

## CSB Bearings France

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# Metal-Polymer Composite Bearings



### PTFE Based Bearings

CSB-50: Steel bronze powder with PTFE	P9-P17
CSB-10DH: Steel bronze powder with PTFE	P18
CSB-11: Bronze backed with bronze powder PTFE	P19-P23
CSB-40: Steel bronze powder with PTFE	P24-P28
CSB-LA10: Aluminum bronze powder with PTFE	P29
CSB-FR: Bronze mesh with PTFE	P30
CSB-3S: Stainless steel with PTFE tape	P30
CSB-TEX: Steel backing with PTFE fabric	P31

### Thermoplastic Based Bearings

CSB-20: Steel bronze powder with POM	P32-P37
CSB-80: Steel bronze powder with PEEK	P38

# CSB-50 Steel Bronze Powder with PTFE/Fibre Dry Bearings

RoHS



## Features

Suitable for dry running with a 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.

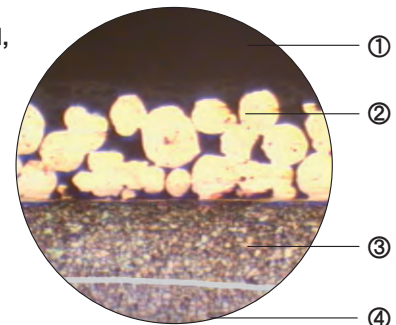
## Structure

**1. PTFE/Fibre mixture thickness 0.01~0.03mm**, provides an excellent initial transfer film, which effectively coats the mating surfaces of the bearing assembly, forming an oxide type solid lubricant film.

**2. Sintered bronze powder thickness 0.20-0.35mm**, provides Max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE-Fibre mixture.

**3. Low-carbon steel**, gives exceptionally high load carrying capacity, excellent heat dissipation.

**4. Copper/Tin plating thickness 0.002mm**, provides good corrosion resistance.



## Tech. Data

Max. load	Static	250N/mm <sup>2</sup>	Friction coefficient	0.03~0.20		
	Very low speed	140N/mm <sup>2</sup>		Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm <sup>2</sup>			Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm <sup>2</sup> *m/s	Thermal conductivity	42 W(m*K) <sup>-1</sup>		
	Continuous operation	1.8N/mm <sup>2</sup> *m/s	Coefficient of thermal expansion	11*10 <sup>-6</sup> *K <sup>-1</sup>		
Temp. limit	-195°C~+280°C					

## Typical Applications

This material meets the demanding criteria for long life and trouble-free performance with or without lubrication.

**Automotive:** tractors, combines, crop sprayers, earth-movers, graders and other construction, auto machines, specific uses in power steering cylinders, steering gear thrust washers, disc brakes, calipers and pistons, shock absorbers, governor linkage, windshield wiper motor, tilt gear assemblies...

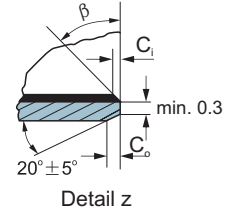
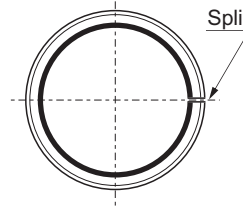
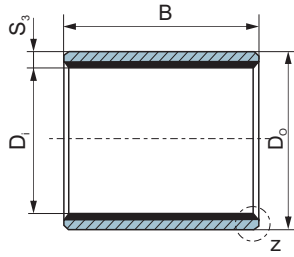
**Business machines:** photocopy machines, typewriters, mail sorters, postage meter systems, computer terminal

printers and peripheral equipment, automatic printing devices, mail processing machinery...

**Hydraulics and valves:** pumps including gear, rotary, water, axial piston, and other types, ball, butterfly, poppet steam, and other valves and valve trunnions...

**Home appliances:** tape recorders, refrigerators, air conditioners, cleaners, polishers, sewing machines, ovens, dishwashers, clothes washing machines...And materials handling, marine engine, packaging, textile equipment, tools...etc.

# CSB-50 Metric Cylindrical Bushes



ID and OD chamfers

S <sub>3</sub>	C <sub>0</sub>	C <sub>i</sub>	β	S <sub>3</sub>	C <sub>0</sub>	C <sub>i</sub>	β
0.75	0.5±0.3	0.25±0.2	30° ±5°	2.00	1.2±0.4	0.50±0.3	30° ±5°
1.00	0.6±0.3	0.30±0.2	30° ±5°	2.50	1.8±0.6	0.60±0.3	45° ±5°
1.50	0.7±0.3	0.50±0.3	30° ±5°				

Unit:mm

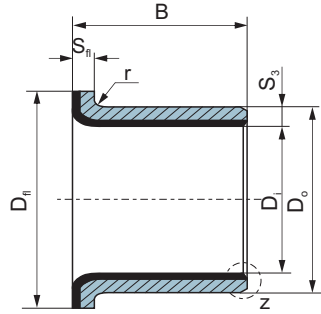
Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>o</sub>	ID after fixed D <sub>i,a</sub>	Clearance C <sub>D</sub>	Wall thick- ness S <sub>3</sub>	B <sup>0</sup> (d ≤ φ30 B-0.3) -0.40 (d > φ30 B-0.4)													
						6	8	10	12	15	20	25	30	40	50				
6 -0.010 -0.022	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	1.005 0.980	CSB-50 0606	CSB-50 0608	CSB-50 0610											
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003		CSB-50 0806	CSB-50 0808	CSB-50 0810	CSB-50 0812	CSB-50 0815									
10 -0.013 -0.028	12 +0.018	12 +0.065 +0.030	10.058 9.990	0.086 0.003		CSB-50 1006	CSB-50 1008	CSB-50 1010	CSB-50 1012	CSB-50 1015	CSB-50 1020								
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006		CSB-50 1206	CSB-50 1208	CSB-50 1210	CSB-50 1212	CSB-50 1215	CSB-50 1220	CSB-50 1225							
13 -0.016 -0.034	15 +0.018	15 +0.065 +0.030	13.058 12.990			CSB-50 1310					CSB-50 1320								
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990			CSB-50 1410	CSB-50 1412	CSB-50 1415	CSB-50 1420	CSB-50 1425									
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990			CSB-50 1510	CSB-50 1512	CSB-50 1515	CSB-50 1520	CSB-50 1525									
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990			CSB-50 1610	CSB-50 1612	CSB-50 1615	CSB-50 1620	CSB-50 1625									
17 -0.016 -0.034	19 +0.021	19 +0.075 +0.035	17.061 16.990			0.095 0.006	CSB-50 1710	CSB-50 1712			CSB-50 1720								
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990				CSB-50 1810	CSB-50 1812	CSB-50 1815	CSB-50 1820	CSB-50 1825								
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990		0.112 0.010				CSB-50 2010	CSB-50 2012	CSB-50 2015	CSB-50 2020	CSB-50 2025	CSB-50 2030					
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	CSB-50 2210			CSB-50 2212	CSB-50 2215	CSB-50 2220	CSB-50 2225	CSB-50 2230								
24 -0.020 -0.041	27 +0.021	27 +0.075 +0.035	24.071 23.990					CSB-50 2415	CSB-50 2420	CSB-50 2425	CSB-50 2430								
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990				CSB-50 2510	CSB-50 2512	CSB-50 2515	CSB-50 2520	CSB-50 2525	CSB-50 2530	CSB-50 2540	CSB-50 2550					
28 -0.020 -0.041	32 +0.025	32 +0.085 +0.045	28.085 27.990	0.126 0.010				CSB-50 2815	CSB-50 2820	CSB-50 2825	CSB-50 2830	CSB-50 2840							
30 -0.020 -0.041	34 +0.025	34 +0.085 +0.045	30.085 29.990		CSB-50 3012	CSB-50 3015	CSB-50 3020	CSB-50 3025	CSB-50 3030	CSB-50 3040									
32 -0.025 -0.050	36 +0.025	36 +0.085 +0.045	32.085 31.990	0.135 0.015					CSB-50 3220		CSB-50 3230	CSB-50 3240							
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990		CSB-50 3512	CSB-50 3515	CSB-50 3520	CSB-50 3525	CSB-50 3530	CSB-50 3540	CSB-50 3550								
38 -0.025 -0.050	42 +0.025	42 +0.085 +0.045	38.085 37.990				CSB-50 3815			CSB-50 3830	CSB-50 3840								
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990		CSB-50 4012			CSB-50 4020	CSB-50 4025	CSB-50 4030	CSB-50 4040	CSB-50 4050							

# CSB-50 Metric Cylindrical Bushes

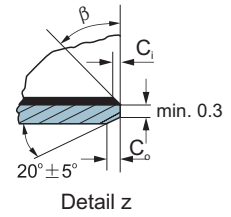
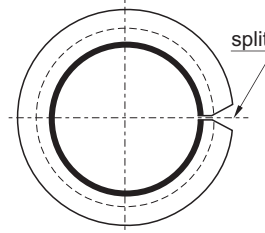
Unit:mm

