Product-catalogue

BRONZE BARS AND BEARINGS

Your first choice in bronze

Johnson Metall

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The design of Slide Bearings

Loading capacity

The loading capacity of a bearing with an inside diameter of d mm, length 1 mm and load F Newton, is calculated as follows:

$$p = \frac{F}{d \times l} \ N/mm^2$$

With sliding speed < 1m/min, in intermittent operation, a surface pressure of half of the yield stress value of the material is permitted.

With sliding speed >1m/min, or continuous operation – the so-called PV-value, Pressure Velocity, (N/mm^2 x m/sec) is used to determine maximum load capacity. For most bronze grades a PV value of 1.75 N/mm x m/sec is permitted. An axial movement normally allows for a greater PV value.

Lubrication

The lubrication groove is very important in mounted bearings. Poor lubrication is often the fault of flawed lubrication grooves. In hydrodynamic lubrication the groove should not be situated in the load area. With radial reciprocating movement, place the grooves in the load area, the distance of the grooves should be <2 x angle of movement. Solid lubricants can be used in sliding speeds of under 0.5 m/sec.

Things to remember in design:
- the lubrication grooves are placed perpendicularly against the direction of movement
- great sliding speed = viscous lubricant
- slow sliding speed = rigid lubricant
- viscosity is chosen according to running temperature

Technical services

Our technical advisors are ready to assist in the choice of correct material and bearing type.

Bearing clearance

For oil lubricated bearings a clearance of 1.5–2.5 ‰ of the inside diameter of the bearing is suggested. For grease lubricated bearings the clearance should be two times greater. For back-and-forth movement a clearance as small as possible is used (0.5– 1‰). In high temperatures the clearance should be bigger than normally.

The design of Slide Bearings, cont.

Mating material

- at least 100HB harder than bronze
- for tin bronze alloys a mating material of minimum 300HB
- for aluminum bronze alloys a mating material of a minimum 400HB
- optimal mating material 500HB
- recommended surface finish <1 Ra
- for stainless steel martensitic grades. An austenitic sliding surface should be hard chromed.

Friction

The coefficient of friction for the bronze bearing:

- in hydrodynamic lubrication = 0.001–0.02
- in the movement area = 0.02–0.08
- in a mixed friction area = 0.08–0.15
- solid lubrication = 0.08–0.25

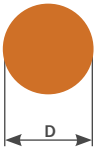
Tolerance and recommendations for bearing housing and axles

Our selection covers seven different types of slide bearings designed for demanding different operations:

- Cast bronze bearings for grease and oil lubrication. Over 200 standard size bearings from stock, (max D 210) Special size bearings according to order.
- Sintered, self-lubricating sliding bearings. Over 250 standard diameter bearings from stock (max D 100 mm).
- Self-lubricating Frimet multiple-layer bearings. Flanged and straight. Over 250 standard diameter bearings from stock (radial bearings max D 160 mm, axial bearings max D 65 mm).
- Straight and flanged rolled bronze bearings, equipped with grease pockets and especially suitable for reciprocating movements.
- Bimet multiple-layer bearings for grease lubrication. Over 75 standard diameter bearings from stock (max D 75 mm).
- Self-lubricating, equipped with solid lubricant Oiles 500 bronze bearings. Base material and lubricant are chosen according to operation (max. load 90 N/mm^2).

JM 1 Round Bars

ALLOY	GUNMETAL	COLOUR CODE
JM 1–15	EN 1982 – CuSn5Zn5Pb5 – C	orange



Order instructions:

Round bar D-length mm, JM 1-15

Other sizes and round bars for automatic machining are produced by order, max D = 1220 mm.

Tolerances:

D10–D18 mm h10
D19–D50 mm h11

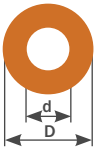
Diameter tolerance: +IT14, -0

Standard Dimensions

Diameter [mm]	Weight [kg/m]	Diameter [mm]	Weight [kg/m]	Diameter [mm]	Weight [kg/m]
13	1.2	51	18.2	142	140.9
16	1.8	56	21.9	152	161.5
19	2.5	61	26.0	162	183.4
21	3.1	67	31.0	172	207.0
23	3.7	72	35.8	182	232.0
26	4.7	77	41.0	192	258.0
29	5.9	82	46.4	202	285.0
31	6.7	87	52.3	222	344.0
33	7.6	92	58.5	252	444.0
36	9.1	97	65.8	Standard lengths	[mm]
39	10.6	102	72.7		
41	11.8	112	87.7	D13–D61	500, 1000, 2000
43	12.9	122	104.0	D67–D142	500, 1000
46	14.8	132	121.8	D152–D252	500

JM 1 Hollow Bars

ALLOY	GUNMETAL	COLOUR CODE
JM 1	EN 1982 – CuSn5Zn5Pb5 – C	orange



Order instructions:

Hollow bar D x d-length mm, JM 1-15

Other sizes and hollow bars for automatic machining are produced by order, max D = 1220 mm.

Tolerances:

D = +IT14, -0
d = +0, -IT15

Standard Dimensions

D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]
26 x 13	3.5	77 x 23	37.7	107 x 63	52.2	192 x 128	143.1
x 18	2.5	x 28	35.9	x 73	42.8	x 148	104.5
29 x 13	4.7	x 33	33.8	x 78	37.5	x 168	60.4
x 18	3.6	x 38	31.4	x 83	31.9	200+	
31 x 13	5.5	x 43	28.5	x 88	25.9	202 x 98	218.0
x 18	4.5	x 48	25.3	112 x 38	77.6	x 138	152.0
33 x 13	6.4	x 53	21.8	x 48	71.5	x 158	110.7
x 18	5.3	x 58	17.9	x 58	64.1	x 178	63.7
x 23	3.9	x 63	13.7	x 68	55.3	212 x 148	161.0
36 x 13	7.9	82 x 28	41.5	x 78	45.1	x 168	116.8
x 18	6.8	x 33	39.4	x 88	33.6	x 178	92.6
x 23	5.4	x 38	36.9	x 93	27.2	x 188	66.0
39 x 26	5.9	x 43	34.1	117 x 63	67.9	222 x 98	277.2
x 28	5.2	x 48	30.9	x 73	58.4	x 148	191.3
41 x 13	10.6	x 53	27.4	x 83	47.5	x 168	147.1
x 18	9.5	x 58	23.5	x 93	35.2	x 178	123.0
x 23	8.1	x 63	19.3	x 98	28.6	x 188	97.4
x 28	6.3	x 68	14.7	122 x 68	71.7	232 x 158	201.6
43 x 26	8.2	87 x 28	47.4	x 78	61.5	x 178	154.7
x 33	5.3	x 33	45.3	x 88	49.2	x 188	129.1
46 x 13	13.6	x 38	42.8	x 98	36.9	x 198	102.1
x 18	12.5	x 43	40.0	x 103	29.9	242 x 168	212.0
x 23	11.1	x 48	36.8	127 x 63	85.0	x 188	162.2
x 28	9.3	x 53	33.3	x 73	75.5	x 198	135.3

JM 1 Hollow Bars (cont.)

