

Plain Bearings

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Permaglide® Plain Bearing Material P1

Features

- Maintenance Free
- Suitable for
 - dry running
 - rotary movement
 - oscillating movement and
 - linear movement with short stroke lengths
- Good sliding characteristics - no stick-slip
- Low coefficient of friction
- Low wear
- High chemical resistance
- Does not tend to weld to metal
- Largely resistant to swelling
 - does not absorb water
- Hydrodynamic operation possible.

Variants

- P10 with steel backing
- P11 with bronze backing, therefore
 - largely corrosion-resistant
 - very good thermal conductivity
 - antimagnetic

Basic Information

The chemical resistance depends on the chemical characteristics of the individual layers. In general, Permaglide® P1 is resistant to water, alcohols, glycols and many mineral oils.

Permaglide® P1 is designed for dry running, i.e. there is no lubricant to protect the mating surface. Rust cannot form between the sliding material and mating surface due to the running-in layer or sliding surface comprising PTFE and Pb.

Permaglide® P1 can be operated under hydrodynamic conditions.

Electrical Conductivity

The electrical conductivity of new bearings may be lower because the running-in layer is still present. The bronze layer is partially exposed after the running-in process, thus improving the electrical conductivity.

The electrical resistance is dependent on the size of the contact surface area.

Lubrication

Permaglide® P1 contains dry lubricants and therefore does not need lubrication. It can be used in fluid media in certain applications. The improved heat dissipation in this case can significantly increase the operating life.

Permaglide® Plain Bearing Material P2

Features

- Low Maintenance
- Suitable for
 - rotating and
 - oscillating movements
- Long relubrication intervals
- Low wear
- Good resistance to edge stress
- Good damping behaviour
- Good resistance to shock loads

Variants

- P20
 - with lubrication pockets
 - ready-to-fit
- P21*, available by agreement
 - with lubrication pockets
 - with machining allowance
- P22*, available by agreement
 - without lubrication pockets
 - with machining allowance
- P23, available by agreement
 - without lubrication pockets
 - ready-to-fit

* The sliding layer is on average 0.15mm thicker than in the case of P20. It can therefore be machined subsequently. Misalignment inaccuracies can therefore be compensated or internal clearances with tighter tolerances can be achieved.

Basic Information

The chemical resistance depends on the chemical characteristics of the individual layers. In general, Permaglide® P2 is resistant to water, alcohols, glycols and many mineral oils.

Rust cannot form between the sliding material and mating surface due to the sliding layer comprising PVDF, PTFE Pb and the lubricant.

Permaglide® P22 and P23 (without lubrication pockets) can be operated under hydrodynamic conditions.

Lubrication

Low-maintenance Permaglide® P2 must be lubricated with grease or fluid.

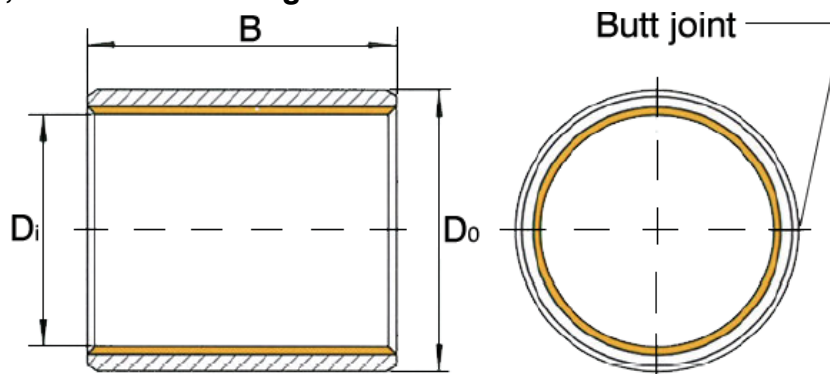
Highly suitable lubricating greases used is Lithium soap with a mineral oil base. Grease additives such as molybdenum disulphide and zinc sulphide are unfavourable since they increase wear.

PLAIN BEARINGS

Permaglide Metric Bushes
PAP.P10

Series PAP.P10

Maintenance Free, with Steel Backing



Shaft Diameter	Part Number	MASS g	Dimensions in mm		
			Di	Do	B(+0.25)
2	PAP 0203 P10	0.15	2	3.5	3
	PAP 0205 P10	0.25	2	3.5	5
3	PAP 0303 P10	0.20	3	4.5	3
	PAP 0304 P10	0.26	3	4.5	4
	PAP 0305 P10	0.33	3	4.5	5
	PAP 0306 P10	0.40	3	4.5	6
4	PAP 0403 P10	0.25	4	5.5	3
	PAP 0404 P10	0.33	4	5.5	4
	PAP 0406 P10	0.50	4	5.5	6
	PAP 0410 P10	0.84	4	5.5	10
5	PAP 0505 P10	0.72	5	7	5
	PAP 0508 P10	1.1	5	7	8
	PAP 0510 P10	1.4	5	7	10
6	PAP 0606 P10	1.0	6	8	6
	PAP 0608 P10	1.3	6	8	8
	PAP 0610 P10	1.7	6	8	10
7	PAP 0710 P10	1.9	7	9	10
8	PAP 0808 P10	1.7	8	10	8
	PAP 0810 P10	2.1	8	10	10
	PAP 0812 P10	2.6	8	10	12
10	PAP 1008 P10	2.1	10	12	8
	PAP 1010 P10	2.6	10	12	10
	PAP 1012 P10	3.1	10	12	12
	PAP 1015 P10	3.9	10	12	15
	PAP 1020 P10	5.3	10	12	20
12	PAP 1208 P10	2.5	12	14	8
	PAP 1210 P10	3.1	12	14	10
	PAP 1212 P10	3.7	12	14	12
	PAP 1215 P10	4.7	12	14	15
	PAP 1220 P10	6.2	12	14	20
	PAP 1225 P10	7.8	12	14	25
13	PAP 1310 P10	3.3	13	15	10
14	PAP 1410 P10	3.6	14	16	10
	PAP 1412 P10	4.3	14	16	12
	PAP 1415 P10	5.4	14	16	15
	PAP 1420 P10	7.1	14	16	20
	PAP 1425 P10	9.0	14	16	25
15	PAP 1510 P10	3.8	15	17	10
	PAP 1512 P10	4.6	15	17	12
	PAP 1515 P10	5.7	15	17	15
	PAP 1520 P10	7.6	15	17	20
	PAP 1525 P10	9.5	15	17	25

Shaft Diameter	Part Number	MASS g	Dimensions in mm		
			Di	Do	B(+0.25)
16	PAP 1610 P10	4.0	16	18	10
	PAP 1612 P10	4.9	16	18	12
	PAP 1615 P10	6.1	16	18	15
	PAP 1620 P10	8.1	16	18	20
	PAP 1625 P10	10.1	16	18	25
18	PAP 1810 P10	4.5	18	20	10
	PAP 1815 P10	6.8	18	20	15
	PAP 1820 P10	9.1	18	20	20
	PAP 1825 P10	11.3	18	20	25
20	PAP 2010 P10	7.8	20	23	10
	PAP 2015 P10	11.7	20	23	15
	PAP 2020 P10	15.6	20	23	20
	PAP 2025 P10	19.5	20	23	25
	PAP 2030 P10	23.4	20	23	30
22	PAP 2215 P10	12.7	22	25	15
	PAP 2220 P10	17.0	22	25	20
	PAP 2225 P10	21.3	22	25	25
	PAP 2230 P10	25.5	22	25	30
24	PAP 2415 P10	13.8	24	27	15
	PAP 2420 P10	18.5	24	27	20
	PAP 2425 P10	23.1	24	27	25
	PAP 2430 P10	27.7	24	27	30
25	PAP 2510 P10	9.6	25	28	10
	PAP 2515 P10	14.4	25	28	15
	PAP 2520 P10	19.2	25	28	20
	PAP 2525 P10	24.0	25	28	25
	PAP 2530 P10	28.8	25	28	30
	PAP 2540 P10	38.4	25	28	40
	PAP 2550 P10	48.0	25	28	50
28	PAP 2820 P10	29.1	28	32	20
	PAP 2830 P10	43.7	28	32	30
30	PAP 3015 P10	23.3	30	34	15
	PAP 3020 P10	31.1	30	34	20
	PAP 3025 P10	38.8	30	34	25
	PAP 3030 P10	46.6	30	34	30
	PAP 3040 P10	62.1	30	34	40

Recommended mounting tolerance:

Shaft	Housing
$dw < 5: h6$	$dg \leq 5.5: H6$
$5 \leq dw < 80: f7$	$5.5 < dg: H7$
$80 \leq dw: h8$	



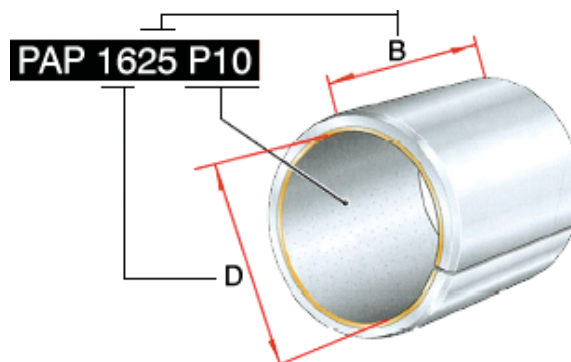
Series PAP.P10

Shaft Diameter	Part Number	MASS g	Dimensions in mm			Shaft Diameter	Part Number	MASS g	Dimensions in mm		
			Di	Do	B(+0.25)				Di	Do	B(+0.25)
32	PAP 3230 P10	49.5	32	36	30	90	PAP 9050 P10	281	90	95	50
	PAP 3240 P10	66.0	32	36	40		PAP 9060 P10	338	90	95	60
35	PAP 3520 P10	35.9	35	39	20	95	PAP 90100 P10	563	90	95	100
	PAP 3530 P10	53.9	35	39	30		PAP 9560 P10	356	95	100	60
	PAP 3540 P10	71.8	35	39	40		PAP 95100 P10	593	95	100	100
	PAP 3550 P10	89.8	35	39	50		100	PAP 10050 P10	312	100	105
40	PAP 4020 P10	40.8	40	44	20	PAP 10060 P10		374	100	105	60
	PAP 4030 P10	61.2	40	44	30	PAP 100115 P10		717	100	105	115
	PAP 4040 P10	81.5	40	44	40	105		PAP 10560 P10	392	105	110
	PAP 4050 P10	102	40	44	50		PAP 105115 P10	752	105	110	115
45	PAP 4530 P10	87	45	50	30	110	PAP 11060 P10	411	110	115	60
	PAP 4540 P10	116	45	50	40		PAP 110115 P10	787	110	115	115
	PAP 4550 P10	145	45	50	50		115	PAP 11550 P10	357	115	120
50	PAP 5020 P10	64	50	55	20	PAP 11560 P10		429	115	120	60
	PAP 5030 P10	96	50	55	30	PAP 11570 P10		500	115	120	70
	PAP 5040 P10	128	50	55	40	120	PAP 12060 P10	447	120	125	60
	PAP 5060 P10	192	50	55	60		PAP 120100 P10	745	120	125	100
55	PAP 5540 P10	140	55	60	40	125	PAP 125100 P10	776	125	130	100
	PAP 5560 P10	210	55	60	60		130	PAP 13060 P10	484	130	135
60	PAP 6030 P10	114	60	65	30	PAP 130100 P10		806	130	135	100
	PAP 6040 P10	152	60	65	40	135	PAP 13560 P10	502	135	140	60
	PAP 6060 P10	228	60	65	60		PAP 13580 P10	669	135	140	80
	PAP 6070 P10	266	60	65	70	140	PAP 14060 P10	520	140	145	60
65	PAP 6530 P10	123	65	70	30		PAP 140100 P10	867	140	145	100
	PAP 6540 P10	164	65	70	40	150	PAP 15060 P10	557	150	155	60
	PAP 6550 P10	205	65	70	50		PAP 15080 P10	742	150	155	80
	PAP 6560 P10	246	65	70	60	PAP 150100 P10	928	150	155	100	
	PAP 6570 P10	288	65	70	70	160	PAP 16080 P10	791	160	165	80
70	PAP 7040 P10	176	70	75	40		PAP 160100 P10	989	160	165	100
	PAP 7050 P10	221	70	75	50	180	PAP 180100 P10	1110	180	185	100
	PAP 7070 P10	309	70	75	70		200	PAP 200100 P10	1232	200	205
	75	PAP 7540 P10	189	75	80	40		220	PAP 220100 P10	1354	220
PAP 7550 P10		236	75	80	50	250	PAP 250100 P10		1536	250	255
PAP 7560 P10		283	75	80	60		300	PAP 300100 P10	1840	300	305
PAP 7580 P10		377	75	80	80						
80	PAP 8040 P10	201	80	85	40						
	PAP 8060 P10	301	80	85	60						
	PAP 8080 P10	402	80	85	80						
	PAP 80100 P10	502	80	85	100						
85	PAP 8560 P10	319	85	90	60						
	PAP 85100 P10	532	85	90	100						

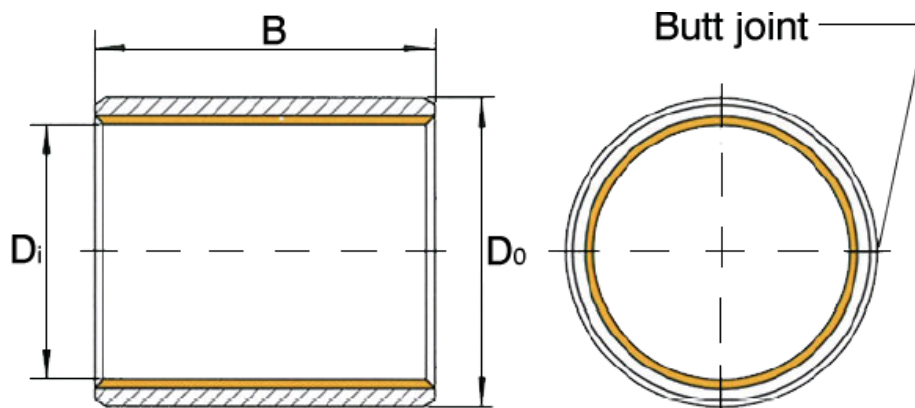
Recommended mounting tolerance:

Shaft	Housing
$dw < 5: h6$	$dg < 5.5: H6$
$5 \leq dw < 80: f7$	$5.5 < dg: H7$
$80 \leq dw: h8$	

Ordering Example



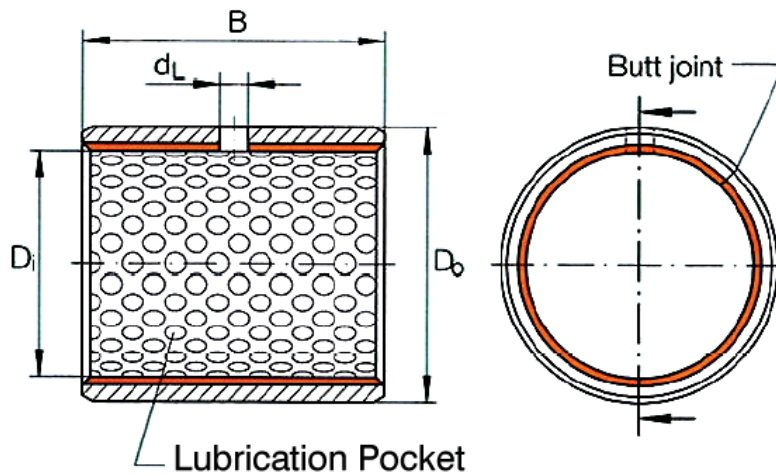
Maintenance Free, with Bronze Backing



Series PAP.P11

Shaft Diameter	Part Number	MASS g	Dimensions in mm			Shaft Diameter	Part Number	MASS g	Dimensions in mm		
			Di	Do	B(+0.25)				Di	Do	B(+0.25)
4	PAP 0406 P11	0.8	4	6	6	24	PAP 2430 P11	30.3	24	27	30
5	PAP 0505 P11	0.8	5	7	5	25	PAP 2525 P11	26.2	25	28	25
6	PAP 0606 P11	1.1	6	8	6	25	PAP 2530 P11	31.5	25	28	30
	PAP 0610 P11	1.8				28	PAP 2830 P11	47.9	28	32	30
8	PAP 0808 P11	1.9	8	10	8	30	PAP 3020 P11	34.1	30	34	20
	PAP 0810 P11	2.3				30	PAP 3030 P11	51.1	30	34	30
	PAP 0812 P11	2.8				30	PAP 3040 P11	68.2	30	34	40
10	PAP 1005 P11	1.4	10	12	5	35	PAP 3520 P11	39.4	35	39	20
	PAP 1010 P11	2.8				35	PAP 3530 P11	59.1	35	39	30
	PAP 1015 P11	4.2				40	PAP 4050 P11	112	40	44	50
	PAP 1020 P11	5.7				45	PAP 4550 P11	159	45	50	50
12	PAP 1210 P11	3.3	12	14	10	50	PAP 5030 P11	105	50	55	30
	PAP 1212 P11	4				50	PAP 5040 P11	140	50	55	40
	PAP 1215 P11	5.1				50	PAP 5060 P11	211	50	55	60
	PAP 1220 P11	6.7				55	PAP 5540 P11	154	55	60	40
	PAP 1225 P11	8.4				60	PAP 6040 P11	167	60	65	40
14	PAP 1415 P11	5.8	14	16	15	60	PAP 6050 P11	209	60	65	50
15	PAP 1515 P11	6.2	15	17	15	60	PAP 6060 P11	251	60	65	60
	PAP 1525 P11	10.3				60	PAP 6070 P11	293	60	65	70
16	PAP 1615 P11	6.6	16	18	15	70	PAP 7050 P11	242	70	75	50
	PAP 1625 P11	11				70	PAP 7070 P11	339	70	75	70
18	PAP 1815 P11	7.4	18	20	15	80	PAP 8060 P11	331	80	85	60
	PAP 1825 P11	12.3				80	PAP 80100 P11	552	80	85	100
20	PAP 2015 P11	12.8	20	23	15	90	PAP 9060 P11	371	90	95	60
	PAP 2020 P11	17				90	PAP 90100 P11	619	90	95	100
	PAP 2025 P11	21.3				95	PAP 9560 P11	391	95	100	60
	PAP 2030 P11	25.5				100	PAP 10060 P11	411	100	105	60
	22	PAP 2215 P11				14	22	25	15	100	PAP 100115 P11788
22	PAP 2220 P11	18.6	22	25	20						
	PAP 2225 P11	23.3				22	25	25			

Low Maintenance



Series PAP..P20

Shaft Diameter	Part Number	MASS g	Dimensions in mm				Shaft Diameter	Part Number	MASS g	Dimensions in mm			
			D _i	D _o	B(+0.25)	d _L				D _i	D _o	B(+0.25)	d _L
8	PAP 0808 P20	1.6	8	10	8	-1)		PAP 3025 P20	37.8	30	34	25	4
	PAP 0810 P20	2.0	8	10	10	-1)		PAP 3030 P20	45.4	30	34	30	4
	PAP 0812 P20	2.4	8	10	12	-1)		PAP 3040 P20	60.6	30	34	40	4
10	PAP 1008 P20	2.0	10	12	8	-1)	32	PAP 3230 P20	48.2	32	36	30	4
	PAP 1010 P20	2.4	10	12	10	3	35	PAP 3520 P20	35.0	35	39	20	4
	PAP 1015 P20	3.7	10	12	15	3		PAP 3530 P20	52.5	35	39	30	4
12	PAP 1210 P20	2.9	12	14	10	3		PAP 3550 P20	87.5	35	39	50	4
	PAP 1212 P20	3.5	12	14	12	3	40	PAP 4020 P20	39.7	40	44	20	4
	PAP 1215 P20	4.4	12	14	15	3		PAP 4030 P20	59.6	40	44	30	4
	PAP 1220 P20	5.9	12	14	20	3		PAP 4040 P20	79.5	40	44	40	4
14	PAP 1420 P20	6.8	14	16	20	3		PAP 4050 P20	99.3	40	44	50	4
15	PAP 1510 P20	3.6	15	17	10	3	45	PAP 4540 P20	113.0	45	50	40	5
	PAP 1515 P20	5.4	15	17	15	3		PAP 4550 P20	142.0	45	50	50	5
	PAP 1525 P20	9.0	15	17	25	3	50	PAP 5025 P20	78.0	50	55	25	5
16	PAP 1612 P20	4.6	16	18	12	3		PAP 5040 P20	125.0	50	55	40	5
	PAP 1615 P20	5.7	16	18	15	3		PAP 5060 P20	188.0	50	55	60	5
	PAP 1620 P20	7.7	16	18	20	3	55	PAP 5540 P20	137.0	55	60	40	5
18	PAP 1815 P20	6.4	18	20	15	3	60	PAP 6030 P20	112.0	60	65	30	6
	PAP 1820 P20	8.6	18	20	20	3		PAP 6040 P20	149.0	60	65	40	6
20	PAP 2015 P20	11.2	20	23	15	3		PAP 6060 P20	224.0	60	65	60	6
	PAP 2020 P20	15.0	20	23	20	3	70	PAP 7040 P20	173.0	70	75	40	6
	PAP 2025 P20	18.8	20	23	25	3		PAP 7050 P20	216.0	70	75	50	6
	PAP 2030 P20	22.5	20	23	30	3		PAP 7070 P20	303.0	70	75	70	6
22	PAP 2220 P20	16.4	22	25	20	3	75	PAP 7540 P20	185.0	75	80	40	6
25	PAP 2515 P20	13.9	25	28	15	4		PAP 7580 P20	370.0	75	80	80	6
	PAP 2520 P20	18.5	25	28	20	4	80	PAP 8040 P20	197.0	80	85	40	6
	PAP 2525 P20	23.1	25	28	25	4		PAP 8055 P20	271.0	80	85	55	6
	PAP 2530 P20	27.8	25	28	30	4		PAP 8060 P20	295.0	80	85	60	6
28	PAP 2830 P20	42.6	28	32	30	4		PAP 8080 P20	394.0	80	85	80	6
30	PAP 3020 P20	30.3	30	34	20	4	90	PAP 9060 P20	331.0	90	95	60	6
							100	PAP 10050 P20	305.0	100	105	50	8
								PAP 10060 P20	366.0	100	105	60	8

Recommended mounting tolerance:

Shaft Housing bore

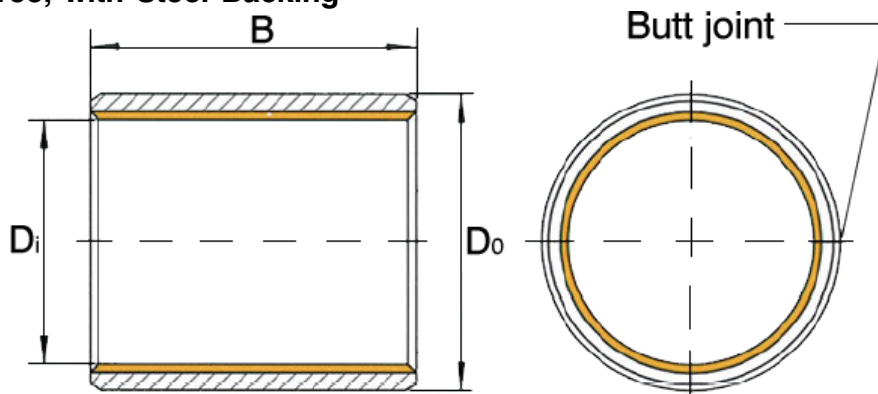
h8 H7

1) No lubrication hole.