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>O</sub>	ID after fixed D <sub>I,a</sub>	Clearance C <sub>O</sub>	Wall thick- ness S <sub>3</sub>	B <sup>0</sup> <sub>-0.40</sub>													
						20	25	30	40	50	60	70	80	100	115				
45 <sup>-0.050</sup> <sub>-0.025</sub>	50 <sup>+0.025</sup>	50 <sup>+0.085</sup> <sub>+0.045</sub>	45.105 44.990	0.155 0.015	2.505 2.460	CSB-50 4520	CSB-50 4525	CSB-50 4530	CSB-50 4540	CSB-50 4550									
50 <sup>-0.050</sup> <sub>-0.025</sub>	55 <sup>+0.030</sup>	55 <sup>+0.100</sup> <sub>+0.055</sub>	50.110 49.990	0.160 0.015		CSB-50 5020		CSB-50 5030	CSB-50 5040	CSB-50 5050	CSB-50 5060								
55 <sup>-0.060</sup> <sub>-0.030</sub>	60 <sup>+0.030</sup>	60 <sup>+0.100</sup> <sub>+0.055</sub>	55.110 54.990	0.170 0.020				CSB-50 5530	CSB-50 5540	CSB-50 5550	CSB-50 5560								
60 <sup>-0.060</sup> <sub>-0.030</sub>	65 <sup>+0.030</sup>	65 <sup>+0.100</sup> <sub>+0.055</sub>	60.110 59.990						CSB-50 6030	CSB-50 6040	CSB-50 6050	CSB-50 6060	CSB-50 6070						
65 <sup>-0.060</sup> <sub>-0.030</sub>	70 <sup>+0.030</sup>	70 <sup>+0.100</sup> <sub>+0.055</sub>	65.110 64.990						CSB-50 6530	CSB-50 6540	CSB-50 6550	CSB-50 6560	CSB-50 6570						
70 <sup>-0.060</sup> <sub>-0.030</sub>	75 <sup>+0.030</sup>	75 <sup>+0.100</sup> <sub>+0.055</sub>	70.110 69.990							CSB-50 7040	CSB-50 7050	CSB-50 7060	CSB-50 7070	CSB-50 7080					
75 <sup>-0.060</sup> <sub>-0.030</sub>	80 <sup>+0.030</sup>	80 <sup>+0.100</sup> <sub>+0.055</sub>	75.110 74.990						CSB-50 7530	CSB-50 7540	CSB-50 7550	CSB-50 7560	CSB-50 7570	CSB-50 7580					
80 <sup>-0.046</sup>	85 <sup>+0.035</sup>	85 <sup>+0.120</sup> <sub>+0.070</sub>	80.155 80.020	0.201 0.020	2.490 2.440				CSB-50 8040	CSB-50 8050	CSB-50 8060	CSB-50 8070	CSB-50 8080	CSB-50 80100					
85 <sup>-0.054</sup>	90 <sup>+0.035</sup>	90 <sup>+0.120</sup> <sub>+0.070</sub>	85.155 85.020	0.209 0.020					CSB-50 8540		CSB-50 8560		CSB-50 8580	CSB-50 85100					
90 <sup>-0.054</sup>	95 <sup>+0.035</sup>	95 <sup>+0.120</sup> <sub>+0.070</sub>	90.155 90.020						CSB-50 9040	CSB-50 9050	CSB-50 9060		CSB-50 9080	CSB-50 90100					
95 <sup>-0.054</sup>	100 <sup>+0.035</sup>	100 <sup>+0.120</sup> <sub>+0.070</sub>	95.155 95.020							CSB-50 9550	CSB-50 9560		CSB-50 9580	CSB-50 95100					
100 <sup>-0.054</sup>	105 <sup>+0.035</sup>	105 <sup>+0.120</sup> <sub>+0.070</sub>	100.155 100.020							CSB-50 10050	CSB-50 10060		CSB-50 10080		CSB-50 100115				
105 <sup>-0.054</sup>	110 <sup>+0.035</sup>	110 <sup>+0.120</sup> <sub>+0.070</sub>	105.155 105.020								CSB-50 10560		CSB-50 10580		CSB-50 105115				
110 <sup>-0.054</sup>	115 <sup>+0.035</sup>	115 <sup>+0.120</sup> <sub>+0.070</sub>	110.155 110.020								CSB-50 11060		CSB-50 11080		CSB-50 110115				
120 <sup>-0.054</sup>	125 <sup>+0.040</sup>	125 <sup>+0.170</sup> <sub>+0.100</sub>	120.210 120.070	0.264 0.070	2.465 2.415						CSB-50 12060		CSB-50 12080	CSB-50 120100					
125 <sup>-0.063</sup>	130 <sup>+0.040</sup>	130 <sup>+0.170</sup> <sub>+0.100</sub>	125.210 125.070	0.273 0.070							CSB-50 12560			CSB-50 125100	CSB-50 125115				
130 <sup>-0.063</sup>	135 <sup>+0.040</sup>	135 <sup>+0.170</sup> <sub>+0.100</sub>	130.210 130.070								CSB-50 13060		CSB-50 13080	CSB-50 130100					
140 <sup>-0.063</sup>	145 <sup>+0.040</sup>	145 <sup>+0.170</sup> <sub>+0.100</sub>	140.210 140.070								CSB-50 14060		CSB-50 14080	CSB-50 140100					
150 <sup>-0.063</sup>	155 <sup>+0.040</sup>	155 <sup>+0.170</sup> <sub>+0.100</sub>	150.210 150.070								CSB-50 15060		CSB-50 15080	CSB-50 150100					
160 <sup>-0.063</sup>	165 <sup>+0.040</sup>	165 <sup>+0.170</sup> <sub>+0.100</sub>	160.210 160.070								CSB-50 16060		CSB-50 16080	CSB-50 160100	CSB-50 160115				
180 <sup>-0.063</sup>	185 <sup>+0.046</sup>	185 <sup>+0.210</sup> <sub>+0.130</sub>	180.216 180.070			0.279 0.070	2.465 2.415							CSB-50 18080	CSB-50 180100				
190 <sup>-0.072</sup>	195 <sup>+0.046</sup>	195 <sup>+0.210</sup> <sub>+0.130</sub>	190.216 190.070	0.288 0.070									CSB-50 19080	CSB-50 190100					
200 <sup>-0.072</sup>	205 <sup>+0.046</sup>	205 <sup>+0.210</sup> <sub>+0.130</sub>	200.216 200.070								CSB-50 20060		CSB-50 20080	CSB-50 200100					
220 <sup>-0.072</sup>	225 <sup>+0.046</sup>	225 <sup>+0.210</sup> <sub>+0.130</sub>	220.216 220.070										CSB-50 22080	CSB-50 220100					
250 <sup>-0.072</sup>	255 <sup>+0.052</sup>	255 <sup>+0.260</sup> <sub>+0.170</sub>	250.222 250.070		0.294 0.070	2.465 2.415								CSB-50 25080	CSB-50 250100				
260 <sup>-0.081</sup>	265 <sup>+0.052</sup>	265 <sup>+0.260</sup> <sub>+0.170</sub>	260.222 260.070											CSB-50 26080	CSB-50 260100				
280 <sup>-0.081</sup>	285 <sup>+0.052</sup>	285 <sup>+0.260</sup> <sub>+0.170</sub>	280.222 280.070		0.303 0.070									CSB-50 28080	CSB-50 280100				
300 <sup>-0.081</sup>	305 <sup>+0.052</sup>	305 <sup>+0.260</sup> <sub>+0.170</sub>	300.222 300.070									CSB-50 30080	CSB-50 300100						

# CSB-50 Metric Flange Bushes



S <sub>3</sub>	1.0	1.5	2.0	2.5
r	1 <sup>+0.5</sup>	1±0.5	1.5±0.5	2±0.5

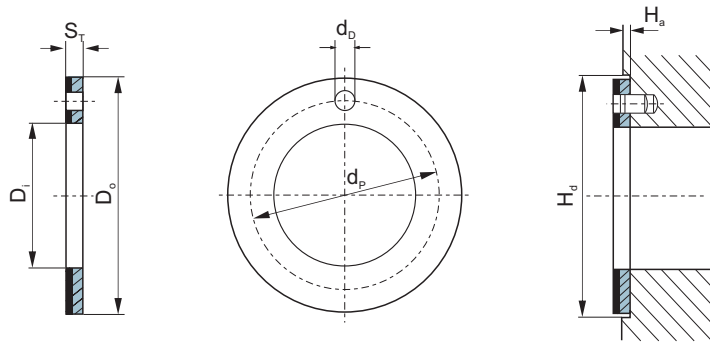


Unit:mm

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>O</sub>	ID after fixed D <sub>i.a</sub>	Clearance C <sub>O</sub>	Designation	Wall thickness S <sub>3</sub>	Dimension				
							D <sub>i</sub>	D <sub>O</sub>	D <sub>i</sub> ± 0.5	B±0.25	S <sub>fl</sub> 0.2
6 -0.013 -0.028	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	CSB-50F06040	1.005 0.980	6	8	12	4	1
					CSB-50F06070					7	
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003	CSB-50F08055	1.005 0.980	8	10	15	5.5	1
					CSB-50F08075					7.5	
10 -0.016 -0.034	12 +0.018	12 +0.055 +0.025	10.058 9.990	0.086 0.003	CSB-50F10070	1.005 0.980	10	12	18	7	1
					CSB-50F10090					9	
					CSB-50F10120					12	
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006	CSB-50F12070	1.005 0.980	12	14	20	7	1
					CSB-50F12090					9	
					CSB-50F12120					12	
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990	0.092 0.006	CSB-50F14120	1.005 0.980	14	16	22	12	1
					CSB-50F14170					17	
					CSB-50F15090					9	
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990	0.092 0.006	CSB-50F15120	1.005 0.980	15	17	23	12	1
					CSB-50F15170					17	
					CSB-50F16120					12	
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990	0.092 0.006	CSB-50F16170	1.005 0.980	16	18	24	17	1
					CSB-50F18120					12	
					CSB-50F18170					17	
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990	0.095 0.006	CSB-50F18200	1.005 0.980	18	20	26	20	1
					CSB-50F20115					11.5	
					CSB-50F20165					16.5	
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990	0.112 0.010	CSB-50F20215	1.505 1.475	20	23	30	21.5	1.5
					CSB-50F22150					15	
					CSB-50F22200					20	
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	0.112 0.010	CSB-50F25115	1.505 1.475	22	25	32	11.5	1.5
					CSB-50F25165					16.5	
					CSB-50F25215					21.5	
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990	0.112 0.010	CSB-50F30160	2.005 1.970	25	28	35	16	2
					CSB-50F30260					26	
					CSB-50F35160					16	
30 -0.025 -0.050	34 +0.025	34 +0.075 +0.035	30.085 29.990	0.126 0.010	CSB-50F35260	2.005 1.970	30	34	42	26	2
					CSB-50F40260					26	
					CSB-50F40400					40	
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990	0.135 0.015	CSB-50F40260	2.005 1.970	35	39	47	26	2
					CSB-50F40260					26	
					CSB-50F40400					40	
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990	0.135 0.015	CSB-50F40400	2.005 1.970	40	44	53	40	2

# CSB-50 Metric Thrust Washer and Strip

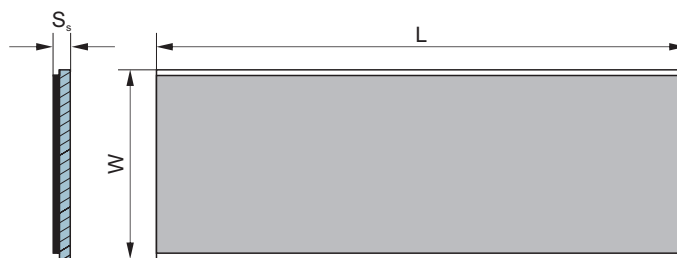
## Metric thrust washer



Unit:mm

Shaft D <sub>s</sub>	Designation	Washer dimension				Installation size		H <sub>d</sub> +0.12
		D <sub>i</sub> +0.25	D <sub>o</sub> -0.25	S <sub>t</sub> -0.05	d <sub>p</sub> ±0.125	d <sub>b</sub> <sup>+0.4</sup> <sub>+0.1</sub>	H <sub>a</sub> ±0.2	
8	CSB-50WC10	10	20	1.5	15	1.5	1	20
10	CSB-50WC12	12	24		18			24
12	CSB-50WC14	14	26		20	26		
14	CSB-50WC16	16	30		23	30		
16	CSB-50WC18	18	32		25	32		
18	CSB-50WC20	20	36		28	36		
20	CSB-50WC22	22	38		30	38		
22	CSB-50WC24	24	42		33	42		
24	CSB-50WC26	26	44		35	44		
26	CSB-50WC28	28	48		38	48		
30	CSB-50WC32	32	54	43	54			
36	CSB-50WC38	38	62	50	62			
40	CSB-50WC42	42	66	54	66			
46	CSB-50WC48	48	74	61	74			
50	CSB-50WC52	52	78	2	65	1.5	78	
60	CSB-50WC62	62	90		76		90	

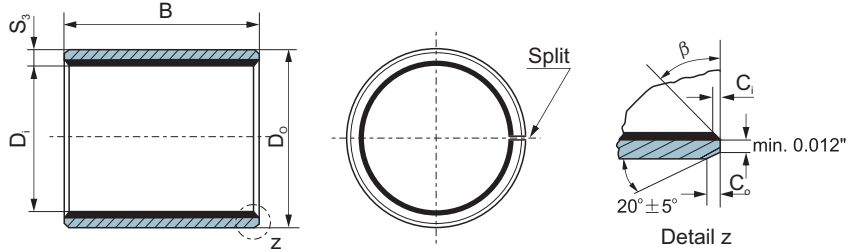
## Metric standard strip



Unit:mm

Type	Length ± 1	Width ± 1	Thickness -0.05
CSB-50SP	500	150	1.0
CSB-50SP	500	150	1.5
CSB-50SP	500	150	2.0
CSB-50SP	500	150	2.5

# CSB-50 Inch Cylindrical Bushes



ID and OD chamfers

S <sub>3</sub>	C <sub>0</sub>	C <sub>1</sub>	β	S <sub>3</sub>	C <sub>0</sub>	C <sub>1</sub>	β
0.0315	0.008-0.030	0.002-0.018	30° ± 5°	0.0787	0.030-0.060	0.008-0.032	30° ± 5°
0.0472	0.012-0.035	0.006-0.022	30° ± 5°	0.0945	0.050-0.095	0.020-0.043	45° ± 5°
0.0630	0.015-0.040	0.008-0.032	30° ± 5°				

Unit: inch"

