



JIASHAN MINQIN OILLESS BEARING CO.,LTD.

5th Edition Wrapped bushing



Jiashan Minqin Oilless Bushing Co.,Ltd.

a professional manufactory of oilless sliding Bushing,set up May.2007.

Our main products:

- ◇ **MQ10** oilless bearings ◇ **MQ20** boundary lubrication bearings ◇ **MQ800** JF bimetal bearings
- ◇ **MQ090 / 092** bronze wrapped bearings
- ◇ **MQ650** JDB solid lubricating bearings ◇ **MQ600** bronze Turned bearings

Now our products are exported to more than 15 countries and regions in EU, America, Asia, etc. and set up & doing the QC system strictly!

our belief: Quality, Service, Price!

Quality: Better and stable quality!

Service: In time and meet the customer's requirement as possible as we can!

Price: Reasonable prices as the market

The products are applied to metallurgy extensively, automobile, mine, petroleum, such various kinds of machinery as rolling mill, chemical industry, electrical machinery, shipping, printing, plastic machinery,office equipment,health and fitness facilities, light industry and machinery, irrigation works, hydraulic pressure machinery, locomotive, rotate, slip, etc.

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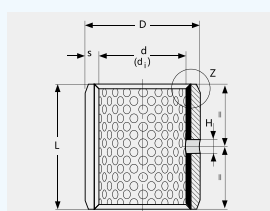
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MQ-10 Oilless Bushing



available if need



MQ-10 Carbon Steel Self-lubricating Bushing

With low carbon steel as the backing, sintered bronze as medial layer, mixed PTFE with fibers as self-lubricating layer.

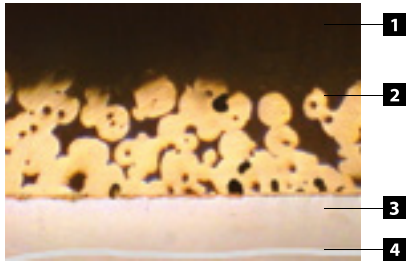
Suitable for dry running with low coefficient of friction, low wear rate, good sliding characteristics, the transfer film created will protect the mating metal surface.

Suitable for rotary and oscillating movement, high chemical resistance, lower absorption of water and reduced swelling. Also performs well with lubrication.

(also known as SF-1 or DU)



Material Structure



1. PTFE with fibers 0.01-0.03mm
2. Sintered bronze powder 0.2-0.35mm
3. Low carbon steel 0.7-2.3mm
4. Cu or Tin coating 0.008
(the actual thickness of metallographic structure as the negotiation)

Application case



Rotary motion, oscillating motion and short stroke linear motion.
Automotive, Calipers, Shock absorbers, Textile Door hinges, Compressor, Agriculture equipments, OA equipment, Construction equipments.....

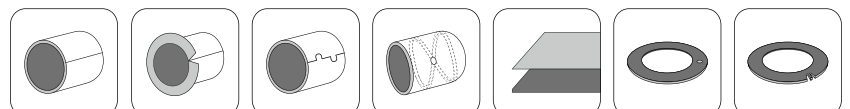
Application Feature

1. Suitable for oilless or few grease working conditions;
2. Long maintenance-free ; Long operating life due to low friction;
4. low vibration, low noise and non-pollution in operation;
5. Thin wall thickness & low weight for the machine with compact design;
6. low hardness of mating shaft can be mated, so the shafts processing is easy;
7. PTFE film is transferred to the mating shaft, to protect the mating metal surface, also improve running properties;
8. lower absorption of water, heat dissipation, and reduced swelling, to keep the exact sizes;
9. Cu or Tin plated in outer surface, for good anti-corrosion.

Technical Data

Max.Loading	Static	250N/mm ²
	Low speed	140N/mm ²
	Rotating Oscillation	60N/mm ²
Max.PV limit(Dry)	Short term operation	3.6N/mm ² ·m/s
	Continuous operation	1.8N/mm ² ·m/s
Temperature Range		-195℃~+280℃
Friction Coefficient		0.02~0.20
Max.Speed	Dry running	2m/s
	Hydrodynamic	>2m/s
Thermal conductivity		42 W(m·k) ⁻¹
Coefficient of thermal expansion		11 × 10 ⁻⁶ ·K ⁻¹

Available Types



MQ-1B Bronze Backing Pb-free Self-lubricating Bushing

MQ-1B with the common characteristics of MQ-10, with more features:

more green & healthier excellent heat dissipation, Very high chemical resistance,

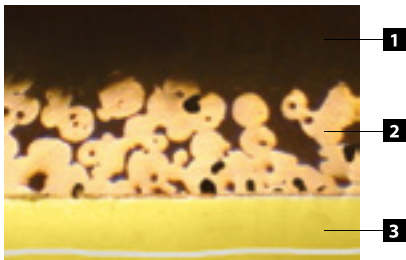
lower absorption of water and swelling, also performs very good lubrication feature!

bronze backing also can be as the self-lubricating materials, while PTFE layer be worked out, then with more long lifes!

(also known as SF-1B or DU-B)

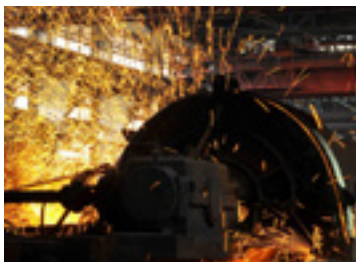


Material Structure



1. PTFE with fibers 0.01-0.03mm
2. Sintered bronze powder 0.2-0.35mm
3. Bronze backing 0.7-2.3mm (the actual thickness of metallographic structure as the negotiation)

Application case



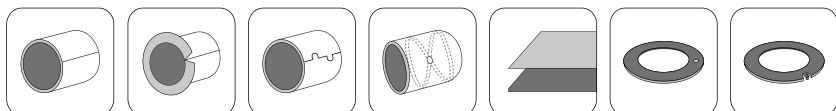
Application Feature

1. The transfer film created can protect the mating metal Surface ;perfect sliding;
2. Excellent thermal conductivity, particularly appropriate for high temperature environment;
3. Suit for dry running and the machine must be under successive long period working ;
4. Better corrosion resistance;
5. high loading capacity;
6. Bronze backing with self-lubrication feature, then with longer working lifes;
7. Environment-friendly ,Anti-magnetic.

Technical Data

Max.Loading	Static	250N/mm ²
	Low speed	140N/mm ²
	Rotating Oscillationg	60N/mm ²
Max.PV limit(Dry)	Short term operation	3.6N/mm ² ·m/s
	Continuous operation	1.8N/mm ² ·m/s
Temperature Range		-195℃~+280℃
Friction Coefficient		0.02~0.20
Max.Speed	Dry running	2m/s
	Hydrodynamic	>2m/s
Thermal conductivity		60 W(m·k) ⁻¹
Coefficient of thermal expansion		18 × 10 ⁻⁶ ·K ⁻¹

Available types



MQ-1S Stainless Steel Pb-free Self-lubricating Bushing

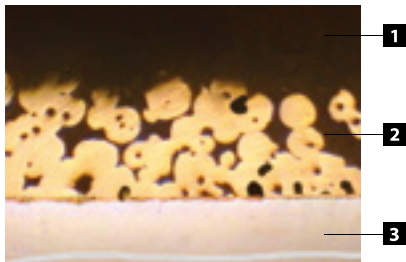
MQ-1S is based on stainless steel backing(Aisi 304,316 or 316L)with sintered porous bronze layer mixed with PTFE and fibers.

It is characterized by acid-resistant ,alkaline-resistant, ocean water resistant,etc.

Widely used as fluid valve of measuring acid and alkalinizing flow in chemical industry,and corrosion resisting sliding position in marine industry.(also known as SF-1S)



Material Structure



1. PTFE with fibers 0.01-0.03mm
2. Sintered bronze powder 0.2-0.35mm
3. Stainless steel backing 0.7-2.3mm (the actual thickness of metallographic structure as the negotiation)

Application case



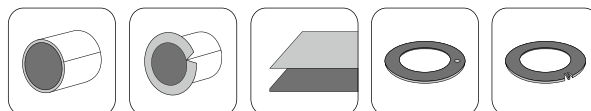
Application Feature

1. PTFE with oil fibres can protect the shaft in operation;
2. Low friction coefficient,good anti-wear;
3. High loading capacity ,working well in motions of rotation ,rock or advance and return movements;
4. Excellent anti-corrosion;
5. green features,used in food machine,pharmaceuticals industry etc;
6. Mainly used in the condition of strong acid and alkali,such as chemical industry,pumps, valves,etc.

Technical Data

Max.Loading	Static	280N/mm ²
	Low speed	160N/mm ²
	Rotating Oscillationg	80N/mm ²
Max.PV limit(Dry)	Short term operation	3.6N/mm ² ·m/s
	Continuous operation	1.8N/mm ² ·m/s
Temperature Range		-195℃~+280℃
Friction Coefficient		0.02~0.20
Max.Speed	Dry running	2m/s
	Hydrodynamic	>2m/s
Thermal conductivity		42 W/(m·k) ⁻¹
Coefficient of thermal expansion		11 × 10 ⁻⁶ ·K ⁻¹

Available types



MQ-1T Carbon Steel Gear Pump Self-lubricating Bushing

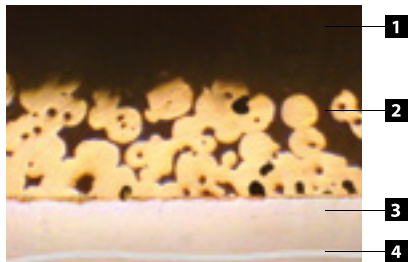
MQ-1T is composed of a specially designed Surface layer of PTFE formulations and is specially applied for the high PV bushings of gear pump.

It is to be used in Hydrodynamic or boundary lubricating condition of medium or high pressure gear pumps.

(also known as SF-1T)



Material Structure



1. PTFE with special fibers 0.01-0.03mm
2. Sintered bronze powder 0.2-0.35mm
3. Low carbon steel 0.7-2.3mm
4. Cu or Tin coating 0.008 (the actual thickness of metallographic structure as the negotiation)

Application case



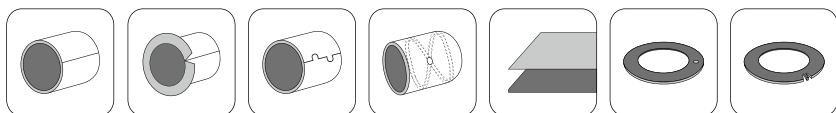
Application Feature

- 1.Low friction & working stable under oil condition;
- 2.Perfect wear resistant,also good shock resistance;
- 3.In hydrodynamic lubrication,Max.PV reaches to120N/mm²·m/s;
- 4.Widely used in gear pumps,plungers and vane pumps,special in midium or high pressure gear pumps.

Technical Data

Max.Loading	Static	250N/mm ²
	Low speed	140N/mm ²
Max.PV limit(Dry)	Rotating Oscillationg	60N/mm ²
	Short term operation	3.6N/mm ² ·m/s
Max.PV limit(Hydrodynamic)	Continuous operation	1.8N/mm ² ·m/s
		120N/mm ² ·m/s
Temperature Range		-195°C~+280°C
Friction Coefficient		0.02~0.20
Max.Speed	Dry running	2m/s
	Hydrodynamic	>3m/s
Thermal conductivity		42 W(m·k) ⁻¹
Coefficient of thermal expansion		11 × 10 ⁻⁶ ·K ⁻¹

Available types



MQ-1D Hydraulic Pb-free Self-lubricating Bushing

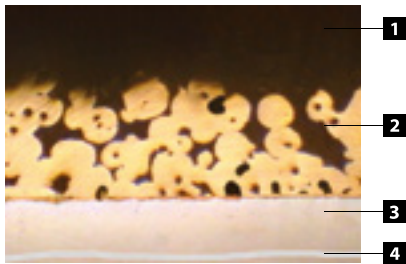
MQ-1D is developed for high duty, oil lubricated, hydraulic applications;

With excellent wear resistance and low static/dynamic friction coefficient, special suitable for frequently reciprocating motion, with or without the strong stocks from side directions.

(also known as SF-1D or similar to DP4)



Material Structure



1. PTFE mixed Polymer fibers 0.01-0.03mm
2. Sintered bronze powder 0.2-0.35mm
3. Low carbon steel 0.7-2.3mm
4. Cu or Tin coating 0.008 (the actual thickness of metallographic structure as the negotiation)

Application case



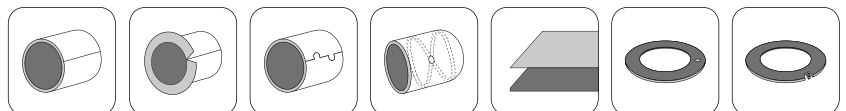
Application Feature

1. PTFE and Polymer fibers created the lubricated film and it is transferred to the mating shaft to improve running properties, also protect the mating surface of shaft;
2. Perfect wear resistant, lower friction, suitable for the working conditions of with or without lubricating oil, and keep the lubricating oil clear after long period of working;
3. Particularly suitable for bushes in reciprocating motions, also for other motions;
4. Used in Automotive suspension structures, shock absorbers, Hydraulic cylinders, gear pumps, motors, axial and radial piston pumps & motors.