PLAIN BEARINGS

Permaglide Inch Bushes
PAPZ..P10

Maintenance Free, with Steel Backing



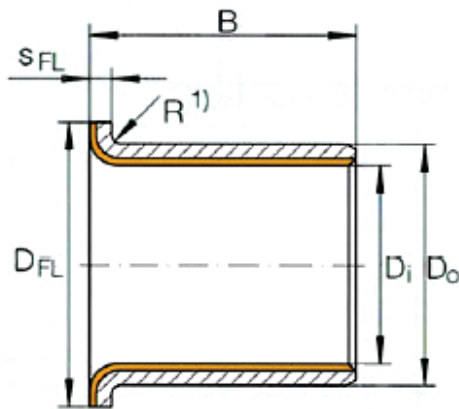
Series PAPZ..P10

Shaft Dia	Part Number	MASS g	Dimensions in INCH			Shaft Dia	Part Number	MASS g	Dimensions in INCH		
			Di	Do	B(+0.25)				Di	Do	B(+0.25)
4.763	PAPZ 0303 P10	0.5	4.763	6.350	4.76 ± 0.25	25.400	PAPZ 1606 P10	9.9	25.400	28.575	9.53 ± 0.25
	PAPZ 0304 P10	0.7	4.763	6.350	6.35 ± 0.25		PAPZ 1608 P10	13.1	25.400	28.575	12.70 ± 0.25
	PAPZ 0306 P10	1	4.763	6.350	9.53 ± 0.25		PAPZ 1612 P10	19.7	25.400	28.575	19.05 ± 0.25
6.350	PAPZ 0404 P10	0.9	6.350	7.938	6.35 ± 0.25		PAPZ 1614 P10	23	25.400	28.575	22.23 ± 0.25
	PAPZ 0406 P10	1.3	6.350	7.938	9.53 ± 0.25		PAPZ 1616 P10	26.3	25.400	28.575	25.40 ± 0.25
	PAPZ 0408 P10	1.7	6.350	7.938	12.70 ± 0.25		PAPZ 1620 P10	32.9	25.400	28.575	31.75 ± 0.25
7.938	PAPZ 0504 P10	1	7.938	9.525	6.35 ± 0.25		PAPZ 1624 P10	39.4	25.400	28.575	38.10 ± 0.25
	PAPZ 0506 P10	1.6	7.938	9.525	9.53 ± 0.25	28.575	PAPZ 1808 P10	18.7	28.575	32.544	12.70 ± 0.25
9.525	PAPZ 0603 P10	1.5	9.525	11.906	4.76 ± 0.25		PAPZ 1812 P10	28	28.575	32.544	19.05 ± 0.25
	PAPZ 0604 P10	1.9	9.525	11.906	6.35 ± 0.25		PAPZ 1816 P10	37.4	28.575	32.544	25.40 ± 0.25
	PAPZ 0606 P10	2.9	9.525	11.906	9.53 ± 0.25	31.750	PAPZ 2006 P10	15.5	31.750	35.719	9.53 ± 0.25
	PAPZ 0608 P10	3.9	9.525	11.906	12.70 ± 0.25		PAPZ 2012 P10	30.9	31.750	35.719	19.05 ± 0.25
	PAPZ 0610 P10	4.9	9.525	11.906	15.88 ± 0.25		PAPZ 2016 P10	41.3	31.750	35.719	25.40 ± 0.25
	PAPZ 0612 P10	5.8	9.525	11.906	19.05 ± 0.25		PAPZ 2020 P10	51.6	31.750	35.719	31.75 ± 0.25
11.113	PAPZ 0706 P10	3.4	11.113	13.494	9.53 ± 0.25	34.925	PAPZ 2206 P10	16.9	34.925	38.894	9.53 ± 0.25
	PAPZ 0708 P10	4.5	11.113	13.494	12.70 ± 0.25		PAPZ 2208 P10	22.6	34.925	38.894	12.70 ± 0.25
	PAPZ 0710 P10	5.6	11.113	13.494	15.88 ± 0.25		PAPZ 2210 P10	28.2	34.925	38.894	15.88 ± 0.25
	PAPZ 0712 P10	6.7	11.113	13.494	19.05 ± 0.25		PAPZ 2212 P10	33.9	34.925	38.894	19.05 ± 0.25
12.700	PAPZ 0804 P10	2.5	12.700	15.081	6.35 ± 0.25		PAPZ 2216 P10	45.1	34.925	38.894	25.40 ± 0.25
	PAPZ 0806 P10	3.8	12.700	15.081	9.53 ± 0.25		PAPZ 2224 P10	67.7	34.925	38.894	38.10 ± 0.25
	PAPZ 0808 P10	5	12.700	15.081	12.70 ± 0.25		PAPZ 2228 P10	79	34.925	38.894	44.45 ± 0.25
	PAPZ 0810 P10	6.3	12.700	15.081	15.88 ± 0.25	38.100	PAPZ 2408 P10	24.5	38.100	42.069	12.70 ± 0.25
	PAPZ 0812 P10	7.6	12.700	15.081	19.05 ± 0.25		PAPZ 2416 P10	49	38.100	42.069	25.40 ± 0.25
	PAPZ 0814 P10	8.8	12.700	15.081	22.23 ± 0.25		PAPZ 2420 P10	61	38.100	42.069	31.75 ± 0.25
14.288	PAPZ 0906 P10	4.2	14.288	16.669	9.53 ± 0.25		PAPZ 2424 P10	74	38.100	42.069	38.10 ± 0.25
	PAPZ 0908 P10	5.6	14.288	16.669	12.70 ± 0.25		PAPZ 2432 P10	98	38.100	42.069	50.80 ± 0.25
	PAPZ 0912 P10	8.4	14.288	16.669	19.05 ± 0.25	41.275	PAPZ 2616 P10	53	41.275	45.244	25.40 ± 0.25
15.875	PAPZ 1004 P10	3.1	15.875	18.256	6.35 ± 0.25		PAPZ 2624 P10	79	41.275	45.244	38.10 ± 0.25
	PAPZ 1008 P10	6.2	15.875	18.256	12.70 ± 0.25	44.450	PAPZ 2816 P10	69	44.450	49.213	25.40 ± 0.25
	PAPZ 1010 P10	7.7	15.875	18.256	15.88 ± 0.25		PAPZ 2824 P10	103	44.450	49.213	38.10 ± 0.25
	PAPZ 1012 P10	9.3	15.875	18.256	19.05 ± 0.25		PAPZ 2832 P10	138	44.450	49.213	50.80 ± 0.25
	PAPZ 1014 P10	10.8	15.875	18.256	22.23 ± 0.25	50.800	PAPZ 3216 P10	78	50.800	55.563	25.40 ± 0.25
17.463	PAPZ 1112 P10	10.2	17.463	19.844	19.05 ± 0.25		PAPZ 3224 P10	117	50.800	55.563	38.10 ± 0.25
19.050	PAPZ 1204 P10	5	19.050	22.225	6.35 ± 0.25		PAPZ 3232 P10	157	50.800	55.563	50.80 ± 0.25
	PAPZ 1206 P10	7.5	19.050	22.225	9.53 ± 0.25		PAPZ 3240 P10	196	50.800	55.563	63.50 ± 0.25
	PAPZ 1208 P10	10.1	19.050	22.225	12.70 ± 0.25						
	PAPZ 1210 P10	12.6	19.050	22.225	15.88 ± 0.25						
	PAPZ 1212 P10	15.1	19.050	22.225	19.05 ± 0.25						
	PAPZ 1216 P10	20.1	19.050	22.225	25.40 ± 0.25						
22.225	PAPZ 1412 P10	17.4	22.225	25.400	19.05 ± 0.25						
	PAPZ 1416 P10	23.2	22.225	25.400	25.40 ± 0.25						



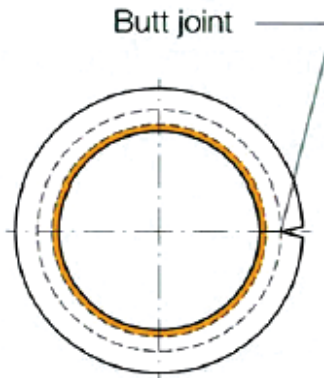
PAF..P10

Maintenance Free, with Steel Backing



PAF..P11

Maintenance Free, with Bronze Backing



Series PAF..P10

Shaft Diameter	Part Number	MASS g	Dimensions in mm				
			Di	Do	DFL	B	SFL
			(±0.5)	(±0.25)	(-0.2)		
6	PAF 06040 P10	0.9	6	8	12	4	1
	PAF 06070 P10	1.4	6	8	12	7	1
	PAF 06080 P10	1.6	6	8	12	8	1
8	PAF 08055 P10	1.7	8	10	15	5.5	1
	PAF 08075 P10	2.1	8	10	15	7.5	1
	PAF 08095 P10	2.5	8	10	15	9.5	1
10	PAF 10070 P10	2.5	10	12	18	7	1
	PAF 10090 P10	3	10	12	18	9	1
	PAF 10120 P10	3.8	10	12	18	12	1
	PAF 10170 P10	5	10	12	18	17	1
12	PAF 12070 P10	3	12	14	20	7	1
	PAF 12090 P10	3.6	12	14	20	9	1
	PAF 12120 P10	4.5	12	14	20	12	1
	PAF 12170 P10	5.9	12	14	20	17	1
14	PAF 14120 P10	5.1	14	16	22	12	1
	PAF 14170 P10	6.9	14	16	22	17	1
15	PAF 15090 P10	4.4	15	17	23	9	1
	PAF 15120 P10	5.5	15	17	23	12	1
	PAF 15170 P10	7.3	15	17	23	17	1
16	PAF 16120 P10	5.8	16	18	24	12	1
	PAF 16170 P10	7.8	16	18	24	17	1
18	PAF 18120 P10	6.5	18	20	26	12	1
	PAF 18170 P10	8.7	18	20	26	17	1
	PAF 18220 P10	10.9	18	20	26	22	1
20	PAF 20115 P10	11.4	20	23	30	11.5	1.5
	PAF 20165 P10	15.1	20	23	30	16.5	1.5
	PAF 20215 P10	18.9	20	23	30	21.5	1.5
25	PAF 25115 P10	14	25	28	35	11.5	1.5
	PAF 25165 P10	18.6	25	28	35	16.5	1.5
	PAF 25215 P10	23.5	25	28	35	21.5	1.5
30	PAF 30160 P10	30.5	30	34	42	16	2
	PAF 30260 P10	45.5	30	34	42	26	2
35	PAF 35160 P10	35	35	39	47	16	2
	PAF 35260 P10	53	35	39	47	26	2
40	PAF 40260 P10	61	40	44	53	26	2

Series PAF..P11

Shaft Diameter	Part Number	MASS g	Dimensions in mm				
			Di	Do	DFL	B	SFL
			(±0.5)	(±0.25)	(-0.2)		
6	PAF 06080 P11	1.8	6	8	12	8	1
8	PAF 08055 P11	1.8	8	10	15	5.5	1
	PAF 08095 P11	2.7	8	10	15	9.5	1
10	PAF 10070 P11	2.7	10	12	18	7	1
	PAF 10120 P11	4.1	10	12	18	12	1
	PAF 10170 P11	5.5	10	12	18	17	1
12	PAF 12070 P11	3.2	12	14	20	7	1
	PAF 12090 P11	3.9	12	14	20	9	1
	PAF 12120 P11	4.9	12	14	20	12	1
15	PAF 15120 P11	6	15	17	23	12	1
	PAF 15170 P11	8	15	17	23	17	1
16	PAF 16120 P11	6.3	16	18	24	12	1
18	PAF 18100 P11	6.1	18	20	26	10	1
	PAF 18220 P11	11.8	18	20	26	22	1
20	PAF 20115 P11	12.4	20	23	30	11.5	1.5
	PAF 20165 P11	16.6	20	23	30	16.5	1.5
25	PAF 25215 P11	25.5	25	28	35	21.5	1.5
30	PAF 30160 P11	33.5	30	34	42	16	2
	PAF 30260 P11	50	30	34	42	26	2
35	PAF 35260 P11	58	35	39	47	26	2
40	PAF 40260 P11	67	40	44	53	26	2

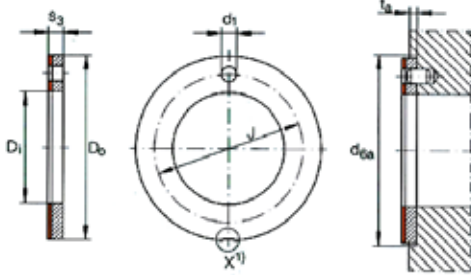
Recommended mounting tolerance:

Shaft f7
Housing bore H7

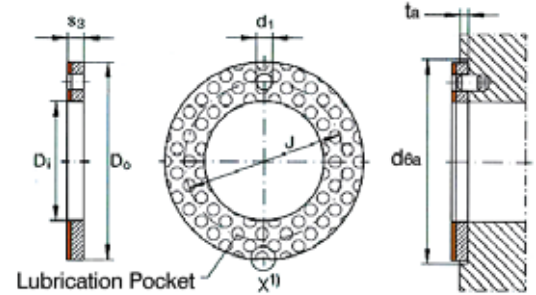
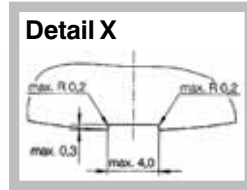
PLAIN BEARINGS

Permaglide Thrust Washers & Strips PAW..P, PAS..P

Low Maintenance



THRUST WASHERS



PAW..P10

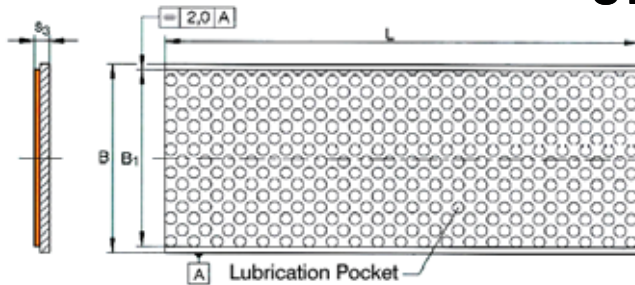
Part Number	MASS g	Dimensions in mm						
		Di	Do	s3	J	d1	ta	d6a
		+0.25	-0.25	-0.05	±0.12	+0.1	±0.2	+0.12
PAW 10 P10	2.7	10	20	1.5	15	1.5	1.0	20
PAW 12 P10	3.9	12	24	1.5	18	1.5	1.0	24
PAW 14 P10	4.3	14	26	1.5	20	2.0	1.0	26
PAW 16 P10	5.8	16	30	1.5	22	2.0	1.0	30
PAW 18 P10	6.3	18	32	1.5	25	2.0	1.0	32
PAW 20 P10	8.1	20	36	1.5	28	3.0	1.0	36
PAW 22 P10	8.7	22	38	1.5	30	3.0	1.0	38
PAW 26 P10	11.4	26	44	1.5	35	3.0	1.0	44
PAW 28 P10	13.7	28	48	1.5	38	4.0	1.0	48
PAW 32 P10	17.1	32	54	1.5	43	4.0	1.0	54
PAW 38 P10	21.5	38	62	1.5	50	4.0	1.0	62
PAW 42 P10	23.5	42	66	1.5	54	4.0	1.0	66
PAW 48 P10	38.5	48	74	2.0	61	4.0	1.5	74
PAW 52 P10	41.0	52	78	2.0	65	4.0	1.5	78
PAW 62 P10	52.0	62	90	2.0	76	4.0	1.5	90

Note: A maximum of 4 cut-outs are permissible on the outside diameter in any position.

PAW..P20

Part Number	MASS g	Dimensions in mm						
		Di	Do	s3	J	d1	ta	d6a
		+0.25	-0.25	-0.05	±0.12	+0.1	±0.2	+0.12
PAW 12 P20	3.8	12	24	1.5	18	1.5	1.0	24
PAW 14 P20	4.2	14	26	1.5	20	2.0	1.0	26
PAW 18 P20	6.1	18	32	1.5	25	2.0	1.0	32
PAW 20 P20	7.8	20	36	1.5	28	3.0	1.0	36
PAW 22 P20	8.4	22	38	1.5	30	3.0	1.0	38
PAW 26 P20	11.0	26	44	1.5	35	3.0	1.0	44
PAW 28 P20	13.3	28	48	1.5	38	4.0	1.0	48
PAW 32 P20	16.5	32	54	1.5	43	4.0	1.0	54
PAW 38 P20	21.0	38	62	1.5	50	4.0	1.0	62
PAW 42 P20	22.5	42	66	1.5	54	4.0	1.0	66
PAW 48 P20	37.5	48	74	2.0	61	4.0	1.5	74
PAW 52 P20	40.0	52	78	2.0	65	4.0	1.5	78

STRIPS



PAS..P10, PAS..P11, PAS..P22

Part Number	MASS g	Dimensions in mm			
		s3	B	B1	L
		-0.04	+1.5		+3
PAS..P10					
PAS 05180 P10	330	0.50	180	168	500
PAS 07180 P10	506	0.75	180	168	500
PAS 07250 P10	703	0.75	250	238	500
PAS 10250 P10	948	1.00	250	238	500
PAS 15250 P10	1439	1.50	250	238	500
PAS 20250 P10	1930	2.00	250	238	500
PAS 25250 P10	2420	2.50	250	238	500
PAS 30250 P10	2970	3.06	250	238	500

PAS..P20, PAS..P21

Part Number	MASS g	Dimensions in mm			
		s3	B	B1	L
		-0.04	+1.5		+3
PAS..P20					
PAS 10180 P20	640	0.99	180	168	500
PAS 15180 P20	986	1.48	180	168	500
PAS 20180 P20	1332	1.97	180	168	500
PAS 25180 P20	1678	2.46	180	168	500
PAS..P21					
PAS 10180 P21	711	1.11	180	168	500
PAS 15180 P21	1064	1.61	180	168	500
PAS 20180 P21	1418	2.11	180	168	500
PAS 25180 P21	1785	2.63	180	168	500

B = Total width
B1 = Usable width

PAS..P11					
PAS 10160 P11	658	1.00	160	148	500
PAS 15180 P11	1132	1.50	180	168	500
PAS 20180 P11	1523	2.00	180	168	500
PAS 25180 P11	1915	2.50	180	168	500
PAS..P22					
PAS 10180 P22	711	1.11	180	168	500
PAS 15180 P22	1064	1.61	180	168	500
PAS 20180 P22	1418	2.11	180	168	500
PAS 25180 P22	1785	2.63	180	168	500



DU and Associated Materials Basic Information

The DU bearing material incorporates a PTFE (polytetrafluoroethylene) and lead lining and is designed to operate without lubrication at temperatures between -200°C and +280°C. It can withstand specific loads up to 250N/mm², dependent on conditions.

DU resists most solvents and many industrial liquids and gases; including water and oil, most of which improve its performance. It has negligible “stick-slip”, is tolerant of dusty environments and does not accumulate static electricity. It is a conductor of electricity and can resist moderate levels of nuclear radiation.

During normal operation, a thin film from the PTFE lining is transferred to the mating surface and maintained there throughout the working life of the bearing. The backing material of DU is normally mild steel, but a bronze backed version, identified as DU(B), is available where corrosion resistance is important.

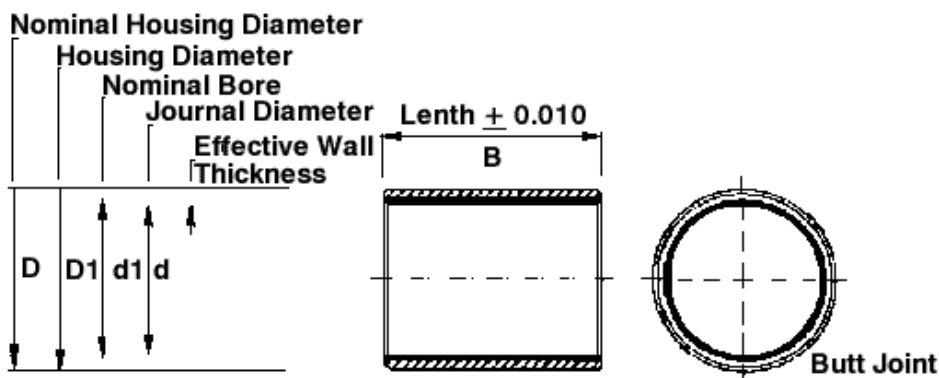
The Plain Bearing Designers’ Handbook provides information about the rate at which lead is released from DU bearings.

Thermal Conductivity and Expansion

The poor thermal conductivity of plastics is one of the main factors which normally limits their use as dry bearings to light duty applications.

However, due to its composite structure, the thermal conductivity of a DU bush, measured from bore to housing is similar to that of steel and thus promotes the dissipation of the generated heat from the bearing surface. The circumferential thermal expansion of the DU material is also the same as that for steel, with the result that throughout the operating temperature range, adequate interference is maintained in steel and cast iron housings.

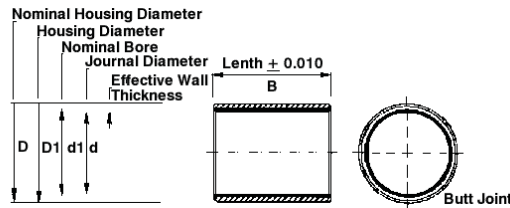
DU Metric Range Bushes



d_1	D	d	D_1	T	B		
2	3.5	2.000 1.994	3.500 3.508		3 MB 0203DU	5 MB 0205DU	
3	4.5	3.000 2.994	4.500 4.508	0.750 0.730	3 MB 0303DU	5 MB 0305DU	6 MB 0306DU
4	5.5	4.000 3.992	5.500 5.508		3 MB 0403DU	4 MB 0404DU	6 MB 0406DU 10 MB 0410DU
5	7.0	4.990 4.978	7.000 7.015		5 MB 0505DU	8 MB 0508DU	10 MB 0510DU
6	8.0	5.990 5.978	8.000 8.015		6 MB 0606DU	8 MB 0608DU	10 MB 0610DU
7	9.0	6.987 6.972	9.000 9.015		10 MB 0710DU		
8	10.0	7.987 7.972	10.000 10.015		8 MB 0808DU	10 MB 0810DU	12 MB 0812DU

PLAIN BEARINGS

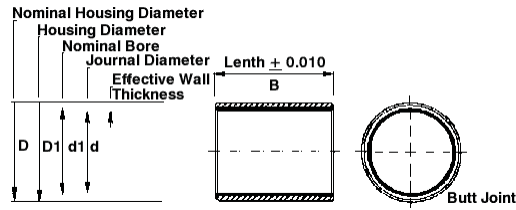
DU Metric Range Bushes



d_1	D	d	D_1	T	B						
10	12.0	9.987	12.000		8 MB	10 MB	12 MB	15 MB	20 MB		
		9.972	12.018		1008DU	1010DU	1012DU	1015DU	1020DU		
12	14.0	11.984	14.000	1.005	8 MB	10 MB	12 MB	15 MB	20 MB	25 MB	
		11.966	14.018		1208DU	1210DU	1212DU	1215DU	1220DU	1225DU	
13	15.0	12.984	15.000	0.980	10 MB	20 MB					
		12.966	15.018		1310DU	1320DU					
14	16.0	13.984	16.000		5 MB	10 MB	12 MB	15 MB	20 MB	25 MB	
		13.966	16.018		1405DU	1410DU	1412DU	1415DU	1420DU	1425DU	
15	17.0	14.984	17.000		10 MB	12 MB	15 MB	20 MB	25 MB		
		14.966	17.018		1510DU	1512DU	1515DU	1520DU	1525DU		
16	18.0	15.984	18.000		10 MB	12 MB	15 MB	20 MB	25 MB		
		15.966	18.018		1610DU	1612DU	1615DU	1620DU	1625DU		
17	19.0	16.984	19.000		20 MB						
		16.966	19.021		1720DU						
18	20.0	17.984	20.000		15 MB	20 MB	25 MB				
		17.966	20.021		1815DU	1820DU	1825DU				
20	23.0	19.980	23.000		10 MB	15 MB	20 MB	25 MB	30 MB		
		19.959	23.021		2010DU	2015DU	2020DU	2025DU	2030DU		
22	25.0	21.980	25.000	1.505	15 MB	20 MB	25 MB	30 MB			
		21.959	25.021		2215DU	2220DU	2225DU	2230DU			
24	27.0	23.980	27.000	1.475	15 MB	20 MB	25 MB	30 MB			
		23.959	27.021		2415DU	2420DU	2425DU	2430DU			
25	28.0	24.980	28.000		15 MB	20 MB	25 MB	30 MB	50 MB		
		24.959	28.021		2515DU	2520DU	2525DU	2530DU	2550DU		
28	32.0	27.980	32.000		15 MB	20 MB	25 MB	30 MB			
		27.959	32.025		2815DU	2820DU	2825DU	2830DU			
30	34.0	29.980	34.000		15 MB	20 MB	25 MB	30 MB	40 MB		
		29.959	34.025		3015DU	3020DU	3025DU	3030DU	3040DU		
32	36.0	31.975	36.000		20 MB	30 MB	40 MB				
		31.950	36.025	2.005	3220DU	3230DU	3240DU				
35	39.0	34.975	39.000	1.970	20 MB	30 MB	35 MB	40 MB	50 MB		
		34.950	39.025		3520DU	3530DU	3535DU	3540DU	3550DU		
37	41.0	36.975	41.000		20 MB						
		36.950	41.025		3720DU						
40	44.0	39.975	44.000		20 MB	30 MB	40 MB	50 MB			
		39.950	44.025		4020DU	4030DU	4040DU	4050DU			
45	50.0	44.975	50.000		20 MB	30 MB	40 MB	45 MB	50 MB		
		44.950	50.025		4520DU	4530DU	4540DU	4545DU	4550DU		
50	55.0	49.975	55.000		20 MB	30 MB	40 MB	50 MB	60 MB		
		49.950	55.030		5020DU	5030DU	5040DU	5050DU	5060DU		
55	60.0	54.970	60.000	2.505	20 MB	25 MB	30 MB	40 MB			
		54.940	60.030	2.460	5520DU	5525DU	5530DU	5540DU			
								50 MB	55 MB	60 MB	
								5550DU	5555DU	5560DU	
60	65.0	59.970	65.000		20 MB	30 MB	40 MB	60 MB	70 MB		
		59.940	65.030		6020DU	6030DU	6040DU	6060DU	6070DU		
65	70.0	64.970	70.000		30 MB	50 MB	70 MB				
		64.940	70.030		6530DU	6550DU	6570DU				
70	75.0	69.970	75.000	2.505	40 MB	50 MB	70 MB				
		69.940	75.030	2.460	7040DU	7050DU	7070DU				
75	80.0	74.970	80.000		60 MB	80 MB					
		74.940	80.030		7560DU	7580DU					
80	85.0	80.000	85.000		60 MB	100 MB					
		79.954	85.035		8060DU	80100DU					
85	90.0	85.000	90.000		30 MB	60 MB	100 MB				
		84.946	90.035		8530DU	8560DU	85100DU				
90	95.0	90.000	95.000		60 MB	100 MB					
		89.946	95.035		9060DU	90100DU					
95	100.0	95.000	100.000		60 MB	100 MB					
		94.946	100.035	2.490	9560DU	95100DU					
100	105.0	100.000	105.000	2.440	60 MB	115 MB					
		99.946	105.035		10060DU	100115DU					

PLAIN BEARINGS

DU Metric Range Bushes



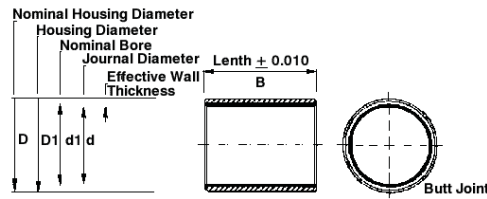
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		104.946	110.035	2.440	10560DU	105115DU
110	115.0	110.000	115.000		60 MB	115 MB
		109.946	115.035		11060DU	110115DU
115	120.0	115.000	120.000		50 MB	70 MB
		114.946	120.035		11550DU	11570DU
120	125.0	120.000	125.000		50 MB	60 MB 100 MB
		119.946	125.040		12050DU	12060DU 120100DU
125	130.0	125.000	130.000		100 MB	
		124.937	130.040		125100DU	
130	135.0	130.000	135.000		60 MB	100 MB
		129.937	135.040		13060DU	130100DU
135	140.0	135.000	140.000		60 MB	80 MB
		134.937	140.040		13560DU	13580DU
140	145.0	140.000	145.000		60 MB	100 MB
		139.937	145.040		14060DU	140100DU
150	155.0	150.000	155.000		60 MB	80 MB 100 MB
		149.937	155.040		15060DU	15080DU 150100DU
160	165.0	160.000	165.000		80 MB	100 MB
		159.937	165.040		16080DU	160100DU
170	175.0	170.000	175.000			
		169.937	175.040			
180	185.0	180.000	185.000		100 MB	
		179.937	185.046		180100DU	
190	195.0	190.000	195.000			
		189.928	195.046			
200	205.0	200.000	205.000		100 MB	
		199.928	205.046		200100DU	
210	215.0	210.000	215.000		100 MB	
		209.928	215.046		210100DU	
220	225.0	220.000	225.000	2.465	100 MB	
		219.928	225.046	2.415	220100DU	
230	235.0	230.000	235.000			
		229.928	235.046			
240	245.0	240.000	245.000			
		239.928	245.046			
250	255.0	250.000	255.000		100 MB	
		249.928	255.052		250100DU	
260	265.0	260.000	265.000			
		259.919	265.052			
270	275.0	270.000	275.000			
		269.919	275.052			
280	285.0	280.000	285.000			
		279.919	285.052			
290	295.0	290.000	295.000			
		289.919	295.052			
300	305.0	300.000	305.000		100 MB	
		299.919	305.052		300100DU	
320	325.0	319.938	325.000			
		319.849	325.057			
340	345.0	339.938	345.000			
		339.849	345.057			
360	365.0	359.938	365.000			
		359.849	365.057			
380	385.0	379.938	385.000			
		379.849	385.057			
400	405.0	399.938	405.000			
		399.849	405.063			

All dimensions in mm.

