

VSB-80 Bimetallic Bearings



Bi-metal Bearings, Copper-Plated or Tin-Plated Steel/Bronze

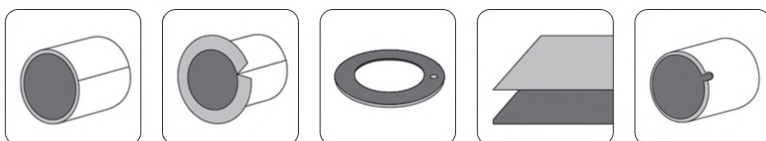
DIN 1494 / ISO 3547, Maintenance-free, With lubrication pockets

Materials

Support material Steel copper-plated or tin-plated

Sliding Layer alternative: CuPb10Sn10、 CuPb6Sn6Zn3、 CuPb24Sn4、 CuPb30、 AlSn20Cu
CuSn8Ni

Bimetallic Bearings



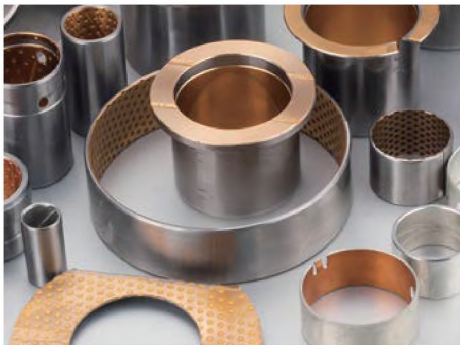
Caption

Special bi-metal bearings dimensions and lubricating surface design

Groove type are available on request

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Bimetal Bushes



Structure Characteristics

VSB Bimetal Bushes consists of steel backing with lead bronze or lead - free copper alloy(CuPb10Sn10 CuPb6Sn6Zn3 CuPb24Sn4, CuPb30, AlSn20Cu) lining, bearing material for oil/grease lubricated Applications. The copper alloy forms a continuous frame for thermal conductivity. These bearing structures are with high Load capacity and good fatigue property. Higher tolerance can be achieved after re-machined from the customers. Lead-free Bronze lining bearing material conforms to the European RoHS directive.

Application

Track rollers
Construction machines
Crane construction
Agricultural machines (impact loading)
Automotive industry

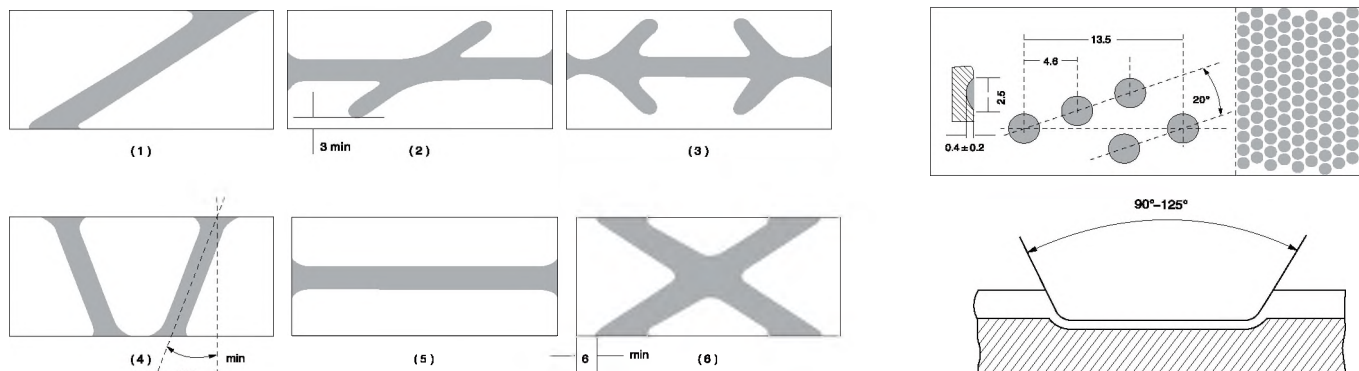
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Bimetal Bushes