Technical Data

Max.Loading	Static	250N/mm ²
	Low speed	140N/mm ²
	Rotating Oscillating	60N/mm ²
Max.PV limit(Dry)	Short term operation	3.6N/mm ² ·m/s
	Continuous operation	1.8N/mm ² ·m/s
Max.PV limit(Hydraulic)		30N/mm ² ·m/s
Temperature Range		-195°C~+280°C
Friction Coefficient	Dry running	0.08~0.20
	Hydraulic	0.03~0.08
Max.Speed	Dry running	2m/s
	Hydrodynamic	>2m/s
Thermal conductivity		42 W(m·k) ⁻¹
Coefficient of thermal expansion		11 × 10 ⁻⁶ ·K ⁻¹

Available types

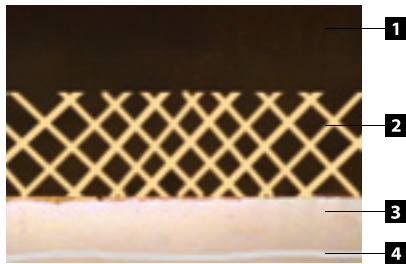


MQ-1W Low Carbon Steel Base Sintered Bronze Mesh Bushing

MQ-1W with low carbon steel as the backing, sintered bronze mesh, mixed with PTFE and fibers, with more firm & stable lubrication layer, accordingly with higher loading capacity and working lifes.



Material Structure



1. PTFE with fibers 0.01-0.03mm
2. Sintered bronze mesh 0.2-0.35mm
3. Low carbon steel 0.7-2.3mm
4. Cu, Tin or Zinc coating 0.008 (the actual thickness of metallographic structure as the negotiation)

Application case



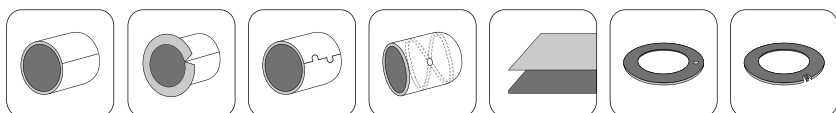
Application Feature

1. PTFE and oil fiber created the lubricated film and it will be transferred to the mating shaft to improve running properties, also protect the Surface of mating shaft ;
2. Low friction, wear resistant and anti-impact;
3. Firm and stable structure, with high loading capacity and more wear resistant;
4. Used for pedal rod, Gearshift rod, clutch brake lever, control rod and other parts.

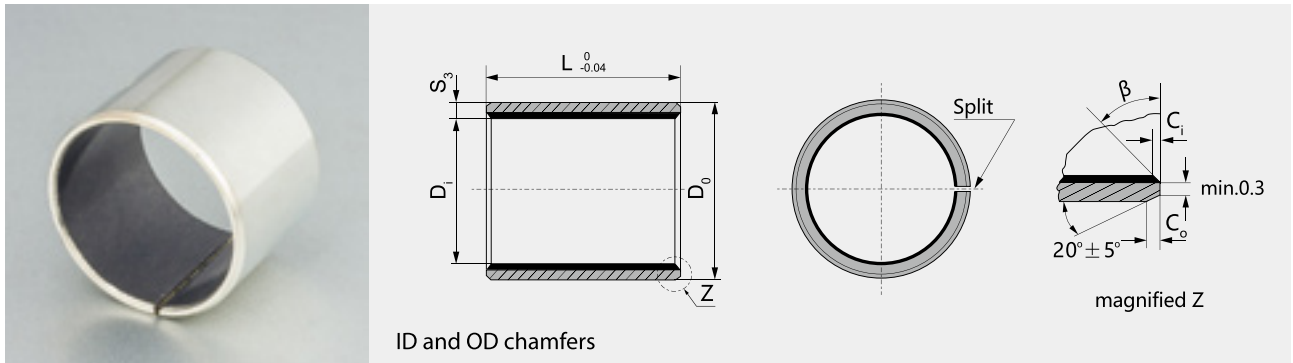
Technical Data

Max.Loading	Static	250N/mm ²
	Low speed	140N/mm ²
	Rotating Oscillationg	60N/mm ²
Max.PV limit(Dry)	Short term operation	3.6N/mm ² ·m/s
	Continuous operation	1.8N/mm ² ·m/s
Temperature Range		-195℃~+280℃
Friction Coefficient		0.02~0.20
Max.Speed	Dry running	2m/s
	Hydrodynamic	>2m/s
Thermal conductivity		42 W/(m·k) ⁻¹
Coefficient of thermal expansion		11 × 10 ⁻⁶ ·K ⁻¹

Available types



MQ-10 Series Metric Cylindrical Bushing Specification & Tolerance



available if need

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°

Unit: mm

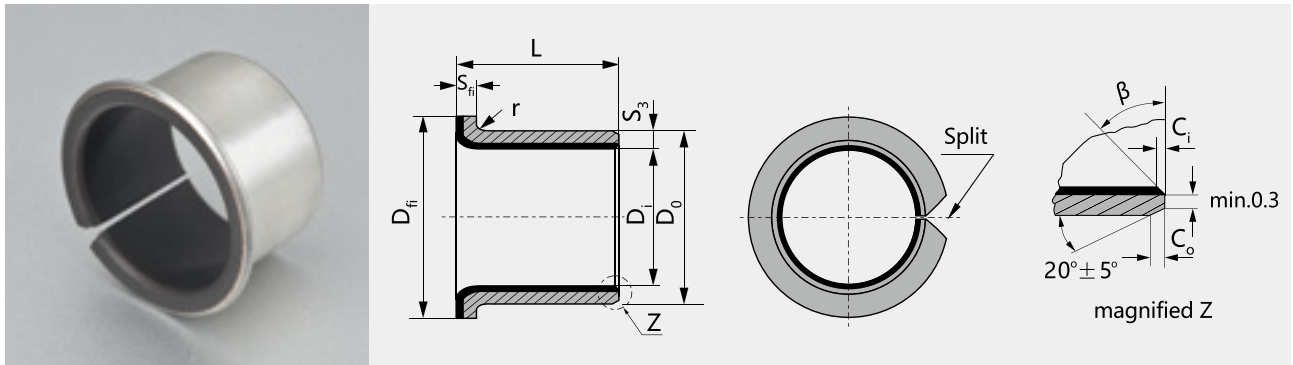
Shaft (f7) D _s	Housing (H7) D _h	Tolerance (OD) D _o	After fixed (ID) D _{i,a}	Clearance D _b	Wall thickness S ₃	Length L ⁰ / _{-0.40} (d ≤ Ø 28 L-0.30 d > Ø 30 L-0.40)														
						6	8	10	12	15	20	25	30	40	50					
6 -0.010 -0.022	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	1.005 0.980	0606	0608	0610												
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003		0806	0808	0810	0812	0815										
10 -0.013 -0.028	12 +0.018	12 +0.065 +0.030	10.058 9.990	0.086 0.003		1006	1008	1010	1012	1015	1020									
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006		1206	1208	1210	1212	1215	1220	1225								
13 -0.016 -0.034	15 +0.018	15 +0.065 +0.030	13.058 12.990			1310	1312	1315	1320	1325										
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990			1410	1412	1415	1420	1425										
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990			1510	1512	1515	1520	1525										
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990	0.095 0.006		1610	1612	1615	1620	1625										
17 -0.016 -0.034	19 +0.021	19 +0.075 +0.035	17.061 16.990			1710	1712	1715	1720	1725										
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990			1810	1812	1815	1820	1825										
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990		0.112 0.010	2010	2012	2015	2020	2025	2030									
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	2210		2212	2215	2220	2225	2230										
24 -0.020 -0.041	27 +0.021	27 +0.075 +0.035	24.071 23.990	2410		2412	2415	2420	2425	2430										
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990	2510		2512	2515	2520	2525	2530	2540	2550								
28 -0.020 -0.041	32 +0.025	32 +0.085 +0.045	28.085 27.990	0.126 0.010	2812	2815	2820	2825	2830	2840	2850									
30 -0.020 -0.041	34 +0.025	34 +0.085 +0.045	30.085 29.990		3012	3015	3020	3025	3030	3040	3050									
32 -0.025 -0.050	36 +0.025	36 +0.085 +0.045	32.085 31.990		3212	3215	3220	3225	3230	3240	3250									
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990		3512	3515	3520	3525	3530	3540	3550									
38 -0.025 -0.050	42 +0.025	42 +0.085 +0.045	38.085 37.990	0.135 0.015	3812	3815	3820	3825	3830	3840	3850									
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990		4012	4015	4020	4025	4030	4040	4050									

MQ-10 Series Metric Cylindrical Bushing Specification & Tolerance

Shaft (f7) D _s	Housing (H7) D _H	Tolerance (OD) D _O	After fixed (ID) D _{I,a}	Clearance D _D	Wall thick- ness S ₃	Length L ⁰ _{-0.40} (d ≤ Ø 28 L-0.30 d > Ø 30 L-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				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						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						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								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												

Non-standard dimensions & tolerances are available

MQ-10F Series Flange Bushing Specification & Tolerance



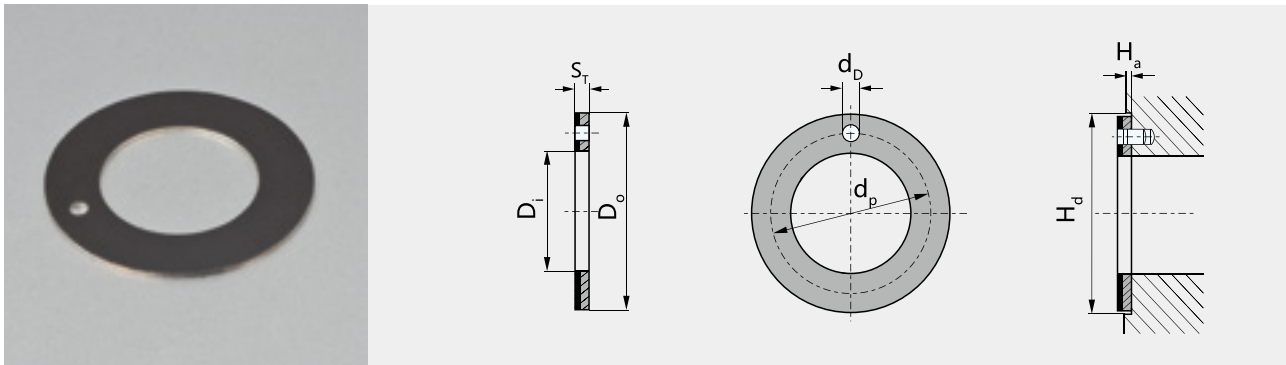
available if need

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

Unit: mm

Shaft (f7) D_s	Housing (H7) D_H	Tolerance (OD) D_o	After fixed (ID) $D_{i,a}$	Clearance D_o	Designation	Wall thickness S_3	Dimension				
							D_i	D_o	$D_n \pm 0.5$	$L \pm 0.25$	$S_n - 0.2$
6 -0.013 -0.028	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	MQ-1F06040	1.005 0.980	6	8	12	4	1
					MQ-1F06070						
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003	MQ-1F08055	1.005 0.980	8	10	15	5.5	1
					MQ-1F08075					7.5	
10 -0.016 -0.034	12 +0.018	12 +0.055 +0.025	10.058 9.990	0.086 0.003	MQ-1F10070	1.005 0.980	10	12	18	7	1
					MQ-1F10090					9	
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006	MQ-1F10120	1.005 0.980	12	14	20	12	1
					MQ-1F12070					7	
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990	0.092 0.006	MQ-1F12090	1.005 0.980	12	14	20	9	1
					MQ-1F12120					12	
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990	0.092 0.006	MQ-1F14120	1.005 0.980	14	16	22	12	1
					MQ-1F14170					17	
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990	0.092 0.006	MQ-1F15090	1.005 0.980	15	17	23	9	1
					MQ-1F15120					12	
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990	0.095 0.006	MQ-1F15170	1.005 0.980	15	17	23	17	1
					MQ-1F16120					12	
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990	0.112 0.010	MQ-1F16170	1.505 1.475	16	18	24	17	1.5
					MQ-1F18120					12	
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	0.112 0.010	MQ-1F18170	1.505 1.475	18	20	26	17	1.5
					MQ-1F18200					20	
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990	0.112 0.010	MQ-1F20115	1.505 1.475	20	23	30	11.5	1.5
					MQ-1F20165					16.5	
30 -0.025 -0.050	34 +0.025	34 +0.075 +0.035	30.085 29.990	0.126 0.010	MQ-1F20215	1.505 1.475	20	23	30	21.5	1.5
					MQ-1F22150					15	
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990	0.135 0.015	MQ-1F22200	2.005 1.970	22	25	32	20	2
					MQ-1F25115					11.5	
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990	0.135 0.015	MQ-1F25165	2.005 1.970	25	28	35	16.5	2
					MQ-1F25215					21.5	
					MQ-1F30160	2.005 1.970	30	34	42	16	2
					MQ-1F30260					26	
					MQ-1F35160	2.005 1.970	35	39	47	16	2
					MQ-1F35260					26	
					MQ-1F40260	2.005 1.970	40	44	53	26	2
					MQ-1F40400					40	

MQ-10WC Series Thrust Washer Specification & Tolerance

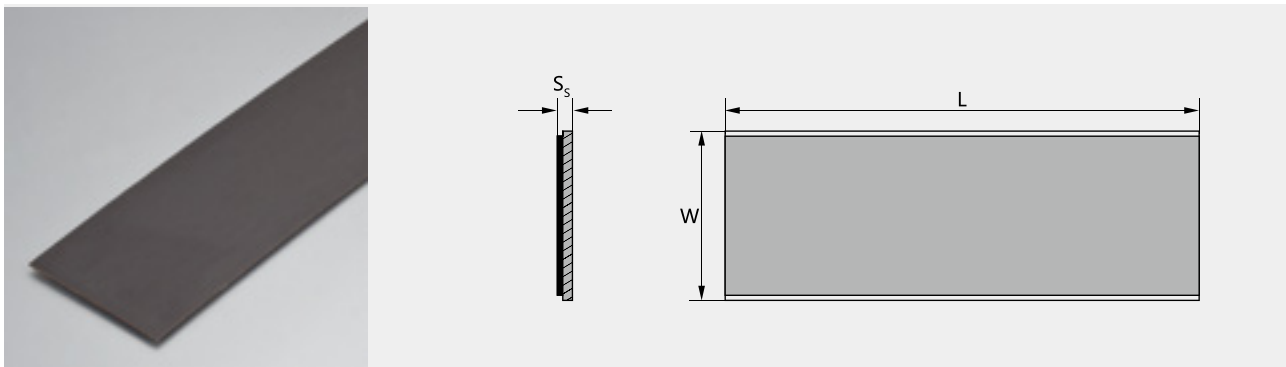


Unit: mm

Shaft D_i	Standard No.	Washer size				Assemble size		$H_d+0.12$
		$D_i+0.25$	$D_o-0.25$	$S_T-0.05$	$d_p \pm 0.125$	$d_b^{+0.4}_{+0.1}$	$H_a \pm 0.2$	
8	W10	10	20	1.5	15	1.5	1	20
10	W12	12	24		18			
12	W14	14	26		20			
14	W16	16	30		23			
16	W18	18	32		25			
18	W20	20	36		28			
20	W22	22	38		30			
22	W24	24	42		33			
24	W26	26	44		35			
26	W28	28	48		38			
30	W32	32	54	43	4	1.5	54	
36	W38	38	62	50				
40	W42	42	66	54				
46	W48	48	74	61				
50	W52	52	78	2	65	78		
60	W62	62	90		76	90		