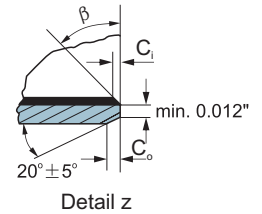
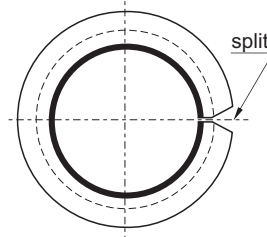
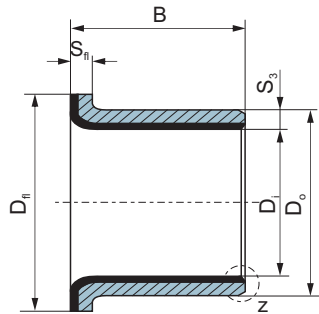
Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	ID after fixed D <sub>1a</sub>	Clearance C <sub>D</sub>	Length ± 0.010					
0.1243 0.1236	0.1878 0.1873	0.1268 0.1243	0.0032 0.0000	CSB-50 02IB02	CSB-50 02IB03				
0.1554 0.1547	0.2191 0.2186	0.1581 0.1556	0.0034 0.0002	CSB-50 025IB025	CSB-50 025IB04				
0.1865 0.1858	0.2503 0.2497	0.1893 0.1867	0.0035 0.0002	CSB-50 03IB03	CSB-50 03IB04	CSB-50 03IB06			
0.2490 0.2481	0.3128 0.3122	0.2518 0.2492	0.0037 0.0002	CSB-50 04IB04	CSB-50 04IB06				
0.3115 0.3106	0.3753 0.3747	0.3143 0.3117		CSB-50 05IB06	CSB-50 05IB08				
0.3740 0.3731	0.4691 0.4684	0.3769 0.3742	0.0038 0.0002	CSB-50 06IB03	CSB-50 06IB04	CSB-50 06IB06	CSB-50 06IB08	CSB-50 06IB10	CSB-50 06IB12
0.4365 0.4355	0.5316 0.5309	0.4394 0.4367	0.0039 0.0002	CSB-50 07IB08	CSB-50 07IB12				
0.4990 0.4980	0.5941 0.5934	0.5019 0.4992		CSB-50 08IB04	CSB-50 08IB06	CSB-50 08IB08	CSB-50 08IB10	CSB-50 08IB12	CSB-50 08IB14
0.5615 0.5605	0.6566 0.6559	0.5644 0.5617		CSB-50 09IB06	CSB-50 09IB08	CSB-50 09IB10	CSB-50 09IB12		
0.6240 0.6230	0.7192 0.7184	0.6270 0.6242	0.0040 0.0002	CSB-50 10IB04	CSB-50 10IB08	CSB-50 10IB10	CSB-50 10IB12	CSB-50 10IB14	CSB-50 10IB16
0.6865 0.6855	0.7817 0.7809	0.6895 0.6867		CSB-50 11IB14					
0.7491 0.7479	0.8755 0.8747	0.7525 0.7493	0.0046 0.0002	CSB-50 12IB04	CSB-50 12IB06	CSB-50 12IB08	CSB-50 12IB10	CSB-50 12IB12	CSB-50 12IB16
0.8116 0.8104	0.9380 0.9372	0.8150 0.8118		CSB-50 13IB12	CSB-50 13IB18				
0.8741 0.8729	1.0005 0.9997	0.8775 0.8743		CSB-50 14IB04	CSB-50 14IB06	CSB-50 14IB12	CSB-50 14IB16	CSB-50 14IB20	
0.9991 0.9979	1.1255 1.1247	1.0025 0.9993		CSB-50 16IB06	CSB-50 16IB08	CSB-50 16IB12	CSB-50 16IB16	CSB-50 16IB20	CSB-50 16IB24
1.1238 1.1226	1.2818 1.2808	1.1278 1.1240	0.0052 0.0002	CSB-50 18IB06	CSB-50 18IB10	CSB-50 18IB12	CSB-50 18IB16		
1.2488 1.2472	1.4068 1.4058	1.2528 1.2490	0.0056 0.0002	CSB-50 20IB06	CSB-50 20IB12	CSB-50 20IB14	CSB-50 20IB16	CSB-50 20IB20	CSB-50 20IB28
1.3738 1.3722	1.5318 1.5308	1.3778 1.3740		CSB-50 22IB12	CSB-50 22IB12	CSB-50 22IB24	CSB-50 22IB28		
1.4988 1.4972	1.6568 1.6558	1.5028 1.4990		CSB-50 24IB08	CSB-50 24IB16	CSB-50 24IB18	CSB-50 24IB20	CSB-50 24IB24	CSB-50 24IB32
1.6238 1.6222	1.7818 1.7808	1.6278 1.6240		CSB-50 26IB16	CSB-50 26IB24				
1.7487 1.7471	1.9381 1.9371	1.7535 1.7489	0.0064 0.0002	CSB-50 28IB16	CSB-50 28IB24	CSB-50 28IB32			

# CSB-50 Inch Cylindrical Bushes

Unit: inch"

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	ID after fixed D <sub>i,a</sub>	Clearance C <sub>D</sub>	Length ± 0.010												
				CSB-50 30IB12	CSB-50 30IB16	CSB-50 30IB36										
1.8737 1.8721	2.0633 2.0621	1.8787 1.8739	0.0066 0.0002	CSB-50 30IB12	CSB-50 30IB16	CSB-50 30IB36										
1.9987 1.9969	2.1883 2.1871	2.0037 1.9989	0.0068 0.0002	CSB-50 32IB08	CSB-50 32IB16	CSB-50 32IB24	CSB-50 32IB28	CSB-50 32IB32	CSB-50 32IB40							
2.1257 2.1239	2.3130 2.3118	2.1326 2.1262		CSB-50 34IB48												
2.2507 2.2489	2.4377 2.4365	2.2573 2.2509		CSB-50 36IB28	CSB-50 36IB32	CSB-50 36IB40	CSB-50 36IB48	CSB-50 36IB56	CSB-50 36IB60	CSB-50 36IB64	CSB-50 36IB72					
2.5011 2.4993	2.6881 2.6869	2.5077 2.5013		CSB-50 40IB16	CSB-50 40IB26	CSB-50 40IB32	CSB-50 40IB40	CSB-50 40IB48	CSB-50 40IB56	CSB-50 40IB60	CSB-50 40IB64	CSB-50 40IB72	CSB-50 40IB76			
2.7500 2.7482	2.9370 2.9358	2.7566 2.7502		CSB-50 44IB32	CSB-50 44IB36	CSB-50 44IB40	CSB-50 44IB48	CSB-50 44IB56	CSB-50 44IB60	CSB-50 44IB64	CSB-50 44IB72	CSB-50 44IB76	CSB-50 44IB76			
2.8752 2.8734	3.0623 3.0610	2.8819 2.8754	0.0085 0.0002	CSB-50 46IB32	CSB-50 46IB36	CSB-50 46IB40	CSB-50 46IB48	CSB-50 46IB56	CSB-50 46IB60	CSB-50 46IB64	CSB-50 46IB72	CSB-50 46IB76	CSB-50 46IB76			
3.0000 2.9982	3.1872 3.1858	3.0068 3.0002	0.0086 0.0002	CSB-50 48IB32	CSB-50 48IB36	CSB-50 48IB40	CSB-50 48IB48	CSB-50 48IB56	CSB-50 48IB60	CSB-50 48IB64	CSB-50 48IB72	CSB-50 48IB76	CSB-50 48IB76			
3.2500 3.2480	3.4372 3.4358	3.2568 3.2502	0.0088 0.0002	CSB-50 52IB32	CSB-50 52IB36	CSB-50 52IB40	CSB-50 52IB48	CSB-50 52IB56	CSB-50 52IB60	CSB-50 52IB64	CSB-50 52IB72	CSB-50 52IB76	CSB-50 52IB76			
3.5000 3.4978	3.6872 3.6858	3.5068 3.5002		CSB-50 56IB32	CSB-50 56IB36	CSB-50 56IB40	CSB-50 56IB48	CSB-50 56IB56	CSB-50 56IB60	CSB-50 56IB64	CSB-50 56IB72	CSB-50 56IB76	CSB-50 56IB76			
3.6250 3.6228	3.8122 3.8108	3.6318 3.6252		CSB-50 58IB32	CSB-50 58IB36	CSB-50 58IB40	CSB-50 58IB48	CSB-50 58IB56	CSB-50 58IB60	CSB-50 58IB64	CSB-50 58IB72	CSB-50 58IB76	CSB-50 58IB76			
3.7500 3.7478	3.9372 3.9358	3.7568 3.7502		CSB-50 60IB32	CSB-50 60IB36	CSB-50 60IB40	CSB-50 60IB48	CSB-50 60IB56	CSB-50 60IB60	CSB-50 60IB64	CSB-50 60IB72	CSB-50 60IB76	CSB-50 60IB76			
4.0000 3.9978	4.1872 4.1858	4.0068 4.0002		CSB-50 64IB32	CSB-50 64IB36	CSB-50 64IB40	CSB-50 64IB48	CSB-50 64IB56	CSB-50 64IB60	CSB-50 64IB64	CSB-50 64IB72	CSB-50 64IB76	CSB-50 64IB76			
4.2500 4.2478	4.4372 4.4358	4.2568 4.2502		CSB-50 68IB32	CSB-50 68IB36	CSB-50 68IB40	CSB-50 68IB48	CSB-50 68IB56	CSB-50 68IB60	CSB-50 68IB64	CSB-50 68IB72	CSB-50 68IB76	CSB-50 68IB76			
4.3750 4.3728	4.5622 4.5608	4.3818 4.3752		CSB-50 70IB32	CSB-50 70IB36	CSB-50 70IB40	CSB-50 70IB48	CSB-50 70IB56	CSB-50 70IB60	CSB-50 70IB64	CSB-50 70IB72	CSB-50 70IB76	CSB-50 70IB76			
4.5000 4.4978	4.6872 4.6858	4.5068 4.5002		CSB-50 72IB32	CSB-50 72IB36	CSB-50 72IB40	CSB-50 72IB48	CSB-50 72IB56	CSB-50 72IB60	CSB-50 72IB64	CSB-50 72IB72	CSB-50 72IB76	CSB-50 72IB76			
4.7500 4.7478	4.9374 4.9358	4.7572 4.7502	0.0094 0.0002	CSB-50 76IB32	CSB-50 76IB36	CSB-50 76IB40	CSB-50 76IB48	CSB-50 76IB56	CSB-50 76IB60	CSB-50 76IB64	CSB-50 76IB72	CSB-50 76IB76	CSB-50 76IB76			
4.9986 4.9961	5.1860 5.1844	5.0056 4.9988		CSB-50 80IB32	CSB-50 80IB36	CSB-50 80IB40	CSB-50 80IB48	CSB-50 80IB56	CSB-50 80IB60	CSB-50 80IB64	CSB-50 80IB72	CSB-50 80IB76	CSB-50 80IB76			
5.2500 5.2475	5.4374 5.4358	5.2570 5.2502		CSB-50 84IB32	CSB-50 84IB36	CSB-50 84IB40	CSB-50 84IB48	CSB-50 84IB56	CSB-50 84IB60	CSB-50 84IB64	CSB-50 84IB72	CSB-50 84IB76	CSB-50 84IB76			
5.5000 5.4975	5.6874 5.6858	5.5070 5.5002		CSB-50 88IB32	CSB-50 88IB36	CSB-50 88IB40	CSB-50 88IB48	CSB-50 88IB56	CSB-50 88IB60	CSB-50 88IB64	CSB-50 88IB72	CSB-50 88IB76	CSB-50 88IB76			
5.7500 5.7475	5.9374 5.9358	5.7570 5.7502		CSB-50 92IB32	CSB-50 92IB36	CSB-50 92IB40	CSB-50 92IB48	CSB-50 92IB56	CSB-50 92IB60	CSB-50 92IB64	CSB-50 92IB72	CSB-50 92IB76	CSB-50 92IB76			
6.0000 5.9975	6.1874 6.1858	6.0070 6.0002		CSB-50 96IB32	CSB-50 96IB36	CSB-50 96IB40	CSB-50 96IB48	CSB-50 96IB56	CSB-50 96IB60	CSB-50 96IB64	CSB-50 96IB72	CSB-50 96IB76	CSB-50 96IB76			
6.2500 6.2475	6.4374 6.4358	6.2570 6.2502		CSB-50 100IB32	CSB-50 100IB36	CSB-50 100IB40	CSB-50 100IB48	CSB-50 100IB56	CSB-50 100IB60	CSB-50 100IB64	CSB-50 100IB72	CSB-50 100IB76	CSB-50 100IB76			
6.5000 6.4975	6.6874 6.6858	6.5070 6.5002		CSB-50 104IB32	CSB-50 104IB36	CSB-50 104IB40	CSB-50 104IB48	CSB-50 104IB56	CSB-50 104IB60	CSB-50 104IB64	CSB-50 104IB72	CSB-50 104IB76	CSB-50 104IB76			
6.7500 6.7475	6.9374 6.9358	6.7570 6.7502		CSB-50 108IB32	CSB-50 108IB36	CSB-50 108IB40	CSB-50 108IB48	CSB-50 108IB56	CSB-50 108IB60	CSB-50 108IB64	CSB-50 108IB72	CSB-50 108IB76	CSB-50 108IB76			
6.9954 6.9929	7.1830 7.1812	7.0026 6.9956	0.0097 0.0002	CSB-50 112IB32	CSB-50 112IB36	CSB-50 112IB40	CSB-50 112IB48	CSB-50 112IB56	CSB-50 112IB60	CSB-50 112IB64	CSB-50 112IB72	CSB-50 112IB76	CSB-50 112IB76			

