



FB-090/092 系列青铜卷制轴承

Bronze-Wrapped Bearing

应用领域 / Application



FB-090 系列青铜卷制轴承

Bronze-Wrapped Bearing



结构特性及用途

Structure Characteristics and Applications

FB-090 青铜卷制轴承，以锡青铜合金 CuSn8 为材料，表面轧制菱形油穴，起储存油脂作用，它具有良好的疲劳强度和承载能力、耐腐蚀、抗磨损。广泛运用于农业机械、建筑机械、工程机械等高载低速场合。

FB-090 wrapped bronze bearing is made of tin-bronze CuSn8 with its surface punched with diamond oil sockets which are preserved for oil saving. It has good anti-fatigue, anti-erosion anti-abrasion and load capacity. The products are widely applied in conditions of heavy load but low running velocity, such as on agricultural, buiding and engineering machines.

FB-092 系列青铜卷制轴承

Bronze-Wrapped Bearing



结构特性及用途

Structure Characteristics and Applications

FB-092 青铜卷制轴承，以锡青铜合金 CuSn8 为材料，工作表面按一定角度、密度均匀排布着润滑通孔，在启动时容易形成油膜，从而降低启动摩擦系数。它具有良好的疲劳强度的承载能力、耐腐蚀、抗磨损。该系列产品广泛运用于农业机械、建筑机械、工程机械等高载低速场合。

FB-092 wrapped bronze bearing is made of tin-bronze CuSn8 that is of high density, its surface is punched with oil apertures by certain angle and density therefore its easier to form an oil film when the bushing works. It has good anti-fatigue and load, anti-erosion anti-abrasion and load capacity. The products are widely applied in conditions of heavy load but low running velocity, such as on agricultural, buiding and engineering machines.

产品的优点 Product Benefits

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。

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 frication surface for grease storage, prolonging the lubrication interval to 5 times as long as required by the bronze bushing.

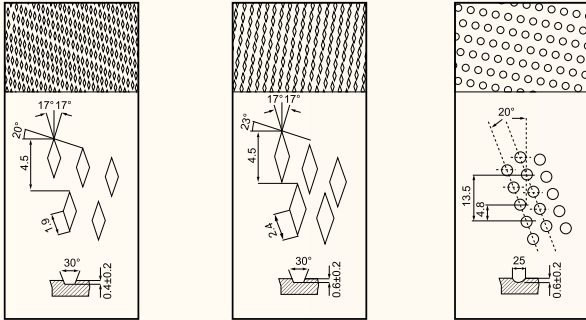
4. Extremely high load sustainability, especially suitable for coarse abrasion surfaces.

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.

FB-090/092 系列青铜卷制轴承

Bronze-Wrapped Bearing



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

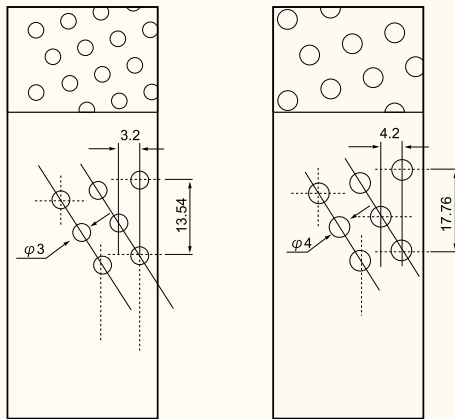
轴衬套内
Inside the bush of the shaft
菱形油穴 $r > \varphi 22$
Rhomb oil holes $r > \varphi 22$

形成菱形
Forming a rhomb

FB-090 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.



轴承内部
球形内径 $r \leq \varphi 25$

轴承球形
内径 $r > \varphi 25$

FB-092 材料结构 Material Structure

表面排布规则的油孔，可在装配前或装配后涂抹油脂，以便在工作中易形成转移油膜，降低摩擦系数。

具有油脂储存量大、免维护周期长等优点。产品被广泛应用于农业机械、森林机械、工程机械等。

FB-092 is deriving from FB-090, the difference between FB-090 & FB-092 is indentations on working surface, which substituted by through-holes.

These holes will allow greater capacity to collect lubricant, which build up a lubrication film at the start of movement and reduce the friction.

