

MQ-800 Series Bimetal Bushing



MQ-800 Series Bi-Metal Bushings

MQ-800 Bimetal composite bearing with high quality low carbon steel as backing, sintered bronze alloy which with low friction properties (CuPb10Sn10, CuPb6Sn6Zn3, CuPb24Sn4, AlSn20Cu, CuSn10, CuSn6.5P) as the wear-resistant layer;

In the inner bronze alloy surface can be processed with various types of oil grooves, oil hole and oil pockets according to the different working applications, to suitable for the conditions which can not continuously put oils or difficult to apply the grease.

Material can get good bonding strength and the best bearing capacity by two times of sintering.

(also known as JF-800; SJ)



Composition analysis of alloy







Inner sintered layer	MQ-800 CuPb10Sn10	MQ-810 CuPb24Sn4	MQ-820 CuPb6Sn6Zn3	MQ-830 CuSn10	MQ-840 CuSn6.5P	MQ-850 AlSn20Cu
Cu	Remainder	Remainder	Remainder	Remainder	Remainder	0.7~1.3
Pb	9.0~11.0	21.0~27.0	2.0~4.0	0.1	0.1	—
Sn	9.0~11.0	3.0~4.5	5.0~7.0	9.0~10.0	6.0~6.8	17.5~22.5
Zn	0.5	0.5	5.0~7.0	0.3	0.3	—
P	0.1	0.1	0.1	0.1	0.1~0.3	—
Fe	0.5	0.7	0.6	0.5	0.6	0.7
Ni	0.5	0.3	0.3	0.5	0.5	0.1
Al	—	—	—	—	—	Remainder
Other	0.5	0.5	0.5	0.5	0.5	0.5

Reference Material Standard Code.

Material	Alloy composition	Alloy hardness	International standard
MQ-800	CuPb10Sn10	80~120HB	JIS-LBC3. JIS-LBC3. SAE-797. DIN CuPb10Sn. UNS C93700. CLEVITE F100. CC495KDAIDO L10. D. A. B. D57. Federal Mogul HF2. Glacier SY. GLYCO66. ACL F100
MQ-810	CuPb24Sn4	45~70HB	JIS-LBC6. JIS-LBC6. SAE-799. GLYCO 68. DAIDO L23. Clacie rsx. ACL F250
MQ-820	CuPb6Sn6Zn3	70-100HB	Din17670
MQ-830	CuSn10	70-100HB	Din G-CuSn10;BS PB1
MQ-840	CuSn6.5P	70-100HB	DIN CuSn6(2.1020); JIS H3110
MQ-850	AlSn20Cu	30~40HB	JIS-AJL. SAE-783. GLYCO74. Glacier AS15. ACL820

