

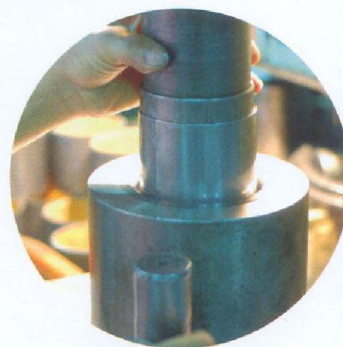
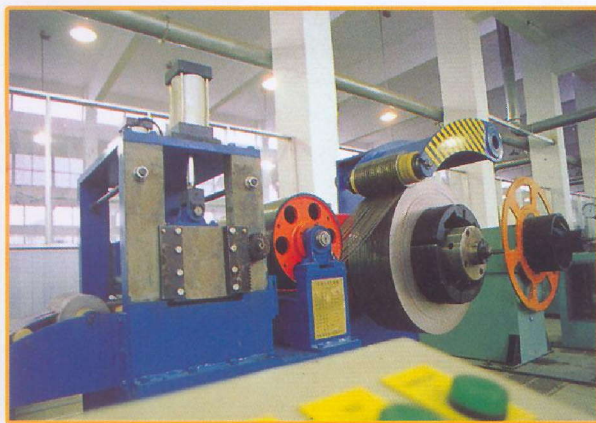
NOVIN **B**all **B**earing
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FB Series **FB系列轴承**
AN ISO-TS 16949 COMPANY



PRODUCTION

生产设备 EQUIPMENT

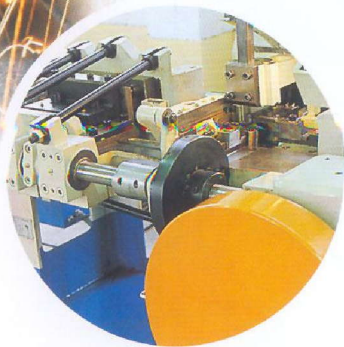


“ Seeking for better, Trying for perfection, ” This is the basis of ZOB ' s sustainable development. We take Human-centered concept as the key to make the best quality products. We hope every member of ZOB to find his potential and do his best.



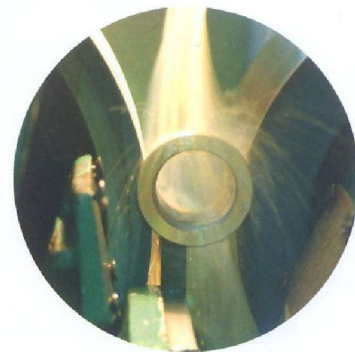
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企业的生存在于不断的发展和
创新，我们始终把握企业发展的
根本，优化产品设备，提升产品档
次，不断开发新品，以期更好、
更快的为客户服务。

New product's development and release is the vitality for a company's continuous development. ZOB is such a company which pays great attention to this. It is always trying its best to provide its customers with the latest products and stay ahead of other companies of its kind.