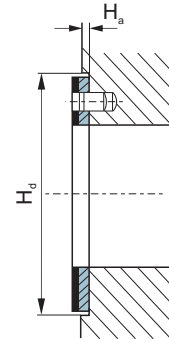
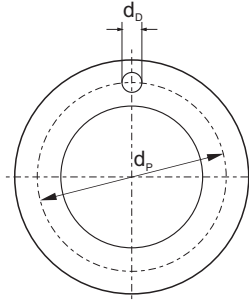
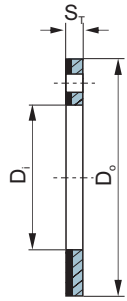
# CSB-50 Inch Flange Bushes



Unit: inch"

Shaft $D_s$	Housing H7 $D_H$	ID after fixed $D_{i,a}$	Clearance $C_D$	Nominal Flange $D_{fl}$	Flange Thickness $S_{fl}$	Length $\pm 0.010$			
						CSB-50	CSB-50	CSB-50	CSB-50
0.3750 0.3740	0.4691 0.4684	0.3779 0.3752	0.0039 0.0002	0.7075 0.6675	0.052 0.044	CSB-50 06FIB04	CSB-50 06FIB06	CSB-50 06FIB08	CSB-50 06FIB12
0.5000 0.4990	0.5941 0.5934	0.5029 0.5002	0.0039 0.0002	0.8325 0.7925	0.052 0.044	CSB-50 08FIB04	CSB-50 08FIB06	CSB-50 08FIB08	CSB-50 08FIB12
0.6250 0.6240	0.7192 0.7184	0.6280 0.6252	0.0040 0.0002	0.9575 0.9175	0.052 0.044	CSB-50 10FIB06	CSB-50 10FIB08	CSB-50 10FIB10	CSB-50 10FIB12
0.7500 0.7488	0.8755 0.8747	0.7534 0.7502	0.0046 0.0002	1.1450 1.1050	0.068 0.060	CSB-50 12FIB06	CSB-50 12FIB08	CSB-50 12FIB12	CSB-50 12FIB16
0.8750 0.8738	1.0005 0.9997	0.8784 0.8752	0.0046 0.0002	1.2200 1.1800	0.068 0.060	CSB-50 14FIB08	CSB-50 14FIB12	CSB-50 14FIB16	CSB-50 14FIB20
1.0000 0.9988	1.1255 1.1247	1.0034 1.0002	0.0046 0.0002	1.3950 1.3550	0.068 0.060	CSB-50 16FIB08	CSB-50 16FIB12	CSB-50 16FIB16	CSB-50 16FIB20
1.2500 1.2484	1.4068 1.4058	1.2540 1.2502	0.0056 0.0002	1.7700 1.7300	0.083 0.075	CSB-50 20FIB16	CSB-50 20FIB20	CSB-50 20FIB24	
1.5000 1.4984	1.6568 1.6558	1.5040 1.5002	0.0056 0.0002	2.0200 1.9800	0.083 0.075	CSB-50 24FIB16	CSB-50 24FIB24	CSB-50 24FIB32	
1.7500 1.7484	1.9381 1.9371	1.7548 1.7502	0.0064 0.0002	2.3950 2.3550	0.098 0.090	CSB-50 28FIB16	CSB-50 28FIB24	CSB-50 28FIB32	

# CSB-50 Inch Thrust Washer



Unit: inch"

Designation	Washer dimension			Installation size			
	Inner side $D_i+0.010$	Outside $D_o-0.010$	$S_T$	$d_o -0.01$	$d_o +0.010$	$H_a \pm 0.010$	$H_b +0.010$
CSB-50WC06IB	0.500	0.875	0.0630 0.0610	0.692	0.067	0.04	0.875
CSB-50WC07IB	0.562	1.000		0.786			1.000
CSB-50WC08IB	0.625	1.125		0.880	0.099		1.125
CSB-50WC09IB	0.687	1.187		0.942			1.187
CSB-50WC10IB	0.750	1.250		1.005	1.250		
CSB-50WC11IB	0.812	1.375		1.099	1.375		
CSB-50WC12IB	0.875	1.500		1.192	0.130		1.500
CSB-50WC13IB	0.937	1.625		1.286			1.625
CSB-50WC14IB	1.000	1.750		1.380	1.750		
CSB-50WC16IB	1.125	2.000		1.567	0.161	2.000	
CSB-50WC18IB	1.250	2.125		1.692		2.125	
CSB-50WC20IB	1.375	2.250		1.817	2.250		
CSB-50WC22IB	1.500	2.500		2.005	0.192	0.07	2.500
CSB-50WC24IB	1.625	2.625		2.130			2.625
CSB-50WC26IB	1.750	2.750		2.255			2.750
CSB-50WC28IB	2.000	3.000		2.505			3.000
CSB-50WC30IB	2.125	3.125	0.0910	2.630	3.125		
CSB-50WC32IB	2.250	3.250		2.755	3.250		

# CSB-10DH Steel Bronze Powder with PTFE/Fibre Dry Bearings

RoHS



## Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, the transfer film created can protect the mating metal surface, suitable for rotary and oscillating movement.

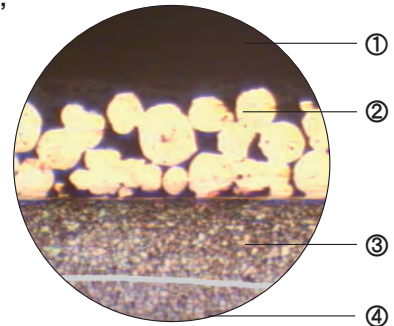
## Structure

**1. PTFE/Fibre mixture thickness 0.01~0.03mm**, provides an excellent initial transfer film, which effectively coats the mating surfaces of the bearing assembly, forming an oxide type solid lubricant film.

**2. Sintered bronze powder thickness 0.20-0.35mm**, provides Max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE mixture.

**3. Low-carbon steel**, gives exceptionally high load carrying capacity, excellent heat dissipation.

**4. Copper/Tin plating thickness 0.002mm**, provides good corrosion resistance.



## Tech. Data

Max. load	Static	250N/mm <sup>2</sup>	Friction coefficient	0.05~0.20		
	Very low speed	140N/mm <sup>2</sup>		Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm <sup>2</sup>			Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm <sup>2</sup> *m/s	Thermal conductivity	42 W(m*K) <sup>-1</sup>		
	Continuous operation	1.8N/mm <sup>2</sup> *m/s	Coefficient of thermal expansion	11*10 <sup>-6</sup> *K <sup>-1</sup>		
Temp. limit	-195°C~+280°C					

## Typical Applications

The application of this material is similar with of normal CSB-50 material, but it is an optimized material for the application of automotive industry like door hinges, trunk hinges, bonnet hinges, dampers and seats etc.

## Available

- Cylindrical Bushes
- Flanged Bushes
- Thrust Washers
- Non-standard parts as design

CSB-10DH supplied by customer ordering, the tolerance is according to CSB-50 standard dimension.

# CSB-11 Bronze Backed with Bronze Powder PTFE/Fibre Dry Bearings RoHS

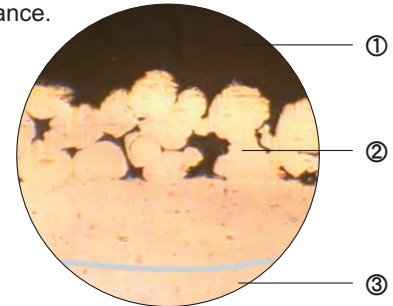


## Structure

**1. PTFE/fibre mixture thickness 0.01~0.03mm**, provides an excellent initial transfer film, which effectively coats the mating surfaces of the bearing assembly, forming an oxide type solid lubricant film.

**2. Sintered bronze powder thickness 0.20-0.35mm**, provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE/Fibre mixture.

**3. Bronze backing, provides exceptionally high load carrying capacity**, excellent heat dissipation and very good corrosion resistance.



## Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, the transfer film created can protect the mating metal surface, suitable for rotary and oscillating movement. Very high chemical resistance, low absorption of water and swelling, also performs very good lubrication feature, the bronze backing provides the improved corrosion resistance comparing with CSB-50.

Tech. Data						
Max. load	Static	250N/mm <sup>2</sup>	Friction coefficient	0.03~0.20		
	Very low speed	140N/mm <sup>2</sup>		Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm <sup>2</sup>			Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm <sup>2</sup> *m/s	Thermal conductivity	60W(m*K) <sup>-1</sup>		
	Continuous operation	1.8N/mm <sup>2</sup> *m/s	Coefficient of thermal expansion	18*10 <sup>-6</sup> *K <sup>-1</sup>		
Temp. limit	-195°C~+280°C					

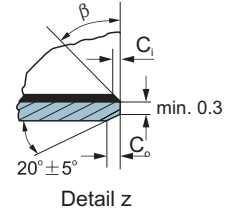
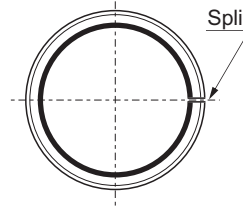
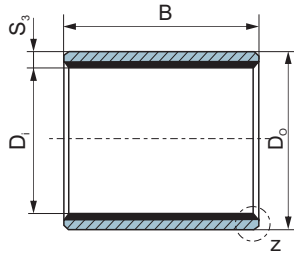
## Typical Applications

This material meets the demanding criteria for long life and trouble-free performance with or without lubricant, of high safety factor even.

The bronze backing provides a high corrosion resistance, anti magnetic properties and a good thermal conductivity, The bearings are particularly appropriate for high

temperature environment where no oil is efficient and the machine must be under successive long period working condition. The typical applications covered Steel metallurgy industry such as bushes for roller grooves of successive casting machines, cement grouting pumps and screw conveyers for cement and so on.