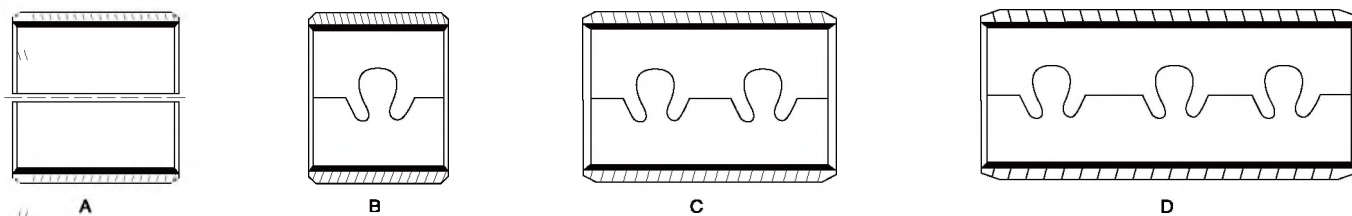
Data	Material	Steel+ CuSn8Ni	Steel+ CuPb10Sn10	Steel+ CuPb24Sn14	Steel+ CuPb30	Steel+ AISn20Cu	Steel+ CuPb10Sn10 Graphite
We can also develop according to customers special request while out of this table.							
Max dynamic Load P N/mm ²		140	140	140	120	120	90
Max line speed V m/s		2.5	2.5	2.5	2.5	—	—
Max PV value N/mm ² ·m/s	Greases lubrication	2.8	2.8	2.8	2.8	—	—
Friction coef u		0.05~0.12	0.05~0.15	0.05~0.15	0.05~0.15	—	—
Max line speed V m/s	Greases lubrication	2.5	10	10	15	20	—
Max PV value N/mm ² ·m/s		2.8	10	10	8	15	—
Friction coef u		0.04~0.12	0.04~0.12	0.04~0.12	0.04~0.12	0.04~0.12	—
Max Working temperature	Greases lubrication	150	150	150	150	150	150
	Oil lub.	250	250	250	250	250	—
Mating Axis	HRC Hardness	≥53	≥53	≥45	≥48	≥270	≥53
	Ra Roughness	0.32~0.63	0.32~0.63	0.32~0.63	0.16~0.63	0.16~0.63	0.16~0.63
Alloy layer hardness		69~90	70~100	45~70	35~45	30~40	60~90
W/mk Thermal conductivity		47	47	60	60	47	47
Coefficient of linear expansion		18×10 ⁻⁶ /K	18×10 ⁻⁶ /K	18×10 ⁻⁶ /K	19×10 ⁻⁶ /K	19×10 ⁻⁶ /K	18×10 ⁻⁶ /K
Pertinence application		Lead free, For use in medium load conditions, such as the engine connecting rod bushings, steering pin covers.	Application: con-rod of automobile engines, engineering and agriculture machinery, heavy duty construction machinery etc.	Application: High speed, heavy load engine main shaft and ransmission gearbox, etc.	high speed and middle load working situation, as engine main bearing, connect-rod bushing, rocket arm bushing and oil pump side plate.	Application: High speed, heavy load engine main shaft and air compressor, cooling machine.etc.	Application: starting motor.

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Bimetal Bushes



Lock Types for Bi-Metallic Bushing

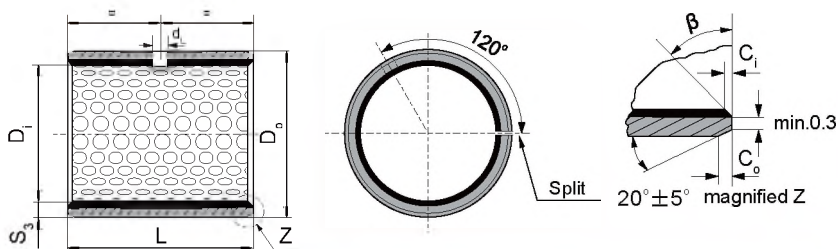
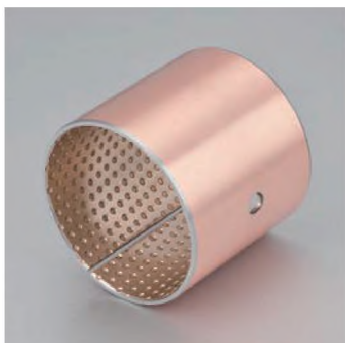


Material Characteristic

Material	Alloy Composition	Alloy Hardness	International Standard
Bimetal bushes	CuPb10Sn10	70 ~ 100HB	SAE-797, DIN CuPb10Sn, JIS-LBC3, UNS C93700, Clevite F100, Daido L10, D. A. B, D57, Federal Mogul HF2, Glacier SY, Glyco66, Miba2, 1010, Taiho HF2, Karl Schmiat KS940SSAE-797, DIN CuPb10Sn, JIS-LBC3, UNS C93700, Clevite F100, Daido L10, D. A. B D57, Federal Mogul HF2 Glacier SY, Glyco66, Miba2, 1010, Taiho HF2, Karl Schmiat Ks940s
Bimetal bushes	CuPb24Sn4	45 ~ 70HB	SAE=799, GLYCO 68, JIS-LBC6, DAIDO L23, Claciersx, ACLF250
Bimetal bushes	CuPb30	30 ~ 45HB	SAE-783, GLYCO74, JIS-AJL
Bimetal bushes	AlSn20Cu	30 ~ 40HB	SAE-48, JIS-KJ3
Bimetal bushes	CuSn8Ni	69 ~ 90HB	

