

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;

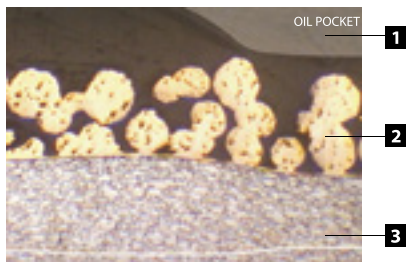
Suitable for reciprocating, rotating and oscillating movements;

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

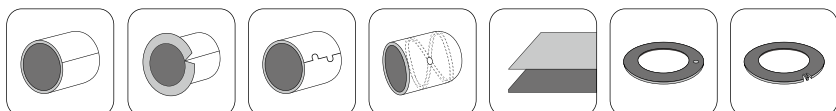
1. Good loading Capacity and anti-wear, anti-impact & shock;
2. Perform well in little of grease or perfect in abundant grease; Especially well suited for applications where lubricant can not be supplied continuously or repeatedly;
3. In high load capacity and low speed with rotational, oscillating or 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



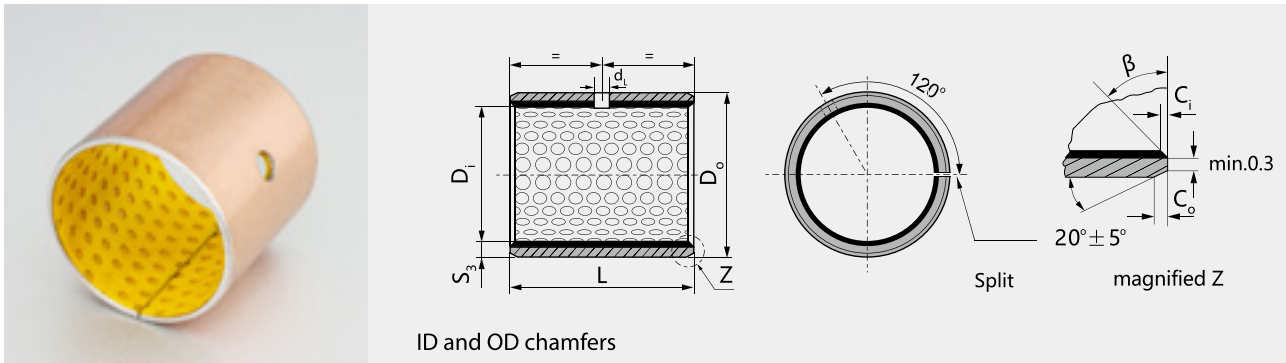
MQ-20 Boundary Lubricating Bushings

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)
	Materiai	Steel+Bronze +POM+Pb /No Pb+MSo2)	Steel+ Bronze+POM+MSo2	Bronze+ Bronze+POM+MSo2	Steel+ Bronze+POM+MSo2	Steel+Bronze +(PTFE+PEEK)
Typicai 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

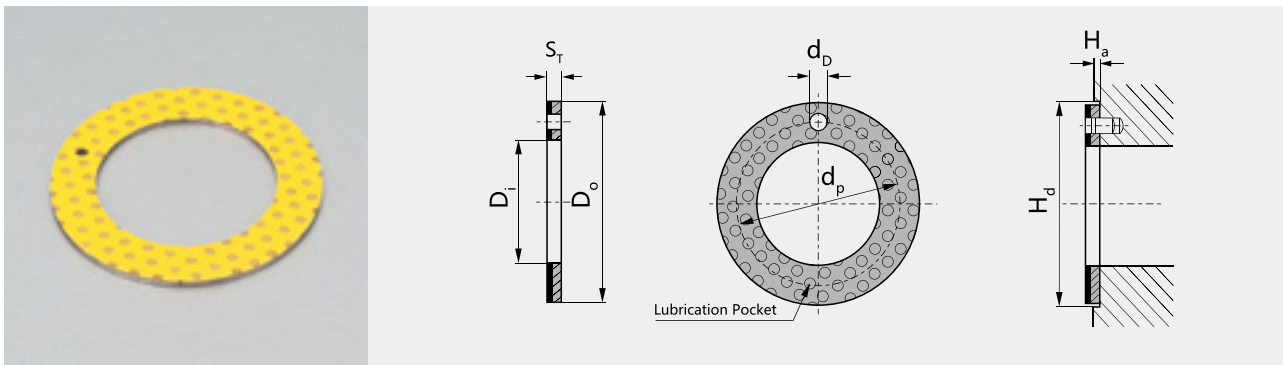
Shaft (f7) D_s	Housing (H7) D_H	Tolerance (OD) D_o	After fixed (ID) $D_{i,a}$	Clearance D_o	Wall thick-ness S_3	Oil hole d_L	Length L $^0_{-0.40}$												
							10	15	20	25	30	35	40	45	50	60			
10 -0.022	12 +0.018	12 +0.065 +0.030	10.108 10.040	0.130 0.040	0.980 0.955	4	1010	1015	1020										
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	0.135 0.040			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	2215	2220	2225	2230									
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				12050	12060	12080	12090	12095	120100	120110					
125 _{-0.063}	130 ^{+0.040}	130 ^{+0.170} _{+0.100}	125.270 125.110	0.324 0.100			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



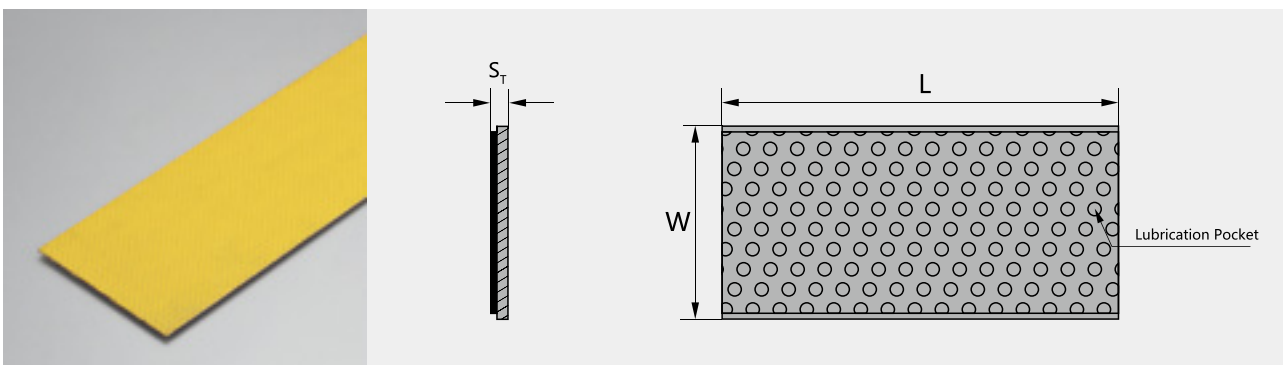
Unit: mm

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	2	65	1.5	78	
60	W62	62	90		76		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