# CSB-11 Metric Cylindrical Bushes



ID and OD chamfers

S <sub>3</sub>	C <sub>o</sub>	C <sub>i</sub>	β	S <sub>3</sub>	C <sub>o</sub>	C <sub>i</sub>	β
0.75	0.5±0.3	0.25±0.2	30° ±5°	2.00	1.2±0.4	0.50±0.3	30° ±5°
1.00	0.6±0.3	0.30±0.2	30° ±5°	2.50	1.8±0.6	0.60±0.3	45° ±5°
1.50	0.7±0.3	0.50±0.3	30° ±5°				

Unit:mm

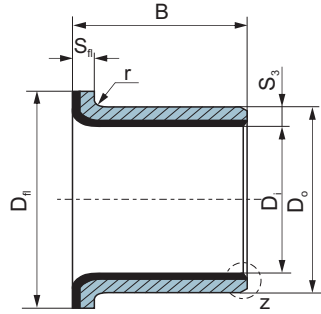
Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>o</sub>	ID after fixed D <sub>i,a</sub>	Clearance C <sub>o</sub>	Wall thick- ness S <sub>3</sub>	B <sup>0</sup> (d ≤ φ30 B-0.3) -0.40 (d > φ30 B-0.4)																
						6	8	10	12	15	20	25	30	40	50							
6 -0.010 -0.022	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	1.005 0.980	CSB-11 0606	CSB-11 0608	CSB-11 0610														
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003		CSB-11 0806	CSB-11 0808	CSB-11 0810	CSB-11 0812	CSB-11 0815												
10 -0.013 -0.028	12 +0.018	12 +0.065 +0.030	10.058 9.990	0.086 0.003		CSB-11 1006	CSB-11 1008	CSB-11 1010	CSB-11 1012	CSB-11 1015	CSB-11 1020											
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006		CSB-11 1206	CSB-11 1208	CSB-11 1210	CSB-11 1212	CSB-11 1215	CSB-11 1220	CSB-11 1225										
13 -0.016 -0.034	15 +0.018	15 +0.065 +0.030	13.058 12.990			CSB-11 1310					CSB-11 1320											
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990			CSB-11 1410	CSB-11 1412	CSB-11 1415	CSB-11 1420	CSB-11 1425												
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990			CSB-11 1510	CSB-11 1512	CSB-11 1515	CSB-11 1520	CSB-11 1525												
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990			CSB-11 1610	CSB-11 1612	CSB-11 1615	CSB-11 1620	CSB-11 1625												
17 -0.016 -0.034	19 +0.021	19 +0.075 +0.035	17.061 16.990			0.095 0.006	CSB-11 1710	CSB-11 1712		CSB-11 1720												
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990				CSB-11 1810	CSB-11 1812	CSB-11 1815	CSB-11 1820	CSB-11 1825											
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990		0.112 0.010				CSB-11 2010	CSB-11 2012	CSB-11 2015	CSB-11 2020	CSB-11 2025	CSB-11 2030								
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	CSB-11 2210			CSB-11 2212	CSB-11 2215	CSB-11 2220	CSB-11 2225	CSB-11 2230											
24 -0.020 -0.041	27 +0.021	27 +0.075 +0.035	24.071 23.990					CSB-11 2415	CSB-11 2420	CSB-11 2425	CSB-11 2430											
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990				CSB-11 2510	CSB-11 2512	CSB-11 2515	CSB-11 2520	CSB-11 2525	CSB-11 2530	CSB-11 2540	CSB-11 2550								
28 -0.020 -0.041	32 +0.025	32 +0.085 +0.045	28.085 27.990	0.126 0.010				CSB-11 2815	CSB-11 2820	CSB-11 2825	CSB-11 2830	CSB-11 2840										
30 -0.020 -0.041	34 +0.025	34 +0.085 +0.045	30.085 29.990		CSB-11 3012	CSB-11 3015	CSB-11 3020	CSB-11 3025	CSB-11 3030	CSB-11 3040												
32 -0.025 -0.050	36 +0.025	36 +0.085 +0.045	32.085 31.990	0.135 0.015					CSB-11 3220		CSB-11 3230	CSB-11 3240										
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990		CSB-11 3512	CSB-11 3515	CSB-11 3520	CSB-11 3525	CSB-11 3530	CSB-11 3540	CSB-11 3550											
38 -0.025 -0.050	42 +0.025	42 +0.085 +0.045	38.085 37.990				CSB-11 3815				CSB-11 3830	CSB-11 3840										
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990				CSB-11 4012		CSB-11 4020	CSB-11 4025	CSB-11 4030	CSB-11 4040	CSB-11 4050									

# CSB-11 Metric Cylindrical Bushes

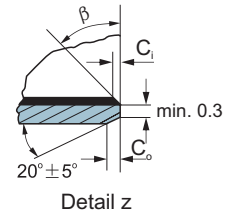
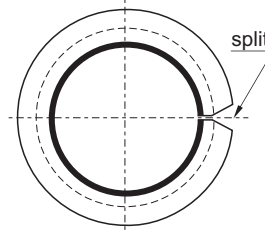
Unit:mm

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>o</sub>	ID after fixed D <sub>i,a</sub>	Clearance C <sub>o</sub>	Wall thick- ness S <sub>3</sub>	B <sub>-0.40</sub> <sup>0</sup>											
						20	25	30	40	50	60	70	80	100	115		
45 <sup>-0.050</sup> <sub>-0.025</sub>	50 <sup>+0.025</sup>	50 <sup>+0.085</sup> <sub>+0.045</sub>	45.105 44.990	0.155 0.015	2.505 2.460	CSB-11 4520	CSB-11 4525	CSB-11 4530	CSB-11 4540	CSB-11 4550							
50 <sup>-0.050</sup> <sub>-0.025</sub>	55 <sup>+0.030</sup>	55 <sup>+0.100</sup> <sub>+0.055</sub>	50.110 49.990	0.160 0.015		CSB-11 5020		CSB-11 5030	CSB-11 5040	CSB-11 5050	CSB-11 5060						
55 <sup>-0.060</sup> <sub>-0.030</sub>	60 <sup>+0.030</sup>	60 <sup>+0.100</sup> <sub>+0.055</sub>	55.110 54.990					CSB-11 5530	CSB-11 5540	CSB-11 5550	CSB-11 5560						
60 <sup>-0.060</sup> <sub>-0.030</sub>	65 <sup>+0.030</sup>	65 <sup>+0.100</sup> <sub>+0.055</sub>	60.110 59.990						CSB-11 6030	CSB-11 6040	CSB-11 6050	CSB-11 6060	CSB-11 6070				
65 <sup>-0.060</sup> <sub>-0.030</sub>	70 <sup>+0.030</sup>	70 <sup>+0.100</sup> <sub>+0.055</sub>	65.110 64.990	0.170 0.020					CSB-11 6530	CSB-11 6540	CSB-11 6550	CSB-11 6560	CSB-11 6570				
70 <sup>-0.060</sup> <sub>-0.030</sub>	75 <sup>+0.030</sup>	75 <sup>+0.100</sup> <sub>+0.055</sub>	70.110 69.990							CSB-11 7040	CSB-11 7050	CSB-11 7060	CSB-11 7070	CSB-11 7080			
75 <sup>-0.060</sup> <sub>-0.030</sub>	80 <sup>+0.030</sup>	80 <sup>+0.100</sup> <sub>+0.055</sub>	75.110 74.990						CSB-11 7530	CSB-11 7540	CSB-11 7550	CSB-11 7560	CSB-11 7570	CSB-11 7580			
80 <sup>-0.060</sup> <sub>-0.030</sub>	85 <sup>+0.035</sup>	85 <sup>+0.120</sup> <sub>+0.070</sub>	80.155 80.020	0.201 0.020	2.490 2.440				CSB-11 8040	CSB-11 8050	CSB-11 8060	CSB-11 8070	CSB-11 8080	CSB-11 80100			
85 <sup>-0.054</sup>	90 <sup>+0.035</sup>	90 <sup>+0.120</sup> <sub>+0.070</sub>	85.155 85.020							CSB-11 8540		CSB-11 8560		CSB-11 8580	CSB-11 85100		
90 <sup>-0.054</sup>	95 <sup>+0.035</sup>	95 <sup>+0.120</sup> <sub>+0.070</sub>	90.155 90.020							CSB-11 9040	CSB-11 9050	CSB-11 9060		CSB-11 9080	CSB-11 90100		
95 <sup>-0.054</sup>	100 <sup>+0.035</sup>	100 <sup>+0.120</sup> <sub>+0.070</sub>	95.155 95.020	0.209 0.020							CSB-11 9550	CSB-11 9560		CSB-11 9580	CSB-11 95100		
100 <sup>-0.054</sup>	105 <sup>+0.035</sup>	105 <sup>+0.120</sup> <sub>+0.070</sub>	100.155 100.020								CSB-11 10050	CSB-11 10060		CSB-11 10080		CSB-11 100115	
105 <sup>-0.054</sup>	110 <sup>+0.035</sup>	110 <sup>+0.120</sup> <sub>+0.070</sub>	105.155 105.020									CSB-11 10560		CSB-11 10580		CSB-11 105115	
110 <sup>-0.054</sup>	115 <sup>+0.035</sup>	115 <sup>+0.120</sup> <sub>+0.070</sub>	110.155 110.020									CSB-11 11060		CSB-11 11080		CSB-11 110115	
120 <sup>-0.054</sup>	125 <sup>+0.040</sup>	125 <sup>+0.170</sup> <sub>+0.100</sub>	120.210 120.070	0.264 0.070	2.465 2.415						CSB-11 12060		CSB-11 12080	CSB-11 120100			
125 <sup>-0.063</sup>	130 <sup>+0.040</sup>	130 <sup>+0.170</sup> <sub>+0.100</sub>	125.210 125.070									CSB-11 12560			CSB-11 125100	CSB-11 125115	
130 <sup>-0.063</sup>	135 <sup>+0.040</sup>	135 <sup>+0.170</sup> <sub>+0.100</sub>	130.210 130.070										CSB-11 13060		CSB-11 13080	CSB-11 130100	
140 <sup>-0.063</sup>	145 <sup>+0.040</sup>	145 <sup>+0.170</sup> <sub>+0.100</sub>	140.210 140.070	0.273 0.070									CSB-11 14060		CSB-11 14080	CSB-11 140100	
150 <sup>-0.063</sup>	155 <sup>+0.040</sup>	155 <sup>+0.170</sup> <sub>+0.100</sub>	150.210 150.070										CSB-11 15060		CSB-11 15080	CSB-11 150100	
160 <sup>-0.063</sup>	165 <sup>+0.040</sup>	165 <sup>+0.170</sup> <sub>+0.100</sub>	160.210 160.070										CSB-11 16060		CSB-11 16080	CSB-11 160100	CSB-11 160115
180 <sup>-0.063</sup>	185 <sup>+0.046</sup>	185 <sup>+0.210</sup> <sub>+0.130</sub>	180.216 180.070	0.279 0.070		2.465 2.415									CSB-11 18080	CSB-11 180100	
190 <sup>-0.072</sup>	195 <sup>+0.046</sup>	195 <sup>+0.210</sup> <sub>+0.130</sub>	190.216 190.070												CSB-11 19080	CSB-11 190100	
200 <sup>-0.072</sup>	205 <sup>+0.046</sup>	205 <sup>+0.210</sup> <sub>+0.130</sub>	200.216 200.070	0.288 0.070									CSB-11 20060		CSB-11 20080	CSB-11 200100	
220 <sup>-0.072</sup>	225 <sup>+0.046</sup>	225 <sup>+0.210</sup> <sub>+0.130</sub>	220.216 220.070												CSB-11 22080	CSB-11 220100	
250 <sup>-0.072</sup>	255 <sup>+0.052</sup>	255 <sup>+0.260</sup> <sub>+0.170</sub>	250.222 250.070	0.294 0.070												CSB-11 25080	CSB-11 250100
260 <sup>-0.081</sup>	265 <sup>+0.052</sup>	265 <sup>+0.260</sup> <sub>+0.170</sub>	260.222 260.070		2.465 2.415											CSB-11 26080	CSB-11 260100
280 <sup>-0.081</sup>	285 <sup>+0.052</sup>	285 <sup>+0.260</sup> <sub>+0.170</sub>	280.222 280.070	0.303 0.070													CSB-11 28080
300 <sup>-0.081</sup>	305 <sup>+0.052</sup>	305 <sup>+0.260</sup> <sub>+0.170</sub>	300.222 300.070													CSB-11 30080	CSB-11 300100