Part No. Example: MB 1825DU = 18mm x 25mm DU Type Metric Bush

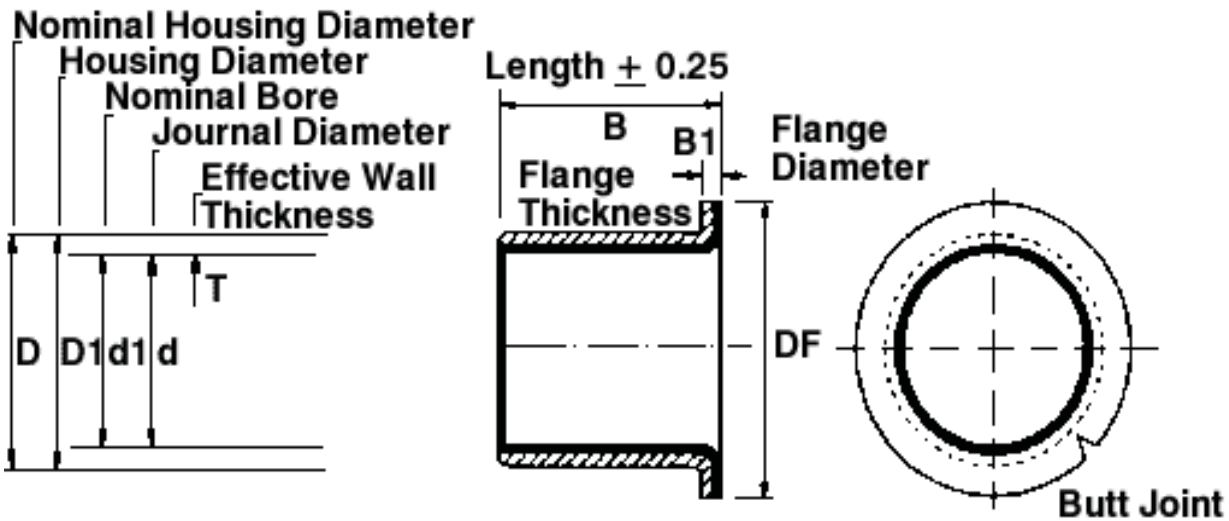
PLAIN BEARINGS

DU Inch Range Bushes



d_1	D	d	D_1	T	B							
1/8	3/16	0.1243 0.1236	0.1873 0.1878		1/8	02DU02	3/16	02DU03				
5/32	7/32	0.1554 0.1547	0.2186 0.2191		5/32	025DU025	1/4	025DU04				
3/16	1/4	0.1865 0.1858	0.2497 0.2503	0.0315 0.0305	3/16	03DU03	1/4	03DU04	3/8	03DU06		
1/4	5/16	0.2490 0.2481	0.3122 0.3128		1/4	04DU04	3/8	04DU06				
5/16	3/8	0.3115 0.3106	0.3747 0.3753		3/8	05DU06	1/2	05DU08				
3/8	15/32	0.3740 0.3731	0.4684 0.4691		3/8	06DU06	1/2	06DU08	3/4	06DU12		
7/16	17/32	0.4365 0.4355	0.5309 0.5316		1/2	07DU08	3/4	07DU12				
1/2	19/32	0.4990 0.4980	0.5934 0.5941	0.0471	3/8	08DU06	1/2	08DU08	5/8	08DU10	7/8	08DU14
9/16	21/32	0.5615 0.5605	0.6559 0.6566	0.0461	1/2	09DU08	3/4	09DU12				
5/8	23/32	0.6240 0.6230	0.7184 0.7192		1/2	10DU08	5/8	10DU10	3/4	10DU12	7/8	10DU14
11/16	25/32	0.6865 0.6855	0.7809 0.7817		7/8	11DU14						
3/4	7/8	0.7491 0.7479	0.8747 0.8755		1/2	12DU08	3/4	12DU12	1	12DU16		
7/8	1	0.8741 0.8729	0.9997 1.0005	0.0627 0.0615	3/4	14DU12	7/8	14DU14	1	14DU16		
1	1-1/8	0.9991 0.9979	1.1246 1.1256		3/4	16DU12	1	16DU16	1-1/2	16DU24		
1-1/8	1-9/32	1.1238 1.1226	1.2808 1.2818		3/4	18DU12	1	18DU16				
1-1/4	1-13/32	1.2488 1.2472	1.4058 1.4068		3/4	20DU12	1	20DU16	1-1/4	20DU20	1-3/4	20DU28
1-3/8	1-17/32	1.3738 1.3722	1.5308 1.5318	0.0784 0.0770	1	22DU16	1-3/8	22DU22	1-3/4	22DU28		
1-1/2	1-21/32	1.4988 1.4972	1.6558 1.6568		1	24DU16	1-1/4	24DU20	1-1/2	24DU24	2	24DU32
1-5/8	1-25/32	1.6238 1.6222	1.7808 1.7818		1	26DU16	1-1/2	26DU24				
1-3/4	1-15/16	1.7487 1.7471	1.9371 1.9381		1	28DU16	1-1/2	28DU24	1-3/4	28DU28	2	28DU32
1-7/8	2-1/16	1.8737 1.8721	2.0621 2.0633	0.0941 0.0923	1	30DU16	1-7/8	30DU30	2-1/4	30DU36		
2	2-3/16	1.9987 1.9969	2.1871 2.1883		1	32DU16	1-1/2	32DU24	2	32DU32	2-1/2	32DU40
2-1/4	2-7/16	2.2507 2.2489	2.4365 2.4377		2	36DU32	2-1/4	36DU36	2-1/2	36DU40	3	36DU48
2-1/2	2-11/16	2.5011 2.4993	2.6869 2.6881		2	40DU32	2-1/2	40DU40	3	40DU48	3-1/2	40DU56
2-3/4	2-15/16	2.7500 2.7482	2.9358 2.9370		2	44DU32	2-1/2	44DU40	3	44DU48	3-1/2	44DU56
3	3-3/16	3.0000 2.9982	3.1858 3.1872		2	48DU32	3	48DU48	3-3/4	48DU60		
3-1/2	3-11/16	3.5000 3.4978	3.6858 3.6872	0.0928 0.0902	2-1/2	56DU40	3	56DU48	3-3/4	56DU60		
4	4-3/16	4.0000 3.9978	4.1858 4.1872		3	64DU48	3-3/4	64DU60	4-3/4	64DU76		
5	5-3/16	4.9986 4.9961	5.1844 5.1860		3	80DU48	3-3/4	80DU60				
6	6-3/16	6.0000 5.9975	6.1858 6.1874		3	96DU48	3-3/4	96DU60				
7	7-3/16	6.9954 6.9929	7.1812 7.1830		3-3/4	112DU60						

All dimensions in inches.



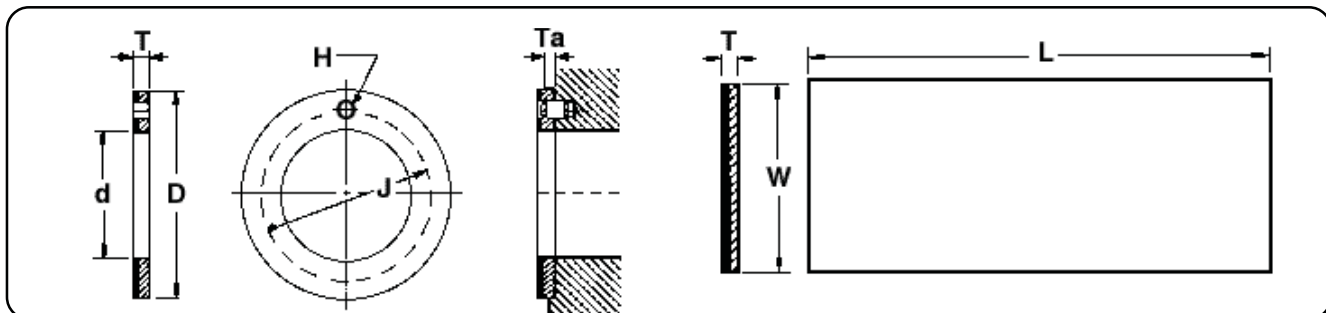
d_1	D	DF	d	D_1	B_1	T	B						
6	8	12	5.990	8.015			4	BB	8	BB			
			5.978	8.000				0604DU		0608DU			
8	10	15	7.987	10.015			5.5	BB	7.5	BB	9.5	BB	
			7.972	10.000				0806DU		0808DU		0810DU	
10	12	18	9.987	12.018			7	BB	9	BB	12	BB	17
			9.972	12.000				1007DU		1009DU		1012DU	1017DU
12	14	20	11.984	14.018			7	BB	9	BB	12	BB	17
			11.966	14.000	1.00	1.005		1207DU		1209DU		1212DU	1217DU
14	16	22	13.984	16.018	0.80	0.980	12	BB	17	BB			
			13.966	16.000				1412DU		1417DU			
15	17	23	14.984	17.018			9	BB	12	BB	17	BB	
			14.966	17.000				1509DU		1512DU		1517DU	
16	18	24	15.984	18.018			12	BB	17	BB			
			15.966	18.000				1612DU		1617DU			
18	20	26	17.984	20.021			12	BB	17	BB	22	BB	
			17.966	20.000				1812DU		1817DU		1822DU	
20	23	30	19.980	23.021			11.5	BB	16.5	BB	21.5	BB	
			19.959	23.000	1.50	1.505		2012DU		2017DU		2022DU	
25	28	35	24.980	28.021	1.30	1.475	11.5	BB	16.5	BB	21.5	BB	
			24.959	28.000				2512DU		2517DU		2522DU	
30	34	42	29.980	34.025			16	BB	26	BB			
			29.959	34.000	2.00	2.005		3016DU		3026DU			
35	39	47	34.975	39.025	1.80	1.970	16	BB	26	BB			
			34.950	39.000				3516DU		3526DU			
40	44	52	39.975	44.025			16	BB	26	BB			
			39.950	44.000				4016DU		4026DU			

All dimensions in mm.

Part No. Example: BB 1009DU = 10mm ID x 9mm Long DU Type Flanged Bush

PLAIN BEARINGS

DU Thrust Washers & Strip



INCH SIZES STRIP		
In lengths (L) of 18 in.		
Group No.	T (in.)	W (in.)
0	0.0277-0.0293	2.75
1	0.0431-0.0447	4
2	0.0586-0.0602	4
3	0.0740-0.0756	4
4	0.0897-0.0913	4
5	0.1190-0.1210	4

METRIC SIZES STRIP		
In lengths (L) of approx. 500mm		
Part No.	T+0/-0.04 (mm)	W (mm)
075150DU	0.75	150
100200DU	1	200
150240DU	1.5	240
200240DU	2	240
250240DU	2.5	240
306240DU	3.06	240

Inch Thrust Washers

Part No.	d	D	T	H	J	Ta
DU06	0.500	0.875	0.063	0.067	0.692	0.040
	0.510	0.865	0.061	0.077	0.682	0.050
DU07	0.562	1.000	0.063	0.067	0.786	0.040
	0.572	0.990	0.061	0.077	0.776	0.050
DU08	0.625	1.125	0.063	0.099	0.880	0.040
	0.635	1.115	0.061	0.109	0.870	0.050
DU09	0.687	1.187	0.063	0.099	0.942	0.040
	0.697	1.177	0.061	0.109	0.932	0.050
DU10	0.750	1.250	0.063	0.099	1.005	0.040
	0.760	1.240	0.061	0.109	0.995	0.050
DU11	0.812	1.375	0.063	0.099	1.099	0.040
	0.822	1.365	0.061	0.109	1.089	0.050
DU12	0.875	1.500	0.063	0.130	1.192	0.040
	0.885	1.490	0.061	0.140	1.182	0.050
DU14	1.000	1.750	0.063	0.130	1.380	0.040
	1.010	1.740	0.061	0.140	1.370	0.050
DU16	1.125	2.000	0.063	0.161	1.567	0.040
	1.135	1.990	0.061	0.171	1.557	0.050
DU18	1.250	2.125	0.063	0.161	1.692	0.040
	1.260	2.115	0.061	0.171	1.682	0.050
DU20	1.375	2.250	0.063	0.161	1.817	0.040
	1.385	2.240	0.061	0.171	1.807	0.050
DU22	1.500	2.500	0.063	0.192	2.005	0.040
	1.510	2.490	0.061	0.202	1.995	0.050
DU24	1.625	2.625	0.063	0.192	2.130	0.040
	1.635	2.615	0.061	0.202	2.120	0.050
DU26	1.750	2.750	0.063	0.192	2.255	0.040
	1.760	2.740	0.061	0.202	2.245	0.050
DU28	2.000	3.000	0.093	0.192	2.505	0.070
	2.010	2.990	0.091	0.202	2.495	0.080
DU30	2.125	3.125	0.093	0.192	2.630	0.070
	2.135	3.115	0.091	0.202	2.620	0.080
DU32	2.250	3.250	0.093	0.192	2.755	0.070
	2.260	3.240	0.091	0.202	2.745	0.080

All dimensions in inches.

Metric Thrust Washers

Part No.	d	D	T	H	J	Ta
WC08DU	10.00	20.00	1.50	NO HOLE		0.95
	10.25	19.75	1.45	NO HOLE		1.20
WC10DU	12.00	24.00	1.50	1.625	18.12	0.95
	12.25	23.75	1.45	1.875	17.88	1.20
WC12DU	14.00	26.00	1.50	2.125	20.12	0.95
	14.25	25.75	1.45	2.375	19.88	1.20
WC14DU	16.00	30.00	1.50	2.125	22.12	0.95
	16.25	29.75	1.45	2.375	21.88	1.20
WC16DU	18.00	32.00	1.50	2.125	25.12	0.95
	18.25	31.75	1.45	2.375	24.88	1.20
WC18DU	20.00	36.00	1.50	3.125	28.12	0.95
	20.25	35.75	1.45	3.375	27.88	1.20
WC20DU	22.00	38.00	1.50	3.125	30.12	0.95
	22.25	37.75	1.45	3.375	29.88	1.20
WC22DU	24.00	42.00	1.50	3.125	33.12	0.95
	24.25	41.75	1.45	3.375	32.88	1.20
WC24DU	26.00	44.00	1.50	3.125	35.12	0.95
	26.25	43.75	1.45	3.375	34.88	1.20
WC25DU	28.00	48.25	1.50	4.125	38.12	0.95
	28.25	47.75	1.45	4.375	37.88	1.20
WC30DU	32.00	54.00	1.50	4.125	43.12	0.95
	32.25	53.75	1.45	4.375	42.88	1.20
WC35DU	38.00	62.00	1.50	4.125	50.12	0.95
	38.25	61.75	1.45	4.375	49.88	1.20
WC40DU	42.00	66.00	1.50	4.125	54.12	0.95
	42.25	65.75	1.45	4.375	53.88	1.20
WC45DU	48.00	74.00	2.00	4.125	61.12	1.45
	48.25	73.75	1.95	4.375	60.88	1.70
WC50DU	52.00	78.00	2.00	4.125	65.12	1.45
	52.25	77.75	1.95	4.375	64.88	1.70
WC60DU	62.00	90.00	2.00	4.125	76.12	1.45
	62.25	89.75	1.95	4.375	75.88	1.70

All dimensions in mm.

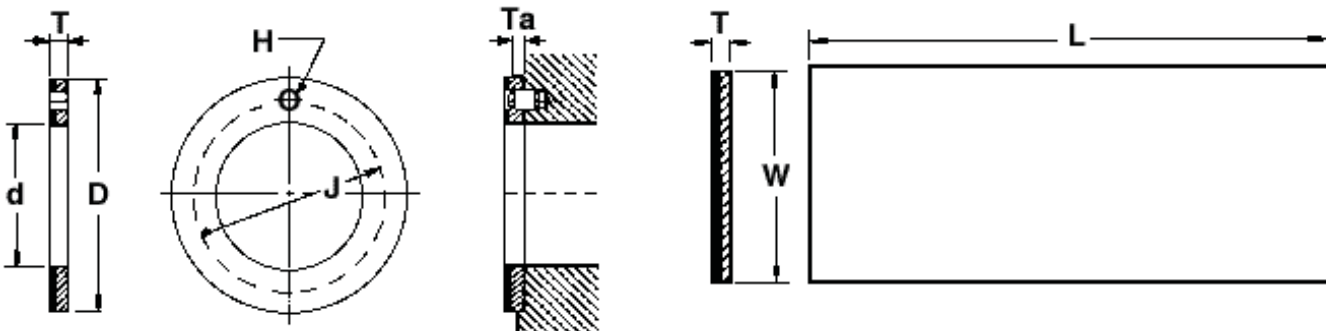
DX is a steel backed, acetal co-polymer lined, composite bearings material designed for marginally lubricated operation and is particularly suitable where continuous oil lubrication is uneconomic or inappropriate.

The bearing surface may be supplied indented for grease lubrication, or it may be plain for applications where fluid lubrication is available. The indented material surface, which

should be filled with suitable grease during assembly, is designed to provide optimum distribution of the lubricant over the bearing surface. Dependent on conditions, DX can withstand temperatures from -40°C up to 130°C for short periods and specific loads up to 140N/mm².

DX is available in the form of wrapped bushes, thrust washers, and strip. The wrapped bushes are available in prefinished or machinable form. The latter may be bored, reamed or broached to size after installation.

DX Thrust Washers and Strip



Metric DX Thrust Washers

Part No.	d	D	T	H	J	Ta
WC10DX	12.00	24.00	1.577	1.625	18.12	0.95
	12.25	23.75	1.487	1.875	17.88	1.20
WC12DX	14.00	26.00	1.577	2.125	20.12	0.95
	14.25	25.75	1.487	2.375	19.88	1.20
WC14DX	16.00	30.00	1.577	2.125	22.12	0.95
	16.25	29.75	1.487	2.375	21.88	1.20
WC16DX	18.00	32.00	1.577	2.125	25.12	0.95
	18.25	31.75	1.487	2.375	24.88	1.20
WC18DX	20.00	36.00	1.577	3.125	28.12	0.95
	20.25	35.75	1.487	3.375	27.88	1.20
WC20DX	22.00	38.00	1.577	3.125	30.12	0.95
	22.25	37.75	1.487	3.375	29.88	1.20
WC22DX	24.00	42.00	1.577	3.125	33.12	0.95
	24.25	41.75	1.487	3.375	32.88	1.20
WC24DX	26.00	44.00	1.577	3.125	35.12	0.95
	26.25	43.75	1.487	3.375	34.88	1.20
WC25DX	28.00	48.00	1.577	4.125	38.12	0.95
	28.25	47.75	1.487	4.375	37.88	1.20
WC30DX	32.00	54.00	1.577	4.125	43.12	0.95
	32.25	53.75	1.487	4.375	42.88	1.20
WC35DX	38.00	62.00	1.577	4.125	50.12	0.95
	38.25	61.75	1.487	4.375	49.88	1.20
WC40DX	42.00	66.00	1.577	4.125	54.12	0.95
	42.25	65.75	1.487	4.375	53.88	1.20
WC45DX	48.00	74.00	2.600	4.125	61.12	1.45
	48.25	73.75	2.510	4.375	60.88	1.70
WC50DX	52.00	78.00	2.600	4.125	65.12	1.45
	52.25	77.75	2.510	4.375	64.88	1.70

All dimensions in mm.

DX STRIP METRIC

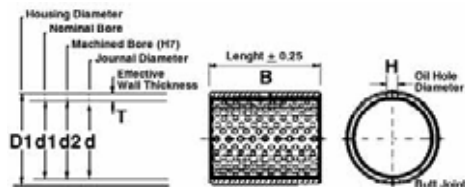
In lengths (L) of approx. 460mm

Group No.	T (mm)	W mm
BM	1.03-1.06	70
CM	1.52-1.55	100
DM	2.02-2.05	100
EM	2.53-2.56	100

* Imperial size DX Thrust Washers also available on request.

PLAIN BEARINGS

DX Metric Range Bushes



Part No. Example:
MB 3020DX = 30mm ID x 20mm Long
DX Type Metric Bush

d_1	D_1	T	d_2	d	H	B					
8	10.000		8.000	7.960	NH	8 MB	10 MB	12 MB			
	10.015		8.015	7.938		0808DX	0810DX	0812DX			
10	12.000		10.000	9.960	NH	10 MB	12 MB	15 MB	20 MB		
	12.018		10.015	9.938		1010DX	1012DX	1015DX*	1020DX*		
12	14.000		12.000	11.950	NH	10 MB	12 MB	15 MB	20 MB	25 MB	
	14.018		12.018	11.923		1210DX	1212DX	1215DX*	1220DX*	1225DX*	
14	16.000	1.108	14.000	13.950	4	15 MB	20 MB	25 MB			
	16.018	1.082	14.018	13.923		1415DX	1420DX	1425DX			
15	17.000		15.000	14.950	4	10 MB	12 MB	15 MB	25 MB		
	17.018		15.018	14.923		1510DX	1512DX	1515DX	1525DX		
16	18.000		16.000	15.950	4	15 MB	20 MB	25 MB			
	18.018		16.018	15.923		1615DX	1620DX	1625DX			
18	20.000		18.000	17.950	4	15 MB	20 MB	25 MB			
	20.021		18.018	17.923		1815DX	1820DX	1825DX			
20	23.000		20.000	19.935	4	10 MB	15 MB	20 MB	25 MB	30 MB	
	23.021		20.021	19.902		2010DX	2015DX	2020DX	2025DX	2030DX	
22	25.000		22.000	21.935	6	15 MB	20 MB	25 MB	30 MB		
	25.021	1.608	22.021	21.902		2215DX	2220DX	2225DX	2230DX		
24	27.000	1.576	24.000	23.935	6	15 MB	20 MB	25 MB	30 MB		
	27.021		24.021	23.902		2415DX	2420DX	2425DX	2430DX		
25	28.000		25.000	24.935	6	15 MB	20 MB	25 MB	30 MB		
	28.021		25.021	24.902		2515DX	2520DX	2525DX	2530DX		
28	32.000		28.000	27.935	6	20 MB	25 MB	30 MB			
	32.025		28.021	27.902		2820DX	2825DX	2830DX			
30	34.000		30.000	29.935	6	20 MB	30 MB	40 MB			
	34.025		30.021	29.902		3020DX	3030DX	3040DX			
32	36.000		32.000	31.920	6	20 MB	30 MB	40 MB			
	36.025	2.108	32.025	31.881		3220DX	3230DX	3240DX			
35	39.000	2.072	35.000	34.920	6	20 MB	30 MB	50 MB			
	39.025		35.025	34.881		3520DX	3530DX	3550DX			
37	41.000		37.000	36.920	6	20 MB					
	41.025		37.025	36.881		3720DX					
40	44.000		40.000	39.920	8	20 MB	30 MB	40 MB	50 MB		
	44.025		40.025	39.881		4020DX	4030DX	4040DX	4050DX		
45	50.000		45.000	44.920	8	20 MB	30 MB	40 MB	50 MB		
	50.025		45.025	44.881		4520DX	4530DX	4540DX	4550DX		
50	55.000		50.000	49.920	8	40 MB	60 MB				
	55.030	2.634	50.025	49.881		5040DX	5060DX				
55	60.000	2.588	55.000	54.900	8	20 MB	25 MB	30 MB	40 MB	50 MB	60 MB
	60.030		55.030	54.854		5520DX	5525DX	5530DX	5540DX	5550DX	5560DX
60	65.000		60.000	59.900	8	30 MB	40 MB	60 MB	70 MB		
	65.030		60.030	59.854		6030DX	6040DX	6060DX	6070DX		
65	70.000		65.000	64.900	8	40 MB	50 MB	60 MB	70 MB		
	70.030		65.030	64.854		6540DX	6550DX	6560DX	6570DX		
70	75.000		70.000	69.900	8	40 MB	50 MB	70 MB	80 MB		
	75.030		70.030	69.854		7040DX	7050DX	7070DX	7080DX		
75	80.000		75.000	74.900	9.5	40 MB	60 MB	80 MB			
	80.030		75.030	74.854		7540DX	7560DX	7580DX			
80	85.000		80.000	79.900	9.5	40 MB	60 MB	80 MB	100 MB		
	85.035		80.030	79.854		8040DX	8060DX	8080DX	80100DX		
85	90.000		85.000	84.880	9.5	30 MB	40 MB	60 MB	80 MB	100 MB	
	90.035		85.035	84.826		8530DX	8540DX	8560DX	8580DX	85100DX	
90	95.000	2.634	90.000	89.880	9.5	40 MB	60 MB	90 MB	100 MB		
	95.035	2.568	90.035	89.826		9040DX	9060DX	9090DX	90100DX		
95	100.000		95.000	94.880	9.5	60 MB	100 MB				
	100.035		95.035	94.826		9560DX	95100DX				
100	105.000		100.000	99.880	9.5	50 MB	60 MB	95 MB	115 MB		
	105.035		100.035	99.826		10050DX	10060DX	10095DX	100115DX		
105	110.000		105.000	104.880	9.5	60 MB	115 MB				
	110.035		105.035	104.826		10560DX	105115DX				
110	115.000		110.000	109.880	9.5	60 MB	115 MB				
	115.035		110.035	109.826		11060DX	110115DX				
115	120.000		115.000	114.880	9.5	50 MB	70 MB				
	120.035		115.035	114.826		11550DX	11570DX				

* These bushes have a 4mm oil hole.

PLAIN BEARINGS

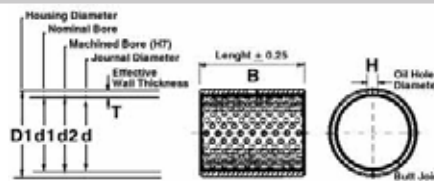
DX Metric Range Bushes Prefinished

d ₁	D ₁	T	d ₂	d	H	B		
120	125.000		120.000	119.880	9.5	60 MB	100 MB	
	125.040	2.634	120.035	119.826		12060DX	120100DX	
125	130.000	2.568	125.000	124.855	9.5	100 MB		
	130.040		125.040	124.792		125100DX		
130	135.000		130.000	129.855		60 MB	100 MB	
	135.040		130.040	129.792		13060DX	130100DX	
135	140.000		135.000	134.855		60 MB	80 MB	
	140.040	2.619	135.040	134.792	No	13560DX	13580DX	
140	145.000	2.564	140.000	139.855	Hole	60 MB	100 MB	
	145.040		140.040	139.792		14060DX	140100DX	
150	155.000		150.000	149.855		60 MB	80 MB	100 MB
	155.040		150.040	149.792		15060DX	15080DX	150100DX

* The length tolerance for 8mm bore bushes only is +0.00 - 0.50

All dimensions in mm.

DX Prefinished Metric (PM) Range Bushes



d ₁	D ₁	T	d ₂	d	H	B				
8	10.000		8.040	8.000	No	8* PM	10* PM	12* PM		
	10.015		8.107	7.978	Hole	0808DX	0810DX	0812DX		
10	12.000		10.040	10.000		10 PM	12 PM	15** PM	20** PM	
	12.018		10.110	9.978		10 1010DX	1012DX	1015DX	1020DX	
12	14.000		12.040	12.000		10 PM	12 PM	15** PM	20** PM	25** PM
	14.018		12.110	11.973		1210DX	1212DX	1215DX	1220DX	1225DX
14	16.000	0.980	14.040	14.000	4	15 PM	20 PM	25 PM		
	16.018	0.954	14.110	13.973		1415DX	1420DX	1425DX		
15	17.000		15.040	15.000	4	10 PM	12 PM	15 PM	25 PM	
	17.018		15.110	14.973		1510DX	1512DX	1515DX	1525DX	
16	18.000		16.040	16.000	4	15 PM	20 PM	25 PM		
	18.018		16.110	15.973		1615DX	1620DX	1625DX		
18	20.000		18.040	18.000	4	15 PM	20 PM	25 PM		
	20.021		18.113	17.973		1815DX	1820DX	1825DX		
20	23.000		20.052	20.000	4	10 PM	15 PM	20 PM	25 PM	30 PM
	23.021		20.137	19.967		2010DX	2015DX	2020DX	2025DX	2030DX
22	25.000		22.052	22.000	6	15 PM	20 PM	25 PM	30 PM	
	25.021		22.137	21.967		2215DX	2220DX	2225DX	2230DX	
24	27.000		24.052	24.000	6	15 PM	20 PM	25 PM	30 PM	
	27.021	1.474	24.137	23.967		2415DX	2420DX	2525DX	2430DX	
25	28.000	1.442	25.052	25.000	6	15 PM	20 PM	25 PM	30 PM	
	28.021		25.137	24.967		2515DX	2520DX	2525DX	2530DX	
26										
28	31.000		28.052	28.000	6	30 PM				
	31.025		28.141	27.967		2830DX				
28	32.000		28.064	28.000	6	20 NTPM	25 NTPM	30 NTPM		
	32.025		28.161	27.967		2820DX	2825DX	2830DX		
30	34.000		30.064	30.000	6	20 PM	30 PM	40 PM		
	34.025		30.161	29.967		3020DX	3030DX	3040DX		
32	36.000		32.064	32.000	6	20 PM	30 PM	35 PM	40 PM	
	36.025		32.161	31.961		3220DX	3230DX	3235DX	3240DX	
34										
35	39.000	1.968	35.064	35.000	6	20 PM	30 PM	35 PM	50 PM	
	39.025	1.932	35.161	34.961		3520DX	3530DX	3535DX	3550DX	
36	40.000		36.064	36.000	6	35 PM				
	40.025		36.161	35.961		3635DX				
37	41.000		37.064	37.000	6	20 PM				
	41.025		37.161	36.961		3720DX				
38										
40	44.000		40.064	40.000	8	20 PM	30 PM	40 PM	50 PM	
	44.025		40.161	39.961		4020DX	4030DX	4040DX	4050DX	
45										

* These bushes have a 4mm oil hole.