ALLOY
JM 1

GUNMETAL
EN 1982 – CuSn5Zn5Pb5 – C

COLOUR CODE
orange

Standard Dimensions

D x d [mm]	Weight [kg/m]
x 33	7.2
51 x 18	15.9
x 23	14.5
x 28	12.7
x 33	10.6
x 38	8.1
56 x 18	19.6
x 23	18.2
x 28	16.4
x 33	14.3
x 38	11.8
x 43	9.0
61 x 18	23.7
x 23	22.3
x 28	20.5
x 33	18.4
x 38	15.9
x 43	13.1
x 48	9.9
67 x 18	29.1
x 23	27.7
x 28	25.9
x 33	23.8
x 38	21.3
x 43	18.5
x 48	15.3
x 53	11.7
72 x 18	34.0
x 23	32.5
x 28	30.8
x 33	28.6
x 38	26.1
x 43	23.3
x 48	20.1
x 53	16.6

D x d [mm]	Weight [kg/m]
x 58	12.7
x 58	29.4
x 63	25.2
x 68	20.6
x 73	15.7
92 x 28	53.7
x 33	51.5
x 38	49.0
x 43	46.2
x 48	43.1
x 53	39.5
x 58	35.6
x 63	31.4
x 68	26.8
x 73	21.9
x 78	16.6
97 x 38	56.6
x 43	52.8
x 48	49.6
x 53	46.1
x 58	42.3
x 63	38.0
x 68	33.4
x 73	28.5
x 78	23.2
x 83	17.6
100+	
102 x 38	62.6
x 48	56.6
x 58	49.2
x 68	40.4
x 73	35.0
x 78	30.2
x 83	24.6
x 88	18.6

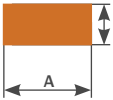
D x d [mm]	Weight [kg/m]
x 83	64.6
x 93	52.3
x 103	38.6
x 108	31.2
132 x 78	79.2
x 88	67.6
x 98	53.9
x 108	40.2
137 x 73	93.9
x 93	70.7
x 103	57.0
142 x 58	117.4
x 78	98.4
x 98	73.0
x 108	58.7
x 118	43.6
147 x 103	76.9
x 123	45.3
152 x 88	107.3
x 98	94.3
x 108	79.9
x 118	64.1
x 128	47.0
162 x 98	116.3
x 118	86.1
x 128	68.9
x 138	50.3
172 x 108	125.2
x 128	92.2
x 138	73.6
x 148	53.7
182 x 118	134.1
x 138	98.4
x 148	78.4
x 158	57.0

D x d [mm]	Weight [kg/m]
x 208	106.9
252 x 178	222.3
x 198	169.8
x 208	141.4
x 218	111.6
262 x 218	147.6
x 228	116.4
272 x 168	319.7
x 228	153.7
x 238	121.1
282 x 238	159.9
x 248	125.9
292 x 188	348.8
x 248	166.0
302 x 198	363.3
x 258	172.1
332 x 273	249.4
362 x 293	315.8
392 x 343	251.6

Standard lengths	[mm]
D26–D56	500, 1000, 2000
D61–D500	500, 1000

JM 1 Rectangular and Hexagonal Bars

ALLOY		COLOUR CODE
JM 1–15	GUNMETAL EN 1982 – CuSn5Zn5Pb5 – C	orange



Order instructions:	Tolerances:
Rectangular bar AXB-length mm, JM 1-15 Other sizes are produced by order.	**+IT15, -0**

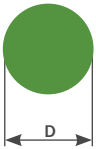
Order instructions:	Tolerances:
Hexagonal bar AXB-length mm, JM 1-15 Other sizes are produced by order.	**AV h11**

Standard Dimensions

Rectangular		Rectangular		Hexagonal	
A x B [mm]	Weight [kg/m]	A x B [mm]	Weight [kg/m]	AV [mm]	Weight [kg/m]
32 x 32	9.1	102 x 12	10.9	17	2.2
42 x 42	15.7	x 14	12.7	18	2.5
52 x 12	5.6	x 18	16.3	20	3.1
x 14	6.5	x 22	20.2	22	3.7
x 18	8.3	122 x 18	19.5	23	4.1
x 22	10.2	x 22	23.9	24	4.4
x 52	24.1	142 x 18	22.7	26	5.2
67 x 12	7.2	x 22	27.8	28	6.0
x 14	8.3	162 x 18	26.0	30	6.9
x 18	10.7	x 22	31.7	32	7.9
x 22	13.1	182 x 18	29.2	34	8.9
x 32	19.1	x 22	35.6	36	10.0
82 x 12	8.8	202 x 18	32.4	38	11.1
x 14	10.2	x 22	39.6	41	13.0
x 18	13.1			44	14.9
x 22	16.1			46	16.3
				50	19.3
				52	20.9

JM 3 Round Bars

ALLOY		COLOUR CODE
JM 3–15	TIN BRONZE EN 1982 – CuSn12 – C	green



Order instructions:

Round bar D-length mm, JM 3-15

Other sizes are produced by order,
max D = 1220 mm.

Tolerances:

D10–D18 mm h10
D19–D50 mm h11

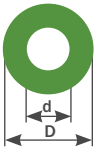
Diameter tolerance:
+IT14, -0

Standard Dimensions

Diameter [mm]	Weight [kg/m]	Diameter [mm]	Weight [kg/m]	Diameter [mm]	Weight [kg/m]
13	1.2	51	18.2	142	140.9
16	1.8	56	21.9	152	161.5
19	2.5	61	26.0	162	183.4
21	3.1	67	31.0	172	207.0
23	3.7	72	35.8	182	232.0
26	4.7	77	41.0	192	258.0
29	5.9	82	46.4	202	285.0
31	6.7	87	52.3	222	344.0
33	7.6	92	58.5	252	444.0
36	9.1	97	65.8	Standard lengths	[mm]
39	10.6	102	72.7		
41	11.8	112	87.7	D13–D61	500, 1000, 2000
43	12.9	122	104.0	D67–D142	500, 1000
46	14.8	132	121.8	D152–D252	500

JM 3 Hollow Bars

ALLOY		COLOUR CODE
JM 3–15	TIN BRONZE EN 1982 – CuSn12 – C	green



Order instructions:

Hollow bar D-length mm, JM 3-15

Other sizes are produced by order,
max D = 1220 mm.

