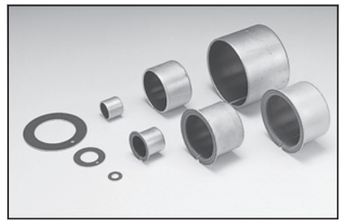
Oiles Drymet LF

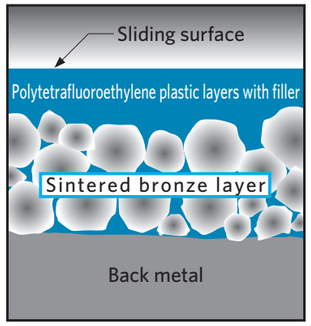
Polytetrafluoroethylene plastic multi-layer bearings with back metals



RoHS2 ELV

Feature

- Serviceable without the need for lubrication. Thin and lightweight for compact design.
- Demonstrate low coefficient of friction and superior load performances in high-load, low-speed conditions.
- Usable at the high PV values even in the middle- and high-speed zones when lubricated.
- Usable in wide temperature ranges from low to high temperatures. Has superior chemical resistance.
- Features superior dimensional stability, mechanical strength, and thermal conductivity.
- The standard products and plate materials are available in various sizes.



image

Service range

Lubrication condition	Dry
Service temperature range ℃	−200～+280
Allowable max. pressure P N/mm² {kgf/cm²}	49.0 (137) {500 (1,400)}
Allowable max. velocity V m/s {m/min}	0.65 {39}
Allowable max. PV value N/mm² · m/s {kgf/cm² · m/min}	3.60 {2,200}

The values in parentheses are static bearing pressures, which are the bearing pressures in applications with no motion or very small motion (≦0.0017m/s[0.1m/min]).

※Allowable max. pressure of LFCF is 24.5N/mm² {250Kgf/cm²} .

Mechanical properties

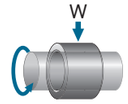
Tensile strength	JIS Z 2241	N/mm² {kgf/cm²}	380 {3,875}
Elongation	JIS Z 2241	%	27
Hardness	JIS Z 2244	HV	107

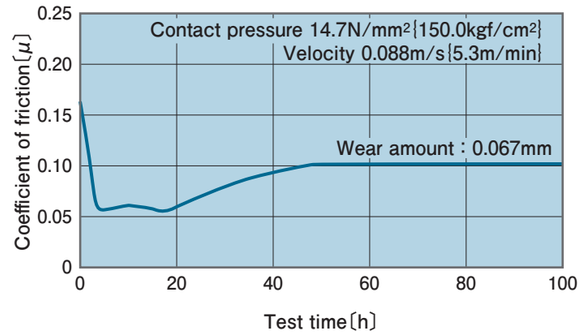
※The values shown above are typical values, not the standard values.
※The values shown above are values of back metal.

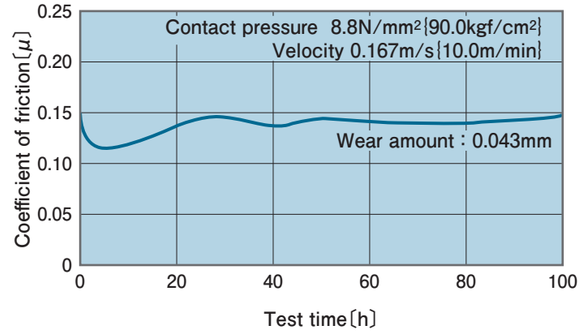
Test data

Journal rotation test

<Testing conditions>
Bearing dimension : φ40×φ44×ℓ30
Mating material : S45C
Pressure : 14.7、8.8、N/mm² {150.0、90.0kgf/cm²}
Velocity : 0.088、0.167m/s {5.3、10.0m/min}
Test time : 100h
Lubrication : dry







Oiles Drymet LF PTFE multi-layer bearings with back metals

Press-fitting (Rolled bushing)

Press-fitting jig

Generally, as shown in the figure 1, a mandrel is used for the press-fitting. However use of a guide ring facilitates easier press-fitting. Use of a guide ring prevents damage of a bushing at the time of press-fitting, The dimension of a guide ring should be calculated from the table below.

Inner diameter of the guide ring should be the size so that the bushing can be inserted by hands. Length of the guide ring should be more than one-third of the bushing, or if possible, it should be the same length as the bushing.

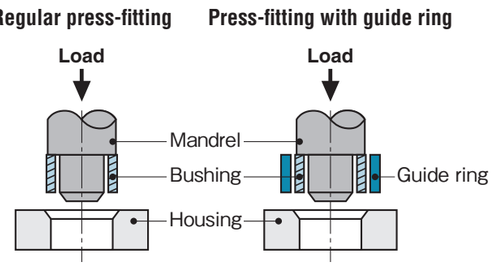


Figure 1

The dimension of mandrel should be calculated from table below.

Dimension of bushing		Dimension of mandrel
I.D.	D0	※1 d0=D0−(0.05 to 0.10)
O.D.	D1	※2 d1=D1−(0.20 to 0.30)
Length	L	ℓ≧L

※1 Techmet B Standard Type (TCB) should be Do-(0.25 to 0.30).
※2 Use of flange bushings should be the same size of flange.

The dimension of guide ring should be calculated from table below.