试验室
Testing room

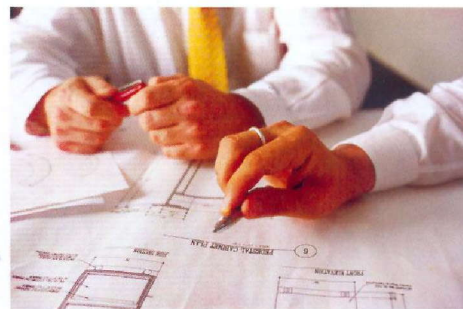


万能试验机
Strength testing machine



MMD-10 端面摩擦试验机
MMD-10 Wear testing machine

优化的工艺流程及严格的品质管理





MPV-20 试验机
MPV-20 Testing machine



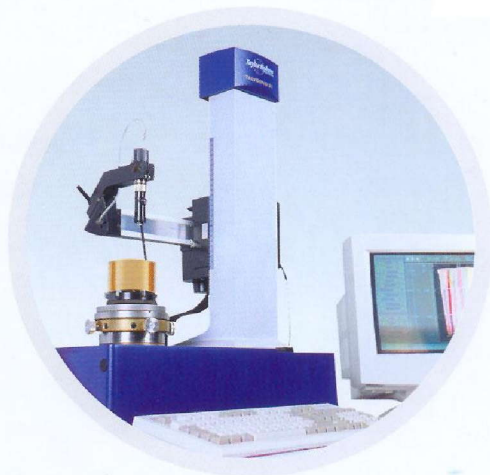
金相分析仪
Metallurgical analysis



硬度测量仪
Hardness equipment



化学分析光谱仪



精密圆度仪
Precision round instrument

NOVIN
OF OILLESS
BEARING CO., LTD

我们严格按照 ISO-TS16949 的质量体系，从原材料投入、模具制造、成形、烧结...等直到服务，全过程加以控制。操作工首先进行自检，专职检验人员进行巡回检，每道工序都进行严格把关，每道工序都做到有据可查。同时以先进的检测设备保证了产品100%的出厂合格率！



产品技术指标 Technical Data

机械性能 Mechanical Characteristics

型号 Type	抗拉强度 (N/mm ²) Tensile Strength	伸长率 (%) Elongation	屈服强度(N/mm ²) Yield Strength
FB090	450	55	250
FB092	300	55	250
FB08G	420	5	230
FB09G	450	10	250

物理性能 Physical Characteristics

型号 Type	比重G/cm ³ Specific Gravity	热胀系数20-300 Linear Expansion 10 ⁻⁶ /°C	导热系数 20 Heat Conductivity CW ⁰ /m.k	导电率 20 Electric rate Cm/onm.mm ²	弹性模量 Elastic Modulus KN/mm ²
FB090	8.9	18.2	60	6.5	115
FB092	8.9	18.2	60	6.5	115
FB08G	7.8	22	70	7.8	108
FB09G	8.0	18.2	60	6.5	115

摩擦性能 Wear Characteristics

型号 Type	最大动载能力 Max.Dynamic Load (N/mm ²)	最高滑动速度 Max.speed (no.oil) (无油) (m/s)	最高滑动速度 Max.speed (oil) (有油) (m/s)	适用温度范围(°C) Temp.
FB090	75	/	2.5	-80~+200
FB092	60	/	2.5	-100~+200
FB08G	65	0.4	4	-100~+260
FB09G	65	0.2	4	-100~+260

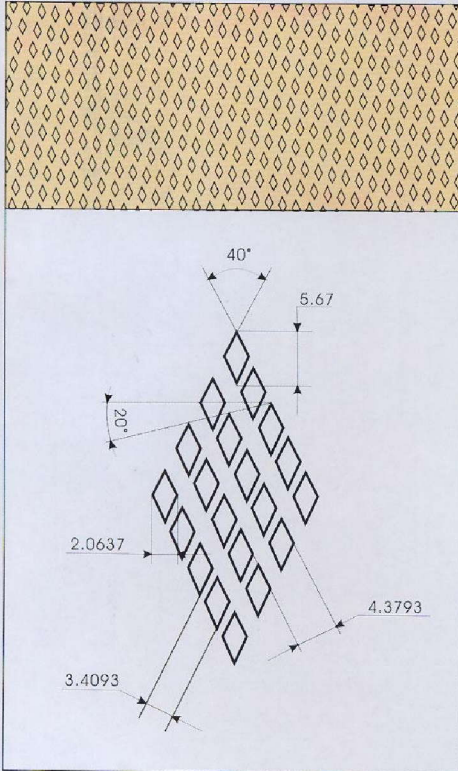
轴承硬度
Bushes Hardness

型号 Type	类别 Item	硬度 Hardness
FB090	标准(Standard)	90~120
FB092	特殊(Special)	125~155
FB08G	标准(Standard)	60~90
FB09G	标准(Standard)	90~120
FBB090	标准(Standard)	70~100