Tolerances:

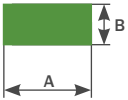
D = +IT14, -0
d = +0, -IT15

Standard Dimensions

D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]
26 x 13	3.5	61 x 28	20.5	82 x 58	23.5	122 x 98	36.9
29 x 13	4.7	x 38	15.9	87 x 58	29.4	127 x 63	85.0
31 x 13	5.5	x 48	9.9	92 x 48	43.1	132 x 98	54.7
33 x 13	6.4	67 x 43	18.5	x 68	26.8	142 x 78	98.4
36 x 18	6.8	72 x 18	34.0	97 x 68	33.4	152 x 118	64.1
41 x 18	9.5	x 28	30.8	102 x 48	56.6	162 x 98	116.3
43 x 26	8.2	x 38	26.1	107 x 63	52.2	182 x 128	117.5
46 x 23	11.1	x 48	20.1	112 x 48	71.5	202 x 98	218.0
x 33	7.2	x 53	16.6	107 x 63	52.2	x 138	152.0
51 x 18	15.9	77 x 53	21.8	112 x 48	71.5	232 x 158	201.6
x 28	12.7	82 x 28	41.5	x 78	45.1	242 x 168	212.0
x 38	8.1	x 43	34.1	117 x 73	58.4	272 x 168	319.7
56 x 33	14.3	x 58	23.5	122 x 68	71.7	302 x 198	363.3

JM 3 Rectangular and Hexagonal Bars

ALLOY		COLOUR CODE
JM 3–15	TIN BRONZE EN 1982 – CuSn12 – C	green



Order instructions:	Tolerances:
A x B -length mm, JM 3-15 Other sizes are produced by order.	**+IT15, -0**

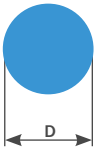
Standard Dimensions

A x B [mm]	Weight [kg/m]	A x B [mm]	Weight [kg/m]
32 x 32	9.1	102 x 12	10.9
42 x 42	15.7	x 14	12.7
52 x 12	5.6	x 18	16.3
x 14	6.5	x 22	20.2
x 18	8.3	122 x 18	19.5
x 22	10.2	x 22	23.9
x 52	24.1	142 x 18	22.7
67 x 12	7.2	x 22	27.8
x 14	8.3	162 x 18	26.0
x 18	10.7	x 22	31.7
x 22	13.1	182 x 18	29.2
x 32	19.1	x 22	35.6
82 x 12	8.8	202 x 18	32.4
x 14	10.2	x 22	39.6
x 18	13.1		
x 22	16.1		

Standard lengths [mm]	500	1000	2000

JM 5 Round Bars

ALLOY		COLOUR CODE
JM 5–15	LEADED TIN BRONZE EN 1982 – CuSn10Pb10 – C	blue



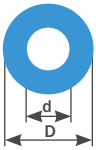
Order instructions:	Tolerances:
Round bar D-length mm, JM 5-15 Other sizes are produced by order, max D = 1220 mm.	**D = +IT14, -0**

Standard Dimensions	
Diameter [mm]	Weight [kg/m]
21	3.1
26	4.7
31	6.7
41	11.8
51	18.2
61	26.0
72	35.8
82	46.4
92	58.5
102	72.7
112	87.7
122	104.0

Standard lengths	[mm]
D13–D61	500, 1000, 2000
D72–D122	500, 1000

JM 5 Hollow Bars

ALLOY		COLOUR CODE
JM 5–15	LEADED TIN BRONZE EN 1982 – CuSn10Pb10 – C	blue



Order instructions:

Hollow bar D x d –length mm, JM 5-15

Other sizes are produced by order.
max D = 1220 mm.

Tolerances:

D = +IT14, -0
d = +0, -IT15

Standard Dimensions

Diameter [mm]	Weight [kg/m]
26 x 13	3.5
29 x 13	4.7
31 x 13	5.5
33 x 18	5.3
36 x 18	6.8
41 x 18	9.5
43 x 26	8.2
46 x 13	13.6
x 23	11.1
x 33	7.2
51 x 18	15.9
x 28	12.7

Diameter [mm]	Weight [kg/m]
61 x 18	23.7
x 48	9.9
82 x 28	41.5
102 x 58	49.2
127 x 63	85.0
162 x 98	116.3
202 x 98	218.0

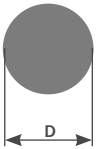
Standard lengths	[mm]
D26–D51	500, 1000, 2000
D61–D500	500, 1000

JM 7 Round Bars

ALLOY
JM 7–15/20

ALUMINUM BRONZE
EN 1982 – CuAl10Fe5Ni5 – C

COLOUR CODE
white



Order instructions:

Round bar D-length mm, JM 7-20

Other sizes are produced by order, max D = 1220 mm.

Tolerances:

D10–D18 = h10
D19–D50 = h11
D>51 = +IT14, -0

Standard Dimensions

Diameter [mm]	Weight [kg/m]	Diameter [mm]	Weight [kg/m]	Diameter [mm]	Weight [kg/m]
10	0.6	56	18.7	142	120.4
13	1.0	61	22.2	152	137.9
16	1.5	67	26.0	162	156.7
19	2.2	71	30.1	182	197.8
21	2.6	76	34.5	192	220.1
23	3.2	81	39.2		
26	4.0	86	44.2		
31	5.7	91	49.4		
33	6.5	97	56.2		
36	7.7	102	62.1		
39	9.1	112	74.9		
41	10.0	122	88.9		
46	12.6	132	104.0		
51	15.5	135	108.7		

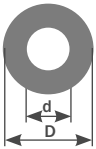
Standard lengths	[mm]
D10–D61	500, 1000, 2000
D66–D142	500, 1000
D152–D192	500

JM 7 Hollow Bars

ALLOY
JM 7–15/20

ALUMINUM BRONZE
EN 1982 – CuAl10Fe5Ni5 – C

COLOUR CODE
white



Order instructions:

Hollow bar D x d-length mm, JM 7-15

Other sizes are produced by order, max D = 1220 mm.

Tolerances:

D<162 = +IT14, -0 d
= +0, -IT15

D>162 = +IT16, -0 d
= +0, -IT15

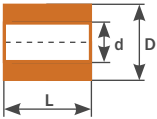
Standard Dimensions

D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]	D x d [mm]	Weight [kg/m]
33 x 18	4.6	72 x 23	27.8	102 x 48	48.4	172 x 108	107.0
42 x 28	5.9	x 38	22.3	x 58	42.0	182 x 128	99.9
47 x 23	10.0	x 48	17.2	x 68	34.5	192 x 148	89.3
x 28	8.5	x 58	10.9	x 78	25.8	202 x 148	112.8
52 x 18	14.2	77 x 58	15.3	112 x 48	61.1	212 x 158	119.2
x 23	13.0	82 x 38	31.5	x 58	54.8	222 x 168	125.7
x 28	11.5	x 48	26.4	x 68	47.3	232 x 178	132.1
x 38	7.5	x 58	20.1	x 88	28.7	242 x 188	138.6
57 x 43	8.4	x 68	12.5	122 x 68	61.2	252 x 178	189.9
62 x 18	21.0	87 x 38	36.6	x 88	42.6	262 x 198	175.7
x 28	18.3	x 58	25.1	x 98	31.5	282 x 218	191.0
x 38	14.3	92 x 48	36.8	132 x 78	67.7	302 x 198	310.4
x 48	9.2	x 58	30.4	142 x 88	74.1	322 x 238	280.8
67 x 43	15.8	x 68	22.9	152 x 98	80.6	332 x 248	290.9
				162 x 118	73.5	362 x 293	269.8
						402 x 348	241.8

Johnson Bearings J

ALLOY
JM 1

GUNMETAL
EN 1982 – CuSn5Zn5Pb5 – C



Order instructions:

Bearing J d x L

Not all sizes are in stock.

Sizes d <12 mm are produced without lubrication groove. Others with lubrication groove parallel to the shaft.