Dimension of bushing	Guide ring I.D.	Guide ring O.D.
Up to ϕ40	D1+(0.1 to 0.3)	D1+(10 to 15)
ϕ42 to ϕ60	D1+(0.2 to 0.5)	
Over ϕ65	D1+(0.5 to 1.0)	

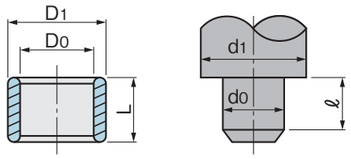


Figure 2

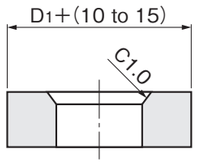


Figure 3

Inner diameter of the guide ring should be the size that bushing can be inserted by hands. The length of the guide ring should be more than one-third of the bushing, or if possible, it should be the same length as the bushing.

Housing chamfer

For the housing chamfer, either a round chamfer or a tapered chamfer is recommended. In case of a C-surface chamfer, (more than C1.0) make sure there is no burr. Smoother press-fitting is possible by applying small amount of grease or lubricant.

Press-fit force

Press-fit smoothly with hydralic (pressure), pneumatic pressure, or a vice.
Avoid press-fit by use of impact such as use of a hammer.
It might induce damage of the bushing, or change the size of the inner diameter after press-fit.

Press-fit force is obtained by below formula.

$$F=(0.9\text{ to }1.2)\times10^4\cdot\frac{t\cdot L\cdot S}{D_1}\ [kg]$$

t : thickness of the steel backing
L : length of the bushing
S : average interference
D1 : O.D. of bushing

●Thickness of the steel backing

Drymet LF Unit : mm

I.D.of bushing	t
Up to ϕ18	0.65
ϕ19 to ϕ25	1.15
ϕ26 to ϕ40	1.65
ϕ42 and over	2.15
LFCF	0.25

※LFCF is obtained by below formula.

$$F=(0.4\text{ to }0.8)\times10^4\cdot\frac{t\cdot L\cdot S}{D_1}\ [kg]$$

Techmet B Unit : mm

I.D.of bushing	t
Up to ϕ18	0.50
ϕ20 to ϕ22	0.95

Toughmet / Toughmet D Unit : mm

I.D.of bushing	t
Up to ϕ18	0.70
ϕ19 to ϕ25	1.10
ϕ26 to ϕ40	1.60
ϕ42 and over	2.10

Techmet E Unit : mm

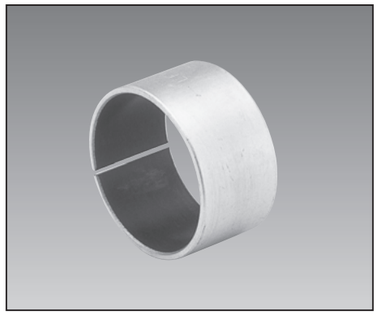
thickness of bearing	t
0.5	0.25
1.0	0.65

※Techmet E (t0.5) is obtained by below formula.

$$F=(0.4\text{ to }0.8)\times10^4\cdot\frac{t\cdot L\cdot S}{D_1}\ [kg]$$

LFB Oiles Drymet LF Bushings (I.D. ϕ3~ϕ28)

RoHS2 ELV

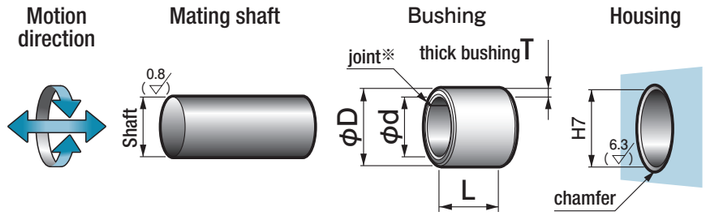


Specify Part No. by required I.D. and length.

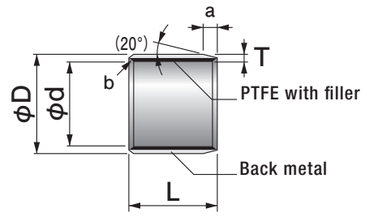
(e.g.) I.D. is 15mm and length is 8mm.

LFB - 1508

Part No.



※The joint causes no influences upon rotation of the shaft. Be careful when press-fitting so that the joint is not at the position to which the maximum load is applied.



a: O.D. chamfering for the bushing I.D. of ϕ10 or more

T	1.0	1.5	2.0
a	0.5	0.8	1.0 (mm)

b: I.D. chamfering for the bushing I.D. of ϕ10 or more

T	1.0	1.5	2.0
b	C0.3	C0.5	C0.5 (mm)

※Chamfering of inner or outer diameters less than ϕ10 mm is done only to remove burrs.