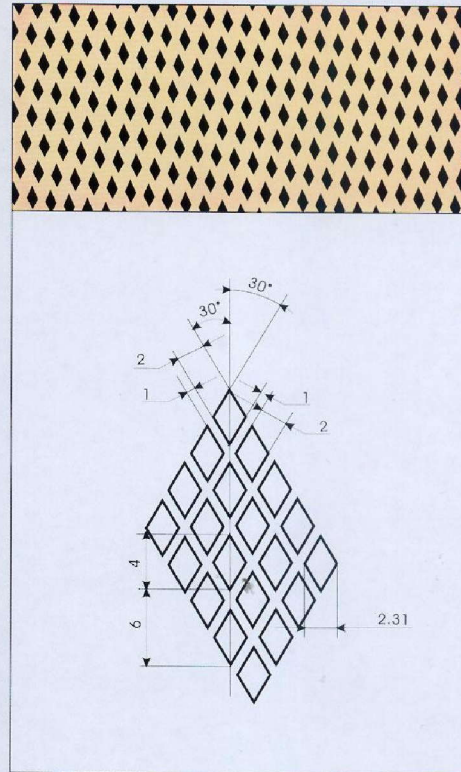
轴承材质
Bushes Material

型号 Type	类别 Item	牌号 Material	材质成分 (%) Composition					
			Cu	Sn	Pb	Zn	P	杂质(Other)
FB090	标准(Standard)	CuSn6.5P	余量 (Remainder)	6~7	—	—	0.1~0.25	≤0.1
	特殊 I (Special I)	CuSn8P	余量 (Remainder)	7~9	—	—	0.01~0.35	≤0.2
FB092	特殊 II (Special II)	H68(CuZn31Si)	66~70	—	≤0.8	余量 (Remainder)	—	≤0.5
FB08G	标准(Standard)	CuSn10Pb10+Gr	余量 (Remainder)	9~11	9~11	—	—	≤0.5
FB09G	标准(Standard)	CuSn6.5P+Gr	余量 (Remainder)	6~7	—	—	0.1~0.25	≤0.1
	特殊(Special)	CuSn8P+Gr	余量 (Remainder)	7~9	—	—	0.01~0.35	≤0.2

FB090 油穴排布
FB090 Oil Indentation



FB09G\FB08G 油穴排布
FB09G\FB08G Oil Indentation

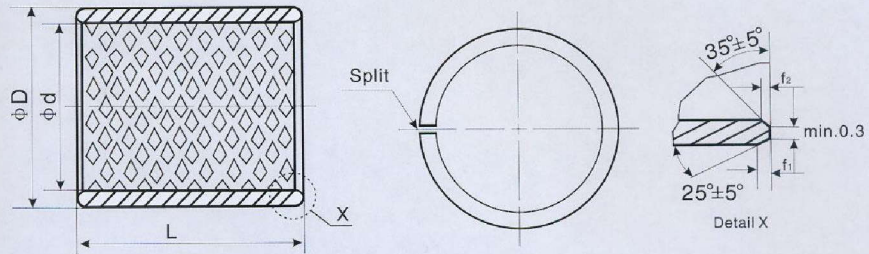


型号 Type	型号壁厚规格 Thickness	油穴深度 Oil Depth
FB090	1mm	0.3~0.4mm
	1.5mm	0.4~0.5mm
	2mm	0.5~0.6mm
	2.5mm	0.6~0.7mm
FB09G FB08G	0.65mm	0.15~0.3mm
	1mm	0.3~0.4mm
	1.5mm	0.4~0.5mm
	2mm	0.4~0.5mm
	2.5mm	0.4~0.5mm

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FB090 标准轴承尺寸 FB090 Normal Size