Standard Dimensions

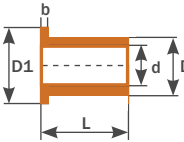
Diameters [mm]		Length series L [mm]		
d	D	1	2	3
5	10	6	8	10
6	12	6	8	12
7	12	8	10	12
8	14	8	12	16
9	14	10	16	20
10	16	10	16	20
12	18	12	16	25
14	20	12	20	30
15	22	16	20	30
16	22	16	20	30
17	25	16	20	30
18	25	16	20	30
20	28	20	20	40
22	32	20	30	40
25	35	25	30	50
28	40	25	35	50
30	40	30	45	60
35	45	35	50	70
40	50	40	60	80
45	55	45	60	80
50	60	50	70	100
55	70	50	70	100
60	75	60	90	120
65	80	60	90	120
70	85	60	90	120

Diameters [mm]		Length series L [mm]		
d	D	1	2	3
75	90	70	100	140
80	95	70	100	140
85	100	70	100	140
90	110	80	120	160
95	115	80	120	160
100	120	80	120	160
105	125	80	120	160
110	130	80	140	200
120	140	80	140	200
130	150	90	140	200
140	160	90	160	200
150	170	100	160	240
160	180	100	160	240
170	190	100	160	240
180	200	100	160	240
190	210	120	200	300
200	220	120	200	300
210	230	120	200	300
220	240	140	250	350
230	250	140	250	350
240	260	140	250	350
250	270	140	250	350

Johnson Flanged Bearings JF

ALLOY
JM 1

GUNMETAL
EN 1982 – CuSn5Zn5Pb5 – C



Order instructions:

Flanged bearing JF d x L

Not all sizes are in stock.

Sizes d <12 mm are produced without lubrication groove. Others with lubrication groove parallel to the shaft.

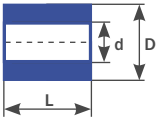
Standard Dimensions

Diameters [mm]			Length series L [mm]		
d	D	D1	B	1	2
5	10	12	2		6
6	12	14	2		6
7	12	16	3		8
8	14	18	3		8
9	14	18	3	8	10
10	16	20	3	8	10
12	18	22	3	10	12
14	20	25	3	10	12
15	22	28	3	12	16
16	22	28	4	12	16
17	25	32	4	12	16
18	25	32	4	12	16
20	28	35	4	16	20
22	32	40	5	16	20
25	35	45	5	16	25
28	40	50	5	16	25
30	40	50	5	20	30
35	45	55	5	20	35
40	50	60	6	25	40
45	55	65	6	30	45
50	60	70	6	30	50
55	70	80	8	30	50
60	75	85	8	35	60
65	80	90	8	35	60
70	85	90	8	35	60

Diameters [mm]			Length series L [mm]		
d	D	D1	B	1	2
75	90	100	8	40	70
80	95	105	8	40	70
85	100	110	8	40	70
90	110	120	8	50	80
95	115	125	8	50	80
100	120	130	8	50	80
105	125	135	8	50	80
110	130	140	8	50	80
120	140	150	8	50	80
130	150	165	10	60	90
140	160	175	10	60	90
150	170	185	10	70	100
160	180	195	10	70	100
170	190	205	10	70	100
180	200	215	10	70	100
190	210	225	10	80	120
200	220	235	10	80	120
210	230	245	10	80	120
220	240	255	10	100	140
230	250	265	10	100	140
240	260	275	10	100	140
250	270	285	10	100	140

Oil Bronze Bearings, straight

SMS 777 and SS2991 (ISO 2795)



Order instructions:

Bearing 777 d / D x L

Self lubricating sintered oil bronze bearing

Standard Dimensions

Diameters [mm]		Length series L [mm]				
d	D	1	2	3	4	5
2	4	4	-	-	-	-
3	8	4	-	-	-	-
4	8	4	6	8	-	-
4	10	8	-	-	-	-
5	10	6	8	10	-	-
5	12	10	-	-	-	-
6	9	4	6	10	-	-
6	10	4	6	10	-	-
6	12	6	8	12	-	-
6	14	12	-	-	-	-
8	11	6	8	12	-	-
8	12	6	8	12	-	-
8	14	8	12	16	-	-
8	18	16	-	-	-	-
10	14	8	10	16	-	-
10	16	8	10	16	20	-
10	22	20	-	-	-	-
12	16	8	12	20	-	-
12	18	8	12	16	20	25
12	25	25	-	-	-	-
14	18	10	14	20	-	-
14	20	10	12	14	20	30

Diameters [mm]		Length series L [mm]				
d	D	1	2	3	4	5
25	30	20	25	30	-	-
25	32	20	25	30	35	-
25	35	25	35	50	-	-
25	45	35	-	-	-	-
30	35	20	25	30	-	-
30	38	20	25	30	40	-
30	40	30	45	60	-	-
30	50	60	-	-	-	-
35	41	25	35	40	-	-
35	45	25	35	40	50	70
40	46	30	40	50	-	-
40	50	30	40	50	60	80
45	51	35	45	55	-	-
45	55	35	45	55	60	65
45	65	80	-	-	-	-
50	60	35	50	70	100	-
50	70	70	-	-	-	-
55	65	40	55	70	-	-
55	70	70	-	-	-	-
60	68	50	60	70	-	-
60	72	50	60	70	-	-
60	75	60	90	-	-	-

Oil Bronze Bearings, straight

SMS 777 and SS2991 (ISO 2795), cont.

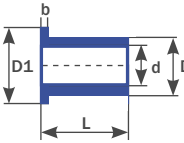
Standard Dimensions

Diameters [mm]		Length series L [mm]				
d	D	1	2	3	4	5
14	28	30	-	-	-	-
15	19	10	15	25	-	-
15	21	10	15	25	-	-
15	22	16	20	30	-	-
15	30	30	-	-	-	-
16	20	12	16	25	-	-
16	22	12	16	20	25	30
16	32	30	-	-	-	-
18	22	12	18	30	-	-
18	24	12	18	30	-	-
18	25	16	20	30	-	-
18	35	30	-	-	-	-
20	25	15	20	25	-	-
20	26	15	20	25	30	-
20	28	20	30	40	-	-
20	40	40	-	-	-	-
22	27	15	20	25	-	-
22	32	20	30	-	-	-

Diameters [mm]		Length series L [mm]				
d	D	1	2	3	4	5
60	85	90	-	-	-	-
65	75	60	90	-	-	-
65	80	60	90	-	-	-
70	80	60	90	-	-	-
70	85	60	90	-	-	-
75	85	70	100	-	-	-
75	90	70	100	-	-	-
75	100	100	-	-	-	-
80	90	70	100	-	-	-
80	95	70	100	-	-	-
80	105	100	-	-	-	-
85	95	100	-	-	-	-
85	100	100	-	-	-	-
90	105	80	-	-	-	-
90	110	80	-	-	-	-
100	120	80	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Oil Bronze Bearings, flanged

SMS 779 and SS 2992 (ISO 2795)



Order instructions:

Flanged bearing 779
d / D x L - D1 x B

Self-lubricating sintered oil bronze bearing.

