完全干摩擦状态，并根据润滑情况、摩擦系数和耐久性要求开发了多种材料。KSOB 的 PTFE 金属复合材料在外部润滑或者不润滑的情况下，都能在最广泛的载荷、速度以及温度范围内提供最好的表现。

KSOB Metal-polymer self-lubricating composite materials consist of metal backing sintered porous bronze with PTFE polymer as working layer. The metal backing provides mechanical strength, while the bronze sinter layer provides a strong mechanical bonding between the backing and the bearing lining, the PTFE polymer offers exceptional low friction even under dry condition and the thermoplastic polymer is generally designed to operate with marginal lubrication. The construction promotes dimensional stability and improves the thermal conductivity. This material meets the demanding criteria for long life and trouble-free performance with or without lubrication.

产品应用 Application

农业机械：拖拉机、联合收割机、农作物喷雾器、推土机、平地机等；
 汽车行业：动力转向泵、转向器推力垫片、盘式制动器、减震器、门铰链、雨刮器、椅子调角器、空气阀以及电磁阀等；
 办公商务机械：复印机、传真机、打印机、邮件处理机等；
 液压元件和阀门：齿轮泵、柱塞泵、叶片泵，球阀、蝶阀，气缸、油缸以及其他液压元件等；
 家用电器：冰箱、空调、吸尘器、缝纫机、清洗机、微波炉和健身器材等；
 以及其它物流机械、包装机械、纺织机械、港口机械、矿产机械和森林机械等等。

Automotive: tractors, crop sprayers, earthmovers, auto machines, specific uses in power steering cylinders, steering gear thrust washers, disc brakes, shock absorbers, windshield wiper motor...



Business machines: duplicator, fax machine, automatic printing devices, mail processing machinery...

Hydraulics and valves: pumps including gear, rotary, water, axial piston, and other types, ball, butterfly, poppet steam, and other valves and valve trunnions...

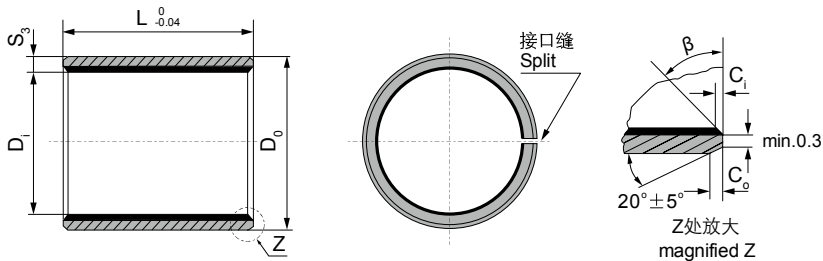
Home appliances: tape recorders, refrigerators, air conditioners, cleaners, polishers, sewing machines, ovens, dishwashers, clothes washing machines...And materials handling, marine engine, packaging, textile equipment, tools...etc.

实际运用中根据使用环境、工况和环保要求的不同，低碳钢板可以改为铜板或不锈钢板，内表面塑料层可以选择 PTFE 含铅或者不含铅材料以及其他高分子填充物，外表可以镀锡或者镀铜。产品范围包括：KSOB-10、KSOB-11、KSOB-40、KSOB-41、KSOB-1SS。

According to the different working conditions and environmental protection, there are steel backing, bronze backing, stainless steel backing can be chosen, different type of alloy can be chosen, the PTFE layer with polymer filler and it is lead free, the surface tin or copper plating. product range includes KSOB-10、KSOB-11、KSOB-40、KSOB-41、KSOB-1SS.