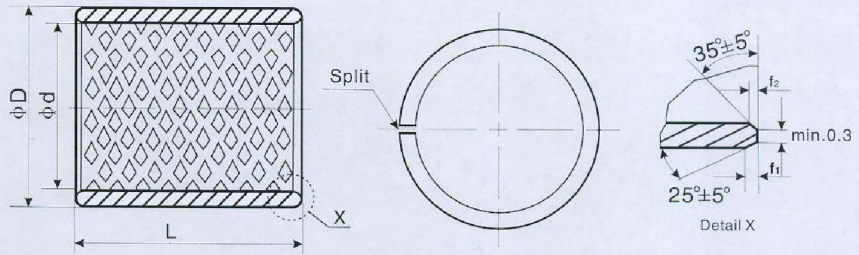
d	D	f ₁	f ₂	L ^{±0.40}															
				10	15	20	25	30	35	40	50	60	70	80	90	100			
10	12	0.5	0.3	1010	1015	1020													
12	14			1210	1215	1220													
14	16			1410	1415	1420	1425												
15	17			1510	1515	1520	1525												
16	18			1610	1615	1620	1625												
18	20			1810	1815	1820	1825												
20	23	0.8	0.4	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	1.0	0.6		3015	3020	3025	3030	3035	3040									
32	36				3215	3220	3225	3230	3235	3240									
35	39				3515	3520	3025	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	0.8		5520	5525	5530	5535	5540	5550	5560								
60	65				6025	6030	6035	6040	6050	6060	6070								
65	70						6530	6535	6540	6550	6560	6570							

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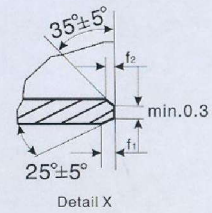
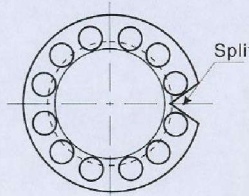
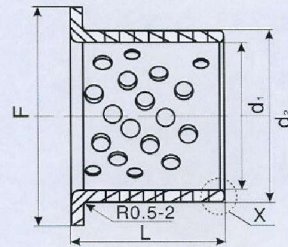
d	D	f ₁	f ₂	L ⁰ -0.40													
				10	15	20	25	30	35	40	50	60	70	80	90	100	
70	75	1.2	0.8					7030	7035	7040	7050	7060	7070	7080			
75	80							7530	7535	7540	7550	7560	7570	7580			
80	85	1.4	0.8					8030	8035	8040	8050	8060	8070	8080			
85	90							8530	8535	8540	8550	8560	8570	8580	8590		
90	95							9030	9035	9040	9050	9060	9070	9080	9090		
95	100									9540	9550	9560	9570	9580	9590	95100	
100	105									10050	10060	10070	10080	10090	100100		
105	110									10550	10560	10570	10580	10590	105100		
110	115	1.4	0.8							11050	11060	11070	11080	11090	110100		
115	120										11550	11560	11570	11580	11590	115100	
120	125										12060	12070	12080	12090	120100		
125	130	1.4	0.8									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	1.4	0.8									19060	19070	19080	19090	190100	
195	200												19560	19570	19580	19590	195100
200	205												20060	20070	20080	20090	200100

FB08G 标准轴承尺寸 FB08G Normal Size



d	D	f ₁	f ₂	L ⁰ GB														
				10	15	20	25	30	35	40	50	60	70	80	90	100		
10	12	0.5	0.3	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	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			1.0	0.6		3015	3020	3025	3030	3035	3040						
32	36		3215			3220	3225	3230	3235	3240								
35	39		3515			3520	3025	3530	3535	3540								
40	44					4020	4025	4030	4035	4040	4050							
45	50					4520	4525	4530	4535	4540	4550							
50	55	1.2	0.8				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						