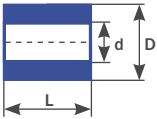
Porous bronze bearing with oil lubrication based function. Parent material analysis: Cu 89.5%, SN 9.3% and C 1.2%. Oil content ca. 25 volume-%. Most typical field of application is higher (over 0.3 m/s) sliding speed in radial movements, but use at lower sliding speeds is also possible. Surface load will maximum be 30 N/mm².

Standard Dimensions

Diameters [mm]				Length series L [mm]				Diameters [mm]				Length series L [mm]			
d	D	D1	B	1	2	3	4	d	D	D1	B	1	2	3	4
3	5	8	1.5	4	-	-	-	20	26	32	4	15	20	25	30
3	6	9	1.5	4	-	-	-	20	28	35	4	16	20	-	-
4	8	10	1.5	6	-	-	-	25	32	39	3.5	20	25	30	-
4	8	12	2	4	6	-	-	25	35	45	5	16	25	-	-
5	9	13	2	4	5	8	-	30	38	46	4	20	25	30	-
5	10	12	2	6	-	-	-	30	40	50	5	20	30	-	-
6	10	14	2	4	6	10	-	35	45	55	5	20	25	35	40
6	12	14	2	6	-	-	-	40	50	60	5	30	40	50	-
8	12	16	2	6	8	12	-	40	50	60	6	25	40	-	-
8	14	18	3	8	-	-	-	45	55	65	5	35	45	55	-
10	16	20	3	8	10	-	-	45	55	65	6	30	45	-	-
10	16	22	3	8	10	16	-	50	60	70	5	35	50	-	-
12	18	22	3	10	12	-	-	50	60	70	6	30	50	-	-
12	18	24	3	8	12	20	-	60	72	84	6	50	60	-	-
14	20	25	3	10	12	-	-	60	75	85	8	35	60	-	-
14	20	26	3	10	14	20	-	70	85	95	8	60	-	-	-
15	21	27	3	10	15	25	-	80	95	105	8	70	-	-	-
15	22	28	3	12	16	-	-	90	110	120	8	50	-	-	-
16	22	28	3	12	16	25	-	100	120	130	8	80	-	-	-
16	22	28	4	12	16	-	-	-	-	-	-	-	-	-	-
18	24	30	3	12	18	30	-	-	-	-	-	-	-	-	-
18	25	32	4	12	16	-	-	-	-	-	-	-	-	-	-

Drymet Radial Bearings

Drymet 701



Order instructions:

Drymet 701-dL

Steel sintered bronze layer oil impregnated acetal plastic

Other sizes are produced by order.

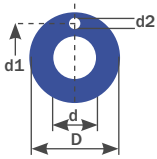
Thin-walled multilayer steel chassis bearing, with an oil-saturated acetal plastic surface. The bearing is self-lubricating however, additional grease or oil lubrication is recommended. Especially in low sliding speeds, intermittent operation, reciprocating and radial movements and in heavy loads, the advantages of this bearing are considerable. Maximum surface load ca. 80 N/mm^2.

Standard Dimensions

Diameters [mm]		Length series L [mm]				Diameters [mm]		Length series L [mm]			
d	D	1	2	3	4	d	D	1	2	3	4
5	7	5	-	-	-	45	50	30	-	40	60
6	8	6	10	-	-	50	55	30	40	60	-
8	10	8	10	12	-	55	60	-	40	60	-
10	12	10	15	20	-	60	65	-	40	60	-
12	14	10	15	20	-	65	70	-	40	60	-
14	16	-	15	20	-	70	75	-	40	80	-
15	17	15	-	25	-	75	80	-	40	80	-
16	18	15	20	25	-	80	85	-	40	80	-
18	20	15	20	25	-	85	90	-	40	80	-
20	23	15	20	25	30	90	95	40	50	90	100
22	25	15	20	25	30	100	105	-	50	95	100
24	27	15	20	25	30	110	115	-	50	95	100
25	28	15	20	25	30	120	125	-	50	95	100
28	32	-	25	-	40	130	135	-	80	-	125
30	34	20	25	30	40	140	145	-	-	100	-
35	39	20	25	30	40	150	155	-	-	100	-
35	39	-	-	-	50	160	165	-	-	-	125
40	44	20	30	-	50	-	-	-	-	-	-
40	45	25	-	40	-	-	-	-	-	-	-

Drymet Thrust Bearings

Drymet 705



Order instructions:
Drymet 705-d
Self-lubricating multilayered bearing

Special sizes are produced by order, max D = 1200 mm

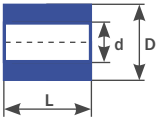
Thin-walled multilayer steel chassis bearing, with an oil-saturated acetal plastic surface. The bearing is self-lubricating however, additional grease or oil lubrication is recommended. Especially in low sliding speeds, intermittent operation, reciprocating and radial movements and with heavy loads, the advantages of this bearing are considerable. Maximum surface load ca. 80 N/mm^2.

Standard Dimensions

d [mm]	D [mm]	t [mm]	d1 [mm]	d2 [mm]
10	20	1.5	15	1.5
12	24	1.5	18	1.5
14	26	1.5	20	2.0
18	32	1.5	25	2.0
20	36	1.5	28	3.0
23	40	1.5	31.5	3.0
28	48	1.5	38	3.0
34	58	1.5	46	3.0
39	66	2.0	52.5	3.0
47	78	2.0	62.5	4.0
50	84	2.5	67	4.0
55	92	2.5	73.5	5.0
60	100	2.5	80	5.0
65	108	2.5	86.5	5.0

Frimet Radial Bearings, straight

Frimet, straight



Order instructions:
Frimet, straight d x L
Self-lubricating multilayer bearing.

Special sizes are produced by order.

Material: Steel sintered bronze layer
Sliding surface: PTFE ja Pb.

Thin-walled multilayer steel chassis bearing with a lead alloy PTFE surface. The bearing is self-lubricating and is recommended for slow movement and high temperatures, in which lubrication oil does not work.

Standard Dimensions

Diameters [mm]		Length series L [mm]					
d	D	1	2	3	4	5	6
Tolerance, Shaft/housing, h6/H6							
3	4.5	3	4	5	6	-	-
4	5.5	3	4	6	10	-	-
Tolerance, Shaft/housing, f7/H7							
5	7	5	8	10	-	-	-
6	8	6	8	10	-	-	-
8	10	8	10	12	-	-	-
10	12	8	10	12	15	20	-
12	14	8	10	12	15	20	25
13	15	10	15	20	25	-	-
14	16	10	12	15	20	25	-
15	17	10	12	15	20	25	-
16	18	10	12	15	20	25	30
17	19	15	20	25	-	-	-
18	20	15	20	25	-	-	-
20	22	10	15	20	25	-	-
20	23	10	15	20	25	30	-
22	25	15	20	25	30	-	-
24	27	15	20	25	30	-	-
25	28	12	15	20	25	30	-
24	28	15	20	25	30	-	-
28	32	20	25	30	-	-	-
30	34	15	20	25	30	40	-
32	36	20	30	40	-	-	-
35	39	20	30	35	40	50	-
40	44	20	30	40	50	-	-
45	50	20	30	40	50	-	-
50	55	20	25	30	40	50	60

Frimet Radial Bearings, straight

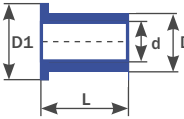
Frimet, straight (cont.)