It is suitable for high load, lower speed application like construction, transport, and agriculture machinery.

标准衬套公差 (依据 DIN ISO/3547) Standard Tolerance for Bearing (As per to DIN ISO/3547)

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 +0.030	+0.018 0	+0.046 0	-0.016 -0.043
18~30	+0.075 +0.035	+0.021 0	+0.052 0	-0.020 -0.020
30~50	+0.085 +0.045	+0.025 0	+0.062 0	-0.025 -0.064
50~80	+0.100 +0.055	+0.030 0	+0.074 0	-0.030 -0.076
80~120	+0.120 +0.070	+0.035 0	+0.087 0	-0.036 -0.090
120~180	+0.170 +0.100	+0.400 0	+0.100 0	-0.043 -0.106
180~250	+0.210 +0.130	+0.046 0	+0.115 0	-0.050 -0.122
250~315	+0.260 +0.170	+0.052 0	+0.130 0	-0.056 -0.137

FB-09G 系列青铜固体卷制轴承

Bronze-Wrapped Bearing



可供形式 Availability

直套、止推垫片、滑板及其它非标品部件等。

Cylindrical Bearing, 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。

The general recommendation is to use H7 as the seat hole tolerance and f7 as the shaft diameter tolerance.

结构特性 Structure Characteristics

与 FB-090 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任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。

This product has the same production process and the use of occasions as with FB-090. Using bronze substrate as base material, oil in its cavity filled with a diamond-shaped solid lubricant which will offer good friction at the start and process works and keep good condition even when there's no oil giving at short time. It is widely used in construction machinery, gear box drive unit parts, motorcycle parts clutch pads, high upload speed, high-altitude equipment outdoor rotating parts.

技术参数 Tech.Data

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

FB-090/092 系列青铜卷制轴承 Bronze-Wrapped Bearing

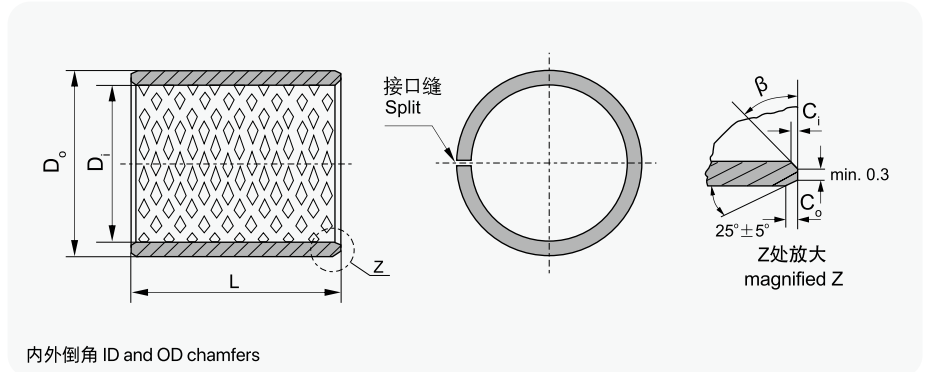
FB-090青铜卷制轴承，表面轧制菱形，起储存油脂作用，它具有良好的疲劳强度和承载能力、耐腐蚀、抗磨损。实际运用中根据使用工况的不同，基体可以采用不同牌号的合金，表面可以加工成其他形式的油孔和油槽。由此衍生出FB-090、FB-091、FB-092、FB-094、FB-09G各系列产品，其材料结构和技术参数汇总表如下：

FB-090 bronze wrapped bearing, with diamond oil socket to preserve oil grease, It has good anti-fatigue, anti-erosion and anti-abrasion and load capacity. Can be produced by different tin-bronze material and the surface can be produced with other type of oil socket and oil groove in different working condition. Like FB-090、FB-091、FB-092、FB-094、FB-09G. Detail see below:

有关数据 Data	代号Grade	FB-090	FB-091	FB-092	FB-094	FB-09G
	材料名称 Material	CuSn8P (Qsn8-0.3)	CuZn31Si (H68)	CuSn8P (Qsn8-0.3)	CuSn8P (Qsn8-0.3)	CuSn8P+石墨 (Qsn8-0.3+graphite)
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。						
主要运用领域 Typical application	产品适用于起重机械、建筑机械、采矿机械，农业机械，森林机械等。 Application: Hoisting, mining machinery, Forest machinery, agricultural machinery etc.	产品运用于建筑机械、汽车制动系统机床工业等。 Application: construction machinery and machine tool, Brake system of Automobile etc.	产品广泛运用于农业机械、建筑机械、工程机械等。 Application: Agricultural Machinery, Heavy duty construction machinery etc	它具有防止油脂倒漏，延长润滑时间，防止灰尘、沙等物质的渗透等优点。产品广泛运用于农业机械、建筑机械、工程机械等。 Can protect the grease leak from the bushing, prevent dust Application: Agricultural	它具有很低的摩擦系数，较好的耐磨性等优点，能在无油或少油的条件下工作。产品广泛应用于启动马达起动机，工程机械，汽车，卡车，拖拉机等。 Application: Starting motor hoisting machines and other construction machines, automobiles, tractors, trucks, machines tools and some mineral engines	
密度 g/cm ³ Density		8.8	8.4	8.8	8.8	8.8
最大动载 N/mm ² Max Dynamic Load		100	90	120	120	100
最高线速度(脂润滑) m/s Max Linear Velocity (Grease)		2	1.5	2.5	2.5	2.5
最高PV值(脂润滑) N/mm ² .m/s Max PV value Grease		2.8	1.65	2.8	2.8	2.8
抗拉强度 N/mm ² Pressure strength		>460	>440	>460	>460	>460
屈服强度 N/mm ² Yield Strength		>280	>230	>280	>280	>280
硬度 HB hardness		90~150	80~120	90~150	90~150	90~150
相配轴 Mating Axis	硬度 HRC Hardness	≥50	≥50	≥50	≥50	≥50
	粗糙度 Roughness	0.4~1.0	0.4~1.0	0.4~1.0	0.4~1.0	0.4~1.0
适用温度 °C Working Temperature		-40~150	-40~150	-40~150	-40~125	-40~150
摩擦系数 Friction Coefficient		0.06~0.15	0.06~0.15	0.06~0.15	0.06~0.15	0.03~0.1
导热系数 W/m·K coefficient of heat conduction		58	71	58	58	58
线膨胀系数 (轴向) Linear expansion coefficient		18.5×10 ⁻⁶ /K	19.2×10 ⁻⁶ /K	18.5×10 ⁻⁶ /K	18.5×10 ⁻⁶ /K	18.5×10 ⁻⁶ /K

FB-090,FB-092 青铜卷制轴承规格及公差

FB-090,FB-092 Bronze-Wrapped Bearing 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	35°±5°
1.00	0.6±0.3	0.30±0.2	35°±5°
1.50	0.7±0.3	0.50±0.3	35°±5°

S ₃	C _o	C _i	β
2.00	1.2±0.4	0.50±0.3	35°±5°
2.50	1.8±0.6	0.60±0.3	45°±5°

单位Unit: mm

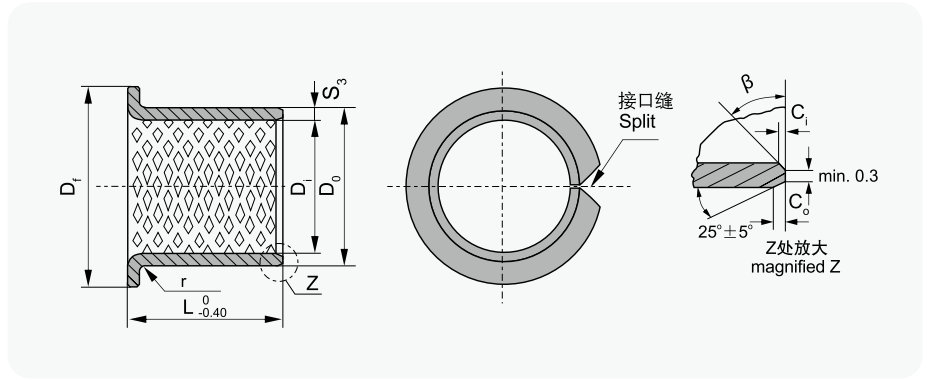
内径 D _i φd	外径 D _o φD	长度 L ⁰ _{-0.40}													
		10	15	20	25	30	35	40	50	60	70	80	90	100	
10	12	1010	1015	1020											
12	14	1210	1215	1220											
14	16	1410	1415	1420	1425										
15	17	1510	1515	1520	1525										
16	18	1610	1615	1620	1625										
18	20	1810	1815	1820	1825										
20	23	2010	2015	2020	2025										
22	25	2210	2215	2220	2225	2230									
24	27		2415	2420	2425	2430									
25	28		2515	2520	2525	2530									
28	31		2815	2820	2825	2830									
30	34		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			5520	5525	5530	5535	5540	5550	5560					
60	65				6025	6030	6035	6040	6050	6060	6070				
65	70					6530	6535	6540	6550	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					8530	8535	8540	8550	8560	8570	8580	8590		
90	95					9030	9035	9040	9050	9060	9070	9080	9090		
95	100							9540	9550	9560	9570	9580	9590	95100	