| 代号 Grade | | KSOB-10 | KSOB-11 | KSOB-40 | KSOB-41 | KSOB-1SS |
|--|---|---|---|---|--|--|
| 有关数据 Date | 材料 Material | 碳钢/Steel+铜粉/ Bronze+(PTFE+Pb+填 料/Filler) | 铜板/Bronze+铜粉/ Bronze+(PTFE+Pb+ 填料/Filler) | 碳钢/Steel+铜粉/ Bronze+(PTFE+Pb+填 料/Filler) | 铜板/Bronze+铜粉/ Bronze+(PTFE+Pb+填 料/Filler) | 不锈钢Stainless+铜粉/ Bronze+(PTFE+Pb+填 料/Filler) |
| 除了目录中显示的标准产品外，还可以提供非标产品或根据客户要求订购。 We can also develop according to customers special request while out of this table. | |  |  |  |  |  |
| 最大承载压力P Load capacity P (干摩擦) (Dry friction) | 静载 N/mm ² Static load | 250 | 250 | 250 | 250 | 250 |
| | 动载 N/mm ² Dynamic load | 140 | 140 | 140 | 140 | 140 |
| | 摇摆 N/mm ² Oscillation Load | 60 | 60 | 60 | 60 | 60 |
| 最大线速度V Max line speed V | 干摩擦 m/s Dry friction | 2.5 | 2.5 | 2.5 | 2.5 | 2 |
| | 润滑油 m/s Oil lubrication | > 5 | > 5 | > 5 | > 5 | > 5 |
| 最高PV值 PV value limit (干摩擦) (Dry friction) | 干摩擦 N/mm ² ·m/s Dry friction | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| | 润滑油 N/mm ² ·m/s Oil lubrication | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 |
| 摩擦系数u Friction coef u | 干摩擦 Dry friction | 0.08~0.20 | 0.08~0.20 | 0.08~0.20 | 0.08~0.20 | 0.08~0.20 |
| | 润滑油 Oil lubrication | 0.02~0.12 | 0.02~0.12 | 0.02~0.12 | 0.02~0.12 | 0.02~0.08 |
| 相配轴径 Mating Axis | 硬度 HB Hardness | > 220 | > 220 | > 220 | > 220 | > 220 |
| | 粗糙度 Ra Roughness | 0.4~1.25 | 0.4~1.25 | 0.4~1.25 | 0.4~1.25 | 0.4~1.25 |
| 工作温度 °C Working temperature | | -200~+280 | -200~+280 | -200~+280 | -200~+280 | -200~+280 |
| 导热系数 W/mk Thermal conductivity | | 40 | 60 | 40 | 40 | 40 |
| 线膨胀系数(轴向) Coefficient of linear expansion | | 11×10 ⁻⁶ /K | 18×10 ⁻⁶ /K | 11×10 ⁻⁶ /K | 11×10 ⁻⁶ /K | 11×10 ⁻⁶ /K |
| 表面镀层 Surface Plating | | 铜或锡 copper/tin | 无/No | 铜或锡 copper/tin | 无/No | 无/No |
| 针对性运用领域 Pertinence applicaton | | 产品应用于印刷机械、纺织机械、烟草机械、健身器等。 Application: the printing, woven, tobacco and gymnastic machinery, etc. | 产品应用于冶金机械、连铸机械、水泥机械等。 Application: metallurgical industry, continuous casting and rolling mill, concrete machinery and spiral conveyers, etc. | 该产品主要用于汽车减震器、摩托车减震器、液压油缸等。 Application: shock absorber of automobiles, motorcycles and pneumatic cylinder, etc. | 该产品主要用于汽车减震器、摩托车减震器、液压油缸等，防锈性能更好。 Application: shock absorber of automobiles, motorcycles and pneumatic cylinder, etc. | 产品适用于印染机械、海洋工业耐腐蚀部位等。 Application: the corrosion resistant part in dyeing machinery and ocean industry, etc. |

KSOB-10 轴套规格及公差 KSOB-10 Sleeve Bushing Specification & Tolerance



内外倒角 ID and OD chamfers

| S ₃ | C _o | C _i | β |
|----------------|----------------|----------------|--------|
| 0.75 | 0.5±0.3 | 0.25±0.2 | 30°±5° |
| 1.00 | 0.6±0.3 | 0.30±0.2 | 30°±5° |
| 1.50 | 0.7±0.3 | 0.50±0.3 | 30°±5° |

| S ₃ | C _o | C _i | β |
|----------------|----------------|----------------|--------|
| 2.00 | 1.2±0.4 | 0.50±0.3 | 30°±5° |
| 2.50 | 1.8±0.6 | 0.60±0.3 | 45°±5° |