FBB092 翻边标准轴承尺寸 FBB092 Flanged Normal Size

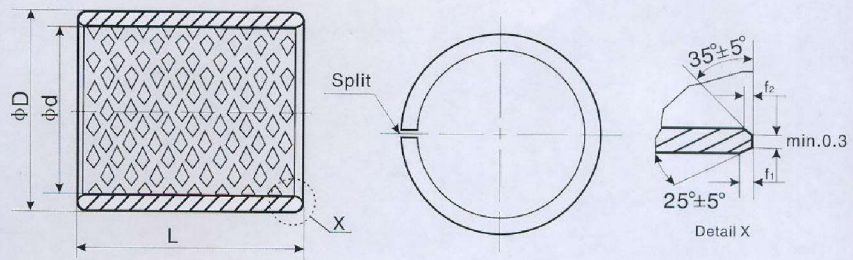


F	d	d ₂	f ₁	f ₂	L ⁰ -0.40												
					15	20	25	30	35	40	50	60	70	80	90		
35	28	25	0.8	0.4	2515	2520	2525										
45	34	30	1.0	0.6		3020	3025	3030									
50	39	35				3520	3525	3530	3535								
55	44	40					4025	4030	4035	4040							
60	50	45	1.2	0.8				4530	4535	4540	4550						
65	55	50							5030	5035	5040	5050					
70	60	55							5530	5535	5540	5550					
75	65	60							6030	6035	6040	6050	6060				
80	70	65							6530	6535	6540	6550	6060				
85	75	70								7035	7040	7050	7060	7070			
90	80	75						7535	7540	7550	7560	7570					
100	85	80	1.4	0.8					8035	8040	8050	8060	8070	8080			
110	95	90										9050	9060	9070	9080	9090	
120	100	105										10050	10060	10070	10080	10090	
130	110	115										11050	11060	11070	11080	11090	
140	120	125										12050	12060	12070	12080	12090	
155	130	135											13060	13070	13080	13090	
165	140	145											14060	14070	14080	14090	
180	150	155											15060	15070	15080	15090	
190	160	165											16060	16070	16080	16090	

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FB09G 标准轴承尺寸 FB09G Normal Size



d	D	f ₁	f ₂	L ^o													
				10	15	20	25	30	35	40	50	60	70	80	90	100	
10	12	0.5	0.3	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	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	1.0	0.6		3015	3020	3025	3030	3035	3040							
32	36			3215	3220	3225	3230	3235	3240								
35	39			3515	3520	3025	3530	3535	3540								
40	44				4020	4025	4030	4035	4040	4050							
45	50				4520	4525	4530	4535	4540	4550							
50	55	1.2	0.8		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						

(一) 外径采用DIN1494标准第二部分第二种方法检测

I. Inspecting O.D In Accordance To DIN1494 Part2,Way2.

在手的压力作用下（最大值为250N），轴套应能推入“通”环规，而不能进入“止”环规。
“通”环规的内径应等于轴套的最大理论外径，“止”环规的内径应等于轴套的最小理论外径。
此方法较简便，通常较适应批量检测和提高工作效率，并易使供货双方方便地达成验收协议。也能满足装配的过盈配合要求。

Under the pressure of the hand (the maximum value is 250N), bush should be pushed into the go end of the ring gauge while can't come through the no go gauge.

The I.D of the go end should be equal to the maximum theoretical O.D of the bush, while the I.D of the stop end equals to the minimum theoretical O.D of the bush.

Due to its relative easiness, the method generally is more suitable for batch inspection and can improve the working efficiency as well. It will also more conveniently lead to inspection agreements between the customer and the manufacturer. Moreover, the demand of shrink fit in installation can be realized.

轴承公差 (Bushes Tolerance)

规格	10<d≤18	18<d≤30	30<d≤60	60<d≤80	80<d≤120	120<d≤180	180<d≤250	250<d≤300
外径公差 O.D.tolerance	+0.065 +0.030	+0.075 +0.035	+0.085 +0.045	+0.100 +0.055	+0.120 +0.070	+0.170 +0.100	+0.210 +0.130	+0.260 +0.170
安装后的内孔H9 Installed I.D.	+0.043 0	+0.052 0	+0.062 0	+0.074 0	+0.087 0	+0.100 0	+0.115 0	+0.130 0

推荐安装座孔 (Housing) : H7

(二) 轴承内径测量方法

II. Inspecting The Inside Diameter



轴承的内径采用塞规检测法（示图）。方法是将轴套压入H7中间值的座孔中，内径按公差要求设通端与止端，用小于250N的力检测，保证通端通，止端止。

为使轴套在内孔检测时不影响产品外径变小，也可以将轴承压到外径的止环规中测内孔尺寸，但其塞规尺寸需同步放大。

Bush's I.D tolerance in this description manual is the size when the indicator reads zero with the bush held in the housing fixture. Therefore inspecting the I.D should be performed by ring gauge after pressing the bush into the H7 housing at its zero tolerance. Go end of the gauge is the min. size and no go plug gauge is the max. size of requested. Usually synchronous amplify way is adopted to inspect the I.D. so as not to deform the bush.