FB-090,FB-092 青铜卷制轴承规格及公差
FB-090,FB-092 Bronze-Wrapped Bearing Specification & Tolerance

内径 D _i φd	外径 D _o φD	长度 L ⁰ _{-0.40}									
		25	30	35	40	50	60	70	80	90	100
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					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
165	170						16560	16570	16580	16590	165100
170	175						17060	17070	17080	17090	170100
175	180						17560	17570	17580	17590	175100
180	185						18060	18070	18080	18090	180100
185	190						18560	18570	18580	18590	185100
190	195						19060	19070	19080	19090	190100
195	200						19560	19570	19580	19590	195100
200	205						20060	20070	20080	20090	200100
205	210						20560	20570	20580	20590	205100
215	220						21560	21570	21580	21590	215100
225	230						22560	22570	22580	22590	225100
230	235						23060	23070	23080	23090	230100
240	245						24060	24070	24080	24090	240100
250	255						25060	25070	25080	25090	250100
260	265						26060	26070	26080	26090	260100
270	275						27060	27070	27080	27090	270100
280	285						28060	28070	28080	28090	280100
290	295						29060	29070	29080	29090	290100
300	305						30060	30070	30080	30090	300100

FB-090F/FB-092F 青铜翻边轴承规格及公差

FB-090F/FB-092F Bronze Flange Bearing Specification & Tolerance



S_3	1.0	1.5	2.0	2.5
r	$1^{+0.5}$	1 ± 0.5	1.5 ± 0.5	2 ± 0.5

单位Unit: mm

内径 D_i ϕd	外径 D_o ϕD	法兰外径 D_{fl}	长度 $L_{-0.40}^0$											
			15	20	25	30	35	40	50	60	70	80	90	
25	28	35	25150	25200	25250									
30	34	45		30200	30250	30300								
35	39	50		35200	35250	35300	35350							
40	44	55			40250	40300	40350	40400						
45	50	60				45300	45350	45400	45500					
50	55	65				50300	50350	50400	50500					
55	60	70				55300	55350	55400	55500					
60	65	75				60300	60350	60400	60500	60600				
65	70	80				65300	65350	65400	65500	65600				
70	75	85					70350	70400	70500	70600	70700			
75	80	90					75350	75400	75500	75600	75700			
80	85	100					80350	80400	80500	80600	80700	80800		
90	95	110							90500	90600	90700	90800	90900	
100	105	120							100500	100600	100700	100800	100900	
110	115	130							110500	110600	110700	110800	110900	
120	125	140							120500	120600	120700	120800	120900	
130	135	155								130600	130700	130800	130900	
140	145	165								140600	140700	140800	140900	
150	155	180								150600	150700	150800	150900	
160	165	190								160600	160700	160800	160900	
170	175	200								170600	170700	170800	170900	
180	185	215								180600	180700	180800	180900	
190	195	225								190600	190700	190800	190900	
200	205	235								200600	200700	200800	200900	
225	230	260								225600	225700	225800	225900	
250	255	290								250600	250700	250800	250900	
265	270	305								265600	265700	265800	265900	
285	290	325								285600	285700	285800	285900	
300	305	340								300600	300700	300800	300900	