单位Unit: mm

| 轴径(f7) Shaft D _s | 座孔(H7) Housing D _H | 外径公差 (OD) Tolerance D _O | (ID)压装后 内孔公差 After fixed D _{1a} | 配合间隙 Clearance D _O | 壁厚 Wall thick- ness S ₃ | 长度 L ⁰ -0.40 (d≤Φ28 L-0.30) d>Φ30 L-0.40 | | | | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|---|---|-------------------------------------|---|---|----------------|----------------|----|----|----|----|----|----|----|--|--|--|--|--|--|
| | | | | | | 6 | 8 | 10 | 12 | 15 | 20 | 25 | 30 | 40 | 50 | | | | | | |
| 6 | -0.010 -0.022 | 8 | +0.015 | 8 | +0.055 +0.025 | 6.055 5.990 | 0.077 0.000 | | | | | | | | | | | | | | |
| 8 | -0.013 -0.028 | 10 | +0.015 | 10 | +0.055 +0.025 | 8.055 7.990 | 0.083 0.003 | | | | | | | | | | | | | | |
| 10 | -0.013 -0.028 | 12 | +0.018 | 12 | +0.065 +0.030 | 10.058 9.990 | 0.086 0.003 | | | | | | | | | | | | | | |
| 12 | -0.016 -0.034 | 14 | +0.018 | 14 | +0.065 +0.030 | 12.058 11.990 | 0.092 0.006 | | | | | | | | | | | | | | |
| 13 | -0.016 -0.034 | 15 | +0.018 | 15 | +0.065 +0.030 | 13.058 12.990 | | | | | | | | | | | | | | | |
| 14 | -0.016 -0.034 | 16 | +0.018 | 16 | +0.065 +0.030 | 14.058 13.990 | | | | | | | | | | | | | | | |
| 15 | -0.016 -0.034 | 17 | +0.018 | 17 | +0.065 +0.030 | 15.058 14.990 | | | | | | | | | | | | | | | |
| 16 | -0.016 -0.034 | 18 | +0.018 | 18 | +0.065 +0.030 | 16.058 15.990 | | | | | | | | | | | | | | | |
| 17 | -0.016 -0.034 | 19 | +0.021 | 19 | +0.075 +0.035 | 17.061 16.990 | | | | | | | | | | | | | | | |
| 18 | -0.016 -0.034 | 20 | +0.021 | 20 | +0.075 +0.035 | 18.061 17.990 | | 0.095 0.006 | | | | | | | | | | | | | |
| 20 | -0.020 -0.041 | 23 | +0.021 | 23 | +0.075 +0.035 | 20.071 19.990 | | | | | | | | | | | | | | | |
| 22 | -0.020 -0.041 | 25 | +0.021 | 25 | +0.075 +0.035 | 22.071 21.990 | 0.112 0.010 | | | | | | | | | | | | | | |
| 24 | -0.020 -0.041 | 27 | +0.021 | 27 | +0.075 +0.035 | 24.071 23.990 | | | | | | | | | | | | | | | |
| 25 | -0.020 -0.041 | 28 | +0.021 | 28 | +0.075 +0.035 | 25.071 24.990 | | | | | | | | | | | | | | | |
| 28 | -0.020 -0.041 | 32 | +0.025 | 32 | +0.085 +0.045 | 28.085 27.990 | 0.126 0.010 | | | | | | | | | | | | | | |
| 30 | -0.020 -0.041 | 34 | +0.025 | 34 | +0.085 +0.045 | 30.085 29.990 | | | | | | | | | | | | | | | |
| 32 | -0.025 -0.050 | 36 | +0.025 | 36 | +0.085 +0.045 | 32.085 31.990 | 0.135 0.015 | | | | | | | | | | | | | | |
| 35 | -0.025 -0.050 | 39 | +0.025 | 39 | +0.085 +0.045 | 35.085 34.990 | | | | | | | | | | | | | | | |
| 38 | -0.025 -0.050 | 42 | +0.025 | 42 | +0.085 +0.045 | 38.085 37.990 | | | | | | | | | | | | | | | |
| 40 | -0.025 -0.050 | 44 | +0.025 | 44 | +0.085 +0.045 | 40.085 39.990 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