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Bimetal Bushes



ID and OD chamfers							
S_3	C_o	C_i	β	S_3	C_o	C_i	β
0.75	0.5±0.3	0.25±0.2	35°±5°	2.00	1.2±0.4	0.50±0.3	35°±5°
1.00	0.6±0.3	0.30±0.2	35°±5°	2.50	1.8±0.6	0.60±0.3	45°±5°
1.50	0.7±0.3	0.50±0.3	35°±5°				

ID∅	OD∅	Shaft(h8)		Housing		Arter fixed D_a	Clearance C_o	Wall thickness		Oil hole dL	$L_{-0.40}^0$						
		D_s		D_H				S_3			10	15	20	25	30	40	50
10	12	10	-0.022	12	+0.018		0.170 0.010				1010	1015	1020				
12	14	12	-0.027	14	+0.018						1210	1215	1220				
14	16	14	-0.027	16	+0.018	+0.148 +0.010					1410	1415	1420				
15	17	15	-0.027	17	+0.018		0.175 0.010	0.995 0.935	4		1510	1515	1520				
16	18	16	-0.027	18	+0.018						1610	1615	1620				
18	20	18	-0.027	20	+0.021	+0.151 +0.010	0.178 0.010				1810	1815	1820	1825			
20	23	20	-0.033	23	+0.021						2010	2015	2020	2025			
22	25	22	-0.033	25	+0.021	+0.161 +0.020	0.194 0.020	1.490 1.430			2210	2215	2220	2225			
24	27	24	-0.033	27	+0.021						2410	2415	2420	2425	2430		
25	28	25	-0.033	28	+0.021							2515	2520	2525	2530		
26	30	26	-0.033	30	+0.021	+0.181 +0.040	0.214 0.040					2615	2620	2625	2630		
28	32	28	-0.033	32	+0.025		0.218 0.040		6			2815	2820	2825	2830	2840	
30	34	30	-0.033	34	+0.025							3015	3020	3025	3030	3040	
32	36	32	-0.039	36	+0.025			1.980 1.920				3215	3220	3225	3230	3240	
35	39	35	-0.039	39	+0.025	+0.185 +0.040							3520	3525	3530	3540	3550
38	42	38	-0.039	42	+0.025		0.224 0.040						3820	3825	3830	3840	3850
40	44	40	-0.039	44	+0.025				8				4020	4025	4030	4040	4050

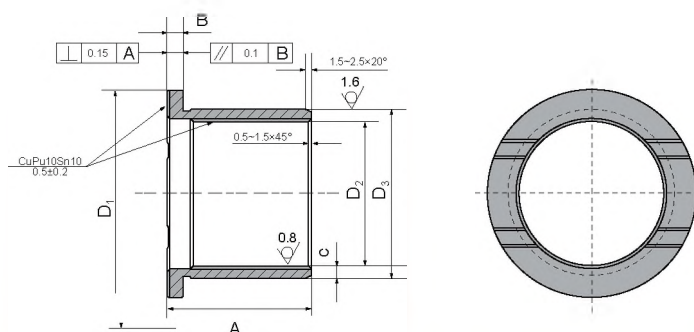
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Bimetal Bushes

ID∅	OD∅	Shaft(h8)		Housing		Arter fixed Dia	Clearance Co	Wall thickness S _s	Oil hole dL	L ⁰ -0.40							
		D _s		D _H						25	30	40	50	60	80	90	100
45	50	45	-0.039	50	+0.025	+0.225 +0.080	0.264 0.080			4525	4530	4540	4550				
50	55	50	-0.039	55	+0.030		0.269 0.080				5030	5040	5050	5060			
55	60	55	-0.046	60	+0.030			8			5530	5540	5550	5560			
60	65	60	-0.046	65	+0.030	+0.230 +0.080					6030	6040	6050	6060			
65	70	65	-0.046	70	+0.030		0.276 0.080				6530	6540	6550	6560			
70	75	70	-0.046	75	+0.030						7030	7040	7050	7060	7080		
75	80	75	-0.046	80	+0.030						7530	7540	7550	7560	7580		
80	85	80	-0.046	85	+0.035		0.281 0.080				8030	8040	8050	8060	8080	8090	
85	90	85	-0.054	90	+0.035						8530	8540	8550	8560	8580	8590	85100
90	95	90	-0.054	95	+0.035							9040	9050	9060	9080	9090	90100
95	100	95	-0.054	100	+0.035			2.460 2.400					9550	9560	9580	9590	95100
100	105	100	-0.054	105	+0.035	+0.235 +0.080							10050	10060	10080	10090	100100
105	110	105	-0.054	110	+0.035		0.289 0.080						10550	10560	10580	10590	105100
110	115	110	-0.054	115	+0.035			9.5					11050	11060	11080	11090	110100
115	120	115	-0.054	120	+0.035								11550	11560	11580	11590	115100
120	125	120	-0.054	125	+0.040								12050	12060	12080	12090	120100
125	130	125	-0.063	130	+0.040									12560	12580	12590	125100
130	135	130	-0.063	135	+0.040									13060	13080	13090	130100
135	140	135	-0.063	140	+0.040	+0.240 +0.080	0.303 0.080							13560	13580	13590	135100
140	145	140	-0.063	145	+0.040									14060	14080	14090	140100
150	155	150	-0.063	155	+0.040									15060	15080	15090	150100