PLAIN BEARINGS

DX Metric Range Bushes Prefinished

d ₁	D ₁	T	d ₂	d	H	B									
45	50.000		45.080	45.000	8	20	PM	30	PM	40	PM	45	PM	50	PM
	50.025		45.197	44.961			4520DX		4530DX		4540DX		4545DX		4550DX
50	55.000	2.460	50.080	50.000	8	40	PM	50	PM	60	PM				
	55.030		50.202	49.961			5040DX		5050DX		5060DX				
55	60.000	2.414	55.080	55.000	8	20	PM	25	PM	30	PM	40	PM	50	PM
	60.030		55.202	54.954			5520DX		5525DX		5530DX		5540DX	5550DX	5560DX
60	65.000		60.080	60.000	8	30	PM	40	PM	60	PM	70	PM		
	65.030		60.202	59.954			6030DX		6040DX		6060DX		6070DX		
65	70.000		65.100	65.000	8	40	PM	50	PM	60	PM	70	PM		
	70.030		65.262	64.954			6540DX		6550DX		6560DX		6570DX		
70	75.000		70.100	70.000	8	40	PM	50	PM	65	PM	70	PM	80	PM
	75.030		70.262	69.954			7040DX		7050DX		7065DX		7070DX	7080DX	
75	80.000		75.100	75.000	9.5	40	PM	60	PM	80	PM				
	80.030		75.262	74.954			7540DX		7560DX		7580DX				
80	85.000		80.100	80.000	9.5	40	PM	60	PM	80	PM	100	PM		
	85.035		80.267	79.954			8040DX		8060DX		8080DX		80100DX		
85	90.000		85.100	85.000	9.5	30	PM	40	PM	60	PM	80	PM	100	PM
	90.035		85.267	84.946			8530DX		8540DX		8560DX		8580DX	85100DX	
90	95.000	2.450	90.100	90.000	9.5	40	PM	60	PM	80	PM	90	PM	100	PM
	95.035	2.384	90.267	89.946			9040DX		9060DX		9080DX		9090DX	90100DX	
95	100.000		95.100	95.000	9.5	60	PM	100	PM						
	100.035		95.267	94.946			9560DX		95100DX						
100	105.000		100.100	100.000	9.5	50	PM	60	PM	80	PM	95	PM	115	PM
	105.035		100.267	99.946			10050DX		10060DX		10080DX		10095DX	100115DX	
105	110.000		105.100	105.000	9.5	60	PM	110	PM	115	PM				
	110.035		105.267	104.946			10560DX		105110DX		105115DX				
110	115.000		110.100	110.000	9.5	60	PM	110	PM	115	PM				
	115.035		110.267	109.946			11060DX		110110DX		110115DX				
115	120.000		115.100	115.000	9.5	50	PM	70	PM						
	120.035		115.267	114.946			11550DX		11570DX						
120	125.000		120.100	120.000	9.5	60	PM	100	PM	110	PM				
	125.040		120.272	119.946			12060DX		120100DX		120110DX				
125	130.000		125.100	125.000	9.5	60	PM	100	PM	110	PM				
	130.040		125.272	124.937			12560DX		125100DX		125110DX				
130	135.000		130.130	130.000	No	50	PM	60	PM	80	PM	100	PM		
	135.040		130.280	129.937	Hole		13050DX		13060DX		13080DX		13100DX		
135	140.000		135.130	135.000		60	PM	80	PM						
	140.040		135.280	134.937			13560DX		13580DX						
140	145.000		140.130	140.000		50	PM	60	PM	80	PM	100	PM		
	145.040		140.280	139.937			14050DX		14060DX		14080DX		140100DX		
150	155.000		150.130	150.000		50	PM	60	PM	80	PM	100	PM		
	155.040		150.280	149.937			15050DX		15060DX		15080DX		150100DX		
160	165.000		160.130	160.000		50	PM	60	PM	80	PM	100	PM		
	165.040		160.280	159.937			16050DX		16060DX		16080DX		160100DX		
170	175.000		170.130	170.000		50	PM	60	PM	80	PM	100	PM		
	175.040		170.280	169.937			17050DX		17060DX		17080DX		170100DX		
180	185.000		180.130	180.000		50	PM	60	PM	80	PM	100	PM		
	185.046		180.286	179.937			18050DX		18060DX		18080DX		180100DX		
190	195.000	2.435	190.130	190.000		50	PM	60	PM	80	PM	100	PM	120	PM
	195.046	2.380	190.286	189.928			19050DX		19060DX		19080DX		190100DX	190120DX	
200	205.000		200.130	200.000		50	PM	60	PM	80	PM	100	PM	120	PM
	205.046		200.286	199.928			20050DX		20060DX		20080DX		200100DX	200120DX	
220	225.000		220.130	220.000		50	PM	60	PM	80	PM	100	PM	120	PM
	225.046		220.286	219.928			22050DX		22060DX		22080DX		220100DX	220120DX	
240	245.000		240.130	240.000		50	PM	60	PM	80	PM	100	PM	120	PM
	245.046		240.286	239.928			24050DX		24060DX		24080DX		240100DX	240120DX	
250	255.000		250.130	250.000		50	PM	60	PM	80	PM	100	PM	120	PM
	255.052		250.292	249.928			25050DX		25060DX		25080DX		250100DX	250120DX	
260	265.000		260.130	260.000		50	PM	60	PM	80	PM	100	PM	120	PM
	265.052		260.292	259.919			26050DX		26060DX		26080DX		260100DX	260120DX	
280	285.000		280.130	280.000		50	PM	60	PM	80	PM	100	PM	120	PM
	285.052		280.292	279.919			28050DX		28060DX		28080DX		280100DX	280120DX	
300	305.000		300.130	300.000		50	PM	60	PM	80	PM	100	PM	120	PM
	305.052		300.292	299.919			30050DX		30060DX		30080DX		300100DX	300120DX	

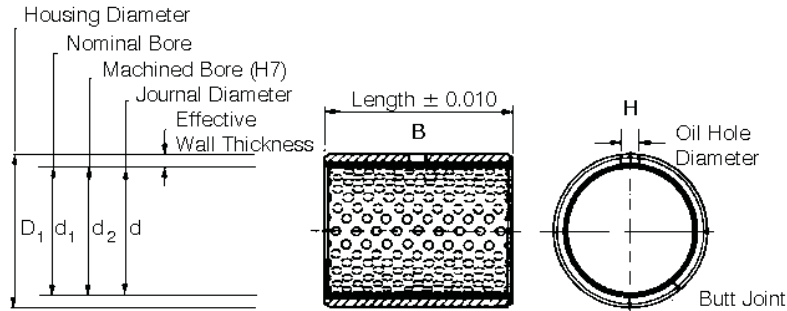
All dimensions in mm

* The length tolerance for 8mm bore bushes only is +0.00-0.50

** These bushes have a 4mm oil hole

PLAIN BEARINGS

DX Inch Range Bushes


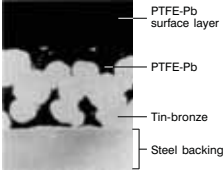

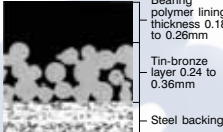
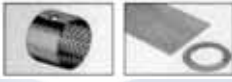
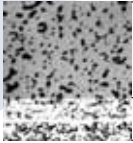
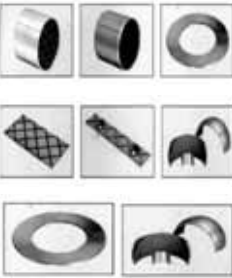
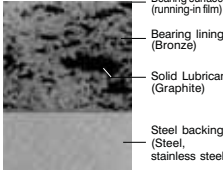


			As supplied		Machined										
d_1	D_1	T	$d_{2 \min}$	d	d_2	d	H	B							
3/8	0.4687 0.4694		0.3667	0.3648 0.3639	0.3750 0.3756	0.3734 0.3725	5/32	3/8	06DX06	1/2	*06DX08	3/4	06DX12		
7/16	0.5312 0.5319		0.4292	0.4273 0.4263	0.4375 0.4382	0.4355 0.4345	5/32	1/2	07DX08	3/4	07DX12				
1/2	0.5937 0.5944	0.0510	0.4917	0.4897 0.4887	0.5000 0.5007	0.4980 0.4970	5/32	3/8	08DX06	1/2	08DX08	5/8	08DX10	7/8	08DX14
9/16	0.6562 0.6569	0.0500	0.5542	0.5522 0.5512	0.5625 0.5632	0.5605 0.5595	5/32	1/2	09DX08	3/4	09DX12				
5/8	0.7187 0.7195		0.6167	0.6146 0.6136	0.6250 0.6257	0.6230 0.6220	5/32	1/2	10DX08	5/8	10DX10	3/4	10DX12	7/8	10DX14
11/16	0.7812 0.7820		0.6792	0.6770 0.6760	0.6875 0.6882	0.6855 0.6845	5/32	7/8	11DX14						
3/4	0.8750 0.8758		0.7412	0.7390 0.7378	0.7500 0.7508	0.7475 0.7463	5/32	1/2	12DX08	3/4	12DX12	1	12DX16		
7/8	1.0000 1.0008	0.0669 0.0657	0.8662	0.8639 0.8627	0.8750 0.8758	0.8725 0.8713	1/4	3/4	14DX12	7/8	14DX14	1	14DX16		
1	1.1250 1.1258		0.9912	0.9888 0.9876	1.0000 1.0008	0.9975 0.9963	1/4	3/4	16DX12	1	16DX16	1-1/2	16DX24		
1-1/8	1.2812 1.2822		1.1164	1.1138 1.1126	1.1250 1.1258	1.1225 1.1213	1/4	3/4	18DX12	1	18DX16				
1-1/4	1.4062 1.4072		1.2414	1.2387 1.2371	1.2500 1.2510	1.2470 1.2454	1/4	3/4	20DX12	1	20DX16	1-1/4	20DX20	1-3/4	20DX28
1-3/8	1.5312 1.5322	0.0824 0.0810	1.3664	1.3635 1.3619	1.3750 1.3760	1.3720 1.3704	1/4	1	22DX16	1-3/8	22DX22	1-3/4	22DX28		
1-1/2	1.6572 1.6562		1.4914	1.4884 1.4868	1.5000 1.5010	1.4970 1.4954	5/16	1	24DX16	1-1/4	24DX20	1-1/2	24DX24	2	24DX32
1-5/8	1.7812 1.7822		1.6164	1.6133 1.6117	1.6250 1.6260	1.6220 1.6204	5/16	1	26DX16	1-1/2	26DX24				
1-3/4	1.9375 1.9385		1.7415	1.7383 1.7367	1.7500 1.7510	1.7470 1.7454	5/16	1	28DX16	1-1/2	28DX24	1-3/4	28DX28	2	28DX32
1-7/8	2.0625 2.0637		1.8665	1.8632 1.8616	1.8750 1.8760	1.8720 1.8704	5/16	1	30DX16	1-7/8	30DX30	2-1/4	30DX36		
2	2.1875 2.1887	0.0980 0.0962	1.9915	1.9881 1.9863	2.0000 2.0012	1.9960 1.9942	5/16	1	32DX16	1-1/2	32DX24	2	32DX32	2-1/2	32DX40
2-1/4	2.4375 2.4387		2.2415	2.2378 2.2360	2.2500 2.2512	2.2460 2.2442	5/16	2	36DX32	2-1/4	36DX36	2-1/2	36DX40		
2-1/2	2.6875 2.6887		2.4915	2.4875 2.4857	2.5000 2.5012	2.4960 2.4942	5/16	2	40DX32	2-1/2	40DX40				
2-3/4	2.9375 2.9387		2.7393	2.7351 2.7333	2.7500 2.7512	2.7460 2.7442	5/16	2	44DX32	2-1/2	44DX40	3	44DX48	3-1/2	44DX56
3	3.1875 3.1889	0.0991	2.9893	2.9849 2.9831	3.0000 3.0012	2.9960 2.9942	3/8	2	48DX32	3	48DX48	3-3/4	48DX60		
3-1/2	3.6875 3.6889	0.0965	3.4893	3.4844 3.4822	3.5000 3.5014	3.4950 3.4928	3/8	2-1/2	56DX40	3	56DX48	3-3/4	56DX60		
4	4.1875 4.1889		3.9893	3.9839 3.9817	4.0000 4.0014	3.9950 3.9928	3/8	3	64DX48	3-3/4	64DX60	4-3/4	64DX76		

* No oil hole
All dimensions in inches.


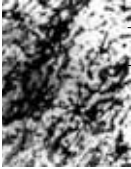

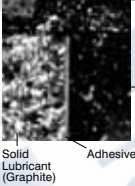


PLAIN BEARINGS

Specialised Bearing Materials

Material Type	Forms available	Material Structure	Operating Conditions	Applications	Installation
Glacier DU™-B bearing material			Dry, Maintenance-free non-magnetic improved corrosion-resistance compared to Glacier DU (suitable for use in saltwater)	Standard range ex-stock. DU-B has the same dynamic and static load characteristics as DU. In addition, DU-B bronze backing offers: corrosion protection, suitable for use in salt-water, non-magnetic. Under extreme loads, after removal of the DU bearing lining, additional emergency running properties are provided by the bronze backing - especially if lubricants are present. Protection against atmospheric attack, various salt solutions.	Housing tolerance: up to 5.5 H6, over 5.5 H7. Shaft tolerance: up to 4 h6 5 - 75 f7, above 80 h8 Suitable for use with unhardened shafts. Mating surface finish: $Ra \leq 0.4 \mu m$. Lubrication increases service life. May be used in water and hydraulic oils. Grease lubrication is not recommended. MoS ₂ filled lubricants not recommended. Press fitting of bushes: - use stepped mandrel - 15° / 20° lead-in chamfer on housing bore - lightly oil back of bush or housing bore - increase housing bore if there is additional plating on the back of the bearing for corrosion protection. Fixing: No additional measures are required other than press fitting. Adhesive bonding is possible if required.
Glacier Hi-eX™ bearing material		 <p>PEEK + PTFE + fillers, tin-bronze, steel backing, with and without lubrication indents in surface. Can be machined as required.</p>	Full and marginal lubrication low-maintenance	Temperature range: -150°C to +250°C. Maximum specific load: 140 N/mm ² . Very high fatigue strength under dynamic load (laboratory tests indicate values equivalent to conventional crankshaft bearing bearings). Hi-ex can be manufactured with/without lubrication indents and with/without machining allowance in the polymer lining. For grease lubrication the indents in the bearing surface act as a lubricant reservoir. unindented material is available for fully lubricated hydrodynamic applications. The bearing performance depends upon the lubricant and the operating conditions. Hi-eX can be used in non lubricating fluids, water/oil emulsions, mineral oils to 150°C. Hi-eX is resistant to the acidic degradation products which occur in mineral oils after prolonged high temperature operation. Typical applications: diesel fuel injection pump bearings, hydraulic radial piston motor piston seat bearings.	A high performance material for marginal or fully lubricated applications. Limited dry running operation also possible. Assembly tolerances as for DX material.
SY™ bearing material		 <p>CuPb10Sn10 Composition: approx. 80% Cu 10% Pb 10% Sn</p> <p>Steel backing with approx. 0.01-0.02mm copper plated</p>	Grease or oil lubricated, low-maintenance	Conventional lubricants (grease, oil-also containing MoS ₂) required. Lubricants filled with lubricants on assembly. Embossed grooves in place of indents are possible. Max. temperature 250°C, max. specific load 300 N/mm ² . Particularly suitable for oscillating motion. Typical applications: Small end bushes, bing pin, flor- and rocker arm bushes. Rinning for bushes in agricultural machines, off-road machines.	Housing tolerance: H7. Shaft tolerance: h7/h8. Press-fit in housing. Shaft HB min. 250, surface finish $Ra \leq 0.8 \mu m$. Bushes can be moduned after installation for minimum tolerance requirements.
DEVA™ - BM (Strip Metal)			Maintenance-free	Standard range, can be supplied at short notice. Temperature range -150°C to +250°C. Maximum permissible static loading 320 N/mm ² . Maximum dynamic load 120 N/mm ² . DEVA-BM, Steel backing + DEVA-metal bearing lining, offers the same technical characteristics at generally lower cost. Typical applications: water turbines, injection moulding machines, food and beverage industry machines, packing machines, print machines, mechanical engineering, tyre moulds etc.	Installation by pressing in with a stepped mandrel. Housing bore: H7. Bearing OD: t6/u6. Bearing ID: H8/H9 after installation. Shaft: d7. Shaft hardness: > 220 HB. Shaft surface finish: $Ra 0.2-0.8 \mu m$.

PLAIN BEARINGS

Specialised Bearing Materials

Material Type	Forms available	Material Structure	Operating Conditions	Applications	Installation
DEVA™ - Metal (Material System)		 <p>Bronze, Iron or Nickel Matrix Solid Lubricant (Graphite)</p>	Maintenance-free	DEVA metal bearing materials are suitable for a wide range of operating conditions. The optimum material is determined from the specified operating conditions and bearings are manufactured to the customer's drawings. Temperature range - 200°C to +900°C. Maximum static load 200 N/mm ² . Maximum dynamic load 100 N/mm ² . Maximum sliding speed $V = 1.0 \text{ m/s}$ Maximum $P \times V$ (50 N/mm ² x 0.01 m/s) = 0.5 N/mm ² x m/s. Maximum $P \times V$ (2.0 N/mm ² x 1.0 m/s) = 2.0 N/m ² x m/s. Friction coefficient μ 0.08 to 0.15 according to operating conditions. DEVA metal is particularly suitable for low sliding speeds at high loads and has excellent temperature and corrosion-resistance. It is resistant to dirt ingress and edge loading. DEVA metal can be machined if required. Typical applications: Mining and steelworks, furnace construction, ventilators, foundry machines, sewage processing plants, water, steam and gas turbines, pumps and compressors, food and beverage industry machines, packing machines, plant construction, mechanical handling etc.	Shrink fitting is recommended. Housing bore: H7. Bearing OD: r6/s6. Bearing ID: C8 for D8 after installation. Shaft: d7. Shaft hardness: > 220 HB. Shaft surface finish: Ra 0.2-0.8 μm . Other methods of installation are also permissible, provided that permanent, secure seating and the required bearing clearance are obtained. Additional lubrication is possible (for increased service life).
DEVA-GLIDE™		 <p>Running-in film (Solid Lubricant) Bronze Solid Lubricant (Graphite) Adhesive</p>	Maintenance-free	The optimum material is determined from the specified operating conditions and bearings manufactured to the customer's drawings. Temperature range - 100°C to +250°C. Maximum static load 150 N/mm ² . Maximum dynamic load 40 N/mm ² . Maximum sliding speed $V = 0.4 \text{ m/s}$. Maximum $P \times V$ (40 N/mm ² x 0.01 m/s) = 0.4 N/mm ² x m/s. Maximum $P \times V$ (3.0 N/mm ² x 0.4 m/s) = 1.2 N/mm ² x m/s. Friction coefficient μ 0.07 to 0.18. devalgleit/DEVAGLIDE is particularly suitable for low movement frequency applications with low sliding speeds, high loads and large dimensions. Typical applications: marine steel construction projects, offshore industry, mining and steelworks, heavy machinery, crane and transport systems, underground and open-face mining, building and earth-moving machines etc.	Shrink fitting is recommended. Housing bore: H7. Bearing OD: s6. Bearing ID: E8 for H10 after installation. Shaft: d8. Shaft hardness: > 220 HB. Shaft surface finish: Ra 0.2-0.8 μm .
GAR-MAX™ bearing material		 <p>Filament wound composite bearing material. Bearing layer: Filament wound PTFE and polyamide fibres Substrate: Glass fibre filament wound and impregnated with epoxy resin</p>	Dry, Maintenance-free	Standard range. Temperature range: -100°C to +160°C. Maximum static load: 200 N/mm ² . Highly shock resistance. Optimum performance under dry running conditions. V to 0.13 m/s dry, $P \times V$ to 0.9 N/mm ² x m/s. V to 0.4 m/s, $P \times V$ to 1.1 N/mm ² x m/s. Coefficient of friction extremely low and dependent on specific loading. Negligible stick-slip. Typical applications: construction machines, diggers, graders, agricultural machines.	Housing tolerance: H7. Bush outside diameter tolerance: s8. Shaft tolerance: h7/8. Shaft material: HRC < 50, hard chrome plated shafts may be used. Shaft surface finish: Ra 0.2-0.4 μm . Press fit bushes in housing using stepped mandrel; no additional fixing is required in the normal temperature range. A 15°/20° lead-in chamfer is required on the housing for assembly.

Fraser Bronze Alloy LG2 - BRONZE

A. W. Fraser Alloy LG2 is a general purpose leaded gunmetal conforming to the requirements of B.S. 1400 - 1985 Alloy LG2.

LG2 has excellent machining properties, medium strength, good pressure tightness and is not subject to dezincification (Category I Alloy), and has reasonable corrosion resistance to seawater and brine, making it suitable for pump and valve components.

LG2 is suitable for bearings having light loads to low to medium speeds with adequate lubrication, and for very light duty gears when loading is negligible.

The composition of A.W. Fraser Alloy LG2 is strictly controlled as are the casting conditions. LG2 products are manufactured using the latest continuous and centrifugal casting technology.

ALLOY LG2 - LEADED GUNMETAL (85-5-5-5) SUMMARY OF PROPERTIES

Chemical Composition - Percent

ELEMENT			NOMINAL
Tin	Sn	4.0 - 6.0	4.5
Lead	Pb	4.0 - 6.0	5.5
Zinc	Zn	4.0 - 6.0	5.5
Nickel	Ni	1.0 maximum	
Iron	Fe	0.30 maximum	
Aluminium	Al	0.005 maximum	
Antimony	Sb	0.25 maximum	
Copper	Cu	Balance	
TOTAL IMPURITIES: 0.80 maximum			

Mechanical Properties (Typical)	Continuous Cast	Centrifugal Cast
Yield Strength	120 MPa (17,400 psi)	120 MPa (17,400 psi)
Ultimate Tensile Strength	300 MPa (43,500 psi)	270 MPa (39,000 psi)
Elongation	20%	20%
Typical Hardness	75 BHN	75 BHN
Compressive Strength 0.1% Permanent Set	100 MPa (15,000 psi)	
Specific Gravity	8.8	
Machinability Rating (Free Machining Brass = 100)	84	
Max. Operating Temperature	230°C (450°F)	
Stress Relieving Temperature	260°C (500°F)	
Time at Temperature	1 hour per 25mm of section thickness	

Comparative Specifications:

BS1400 - LG2; AS1565 83600; ASTM B505, B271 - 83600; SAE 40; JIS (Japan) H5111 - BC6; DIN (Germany) 1705 - RG5; ISO 1338 - CuPb5Sn5Zn5

PLAIN BEARINGS

Bronze Bushing
Solid & Hollow Bronze: Imperial

Stock Sizes & Weights

SOLID Imperial Size		
OD	Kg/Ft	Kg/Metre
1/2	0.400	1.31
5/8	0.606	1.99
3/4	0.855	2.80
7/8	1.15	3.76
1	1.48	4.86
1-1/8	1.86	6.10
1-1/4	2.28	7.48
1-3/8	2.74	9.00
1-1/2	3.25	10.66
1-5/8	3.80	12.46
1-3/4	4.39	14.40
1-7/8	5.02	16.48
2	5.70	18.70
2-1/4	7.18	23.57
2-1/2	8.84	28.99
2-3/4	10.66	34.98
3	12.66	41.53
3-1/4	14.83	48.64
3-1/2	17.16	56.31
3-3/4	19.67	64.55
4	22.69	74.44
4-1/2	28.61	93.85
5	35.21	115.51
5-1/2	42.86	140.62
6	50.87	166.88
7	69.22	227.10
8	90.06	295.49
9	113.65	372.86
10	139.97	459.22
11	169.03	554.57
12	200.83	658.90

HOLLOW - Imperial Size			
OD	ID	Kg/Ft	Kg/Metre
1	x 1/2	1.22	3.99
	3/4	0.83	2.72
1-1/8	x 3/4	1.21	3.96
	7/8	0.95	3.11
1-1/4	x 1/2	2.01	6.61
	5/8	1.84	6.04
	3/4	1.63	5.34
	1	1.07	3.51
1-3/8	x 3/4	2.09	6.86
	1	1.53	5.03
1-1/2	x 1/2	2.98	9.79
	3/4	2.60	8.52
	1	2.04	6.69
	1-1/4	1.31	4.29
1-5/8	x 1	2.59	8.49
	1-1/4	1.86	6.09
1-3/4	x 3/4	3.74	12.26
	1	3.18	10.43
	1-1/4	2.45	8.03
	1-1/2	1.55	5.08
2	x 3/4	5.05	16.56
	1	4.49	14.73
	1-1/4	3.76	12.34
	1-1/2	2.86	9.38
	1-3/4	1.79	5.87
2-1/4	x 3/4	6.53	21.43
	1	5.97	19.59
	1-1/4	5.24	17.20
	1-1/2	4.34	14.25
	1-3/4	3.27	10.73
	2	2.03	6.65
2-1/2	x 3/4	8.18	26.85
	1	7.63	25.02
	1-1/4	6.90	22.63
	1-1/2	6.00	19.67
	1-3/4	4.92	16.16
	2	3.68	12.08
2-3/4	x 1	9.45	31.01
	1-1/4	8.72	28.62
	1-1/2	7.82	25.66
	1-3/4	6.75	22.14
	2	5.51	18.07
	2-1/4	4.09	13.43
3	x 1	11.45	37.56
	1-1/4	10.72	35.17
	1-1/2	9.82	32.21
	1-3/4	8.75	28.69
	2	7.50	24.62
	2-1/4	6.09	19.98
	2-1/2	4.50	14.78
3-1/4	x 1	13.62	44.67
	1-1/4	12.89	42.28
	1-1/2	11.99	39.32
	1-3/4	10.91	35.81
	2	9.67	31.73
	2-1/4	8.26	27.09
	2-1/2	6.67	21.89
	2-3/4	4.91	16.12
3-1/2	x 1	15.95	52.34
	1-1/4	15.22	49.95
	1-1/2	14.32	47.00
	1-3/4	13.25	43.48
	2	12.01	39.40
	2-1/4	10.60	34.76
	2-1/2	9.01	29.56
	2-3/4	7.25	23.80
	3	5.33	17.47
3-3/4	x 1	18.46	60.58
	1-1/4	17.73	58.18
	1-1/2	16.83	55.23
	1-3/4	15.76	51.71
	2	14.52	47.64
	2-1/4	13.11	43.00
	2-1/2	11.52	37.79
	2-3/4	9.76	32.03
	3	7.84	25.71
	3-1/4	5.74	18.82
4	x 1	21.55	70.72
	1-1/4	20.85	68.39
	1-1/2	19.97	65.50
	1-3/4	18.91	62.05
	2	17.69	58.04
	2-1/4	16.30	53.47
	2-1/2	14.73	48.34
	2-3/4	13.00	42.64
	3	11.09	36.38
	3-1/4	9.01	29.57
	3-1/2	6.76	22.18
4-1/2	x 2	23.61	77.46
	2-1/4	22.22	72.88
	2-1/2	20.65	67.75
	2-3/4	18.91	62.05
	3	17.01	55.80
	3-1/4	14.93	48.98
	3-1/2	12.68	41.60
	3-3/4	10.26	33.65
	4	7.67	25.15

Part No. Example:
BR 1/2 x 1 Ft
= 1/2 Solid x 1 Ft Lengths
Available in stock lengths of 1 foot or longer lengths in multiples of 1 foot.