Non-standard dimensions & tolerances are available

MQ-10SP Series Strip Specification & Tolerance



Unit: mm

Standard No.	Length $L \pm 1$	Width $W \pm 1$	Wall thickness $S_s-0.05$
SP	500	150	1.0
SP	500	150	1.5
SP	500	150	2.0
SP	500	150	2.5

Non-standard dimensions & tolerances are available

MQ-20 Marginal Bushing



20-1



20-2



20-3



20-4



20-5



20-6

MQ-20 Boundary Lubricating Bushings

MQ-20 is made of high quality low-carbon steel as backing, sintered porous bronze layer as the medial layer, then POM+MoS₂ mixed with them as the inner lubricating layer;

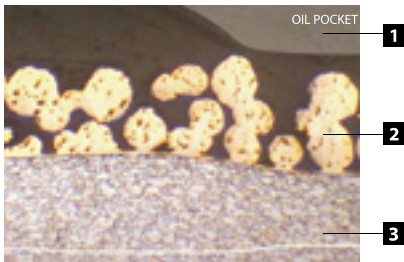
Suitable for reciprocating, rotating and oscillating movements;

Less maintenance requirements;

Low wear and therefore no swelling, good damping behaviour, good resistance to shock (also known as SF-2 or DX)



Material Structure



1. POM with MoS₂ 0.3-0.5mm
2. Sintered porous bronze 0.2-0.35mm
3. Low carbon steel 0.7-2.1mm
4. Electric plating: Cu or Tin 0.008mm (the actual thickness of metallographic structure as the negotiation)

Application case



Application Feature

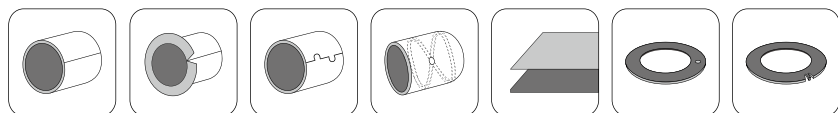
1. Good loading Capacity and anti-wear, anti-impact & shock;
2. Perform well in little of grease or perfect in abundant grease; Especially well suited for applications where lubricant can not be supplied continuously or repeatedly;
3. In high load capacity and low speed with rotational, oscillating or frequent stop-start motions;
4. Applied in Automotive chassis, forging machine, metallurgical, machine tool, building industry, agricultural equipment, forestry machinery, construction machinery, etc.

Technical Data

Max.Loading	Static	250N/mm ²
	Low speed	140N/mm ²
	Rotating Oscillationg	70N/mm ²
Max.PV limit		3.0N/mm ² ·m/s
Friction Coefficient	Grease lubrication	0.05~2.0
Max.Speed		2.5m/s
Match the axis	Hardness	>270HB
	Roughness	0.4~1.25
Temperature Range		-40℃~+120℃
Thermal conductivity		52 W(m·k) ⁻¹
Coefficient of thermal expansion		11 × 10 ⁻⁶ ·K ⁻¹

*Initial pre-lubrication at assembly is strongly recommended.

Available types



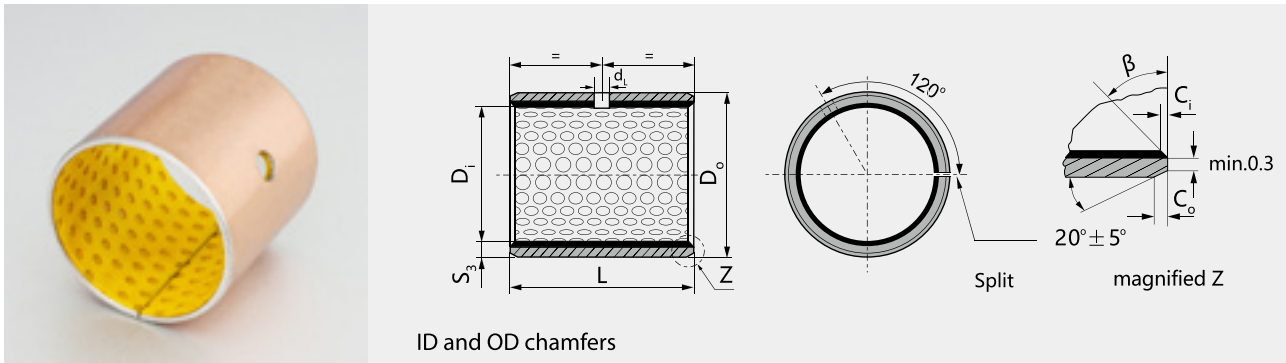
MQ-20 Boundary Lubricating Bushings

MQ-20 Bushing special for heavy load low speed in reciprocating , rotation, Oscillating motions, and the situation under heavy load but not possible to always put grease. This type of bushing can work longer life when put grease during the working condition.

Different matel backing and the POM can be choosed which be depend on different working condition ,environment production request, like our product MQ-20 series as below chart:

Data	Types	MQ-20 (SF-2 with or without lead)	MQ-21 (SF-2 No oil pockets , without lead)	MQ-22 (SF-2B Bronze backing , without lead)	MQ-23 (SF-2L Blue,without lead)	MQ-24 (SF-2W without lead)
	Material	Steel+Bronze +POM+Pb /No Pb+MSo2)	Steel+ Bronze+POM+MSo2	Bronze+ Bronze+POM+MSo2	Steel+ Bronze+POM+MSo2	Steel+Bronze +(PTFE+PEEK)
Typical application		It's used in many places of Vehicle/Automotive, Building equipment, Agricultural equipment, Machine tooling building industry, forming machine tools, steel metallurgical machinery, mineral mountain machinery, hydraulic industry and rolling steel industry, etc.				High temperature condition like high-pressure gear pump, water injection pump, hydraulic motor and spray painting food processing.
Max.Loading P	N/mm ² Static load	250	250	250	250	250
	N/mm ² Very low speed	140	140	140	140	140
	N/mm ² Dynamic load	70	70	70	70	70
Max.Speed V m/s	Grease lubrication	2.5	2.5	2.5	2.5	2.5
Max.PV limit		3.0	3.0	3.0	3.0	3.6
Friction coef u		0.05~0.20	0.05~0.20	0.05~0.20	0.05~0.20	0.03~0.20
Mating Axis	Hardness HB	>270	>270	>270	>270	>270
	Roughness Ra	0.4~1.25	0.4~1.25	0.4~1.25	0.4~1.25	0.4~1.25
Temperature Range °C		-40~+120	-40~+120	-40~+120	-40~+120	-150~+250
Thermal conductivity W/mk ⁻¹		50	50	65	50	50
Coefficient of linear expansion		11 × 10 ⁻⁶ /K	11 × 10 ⁻⁶ /K	11 × 10 ⁻⁶ /K	11 × 10 ⁻⁶ /K	11 × 10 ⁻⁶ /K
Outside Surface Plating		copper/tin	copper/tin	No copper/tin	copper/tin	copper/tin
The photos for some items, just for reference!						

MQ-20 Series Cylindrical Bushing Specification & Tolerance



ID and OD chamfers



available if need

S_3	C_o	C_i	β
1.0	0.6 ± 0.3	0.30 ± 0.2	$30^\circ \pm 5^\circ$
1.5	0.7 ± 0.3	0.50 ± 0.2	$30^\circ \pm 5^\circ$

S_3	C_o	C_i	β
2.00	1.2 ± 0.4	0.50 ± 0.3	$30^\circ \pm 5^\circ$
2.50	1.8 ± 0.6	0.80 ± 0.3	$45^\circ \pm 5^\circ$

Unit: mm

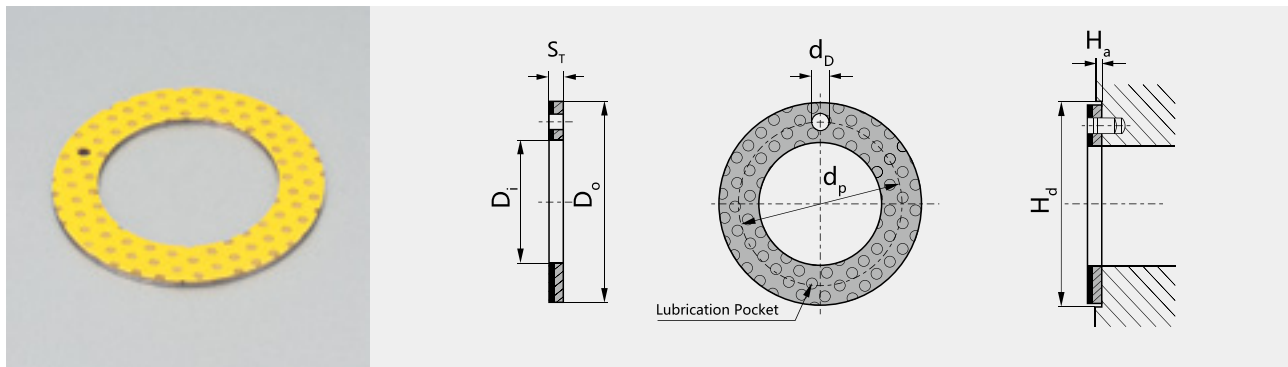
Shaft (f7) D_s	Housing (H7) D_H	Tolerance (OD) D_o	After fixed (ID) $D_{i,a}$	Clearance D_o	Wall thick-ness S_3	Oil hole d_L	Length L $^0_{-0.40}$															
							10	15	20	25	30	35	40	45	50	60						
10 -0.022	12 +0.018	12 +0.065 +0.030	10.108 10.040	0.130 0.040	0.980 0.955	4	1010	1015	1020													
12 -0.027	14 +0.018	14 +0.065 +0.030	12.108 12.040						1210	1215	1220											
14 -0.027	16 +0.018	16 +0.065 +0.030	14.108 14.040							1415	1420											
15 -0.027	17 +0.018	17 +0.065 +0.030	15.108 15.040							1515	1520	1525										
16 -0.027	18 +0.018	18 +0.065 +0.030	16.108 16.040							1615	1620	1625										
18 -0.027	20 +0.021	20 +0.075 +0.035	18.111 18.040	0.138 0.040						1815	1820	1825										
20 -0.033	23 +0.021	23 +0.075 +0.035	20.131 20.050							2015	2020	2025	2030									
22 -0.033	25 +0.021	25 +0.075 +0.035	22.131 22.050	0.164 0.050	1.475 1.445	6																
25 -0.033	28 +0.021	28 +0.075 +0.035	25.131 25.050						2515	2520	2525	2530										
28 -0.033	32 +0.025	32 +0.085 +0.045	28.155 28.060	0.188 0.060						2820	2825	2830										
30 -0.033	34 +0.025	34 +0.085 +0.045	30.155 30.060		1.970 1.935					3020	3025	3030	3035	3040								
35 -0.039	39 +0.025	39 +0.085 +0.045	35.155 35.060	0.194 0.060						3520	3525	3530	3535	3540								
40 -0.039	44 +0.025	44 +0.085 +0.045	40.155 40.060							4020	4025	4030	4035	4040	4045	4050						
45 -0.039	50 +0.025	50 +0.085 +0.045	45.195 45.080	0.234 0.080						4520	4525	4530	4535	4540	4545	4550						
50 -0.039	55 +0.030	55 +0.100 +0.055	50.200 50.080	0.239 0.080	2.460 2.415	8						5030	5035	5040	5045	5050	5060					
55 -0.046	60 +0.030	60 +0.100 +0.055	55.200 55.080	0.246 0.080									5530	5535	5540	5545	5550	5560				
60 -0.046	65 +0.030	65 +0.100 +0.055	60.200 60.080										6030	6035	6040	6045	6050	6060				