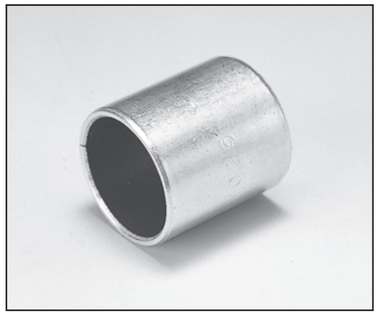
Shaft		Housing		I.D.	O.D.		Wall thickness		Length L Tolerance $^{0}_{-0.3}$					
Size	Tolerance	Size	H7 Tolerance	ϕd	ϕD	Tolerance	T	Tolerance	3	4	5	6	7	8
3	$^{-0.025}_{-0.034}$	5	$^{+0.012}_{0}$	3	5	$^{+0.047}_{+0.017}$	1.0	$^{0}_{-0.025}$	0303	0304	0305	0306		
4	$^{-0.025}_{-0.037}$	6	$^{+0.012}_{0}$	4	6	$^{+0.047}_{+0.017}$	1.0	$^{0}_{-0.025}$	0403	0404	0405	0406		0408
5	$^{-0.025}_{-0.037}$	7	$^{+0.015}_{0}$	5	7	$^{+0.055}_{+0.025}$	1.0	$^{0}_{-0.025}$	0503	0504	0505	0506		0508
6	$^{-0.025}_{-0.037}$	8	$^{+0.015}_{0}$	6	8	$^{+0.055}_{+0.025}$	1.0	$^{0}_{-0.025}$	0603	0604	0605	0606	0607	0608
7	$^{-0.025}_{-0.040}$	9	$^{+0.015}_{0}$	7	9	$^{+0.055}_{+0.025}$	1.0	$^{0}_{-0.025}$			0705	0706	0707	0708
8	$^{-0.025}_{-0.040}$	10	$^{+0.015}_{0}$	8	10	$^{+0.055}_{+0.025}$	1.0	$^{0}_{-0.025}$			0805	0806	0807	0808
9	$^{-0.025}_{-0.040}$	11	$^{+0.018}_{0}$	9	11	$^{+0.060}_{+0.030}$	1.0	$^{0}_{-0.025}$				0906		
10	$^{-0.025}_{-0.040}$	12	$^{+0.018}_{0}$	10	12	$^{+0.060}_{+0.030}$	1.0	$^{0}_{-0.025}$				1006	1007	1008
12	$^{-0.025}_{-0.043}$	14	$^{+0.018}_{0}$	12	14	$^{+0.060}_{+0.030}$	1.0	$^{0}_{-0.025}$				1206		1208
13	$^{-0.025}_{-0.043}$	15	$^{+0.018}_{0}$	13	15	$^{+0.060}_{+0.030}$	1.0	$^{0}_{-0.025}$						1308
14	$^{-0.025}_{-0.043}$	16	$^{+0.018}_{0}$	14	16	$^{+0.065}_{+0.035}$	1.0	$^{0}_{-0.025}$						1408
15	$^{-0.025}_{-0.043}$	17	$^{+0.018}_{0}$	15	17	$^{+0.065}_{+0.035}$	1.0	$^{0}_{-0.025}$						1508
16	$^{-0.025}_{-0.043}$	18	$^{+0.018}_{0}$	16	18	$^{+0.070}_{+0.035}$	1.0	$^{0}_{-0.025}$						
17	$^{-0.025}_{-0.043}$	19	$^{+0.021}_{0}$	17	19	$^{+0.070}_{+0.035}$	1.0	$^{0}_{-0.025}$						
18	$^{-0.025}_{-0.043}$	20	$^{+0.021}_{0}$	18	20	$^{+0.075}_{+0.040}$	1.0	$^{0}_{-0.025}$						
19	$^{-0.025}_{-0.046}$	22	$^{+0.021}_{0}$	19	22	$^{+0.075}_{+0.040}$	1.5	$^{0}_{-0.030}$						
20	$^{-0.025}_{-0.046}$	23	$^{+0.021}_{0}$	20	23	$^{+0.080}_{+0.045}$	1.5	$^{0}_{-0.030}$						
22	$^{-0.025}_{-0.046}$	25	$^{+0.021}_{0}$	22	25	$^{+0.080}_{+0.045}$	1.5	$^{0}_{-0.030}$						
24	$^{-0.025}_{-0.046}$	27	$^{+0.021}_{0}$	24	27	$^{+0.080}_{+0.045}$	1.5	$^{0}_{-0.030}$						
25	$^{-0.025}_{-0.046}$	28	$^{+0.021}_{0}$	25	28	$^{+0.085}_{+0.050}$	1.5	$^{0}_{-0.030}$						
26	$^{-0.025}_{-0.046}$	30	$^{+0.021}_{0}$	26	30	$^{+0.085}_{+0.050}$	2.0	$^{0}_{-0.030}$						
28	$^{-0.025}_{-0.046}$	32	$^{+0.025}_{0}$	28	32	$^{+0.090}_{+0.050}$	2.0	$^{0}_{-0.030}$						

※Outer diameter is measrued by exclusive gauge.
※The I.D. tolerance after press fitting is for reference only.
※I.D. ϕ30~ϕ160 are shown on pages 157 to 158.

Length L Tolerance $^{0}_{-0.3}$									I.D. tolerance after press fitting (reference)	I.D.
10	12	14	15	16	20	25	30	35		ϕd
									$^{+0.062}_{0}$	3
									$^{+0.062}_{0}$	4
									$^{+0.065}_{0}$	5
0610	0612								$^{+0.065}_{0}$	6
0710	0712								$^{+0.065}_{0}$	7
0810	0812		0815						$^{+0.065}_{0}$	8
0910									$^{+0.068}_{0}$	9
1010	1012		1015		1020				$^{+0.068}_{0}$	10
1210	1212		1215		1220				$^{+0.068}_{0}$	12
1310	1312		1315		1320				$^{+0.068}_{0}$	13
1410	1412	1414	1415	1416	1420				$^{+0.068}_{0}$	14
1510	1512		1515		1520	1525			$^{+0.068}_{0}$	15
1610	1612		1615		1620	1625			$^{+0.068}_{0}$	16
1710			1715						$^{+0.071}_{0}$	17
1810	1812		1815		1820	1825	1830		$^{+0.071}_{0}$	18
1910			1915		1920				$^{+0.081}_{0}$	19
2010	2012		2015		2020	2025	2030		$^{+0.081}_{0}$	20
2210	2212		2215		2220	2225	2230		$^{+0.081}_{0}$	22
			2415		2420	2425	2430		$^{+0.081}_{0}$	24
2510	2512		2515		2520	2525	2530	2535	$^{+0.081}_{0}$	25
			2615		2620	2625	2630		$^{+0.081}_{0}$	26
	2812		2815		2820	2825	2830		$^{+0.085}_{0}$	28