Part No. Example:
BR 1-1/2 x 1/2 x 1 Ft.
= 1-1/2 OD x 1/2 Bore x 1 Ft Length.

Standard Lengths
≤ 8" dia. 10ft
> 8" dia. - 1 metre max

PLAIN BEARINGS

Bronze Bushing
Solid & Hollow Bronze: Imperial

Stock Sizes & Weights

HOLLOW - Imperial Size

OD	ID	Kg/Ft	Kg/Metre	OD	ID	Kg/Ft	Kg/Metre	OD	ID	Kg/Ft	Kg/Metre
5	x 2	30.21	99.12	9	x 4	93.03	305.21	14	x 7	207.82	681.83
	2-1/4	28.82	94.54		4-1/2	87.37	286.65		8	187.61	615.50
	2-1/2	27.25	89.41		5	81.03	265.85		9	164.65	540.19
	2-3/4	25.52	83.71		5-1/2	74.00	242.79		10	138.95	455.88
	3	23.61	77.46		6	66.29	217.49		11	110.52	362.60
	3-1/4	21.53	70.64		6-1/2	57.90	189.95		12	79.35	260.32
	3-1/2	19.28	63.26		7	48.81	160.15	15	x 7	247.84	813.13
	3-3/4	16.86	55.31		7-1/2	39.05	128.11		8	227.62	746.80
	4	14.27	46.81		8	28.60	93.83		9	204.67	671.48
	4-1/4	11.50	37.74	10	x 4	119.35	391.57		10	178.97	587.18
	4-1/2	8.57	28.12		4-1/2	113.69	373.01		11	150.54	493.89
5-1/2	x 2	37.96	124.53		5	107.35	352.21		12	119.36	391.62
	2-1/2	35.02	114.91		5-1/2	100.33	329.15		13	85.45	280.35
	3	31.41	103.04		6	92.61	303.85	16	x 8	270.38	887.08
	3-1/2	27.10	88.92		6-1/2	84.22	276.31		9	247.43	811.77
	4	22.11	72.55		7	75.14	246.51		10	221.73	727.47
	4-1/2	16.44	53.94		7-1/2	65.37	214.47		11	193.30	634.18
6	x 2	45.96	150.80		8	54.92	180.19		12	162.12	531.90
	2-1/2	43.03	141.17		8-1/2	43.79	143.65		13	128.21	420.64
	3	39.41	129.30		9	31.97	104.87		14	91.56	300.38
	3-1/2	35.11	115.18	11	x 4	148.41	486.92	17	x 8	315.88	1036.35
	4	30.12	98.81		4-1/2	142.76	468.36		9	292.93	961.04
	4-1/2	24.45	80.20		5	136.41	447.55		10	267.23	876.74
	5	18.09	59.34		5-1/2	129.39	424.50		11	238.80	783.45
6-1/2	x 3	48.47	159.01		6	121.68	399.20		12	207.62	681.17
	3-1/2	44.18	144.94		6-1/2	113.28	371.65		13	173.71	569.91
	4	39.21	128.63		7	104.20	341.86		14	137.06	449.66
	4-1/2	33.55	110.07		7-1/2	94.43	309.82		15	97.66	320.42
	5	27.21	89.27		8	83.98	275.53	18	x 9	341.16	1119.30
	5-1/2	20.18	66.21		8-1/2	72.85	239.00		10	315.47	1035.00
7	x 3	57.86	189.83		9	61.03	200.22		11	287.03	941.71
	4	48.60	159.45		9-1/2	48.52	159.19		12	255.86	839.43
	4-1/4	45.86	150.45		10	35.33	115.92		13	221.95	728.17
	4-1/2	42.94	140.89	12	x 5	168.22	551.89		14	185.29	607.92
	5	36.60	120.09		5-1/2	161.19	528.84		14	145.90	478.68
	5-1/2	29.58	97.03		6	153.48	503.54		16	103.77	340.45
	6	21.86	71.74		6-1/2	145.08	475.99	19	x 10	366.44	1202.24
7-1/2	x 3	67.94	222.90		7	136.00	446.20		11	338.01	1108.96
	4	58.68	192.52		7-1/2	126.23	414.16		12	306.84	1006.68
	4-1/2	53.02	173.96		8	115.78	379.87		13	272.92	895.41
	5	46.68	153.16		8-1/2	104.65	343.33		14	236.27	775.16
	5-1/2	39.66	130.10		9	92.83	304.55		15	196.88	645.92
	6	31.94	104.80		9-1/2	80.32	263.53		16	154.75	507.70
	6-1/2	23.55	77.26		10	67.13	220.25		17	109.88	360.48
8	x 3	78.70	258.22	13	x 6	188.02	616.86	20	x 12	360.55	1182.91
	4	69.45	227.84		7	170.54	559.52		13	326.64	1071.65
	5	57.45	188.47		8	150.32	493.19		14	289.99	951.40
	6	42.71	140.12		9	127.37	417.88		15	250.59	822.16
	7	25.23	82.78		10	101.61	333.57		16	208.46	683.93
					11	73.24	240.29		17	163.59	536.72
									18	115.98	380.52

Part No. Example: BR 1-1/2 x 1/2 x 1 Ft.
= 1-1/2 OD x 1/2 Bore x 1 Ft Length.

Standard Lengths
≤ 8" dia. 10ft
> 8" dia. - 1 metre max

PLAIN BEARINGS

Fraser Bronze Bearings
FB Imperial Range

FB Imperial Size Range

ID	OD	Length	Part No.	ID	OD	Length	Part No.	ID	OD	Length	Part No.
5/16	7/16	1/2	FB1	5/8	3/4	1-1/4	FB305	3/4	1-1/8	3	FB537
5/16	7/16	3/4	FB3	5/8	3/4	1-1/2	FB307	3/4	1-1/4	2-1/2	FB538
5/16	7/16	1	FB4	5/8	3/4	1-3/4	FB308	13/16	15/16	1	FB600
5/16	7/16	1-1/2	FB2	5/8	3/4	2	FB309	13/16	15/16	1-1/2	FB602
3/8	1/2	3/4	FB10	5/8	3/4	2-1/4	FB310	13/16	15/16	2	FB603
3/8	1/2	1	FB11	5/8	3/4	2-1/2	FB311	13/16	1	1-1/2	FB605
3/8	1/2	1-1/2	FB13	5/8	3/4	3	FB312	13/16	1	2	FB606
3/8	1/2	2	FB12	5/8	13/16	1	FB313	13/16	1	2-1/2	FB607
7/16	9/16	3/4	FB19	5/8	13/16	1-1/2	FB315	13/16	1-1/16	2	FB608
7/16	9/16	1	FB20	5/8	13/16	2	FB317	13/16	1-1/16	2-1/2	FB610
7/16	9/16	1-1/2	FB22	5/8	13/16	2-1/2	FB319	13/16	1-1/16	3	FB612
7/16	9/16	2	FB25	5/8	7/8	3/4	FB321	7/8	1	1	FB700
7/16	5/8	1	FB36	5/8	7/8	1	FB322	7/8	1	1-1/4	FB702
7/16	5/8	1-1/2	FB27	5/8	7/8	1-1/4	FB324	7/8	1	1-1/2	FB703
7/16	5/8	2	FB29	5/8	7/8	1-1/2	FB325	7/8	1	2	FB705
7/16	11/16	1	FB39	5/8	7/8	1-3/4	FB326	7/8	1	2-1/2	FB707
7/16	11/16	1-1/2	FB30	5/8	7/8	2	FB328	7/8	1	3	FB708
7/16	11/16	2	FB32	5/8	7/8	2-1/4	FB329	7/8	1-1/16	1	FB709
1/2	9/16	1-1/2	FB100	5/8	7/8	2-1/2	FB330	7/8	1-1/16	1-1/2	FB711
1/2	5/8	3/4	FB101	5/8	7/8	3	FB331	7/8	1-1/16	2	FB713
1/2	5/8	1	FB102	5/8	1	1-1/4	FB334	7/8	1-1/16	2-1/2	FB715
1/2	5/8	1-1/4	FB103	5/8	1	2	FB335	7/8	1-1/8	1-1/4	FB717
1/2	5/8	1-1/2	FB104	5/8	1	2-1/2	FB337	7/8	1-1/8	1-1/2	FB718
1/2	5/8	2	FB106	11/16	13/16	1	FB400	7/8	1-1/8	2	FB720
1/2	11/16	1	FB107	11/16	13/16	1-1/2	FB401	7/8	1-1/8	2-1/4	FB721
1/2	11/16	1-1/2	FB110	11/16	13/16	2	FB403	7/8	1-1/8	2-1/2	FB722
1/2	11/16	2	FB112	11/16	7/8	1	FB406	7/8	1-1/8	3	FB723
1/2	3/4	3/4	FB99	11/16	7/8	2	FB409	7/8	1-1/4	1-1/2	FB725
1/2	3/4	1	FB113	11/16	15/16	1	FB412	7/8	1-1/4	2	FB726
1/2	3/4	1-1/2	FB115	11/16	15/16	1-1/2	FB413	7/8	1-1/4	2-1/2	FB728
1/2	3/4	1-3/4	FB116	11/16	15/16	2	FB415	7/8	1-1/4	3	FB729
1/2	3/4	2	FB117	11/16	1	2	FB418	7/8	1-3/8	3	FB730
1/2	3/4	2-1/2	FB119	3/4	13/16	1-1/2	FB500	15/16	1-1/16	1-1/2	FB731
1/2	7/8	1-1/2	FB120	3/4	7/8	3/4	FB501	15/16	1-1/16	2	FB732
1/2	7/8	2	FB121	3/4	7/8	1	FB502	15/16	1-1/16	2-1/2	FB733
1/2	1	2	FB122	3/4	7/8	1-1/4	FB504	15/16	1-1/8	1-1/4	FB734
9/16	11/16	1	FB200	3/4	7/8	1-1/2	FB505	15/16	1-1/8	2-1/4	FB735
9/16	11/16	1-1/2	FB203	3/4	7/8	2	FB507	15/16	1-1/8	3	FB736
9/16	11/16	1-3/4	FB206	3/4	7/8	2-1/2	FB510	15/16	1-3/16	2	FB738
9/16	11/16	2	FB207	3/4	15/16	1	FB511	1	1-1/16	1-1/2	FB800
9/16	3/4	1	FB210	3/4	15/16	1-1/2	FB515	1	1-1/8	1	FB801
9/16	3/4	1-1/2	FB214	3/4	15/16	2	FB518	1	1-1/8	1-1/4	FB802
9/16	3/4	1-3/4	FB216	3/4	15/16	2-1/4	FB519	1	1-1/8	1-1/2	FB803
9/16	3/4	2	FB217	3/4	15/16	2-1/2	FB520	1	1-1/8	2	FB805
9/16	3/4	2-1/4	FB219	3/4	1	3/4	FB490	1	1-1/8	2-1/2	FB806
9/16	3/4	2-1/2	FB220	3/4	1	1	FB522	1	1-1/8	3	FB807
9/16	13/16	1	FB236	3/4	1	1-1/4	FB523	1	1-3/16	1-1/2	FB808
9/16	13/16	1-1/2	FB222	3/4	1	1-1/2	FB524	1	1-3/16	2	FB809
9/16	13/16	2	FB224	3/4	1	1-3/4	FB525	1	1-3/16	2-1/2	FB810
9/16	7/8	1	FB237	3/4	1	2	FB526	1	1-1/4	1	FB811
9/16	7/8	1-1/2	FB227	3/4	1	2-1/4	FB528	1	1-1/4	1-1/8	FB812
9/16	7/8	2	FB228	3/4	1	2-1/2	FB529	1	1-1/4	1-1/4	FB813
9/16	1	1-1/2	FB231	3/4	1	3	FB530	1	1-1/4	1-1/2	FB814
9/16	1	2	FB232	3/4	1-1/16	2	FB531	1	1-1/4	1-3/4	FB815
5/8	11/16	1-1/2	FB301	3/4	1-1/16	2-1/2	FB532	1	1-1/4	2	FB816
5/8	11/16	2	FB302	3/4	1-1/8	1-1/2	FB533	1	1-1/4	2-1/2	FB818
5/8	3/4	3/4	FB303	3/4	1-1/8	2	FB534	1	1-1/4	3	FB820
5/8	3/4	1	FB304	3/4	1-1/8	2-1/2	FB536	1	1-1/4	3-1/2	FB821

Specifications:

Fraser Bronze bearings are manufactured from continuously cast bronze conforming to AS 1565 grade C83600 (BS 1400 LG2).

PLAIN BEARINGS

Fraser Bronze Bearings
FB Imperial & Metric

FB Imperial Size Range - cont.

ID	OD	Length	Part No.	ID	OD	Length	Part No.	ID	OD	Length	Part No.
1	1-1/4	4	FB822	1-1/4	1-1/2	3-1/2	FB1007	1-3/4	2	4	FB1033
1	1-3/8	1-1/2	FB827	1-1/4	1-1/2	4	FB1008	1-3/4	2-1/8	4	FB1018
1	1-3/8	2	FB823	1-1/4	1-5/8	1-3/4	FB1009	1-3/4	2-1/4	2-1/4	FB1036
1	1-3/8	2-1/2	FB824	1-3/8	1-5/8	2	FB1010	1-3/4	2-1/4	3	FB1037
1	1-3/8	3	FB825	1-3/8	1-5/8	3	FB1011	1-3/4	2-1/4	3-1/2	FB1038
1-1/8	1-1/4	1-1/2	FB900	1-3/8	1-5/8	4	FB910	1-3/4	2-1/2	4	FB1039
1-1/8	1-1/4	2	FB901	1-3/8	1-3/4	4	FB1012	2	2-1/4	2-1/2	FB1040
1-1/8	1-1/4	2-1/2	FB902	1-1/2	1-5/8	2	FB1013	2	2-1/4	3	FB1041
1-1/8	1-1/4	3	FB903	1-1/2	1-3/4	1-1/2	FB996	2	2-1/4	3-1/2	FB1019
1-1/8	1-3/8	2	FB904	1-1/2	1-3/4	2	FB998	2	2-1/2	2-1/2	FB1050
1-1/8	1-3/8	3	FB906	1-1/2	1-3/4	2-1/2	FB1014	2	2-1/2	3	FB1051
1-1/8	1-3/8	3-1/2	FB907	1-1/2	1-3/4	3	FB1015	2	2-1/2	3-1/2	FB1052
1-1/8	1-3/8	4	FB908	1-1/2	1-3/4	3-1/2	FB1016	2	2-1/2	4	FB1053
1-1/8	1-1/2	3	FB909	1-1/2	1-3/4	4	FB1017	2-1/4	2-3/4	2-1/2	FB1060
1-1/4	1-3/8	1-1/2	FB1000	1-1/2	2	2-1/2	FB1020	2-1/4	2-3/4	3	FB1061
1-1/4	1-3/8	3	FB1001	1-1/2	2	3	FB1021	2-1/4	2-3/4	3-1/2	FB1062
1-1/4	1-1/2	1	FB912	1-1/2	2	3-1/2	FB1022	2-1/4	2-3/4	4	FB1063
1-1/4	1-1/2	1-1/2	FB914	1-1/2	2	4	FB1023	2-1/2	3	2-1/2	FB1070
1-1/4	1-1/2	1-3/4	FB1002	1-3/4	2	2-1/2	FB1030	2-1/2	3	3	FB1071
1-1/4	1-1/2	2	FB1003	1-3/4	2	3	FB1031	2-1/2	3	3-1/2	FB1072
1-1/4	1-1/2	2-1/2	FB1004	1-3/4	2	3-1/2	FB1032	2-1/2	3	4	FB1073
1-1/4	1-1/2	3	FB1005								

FB Metric Size Range

ID	OD	Length	Part No.	ID	OD	Length	Part No.	ID	OD	Length	Part No.
8	10	10	FB8x10x10	16	24	80	FB16x24x80	30	40	60	FB30x40x60
8	10	20	FB8x10x20	20	24	30	FB20x24x30	30	40	80	FB30x40x80
8	10	30	FB8x10x30	20	24	40	FB20x24x40	30	40	100	FB30x40x100
8	10	40	FB8x10x40	20	24	50	FB20x24x50	35	40	40	FB35x40x40
8	12	10	FB8x12x10	20	24	60	FB20x24x60	35	40	50	FB35x40x50
8	12	20	FB8x12x20	20	24	80	FB20x24x80	35	40	60	FB35x40x60
8	12	30	FB8x12x30	20	30	30	FB20x30x30	35	40	80	FB35x40x80
8	12	40	FB8x12x40	20	30	40	FB20x30x40	35	40	100	FB35x40x100
10	12	20	FB10x12x20	20	30	50	FB20x30x50	35	45	40	FB35x45x40
10	12	30	FB10x12x30	20	30	60	FB20x30x60	35	45	50	FB35x45x50
10	12	40	FB10x12x40	20	30	80	FB20x30x80	35	45	60	FB35x45x60
10	16	20	FB10x16x20	25	30	30	FB25x30x30	35	45	80	FB35x45x80
10	16	30	FB10x16x30	25	30	40	FB25x30x40	35	45	100	FB35x45x100
10	16	40	FB10x16x40	25	30	50	FB25x30x50	40	45	40	FB40x45x40
10	16	50	FB10x16x50	25	30	60	FB25x30x60	40	45	50	FB40x45x50
12	16	20	FB12x16x20	25	30	80	FB25x30x80	40	45	60	FB40x45x60
12	16	30	FB12x16x30	25	30	100	FB25x30x100	40	45	80	FB40x45x80
12	16	40	FB12x16x40	25	35	30	FB25x35x30	40	45	100	FB40x45x100
12	16	50	FB12x16x50	25	35	40	FB25x35x40	40	50	40	FB40x50x40
12	20	20	FB12x20x20	25	35	50	FB25x35x50	40	50	50	FB40x50x50
12	20	30	FB12x20x30	25	35	60	FB25x35x60	40	50	60	FB40x50x60
12	20	40	FB12x20x40	25	35	80	FB25x35x80	40	50	80	FB40x50x80
12	20	50	FB12x20x50	25	35	100	FB25x35x100	40	50	100	FB40x50x100
16	20	20	FB16x20x20	30	35	30	FB30x35x30	45	55	50	FB45x55x50
16	20	30	FB16x20x30	30	35	40	FB30x35x40	45	55	60	FB45x55x60
16	20	40	FB16x20x40	30	35	50	FB30x35x50	45	55	80	FB45x55x80
16	20	50	FB16x20x50	30	35	60	FB30x35x60	45	55	100	FB45x55x100
16	20	60	FB16x20x60	30	35	80	FB30x35x80	50	60	50	FB50x60x50
16	24	30	FB16x24x30	30	35	100	FB30x35x100	50	60	60	FB50x60x60
16	24	40	FB16x24x40	30	40	30	FB30x40x30	50	60	80	FB50x60x80
16	24	50	FB16x24x50	30	40	40	FB30x40x40	50	60	100	FB50x60x100
16	24	60	FB16x24x60	30	40	50	FB30x40x50				

Part No. Example: FB 8 x 10 x 10 = 8mm ID x 10mm OD x 10mm Length

Specifications:

Fraser Bronze bearings are manufactured from continuously cast bronze conforming to AS 1565 grade C83600 (BS 1400 LG2).

PLAIN BEARINGS

Aluminium Bronze Bushing Product Information Sheet - C954

Fraser Bronze Alloy 954 - ALUMINIUM BRONZE

A. W. Fraser Alloy 954 is a high strength aluminium bronze conforming to the requirements of ASTM B505 for Continuous Cast and ASTM B271 for Centrifugal Cast Alloy 95400.

Alloy 954 is a very hard and abrasion resistant, having excellent strength and wear resistance with reasonable machining properties. These physical properties remain good at elevated temperatures. General corrosion

resistance is good but under some circumstances may suffer dealuminification.

Alloy 954 is suitable for high strength bearings, and has good impact resistance, but poor anti-seizure properties requiring reliable full film lubrication to prevent metal to metal contact and possible scoring.

ALLOY 954 - ALUMINIUM BRONZE

SUMMARY OF PROPERTIES

Chemical Composition - Percent

ELEMENT			NOMINAL
Aluminium	Al	10.0 - 11.5	10.5
Iron	Fe	3.0 - 5.0	4.0
Nickel	Ni	1.5 maximum	0.5 maximum
Manganese	Mn	0.5 maximum	
Copper	Cu	Balance	
TOTAL IMPURITIES: 0.5 maximum			

Mechanical Properties :

	Continuous Cast	Centrifugal Cast
Yield Stress at 0.5% Elongation	221 MPa min.	205 MPa min.
Ultimate Tensile Strength	586 MPa min.	515 MPa min.
Elongation	12% min.	12% min.
Hardness (Typical)	180 BHN	170 BHN
Shear Strength (Typical)	324 MPa	
Compressive Strength 0.1% Permanent Set (Typical)	265 MPa (38,000 psi)	
Specific Gravity	7.45	
Machinability Rating (Free Machining Brass = 100)	60	
Max Operating Temperature	260°C (500°F)	
Stress Relieving Temperature	316°C (600°F)	
Time at Temperature	1 hour per 25mm of section thickness	

Comparative Specifications:

AS 1565 95400; ASTM B505, B271-C95400; SAE J461, J462; DIN 1714 - G-CuAl11Fe4; UNI 5274 - G-CuAl11Fe4.

Standard Lengths
≤ 6" dia. 12ft
> 6" dia. - 1 metre max

SOLID

OD	ID	kg/ft	kg/mtr
3/4		0.790	2.592
1		1.380	4.528
1-1/4		2.000	6.562
1-1/2		2.956	9.698
1-3/4		3.847	12.621
2		5.129	16.827
2-1/2		7.890	25.886
3		11.237	36.866
3-1/2		14.566	47.795
4		20.023	65.691
4-1/2		25.348	83.162
5		36.266	118.981
6		44.836	147.078

Part No. Example: AB 3/4 x 1FT
= 3/4 OD x 1 Ft Length

HOLLOW

OD	ID	kg/ft	kg/mtr	OD	ID	kg/ft	kg/mtr
1 1/2	x 1	1.710	5.610	3 1/2	x 2 1/2	8.750	28.723
1 3/4	x 1	3.059	10.036	3 1/2	x 3	5.644	18.517
2	x 1	4.223	13.855	3 3/4	x 3	7.859	25.784
2	x 1 1/2	2.884	9.462	4	x 2	15.852	52.007
2 1/4	x 1 3/4	3.240	10.630	4	x 3	9.919	32.542
2 1/2	x 1	6.983	22.910	4 1/2	x 2	21.167	69.445
2 1/2	x 1 1/2	5.644	18.517	4 1/2	x 3	15.587	51.138
2 1/2	x 2	3.718	12.198	5	x 2	26.229	86.052
3	x 1 1/2	9.002	29.534	5	x 3	21.393	70.186
3	x 2	6.506	21.345	5	x 4	13.000	42.650
3	x 2 1/2	4.546	14.915	6	x 3	35.195	115.468
3 1/2	x 1 1/2	13.205	43.323	6	x 4	27.254	89.415

Part No. Example: AB 2 x 1 x 1FT
= 2 OD x 1 Bore x 1 Ft Length.

Available in stock lengths of 1 foot or longer lengths in multiples of 1 foot.

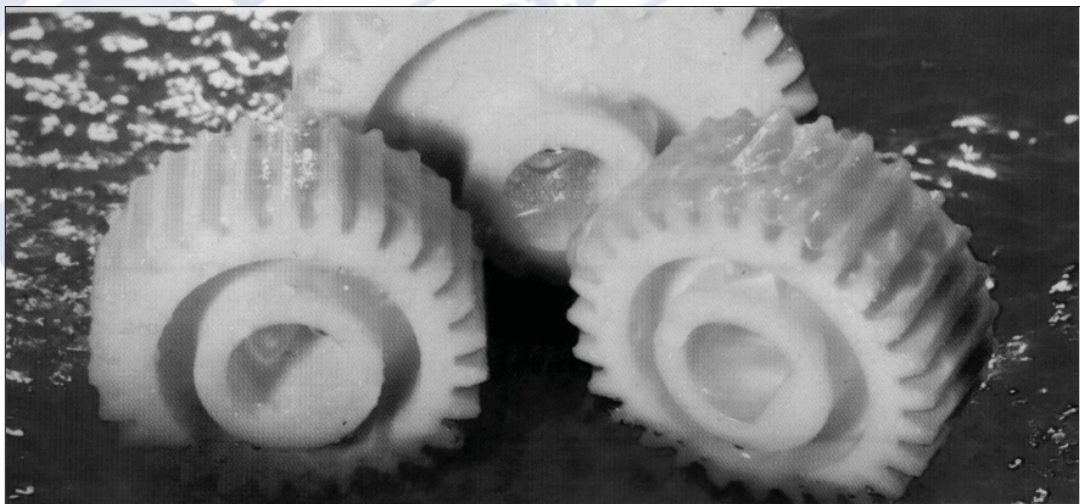
Other sizes available upon request.

INTRODUCTION

Today's industrial processes demand bearing products which are capable of operating in environments where traditional bearing materials fail to perform.

Engineering plastics such as various grades of Nylon, Acetals, and Ultra High Molecular Weight Polyethylene and other Polymer formulations, are designed to provide great strength, thermal and chemical resistance, coupled with high load and low frictional properties.

Some detail on the more popular materials and their applications follow. However, BSC, in consultation with our principal manufacturers, can design a product to suit applications as required.



LUBRON®

BSC Lubron® is a self lubricating bearing material manufactured from a high impact resistant filled nylon compound. This is a tough and resilient friction modified type II grade nylon filled with graphite, providing low frictional properties and low bearing heat generation even when operating under the most rugged conditions. Dimensional stability and compressive strength is maintained through minimal moisture absorption.

These exceptional properties of BSC Lubron® open up new concepts of design application.

SOLID ROD (Nominal O.D. Sizes)

Part Number O.D. Size		Part Number O.D. Size	
Metric	Inch	Metric	Inch
LUB 6MM	LUB 1/4	LUB 50MM	LUB 2
LUB 10MM	LUB 3/8	LUB 55MM	LUB 2-1/8
LUB 13MM	LUB 1/2	LUB 60MM	LUB 2-1/4
LUB 16MM	LUB 5/8	LUB 65MM	LUB 2-1/2
LUB 20MM	LUB 3/4	LUB 70MM	LUB 2-3/4
LUB 22MM	LUB 7/8	LUB 75MM	LUB 2-7/8
LUB 25MM	LUB 1	LUB 80MM	LUB 3
LUB 30MM	LUB 1-1/8	LUB 90MM	LUB 3-1/2
LUB 35MM	LUB 1-1/4	LUB 100MM	LUB 4
LUB 38MM	LUB 1-3/8	LUB 120MM	LUB 4-1/2
LUB 40MM	LUB 1-1/2	LUB 125MM	LUB 4-3/4
LUB 45MM	LUB 1-3/4	LUB 130MM	LUB 5

Properties and Advantages of Lubron® Self-Lubricating Bearing Material.