MQ-20 Series Cylindrical Bushing Specification & Tolerance

Shaft (f7) D _s	Housing (H7) D _H	Tolerance (OD) D _o	After fixed (ID) D _{i,a}	Clearance D _D	Wall thick- ness S ₃	Oil hole d _L	Length L ⁰ -0.40											
							40	50	60	80	90	95	100	110	120			
65 _{-0.046}	70 ^{+0.030}	70 ^{+0.100} _{+0.055}	65.200 65.080	0.246 0.080	2.460 2.415	8	6540	6550	6560									
70 _{-0.046}	75 ^{+0.030}	75 ^{+0.100} _{+0.055}	70.200 70.080				7040	7050	7060	7080								
75 _{-0.046}	80 ^{+0.030}	80 ^{+0.100} _{+0.055}	75.200 75.080				7540	7550	7560	7580								
80 _{-0.046}	85 ^{+0.035}	85 ^{+0.120} _{+0.070}	80.265 80.100	0.313 0.100	2.450 2.385	9.5	8040	8050	8060	8080								
85 _{-0.054}	90 ^{+0.035}	90 ^{+0.120} _{+0.070}	85.265 85.100	8540			8550	8560	8580									
90 _{-0.054}	95 ^{+0.035}	95 ^{+0.120} _{+0.070}	90.265 90.100	9040			9050	9060	9080	9090								
100 _{-0.054}	105 ^{+0.035}	105 ^{+0.120} _{+0.070}	100.265 100.100	0.321 0.100			10050	10060	10080	10090	10095							
105 _{-0.054}	110 ^{+0.035}	110 ^{+0.120} _{+0.070}	105.265 105.100				10550	10560	10580	10590	10595	105100	105110					
110 _{-0.054}	115 ^{+0.035}	115 ^{+0.120} _{+0.070}	110.265 110.110				11050	11060	11080	11090	11095	110100	110110					
120 _{-0.054}	125 ^{+0.040}	125 ^{+0.170} _{+0.100}	120.270 120.110				0.324 0.100	12050	12060	12080	12090	12095	120100	120110				
125 _{-0.063}	130 ^{+0.040}	130 ^{+0.170} _{+0.100}	125.270 125.110	12550				12560	12580	12590	12595	125100	125110					
130 _{-0.063}	135 ^{+0.040}	135 ^{+0.170} _{+0.100}	130.270 130.110	13050				13060	13080	13090	13095	130100	130110					
140 _{-0.063}	145 ^{+0.040}	145 ^{+0.170} _{+0.100}	140.270 140.110	14050				14060	14080	14090	14095	140100	140110					
150 _{-0.063}	155 ^{+0.040}	155 ^{+0.170} _{+0.100}	150.270 150.110	15050	15060	15080		15090	15095	150100	150110							
160 _{-0.063}	165 ^{+0.040}	165 ^{+0.170} _{+0.100}	160.270 160.110	16050	16060	16080		16090	16095	160100	160110							
170 _{-0.063}	175 ^{+0.040}	175 ^{+0.170} _{+0.100}	170.270 170.110	17050	17060	17080	17090	17095	170100	170110								
180 _{-0.063}	185 ^{+0.046}	185 ^{+0.210} _{+0.130}	180.276 180.110	0.339 0.110	18050	18060	18080	18090	18095	180100	180110							
190 _{-0.072}	195 ^{+0.046}	195 ^{+0.210} _{+0.130}	190.276 190.110		19050	19060	19080	19090	19095	190100	190110	190120						
200 _{-0.072}	205 ^{+0.046}	205 ^{+0.210} _{+0.130}	200.276 200.110		20050	20060	20080	20090	20095	200100	200110	200120						
220 _{-0.072}	225 ^{+0.046}	225 ^{+0.210} _{+0.130}	220.276 220.110		22050	22060	22080	22090	22095	220100	220110	220120						
240 _{-0.072}	245 ^{+0.046}	245 ^{+0.210} _{+0.130}	240.276 240.110	0.354 0.110	24050	24060	24080	24090	24095	240100	240110	240120						
250 _{-0.072}	255 ^{+0.052}	255 ^{+0.260} _{+0.170}	250.282 250.110		25050	25060	25080	25090	25095	250100	250110	250120						
260 _{-0.081}	265 ^{+0.052}	265 ^{+0.260} _{+0.170}	260.282 260.110		26050	26060	26080	26090	26095	260100	260110	260120						
280 _{-0.081}	285 ^{+0.052}	285 ^{+0.260} _{+0.170}	280.282 280.110		28050	28060	28080	28090	28095	280100	280110	280120						
300 _{-0.081}	305 ^{+0.052}	305 ^{+0.260} _{+0.170}	300.282 300.110		30050	30060	30080	30090	30095	300100	300110	300120						

Non-standard dimensions & tolerances are available

MQ-20WC Series Thrust Washer Specification & Tolerance



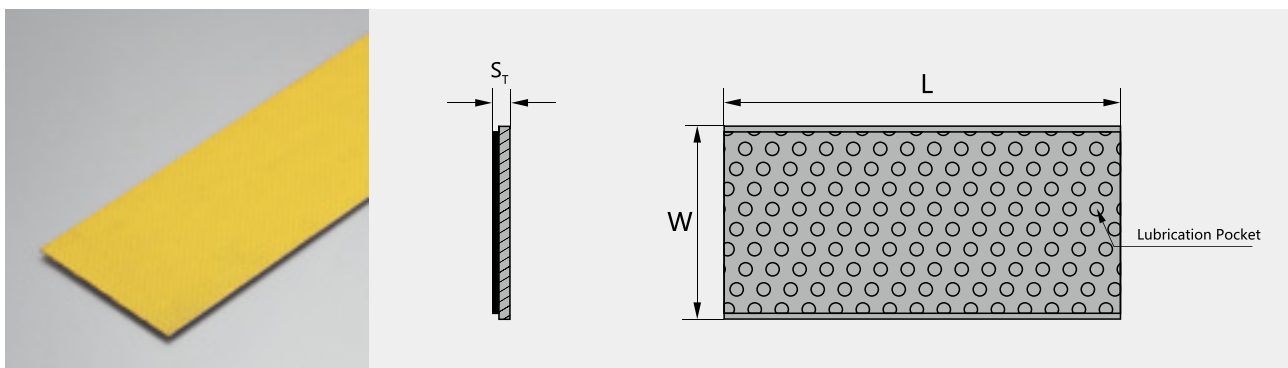
Unit: mm

Shaft D_s	Standard No.	Washer size				Assemble size		
		$D_i+0.25$	$D_o-0.25$	$S_T-0.05$	$d_p \pm 0.125$	$d_{D+0.1}^{+0.4}$	$H_a \pm 0.2$	$H_d+0.12$
8	W10	10	20	1.5	15	1.5	1	20
10	W12	12	24		18			
12	W14	14	26		20			
14	W16	16	30		23			
16	W18	18	32		25			
18	W20	20	36		28			
20	W22	22	38		30			
22	W24	24	42		33			
24	W26	26	44		35			
26	W28	28	48		38			
30	W32	32	54		43			
36	W38	38	62		50			
40	W42	42	66		54			
46	W48	48	74		61			
50	W52	52	78	65	4	1.5	74	
60	W62	62	90	76			78	
								90

Non-standard dimensions & tolerances are available



MQ-20SP Series Strip Standard Metric Size



Unit: mm

Standard No.	Length $L \pm 1$	Width $W \pm 1$	Wall thickness $S_T -0.05$
P	500	150	1.0
P	500	150	1.5
P	500	150	2.0
P	500	150	2.5

Non-standard dimensions & tolerances are available

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

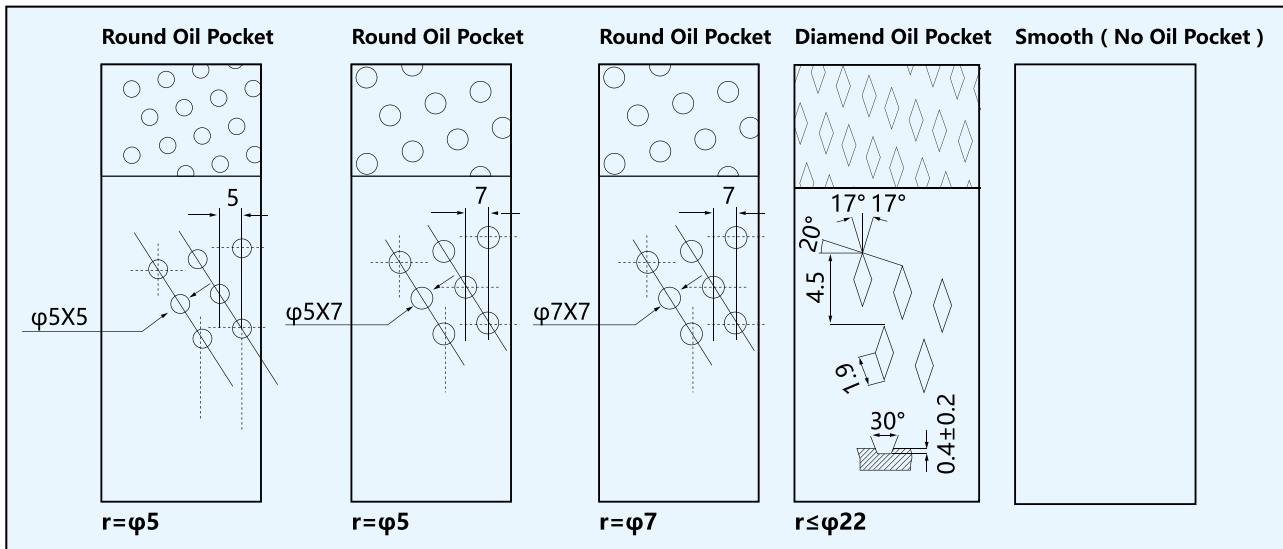
MQ-800 Series Bi-metal Bushings

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.

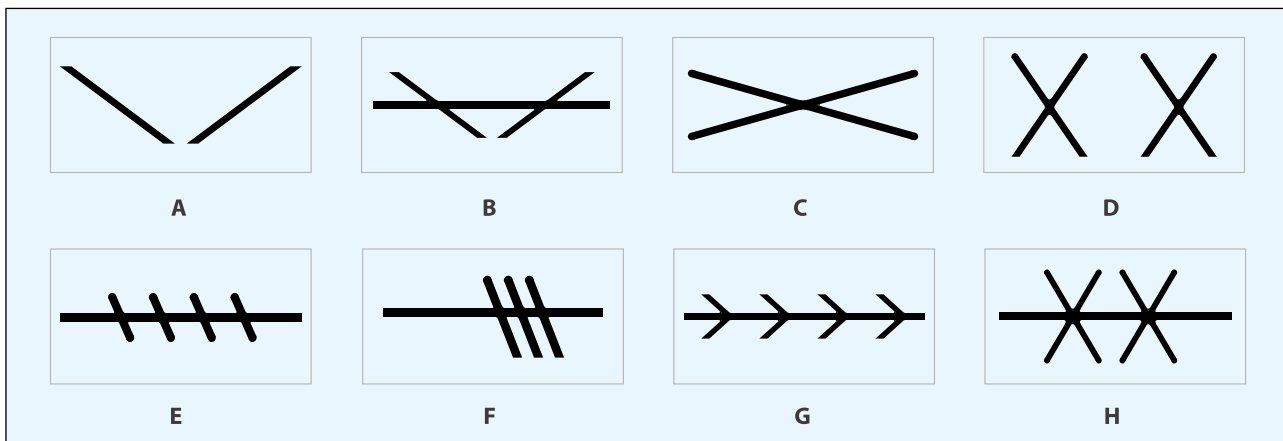
Data	Grade	MQ-800	MQ-810	MQ-820	MQ-830	MQ-840	MQ-850
	Material	Steel+ CuPb10Sn10	Steel+ CuPb24Sn4	Steel+ CuPb6Sn6Zn3	Steel+ CuSn10	Steel+ CuSn6.5P	Steel+ AlSn20Cu
Also willing to develop special items according to customers request ,while out of this table.							
Alloy layer hardness HB		80~120	45~70	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

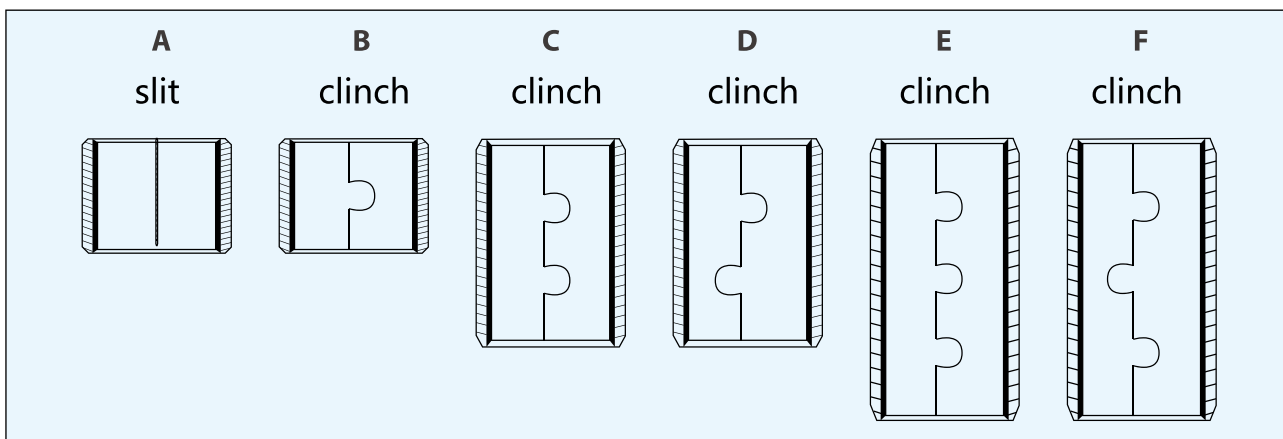
Parts types for oil pockets of bimetal bushing



Parts types for oil grooves of bimetal bushing



Parts types for butt joint types of bimetal bushing

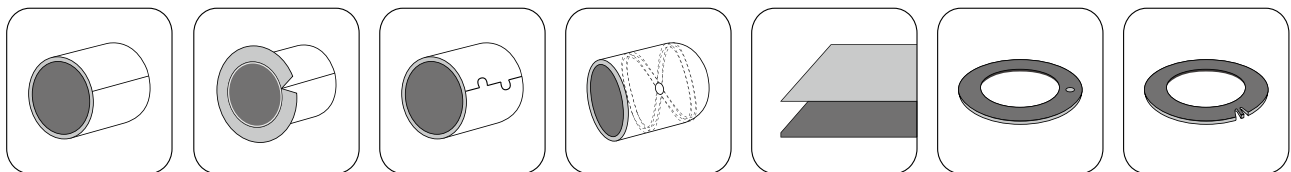


Special designs are available

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)		