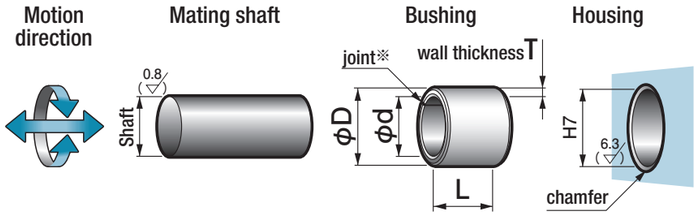
LFB Oiles Drymet LF Bushings (I.D. φ30~φ160)

RoHS2 ELV

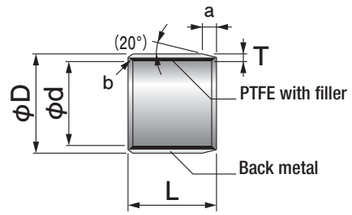


Specify Part No. by required I.D. and length.
(e.g.) I.D. is 70mm and length is 35mm.

LFB - 7035
Part No.



※The joint causes no influences upon rotation of the shaft. Be careful when press-fitting so that the joint is not at the position to which the maximum load is applied.



a: O.D. chamfering

T	2.0	2.5
a	1.0	1.0

(mm)

b: I.D. chamfering

T	2.0	2.5
b	C0.5	C0.5

(mm)

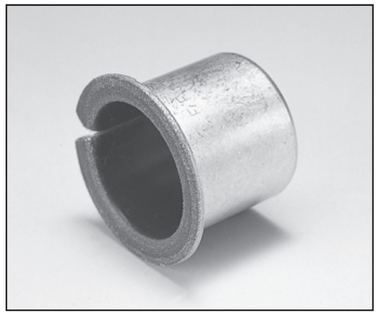
Shaft		Housing		I.D.	O.D.		Wall thickness		Length L Tolerance $^{0}_{-0.3}$					
Size	Tolerance	H7	H7 Tolerance	φd	φD	Tolerance	T	Tolerance	12	15	20	25	30	35
30	−0.025 −0.046	34	+0.025 0	30	34	+0.090 +0.050	2.0	0 −0.030	3012	3015	3020	3025	3030	3035
31	−0.025 −0.050	35	+0.025 0	31	35	+0.090 +0.050	2.0	0 −0.030		3115		3125	3130	
32	−0.025 −0.050	36	+0.025 0	32	36	+0.090 +0.050	2.0	0 −0.030		3215	3220	3225	3230	
35	−0.025 −0.050	39	+0.025 0	35	39	+0.095 +0.055	2.0	0 −0.030	3512	3515	3520	3525	3530	3535
38	−0.025 −0.050	42	+0.025 0	38	42	+0.095 +0.055	2.0	0 −0.030			3820	3825	3830	3835
40	−0.025 −0.050	44	+0.025 0	40	44	+0.095 +0.055	2.0	0 −0.030	4012	4015	4020	4025	4030	4035
45	−0.025 −0.050	50	+0.025 0	45	50	+0.100 +0.060	2.5	0 −0.040			4520	4525	4530	4535
50	−0.025 −0.050	55	+0.030 0	50	55	+0.105 +0.060	2.5	0 −0.040			5020	5025	5030	5035
55	−0.025 −0.055	60	+0.030 0	55	60	+0.110 +0.065	2.5	0 −0.040				5525	5530	5535
60	−0.025 −0.055	65	+0.030 0	60	65	+0.120 +0.070	2.5	0 −0.040					6030	6035
65	+0.035 +0.005	70	+0.030 0	65	70	+0.125 +0.075	2.5	−0.030 −0.080					6530	
70	+0.035 +0.005	75	+0.030 0	70	75	+0.125 +0.075	2.5	−0.030 −0.080					7030	7035
75	+0.035 +0.005	80	+0.030 0	75	80	+0.130 +0.075	2.5	−0.030 −0.080					7530	7535
80	+0.035 +0.005	85	+0.035 0	80	85	+0.130 +0.075	2.5	−0.030 −0.080						
85	+0.035 0	90	+0.035 0	85	90	+0.130 +0.075	2.5	−0.030 −0.080						
90	+0.035 0	95	+0.035 0	90	95	+0.130 +0.075	2.5	−0.030 −0.080						
100	+0.035 0	105	+0.035 0	100	105	+0.140 +0.080	2.5	−0.030 −0.080						
110	+0.035 0	115	+0.035 0	110	115	+0.140 +0.080	2.5	−0.030 −0.080						
120	+0.035 0	125	+0.040 0	120	125	+0.145 +0.090	2.5	−0.030 −0.080						
130	+0.035 −0.005	135	+0.040 0	130	135	+0.145 +0.090	2.5	−0.030 −0.080						
140	+0.035 −0.005	145	+0.040 0	140	145	+0.165 +0.100	2.5	−0.030 −0.080						
150	+0.035 −0.005	155	+0.040 0	150	155	+0.185 +0.120	2.5	−0.030 −0.080						
160	+0.035 −0.005	165	+0.040 0	160	165	+0.185 +0.120	2.5	−0.030 −0.080						

※Outer diameter is measrued by exclusive gauge.
※The I.D. tolerance after press fitting is for reference only.
※I.D. φ3~φ28 are shown on pages 155 to 156.