Standard Dimensions

Diameters [mm]		Length series L [mm]					
d	D	1	2	3	4	5	6
55	60	20	25	30	40	50	60
60	65	30	40	60	70	-	-
65	70	30	35	50	60	70	-
70	75	40	50	60	70	-	-
75	80	40	50	60	70	80	-
Tolerance, Shaft/housing, h8/H7							
80	85	40	60	100	-	-	-
85	90	60	100	-	-	-	-
90	95	60	100	-	-	-	-
95	100	60	100	-	-	-	-
100	105	60	70	80	100	115	-
105	110	60	100	115	-	-	-
110	115	60	100	115	-	-	-
115	120	60	70	100	115	-	-
120	125	60	100	-	-	-	-
125	130	60	100	-	-	-	-
130	135	60	100	-	-	-	-
135	140	60	100	-	-	-	-
140	145	60	100	-	-	-	-
145	150	60	100	-	-	-	-
150	155	60	100	-	-	-	-
155	160	60	100	-	-	-	-
160	165	60	80	100	-	-	-
165	170	60	100	-	-	-	-
170	175	60	100	-	-	-	-
175	180	60	100	-	-	-	-
180	185	60	100	-	-	-	-
200	205	60	100	-	-	-	-
205	210	60	100	-	-	-	-
210	215	60	100	-	-	-	-
215	220	60	100	-	-	-	-
220	225	60	100	-	-	-	-
230	235	60	100	-	-	-	-
240	245	60	100	-	-	-	-
250	255	60	100	-	-	-	-
280	285	60	100	-	-	-	-
300	305	60	100	-	-	-	-

Frimet Radial Bearings, flanged

Frimet, flanged



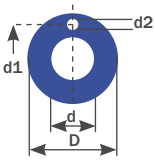
Order instructions: Frimet, flanged d x L Limited stock.	Material: Steel sintered bronze layer Sliding surface: PTFE and Pb. Thin-walled multilayer steel chassis bearing with a lead alloy PTFE surface. The bearing is self-lubricating and is recommended for slow movement and high temperatures, in which lubrication oil does not work.	Tolerances: Shaft/housing f7/H7

Standard Dimensions

Diameters [mm]			Length series L [mm]			
d	D	D1	1	2	3	4
6	8	12	4	7	8	-
8	10	15	5.5	7.5	9.5	-
10	12	18	7	9	12	17
12	14	20	7	9	12	17
14	16	22	12	17	-	-
15	17	23	9	12	17	-
16	18	24	12	17	-	-
18	20	26	12	17	22	-
20	23	30	11.5	16.5	21.5	-
25	28	35	11.5	16.5	21.5	-
30	34	42	16	26	-	-
35	39	47	16	26	-	-
40	44	53	26	-	-	-

Frimet Thrust Bearings

Frimet



Order instructions for bearings:
Frimet, thrust bearing d

Order instructions for strips:
Frimet, strip bxt

Limited stock.

Material: Steel sintered bronze layer
Sliding surface: PTFE and Pb.

Thin-walled multilayer steel chassis bearing with a lead alloy PTFE surface. The bearing is self-lubricating and is recommended for slow movement and high temperatures, in which lubrication oil does not work.

Standard Dimensions, Frimet Trust bearing

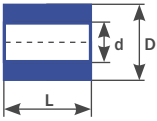
d [mm]	D [mm]	D2 [mm]	d1 [mm]	d2 [mm]
10	20	1.5	15	1.5
12	24	1.5	18	1.5
14	26	1.5	20	2.0
16	30	1.5	22	2.0
18	32	1.5	25	2.0
20	36	1.5	28	3.0
22	38	1.5	30	3.0
26	44	1.5	35	3.0
28	48	1.5	38	4.0
32	54	1.5	43	4.0
38	62	1.5	50	4.0
42	66	1.5	54	4.0
48	74	2.0	61	4.0
52	78	2.0	65	4.0
62	90	2.0	76	4.0

Standard Dimensions, Frimet Strips

b [mm]	t [mm]				
280	1.0	1.5	2.0	2.5	3.0

Rolled Bronze Bearings

BMR 10, straight



Order instructions:

BRM 10, straight d x L

Norm: DIN 1494
Material: CuSn8 (DIN 17662)

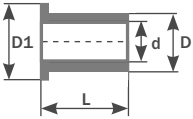
Rolled sliding bearing according to DIN 17662, made from tin bronze plate by rolling. The sliding surface, storing lubricant, is equipped with grease pockets.

Standard Dimensions

Diameters [mm]		Length series L [mm]						Diameters [mm]		Length series L [mm]	
d	D	1	2	3	4	5	6	d	D	1	2
10	12	10	15	20	-	-	-	90	95	60	100
12	14	10	15	20	-	-	-	95	100	60	100
13	15	-	15	20	-	-	-	100	105	60	100
14	16	10	15	20	25	-	-	105	110	60	100
15	17	10	15	20	25	-	-	110	115	60	100
16	18	10	15	20	20	-	-	115	120	60	100
17	19	-	15	20	-	-	-	120	125	60	100
18	20	-	15	20	25	-	-	125	130	60	100
20	22	10	15	20	25	-	-	130	135	60	100
20	23	15	20	25	25	30	-	135	140	60	100
22	25	15	20	25	30	-	-	140	145	60	100
24	27	15	20	25	30	-	-	145	150	60	100
24	28	15	20	25	30	-	-	150	155	60	100
25	28	15	20	25	30	50	-	155	160	60	100
28	32	-	20	25	30	-	-	160	165	60	100
30	34	15	20	25	30	40	-	165	170	60	100
32	36	-	20	-	30	40	-	170	175	60	100
35	39	20	30	35	40	50	-	175	180	60	100
40	44	20	30	-	40	50	-	180	185	60	100
45	50	20	30	-	40	50	-	200	205	60	100
50	55	20	25	30	40	50	60	205	210	60	100
55	60	20	25	30	40	50	60	210	215	60	100
60	65	30	-	40	-	60	70	215	220	60	100
65	70	30	-	-	50	60	70	220	225	60	100
70	75	40	50	60	70	-	-	230	240	60	100
75	80	40	50	60	70	80	-	240	250	60	100
80	85	40	-	60	-	-	100	250	255	60	100
85	90	-	-	60	-	-	100	280	285	60	100
-	-	-	-	-	-	-	-	300	305	60	100

Rolled Flanged Bearings

BMR 10, flanged



Order instructions:
BRM 10, flanged d x L

Special sizes are produced by order and are also delivered perforated, max D = 1200 mm

Norm: DIN 1494
Material: CuSn8 (DIN 17662)

Rolled sliding bearing according to DIN 17662, made from tin bronze plate by rolling. The sliding surface, storing lubricant, is equipped with grease pockets.