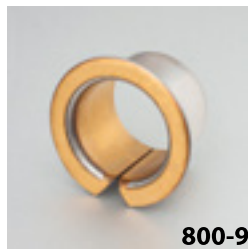
MQ-800 Series Bi-Metal Bushings (Parts)



800-7



800-8



800-9



800-10



800-11



800-12



800-13



800-14



800-15



800-16



800-17



800-18



800-19



800-20



800-21



800-21



800-22



800-23



800-24



800-25



800-26



800-27



MF Series 800-28



800-29



800-30



800-31



800-32



800-33

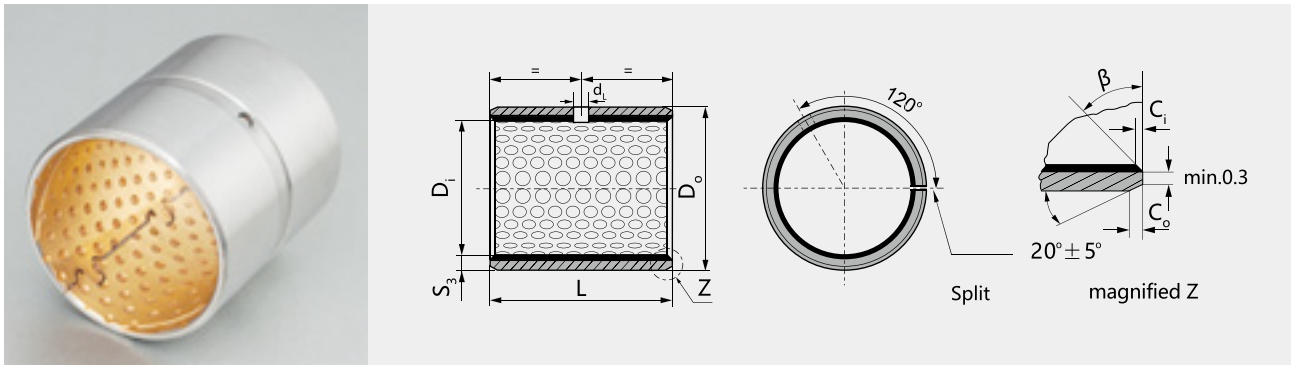


800-34



800-35

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	$35^\circ \pm 5^\circ$
1.00	0.6 ± 0.3	0.30 ± 0.2	$35^\circ \pm 5^\circ$
1.50	0.7 ± 0.3	0.50 ± 0.3	$35^\circ \pm 5^\circ$

S_3	C_0	C_1	β
2.00	1.2 ± 0.4	0.50 ± 0.3	$35^\circ \pm 5^\circ$
2.50	1.8 ± 0.6	0.60 ± 0.3	$45^\circ \pm 5^\circ$

unit:mm

D_i ϕd	D_o ϕD	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}															
14	16	14 _{-0.027}	16 ^{+0.018}															
15	17	15 _{-0.027}	17 ^{+0.018}															
16	18	16 _{-0.027}	18 ^{+0.018}															
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



MQ-800 Series Bimetal Bushing Specification & Tolerance

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

MQ-090/092 BRONZE WRAPPED(FB series) Bushing



MQ-090 Bronze-Wrapped Bushings

MQ-090 bronze wrapped bushing, using tin bronze alloy CuSn8P/CuSn6.5P for material, Surface rolling diamond pockets, to store grease or graphite powder, to rapidly build up a lubrication film at the start of movement and thereafter reduce the startup & running friction;

it has good fatigue strength and bearing capacity, corrosion resistance, wear resistance.

Widely used in agricultural machinery, forestry machinery, building machinery, construction machinery, such as high load low speed occasions.

(also known as FB090 or B09)



Product Benefits

- 1.the advantages of light weight and low cost,for compact application,easy fitting;
- 2.oil pockets stored oil or grease, then the time for apply oil is extended over 5 times than the ones of general copper sleeve;
- 3 extremely high bearing capacity, especially can match the shafts with rough surfaces;
- 4 high heat dissipation, small expansion coefficient, stable use, long service life
- 5.Excellent wear resistance with lower friction;
- 6.Chemical resistance.

Chemical Composition

Material	Cu	Sn	P
CuSn8	91.3%	8.5%	0.3%

Refer to the standard of DIN17662

ISO 4382-2: 1991; CW453K

The actual composition proportion is allowed to up or down in certain range

Application case



widely used in elevator, conveyor, hoist, agricultural machinery, forestry machinery, etc., etc..

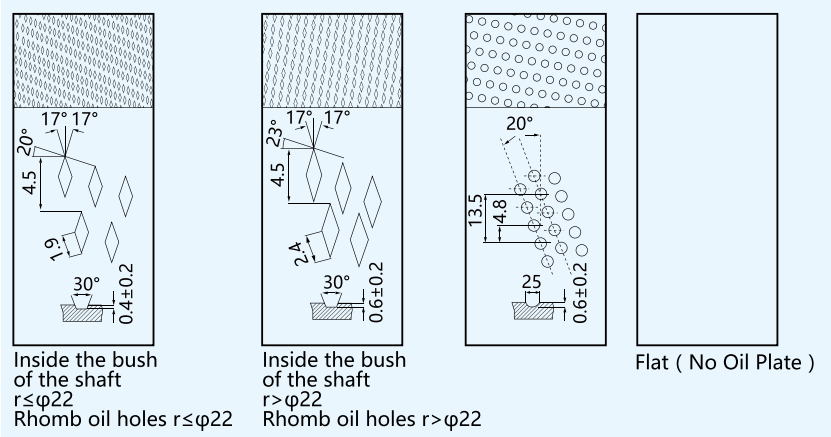
Technical Data

Max.Loading	Static	120N/mm ²
	Dynamic load	40N/mm ²
Max.PV limit	Grease lubrication	2.8N/mm ² ·m/s
Max.Speed		2.5m/s
Match the axis	Hardness	≥50HRC
	Roughness	Ra=0.4~1.0
Friction Coefficient		0.05~0.25 μ
Tensile strength		470N/mm ²
Yield Strength		280N/mm ²
Hardness		100~120HB
Density		8.8g/cm ³
Temperature Range		-100°C~+200°C
Thermal conductivity		58 W(m·k) ⁻¹
Coefficient of thermal expansion		18.5 × 10 ⁻⁶ ·K ⁻¹

*Initial pre-lubrication at assembly is required.

Material Structure

Use high density bronze strips to roll the spherical oil pockets, in order to reduce wear, prolong the use time, good corrosion and protection function



MQ-092 Bronze-Wrapped Bushings

MQ-092 wrapped bronze bushing, using tin bronze alloy CuSn8/CuSn6.5 for material, with oil holes according to a certain angle, easy to form oil film at startup, thereby reducing startup & running friction coefficient.

It has good bearing capacity, corrosion resistance and wear resistance.

This series of products are widely used in agricultural machinery, forestry machinery, construction machinery, construction machinery and other high load low speed occasions.

(also known as FB092)



Product Benefits

- 1.the advantages of light weight and low cost,for compact application,easy fitting;
- 2.oil holes stored more oil or grease, then extended service life and lubrication intervals than normal MQ-090 type bushings.
- 3 high bearing capacity, especially can match the shafts with rough surfaces;
- 4 extraemely high heat dissipation, small expansion coefficient, stable use, long service life
- 5.Excellent wear resistance with lower friction;
- 6.Chemical resistance.

Chemical Composition

Material	Cu	Sn	P
CuSn8	91.3%	8.5%	0.3%

Refer to the standard of DIN17662
ISO 4382-2: 1991; CW453K

The actual composition proportion is allowed to up or down in certain range

Application case



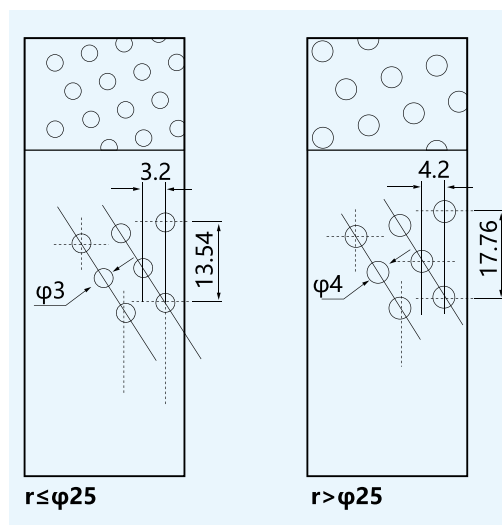
widely used in agricultural machinery, forest machinery, construction machinery, etc.

Technical Data

Max.Loading	Static	120N/mm ²
	Dynamic load	40N/mm ²
Max.PV limit	Grease lubrication	2.8N/mm ² ·m/s
Max.Speed		2.5m/s
Match the axis	Hardness	≥50HRC
	Roughness	Ra=0.4~1.0
Friction Coefficient		0.05~0.25 μ
Tensile strength		470N/mm ²
Yield Strength		280N/mm ²
Hardness		100~120HB
Density		8.8g/cm ³
Temperature Range		-100°C~+200°C
Thermal conductivity		58 W(m·k) ⁻¹
Coefficient of thermal expansion		18.5 × 10 ⁻⁶ ·K ⁻¹

*Initial pre-lubrication at assembly is required.

Material Structure

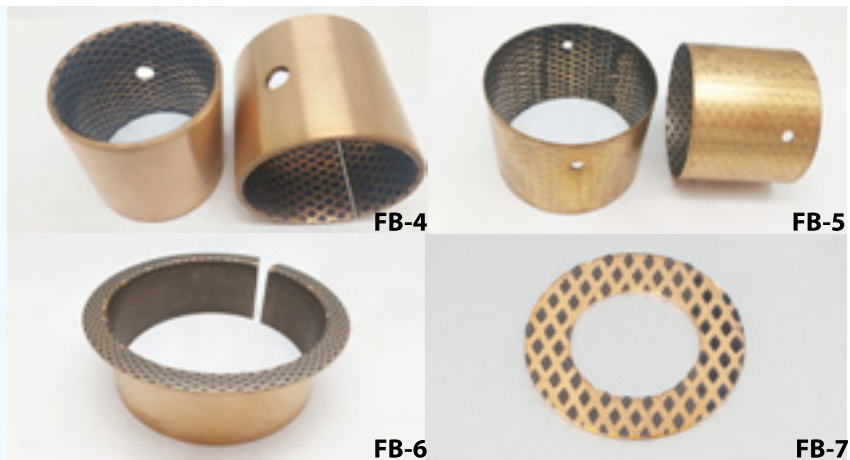


The oil holes can be filled with grease before or after the assembly, in order to facilitate the formation of the transfer film, reducing Friction Coefficient. The utility model has the advantages of large oil storage capacity and long maintenance free period.

MQ-09G Embed Graphites Bronze-Wrapped Bushings

MQ-09G are similar to the MQ090, except there are solid lubricants embedded into the diamond shaped pockets on the bearing surface, which provide perfect lubrication at the startup & running, even with a lack of oil.

It can be used in construction machinery, gear boxes, automotive clutch parts, forestry machinery, etc.

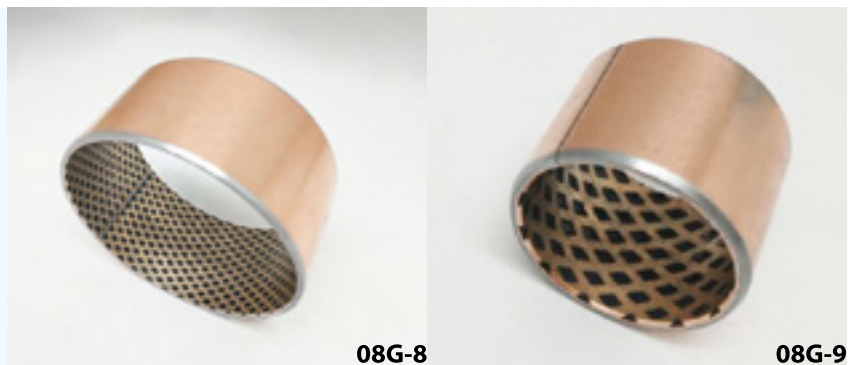


*Initial pre-lubrication at assembly is required.

MQ-08G Embed Graphites Steel-Wrapped Bushings

MQ-08G is similar with the MQ09G, except for: replace bronze with steel backing, to save the costs, economic & more loading capacity.

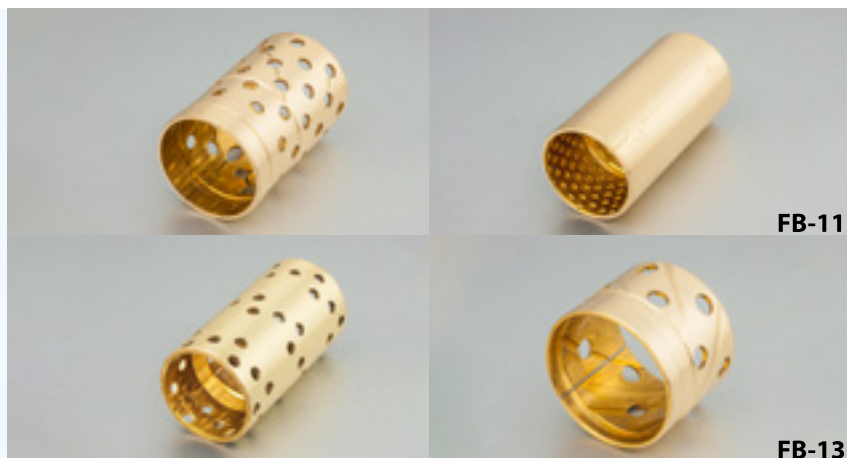
Widely used in construction machinery, machine and machine tool, brake system of automobile, etc.



*Initial pre-lubrication at assembly is required.