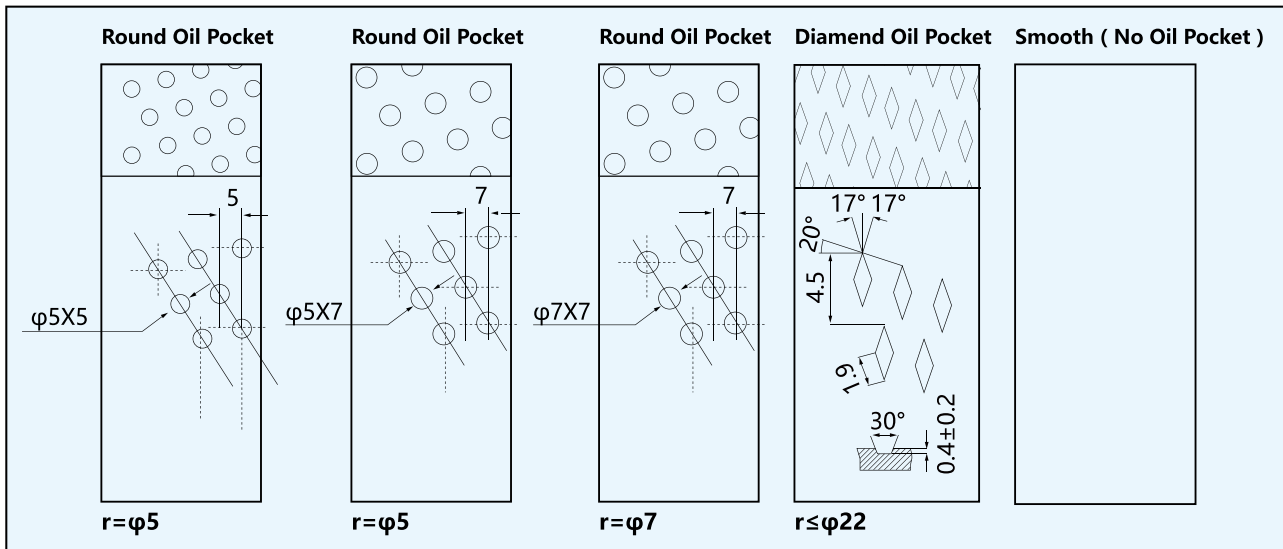
MQ-800 Series Bi-metal Bushings

According to the different working applications, different alloy material (**CuPb10Sn10**、**CuPb24Sn4**、**CuPb6Sn6Zn3**、**CuSn10**、**CuSn6.5P**、**AlSn20Cu**) can be chosen to be sintered on steel backing.

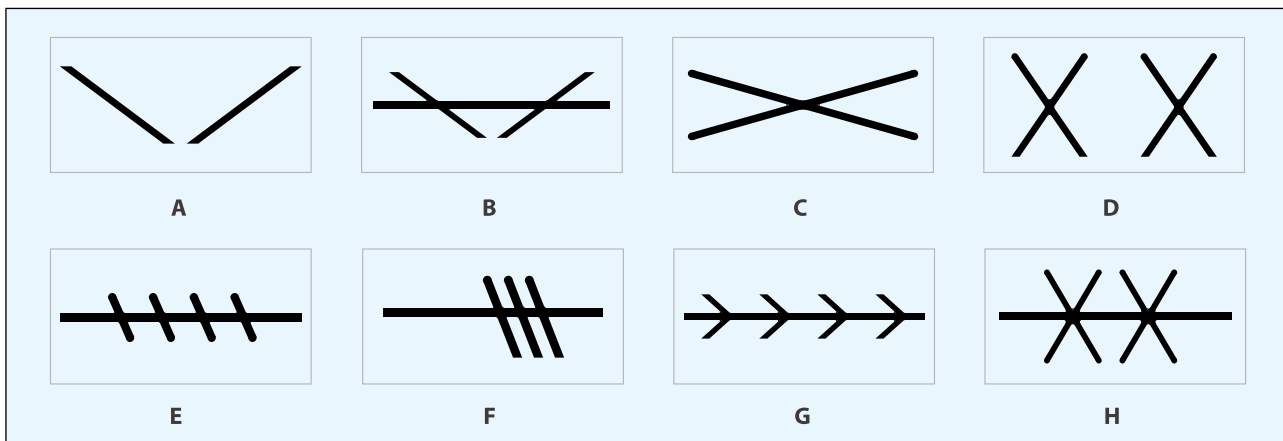
Data	Grade	MQ-800	MQ-810	MQ-820	MQ-830	MQ-840	MQ-850
	Material	Steel+ CuPb10Sn10	Steel+ CuPb24Sn4	Steel+ CuPb6Sn6Zn3	Steel+ CuSn10	Steel+ CuSn6.5P	Steel+ AlSn20Cu
Also willing to develop special items according to customers request ,while out of this table.							
Alloy layer hardness HB		80~120	45~70	70~100	70~100	70~100	30~40
N/mm ² Max dynamic Load P		150	130	130	130	130	100
Max.Speed V m/s	Grease lubrication	3.5	2.5	2.5	2.5	—	—
Max.PV limit N/mm ² ·m/s		2.8	2.8	2.8	2.8	2.8	—
Friction Coefficient u		0.05~0.10	0.05~0.15	0.05~0.15	0.05~0.15	0.05~0.15	—
Max.Speed V m/s		8	10	5	5	5	15
Max.PV limit N/mm ² ·m/s	Oil lubrication	10	10	10	10	10	8
Friction Coefficient u		0.04~0.12	0.04~0.12	0.04~0.12	0.04~0.12	0.04~0.12	0.05~0.02
MaxWorking temperature °C	Grease lubrication	150	150	150	150	150	150
	Oil lub.	250	250	250	250	250	250
Thermal conductivity W/mk		60	60	60	60	60	47
Coefficient of linear expansion		18 × 10 ⁻⁶ /K ¹	19 × 10 ⁻⁶ /K	18 × 10 ⁻⁶ /K	18 × 10 ⁻⁶ /K	19 × 10 ⁻⁶ /K	18 × 10 ⁻⁶ /K
Match the axis	Hardness HRC	≥53	≥45	≥53	≥53	≥53	≥270
	Roughness Ra	0.32~0.63	0.32~0.63	0.16~0.63	0.32~0.63	0.16~0.63	0.16~0.63
Main Features							
① Sliding		★★★★★	★★★★★	★★★★	★★★★★	★★★★	★★★★
② Abrasion Resistance		★★★★★	★★★	★★★★	★★★★	★★★★	★★★★
③ Hardness		★★★★★	★★	★★★★	★★★	★★★★	★★
④ Anti-bite Shaft		★★★★	★★★★★	★★★	★★★★	★★★	★★★★
⑤ Corrosion-resistant		★★★★★	★★	★★★★	★★★★	★★★★	★★★
⑥ High loading		★★★★★	★★	★★★★	★★★★	★★★★	★★★
⑦ Anti-fatigue		★★★★★	★★★	★★★★	★★★★	★★★★	★★★
⑧ Environmental protection		×	×	×	★★	★★	★