Standard Dimensions

Diameters [mm]			Length series L [mm]		Diameters [mm]			Length series L [mm]	
d	D	D1	1	2	d	D	D1	1	2
25	28	35	15	25	120	125	140	50	90
30	34	45	20	30	130	135	155	60	90
35	39	50	20	35	140	145	165	60	90
40	44	55	25	40	150	155	180	60	90
45	50	60	30	45	160	165	190	60	90
50	55	65	30	50	170	175	200	60	90
55	60	70	30	50	180	185	215	60	90
60	65	75	30	60	190	195	225	60	90
65	70	80	30	60	200	205	235	60	90
70	75	85	40	70	225	230	260	60	90
75	80	90	40	70	250	255	290	60	90
80	85	100	40	80	265	270	305	60	90
90	95	110	50	90	285	290	325	60	90
100	105	120	50	90	300	305	340	60	90
110	115	130	50	90					

Technical information of tool bronze

AMPCO	Recommendations for use	Cu [%]	Al [%]	Fe [%]	Ni [%]	Mn [%]	Cr [%]	Si [%]
18	Outstanding sliding and fatigue properties and excellent wear resistance. Good sliding properties against stainless steel	rest	10.5	3.5				
21	Great hardness and low strain. For tracks and bending studs in deepdrawing of the bar.	rest	12.8	4.5				
22	Harder than AMPCO 21. For deep drawing of stainless steel, cores, for ejector pins and rollers for tube manufacturing.	rest	13.8	5.0				
25	Bending studs and pressure pistons in the deep drawing of stainless steel, rollers and mandrel.							
45	For big mechanical loads in deep drawing conditions.	rest	10.0	3.5	5.0	1.0		
M-4	Good mechanical properties at high temperatures.	rest	11.0	4.8	5.1	1.0		
AMPCOLOY	**Recommendations for use**	**Cu [%]**	**Al [%]**	**Fe [%]**	**Ni [%]**	**Mn [%]**	**Cr [%]**	**Si [%]**
945	Be free. Option for alloy CuBe2. For seam-, spot- and project welding of stainless steel.	rest						2.8
940	RWMA 3. For spot welding electrodes for stainless steel.	rest					0.4	0.7
972	RMWA 2. The holders of the electrodes, for continuous casting of steel and aluminium for dies.	rest					1.1	

Other [%]	Tensile Strenght R_m [N/mm²]	0.2% Proof strength $Rp_{0.2}$ [N/mm²]	Hard-ness HBW	Elonga-tion A [%]	Density [kg/dm³]	Yield strength under com-pression [N/mm²]	Conduc-tivity [%] IACS	Thermal conductivity [W/mXK°]
<0.5	720	360	190	14	7.45	240		
<2.5	760	410	280	1	7.21	340		
<2.5	720	430	330	0.5	7.06	650		
			>340	0.2	6.93	710		
<0.5	810	520	230	10	7.53	270		
<0.5	990	790	290	8	7.45	730		
Other [%]	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Hard-ness HBW**	**Elonga-tion A [%]**	**Density [kg/dm³]**	**Yield strength under com-pression [N/mm²]**	**Conduc-tivity [%] IACS**	**Thermal conductivity [W/mXK°]**
	890	550	290	6	8.65	690	16	140
	660	>510	210	9-13	8.71	630	>26	190
<0.5	448-496	480	150	13	8.87		45	310

Casting alloy standards of copper metals

JM-1	Gunmetal, EN 1982 – CuSn5Zn5Pb5 – C	Cu [%]	Sn [%]	Pb [%]
-15	Most economic and mostly used sliding bearings for common use. Good wear resistance and sliding qualities.	83.0–87.0	4.0–6.0	4.0–6.0
-03	Not recommended for sliding bearings when sand cast, and not seawater resistant.			
JM-2	**TIN BRONZE, EN 1982 – CuSn10 – C**	**Cu [%]**	**Sn [%]**	**Pb [%]**
-15	Great strenght, combined with the best wear resistance. Recommended when strength staying within the dimension under impact and heavy loads is a requirement. Does not conform to edge loading. Mating material preferably hard and quenched. Good salt water resistance.	88.0–90.0	9.0–11.0	0–1.0
-03	Due to wear resistance the best sand cast alloys are alloys with plenty of tin (14%)			
JM-3	**TIN BRONZE, EN 1982 – CuSn12 – C**	**Cu [%]**	**Sn [%]**	**Pb [%]**
-15	Great strength combined with the best wear resistance. Recommended when staying within the dimension under impact and heavy loads is a requirement. Does not conform to edge loading. Mating material preferably hard and quenched. Good salt water resistance.	85.0–88.5	11.0–13.0	0–0.7
-03	Due to wear resistance the best sand cast alloys are alloys with plenty of tin (14%).			
JM-4	**LEADED TIN BRONZE, EN 1982 – CuSn7Pb15 – C**	**Cu [%]**	**Sn [%]**	**Pb [%]**
-15	When lubrication is intermittent or otherwise insufficient, these bearing bronzes have the best wear resistance and sliding properties. The bearing bronzes most suitable for water lubrication. Conforms to edge loading and have good saltwater resistance.	74.0–80.0	6.0–8.0	13.0–17.0
-03	Noticeably poorer wear resistance.			

When the alloying element is marked with an x, this is defined as an impurity and it will not be alloyed.
This may occur within the limits defined by the standard.

Zn [%]	Ni [%]	Al [%]	Fe [%]	Mn [%]	Density [kg/dm³]	Tensile Strenght R_m [N/mm²]	0.2% Proof strength $Rp_{0.2}$ [N/mm²]	Elongation A [%]	Brinell-hardness HBW
4.0–6.0	0.60–2.00	x	x–0.30	x	8.8	≥250	≥110	≥13	≥65
						≥200	≥90	≥13	≥60
Zn [%]	**Ni [%]**	**Al [%]**	**Fe [%]**	**Mn [%]**	**Density [kg/dm³]**	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Elongation A [%]**	**Brinell-hardness HBW**
x–0.5	0–2.0	x	x–0.20	x–0.10	8.8	≥280	≥160	≥10	≥80
						≥250	≥130	≥18	≥70
Zn [%]	**Ni [%]**	**Al [%]**	**Fe [%]**	**Mn [%]**	**Density [kg/dm³]**	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Elongation A [%]**	**Brinell-hardness HBW**
x–0.50	0–2.0	x–0.01	x–0.20	x–0.20	8.8	≥300	≥150	≥6	≥90
						≥260	≥140	≥7	≥80
Zn [%]	**Ni [%]**	**Al [%]**	**Fe [%]**	**Mn [%]**	**Density [kg/dm³]**	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Elongation A [%]**	**Brinell-hardness HBW**
0–2.0	0.5–2.0	x	x–0.25	x–0.20	9.1	≥200	≥90	≥8	≥65
						≥170	≥80	≥8	≥60

We also cast other EN 1982 standard alloys on demand. When placing such orders, references are to be made to the norm and the connected alloy.

Casting alloy standards of copper metals (cont.)