MQ-091 Brass-Wrapped Bushings

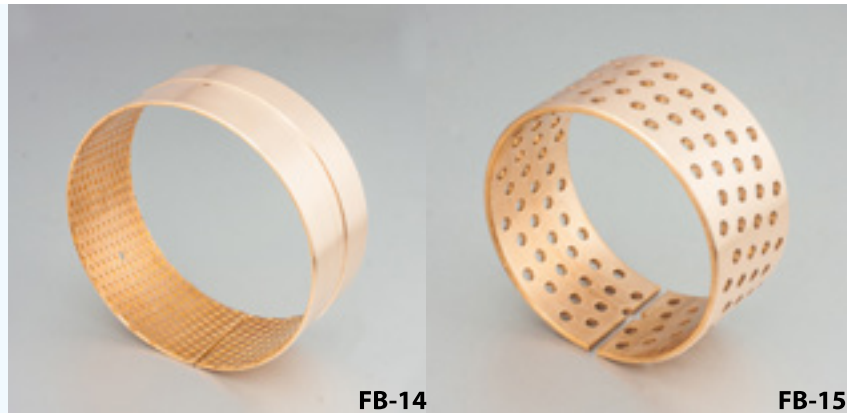
MQ-091 is similar with MQ090, except for: replace bronze with copper CuZn31Si(H68) or CuZn37Si(H62), to save the costs, economic & more loading capacity.



* Initial pre-lubrication at assembly is required.

MQH-090/092 Bronze-Wrapped Bushings (Super Hardness)

MQH-090/092 : compared to the normal MQ090/092,with higher Hardness;the corresponding bearing capacity and wear resistance are stronger, to adapt to a wider range of products, longer service life.



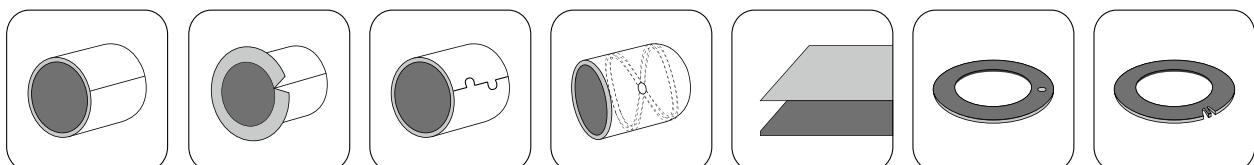
*Initial pre-lubrication at assembly is required.

Technical Data	MQH-090/092	MQ-090/092
Tensile strength, Rm	680N/mm ²	450N/mm ² ·m/s
Max.Speed	2.5m/s	2.5m/s
Yield Strength, Rp 0.2	200N/mm ²	250N/mm ²
Hardness, Brinell	140-165HB	100~120HB
Friction Coefficient	0.03~0.2 μ	0.05~0.25 μ
Max Static load	120~180N/mm ²	80~120N/mm ²
Max Dynamic load	45~60N/mm ²	30~40N/mm ²
Surface Roughness	2 μ m	2 μ m

Standard tolerance for MQ-090/092 series bushing (As per to DIN 1494/ ISO3547)

Standard Dia.	O.D.Size	Housing Bore(H7)	I.D.Size after mounting (H9)	Matching Shaft Diameter (f7 to f8)
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

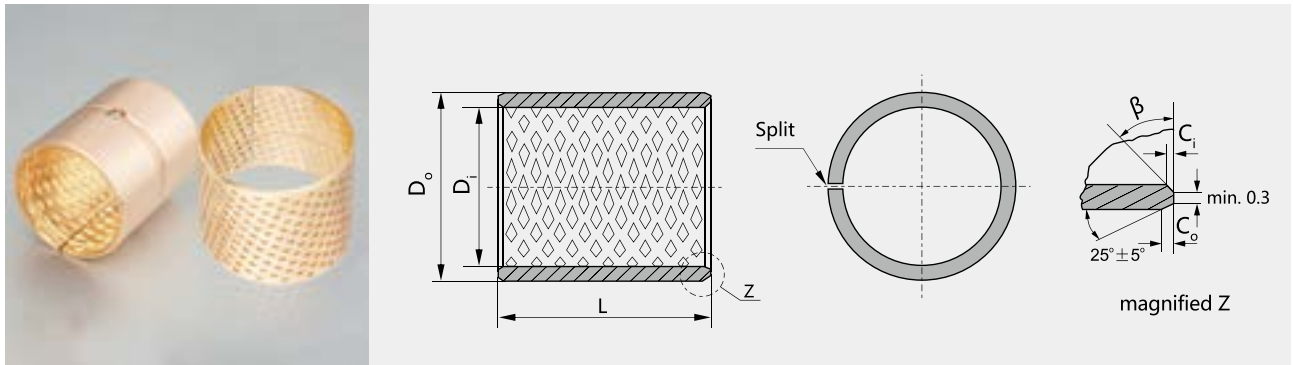
Available type



MQ-090/092 Series Bronze-Wrapped Bushings (Parts)



MQ-090/MQ-092 Series Bronze-Wrapped Bushings Specification



available if need

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°

Unit: mm

D _i φ d	D _o φ D	Length L ± 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		

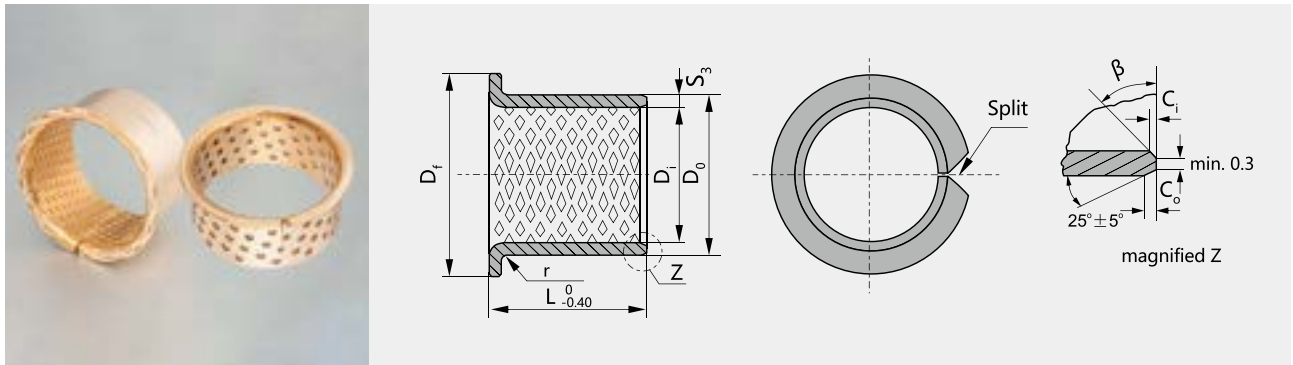


MQ-090/MQ-092 Series Bronze-Wrapped Bushings Specification

D _i φ d	D _o φ D	Length L $\begin{smallmatrix} 0 \\ -0.40 \end{smallmatrix}$									
		25	30	35	40	50	60	70	80	90	100
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					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

Non-standard dimensions & tolerances are available

MQ-090F/MQ-092F Series Bronze Flange Bushing Specification



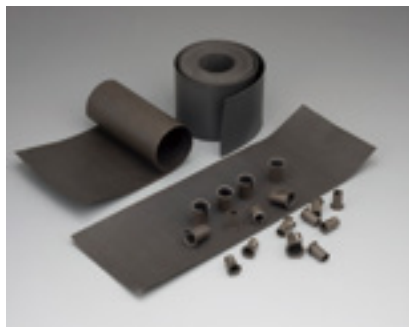
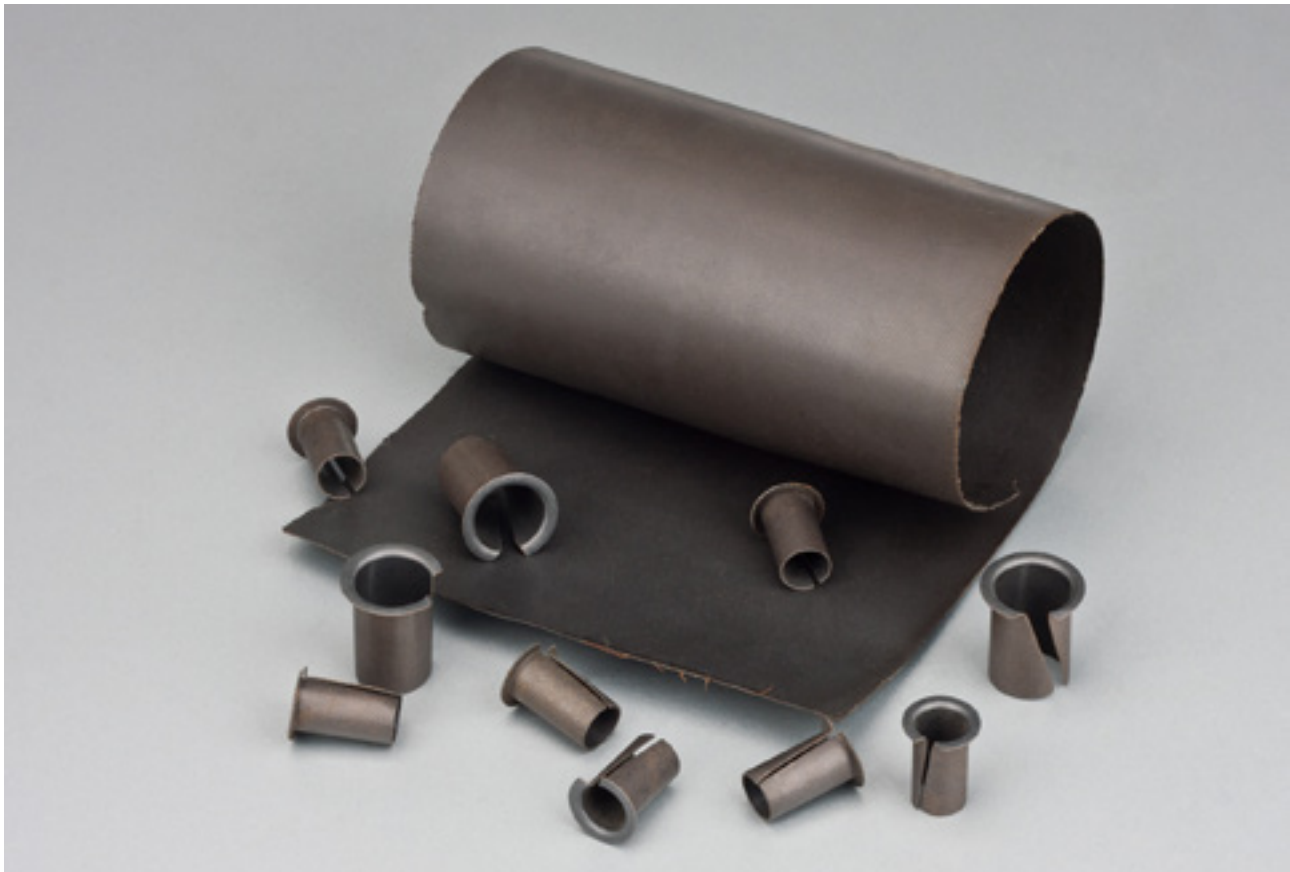
available if need

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

Unit: mm

D_i ϕd	D_o ϕD	D_f	Length L 0.40																				
			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	40350	40400	40500														
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										

QM-FR Bronze Mesh with PTFE Bushings



MQ-FR Bronze Mesh with PTFE Bushings

MQ-FR(FR) soft strip material consists of a bronze mesh shell, laminated with compounded PTFE tape.

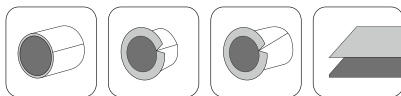
It is widely used in car door hinges, joint bearings, medical industries, food industries, textile machines etc. The standard wall thickness is 0.48±0.02 mm.



Product Benefits

- 1.able to work stably in without oil lubrication state.;
- 2, suitable for low-speed reciprocating motion, swing and intermittent movement, etc.;
- 3.good anti-wear;
- 4.good corrosion resistance.

Available type

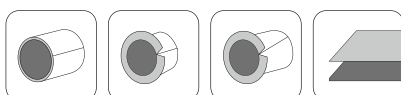


Application case



Automobile door and window hinge, textile machinery, joint bearing, chemical industry, food industry, valve control mechanism, office machinery, instrument and so on, light load low speed but need to lubricate different occasions

Availability



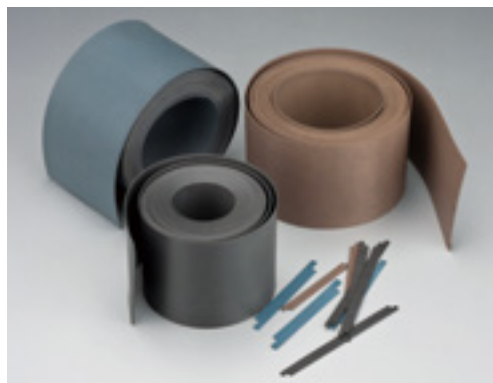
Technical Parameters

Metal Bushing Capacity	Thickness
Bronze	0.48 ±0.02
Copper	0.48 ±0.02
Stainless steel	0.48 ±0.02

*Different thickness is available while big demand!

Max.Loading	Temp.limit	Max. Speed		Max.PV limit	Friction Coefficient μ
		Dry	Oil		
30N/mm ²	-20°C~+250°C	0.5m/s	2m/s	1.65/mm ² ·m/s	0.05~0.20

MQ-FD Soft Strip with Copper Lubricants



FD Soft strip is composed of PTFE and bronze powder, it is fabricated by using mould to press and then sinter. It has the advantage of lower friction and lower wear and powerful tensile strength.