*Initial pre-lubrication at assembly is required

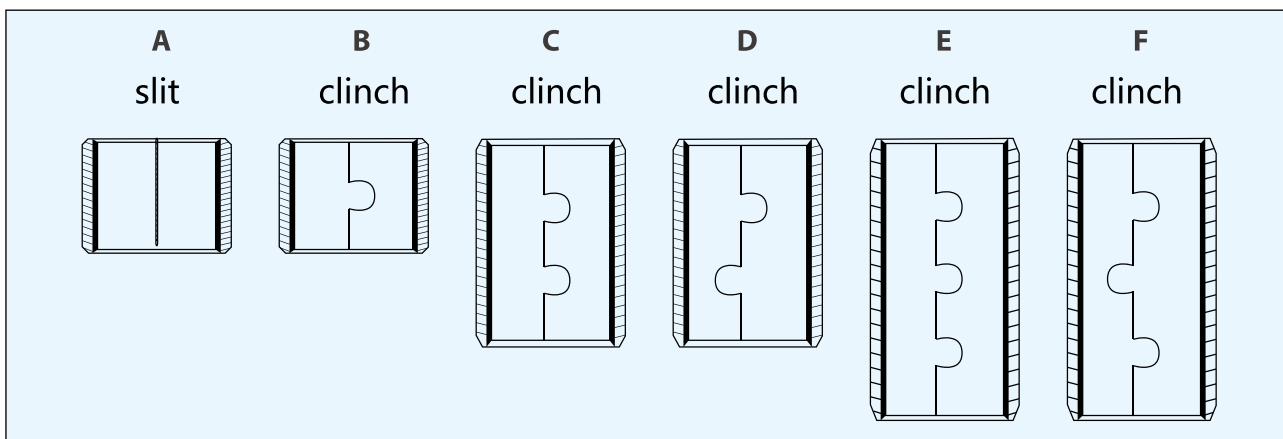
Parts types for oil pockets of bimetal bushing