Length L Tolerance $^{0}_{-0.3}$								I.D. tolerance after press fitting (reference)	I.D.
40	50	60	70	80	90	95	100		φd
3040	3050							+0.085 0	30
3140								+0.085 0	31
3240								+0.085 0	32
3540	3550							+0.085 0	35
3840								+0.085 0	38
4040	4050							+0.085 0	40
4540	4550							+0.105 0	45
5040	5050	5060						+0.110 0	50
5540	5550	5560						+0.110 0	55
6040	6050	6060		6080				+0.110 0	60
6540	6550	6560						+0.190 +0.060	65
7040	7050	7060	7070	7080				+0.190 +0.060	70
7540	7550	7560		7580				+0.190 +0.060	75
8040	8050	8060		8080				+0.195 +0.060	80
8540	8550	8560		8580				+0.195 +0.060	85
9040	9050	9060			9090			+0.195 +0.060	90
	10050		10070	10080		10095	100100	+0.195 +0.060	100
	11050		11070			11095	110100	+0.195 +0.060	110
	12050		12070			12095	120100	+0.200 +0.060	120
	13050			13080			130100	+0.200 +0.060	130
	14050			14080			140100	+0.200 +0.060	140
	15050			15080			150100	+0.200 +0.060	150
	16050			16080			160100	+0.200 +0.060	160

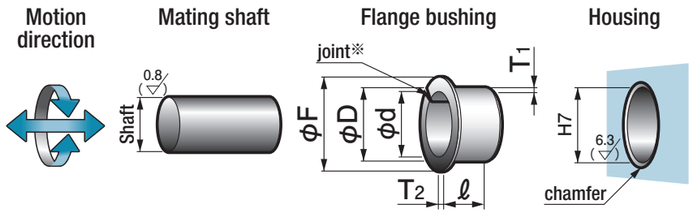
LFF Oiles Drymet LF Flange Bushings

RoHS2 ELV

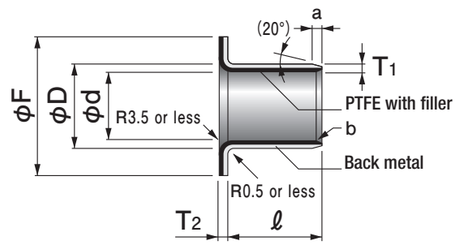


Specify Part No. by required I.D. and length.
(e.g.) I.D. is 20mm and length is 10mm.

LFF - 2010
Part No.



※The joint causes no influences upon rotation of the shaft. Be careful when press-fitting so that the joint is not at the position to which the maximum load is applied.



a: O.D. chamfering for the bushing I.D. of φ10 or more

T1	1.0	1.5	2.0	2.5	
a	0.5	0.8	1.0	1.0	(mm)

b: I.D. chamfering for the bushing I.D. of φ10 or more

T1	1.0	1.5	2.0	2.5	
b	C0.3	C0.5	C0.5	C0.5	(mm)

※Chamfering of inner or outer diameters less than φ10 mm is done only to remove burrs.

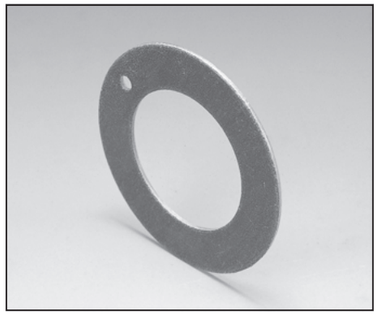
Shaft		Housing		I.D.	O.D.		Flange				Wall thickness		Length ℓ Tolerance 0 −0.3			
Size	Tolerance	Size	H7 Tolerance	φd	φD	Tolerance	φF	Tolerance	T2	Tolerance	T1	Tolerance	3	4	5	6
3	−0.025 −0.034	4.6	+0.012 0	3	4.6	+0.047 +0.017	7	0 −0.8	0.8	0 −0.15	0.8	0 −0.025	0303		0305	
4	−0.025 −0.037	5.6	+0.012 0	4	5.6	+0.047 +0.017	9	0 −0.8	0.8	0 −0.15	0.8	0 −0.025		0404		0406
5	−0.025 −0.037	7	+0.015 0	5	7	+0.055 +0.025	10	0 −0.8	1.0	0 −0.15	1.0	0 −0.025		0504	0505	0506
6	−0.025 −0.037	8	+0.015 0	6	8	+0.055 +0.025	12	0 −0.8	1.0	0 −0.15	1.0	0 −0.025			0605	0606
7	−0.025 −0.040	9	+0.015 0	7	9	+0.055 +0.025	13	0 −0.8	1.0	0 −0.15	1.0	0 −0.025			0705	
8	−0.025 −0.040	10	+0.015 0	8	10	+0.055 +0.025	15	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				0806
9	−0.025 −0.040	11	+0.018 0	9	11	+0.060 +0.030	16	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				
10	−0.025 −0.040	12	+0.018 0	10	12	+0.060 +0.030	18	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				1006
12	−0.025 −0.043	14	+0.018 0	12	14	+0.060 +0.030	20	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				1206
13	−0.025 −0.043	15	+0.018 0	13	15	+0.060 +0.030	21	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				
14	−0.025 −0.043	16	+0.018 0	14	16	+0.065 +0.035	22	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				
15	−0.025 −0.043	17	+0.018 0	15	17	+0.065 +0.035	23	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				
16	−0.025 −0.043	18	+0.018 0	16	18	+0.070 +0.035	24	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				
18	−0.025 −0.043	20	+0.021 0	18	20	+0.075 +0.040	26	0 −0.8	1.0	0 −0.15	1.0	0 −0.025				
20	−0.025 −0.046	23	+0.021 0	20	23	+0.080 +0.045	31	0 −0.8	1.5	0 −0.15	1.5	0 −0.030				
22	−0.025 −0.046	25	+0.021 0	22	25	+0.080 +0.045	33	0 −0.8	1.5	0 −0.15	1.5	0 −0.030				
24	−0.025 −0.046	27	+0.021 0	24	27	+0.080 +0.045	35	0 −0.8	1.5	0 −0.15	1.5	0 −0.030				
25	−0.025 −0.046	28	+0.021 0	25	28	+0.085 +0.050	36	0 −0.8	1.5	0 −0.15	1.5	0 −0.030				
26	−0.025 −0.046	30	+0.021 0	26	30	+0.085 +0.050	38	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
28	−0.025 −0.046	32	+0.025 0	28	32	+0.090 +0.050	40	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
30	−0.025 −0.046	34	+0.025 0	30	34	+0.090 +0.050	42	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
31	−0.025 −0.050	35	+0.025 0	31	35	+0.090 +0.050	45	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
32	−0.025 −0.050	36	+0.025 0	32	36	+0.090 +0.050	46	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
35	−0.025 −0.050	39	+0.025 0	35	39	+0.095 +0.055	49	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
38	−0.025 −0.050	42	+0.025 0	38	42	+0.095 +0.055	52	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
40	−0.025 −0.050	44	+0.025 0	40	44	+0.095 +0.055	54	0 −0.8	2.0	0 −0.15	2.0	0 −0.030				
45	−0.025 −0.050	50	+0.025 0	45	50	+0.100 +0.060	60	0 −0.8	2.5	0 −0.15	2.5	0 −0.040				
50	−0.025 −0.050	55	+0.030 0	50	55	+0.105 +0.060	65	0 −0.8	2.5	0 −0.15	2.5	0 −0.040				
55	−0.025 −0.055	60	+0.030 0	55	60	+0.110 +0.065	70	0 −0.8	2.5	0 −0.15	2.5	0 −0.040				
60	−0.025 −0.055	65	+0.030 0	60	65	+0.120 +0.070	75	0 −0.8	2.5	0 −0.15	2.5	0 −0.040				

