



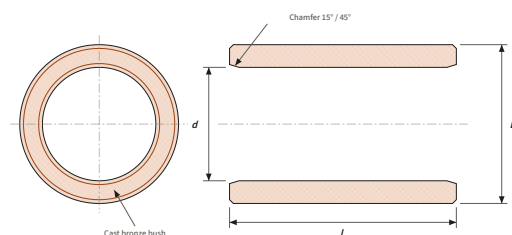
Cast Bronze Bushings – Metric Size Chart

ISO 4379 Type C sleeve · Type F flanged · thrust washers · tolerances · mm

Standard metric sleeve bushings to ISO 4379 Type C (the successor of DIN 1850-2): 46 bores from Ø6 to Ø200 mm, each with three outside diameters – thin, medium and thick wall – and the lengths the standard lists. Bore E6 as delivered (closes to approx. H8 in an H7 housing), outside s6 to Ø120 and r6 above, length h13. Bores in parentheses are for special applications only in ISO 4379.

Order code: grade – bore – outside Ø – length, each with at least two digits. 660-253020 = C93200, Ø25 × Ø30 × 20 mm; 660-100115100 = Ø100 × Ø115 × 100. Other grades replace 660 (937, 938, 483, 481, 480, 905, 836, 954, 955, AFM, 863); grooves -G2 ... -G8, oil hole -H.

Weights are for C93200 (8.93 g/cm³) at the medium wall D₂, shortest to longest standard length.



Sleeve bushings Ø6 – 50 mm

mm · deviations in µm (upper / lower) from ISO 286-2 · wall thickness in small type after each D

d bore	E6 µm	Outside diameter D · wall			s6 / r6 µm, at D ₂	Lengths L h13	Weight kg, D ₂ × L	Chamfer 45° / 15°
		D ₁ thin	D ₂ medium	D ₃ thick				
6	+28 / +20	8 1	10 2	12 3	+32 / +23	6 · 10	0.003 – 0.004	0.3 / 1
8	+34 / +25	10 1	12 2	14 3	+39 / +28	6 · 10	0.003 – 0.006	0.3 / 1
10	+34 / +25	12 1	14 2	16 3	+39 / +28	6 · 10	0.004 – 0.007	0.3 / 1
12	+43 / +32	14 1	16 2	18 3	+39 / +28	10 · 15 · 20	0.008 – 0.016	0.5 / 2
14	+43 / +32	16 1	18 2	20 3	+39 / +28	10 · 15 · 20	0.009 – 0.018	0.5 / 2
15	+43 / +32	17 1	19 2	21 3	+48 / +35	10 · 15 · 20	0.010 – 0.019	0.5 / 2
16	+43 / +32	18 1	20 2	22 3	+48 / +35	12 · 15 · 20	0.012 – 0.020	0.5 / 2
18	+43 / +32	20 1	22 2	24 3	+48 / +35	12 · 20 · 30	0.013 – 0.034	0.5 / 2
20	+53 / +40	23 1.5	24 2	26 3	+48 / +35	15 · 20 · 30	0.019 – 0.037	0.5 / 2
22	+53 / +40	25 1.5	26 2	28 3	+48 / +35	15 · 20 · 30	0.020 – 0.040	0.5 / 2
(24)	+53 / +40	27 1.5	28 2	30 3	+48 / +35	15 · 20 · 30	0.022 – 0.044	0.5 / 2
25	+53 / +40	28 1.5	30 2.5	32 3.5	+48 / +35	20 · 30 · 40	0.039 – 0.077	0.5 / 2
(27)	+53 / +40	30 1.5	32 2.5	34 3.5	+59 / +43	20 · 30 · 40	0.041 – 0.083	0.5 / 2
28	+53 / +40	32 2	34 3	36 4	+59 / +43	20 · 30 · 40	0.052 – 0.10	0.5 / 2
30	+53 / +40	34 2	36 3	38 4	+59 / +43	20 · 30 · 40	0.056 – 0.11	0.5 / 2
32	+66 / +50	36 2	38 3	40 4	+59 / +43	20 · 30 · 40	0.059 – 0.12	0.8 / 3
(33)	+66 / +50	37 2	40 3.5	42 4.5	+59 / +43	20 · 30 · 40	0.072 – 0.14	0.8 / 3
35	+66 / +50	39 2	41 3	45 5	+59 / +43	30 · 40 · 50	0.096 – 0.16	0.8 / 3
(36)	+66 / +50	40 2	42 3	46 5	+59 / +43	30 · 40 · 50	0.098 – 0.16	0.8 / 3
38	+66 / +50	42 2	45 3.5	48 5	+59 / +43	30 · 40 · 50	0.12 – 0.20	0.8 / 3
40	+66 / +50	44 2	48 4	50 5	+59 / +43	30 · 40 · 60	0.15 – 0.30	0.8 / 3
42	+66 / +50	46 2	50 4	52 5	+59 / +43	30 · 40 · 60	0.15 – 0.31	0.8 / 3
45	+66 / +50	50 2.5	53 4	55 5	+72 / +53	30 · 40 · 60	0.16 – 0.33	0.8 / 3
48	+66 / +50	53 2.5	56 4	58 5	+72 / +53	40 · 50 · 60	0.23 – 0.35	0.8 / 3
50	+66 / +50	55 2.5	58 4	60 5	+72 / +53	40 · 50 · 60	0.24 – 0.36	0.8 / 3