KSOB-10 轴套规格及公差 KSOB-10 Sleeve Bushing Specification & Tolerance

单位Unit: mm

| 轴径(f7) Shaft D _s | 座孔(H7) Housing D _H | (OD) 外径公差 Tolerance D _O | (ID)压装后 内孔公差 After fixed D _{i,a} | 配合间隙 Clearance D _D | 壁厚 Wall thick- ness S ₃ | 长度 L ⁰ -0.40 | | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|---|--|-------------------------------------|---|----------------------------|----------------|------|------|------|-------|-------|-------|--------|--------|--------|--|--|
| | | | | | | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 100 | 115 | | | |
| 45 -0.050 -0.025 | 50 +0.025 | 50 +0.085 +0.045 | 45.105 44.990 | 0.155 0.015 | 2.505 2.460 | 4520 | 4525 | 4530 | 4540 | 4550 | | | | | | | | |
| 50 -0.050 -0.025 | 55 +0.030 | 55 +0.100 +0.055 | 50.110 49.990 | 0.160 0.015 | | 5020 | 5025 | 5030 | 5040 | 5050 | 5060 | | | | | | | |
| 55 -0.060 -0.030 | 60 +0.030 | 60 +0.100 +0.055 | 55.110 54.990 | 0.170 0.020 | | | | 5530 | 5540 | 5550 | 5560 | | | | | | | |
| 60 -0.060 -0.030 | 65 +0.030 | 65 +0.100 +0.055 | 60.110 59.990 | | | | | | 6030 | 6040 | 6050 | 6060 | 6070 | | | | | |
| 65 -0.060 -0.030 | 70 +0.030 | 70 +0.100 +0.055 | 65.110 64.990 | | | | | | 6530 | 6540 | 6550 | 6560 | 6570 | | | | | |
| 70 -0.060 -0.030 | 75 +0.030 | 75 +0.100 +0.055 | 70.110 69.990 | | | | | | 7030 | 7040 | 7050 | 7060 | 7070 | 7080 | | | | |
| 75 -0.060 -0.030 | 80 +0.030 | 80 +0.100 +0.055 | 75.110 74.990 | | | | | | 7530 | 7540 | 7550 | 7560 | 7570 | 7580 | | | | |
| 80 -0.045 | 85 +0.035 | 85 +0.120 +0.070 | 80.155 80.020 | 0.201 0.020 | 2.490 2.440 | | | | 8040 | 8050 | 8060 | 8070 | 8080 | 80100 | | | | |
| 85 -0.054 | 90 +0.035 | 90 +0.120 +0.070 | 85.155 85.020 | 0.209 0.020 | | | | | 8540 | 8550 | 8560 | 8570 | 8580 | 85100 | | | | |
| 90 -0.054 | 95 +0.035 | 95 +0.120 +0.070 | 90.155 90.020 | | | | | | 9040 | 9050 | 9060 | 9070 | 9080 | 90100 | | | | |
| 95 -0.054 | 100 +0.035 | 100 +0.120 +0.070 | 95.155 95.020 | | | | | | | 9550 | 9560 | 9570 | 9580 | 95100 | | | | |
| 100 -0.054 | 105 +0.035 | 105 +0.120 +0.070 | 100.155 100.020 | | | | | | | | 10050 | 10060 | 10070 | 10080 | 100100 | 100115 | | |
| 105 -0.054 | 110 +0.035 | 110 +0.120 +0.070 | 105.155 105.020 | | | | | | | | 10560 | 10570 | 10580 | 105100 | 105115 | | | |
| 110 -0.054 | 115 +0.035 | 115 +0.120 +0.070 | 110.115 110.020 | | | | | | | | 11060 | 11070 | 11080 | 110100 | 110115 | | | |
| 120 -0.054 | 125 +0.040 | 125 +0.170 +0.100 | 120.210 120.070 | | 0.264 0.070 | 2.465 2.415 | | | | | | 12060 | 12070 | 12080 | 120100 | 120115 | | |
| 125 -0.063 | 130 +0.040 | 130 +0.170 +0.100 | 125.210 125.070 | 0.273 0.070 | | | | | | | 12560 | 12570 | 12580 | 125100 | 125115 | | | |
| 130 -0.063 | 135 +0.040 | 135 +0.170 +0.100 | 130.210 130.070 | | | | | | | | 13060 | 13070 | 13080 | 130100 | 130115 | | | |
| 140 -0.063 | 145 +0.040 | 145 +0.170 +0.100 | 140.210 140.070 | | | | | | | | 14060 | 14070 | 14080 | 140100 | 140115 | | | |
| 150 -0.063 | 155 +0.040 | 155 +0.170 +0.100 | 150.210 150.070 | | | | | | | | 15060 | 15070 | 15080 | 150100 | 150115 | | | |
| 160 -0.063 | 165 +0.040 | 165 +0.170 +0.100 | 160.210 160.070 | | | | | | | | 16060 | 16070 | 16080 | 160100 | 160115 | | | |
| 180 -0.063 | 185 +0.046 | 185 +0.210 +0.130 | 180.216 180.070 | | 0.279 0.070 | | 2.465 2.415 | | | | | | 18060 | 18070 | 18080 | 180100 | | |
| 190 -0.072 | 195 +0.046 | 195 +0.210 +0.130 | 190.216 190.070 | | 0.288 0.070 | | | | | | | 19060 | 19070 | 19080 | 190100 | | | |
| 200 -0.072 | 205 +0.046 | 205 +0.210 +0.130 | 200.016 200.070 | | | | | | | | | 20060 | 20070 | 20080 | 200100 | | | |
| 220 -0.072 | 225 +0.046 | 225 +0.210 +0.130 | 220.216 220.070 | | | | | | | | | 22060 | 22070 | 22080 | 220100 | | | |
| 250 -0.072 | 255 +0.052 | 255 +0.260 +0.170 | 250.222 250.070 | 0.294 0.070 | | | | | | | | | | 25080 | 250100 | | | |
| 260 -0.081 | 265 +0.052 | 265 +0.260 +0.170 | 260.222 260.070 | 0.303 0.070 | | 2.465 2.415 | | | | | | | 26080 | 260100 | | | | |
| 280 -0.081 | 285 +0.052 | 285 +0.260 +0.170 | 280.222 280.070 | | | | | | | | | | | 28080 | 280100 | | | |
| 300 -0.081 | 305 +0.052 | 305 +0.260 +0.170 | 300.222 300.070 | | | | | | | | | | | 30080 | 300100 | | | |