Wear and Abrasion Resistance	LUBRON® outlasts metal bearings in gritty or dirty conditions because of the tough, slightly yielding surface.
Resilience and Toughness	LUBRON® withstands shock loads that cause other bearing materials to fail from poundout or fatigue.
Excellent Strength to Weight Ratio	Where weight is critical, LUBRON® at 1/8 the weight of bronze, is a valuable bearing material.
Easily Machined	... by oils, greases etc. when the bush is operated dry or with the product liquid acting as a lubricant. In the event of wear particles of LUBRON® being objectionable to product appearance, natural NYLON can be supplied.
Chemical Resistance	LUBRON® resists strong reagents and can be used in many conditions where metal parts will corrode. It is particularly resistant to alkalis and organic solvents, enabling LUBRON® to function satisfactorily in detergents and gasoline without lubrication.
Low Heat Generation	This stems from the naturally low co-efficient of friction of Nylon, improved still further by the addition of graphite or molybdenum disulphide.
Mechanical Vibration and Noise Dampening	... is affected by the natural resilience of LUBRON® and the absence of metal to metal contact.
Dry Operation	... Where lubrication is difficult or impractical, LUBRON® will operate reliably at reasonable speeds.
Good Electrical Insulation	...LUBRON® insulates shafting - particularly advantageous in electroplating applications.
Range	A comprehensive range of bushes machined to sizes generally used by industry is available from Bearing Service distributors.

Special sizes and other parts - such as Gears, Cams, Pulleys, Wear Strips etc., can be produced to order or machined by the customer from LUBRON® rod or sections.

*LUBRON is the registered trade name for self-lubricating grades of Nylon.

NYLON (P.A. - POLYAMIDE)

As the workhorse of engineering plastics, due to its wide variety of mechanical properties, nylon has been in demand for a number of years as a bearing material. Because of its good abrasion resistance, chemical, thermal and low friction properties, it has earned a reputation for its resistance to wear. Hardness and strength, yet toughness and tenacity are the combination that makes nylon so versatile and the chosen product for many applications.

- Useful working temperature range of -40°C to +140°C
- Self lubricating properties can be further enhanced with fillers
- Available in a wide variety of grades to suit specific applications
- Typical applications include bushes, bearings, gears, cams, pulleys and wear pads

STANDARD EXTRUDED GRADES

Type 6	:	Natural & Black
Type 6.6	:	Natural & Black
Type 11	:	Natural
Type 12	:	Natural
Type 46	:	High temperature

FILLED GRADES

MoS ₂	:	Molybdenum disulphide
Graphite	:	
Glass filled	:	From 3% - 50%
Carbon fibre	:	20%
Kevlar® fibre	:	20%

SPECIALTY GRADES

TR 55	:	Nylon 12 transparent
TR 90	:	Nylon 12 transparent - autoclavable

MONOMER CAST GRADES

Natural & Black	:	MoS ₂
	:	Molybdenum Disulphide
Yellow	:	Oil filled
Glass filled	:	30%
6/12	:	High Impact

NYLON (POLYAMIDE)

RODS...	:	TYPE 6.6 & 6 5 min - 150 min
SHEETS...	:	1mm - 6mm NATURAL
MONOMER CAST NYLON RODS...	:	40mm - 600mm NATURAL (MoS ₂ - OIL FILLED)
SHEETS...	:	10mm - 100mm THICK NATURAL (MoS ₂ - OIL FILLED)
TUBES...	:	up to 500mm DIA

SPECIALTY SHAPES AVAILABLE ON REQUEST

ACETAL (P.O.M)

Acetals display good impact resistance, dimensional stability, high mechanical strength with natural lubricity and outstanding surface hardness. They have a high dielectric strength and are resistant to many solvents. Moisture absorption is very low and has little or no effect on strength properties. Acetals have a wide working temperature range of -45°C to +100°C.

- Copolymer grades are best suited for high temperature water applications
 - Acetals are widely used as parts in the food industry*
 - Typical applications include bearings, gears, bushing and wear resistant components
- * Not all acetals are F.D.A. approved

POLYMER TYPES

Homopolymer	:	Delrin®
Copolymer	:	Celcon/Hostaform®

STANDARD COLOURS

White	
Black (U.V. Stabilised)	

SPECIALTY GRADES

C.L.	:	Chemically lubricated
A.F.	:	P.T.F.E. (Teflon®) filled
G.F.	:	Glass filled (up to 30%)
E.L.	:	Electrically conductive
S.D.	:	Static Dissipative

OPTIONS

Custom coloured rods available on request.

ACETAL DELRIN

RODS...	:	NATURAL & BLACK 5mm - 200mm DIA
SHEETS...	:	1mm - 100mm THICK NATURAL Ex STOCK BLACK on REQUEST

ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE (UHMWPE)

This material is high density polyethylene with an average molecular weight of 6,000,000 which results in this material having high physical strength and increased chemical stability. The properties that make this superior to other plastics are abrasion resistance, impact resistance, extremely low coefficient of friction, self lubrication and chemical resistance, with a wide working temperature range of -269°C to +80°C.

- F.D.A. approval for food and drug industries
- Excellent general purpose material
- Superior wear resistance and friction properties
- Typical applications include hopper lining, chain wear strip, rollers, bottle stars and feed screws, cryogenic parts

STANDARD COLOURS	CUSTOM COLOURS	STANDARD SHAPES
White and Black	Green and Yellow Specialty colours on request	Sheet Rod
SPECIALTY SHAPES		SPECIALTY GRADES
Pipes Tubes Cylinders Composite sheets - rubber backed, aluminium backed Adhesive tapes - plain & antistatic Films - plain & antistatic Profiles - C,V, round clip on, L, T, Z & continuous strip Custom manufactured profiles & injection mouldings		XL : 100% crosslinked - abrasion/U.V. resistant - grey HC 500 : Abrasion resistant - brown/white fleck HC-2000 : Abrasion resistant - ferrous oxide filled RB-3 : 3% Ceramic bead fillers - blue colour RB-6 : 3% Ceramic bead fillers + 3% carbon fibres - black colour BF : Boron filled - neutron shielding - off white ASB : Anti-static black ASP : Anti-static pearl

ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE (NEW LIGHT)

RODS ... 10mm - 250mm DIA

SHEET THICKNESS ... 1mm - 150mm

Grades Available On Request

SPECIAL PRODUCTS

RUBBER BACKED UHMW-PE

SKIVED TAPES 0.25mm - 1.5mm THICK 300mm & 1000mm WIDE IN CONTINUOUS ROLLS.
AVAILABLE EITHER AS EXTRUDED SHAPES OR MACHINED TO CUSTOMER SPECIFICATION.

PROFILE SHAPES

AVAILABLE EITHER AS EXTRUDED SHAPES OR MACHINED TO CUSTOMER SPECIFICATION.

INJECTION MOULDINGS

FOR DETAILS ON OUR RANGE OF PRODUCTS, CONTACT YOUR NEAREST BSC OFFICE.

OTHER ENGINEERING & INDUSTRIAL PLASTIC MATERIALS AVAILABLE

POLYOLEFINS : (POLYETHYLENE & POLYPROPYLENE)

RODS ...	HD & LD 6mm - 150mm NATURAL & BLACK
SHEETS ...	LD 1mm - 6mm HD 1mm - 6mm NATURAL
POLYPROPYLENE RODS ...	6mm - 150mm NATURAL - GREY - BLACK
SHEETS ...	1mm - 6mm NATURAL (CO-POLYMER) 1mm - 50mm GREY

P.V.C. : (POLYVINYLCHLORIDE)

RODS ...	6mm - 200mm DIA
SHEETS ...	1mm - 50mm THICK
OTHER PRODUCTS ...	Welding Rods & Welding Guns and Angles

S.R.B.F. : (CANVAS BAKELITE)

RODS ...	3mm - 150mm DIA
SHEETS ...	1mm - 150mm THICK Tubes on Request.

POLYCARBONATE

RODS ...	6mm - 150mm DIA
TUBES ...	6mm - 150mm OD
SHEET ...	0.8mm - 12mm THICK Coated & Tinted Grades Available

P.T.F.E. : (TEFLON)

RODS ...	3mm - 200mm DIA
SHEETS ...	1.5mm - 50mm THICK
SKIVED TAPE ... GLASS CLOTH ...	0.25mm - 1mm PLAIN & ETCHED.
ROLLS & TAPE	.003" - .015" Filled Grades Available In MoS ₂ - Glass - Carbon Bronze

POLYURETHANE

HARDNESS RANGE ...	(45A - 75D)
RODS ...	6mm - 200mm DIA
SHEET ...	1mm - 50mm THICK Specialty Shapes & Mouldings upon Request

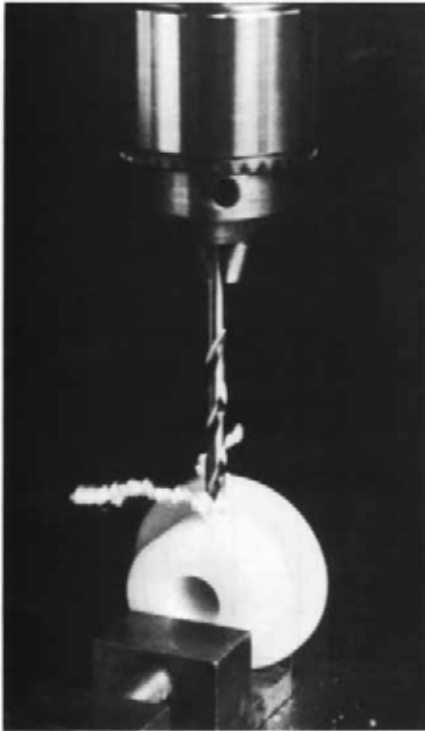
P.E.T.P. : (ARNITE)

RODS ...	10mm - 150mm DIA
SHEETS ...	1mm - 100mm THICK Grades... Natural & MoS Tubes Available on Request

SPECIALTY POLYMERS AVAILABLE ON REQUEST:

ABS	... ACRYLONITRILE BUTADIENE STYRENE
PPO	... POLYPHENYLENE OXIDE (NORYL)
PSU	... POLYSULPHONE
PES	... POLYETHERSULPHONE
PEI	... POLYETHERIMIDE (ULTEM)
PAI	... POLYAMIDERMIDE (TORLON)
PI	... POLYIMIDE (VESPEL)
PEEK	... POLYETHERETHERKETONE (VICTREX)
PBI	... POLYBENZIMIDAZOLE
PBT	... POLYBUTYLENE TEREPHTHALATE
PLUS OTHER HIGH PERFORMANCE MATERIALS	

MACHINING



Drilling

A slow spiral drill with polished flutes is ideal as the large flute areas permits a free discharge of chips. The point angle should be 80° to 90° included with a lip clearance of from 10° to 15° . General purpose drills can be made suitable by grinding the point angles to 118° included, and lip clearance of from 12° to 16° . The lip rake should be ground off, and the web thinned.

Dimensional accuracy will be achieved by holding the work in a jig, or in the event of having to drill a piece with a number of holes, a sizing pin should be placed in each hole after drilling. 2,000 to 3,000 rpm will be suitable speed for drills in the general range.

Reaming

Spiral fluted reamers, well sharpened to a greater than normal clearance angle, will produce good results. $0.015''$ is an ideal reaming allowance. Shrinkage of hole diameter of $.004''$ to $.005''$ under the reamer size should be anticipated.

Sawing

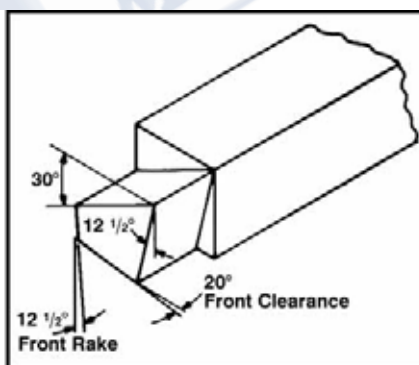
As in other machining operations, sawing does not present problems providing the blade is sharp and the work is kept cool. A band-saw is ideal because the length of blade permits better heat dissipation than other blades, such as hack-saws and circular saws. A coolant is always beneficial, but dry cutting is quite practical, using a skip-tooth metal cutting blade of 4 to 6 t.p.i.

Turning

Since overheating leads to instability, precautions must be taken to keep the heat generated in the work as low as possible. This position can be achieved by ensuring tool sharpness, and providing generous clearances.

High speeds and low feeds, a tool where only the cutting edge contacts the work to prevent rubbing and therefore loss of finish and accuracy and the use of a soluble oil type coolant all contribute towards a cool workpiece and a satisfactory result.

Tools as generally recommended for the machining of soft metals like aluminium are suitable.



Roughing cuts are not normally required as a good finish can be produced from both light and heavy cuts, using this tool form.

Carbide tip tools are preferable so long as the cutting edges are carefully honed.

Tangent type box tools, or V-rests, will give good results. The cutter should be slightly below centre, ground to a radius and have a positive rake of from 0° to 5° .

Plunge forming is practical, providing the cutting surface of the tool is no wider than the minimum work diameter. Larger areas can be formed by using two or more tools, or by supporting the stock so that it will not be deflected. Either circular or dove-tail form tools can be used with a front clearance of from 10° to 15° . Negative backrake of from 0° to 2° is also recommended.

The feed rate of the forming tool will be influenced by the deflection of the stock. Between $.004''$ and $.010''$ per spindle revolution will be found suitable. Screw machining work will be helped by breaking up the swarf by using serrated cams that produce a momentary interruption of the feed. Parting off is best performed with conventional blade type tools. The blade would be square to the work, otherwise, a convex or concave surface will result. Keep the overhang to a minimum and allow ample side clearance to prevent rubbing. Zero to negative backrake should be applied.



Fabric Reinforced Thermoset Composite

'Orkot' is manufactured by impregnating cloths or fibres with thermosetting resin.

The composite's physical and mechanical properties make Orkot an ideal bearing material.

By adjusting the composition of the material, ie the reinforcement and resin used, the physical and chemical properties are changed to suit specific applications.

Orkot's chemical resistance properties allow process liquors, solvents, sludges, etc, to be used as lubricants.

Orkot has exceptional wear resistance properties with or without lubrication.

TL grades in particular are ideal for water applications having an extremely low rate of moisture absorption and therefore negligible dimensional change.

Orkot has a low density and its strength/weight ratio compares favourably with other materials.



Grades

SL Ideal for general purpose wear pads, bushes, etc. With low swell in water, acids and chemical solutions, produce a good machining finish and can be supplied oil dipped. Approved for railway use.

TL Manufactured from medium weave fabrics with excellent mechanical strength and possessing exceptional dimensional stability when immersed in water, acids and chemical solutions.

TX Supplied as finished components for low friction slide pads and bearings. Incorporating a unique low friction composite bearing surface.

All grades of 'Orkot' are available with a solid lubricant incorporated. These grades contain either graphite, PTFE or molybdenum disulphide dispersed evenly throughout the material so that wear of a bearing surface continually releases further lubricant. These materials are recommended for use where other forms of lubrication are either not desirable or are erratic, intermittent or non-existent: In addition, in numerous cases where the maintenance of lubricant films is difficult, this type of bearing has been found to give improved performance. Each grade of material may also be impregnated or coated with mineral oil.

Applications

Typical applications include:-

- Bushes
- Bearings
- Slide Pads
- Fabricated Components
- Thermal Insulation Components



Floating Crane



Automotive Lift



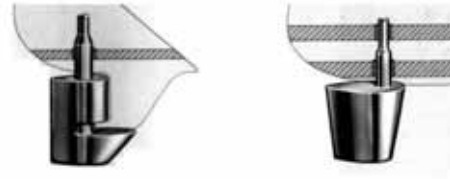
Agricultural Plough

Strength To Weight Comparisons

Material	Density		Compressive Strength		Strength Weight Ratio
	g/cm ³	lbs/in ³	p.s.i.	N/mm ²	
Stainless Steel	7.85	0.283	150000	1034	19100
Aluminium Alloy	2.3	0.083	40000	276	17400
Magnesium Alloy	1.81	0.065	35000	241	19300
Typical Hardwoods	0.7	0.025	9250	64	13200
Typical Softwoods	0.45	0.016	6500	45	14500
'Orkot TL'	1.25	0.047	50000	345	38000

Physical and Mechanical Properties

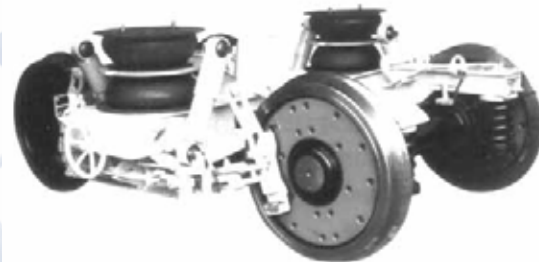
GRADE	SL	TL	TX
Tensile Strength (lb./sq.in.) (N/mm ²)	5,800 40	8,000 55	8,000 55
Compressive Strength (i) Normal to laminate (lb./sq.in.) (N/mm ²)	34,000 235	50,000 345	50,000 345
(ii) Parallel to laminate (lb./sq.in.) (N/mm ²)	14,500 100	14,000 97	14,000 97
Elastic Modulus (bending) (lb./sq.in. x 10 ⁶) (N/mm ² x 10 ⁴)	0.35 0.24	0.28 0.19	0.26 0.18
Impact Strength Normal to laminate (Notched Izod) ft lb/in. BS 2782 & ISO 179-1982	>10.0	>10.0	>10.0
Shear Strength (lb./sq.in.) (N/mm ²)	8,700 60	12,000 83	12,000 83
Hardness Rockwell M	90	100	100
Density (g/cm ³)	1.25	1.25	1.25
Swell in Water (% Wall Thickness)	<0.1	<0.1	<0.1
The above grades represent the base grades incorporation standard resins without the addition of dry lubricants. These grades can be offered with PTFE, MOS ₂ as dry lubricants and for improved resistance against acids and alkalis modified resins are used.			



TLM Marine Bearings



Bushes for a butterfly valve



Railway Track Bogie



Construction Application

Within industries such as aerospace, agriculture, automotive, construction, food, hydraulic, marine, mechanical handling, mining, nuclear, railway and water engineering.

Availability

'Orkot' is available in tube, rod or sheet form, or it can be supplied fully machined to customer's own drawing. Our modern machining facility is capable of dealing with large schedule orders or small quantity runs.

The following range of maximum and minimum sizes are available:-

TUBE

Minimum bore 5.00mm
 Maximum O.D. 2000mm
 Larger sizes available on request
 Standard Lengths 670mm
 Larger sizes available on request

ROD

Minimum diameter 13mm
 Maximum diameter 305mm
 Larger sizes available on request
 Standard Lengths 250mm and 500mm
 Larger sizes available on request

SHEET

Minimum thickness 1.50mm
 Maximum thickness 102mm
 Thicker to special order
 Maximum width 610mm
 Maximum lengths 2000mm

ORKOT - For the Water Industry

Roll Covering

Most sizes can be handled in our machine shops but for exceptionally large rolls please contact our Sales Department.

Special Products

Special components can be manufactured to customers' drawings from all grades of 'Orkot'. Please consult Orkot's Technical Service Department for special applications.

Machining

'Orkot' is really machinable by conventional engineering techniques and, as a general guide, may be treated as brass or lignum vitae but should be machined dry without coolant.

For turning, tungsten carbide-tipped tools should be used to obtain a fine finish. High-speed steel tools can be used for machining where accuracy below 0.13mm is not required and for small-quantity production.

No asbestos is used in the manufacture of 'Orkot' products and the material is completely non-toxic. It is, however, advisable to use adequate dust extraction when machining 'Orkot'.

Tool Cutting Angles

Top Rake	0° to 5°
Side Rake	5° to 7°
Front Rake	5°

Cutting Speeds

For good surface finish	6.1 m/sec.
For longer tool life	5.1 - 5.6 m/sec.
For form tools	4.6 - 6.1 m/sec.

Cutting Feeds

Rough turning	0.51 - 0.76 mm per rev.
Finishing cut	0.25 - 0.38 mm per rev.

Milling

This follows metal machining techniques and cutting speeds are as for turning. Feeds should be limited to 0.25 - 0.38 mm per tooth to prolong cutter life and reduce excessive heat build-up.

Drilling

This should be carried out with high-speed tungsten twists at 0.5 - 0.6 m/sec peripheral speed. Feed should be limited to 51 - 76 mm per minute.

A more detailed machining data sheet is available on request.

Bearings and Slide Pads

Orkot is fabric reinforced thermoset composite which offers benefits in the water control and processing industry, it can be filled with solid lubricants or a unique low friction layer can be incorporated to reduce the coefficient of friction. The material has high mechanical strength with no swell in water and no change to the mechanical properties.

Some Applications where Orkot has been used successfully:

Water Control Bearings

Dock Gate
Lock Gates
Storm Barriers
Flood Control Gates

General Bearings

Vertical Pump Shaft
Butterfly Valves
Hydraulics

Power Generation Bearings

Wicket Gate
Butterfly Valve and Trunnions
Fish Screens
Wicket Gate Linkage
Trash Rakes

Wear Pads

Operating Rings
Screens
Marine
Stern Tube
Rudder Pintle Brgs

Benefits

Low Friction
Pollution Free
Self Lubricating
Tolerates High Edge Load
Long Life
Low Moisture Absorption
Large Size Range
Non-Toxic

Corrosion Free
Easily Machined
Easily Fitted
Tolerates High Shock Load
High Load Capabilities
Potable Water Approval
Immediate Availability
Protects the Shaft



PLAIN BEARINGS

Orkot Composites TLM
Standard Size Range

TUBE

Standard Length - 26 inches
(660mm)

Finish	OD	x	ID
TLM	1	x	1/2
TLM	1-1/4	x	3/4
TLM	1-1/2	x	3-4
TLM	1-1/2	x	1
TLM	1-3/4	x	1
TLM	1-3/4	x	1-1/4
TLM	2	x	1
TLM	2-1/4	x	1-1/2
TLM	2-1/4	x	1-3/4
TLM	2-1/2	x	3/4
TLM	2-1/2	x	1
TLM	2-1/2	x	1-1/2
TLM	2-1/2	x	1-3/4
TLM	2-1/2	x	2
TLM	2-3/4	x	1-3/4
TLM	2-3/4	x	2
TLM	3	x	1
TLM	3	x	1-1/2
TLM	3	x	2
TLM	3	x	2-1/4
TLM	3	x	2-1/2
TLM	3-1/4	x	2-1/4
TLM	3-1/4	x	2-1/2
TLM	3-1/2	x	1-1/2
TLM	3-1/2	x	2-1/2
TLM	3-1/2	x	3
TLM	3-3/4	x	2-3/4
TLM	3-3/4	x	3
TLM	4	x	2
TLM	4	x	2-3/4
TLM	4	x	3
TLM	4-1/4	x	3-1/2
TLM	4-3/8	x	3-5/8
TLM	4-1/2	x	3
TLM	4-1/2	x	3-1/2
TLM	4-5/8	x	2-7/8
TLM	4-3/4	x	3-3/4
TLM	5	x	2
TLM	5	x	3
TLM	5	x	4
TLM	5-1/2	x	3
TLM	5-3/4	x	4-1/2
TLM	5-3/4	x	5
TLM	6	x	5
TLM	7	x	5

Part No. Example: TLM 1 X 1/2

ROD

Standard Length - 9 inches (250mm)

Finish	OD
TLM	1
TLM	1-1/4
TLM	1-1/2
TLM	2
TLM	2-1/2
TLM	3
TLM	3-1/2
TLM	4

Part No. Example: TLM 2-1/2 Rod

SHEET

Standard Length - 2000mm
Width - 500mm

Finish	Thickness
TLM	3/16
TLM	1/4
TLM	1/2
TLM	3/4

Part No. Example: TLM 3/4 Sheet

THK rod ends are self-aligning bearings using a spherical inner ring which has been given the same accuracy and hardness as a bearing steel ball. The sliding surfaces are a combination of a spherical inner ring finished to mirror finish and a rational holder, so that very smooth rotation and oscillation movement without looseness can be obtained.

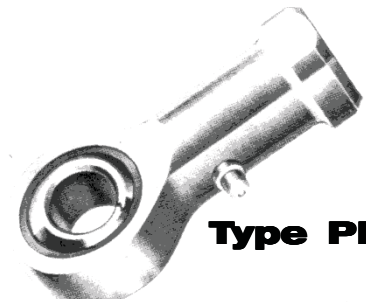
Type PHS (with female thread)

With this construction: a special copper alloy with good running-in characteristics is inserted between the color-chromated holder and the hard chrome-plated spherical inner ring, so that the stiffness is high and the wear resistance and the corrosion resistance are high.

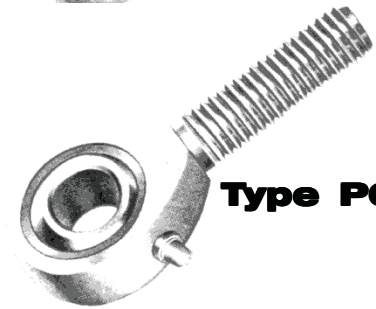
The grease nipple on the holder permits suitable lubrication of the slide surfaces.

Type POS (with male thread)

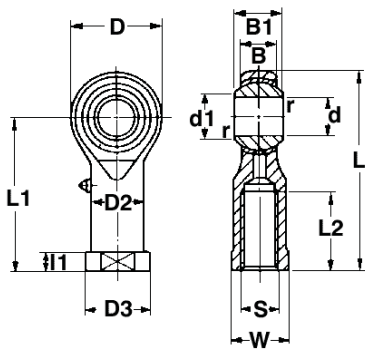
This is a high-stiffness rod end with a male thread for the holder instead of the female thread of the type PHS.



Type PHS



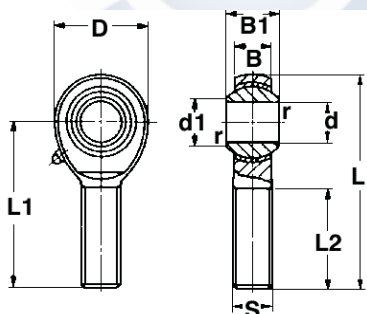
Type POS



1) Accuracy standards

Classification as shown below is made according to the dimension tolerance for the inner diameter d of the spherical inner ring.

Accuracy Class	Dimension Tolerance for d	Accuracy Symbol
Commercial Type	0.063 -0.012	C
High Grade	H7	No Symbol



1) Accuracy standards

Classification as shown on table above (refer to Type PHS) is made according to the dimension tolerance for the inner diameter d of the spherical inner ring.

2) Lubrication for POS5, 6 is executed via the oil hole of the holder, while the grease nipple is used for the other sizes.