Parts types for oil grooves of bimetal bushing



Parts types for butt joint types of bimetal bushing

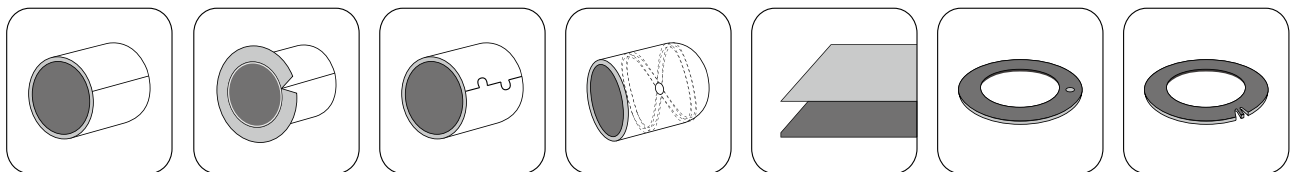


Special designs are available

Wall Thickness of No-machinable and Allow-machinable Bore of Bushing and Their Tolerances

Normal Wall Thickness	Tolerances of Wall thickness (non-machinable)	Tolerances of Wall thickness (allow-machinable)
1.0	-0.025	+0.25 +0.15
1.5	-0.030	+0.25 +0.15
2.0	-0.035	+0.25 +0.15
2.5	-0.040	+0.30 +0.15
3.0	-0.045	+0.30 +0.15
3.5	-0.050	+0.30 +0.15

Available types



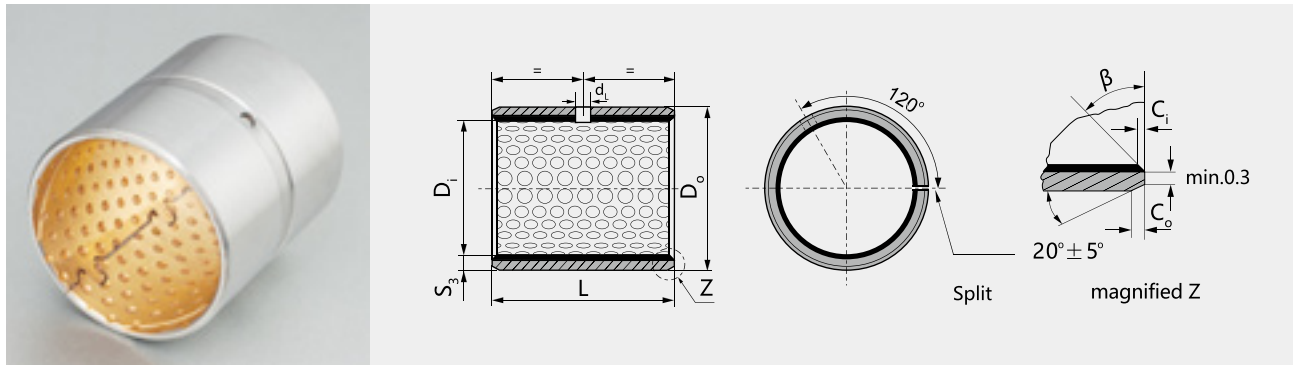
Order Informations for Bimetal Bushing

1. Type :	(Dimensions): ID _____ x OD _____ x (F) _____ x L _____ mm		
2. Inner Layer :	(Sintered Metal Material)		
A. Thickness of inner Sintered layer (0.05-1.50mm):	mm		
B. <input type="checkbox"/> Round Oil Pocket	<input type="checkbox"/> Diamond Oil Pocket	<input type="checkbox"/> Oil Pocket with Graphites	
<input type="checkbox"/> Smooth(No oil Pockets)			
C. <input type="checkbox"/> With oil Grooves as the drawing or samples	<input type="checkbox"/> Non-oil Grooves		
D. <input type="checkbox"/> No-machined(Just Extrusion-moulding)	<input type="checkbox"/> Machined and final thickness of inner Sintered layer: _____ mm	<input type="checkbox"/> Allowance for machining: _____ mm	
3. Outer Surface			
A. <input type="checkbox"/> Natural Steel Colour	<input type="checkbox"/> Black Coating	<input type="checkbox"/> Tin Coating(Gray)	
<input type="checkbox"/> Cu-coating	<input type="checkbox"/> Grinded		
B. <input type="checkbox"/> Ring groove as the drawing/sample			
C. <input type="checkbox"/> Oil Hole as the drawing/sample	<input type="checkbox"/> Fixation holes/dents as the drawing/sample	<input type="checkbox"/> Other	
D. <input type="checkbox"/> Slit Type	<input type="checkbox"/> Clinch Butt Joint as MQ No. : _____ or as the drawing/samples		
E. <input type="checkbox"/> Cylinder Type	<input type="checkbox"/> Flange Type (Cut off the inner layers in the areas of flange angle while cracked)		