# CSB-11 Metric Flange Bushes



S <sub>3</sub>	1.0	1.5	2.0	2.5
r	1 <sup>+0.5</sup>	1±0.5	1.5±0.5	2±0.5

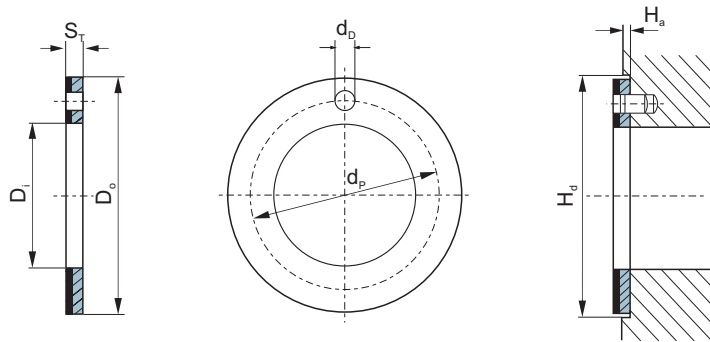


Unit:mm

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>O</sub>	ID after fixed D <sub>I.a</sub>	Clearance C <sub>O</sub>	Designation	Wall thickness S <sub>3</sub>	Dimension				
							D <sub>I</sub>	D <sub>O</sub>	D <sub>I</sub> ± 0.5	B±0.25	S <sub>H</sub> 0.2
6 -0.013 -0.028	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	CSB-11F06040	1.005 0.980	6	8	12	4	1
					CSB-11F06070					7	
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003	CSB-11F08055	1.005 0.980	8	10	15	5.5	1
					CSB-11F08075					7.5	
10 -0.016 -0.034	12 +0.018	12 +0.055 +0.025	10.058 9.990	0.086 0.003	CSB-11F10070	1.005 0.980	10	12	18	7	1
					CSB-11F10090					9	
					CSB-11F10120					12	
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006	CSB-11F12070	1.005 0.980	12	14	20	7	1
					CSB-11F12090					9	
					CSB-11F12120					12	
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990	0.092 0.006	CSB-11F14120	1.005 0.980	14	16	22	12	1
					CSB-11F14170					17	
					CSB-11F15090					9	
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990	0.092 0.006	CSB-11F15120	1.005 0.980	15	17	23	12	1
					CSB-11F15170					17	
					CSB-11F16120					12	
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990	0.092 0.006	CSB-11F16170	1.005 0.980	16	18	24	17	1
					CSB-11F18120					12	
					CSB-11F18170					17	
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990	0.095 0.006	CSB-11F18200	1.005 0.980	18	20	26	20	1
					CSB-11F20115					11.5	
					CSB-11F20165					16.5	
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990	0.112 0.010	CSB-11F20215	1.505 1.475	20	23	30	21.5	1.5
					CSB-11F22150					15	
					CSB-11F22200					20	
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	0.112 0.010	CSB-11F25115	1.505 1.475	22	25	32	20	1.5
					CSB-11F25165					11.5	
					CSB-11F25215					16.5	
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990	0.112 0.010	CSB-11F30160	2.005 1.970	25	28	35	21.5	2
					CSB-11F30260					16	
					CSB-11F35160					16	
30 -0.025 -0.050	34 +0.025	34 +0.075 +0.035	30.085 29.990	0.126 0.010	CSB-11F35260	2.005 1.970	30	34	42	26	2
					CSB-11F40260					26	
					CSB-11F40400					40	
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990	0.135 0.015	CSB-11F40260	2.005 1.970	35	39	47	26	2
					CSB-11F40400					26	
					CSB-11F40400					40	
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990	0.135 0.015	CSB-11F40400	2.005 1.970	40	44	53	40	2

# CSB-11 Metric Thrust Washer and Strip

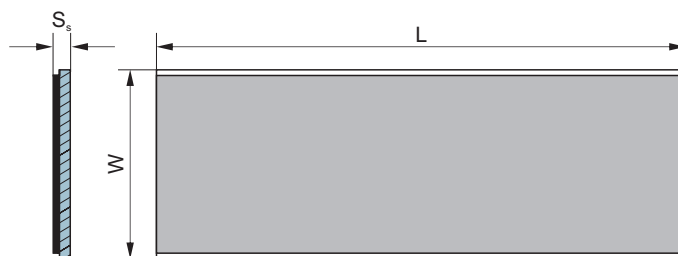
## Metric thrust washer



Unit:mm

Shaft $D_s$	Designation	Washer dimension				Installation size		$H_d+0.12$
		$D_i +0.25$	$D_o -0.25$	$S_t -0.05$	$d_p \pm 0.125$	$d_{b+0.1}^{+0.4}$	$H_a \pm 0.2$	
8	CSB-11WC10	10	20	1.5	15	1.5	1	20
10	CSB-11WC12	12	24		18			24
12	CSB-11WC14	14	26		20	2		26
14	CSB-11WC16	16	30		23			30
16	CSB-11WC18	18	32		25	3		32
18	CSB-11WC20	20	36		28			36
20	CSB-11WC22	22	38		30			38
22	CSB-11WC24	24	42		33	4		42
24	CSB-11WC26	26	44		35			44
26	CSB-11WC28	28	48		38	2		48
30	CSB-11WC32	32	54	43	54			
36	CSB-11WC38	38	62	50	1.5		62	
40	CSB-11WC42	42	66	54			66	
46	CSB-11WC48	48	74	61	1.5		74	
50	CSB-11WC52	52	78	65			78	
60	CSB-11WC62	62	90	76			90	

## Metric standard strip



Unit:mm

Type	Length $\pm 1$	Width $\pm 1$	Thickness $-0.05$
CSB-11SP	500	150	1.0
CSB-11SP	500	150	1.5
CSB-11SP	500	150	2.0
CSB-11SP	500	150	2.5

# CSB-40 Steel Bronze Powder with PTFE/Fibre Dry Bearings

RoHS



## Features

Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, the transfer film created can protect the mating metal surfaces, suitable for rotating and oscillating movement, high chemical resistance, low absorption of water and swelling. The CSB-40 improved the friction and much good wear resistance over the common CSB-50 range under lubricated operation.

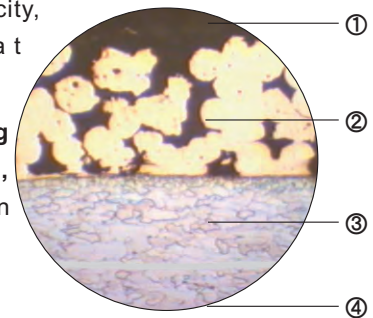
## Structure

**1. PTFE/Polymer fibres mixture thickness 0.01~0.03mm.** Lead-free bearing layer provides an excellent initial transfer film, which effectively coats the mating surfaces of the bearing assembly, forming an oxide type solid lubricant film.

**2. Sintered bronze powder thickness 0.20-0.35mm,** provides max. thermal conductivity away from the bearing surface, also serves as a reservoir for the PTFE mixture.

**3. Steel backing,** provides high load carrying capacity, excellent heat dissipation.

**4. Copper/Tin plating thickness 0.002mm,** provides good corrosion resistance.



## Tech. Data

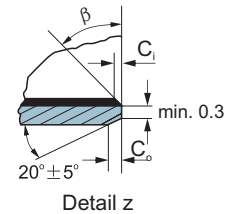
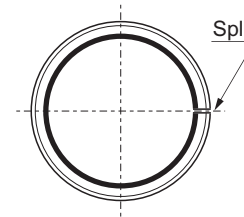
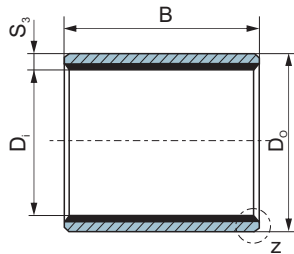
Max. load	Static	250N/mm <sup>2</sup>	Temp. limit	-195°C~+280°C		
	Very low speed	140N/mm <sup>2</sup>		Max. speed	Dry running	2m/s
	Rotating oscillating	60N/mm <sup>2</sup>			Hydrodynamic operation	>2m/s
Max. PV dry running	Short-term operation	3.6N/mm <sup>2</sup> *m/s	Thermal conductivity		42 W(m*K) <sup>-1</sup>	
	Continuous operation	1.8N/mm <sup>2</sup> *m/s	Coefficient of thermal expansion		11*10 <sup>-6</sup> *K <sup>-1</sup>	
PV max. hydrodynamic		30N/mm <sup>2</sup> *m/s	Friction coefficient	Dry	0.08~0.20	
				Hydrodynamic	0.03~0.08	

## Typical Applications

CSB-40 is developed for high duty, oil lubricated, hydraulic applications...Automotive suspension struts, shock absorbers guide bushing, hydraulic cylinders, gear pumps, motors, axial and radial piston pumps & motors. CSB-40 is designed mainly for using under lubricated conditions and it

performs excellent wear resistance and low static/dynamic friction coefficient.

# CSB-40 Metric Cylindrical Bushes



ID and OD chamfers

S <sub>3</sub>	C <sub>0</sub>	C <sub>1</sub>	β	S <sub>3</sub>	C <sub>0</sub>	C <sub>1</sub>	β
0.75	0.5±0.3	0.25±0.2	30° ±5°	2.00	1.2±0.4	0.50±0.3	30° ±5°
1.00	0.6±0.3	0.30±0.2	30° ±5°	2.50	1.8±0.6	0.60±0.3	45° ±5°
1.50	0.7±0.3	0.50±0.3	30° ±5°				