※Outer diameter is measrued by exclusive gauge.
※The I.D. tolerance after press fitting is for reference only.

Length ℓ Tolerance 0 −0.3											I.D. tolerance after press fitting (reference)	I.D.
7	8	10	12	15	20	25	30	40	50	60		
											+0.062 0	3
											+0.062 0	4
											+0.065 0	5
0607	0608	0610									+0.065 0	6
0707		0710	0712								+0.065 0	7
	0808	0810	0812								+0.065 0	8
		0910									+0.068 0	9
1007	1008	1010	1012	1015							+0.068 0	10
1207	1208	1210	1212	1215	1220						+0.068 0	12
		1310		1315							+0.068 0	13
		1410	1412	1415	1420						+0.068 0	14
		1510	1512	1515	1520	1525					+0.068 0	15
		1610	1612	1615	1620	1625					+0.068 0	16
		1810	1812	1815	1820	1825					+0.071 0	18
		2010	2012	2015	2020	2025	2030				+0.081 0	20
		2210	2212	2215	2220	2225					+0.081 0	22
				2415	2420	2425	2430				+0.081 0	24
		2510	2512	2515	2520	2525	2530				+0.081 0	25
				2615	2620						+0.081 0	26
			2812	2815	2820		2830				+0.085 0	28
			3012	3015	3020	3025	3030	3040			+0.085 0	30
						3125					+0.085 0	31
					3220	3225	3230				+0.085 0	32
			3512		3520	3525	3530	3540	3550		+0.085 0	35
					3820		3830	3840			+0.085 0	38
			4012		4020	4025	4030	4040	4050		+0.085 0	40
					4520	4525	4530	4540	4550		+0.105 0	45
					5020		5030	5040		5060	+0.110 0	50
							5530	5540		5560	+0.110 0	55
							6030	6040		6060	+0.110 0	60

LFW Oiles Drymet LF Washers

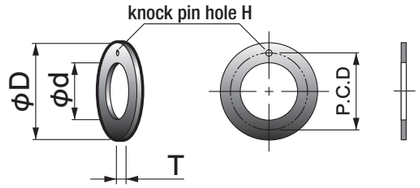
RoHS2 ELV



● Sliding surface consists of a plastic layer.

Specify Part No. by required I.D. and thickness.
(e.g.) I.D. is 20mm and thickness is 1.5mm.

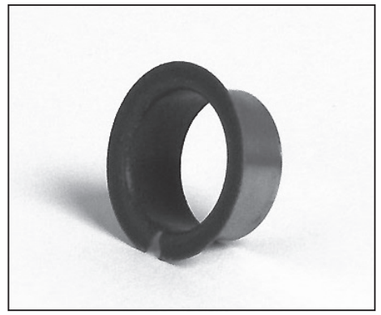
LFW - 2015
Part No.