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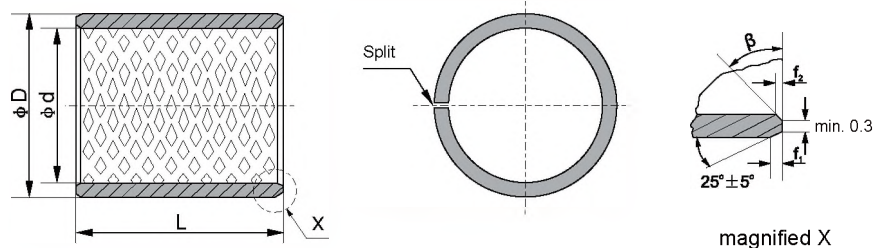


D ₁	B	D ₃	D ₂	A	C
42	3.5	37	30	30	3.5
43	2	34	30	28	2
44	3.5	39	32	35	3.5
47	3.5	39	32	50	3.5
48	2	39	35	37	2
52	3	41	35	35	3
55	3.5	42	35	35	3.5
55	3.5	45	38	35	3.5
55	3.5	45	38	40	3.5
60	3	41	35	42	3
60	3	46	40	62	3
63	3.5	47	40	40	3.5
65	3.5	52	45	40	3.5
68	3.5	54	47	35	3.5
70	3.5	54	47	40	3.5
70	3.5	57	50	48	3.5
72	3.5	57	50	45	3.5
72	3.5	57	50	50	3.5
75	3.5	57	50	50	3.5
77	3	60	54	55	3
83	3.5	66	59	53	3.5
85	3.5	65	58	60	3.5
87	3.5	67	60	53	3.5
87	3.5	67	60	60	3.5

D ₁	B	D ₃	D ₂	A	C
87	3.5	67	60	65	3.5
87	4	68	60	60	4
94	3.5	72	65	60	3.5
87	3.5	72	65	65	3.5
87.5	1.95	69.12	65.22	64.5	2
88	3.5	67	60	60	3.5
88	3.5	72	65	65	3.5
92	3.5	77	70	67	3.5
93	3.5	75	68	60	3.5
94	3.5	77	70	70	3.5
95	3.5	77	70	65	3.5
95	4	78	70	70	4
97	3.48	77.14	70.18	62	3.5
97	3.5	82	75	74	3.5
100	5	85	75	70	5
103	3.525	70.8	63.75	73	3.5
105	3.5	82	75	75	3.5
105	3.5	87	80	70	3.5
107	4	83	75	74	4
115	5	100	90	75	5
128	3.8	92.6	85	103	4
108	3.5	72	65	75	3.5
108	3.5	77	70	98	3.5
108	5	80	70	90	5

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Bimetal Bushes With Graphite



d	D	f ₁	f ₂	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	0.3	0.5	1510	1515	1520	1525									
16	18			1610	1615	1620	1625									
18	20			1810	1815	1820	1825									
20	23			2010	2015	2020	2025									
22	25	0.8	0.4	2210	2215	2220	2225	2230								
24	27				2415	2420	2425	2430								
25	28				2515	2520	2525	2530								
28	32				2815	2820	2825	2830								
30	34				3015	3020	3025	3030	3035	3040						
32	36	1.0	0.6		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	1.2				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							8540	8550	8560	8570	8580	8590			
90	95							9040	9050	9060	9070	9080	9090			
95	100								9550	9560	9570	9580	9590	95100		
100	105								10050	10060	10070	10080	10090	100100		
105	110		0.8						10550	10560	10570	10580	10590	105100		
110	115								11050	11060	11070	11080	11090	110100		
115	120								11550	11560	11570	11580	11590	115100		
120	125	1.4								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		