Unit:mm

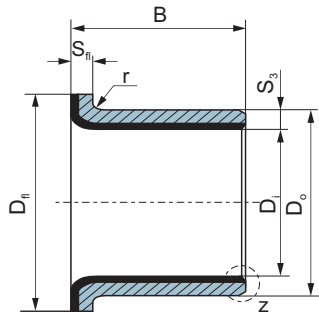
Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>o</sub>	ID after fixed D <sub>i,a</sub>	Clearance C <sub>o</sub>	Wall thick- ness S <sub>3</sub>	B <sup>0</sup> <sub>-0.40</sub> (d ≤ φ 30 B-0.3) <sub>-0.40</sub> (d > φ 30 B-0.4)														
						6	8	10	12	15	20	25	30	40	50					
6	-0.010 -0.022	8	+0.015	8	+0.055 +0.025	6.055 5.990	0.077 0.000		CSB-40 0606	CSB-40 0608	CSB-40 0610									
8	-0.013 -0.028	10	+0.015	10	+0.055 +0.025	8.055 7.990	0.083 0.003		CSB-40 0806	CSB-40 0808	CSB-40 0810	CSB-40 0812	CSB-40 0815							
10	-0.013 -0.028	12	+0.018	12	+0.065 +0.030	10.058 9.990	0.086 0.003		CSB-40 1006	CSB-40 1008	CSB-40 1010	CSB-40 1012	CSB-40 1015	CSB-40 1020						
12	-0.016 -0.034	14	+0.018	14	+0.065 +0.030	12.058 11.990			CSB-40 1206	CSB-40 1208	CSB-40 1210	CSB-40 1212	CSB-40 1215	CSB-40 1220	CSB-40 1225					
13	-0.016 -0.034	15	+0.018	15	+0.065 +0.030	13.058 12.990					CSB-40 1310			CSB-40 1320						
14	-0.016 -0.034	16	+0.018	16	+0.065 +0.030	14.058 13.990	0.092 0.006				CSB-40 1410	CSB-40 1412	CSB-40 1415	CSB-40 1420	CSB-40 1425					
15	-0.016 -0.034	17	+0.018	17	+0.065 +0.030	15.058 14.990					CSB-40 1510	CSB-40 1512	CSB-40 1515	CSB-40 1520	CSB-40 1525					
16	-0.016 -0.034	18	+0.018	18	+0.065 +0.030	16.058 15.990					CSB-40 1610	CSB-40 1612	CSB-40 1615	CSB-40 1620	CSB-40 1625					
17	-0.016 -0.034	19	+0.021	19	+0.075 +0.035	17.061 16.990	0.095 0.006				CSB-40 1710	CSB-40 1712		CSB-40 1720						
18	-0.016 -0.034	20	+0.021	20	+0.075 +0.035	18.061 17.990					CSB-40 1810	CSB-40 1812	CSB-40 1815	CSB-40 1820	CSB-40 1825					
20	-0.020 -0.041	23	+0.021	23	+0.075 +0.035	20.071 19.990					CSB-40 2010	CSB-40 2012	CSB-40 2015	CSB-40 2020	CSB-40 2025	CSB-40 2030				
22	-0.020 -0.041	25	+0.021	25	+0.075 +0.035	22.071 21.990	0.112 0.010				CSB-40 2210	CSB-40 2212	CSB-40 2215	CSB-40 2220	CSB-40 2225	CSB-40 2230				
24	-0.020 -0.041	27	+0.021	27	+0.075 +0.035	24.071 23.990							CSB-40 2415	CSB-40 2420	CSB-40 2425	CSB-40 2430				
25	-0.020 -0.041	28	+0.021	28	+0.075 +0.035	25.071 24.990					CSB-40 2510	CSB-40 2512	CSB-40 2515	CSB-40 2520	CSB-40 2525	CSB-40 2530	CSB-40 2540	CSB-40 2550		
28	-0.020 -0.041	32	+0.025	32	+0.085 +0.045	28.085 27.990	0.126 0.010						CSB-40 2815	CSB-40 2820	CSB-40 2825	CSB-40 2830	CSB-40 2840			
30	-0.020 -0.041	34	+0.025	34	+0.085 +0.045	30.085 29.990						CSB-40 3012	CSB-40 3015	CSB-40 3020	CSB-40 3025	CSB-40 3030	CSB-40 3040			
32	-0.025 -0.050	36	+0.025	36	+0.085 +0.045	32.085 31.990								CSB-40 3220		CSB-40 3230	CSB-40 3240			
35	-0.025 -0.050	39	+0.025	39	+0.085 +0.045	35.085 34.990	0.135 0.015						CSB-40 3512	CSB-40 3515	CSB-40 3520	CSB-40 3525	CSB-40 3530	CSB-40 3540	CSB-40 3550	
38	-0.025 -0.050	42	+0.025	42	+0.085 +0.045	38.085 37.990								CSB-40 3815			CSB-40 3830	CSB-40 3840		
40	-0.025 -0.050	44	+0.025	44	+0.085 +0.045	40.085 39.990								CSB-40 4012		CSB-40 4020	CSB-40 4025	CSB-40 4030	CSB-40 4040	CSB-40 4050

# CSB-40 Metric Cylindrical Bushes

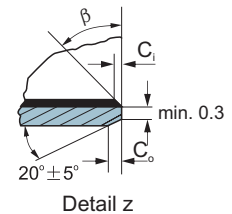
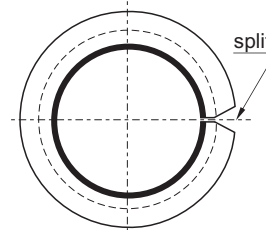
Unit:mm

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>O</sub>	ID after fixed D <sub>i,a</sub>	Clearance C <sub>D</sub>	Wall thick- ness S <sub>3</sub>	B <sup>0</sup> <sub>-0.40</sub>													
						20	25	30	40	50	60	70	80	100	115				
45 <sup>-0.050</sup> <sub>-0.025</sub>	50 <sup>+0.025</sup>	50 <sup>+0.085</sup> <sub>+0.045</sub>	45.105 44.990	0.155 0.015	2.505 2.460	CSB-40 4520	CSB-40 4525	CSB-40 4530	CSB-40 4540	CSB-40 4550									
50 <sup>-0.050</sup> <sub>-0.025</sub>	55 <sup>+0.030</sup>	55 <sup>+0.100</sup> <sub>+0.055</sub>	50.110 49.990	0.160 0.015		CSB-40 5020		CSB-40 5030	CSB-40 5040	CSB-40 5050	CSB-40 5060								
55 <sup>-0.060</sup> <sub>-0.030</sub>	60 <sup>+0.030</sup>	60 <sup>+0.100</sup> <sub>+0.055</sub>	55.110 54.990	0.170 0.020				CSB-40 5530	CSB-40 5540	CSB-40 5550	CSB-40 5560								
60 <sup>-0.060</sup> <sub>-0.030</sub>	65 <sup>+0.030</sup>	65 <sup>+0.100</sup> <sub>+0.055</sub>	60.110 59.990						CSB-40 6030	CSB-40 6040	CSB-40 6050	CSB-40 6060	CSB-40 6070						
65 <sup>-0.060</sup> <sub>-0.030</sub>	70 <sup>+0.030</sup>	70 <sup>+0.100</sup> <sub>+0.055</sub>	65.110 64.990						CSB-40 6530	CSB-40 6540	CSB-40 6550	CSB-40 6560	CSB-40 6570						
70 <sup>-0.060</sup> <sub>-0.030</sub>	75 <sup>+0.030</sup>	75 <sup>+0.100</sup> <sub>+0.055</sub>	70.110 69.990							CSB-40 7040	CSB-40 7050	CSB-40 7060	CSB-40 7070	CSB-40 7080					
75 <sup>-0.060</sup> <sub>-0.030</sub>	80 <sup>+0.030</sup>	80 <sup>+0.100</sup> <sub>+0.055</sub>	75.110 74.990						CSB-40 7530	CSB-40 7540	CSB-40 7550	CSB-40 7560	CSB-40 7570	CSB-40 7580					
80 <sup>-0.046</sup>	85 <sup>+0.035</sup>	85 <sup>+0.120</sup> <sub>+0.070</sub>	80.155 80.020	0.201 0.020	2.490 2.440				CSB-40 8040	CSB-40 8050	CSB-40 8060	CSB-40 8070	CSB-40 8080	CSB-40 80100					
85 <sup>-0.054</sup>	90 <sup>+0.035</sup>	90 <sup>+0.120</sup> <sub>+0.070</sub>	85.155 85.020	0.209 0.020					CSB-40 8540		CSB-40 8560		CSB-40 8580	CSB-40 85100					
90 <sup>-0.054</sup>	95 <sup>+0.035</sup>	95 <sup>+0.120</sup> <sub>+0.070</sub>	90.155 90.020						CSB-40 9040	CSB-40 9050	CSB-40 9060		CSB-40 9080	CSB-40 90100					
95 <sup>-0.054</sup>	100 <sup>+0.035</sup>	100 <sup>+0.120</sup> <sub>+0.070</sub>	95.155 95.020							CSB-40 9550	CSB-40 9560		CSB-40 9580	CSB-40 95100					
100 <sup>-0.054</sup>	105 <sup>+0.035</sup>	105 <sup>+0.120</sup> <sub>+0.070</sub>	100.155 100.020							CSB-40 10050	CSB-40 10060		CSB-40 10080		CSB-40 100115				
105 <sup>-0.054</sup>	110 <sup>+0.035</sup>	110 <sup>+0.120</sup> <sub>+0.070</sub>	105.155 105.020								CSB-40 10560		CSB-40 10580		CSB-40 105115				
110 <sup>-0.054</sup>	115 <sup>+0.035</sup>	115 <sup>+0.120</sup> <sub>+0.070</sub>	110.155 110.020								CSB-40 11060		CSB-40 11080		CSB-40 110115				
120 <sup>-0.054</sup>	125 <sup>+0.040</sup>	125 <sup>+0.170</sup> <sub>+0.100</sub>	120.210 120.070		0.264 0.070	2.465 2.415					CSB-40 12060		CSB-40 12080	CSB-40 120100					
125 <sup>-0.063</sup>	130 <sup>+0.040</sup>	130 <sup>+0.170</sup> <sub>+0.100</sub>	125.210 125.070	0.273 0.070						CSB-40 12560			CSB-40 125100	CSB-40 125115					
130 <sup>-0.063</sup>	135 <sup>+0.040</sup>	135 <sup>+0.170</sup> <sub>+0.100</sub>	130.210 130.070								CSB-40 13060		CSB-40 13080	CSB-40 130100					
140 <sup>-0.063</sup>	145 <sup>+0.040</sup>	145 <sup>+0.170</sup> <sub>+0.100</sub>	140.210 140.070								CSB-40 14060		CSB-40 14080	CSB-40 140100					
150 <sup>-0.063</sup>	155 <sup>+0.040</sup>	155 <sup>+0.170</sup> <sub>+0.100</sub>	150.210 150.070								CSB-40 15060		CSB-40 15080	CSB-40 150100					
160 <sup>-0.063</sup>	165 <sup>+0.040</sup>	165 <sup>+0.170</sup> <sub>+0.100</sub>	160.210 160.070								CSB-40 16060		CSB-40 16080	CSB-40 160100	CSB-40 160115				
180 <sup>-0.063</sup>	185 <sup>+0.046</sup>	185 <sup>+0.210</sup> <sub>+0.130</sub>	180.216 180.070		0.279 0.070		2.465 2.415							CSB-40 18080	CSB-40 180100				
190 <sup>-0.072</sup>	195 <sup>+0.046</sup>	195 <sup>+0.210</sup> <sub>+0.130</sub>	190.216 190.070		0.288 0.070									CSB-40 19080	CSB-40 190100				
200 <sup>-0.072</sup>	205 <sup>+0.046</sup>	205 <sup>+0.210</sup> <sub>+0.130</sub>	200.216 200.070									CSB-40 20060		CSB-40 20080	CSB-40 200100				
220 <sup>-0.072</sup>	225 <sup>+0.046</sup>	225 <sup>+0.210</sup> <sub>+0.130</sub>	220.216 220.070											CSB-40 22080	CSB-40 220100				
250 <sup>-0.072</sup>	255 <sup>+0.052</sup>	255 <sup>+0.260</sup> <sub>+0.170</sub>	250.222 250.070	0.294 0.070		2.465 2.415								CSB-40 25080	CSB-40 250100				
260 <sup>-0.081</sup>	265 <sup>+0.052</sup>	265 <sup>+0.260</sup> <sub>+0.170</sub>	260.222 260.070	0.303 0.070											CSB-40 26080	CSB-40 260100			
280 <sup>-0.081</sup>	285 <sup>+0.052</sup>	285 <sup>+0.260</sup> <sub>+0.170</sub>	280.222 280.070													CSB-40 28080	CSB-40 280100		
300 <sup>-0.081</sup>	305 <sup>+0.052</sup>	305 <sup>+0.260</sup> <sub>+0.170</sub>	300.222 300.070												CSB-40 30080	CSB-40 300100			