Part No.	I.D.		O.D.		Thickness		Knock pin hole		Position of knock pin	
	ϕd	Tolerance	ϕD	Tolerance	T	Tolerance	H	Tolerance	P.C.D	Tolerance
LFW-0815	8	+0.25 0	16	0 −0.25	1.5	−0.03 −0.08	1	+0.30 +0.10	12	±0.12
LFW-1015	10	+0.25 0	18	0 −0.25	1.5	−0.03 −0.08	1	+0.30 +0.10	14	±0.12
LFW-1215	12	+0.25 0	24	0 −0.25	1.5	−0.03 −0.08	1.5	+0.375 +0.125	18	±0.12
LFW-1415	14	+0.25 0	26	0 −0.25	1.5	−0.03 −0.08	2	+0.375 +0.125	20	±0.12
LFW-1615	16	+0.25 0	30	0 −0.25	1.5	−0.03 −0.08	2	+0.375 +0.125	23	±0.12
LFW-1815	18	+0.25 0	32	0 −0.25	1.5	−0.03 −0.08	2	+0.375 +0.125	25	±0.12
LFW-2015	20	+0.25 0	36	0 −0.25	1.5	−0.03 −0.08	3	+0.375 +0.125	28	±0.12
LFW-2215	22	+0.25 0	38	0 −0.25	1.5	−0.03 −0.08	3	+0.375 +0.125	30	±0.12
LFW-2415	24	+0.25 0	42	0 −0.25	1.5	−0.03 −0.08	3	+0.375 +0.125	33	±0.12
LFW-2615	26	+0.25 0	44	0 −0.25	1.5	−0.03 −0.08	3	+0.375 +0.125	35	±0.12
LFW-2815	28	+0.25 0	48	0 −0.25	1.5	−0.03 −0.08	4	+0.375 +0.125	38	±0.12
LFW-3215	32	+0.25 0	54	0 −0.25	1.5	−0.03 −0.08	4	+0.375 +0.125	43	±0.12
LFW-3815	38	+0.25 0	62	0 −0.25	1.5	−0.03 −0.08	4	+0.375 +0.125	50	±0.12
LFW-4215	42	+0.25 0	66	0 −0.25	1.5	−0.03 −0.08	4	+0.375 +0.125	54	±0.12
LFW-4820	48	+0.25 0	74	0 −0.25	2.0	−0.03 −0.08	4	+0.375 +0.125	61	±0.12
LFW-5220	52	+0.25 0	78	0 −0.25	2.0	−0.03 −0.08	4	+0.375 +0.125	65	±0.12

LFCF Oiles Drymet LF (t0.5)

RoHS2 ELV

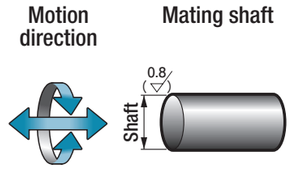


Specify Part No. by required I.D. and length.
(e.g.) I.D. is 8mm and length is 5.5mm.

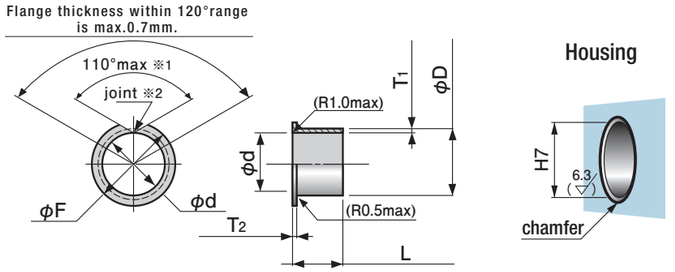
LFCF - 0805
Part No.

Feature

- This bearing is as thin as 0.5 mm, allowing the user who gives up an idea to use a bearing in a small space to use it.
- The sliding layer made of plastic containing special additives maintains stable coefficient of friction. It is effective to reduce abnormal noise and wear in applications without bushings.



Tolerance of mating shaft
General use, high load e7



※1 The degree shown is after press-fitted into the ring gauge of ϕD +0.055mm. (the ring gauge of ϕD+0.060mm is used for the bushings of ϕ11 or bigger.)

※2 The joint causes no influences upon rotation of the shaft. Be careful when press-fitting so that the joint is not at the position to which the maximum load is applied.

※3 Dimensions shown in parentheses indicate the mold dimensions.

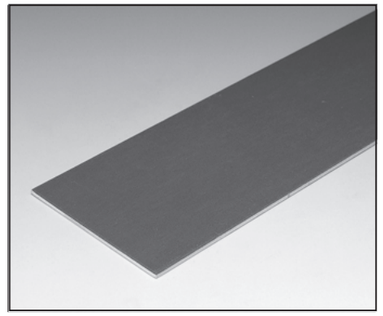
Note There is no chamfer on LFCF.

Part No.	I.D.	O.D.		Flnage				Thick bushing		Length L	I.D. tolerance after press fitting (reference)
	ϕd	ϕD	Tolerance	ϕF	Tolerance	T_2	Tolerance	T_1	Tolerance	Tolerance±0.3	
LFCF-0505	5	6	+0.055 +0.025	8.5	±0.5	0.48	±0.05	0.48	±0.02	5.5	+0.092 0
LFCF-0605	6	7	+0.055 +0.025	10	±0.5	0.48	±0.05	0.48	±0.02	5.5	+0.095 0
LFCF-0705	7	8	+0.055 +0.025	11	±0.5	0.48	±0.05	0.48	±0.02	5.5	+0.095 0
LFCF-0805	8	9	+0.055 +0.025	12	±0.5	0.48	±0.05	0.48	±0.02	5.5	+0.095 0
LFCF-1006	10	11	+0.060 +0.030	15	±0.5	0.48	±0.05	0.48	±0.02	6.5	+0.098 0
LFCF-1206	12	13	+0.060 +0.030	17	±0.5	0.48	±0.05	0.48	±0.02	6.5	+0.098 0
LFCF-1606	16	17	+0.060 +0.030	21	±0.5	0.48	±0.05	0.48	±0.02	6.5	+0.098 0

※Outer diameter is measrued by exclusive gauge.
※I.D after press-fitted into the housing of ϕD H7 is reference value.