FD can be used with oil or without oil, so it is the best choice for machine tool slide guide, automobile absorber, piston ring, and so on.

Tensile strength	Temp.limit	Temp.limit	Friction Coefficient μ
22N/mm ²	1.5m/s	-100°C~250°C	0.09~0.2

Other Types (Ref.to our catalogue of Solid lubricating bushing or website)

JDB/ MQ650# Cast Brass/Bronze Lubrication bearing with Graphite plug



MQ600 Solid Bronze Turned Bearing



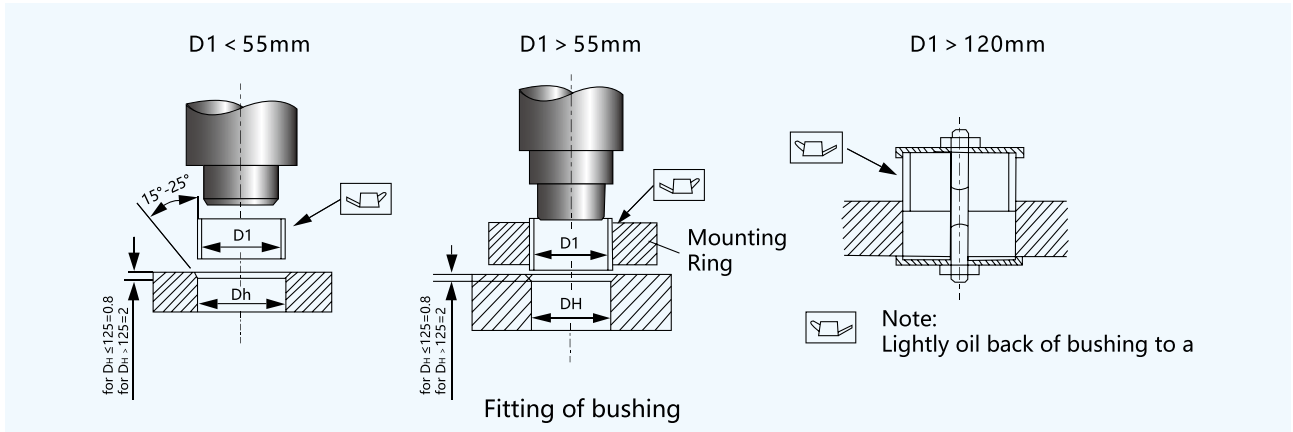
Others Product



Bearings Installation

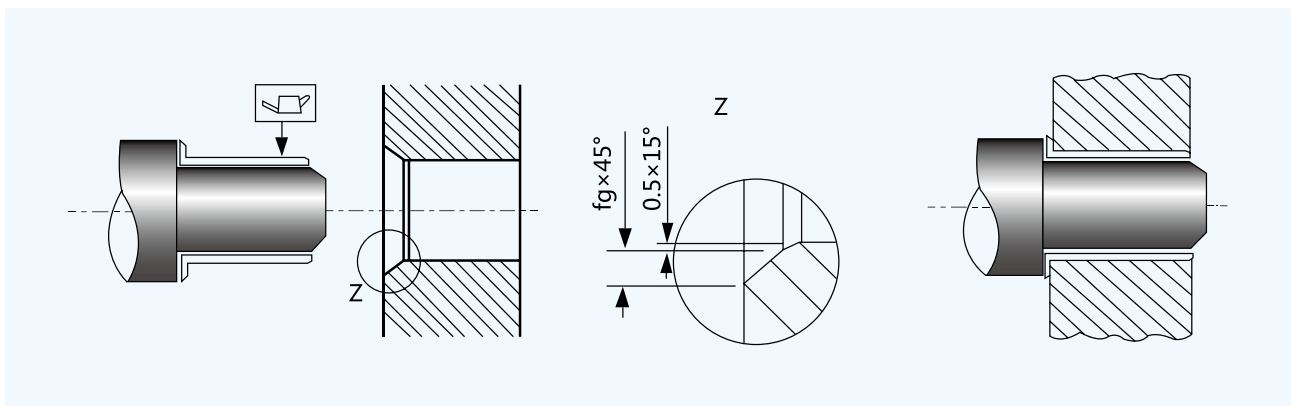
1. Fitting methods for cylindrical bushings

Diameter of the pressing-in arbor is 0.1 ~ 0.3mm smaller than the diameter of the bushing. It's better to have the core axis heat-treated. For easier fitting, we can add a light coating of oil on the bushing backing. Make sure not to fix the bushing into the housing by hammering its end surface. When the diameter of the bushing is more than 55mm, necessary measures must be taken to calibrate the seam position of bushing.

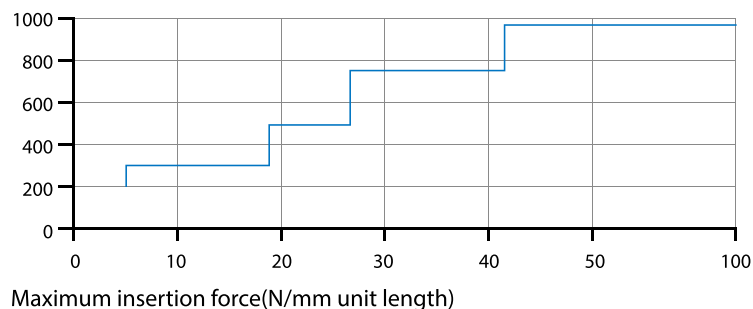


2. Fitting methods for flanged bushings

For flanged bushings, the radius at the flanged folds must be taken into account. A sufficiently large chamfer must be provided on the housing to prevent flanged bush fouling in the area of the radius. Fitting methods for the flanged bushings are similar to that for cylindrical bushings. However, the diameter of the convex part on the pressing-in arbor for flanged bushings needs to be a little bigger.

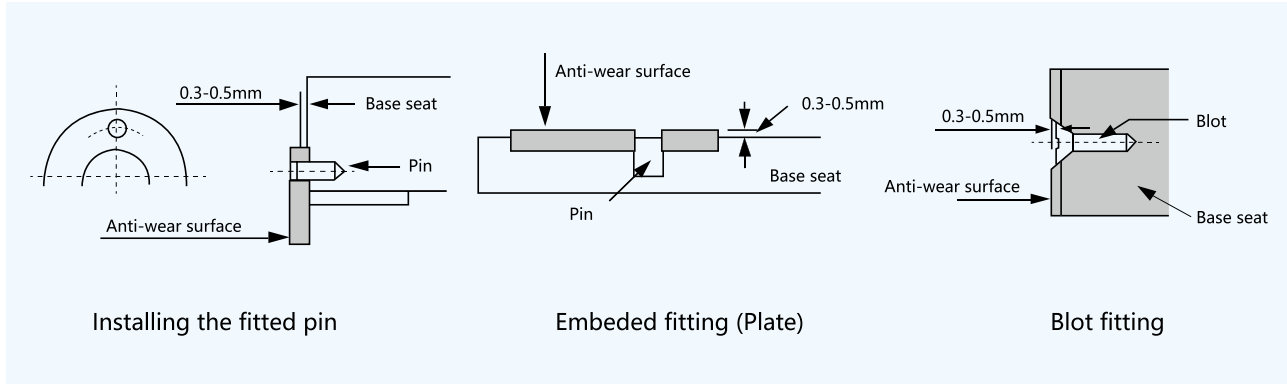


3. Insertion forces



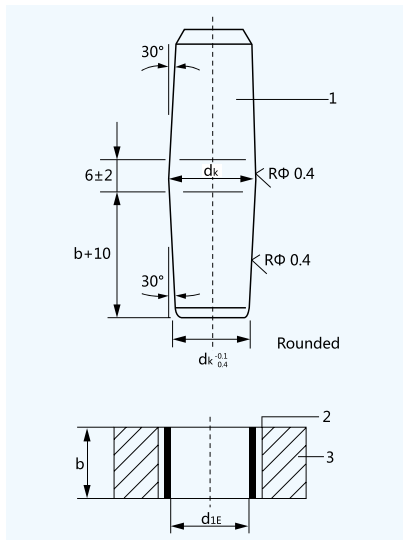
4、Fitting methods for thrust washers and gliding plate.

We recommend using a single dowel or countersunk head screw to fix the thrust washer. For the gliding plate we recommend the methods of enclashing. When fix the thrust washer or the gliding plate, the sliding layer shall be 0.3~0.5mm thicker than base seat.



If the above fitting methods are not appropriate or economic, you can adopt laser welding, adhesive fitting or high temperature welding. When using adhesive fitting, dowel is optional, but the fitting effect may not be good. Adhesives like oxidized rosin and synthetic rosin is more appropriate. When using laser welding or high temperature welding, the temperature shall not exceed the max temperature that the lubricating layer could bear.

5、Inside diameter alignment after fitting



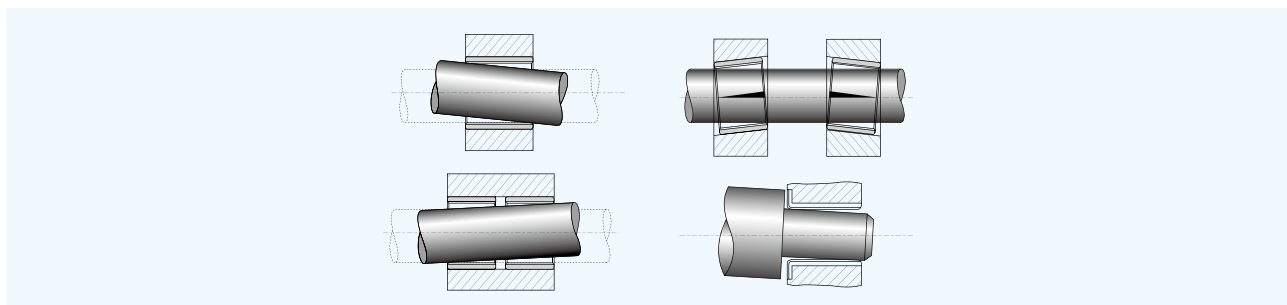
1) Inside diameter alignment for common bushings

Normally the bushing can be immediately put into use after it has been fixed. But if there's need to enlarge the matching clearance or due to too much surplus the inner bore of the bushing deformed, we can use the following showed molding tools to make the inner bore meet the required dimensions. Diameter of the molding tools shall not be too big; otherwise, life of the bushing may decrease. Please see the picture:

Dia of the axis d	Required ID dE	Diameter of the shaping tools dk
d	d	d+0.03
	d+0.02	d+0.06
	d+0.03	d+0.08
	d+0.04	d+0.10

2) Alignment of the mating arbor

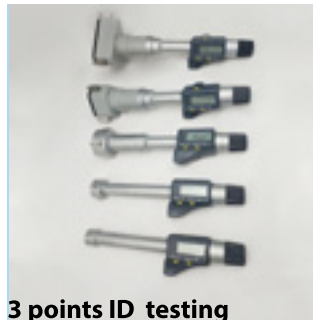
In order to avoid load centralization, when fitting the bushing, radial or axial movement, parallelism between the bushing and the arbor must be aligned. It requires the parallelism not exceed 0.02mm.



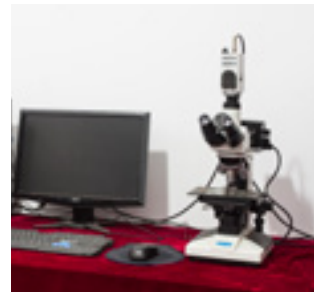
Testing Devices



Coating thickness gauge



3 points ID testing



Metallographical testing



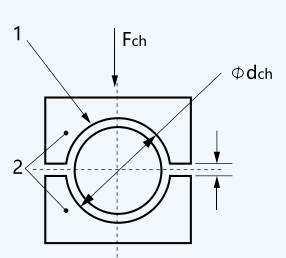
chemical elements testing

Checking methods for wrapped Bushing

1、Methods for checking the outside diameter

1) Load checking (As ISO3547 Test A)

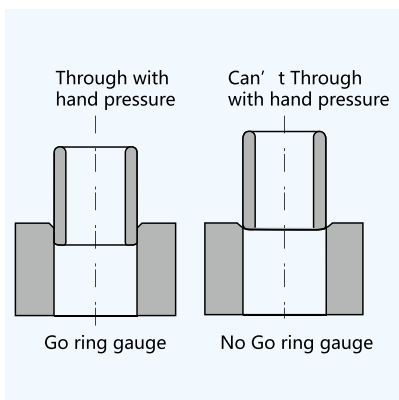
The checking rig consists of two checking block halves. Align the "zero" position of the checking blocks by a setting plug d_{ch} . 2 and make the bush's split place at the upper halve of the checking blocks and then add the same checking load F_{ch} on both of the checking halves. Read the moving distance of the halves displayed on the distance indicator and record the reading Δz .