JM-5	LEADED TIN BRONZE, EN 1982 – CuSn10Pb10 – C	Cu [%]	Sn [%]	Pb [%]
-15	When lubrication is intermittent or otherwise insufficient these bearing bronzes have the best wear resistance and sliding properties. The best suitable bearing bronzes for water lubrication. Conforms to edge loading and have good saltwater resistance.	78–82	9.0–11.0	8.0–11.0
-03	Noticeably poorer wear resistance			
JM-6	**ALUMINUM BRONZE, EN 1982 – CuAl10Fe2 – C**	**Cu [%]**	**Sn [%]**	**Pb [%]**
-15	Material possesses great tenacity and high corrosion resistance. Sliding properties and wear resistance clearly poorer than above mentioned alloys. Only recommended for sliding bearings when yield properties of tin bronze are insufficient. Good saltwater resistance.	83–89.5	x–0.20	x–0.10
-03	Same properties			
JM-7	**ALUMINUM BRONZE, EN 1982 – CuAl10Fe5Ni5 – C**	**Cu [%]**	**Sn [%]**	**Pb [%]**
-15	Material possessing great tenacity and high corrosion resistance. Sliding properties and wear resistance clearly poorer than above mentioned alloys. Only recommended in slide bearings when yield properties of tin bronze are insufficient. Good saltwater resistance.	76.0–83.0	x–0.10	x–0.03
-03	Same properties			
-20	Same properties			
JM-15	MANGANESE BRONZE, EN 1982 – CuZn35Mn2Al1Fe1 – C	Cu [%]	Sn [%]	Pb [%]
-15	Material possessing great tenacity and high corrosion resistance. Sliding properties and wear resistance clearly poorer than above mentioned alloys. Only recommended in slide bearings when yield properties of tin bronze are insufficient. Good saltwater resistance.	57–65	0–1.0	x–0.5
-03	Same properties			

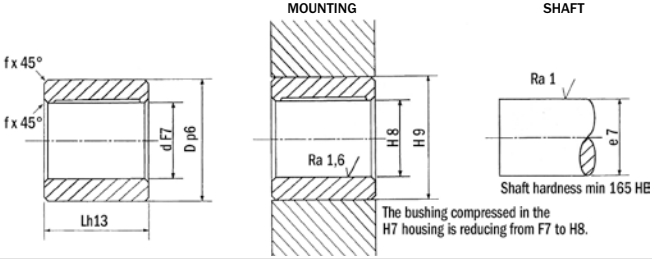
When the alloying element is marked with an x, this is defined as an impurity and it will not be alloyed. This may occur within the limits defined by the standard.

Zn [%]	Ni [%]	Al [%]	Fe [%]	Mn [%]	Density [kg/dm³]	Tensile Strenght R_m [N/mm²]	0.2% Proof strength $Rp_{0.2}$ [N/mm²]	Elongation A [%]	Brinell-hardness HBW
0–2.0	0–2.0	x	x–0.25	x–0.20	8.9	≥220	≥110	≥8	70
						≥180	≥80	≥8	≥60
Zn [%]	**Ni [%]**	**Al [%]**	**Fe [%]**	**Mn [%]**	**Density [kg/dm³]**	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Elongation A [%]**	**Brinell-hardness HBW**
x–0.50	0–1.5	8.15–10.5	1.5–3.5	0–1.0	7.6	≥550	≥200	≥15	≥130
						≥500	≥180	≥18	≥100
Zn [%]	**Ni [%]**	**Al [%]**	**Fe [%]**	**Mn [%]**	**Density [kg/dm³]**	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Elongation A [%]**	**Brinell-hardness HBW**
x–050	4.0–6.0	18.5–10.5	4.0–5.5	0–3.0	7.6	≥650	≥280	≥13	≥150
						≥600	≥250	≥13	≥140
Zn [%]	**Ni [%]**	**Al [%]**	**Fe [%]**	**Mn [%]**	**Density [kg/dm³]**	**Tensile Strenght R_m [N/mm²]**	**0.2% Proof strength $Rp_{0.2}$ [N/mm²]**	**Elongation A [%]**	**Brinell-hardness HBW**
Remain-der	0–6.0	0.5–2.5	0.5–2.0	0.5–3.0	8.2	≥500	≥200	≥18	≥120
						≥450	≥170	≥20	≥110

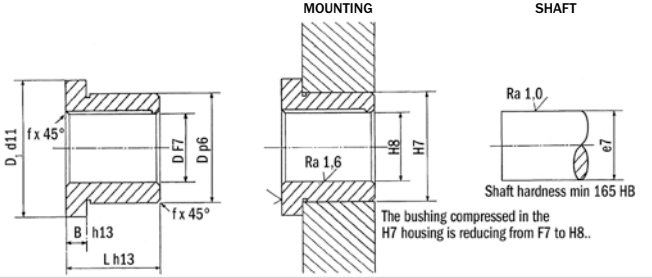
We also cast other EN 1982 standard alloys on demand. When placing such orders, references are to be made to the norm and the connected alloy.

Tolerances and recommendations for bearing houses and shafts

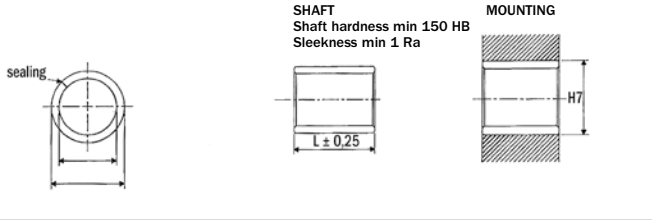
J-BUSHING



JF- FLANGED BUSHING

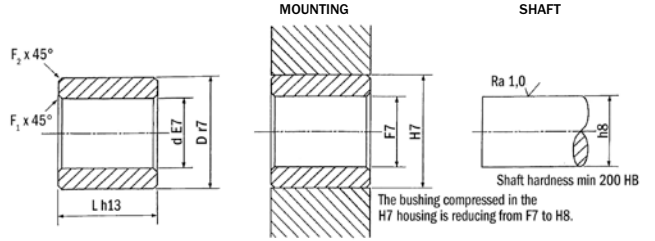


ROLLED BRONZE BEARING BRM 10

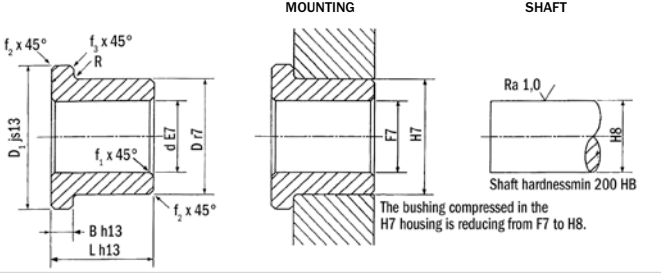


Tolerances and recommendations for bearing houses and shafts (cont.)

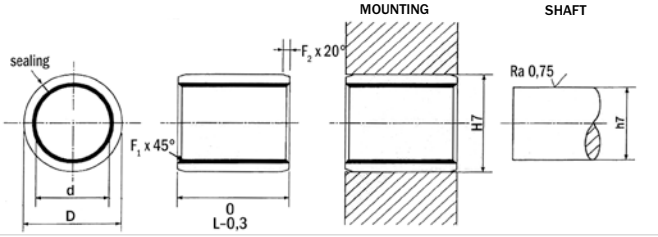
SINTERED BUSHING SMS 777



SINTERED FLANGED BUSHING



DRYMET 701 AND BIMET 5 RADIAL BEARINGS



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