Type PHS

Model No.	Thread S JIS Gr 2	Main Dimensions											Ball Dia. i			
		d	D	B	B_1	d_1	L	L_1	L_2	r	W	D_2	D_3	mm	inch	
PHS5	M5x0.80	5	16	6.00	8	7.7	35	4.0	27	14	9	9.0	11	0.5	11.112	7/16
PHS6	M6x1.00	6	18	6.75	9	9.0	39	5.0	30	14	11	10.0	13	0.5	12.700	1/2
PHS8	M8x1.25	8	22	9.00	12	10.4	47	5.0	36	17	14	12.5	16	0.5	15.875	5/8
PHS10	M10x1.50	10	26	10.50	14	12.9	56	6.5	43	21	17	15.0	19	0.5	19.050	3/4
PHS12	M12x1.75	12	30	12.00	16	15.4	65	6.5	50	24	19	17.5	22	0.5	22.225	7/8
PHS14	M14x2.00	14	34	13.50	19	16.9	74	8.0	57	27	22	20.0	25	0.5	25.400	1
PHS16	M16x2.00	16	38	15.00	21	19.4	83	8.0	64	33	22	22.0	27	0.5	28.575	1-1/8
PHS18	M18x1.50	18	42	16.50	23	21.9	92	10.0	71	36	27	25.0	31	0.5	31.750	1-1/4
PHS20	M20x1.50	20	46	18.00	25	24.4	100	10.0	77	40	30	27.5	34	0.5	34.925	1-3/8
PHS22	M22x1.50	22	50	20.00	28	25.8	109	12.0	84	43	32	30.0	37	0.5	38.100	1-1/2
PHS25	M24x2.00	25	60	22.00	31	29.6	124	12.0	94	48	36	33.5	42	0.5	42.862	1-11/16
PHS30	M30x2.00	30	70	25.00	37	34.8	145	15.0	110	56	41	40.0	50	0.5	50.800	2

2) Left hand thread is indicated by "L" at the end of the code number. This is stamped at the spanner application part of the holder on the product.
Example: **PHS10**

Model No.

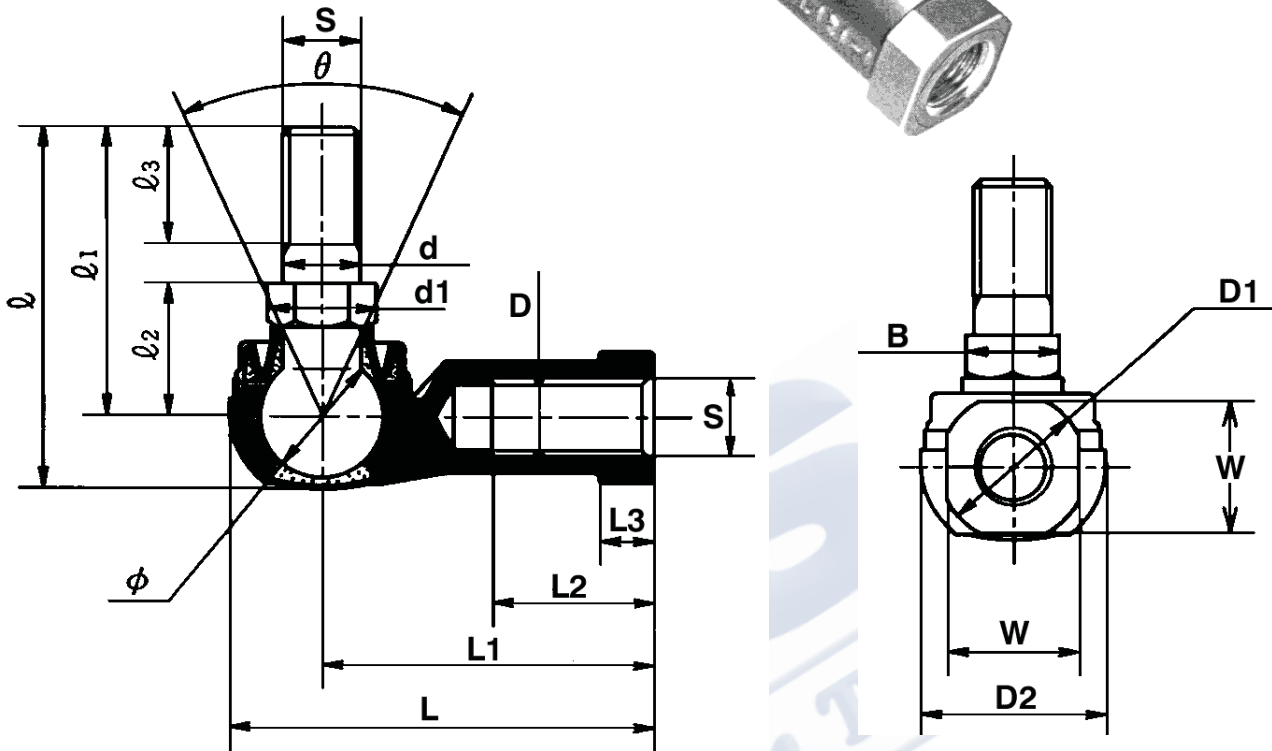
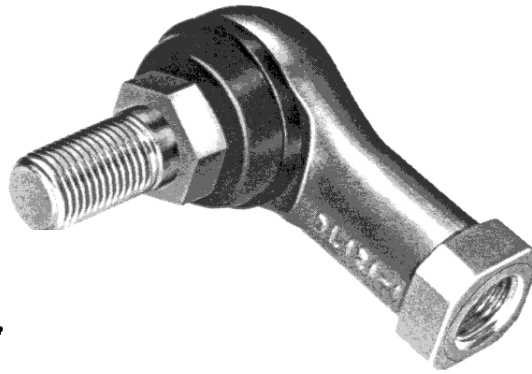
Accuracy Symbol

Left-hand Thread

3) Lubrication can be executed at suitable intervals via the grease nipple.

Type POS

Model No.	d	Thread S JIS Gr 2	Main Dimensions (mm)								Ball Dia. ϕ	
			D	B	B_1	d_1	L	L_1	L_2	r	mm	inch
POS5	5	M5x0.80	16	6.00	8	7.7	41	33	20	0.5	11.112	7/16
POS6	6	M6x1.00	18	6.75	9	9.0	45	36	22	0.5	12.700	1/2
POS8	8	M8x1.25	22	9.00	12	10.4	53	42	25	0.5	15.875	5/8
POS10	10	M10x1.50	26	10.50	14	12.9	61	48	29	0.5	19.050	3/4
POS12	12	M12x1.75	30	12.00	16	15.4	69	54	33	0.5	22.225	7/8
POS14	14	M14x2.00	34	13.50	19	16.9	77	60	36	0.5	25.400	1
POS16	16	M16x2.00	38	15.00	21	19.4	85	66	40	0.5	28.575	1-1/8
POS18	18	M18x1.50	42	16.50	23	21.9	93	72	44	0.5	31.750	1-1/4
POS20	20	M20x1.50	46	18.00	25	24.4	101	78	47	0.5	34.925	1-3/8
POS22	22	M22x1.50	50	20.00	28	25.8	109	84	51	0.5	38.100	1-1/2
POS25	25	M24x2.00	60	22.00	31	29.6	124	94	57	0.5	42.862	1-11/16
POS30	30	M30x2.00	70	25.00	37	34.8	145	110	66	0.5	50.800	2



Model No.	Thread JIS Cl. 2	S Wt grf	Main Dimensions (mm)														Ball Dia. Perm.		
			L	L ₁	L ₂	L ₃	D	D ₁	D ₂	W	d	l	l ₁	l ₂	l ₃	Hex B	d ₁	ø mm	Angle
BL6D	M6x1.00	26	38.0	30	16	5	10.0	13	16	11	6	32.6	26	11	11	10	11.6	11.112	40ø
BL8D	M8x1.25	49	45.5	36	19	6	12.5	16	19	14	8	38.6	31	14	12	12	13.8	12.700	40ø
BL10D	M10x1.25	87	55.5	43	23	7	14.5	19	25	17	10	46.3	37	17	15	14	16.2	15.875	40ø
BL10BD	M10x1.50	90	55.5	43	23	7	14.5	19	25	17	10	52.3	43	17	21	14	16.2	15.875	40ø
BL12D	M12x1.25	143	64.5	50	26	8	17.5	22	29	19	12	52.7	42	19	17	17	19.6	19.050	40ø
BL12BD	M12x1.75	148	64.5	50	26	8	17.5	22	29	19	12	59.7	49	19	24	17	19.6	19.050	40ø

1) Material

Holder: Special alloy for bearings
 Boot: Special NBR type synthetic rubber

- 2) When a boot is provided, the inside of the boot and the cap is filled with lithium soap base grease No. 2.

3) Material

When the female screw is left-hand, add the letter "L" to the code number. The distinction can be done by the cap color.
 Example:

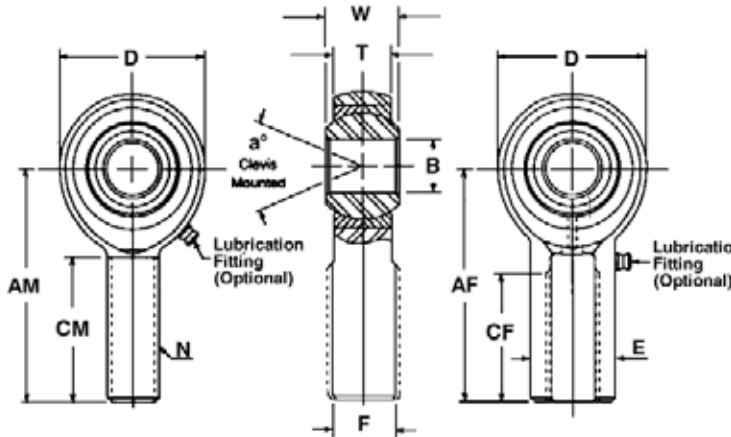
BL10 **D** **L**
 Model No. Accuracy Symbol Left-hand Thread

Thread	Distinction (cap color)
Right-hand	White
Left-hand	Yellow

PLAIN BEARINGS

THK Sintered Bronze
M-SB/F-SB Inch Sizes

M-SB



F-SB



FK Part No.	Bore x Thd. Size Ref.	B Dia. +.0025 -0.0005	D Dia. ±.010	W Width ±.005	T Width ±.005	Ball Dia. Ref.	AM Lgth ±.015	AF Lgth ±.015	N Thd. UNF 3A-2B	CM Lgth +.062 -.031	CF Lgth +.062 -.031	E Dia. ±.010	F Flat ±.010	a° Mis. Ang. Ref.
M3SB F3SB	3/16x10-32	.1900	.625	.312	.250	.437	1.250	1.062	10-32	.750	.562	.406	.312	13
M4SB F4SB	1/4x1/4-28	.2500	.750	.375	.281	.500	1.562	1.312	1/4-28	1.000	.750	.469	.375	16
M5SB F5SB	5/16x5/16-24	.3125	.875	.437	.344	.625	1.875	1.375	5/16-24	1.250	.750	.500	.437	14
M6SB F6SB	3/8x3/8-24	.3750	1.000	.500	.406	.719	1.938	1.625	3/8-24	1.250	.937	.687	.562	12
M7SB F7SB	7/16x7/16-20	.4375	1.125	.562	.437	.812	2.125	1.812	7/16-20	1.375	1.062	.750	.625	14
M8SB F8SB	1/2x1/2-20	.5000	1.312	.625	.500	.937	2.438	2.125	1/2-20	1.500	1.187	.875	.750	12
M10SB F10SB	5/8x5/8-18	.6250	1.500	.750	.562	1.125	2.625	2.500	5/8-18	1.625	1.500	1.000	.875	16
M12SB F12SB	3/4x3/4-16	.7500	1.750	.875	.687	1.312	2.875	2.875	3/4-16	1.750	1.750	1.125	1.000	14

All Dimensions in Inches

Materials		
Ball	Race	Body
Low Carbon Steel Case Hardened, Hard	Sintered Phosphor Bronze	Low Carbon Steel Zinc Plated, Chromate Treated
Chrome Plated Case Hardened, Hard	Oil Impregnated Phosphor Bronze	Zinc Plated, Chromate Treated
Chrome Plated		

Notes:

1. For left hand threads add "L" to prefix. Example: ML4SB
2. For grease fittings add "Z" to suffix. Example: M6SBZ
3. For Stud Type Rod Ends, add "Y" to suffix. Example F6SBY
4. Larger sizes are available. Details upon request.

REVIEW OF POPULAR ROD END SERIES

CM/CFECONOMYSERIES

FEATURES: LOW PRICE, 2 PIECE STEEL ON STEEL ROD END
APPLICATIONS: TRUCK, BUS AND RECREATIONAL VEHICLE LINKAGES

M-SB/F-SB COMMERCIAL SERIES

FEATURES: 3 PIECE DESIGN WITH SINTERED BRONZE SELF LUBE RACE
APPLICATIONS: MOST POPULAR GENERAL INDUSTRIAL SERIES

SCM-T/SCF-T STAINLESS SERIES

FEATURES: STAINLESS STEEL BALL AND BODY, TEFLON FABRIC LINER
APPLICATIONS: MARINE ENGINE, OUTDRIVE, STEERING LINKAGES & FOOD PROCESSING

JM(X)/JF(X)/RSM/RSM(X) PRECISION SERIES

FEATURES: 3 PIECE, DESIGNED WITH 52100 BEARING STEEL BALL, ALLOY RACE, LOW CARBON OR 4130 (PREFIX-X) STEEL BODY. AVAILABLE WITH THE POPULAR TEFLON LINER (ADD SUFFIX-T). "J" SERIES HAS A STANDARD SHANK. "RS" SERIES HAS A HEAVY SHANK.
APPLICATIONS: RACE CARS AND PRECISION MACHINERY.

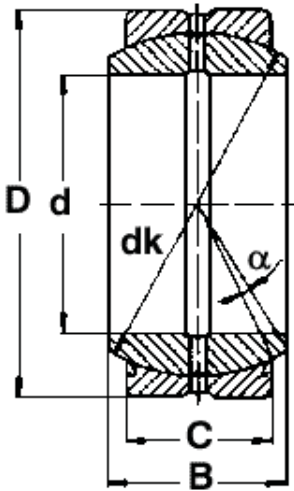
ALJM/ALRSM ALUMINIUM SERIES

FEATURES: BASICALLY A "JM" OR "RSM" SERIES ROD END WITH A RED ANODIZED ALUMINIUM BODY. TOTAL WEIGHT IS LESS THAN HALF THAT OF THE STANDARD ROD END YET STATIC CAPACITY IS HIGHER.
APPLICATIONS: RACE CARS WHERE WEIGHT IS A CRITICAL CONCERN.

PLAIN BEARINGS

Radial Spherical
Series GE..DO, GE..DO-RS

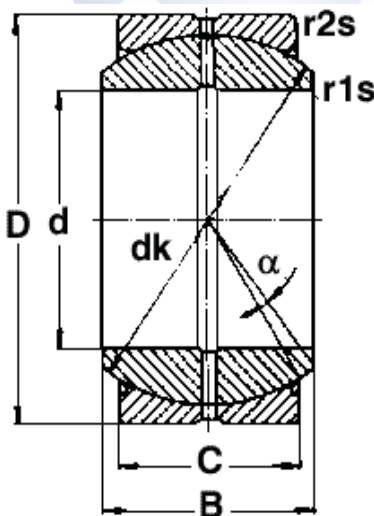
DIN 648, Dimension Series E
Sliding Contact Surfaces:
Steel/steel



Designation Bearing	Dimensions (mm)							
	without seals	with seals	d mm	D	B	C	d _k	a degrees
GE6DO*			6	14	6	4	10	13
GE8DO*			8	16	8	5	13	15
GE10DO*			10	19	9	6	16	12
GE12DO*			12	22	10	7	18	11
GE15DO			15	26	12	9	22	8
GE17DO	GE17DO-2RS		17	30	14	10	25	10
GE20DO	GE20DO-2RS		20	35	16	12	29	9
GE25DO	GE25DO-2RS		25	42	20	16	35.5	7
GE30DO	GE30DO-2RS		30	47	22	18	40.7	6
GE35DO	GE35DO-2RS		35	55	25	20	47	6
GE40DO	GE40DO-2RS		40	62	28	22	53	7
GE45DO	GE45DO-2RS		45	68	32	25	60	7
GE50DO	GE50DO-2RS		50	75	35	28	66	6
GE60DO	GE60DO-2RS		60	90	44	36	80	6
GE70DO	GE70DO-2RS		70	105	49	40	92	6
GE80DO	GE80DO-2RS		80	120	55	45	105	6
GE90DO	GE90DO-2RS		90	130	60	50	115	5
GE100DO	GE100DO-2RS		100	150	70	55	130	7
GE110DO	GE110DO-2RS		110	160	70	55	140	6
GE120DO	GE120DO-2RS		120	180	85	70	160	6
GE140DO	GE140DO-2RS		140	210	90	70	180	7
GE160DO	GE160DO-2RS		160	230	105	80	200	8
GE180DO	GE180DO-2RS		180	260	105	80	225	6
GE200DO	GE200DO-2RS		200	290	130	100	250	7
	GE220DO-2RS		220	320	135	100	275	8
	GE240DO-2RS		240	340	140	100	300	8
	GE260DO-2RS		260	370	150	110	325	7
	GE280DO-2RS		280	400	155	120	350	6
	GE300DO-2RS		300	430	165	120	375	7

* Relubrication not possible

In Inch Sizes
Sliding Contact Surfaces:
Steel/ steel

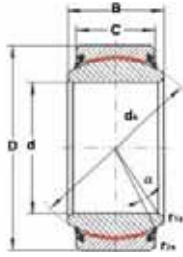


Designation Bearing	Dimensions (inches)							
	w/o seals	with seals	d (inch)	D	B	C	d _k	a degrees
GE12ZO			0.5000	0.8750	0.437	0.375	18.0	6
GE15ZO			0.6250	1.0625	0.547	0.469	23.0	6
GE19ZO	GE19ZO-2RS		0.7500	1.2500	0.659	0.562	27.5	6
GE22ZO	GE22ZO-2RS		0.8750	1.4375	0.765	0.656	32.0	6
GE25ZO	GE25ZO-2RS		1.0000	1.6250	0.875	0.750	35.5	6
GE31ZO	GE31ZO-2RS		1.2500	2.0000	1.093	0.937	45.5	6
GE34ZO	GE34ZO-2RS		1.3750	2.1875	1.187	1.031	49.0	6
GE38ZO	GE38ZO-2RS		1.5000	2.4375	1.321	1.125	53.0	6
GE44ZO	GE44ZO-2RS		1.7500	2.8125	1.531	1.312	63.9	6
GE47ZO	GE47ZO-2RS		1.8755	3.5625	1.969	1.687	82.0	6
GE50ZO	GE50ZO-2RS		2.0000	3.1875	1.750	1.500	73.0	6
GE57ZO	GE57ZO-2RS		2.2500	3.5625	1.969	1.687	82.0	6
GE63ZO	GE63ZO-2RS		2.5000	3.9375	2.187	1.875	92.0	6
GE69ZO	GE69ZO-2RS		2.7500	4.3750	2.406	2.062	100.0	6
GE76ZO	GE76ZO-2RS		3.0000	4.7500	2.625	2.250	109.5	6
GE82ZO	GE82ZO-2RS		3.2500	5.1250	2.844	2.437	119.0	6
GE88ZO			3.5000	5.5000	3.062	2.625	128.0	6

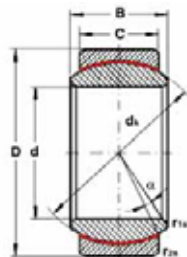
Other sizes and styles available. Please
consult BSC outlets for further information.

PLAIN BEARINGS

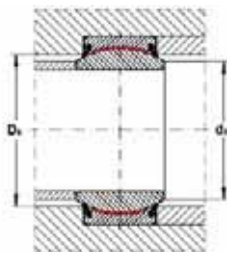
Radial Spherical Series GE..UK, GE..UK-2RS, GE..UK-2RS



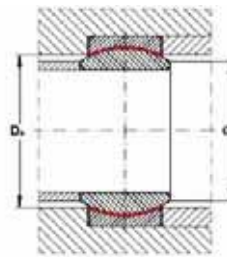
GE..UK



GE..UK-2RS



GE..UK



GE..UK-2RS



Designation Bearings w/o seals	Dimensions (mm)						Basic Load Ratings		Radial internal clearance	Chamfer Dimensions		Mounting Dimensions		Mass kg	
	with seals	d mm	D	B	C	d _k deg. ^o	a	dynamic C kN		static C ₀ kN	r _{1s} min	r _{2s} min	d _a max		d _a min
GE6UK		6	14	6	4	10	13	3.60	9.0	0-0.032	0.3	0.3	8	9.6	0.004
GE8UK		8	16	8	5	13	15	5.85	14.6	0-0.032	0.3	0.3	10.2	12.5	0.007
GE10UK		10	19	9	6	16	12	8.65	21.6	0-0.032	0.3	0.3	13.2	15.5	0.011
GE12UK		12	22	10	7	18	11	11.4	28.5	0-0.032	0.3	0.3	14.9	17.5	0.016
GE15UK		15	26	12	9	22	8	17.6	44.0	0-0.040	0.3	0.3	18.4	21	0.027
GE17UK	GE17UK-2RS	17	30	14	10	25	10	22.4	30.0 ²⁾	0-0.040	0.3	0.3	20.7	24	0.037
GE20UK	GE20UK-2RS ¹⁾	20	35	16	12	29	9	31.5	41.5 ²⁾	0-0.040	0.3	0.3	24.1	27.5	0.06
GE25UK	GE25UK-2RS ¹⁾	25	42	20	16	35.5	7	51.0	68.0 ²⁾	0-0.050	0.6	0.6	29.3	33	0.11
GE30UK	GE30UK-2RS ¹⁾	30	47	22	18	40.7	6	65.5	88.0 ²⁾	0-0.050	0.6	0.6	34.2	38	0.14
	GE35UK-2RS ¹⁾	35	55	25	20	47	6		112 ²⁾	0-0.050	0.6	1.0	39.7	44.5	0.22
	GE40UK-2RS ¹⁾	40	62	28	22	53	7		140 ²⁾	0-0.060	0.6	1.0	45	51	0.30
	GE45UK-2RS ¹⁾	45	68	32	25	60	7		180 ²⁾	0-0.060	0.6	1.0	50.7	57	0.39
	GE50UK-2RS ¹⁾	50	75	35	28	66	6		220 ²⁾	0-0.060	0.6	1.0	55.9	63	0.53
	GE60UK-2RS ¹⁾	60	90	44	36	80	6		345 ²⁾	0-0.060	1.0	1.0	66.8	75	0.98
	GE70UK-2RS ¹⁾	70	105	49	40	92	6		440 ²⁾	0-0.072	1.0	1.0	77.8	87	1.5
	GE80UK-2RS ¹⁾	80	120	55	45	105	6		570 ²⁾	0-0.072	1.0	1.0	89.4	99	2.2
	GE90UK-2RS ¹⁾	90	130	60	50	115	5		695 ²⁾	0-0.072	1.0	1.0	98.1	108	2.7
	GE100UK-2RS ¹⁾	100	150	70	55	130	7		865 ²⁾	0-0.085	1.0	1.0	109.5	123	4.2
	GE110UK-2RS ¹⁾	110	160	70	55	140	6		930 ²⁾	0-0.085	1.0	1.0	121.2	134	4.7
	GE120UK-2RS ¹⁾	120	180	85	70	160	6	120	1340 ²⁾	0-0.085	1.0	1.0	135.5	150	8.1
	GE140UK-2RS ¹⁾	140	210	90	70	180	7	140	1500 ²⁾	0-0.100	1.1	1.1	155.8	173	11.0
	GE160UK-2RS ¹⁾	160	230	105	80	200	8	160	1930 ²⁾	0-0.100	1.1	1.1	170.2	191	13.5
	GE180UK-2RS ¹⁾	180	260	105	80	225	6	180	2160 ²⁾	0-0.100	1.1	1.1	198.9	219	18.5
	GE200UK-2RS ¹⁾	200	290	130	100	250	7	200	3000 ²⁾	0-0.100	1.1	1.1	213.5	239	28.0
	GE220UK-2RS ¹⁾	220	320	135	100	275	8	220	3350 ²⁾	0-0.100	1.1	1.1	239.5	267	35.5
	GE240UK-2RS ¹⁾	240	340	140	100	300	8	240	3600 ²⁾	0-0.100	1.1	1.1	265.3	295	40.0
	GE260UK-2RS ¹⁾	260	370	150	110	325	7	260	4300 ²⁾	0-0.110	1.1	1.1	288.3	319	50.8
	GE280UK-2RS ¹⁾	280	400	155	120	350	6	280	5000 ²⁾	0-0.110	1.1	1.1	313.8	342	64.7
	GE300UK-2RS ¹⁾	300	430	165	120	375	7	300	5400 ²⁾	0-0.110	1.1	1.1	336.7	370	76.7

- 1) Series GE..UK-2RS-W1 made from corrosion resistant steel available on request.
2) Basic load ratings for series GE..UK-2RS

THRUST TYPE

(designed to take thrust loads only)



DIAGRAM 1

Extended Inner Ring - the inner ring is extended to eliminate the use of spacers.



DIAGRAM 2

Sealing - many of the bearings can be supplied with a built in sealing arrangement.

MAJOR TYPES

We carry INA Elges brand plain bearings and consequently use their numbering system. The numbers consist of a prefix, size, designation and suffix.

PART NO	EXPLANATION
GE_DO	Steel on Steel - standard type - available sealed - with the additional suffix 2RS.
GE_LO	Steel on Steel - extended inner ring
GE_ZO	Steel on Steel - standard type - inch sizes
GE_SX	Steel on steel - angular contact type
GE_AX	Steel on steel - thrust type
GE_UK	PTFE (Teflon) on hard chrome type - available sealed - suffix 2RS.
GE_SW	PTFE on hard chrome - angular contact type
GE_AW	PTFE on hard chrome, thrust type
GE_HO	Similar to DO type but with extended inner ring

NUMBERS

The numeric section of the part number for metric dimensional bearings is the ID size in mm. For Example, **GE 12 DO** would fit a 12mm shaft.

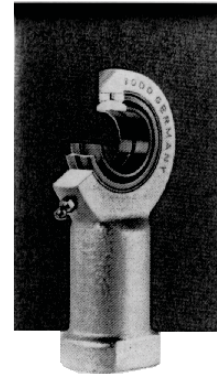
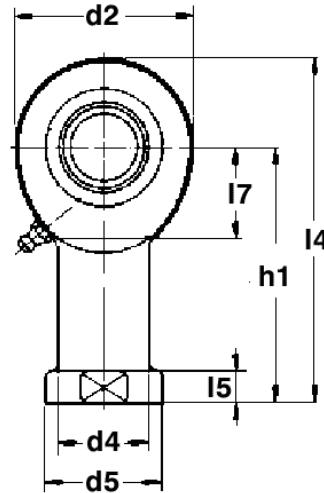
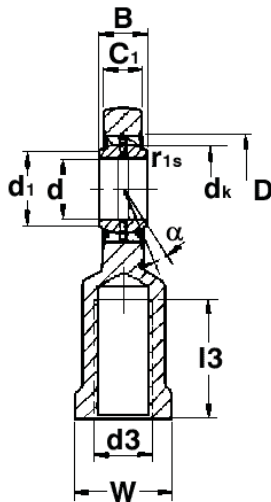
In inch dimensioned bearings (**ZO**), the number is derived from the nearest mm size after converting inches to mm. The table below gives examples.