ISO3547-2 Testing A

Verify mould and mandrel	$d_{ch1}=d_{ch2}=$	mm
Testing load	$F_{ch}=$	
Limit	$\Delta z=$	e= mm
Outer diameter	$D=$	to mm

2-- Hatch position 1-- Verifying mould



2) Measuring of gauge (As ISO 3547-2 Testing B)

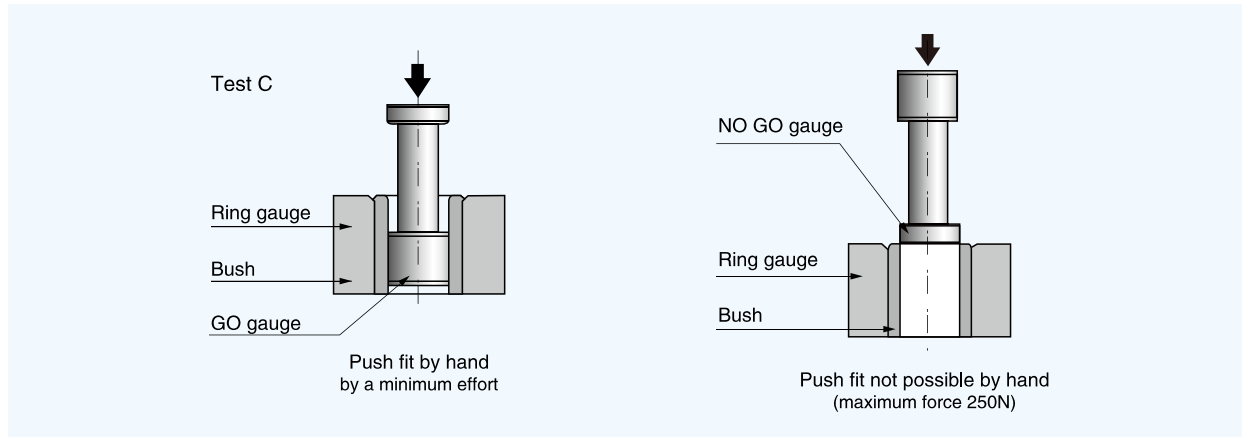
The checking is carried out by two ring gauges, a "GO" ring gauge and a "NO GO" ring gauge. It must be possible to press the bushing in "GO" ring gauge with hand pressure (max 250N). With the same force it must not be possible to press the bushing in "NO GO" ring gauge.

Note: In some cases, such as the bushing with roundness problem, or the butt joints not close tightly, the accuracy of the checking may be affected.

2、 Inside diameter checking methods for wrapped bushing

1) Plug gauge checking (As ISO3547-2 Test C)

Press the bush into the ring gauge, the tolerance class of which is H7, and check the inside diameter of the bushing with plug gauges.

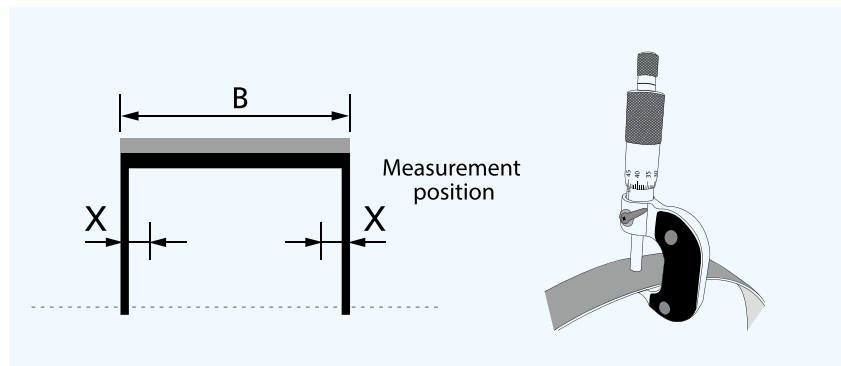


2) Wall thickness micrometer checking methods

Check the wall thickness of the bushing with a wall thickness micrometer and then calculate out the value of the inside diameter. According to ISO3547-2 make sure not to mark both 1&2 checking methods of the wall thickness and inside diameter on the drawing.

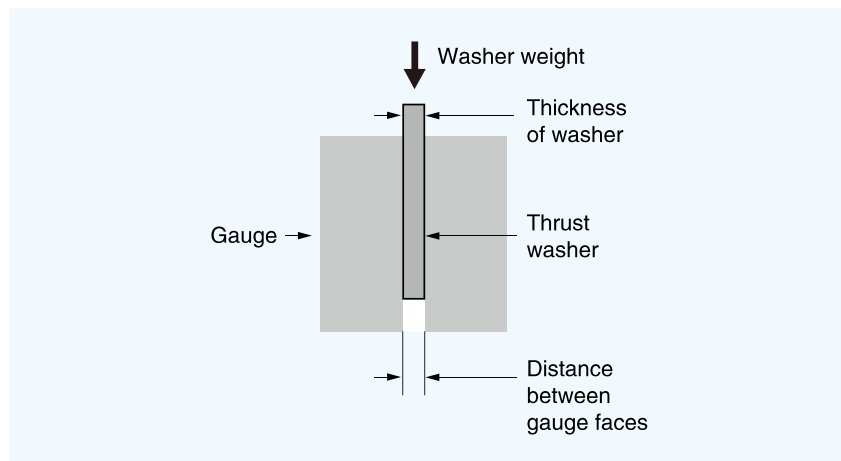
The wall thickness is measured at once, two or three positions axially according to the bearing dimensions. The wall thickness and the inside diameter shall not be specified together on the same drawing.

B[mm]	X[mm]	Measurement position
$B \leq 15$	$B/2$	1
$15 < B \leq 50$	4	2
$50 < B \leq 90$	6 and $B/2$	3
$B > 90$	8 and $B/2$	3

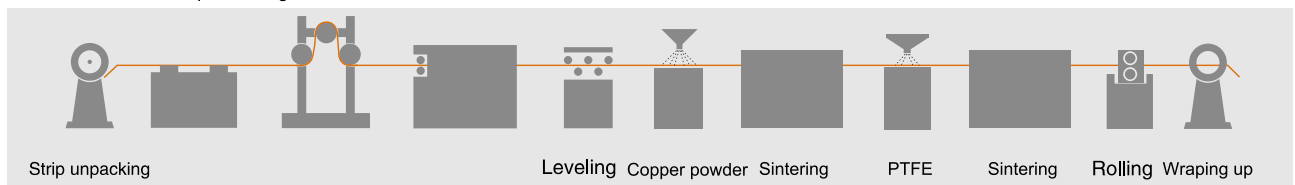


3、 Thrust washer test method

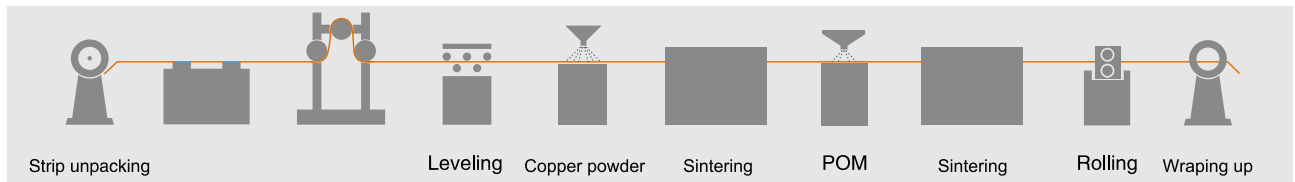
Beside the thickness, the flatness of washer is also important for service life of washer and grinding parts'. We use very helpful test in which the washer falls through the gap between two plain parallel plates of a gauge with its own weight. The plates must be big enough to cover the whole washer.



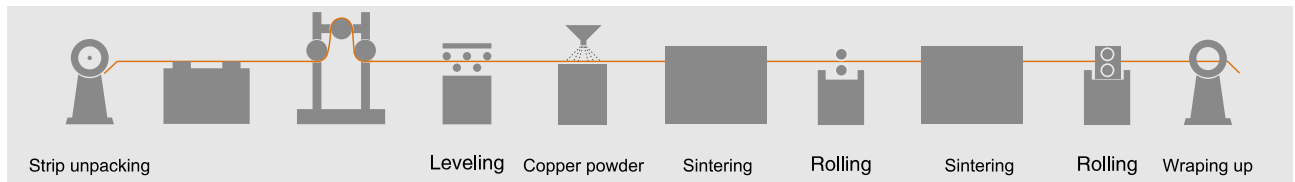
10 series material processing flow



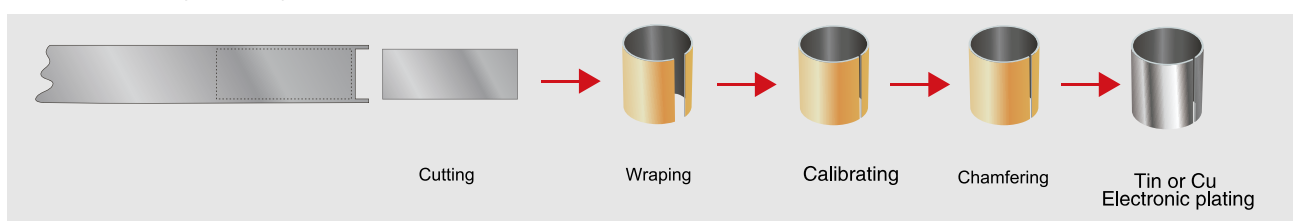
20 series material processing flow



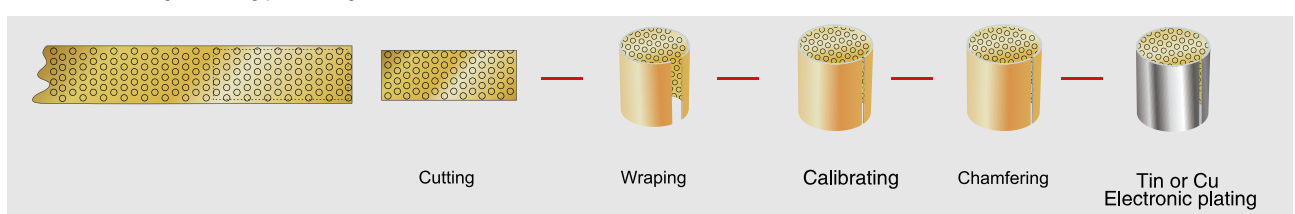
800 series material processing flow



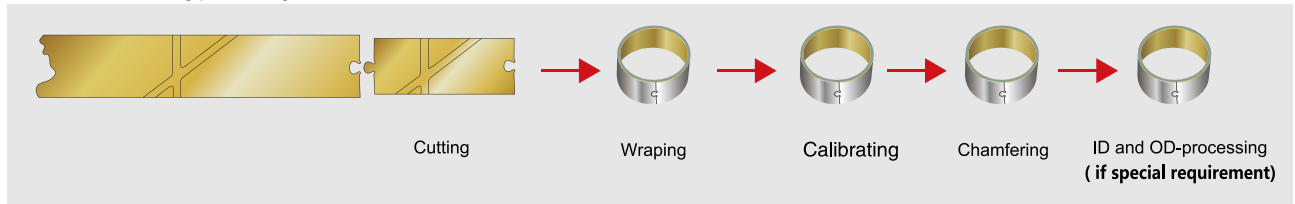
10 series bushing processing flow



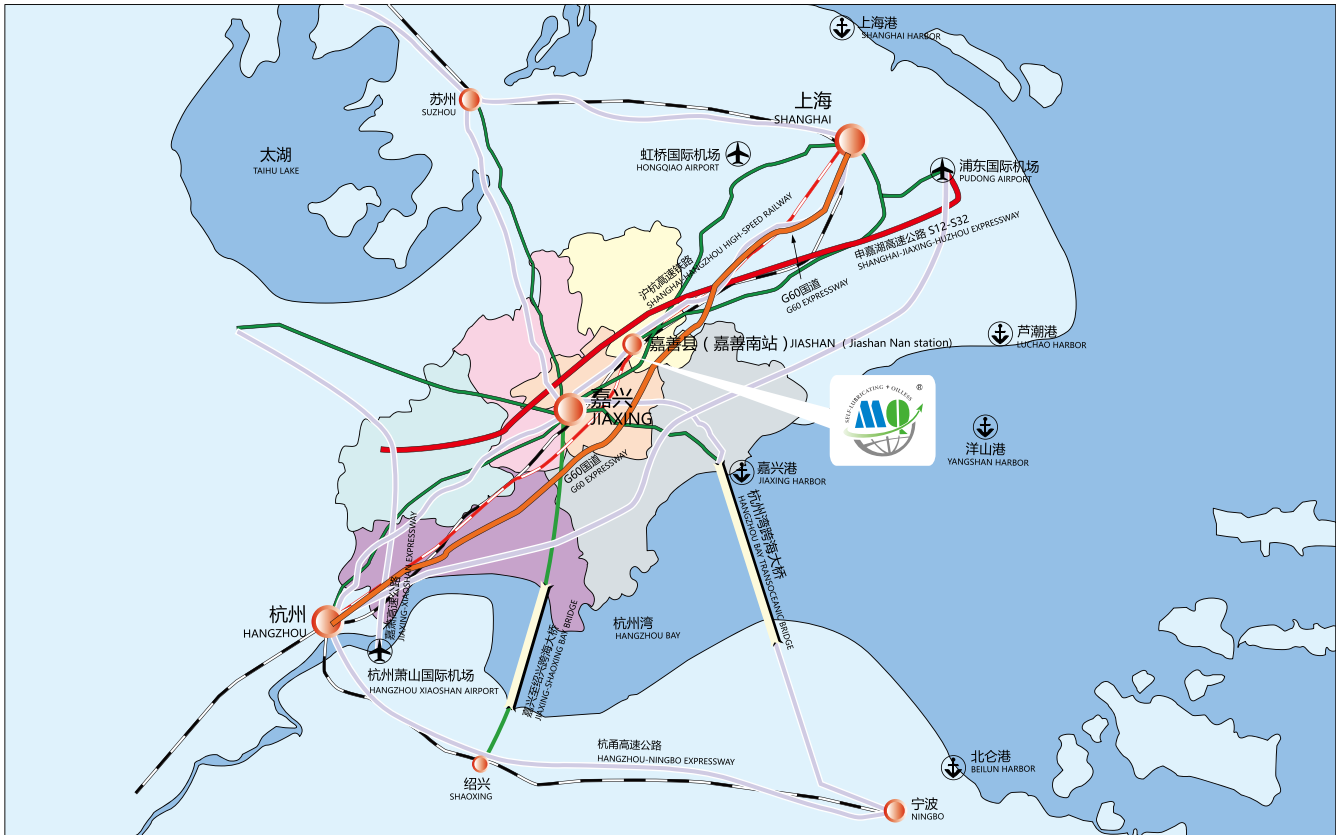
20 series straight bushing processing flow



800series bushing processing flow



***Visit our website of www.mqbearing.com to get more detail technical informations ***



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