MQ-800 Series Bi-Metal Bushings (Parts)



MQ-800 Series Bimetal Bushing Specification & Tolerance



ID and OD chamfers

S ₃	C ₀	C ₁	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 ₀	C ₁	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°

unit:mm

D _i φ d	D _o φ D	Shaft (h8) D _s	Housing (H7) D _H	ID after fixed D _{i,a}	Clearance C _D	Wall thickness S ₃	Oil hole d _L	L						
								10	15	20	25	30	40	50
10	12	10 _{-0.022}	12 ^{+0.018}	+0.148 +0.010	0.170 0.010	0.995 0.935	4	1010	1015	1020				
12	14	12 _{-0.027}	14 ^{+0.018}					1210	1215	1220				
14	16	14 _{-0.027}	16 ^{+0.018}					1410	1415	1420				
15	17	15 _{-0.027}	17 ^{+0.018}					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}	+0.161 +0.020	0.194 0.020	1.490 1.430	6	2010	2015	2020	2025			
22	25	22 _{-0.033}	25 ^{+0.021}						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	2815	2820	2825	2830	2840
30	34	30 _{-0.033}	34 ^{+0.025}	+0.185 +0.040	0.224 0.040	1.980 1.920	8	3015	3020	3025	3030	3040		
32	36	32 _{-0.039}	36 ^{+0.025}						3215	3220	3225	3230	3240	
35	39	35 _{-0.039}	39 ^{+0.025}						3520	3525	3530	3540	3550	
38	42	38 _{-0.039}	42 ^{+0.025}						3820	3825	3830	3840	3850	
40	44	40 _{-0.039}	44 ^{+0.025}						4020	4025	4030	4040	4050	

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D _i φ d	D _o φ D	Shaft (h8) D _s	Housing (H7) D _H	ID after fixed D _{i,a}	Clearance C _D	Wall thickness S ₃	Oil hole d _L	L ⁰ _{-0.40}												
								25	30	40	50	60	80	90	100					
45	50	45 _{-0.039}	50 ^{+0.025}	+0.225 +0.080	0.264 0.080	2.460 2.400	8	4525	4530	4540	4550									
50	55	50 _{-0.039}	55 ^{+0.030}	+0.230 +0.080	0.269 0.080					5030	5040	5050	5060							
55	60	55 _{-0.046}	60 ^{+0.030}					0.276 0.080			5530	5540	5550	5560						
60	65	60 _{-0.046}	65 ^{+0.030}									6030	6040	6050	6060					
65	70	65 _{-0.046}	70 ^{+0.030}									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}		+0.235 +0.080				0.281 0.080			8030	8040	8050	8060	8080	8090			
85	90	85 _{-0.054}	90 ^{+0.035}				0.289 0.080				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}										9550	9560	9580	9590	95100			
100	105	100 _{-0.054}	105 ^{+0.035}											10050	10060	10080	10090	100100		
105	110	105 _{-0.054}	110 ^{+0.035}											10550	10560	10580	10590	105100		
110	115	110 _{-0.054}	115 ^{+0.035}											11050	11060	11080	11090	110100		
115	120	115 _{-0.054}	120 ^{+0.035}	+0.240 +0.080	0.303 0.080								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}													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

Non-standard dimensions & tolerances are available