Inch	mm	p/n
1/2 inch	12.7mm	p/n GE 12 ZO
7/8 inch	22.225mm	p/n GE 22 ZO
1 inch	25.4mm	p/n GE 25 ZO
1-1/2 inch	38.1mm	p/n GE 38 ZO

PLAIN BEARINGS

Rod Ends

Series GIR..DO, GIR..DO-2RS



Designation ¹⁾	Dimensions (mm)																Chamfer dim. r _{1s} min mm	Basic Load Ratings		Radial internal clearance mm	Mass kg	
	d	D	B	d _k	d ₁	d ₂	d ₃	d ₄	h ₁	C ₁	a	l ₁	l ₂	l ₃	l ₄	l ₅		d ₅	W			dyn C kN
	mm																					
GIR 6 DO 2)	6	14	6	10	8	21	M6	10	30	4.4	13	11	40.5	5	12	13	11	0.3	3.40	8.15	0.023-0.068	0.021
GIR 8 DO 2)	8	16	8	13	10.2	24	M8	12.5	36	6	15	15	48	5	14	16	14	0.3	5.50	12.9	0.023-0.068	0.039
GIR 10 DO 2)	10	19	9	16	13.2	29	M10	15	43	7	12	20	57.5	6.5	15	19	17	0.3	8.15	17.6	0.023-0.068	0.061
GIR 12 DO 2)	12	22	10	18	14.9	34	M12	17.5	50	8	11	23	67	6.5	18	22	19	0.3	10.8	24.5	0.023-0.068	0.096
GIR 15 DO 3)	15	26	12	22	18.4	40	M14	21	61	10	8	30	81	8	20	26	22	0.3	17.0	36.0	0.030-0.082	0.18
GIR 17 DO 3)	17	30	14	25	20.7	46	M16	24	67	11	10	34	90	10	23	30	27	0.3	21.2	45.0	0.030-0.082	0.22
GIR 20 DO-2RS 3)	20	35	16	29	24.1	53	M20X1.5	27.5	77	13	9	40	103.5	10	27	35	32	0.3	30.0	60.0	0.030-0.082	0.35
GIR 25 DO-2RS	25	42	20	35.5	29.3	64	M24X2	33.5	94	17	7	48	126	12	32	42	36	0.6	48.0	83.0	0.037-0.100	0.64
GIR 30 DO-2RS	30	47	22	40.7	34.2	73	M30X2	40	110	19	6	56	146.5	15	37	50	41	0.6	62.0	110	0.037-0.100	0.93
GIR 35 DO-2RS	35	55	25	47	39.7	82	M36X3	47	125	21	6	60	166	15	42	58	50	0.6	80.0	146	0.037-0.100	1.3
GIR 40 DO-2RS	40	62	28	53	45	92	M39X3 4)	52	142	23	7	65	188	18	48	65	55	0.6	100	180	0.043-0.120	2.0
GIR 45 DO-2RS	45	68	32	60	50.7	102	M42X3 4)	58	145	27	7	65	196	20	52	70	60	0.6	127	240	0.043-0.120	2.0
GIR 50 DO-2RS	50	75	35	66	55.9	112	M45X3 4)	62	160	30	6	68	216	20	60	75	65	0.6	156	290	0.043-0.120	3.5
GIR 60 DO-2RS	60	90	44	80	66.8	135	M52X3 4)	70	175	38	6	70	242.5	20	75	88	75	1.0	245	450	0.043-0.120	5.5
GIR 70 DO-2RS	70	105	49	92	77.8	160	M56X4 4)	80	200	42	6	80	280	20	87	98	85	1.0	315	610	0.055-0.142	8.6
GIR 80 DO-2RS	80	120	55	105	89.4	180	M64X4 4)	95	230	47	6	85	320	25	100	110	100	1.0	400	750	0.055-0.142	12.0

- 1) For left-hand thread, the letter "R" is replaced by "L" e.g. GIL...
- 2) Cannot be relubricated
- 3) Relubrication via a lubricating hole in the housing
- 4) Thread end or thread undercut at manufacturer's discretion
- 5) Housing capacity

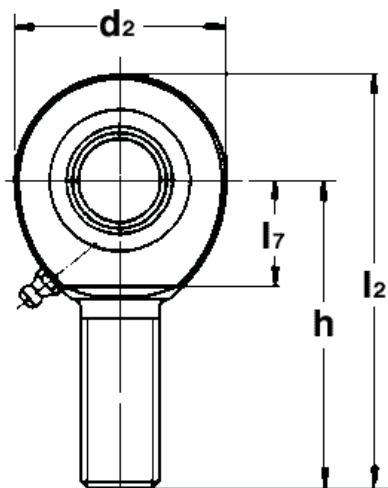
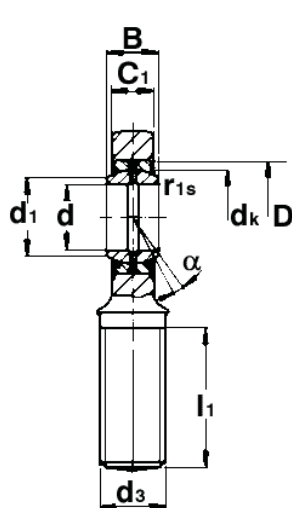
Female Rod End Metric

Sliding Contact Surface: Steel to Steel

Rod end manufactured to DIN 648
Dimension series K-ISO6126

PLAIN BEARINGS

Rod Ends
Series GAR..DO, GAR..DO-2RS



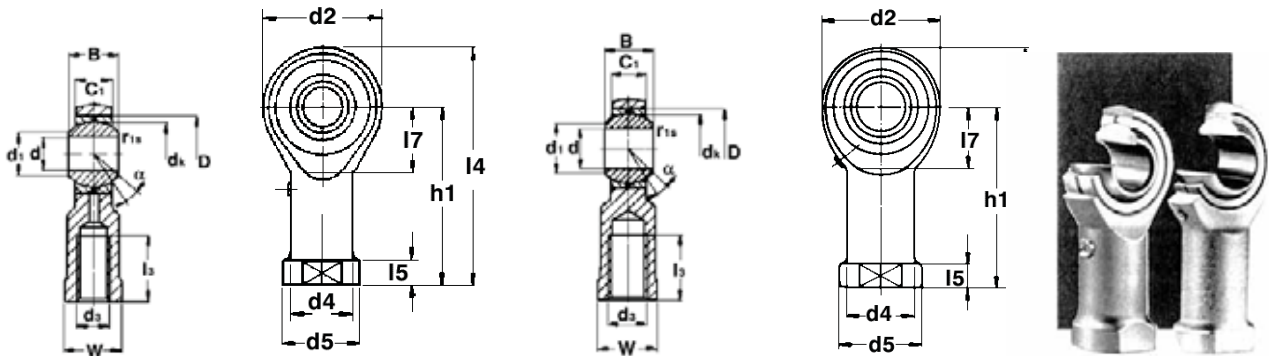
Designation ¹⁾	Dimensions (mm)													Chamfer dim. r _{1s} min mm	Basic Load Ratings		Radial internal clearance	Mass Kg
	d	D	B	d ₁	d ₁	d ₂	d ₃	h	C ₁	a	l ₁	l ₂	l ₂		dyn C kN	stat. C ₀ ⁴⁾		
	mm																	
GAR 6 DO 2)	6	14	6	10	8	21	M6	36	4.4	13	18	46.5	12	0.3	3.40	8.15	0.023-0.068	0.017
GAR 8 DO 2)	8	16	8	13	10.2	24	M8	42	6	15	22	54	14	0.3	5.50	12.9	0.023-0.068	0.029
GAR 10 DO 2)	10	19	9	16	13.2	29	M10	48	7	12	26	62.5	15	0.3	8.15	17.6	0.023-0.068	0.051
GAR 12 DO 2)	12	22	10	18	14.9	34	M12	54	8	11	28	71	18	0.3	10.8	24.5	0.023-0.068	0.086
GAR 15 DO 3)	15	26	12	22	18.4	40	M14	63	10	8	34	83	20	0.3	17.0	36.0	0.030-0.082	0.14
GAR 17 DO 3)	17	30	14	25	20.7	46	M16	69	11	10	36	92	23	0.3	21.2	45.0	0.030-0.082	0.19
GAR 20 DO-RS 3)	20	35	16	29	24.1	53	M20X1.5	78	13	9	43	104.5	27	0.3	30.0	60.0	0.030-0.082	0.31
GAR 25 DO-RS	25	42	20	35.5	29.3	64	M24X2	94	17	7	53	126	32	0.6	48.0	83.0	0.037-0.100	0.56
GAR 30 DO-RS	30	47	22	40.7	34.2	73	M30X2	110	19	6	65	146.5	37	0.6	62.0	110	0.037-0.100	0.89
GAR 35 DO-RS	35	55	25	47	39.7	82	M36X3	140	21	6	82	181	42	0.6	80.0	146	0.037-0.100	1.4
GAR 40 DO-RS	40	62	28	53	45	92	M39X3	150	23	7	86	196	48	0.6	100	180	0.043-0.120	1.8
GAR 45 DO-RS	45	68	32	60	50.7	102	M42X3	163	27	7	94	214	52	0.6	127	240	0.043-0.120	2.6
GAR 50 DO-RS	50	75	35	66	55.9	112	M45X3	185	30	6	107	241	60	0.6	156	290	0.043-0.120	3.4
GAR 60 DO-RS	60	90	44	80	66.8	135	M52X3	210	38	6	115	277.5	75	1.0	245	450	0.043-0.120	5.9
GAR 70 DO-RS	70	105	49	92	77.8	160	M56X4	235	42	6	125	315	87	1.0	315	610	0.055-0.142	8.2
GAR 80 DO-RS	80	120	55	105	89.4	180	M64X4	270	47	6	140	360	100	1.0	400	750	0.055-0.142	12.0

- 1) For left-hand thread, the letter "R" is replaced by "L" e.g. GIL...
- 2) Cannot be relubricated
- 3) Relubrication via a lubricating hole in the housing
- 4) Housing capacity

Male Rod End Metric

Sliding Contact Surface: Steel to Steel

Rod end manufactured to DIN 648
Dimension series K-ISO6126



Designation ¹⁾	Dimensions (mm)																Pitch dim. 's min mm	Basic Load Ratings		Radial internal clearance mm	Mass Kg	
	d ²⁾	D	B	d ₁	d ₁	d ₂	d ₃	d ₄	h ₁	C ₁	a	l ₃	l ₄	l ₅	l ₇	d ₄		W	dyn C			stat. C ₀ ³⁾
mm	deg. ⁴⁾																mm	kN				
GIKFR 5 PB	5	13	8	11.112	7.7	18	M5	8.5	27	6	13	10	36	4	10	11	9	0.3	3.25	5.70	0-0.035	0.016
GIKFR 6 PB	6	16	9	12.7	8.9	20	M6	10	30	6.75	13	12	40	5	11	13	11	0.3	4.30	7.20	0-0.035	0.022
GIKFR 8 PB	8	19	12	15.875	10.3	24	M8	12.5	36	9	14	16	48	5	13	16	14	0.3	7.20	11.6	0-0.035	0.047
GIKFR 10 PB	10	22	14	19.05	12.9	28	M10	15	43	10.5	13	20	57	6.5	15	19	17	0.3	10.0	14.5	0-0.035	0.077
GIKFR 12 PB	12	26	16	22.225	15.4	32	M12	17.5	50	12	13	22	66	6.5	17	22	19	0.3	13.4	17.0	0-0.035	0.10
GIKFR 14 PB	14	28 3)	19	25.4	16.8	36	M14	21	57	13.5	16	25	75	8	18	26	22	0.3	17.0	24.0	0-0.035	0.16
GIKFR 16 PB	16	32	21	28.575	19.3	42	M16	22	64	15	15	28	85	8	23	28	22	0.3	21.6	28.5	0-0.035	0.22
GIKFR 18 PB	18	35	23	31.75	21.8	46	M18X1.5	25	71	16.5	15	32	94	10	25	31	27	0.3	26.0	42.5	0-0.035	0.32
GIKFR 20 PB	20	40	25	34.925	24.3	50	M20X1.5	27.5	77	18	14	33	102	10	26	35	30	0.3	31.5	42.5	0-0.035	0.42
GIKFR 22 PB	22	42	28	38.1	25.8	54	M22X1.5	30	84	20	15	37	111	12	29	38	32	0.3	38.0	57.0	0-0.035	0.54
GIKFR 25 PB	25	47	31	42.85	29.5	60	M24X2	33.5	94	22	15	42	124	12	32	42	36	0.3	47.5	68.0	0-0.035	0.73
GIKFR 30 PB	30	55	37	50.80	34.8	70	M30X2	40	110	25	17	51	145	15	37	50	41	0.3	64.0	88.0	0-0.035	1.1

- 1) For left-hand thread, the letter "R" is replaced by "L" e.g. GIKFL..
- 2) Bore tolerance: H7 (arithmetical mean value)
- 3) Not included in DIN 648, dimension series K
- 4) Housing capacity

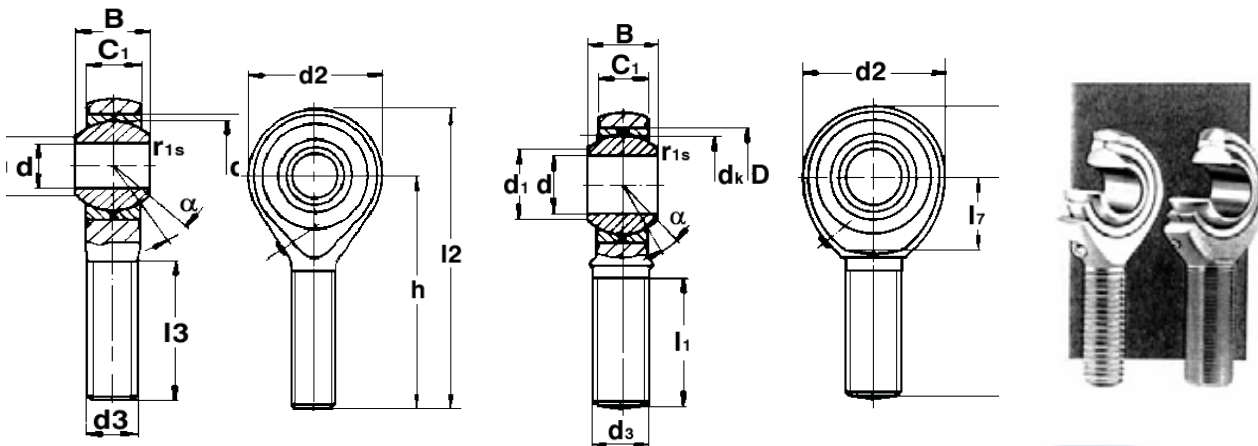
Female Rod End Metric

Sliding Contact Surface: Steel to Bronze

Rod end manufactured to DIN 648
Dimension series K-ISO6126

PLAIN BEARINGS

Rod Ends
Series GAKFR..PB



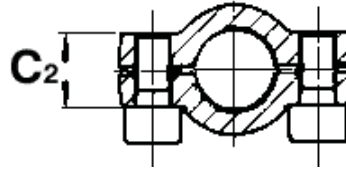
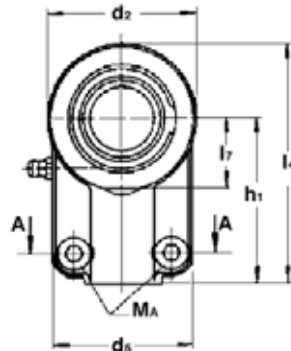
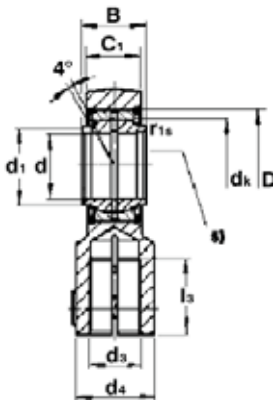
Designation ¹⁾	Dimensions (mm)													Chamfer dim. r _{1s} min mm	Basic Load Ratings		Radial internal clearance mm	Mass kg
	d ²⁾	D	B	d _t	d ₁	d ₂	d ₃	h	C ₁	a	l ₁	l ₂	l ₃		C	stat. C ₀ ⁴⁾		
	mm														kN			
GAKFR 5 PB	5	13	8	11.112	7.7	18	M5	33	6	13	19	42		0.3	3.25	3.10	0-0.035	0.013
GAKFR 6 PB	6	16	9	12.7	8.9	20	M6	36	6.75	13	21	46		0.3	4.30	4.40	0-0.035	0.020
GAKFR 8 PB	8	19	12	15.875	10.3	24	M8	42	9	14	25	54		0.3	7.20	8.00	0-0.035	0.038
GAKFR 10 PB	10	22	14	19.05	12.9	28	M10	48	10.5	13	28	62		0.3	10.0	12.9	0-0.035	0.055
GAKFR 12 PB	12	26	16	22.225	15.4	32	M12	54	12	13	32	70		0.3	13.4	17.0	0-0.035	0.085
GAKFR 14 PB	14	28 3)	19	25.4	16.8	36	M14	60	13.5	16	36	78	18	0.3	17.0	24.0	0-0.035	0.140
GAKFR 16 PB	16	32	21	28.575	19.3	42	M16	66	15	15	37	87	23	0.3	21.6	28.5	0-0.035	0.210
GAKFR 18 PB	18	35	23	31.75	21.8	46	M18X1.5	72	16.5	15	41	95	25	0.3	26.0	42.5	0-0.035	0.280
GAKFR 20 PB	20	40	25	34.925	24.3	50	M20X1.5	78	18	14	45	103	26	0.3	31.5	42.5	0-0.035	0.380
GAKFR 22 PB	22	42	28	38.1	25.8	54	M22X1.5	84	20	15	48	111	29	0.3	38.0	57.0	0-0.035	0.480
GAKFR 25 PB	25	47	31	42.85	29.5	60	M24X2	94	22	15	55	124	32	0.3	47.5	68.0	0-0.035	0.640
GAKFR 30 PB	30	55	37	50.80	34.8	70	M30X2	110	25	17	66	145	37	0.3	64.0	88.0	0-0.035	1.100

- 1) For left-hand thread, the letter "R" is replaced by "L" e.g. GIKFL..
- 2) Bore tolerance: H7 (arithmetical mean value)
- 3) Not included in DIN 648, dimension series K
- 4) Housing capacity

Male Rod End Metric

Sliding Contact Surface: Steel to Bronze

Rod end manufactured to DIN 648
Dimension series K-ISO6126



Designation	Dimensions in mm																Load Ratings		Radial Internal C_0^8 mm	Nominal Cyl. Clearance kN	Screws to DIN 912-8.8 Force	Tightening Torque M_A Nm	Mass kg
	$d^{1)}$	D	B	d_k	d_1	d_2	d_3	d_4	h_1	C_1	a	l_3	l_4	l_7	d_5	C_2	dyn	stat.					
mm	deg. ²																kN						
GIHN-K12LO2)4)	12	22	12	18	15.5	32	M12X1.25	16.5	38	10.6	4	17	54	14	32	10.6	10.8	24.5	0.023-0.068	8	7) M5X12	8	0.10
GIHN-K16LO4)	16	28	16	23	20	40	M14X1.5	21	44	13	4	19	64	18	40	13	17.6	36.5	0.030-0.082	12.5	7) M6X16	13	0.20
GIHN-K20LO	20	35	20	29	25	47	M16X1.5	25	52	17	4	23	75.2	22	47	17	30.0	48.0	0.030-0.082	20	7) M8X20	32	0.40
GIHN-K25LO	25	42	25	35.5	30.5	58	M20X1.5	30	65	21	4	29	94	27	54	17	48.0	78.0	0.037-0.100	32	7) M8X20	32	0.66
GIHN-K32LO	32	52	32	44	38	70	M27X2	38	80	27	4	37	115	32	66	22	67.0	114	0.037-0.100	50	7) M10X25	64	1.20
GIHN-K40LO6)	40	62	40	53	46	89	M33X2	47	97	32	4	46	141.5	41	80	26	100	204	0.043-0.120	80	7) M10X25	64	2.10
GIHN-K50LO6)	50	75	50	66	57	108	M42X2	58	120	40	4	57	174	50	96	32	156	310	0.043-0.120	125	7) M12X30	110	4.40
GIHN-K63LO6)	63	95	63	83	71.5	132	M48X2	70	140	52	4	64	211	62	114	38	255	430	0.055-0.142	200	M12X30	80	7.60
GIHN-K70LO3)6)	70	105	70	92	79	155	M56X2	80	160	57	4	76	245	70	135	42	315	540	0.055-0.142	250	M16X40	195	9.50
GIHN-K80LO6)	80	120	80	105	91	168	M64X3	90	180	66	4	86	270	78	148	48	400	695	0.055-0.142	320	M16X45	195	14.5
GIHN-K90LO3)	90	130	90	115	99	185	M72X3	100	195	72	4	91	296	85	160	52	490	750	0.055-0.142	400	M16X50	195	17.0
GIHN-K100LO	100	150	100	130	113	210	M80X3	110	210	84	4	96	322	98	178	62	610	1060	0.065-0.165	500	M20X60	385	28.0
GIHN-K110LO3)	110	160	110	140	124	235	M90X3	125	235	88	4	106	364	105	190	62	655	1200	0.065-0.165	635	M20X60	385	32.0
GIHN-K125LO	125	180	125	160	138	262	M100X3	135	260	102	4	113	405	120	200	72	950	1430	0.065-0.165	800	M20X70	385	43.0
GIHN-K160LO	160	230	160	200	177	326	M125X4	165	310	130	4	126	488	150	250	82	1370	2200	0.065-0.192	1250	M24X80	660	80
GIHN-K200LO	200	290	200	250	221	418	M160X4	215	390	162	4	161	620	195	320	102	2120	3650	0.065-0.192	2000	M30X100	1350	165

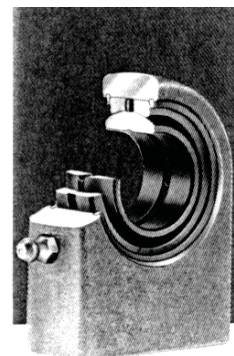
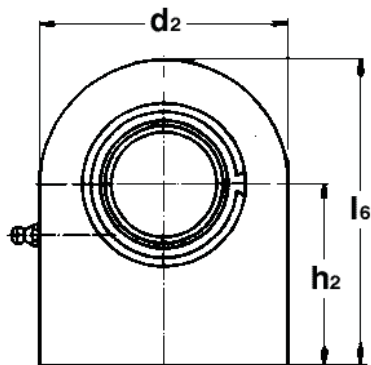
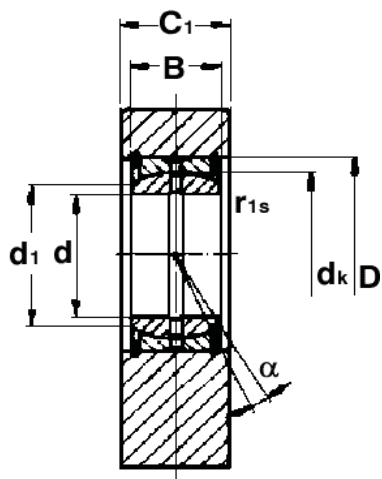
- 1) Bore tolerance: H7
- 2) Cannot be relubricated
- 3) Not included in DIN 24338
- 4) Cylindrical across whole dimension, d
- 6) Thread end or thread undercut at manufacturer's discretion
- 7) DIN 912-10.9
- 8) Housing capacity

SLIDING CONTACT SURFACE

Steel/steel

Hydraulic rod ends with internal thread according to DIN 24 338. Housings made from forged steel up to nominal size 50, from nominal size 63 of spheroidal graphite cast iron. Spherical plain bearing fixed in housing by snap rings. Thread clamping by two hexagon socket screws to DIN 912-8.8 or 10.9.

For standard hydraulic cylinders to CETOP recommendation RP 58 H; DIN 24 333; DIN 24 336; ISO/DIS 6020 I; ISO/DIS 6022.



Designation	Dimensions (mm)											Chamfer dim. '1s min	Basic Load Ratings		Radial internal clearance mm	Mass kg
	d	D	B	d ₁	d ₁	d ₂	h ₂	C ₁	C ₁	a	l ₆		dyn C	stat. C ₀ ¹⁾ kN		
	mm															
GF 20 DO	20	35	16	29	24.1	50	38	19	20	9	63	0.3	30.0	67.0	0.030-0.082	0.35
GF 25 DO	25	42	20	35.5	29.3	55	45	23	24	7	72.5	0.6	48.0	69.5	0.037-0.100	0.53
GF 30 DO	30	47	22	40.7	34.2	65	51	28	29	6	83.5	0.6	62.0	118	0.037-0.100	0.87
GF 35 DO	35	55	25	47	39.7	83	61	30	31	6	102.5	0.6	80.0	196	0.037-0.100	1.5
GF 40 DO	40	62	28	53	45	100	69	35	36.5	7	119	0.6	100	300	0.043-0.120	2.4
GF 45 DO	45	68	32	60	50.7	110	77	40	41.5	7	132	0.6	127	380	0.043-0.120	3.4
GF 50 DO	50	75	35	66	55.9	123	88	40	41.5	6	149.5	0.6	156	440	0.043-0.120	4.4
GF 60 DO	60	90	44	80	66.8	140	100	50	52.5	6	170	1.0	245	570	0.043-0.120	7.1
GF 70 DO	70	105	49	92	77.8	164	115	55	58	6	197	1.0	315	695	0.055-0.142	10.5
GF 80 DO	80	120	55	105	89.4	180	141	60	63	6	231	1.0	400	780	0.055-0.142	15.0
GF 90 DO	90	130	60	115	98.1	226	150	65	69	5	263	1.0	490	1340	0.055-0.142	23.5
GF 100 DO	100	150	70	130	109.5	250	170	70	74	7	295	1.0	610	1500	0.065-0.165	31.5
GF 110 DO	110	160	70	140	121.2	295	185	80	85	6	332.5	1.0	655	2160	0.065-0.165	48.0
GF 120 DO	120	180	85	160	135.5	360	210	90	95	6	390	1.0	950	3250	0.065-0.165	79

1) Housing capacity

SLIDING CONTACT SURFACE

Steel/steel

Rod ends with rectangular welding face, housings up to nominal size 50 made from forged steel St 52-3. Spherical plain bearings to DIN 648, dimension series E, fixed in housing by snap rings.

Rod end with very sturdy housing design for welding onto hydraulic cylinder bottoms, usable in plain and equipment engineering and in other welded constructions. The spherical plain bearing can be removed.

PLAIN BEARINGS

Interchange Table

F-K	ALINABAL	AURORA	HEIM/ BOSTON	MORSE/ SPHERCO	NATIONAL	NMB/ NHBB
MALE ROD ENDS						
CM	AM	CM	M-CR	CFM	MSM	AHM/LSPL
M		BM	HM	TRE		
M-SB	VM		HM-C	TM	MBM	
JM	CM	MM/KM	HMA		MTSM	HAMR
JM-T		MM-T/KM-T	HME	TRE-T	MTSM-T	AMRT
JMX		AM	BHM	ARE	TSMX	HAMRX
JMX-T		AM-T				
RJMX-T		RAM-T				
EMX-Z			HMX-G	ARE-20N	BMX-Z	
RSM		XM			RM	AXM
RSM-T		XM-T			RM-T	
RSMX		XAM			RMX	XAMX
RSMX-T	XAM-T			RMX-T		RRSMX-T
RXAM-T						
ALJM		ALM			KCA	
ALJM-T		ALM-T				
ALRSM		XALM			KCAX	
ALRSM-T		XALM-T				
SCM-T		CM-ET			SSM-T	
FEMALE ROD ENDS						
CF	AF	CW	F-CR	CFF	MSF	AHF-LSPL
F		BW	HF	TR		
F-SB	VF		HF-C	TF	MBF	
JF	CF	MW/KW	HFA		MTSF	HAFR
JF-T		MW/KW-T	HFE	TR-T	MTSF-T	AFRT
JFX		AW			TSFX	HAFRX
JFX-T		AW-T			TSFX-T	
EFX-Z			HFX-G	AR-N	BFX-Z	
SCF-T		CW-ET			SFF-T	