LFP Oiles Drymet LF Plates

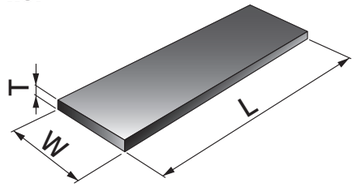
RoHS2 ELV



● Sliding surface consists of a plastic layer.

Specify Part No. by required thickness and width.
(e.g.) Thickness is 1.5mm and width is 90mm.

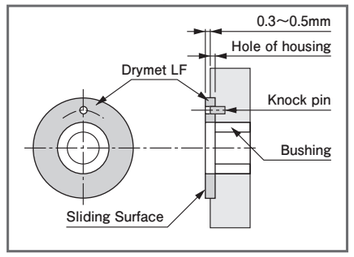
LFP - 1590
Part No.



Part No.	Thickness		Width	Length
	T	Tolerance	W	L
LFP-1080	1.0	−0.03 −0.13	80	500
LFP-1590	1.5	−0.03 −0.13	90	500
LFP-20100	2.0	−0.03 −0.13	100	500
LFP-25100	2.5	−0.03 −0.13	100	500

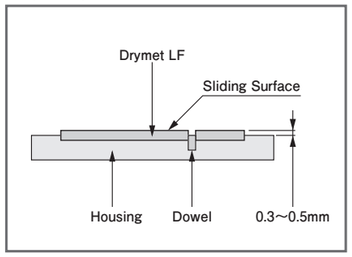
How to attach washers, plates

①Knock pin method (Thrust washer)



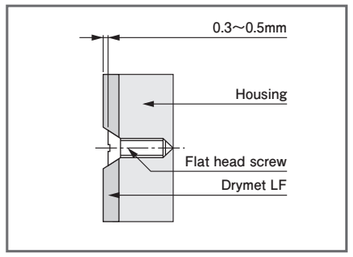
※Sliding surface consists of a plastic layer.

②Inlay method (Plate)



※Sliding surface consists of a plastic layer.

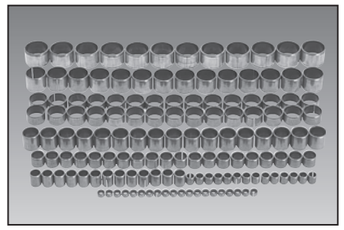
③Flat head screw method



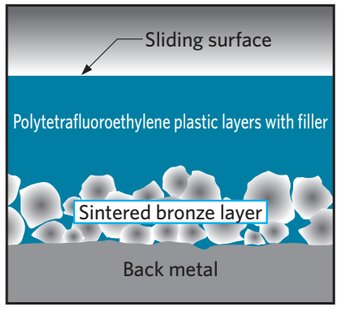
④Using glue

In the case of (2), the washer and plate may be inserted with glue, not a knock pin. Synthetic epoxy plastic glue is suitable, though no glue is specified, in particular. Be careful because fitting with glue only may result in separation in some cases.

Oiles Techmet B Polytetrafluoroethylene plastic multi-layer bearings with back metals



RoHS2 ELV



image

Feature

- Serviceable without the need for lubrication. Features superior dimensional stability, mechanical strength, and thermal conductivity with a thin, lightweight, and compact design.
- Demonstrates stable low coefficient of friction and superior wear resistance under high-speed conditions.
- The plastic layers have machining allowance, allowing high dimensional accuracy when the inner diameter is machined.
- The standard products in various sizes are available on order.

Service range

Lubrication condition	Dry
Service temperature range ℃	−50〜+250
Allowable max. pressure P N/mm² {kgf/cm²}	19.5 (137) {199 (1,400)}
Allowable max. velocity V m/s {m/min}	2.50 {150}
Allowable max. PV value N/mm² • m/s {kgf/cm² • m/min}	1.45 {887}

The values in parentheses are static bearing pressures, which are the bearing pressures in applications with no motion or very small motion (≦0.0017m/s [0.1m/min]).

Mechanical properties

Tensile strength	JIS Z 2241	N/mm² {kgf/cm²}	380 {3,875}
Elongation	JIS Z 2241	%	27
Hardness	JIS Z 2244	HV	107

※The values shown above are typical values, not the standard values.
※The values shown above are values of back metal.

◉Please refer to the fitting method of Drymet LF. (P.153, 154)

Lathe turning

Cutting tool	carbide tool (JIS)	
	Relief angle	5〜10°
	Rake angle	10〜20°
	Nose radius, (mm)	0.10〜0.20
Condition	Speed (m/min)	60〜200
	Cut depth (mm)	0.05〜0.10
	Feed (mm/rev)	0.05〜0.20

Attention should be paid to dimensional variances due to thermal expansion, chucking, and bend of the material.

The Oiles Techmet should be ground. If it is reamed, it is difficult to maintain the dimension in mass production.

The I.D. machining allowance is 0.2 mm for the diameter.

Machining accuracy (bushing)

I.D.	O.D.	Length
class 7 (Note)	—	class 8 to 9

(Note) Accuracy after press fitting.

Classes here are in JIS standard.

This product demonstrates satisfactory performance at the slide surface roughness of Rz6.3 to 12.5μm.

Dimensions may change due to thermal expansion, chucking pressure, moisture absorption deformation, etc. High accuracy is ensured if the product is installed on the housing and then ground.