# CSB-40 Metric Flange Bushes



S <sub>3</sub>	1.0	1.5	2.0	2.5
r	1 <sup>+0.5</sup>	1±0.5	1.5±0.5	2±0.5

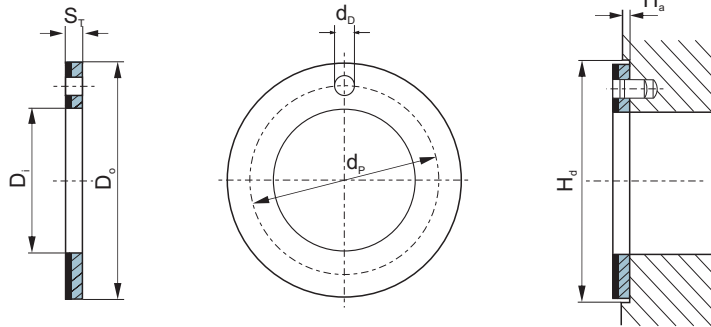


Unit:mm

Shaft D <sub>s</sub>	Housing H7 D <sub>H</sub>	OD tolerance D <sub>O</sub>	ID after fixed D <sub>I,a</sub>	Clearance C <sub>D</sub>	Designation	Wall thickness S <sub>3</sub>	Dimension				
							D <sub>i</sub>	D <sub>o</sub>	D <sub>i</sub> ± 0.5	B±0.25	S <sub>i</sub> -0.2
6 -0.013 -0.028	8 +0.015	8 +0.055 +0.025	6.055 5.990	0.077 0.000	CSB-40F06040	1.005 0.980	6	8	12	4	1
					CSB-40F06070					7	
8 -0.013 -0.028	10 +0.015	10 +0.055 +0.025	8.055 7.990	0.083 0.003	CSB-40F08055	1.005 0.980	8	10	15	5.5	1
					CSB-40F08075					7.5	
10 -0.016 -0.034	12 +0.018	12 +0.055 +0.025	10.058 9.990	0.086 0.003	CSB-40F10070	1.005 0.980	10	12	18	7	1
					CSB-40F10090					9	
					CSB-40F10120					12	
12 -0.016 -0.034	14 +0.018	14 +0.065 +0.030	12.058 11.990	0.092 0.006	CSB-40F12070	1.005 0.980	12	14	20	7	1
					CSB-40F12090					9	
					CSB-40F12120					12	
14 -0.016 -0.034	16 +0.018	16 +0.065 +0.030	14.058 13.990	0.092 0.006	CSB-40F14120	1.005 0.980	14	16	22	12	1
					CSB-40F14170					17	
					CSB-40F15090					9	
15 -0.016 -0.034	17 +0.018	17 +0.065 +0.030	15.058 14.990	0.092 0.006	CSB-40F15120	1.005 0.980	15	17	23	12	1
					CSB-40F15170					17	
16 -0.016 -0.034	18 +0.018	18 +0.065 +0.030	16.058 15.990	0.092 0.006	CSB-40F16120	1.005 0.980	16	18	24	12	1
					CSB-40F16170					17	
18 -0.016 -0.034	20 +0.021	20 +0.075 +0.035	18.061 17.990	0.095 0.006	CSB-40F18120	1.005 0.980	18	20	26	12	1
					CSB-40F18170					17	
					CSB-40F18200					20	
20 -0.020 -0.041	23 +0.021	23 +0.075 +0.035	20.071 19.990	0.112 0.010	CSB-40F20115	1.505 1.475	20	23	30	11.5	1.5
					CSB-40F20165					16.5	
					CSB-40F20215					21.5	
22 -0.020 -0.041	25 +0.021	25 +0.075 +0.035	22.071 21.990	0.112 0.010	CSB-40F22150	1.505 1.475	22	25	32	15	1.5
					CSB-40F22200					20	
					CSB-40F25115					11.5	
25 -0.020 -0.041	28 +0.021	28 +0.075 +0.035	25.071 24.990	0.112 0.010	CSB-40F25165	1.505 1.475	25	28	35	16.5	1.5
					CSB-40F25215					21.5	
					CSB-40F30160					16	
30 -0.025 -0.050	34 +0.025	34 +0.075 +0.035	30.085 29.990	0.126 0.010	CSB-40F30260	2.005 1.970	30	34	42	26	2
					CSB-40F35160					16	
35 -0.025 -0.050	39 +0.025	39 +0.085 +0.045	35.085 34.990	0.135 0.015	CSB-40F35260	2.005 1.970	35	39	47	26	2
					CSB-40F40260					26	
40 -0.025 -0.050	44 +0.025	44 +0.085 +0.045	40.085 39.990	0.135 0.015	CSB-40F40400	2.005 1.970	40	44	53	40	2

## CSB-40 Metric Thrust Washer and Strip

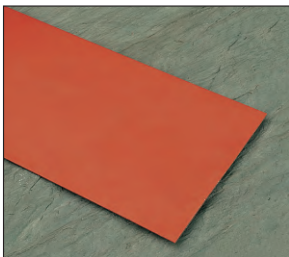
### Metric thrust washer



Unit:mm

Shaft $D_s$	Designation	Washer dimension				Installation size		$H_a + 0.12$
		$D_i + 0.25$	$D_o - 0.25$	$S_r - 0.05$	$d_p \pm 0.125$	$d_b^{+0.4}_{+0.1}$	$H_a \pm 0.2$	
8	CSB-40WC10	10	20	1.5	15	1.5	1	20
10	CSB-40WC12	12	24		18			24
12	CSB-40WC14	14	26		20			26
14	CSB-40WC16	16	30		23	30		
16	CSB-40WC18	18	32		25	32		
18	CSB-40WC20	20	36		28	36		
20	CSB-40WC22	22	38		30	38		
22	CSB-40WC24	24	42		33	42		
24	CSB-40WC26	26	44		35	44		
26	CSB-40WC28	28	48		38	48		
30	CSB-40WC32	32	54		43	54		
36	CSB-40WC38	38	62		50	62		
40	CSB-40WC42	42	66		54	66		
46	CSB-40WC48	48	74		61	74		
50	CSB-40WC52	52	78	2	65	1.5	78	
60	CSB-40WC62	62	90		76		90	

### Metric standard strip

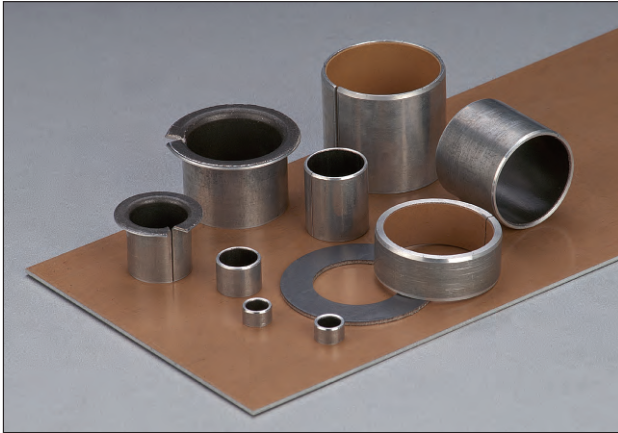


Unit:mm

Type	Length $\pm 1$	Width $\pm 1$	Thickness -0.05
CSB-40SP	500	150	1.0
CSB-40SP	500	150	1.5
CSB-40SP	500	150	2.0
CSB-40SP	500	150	2.5

# CSB-LA10 Aluminum Alloy Bronze Powder with PTFE/Fibre

RoHS



## Features

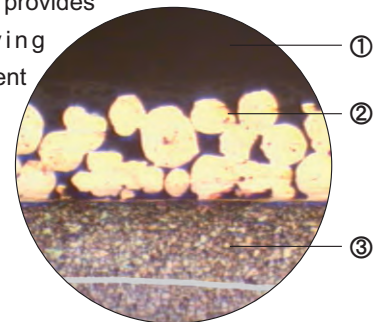
This material structure enables the final parts to be lighter and easier for installation. Suitable for dry running, low coefficient of friction, lower wear, good sliding characteristics, the transfer film created can protect the mating metal surface, suitable for rotary, linear and oscillating movement.

## Structure

**1. PTFE/Fibre mixture thickness 0.01~0.03mm**, provides an excellent initial transfer film, which effectively coats the mating surfaces of the bearing assembly, forming an oxide type solid lubricant film.

**2. Sintered bronze powder thickness 0.20-0.35mm**, provides Max. Thermal conductivity away from the bearing surfaces, also serves as a reservoir for the PTFE layer mixture.

**3. Aluminum alloy** provides good load carrying capacity and excellent heat dissipation.



## Tech. Data

Max. load	Static	80N/mm <sup>2</sup>	Friction coefficient	0.03~0.20		
	Very low speed	40N/mm <sup>2</sup>		Max. speed	Dry running	1m/s
	Rotating oscillating	20N/mm <sup>2</sup>			Hydrodynamic operation	>1m/s
Max. PV dry running	Short-term operation	2.8N/mm <sup>2</sup> *m/s	Thermal conductivity	50W(m*K) <sup>-1</sup>		
	Continuous operation	1.8N/mm <sup>2</sup> *m/s	Coefficient of thermal expansion	24*10 <sup>-6</sup> *K <sup>-1</sup>		
Temp. limit	-50°C~+150°C					

## Typical Applications

CSB-LA10 is a material with much lower weight and could be applied in OA machineries, fitness equipments, bicycle, food industry machines and packaging machineries etc.

## Available

- Cylindrical Bushes
- Thrust Washers
- Non-standard parts as design

CSB-LA10 supplied by customer ordering, the tolerance is according to CSB-50 standard dimension.

## CSB-FR Bronze Mesh with PTFE Layer Bearings

RoHS



### Structure

CSB-FR consists of a bronze mesh shell, laminated with compounded PTFE tape. This material structure enables the final parts to be lighter and easier for installation. It is widely used in chemical industries, medical industries, food industries, textile machines, OA machines, and door/window hinges etc.

### Available

Standard wall thickness:  $0.48 \pm 0.02\text{mm}$ , dimensions could be supplied against customer designation.

### Tech. Data

Max. load	Static	80N/mm <sup>2</sup>	Friction coefficient	0.03~0.20	
	Dynamic	40N/mm <sup>2</sup>		Max. speed	Dry
Temp. limit	-195℃~+260℃			Oil	>1m/s

## CSB-3S Metal mesh with PTFE layer bearings

RoHS



### Structure

CSB-3S consists of a stainless steel mesh shell laminated with compounded PTFE tape. This material structure enables the final parts to be lighter. The stainless steel provides good corrosion resistance. It is widely used in chemical industries like chemical valves, medical industries, food industries etc.

### Available

Standard wall thickness	0.80mm	+0.10 0
	1.20mm	±0.75
	1.63mm	0 -0.18

Dimensions could be supplied against customer designation.

### Tech. Data

Max. load	Static	80N/mm <sup>2</sup>	Friction coefficient	0.05~0.20	
	Dynamic	40N/mm <sup>2</sup>		Max. speed	Dry
Temp. limit	-195℃~+260℃			Oil	>1m/s

## CSB-TEX Steel with PTFE Fibre Fabric Bearings

RoHS



### Features

Suitable for rotating and oscillating movement, less maintenance requirements due to long re-lubrication intervals, lower wear, lower susceptibility to edge loading, no absorption of water and therefore no swelling, good damping behaviours, good resistance to impact loads. It has longer service life under low speed and high load.

### Structure

This new material uses the PTFE fibre fabric overlay on steel backing, the fabric is with high load capacity and much longer operating life comparing with conventional 3-layer bushes.

### Tech. Data

Max. load	Static	350N/mm <sup>2</sup>	Temp.	-50°C ~ +160°C
	Dynamic	180N/mm <sup>2</sup>		Friction coefficient
Max. speed		0.5m/s	Thermal conductivity	42W(m*k) <sup>-1</sup>
Max. PV (Dry)	Short-term	3.6N/mm <sup>2</sup> *m/s	Coefficient of thermal expansion	11*10 <sup>-6</sup> *K <sup>-1</sup>
	Continuous	1.8N/mm <sup>2</sup> *m/s		

### Typical Applications

This material is used in the equipments like suspension and auxiliary of agriculture, construction machines,

cranes, hydraulic and mechanical jibs, ball butterfly and sluice valves, water pumps and chemical industries etc.

### Available

Standard wall thickness	1.0mm	-0.02 -0.06
	1.5mm	-0.02 -0.065
	2.0mm	-0.03 -0.08
	2.5mm	-0.04 -0.11

Dimensions could be supplied against customer designation.