Continued: Ø55 – 200 mm on the next page



Sleeve bushings Ø55 – 200 mm, same fits and the same code rule. Above Ø150 mm we recommend shrink fitting (heat the housing or cool the bush) instead of pressing, and above Ø200 mm finishing the bore in place when several bushes must align. Larger bores – to Ø1000 mm – and any wall or length not listed are machined to drawing from the same stock.

Sleeve bushings Ø55 – 200 mm

mm · deviations in µm · weights C93200 at D₂

d bore	E6 µm	Outside diameter D · wall			s6 / r6 µm, at D ₂	Lengths L h13	Weight kg, D ₂ × L	Chamfer 45° / 15°
		D ₁ thin	D ₂ medium	D ₃ thick				
55	+79 / +60	60 2.5	63 4	65 5	+72 / +53	40 · 50 · 70	0.26 – 0.46	0.8 / 3
60	+79 / +60	65 2.5	70 5	75 7.5	+78 / +59	40 · 60 · 80	0.36 – 0.73	0.8 / 3
65	+79 / +60	70 2.5	75 5	80 7.5	+78 / +59	50 · 60 · 80	0.49 – 0.79	1 / 4
70	+79 / +60	75 2.5	80 5	85 7.5	+78 / +59	50 · 70 · 90	0.53 – 0.95	1 / 4
75	+79 / +60	80 2.5	85 5	90 7.5	+93 / +71	50 · 70 · 90	0.56 – 1.0	1 / 4
80	+79 / +60	85 2.5	90 5	95 7.5	+93 / +71	60 · 80 · 100	0.72 – 1.2	1 / 4
85	+94 / +72	90 2.5	95 5	100 7.5	+93 / +71	60 · 80 · 100	0.76 – 1.3	1 / 4
90	+94 / +72	100 5	105 7.5	110 10	+101 / +79	60 · 80 · 120	1.2 – 2.5	1 / 4
95	+94 / +72	105 5	110 7.5	115 10	+101 / +79	60 · 100 · 120	1.3 – 2.6	1 / 4
100	+94 / +72	110 5	115 7.5	120 10	+101 / +79	80 · 100 · 120	1.8 – 2.7	1 / 4
105	+94 / +72	115 5	120 7.5	125 10	+101 / +79	80 · 100 · 120	1.9 – 2.8	1 / 4
110	+94 / +72	120 5	125 7.5	130 10	+88 / +63	80 · 100 · 120	2.0 – 3.0	1 / 4
120	+94 / +72	130 5	135 7.5	140 10	+88 / +63	100 · 120 · 150	2.7 – 4.0	1 / 4
130	+110 / +85	140 5	145 7.5	150 10	+90 / +65	100 · 120 · 150	2.9 – 4.3	2 / 5
140	+110 / +85	150 5	155 7.5	160 10	+90 / +65	100 · 150 · 180	3.1 – 5.6	2 / 5
150	+110 / +85	160 5	165 7.5	170 10	+93 / +68	120 · 150 · 180	4.0 – 6.0	2 / 5
160	+110 / +85	170 5	180 10	185 12.5	+93 / +68	120 · 150 · 180	5.7 – 8.6	2 / 5
170	+110 / +85	180 5	190 10	195 12.5	+106 / +77	120 · 180 · 200	6.1 – 10.1	2 / 5
180	+110 / +85	190 5	200 10	210 15	+106 / +77	150 · 180 · 250	8.0 – 13.3	2 / 5
190	+129 / +100	200 5	210 10	220 15	+109 / +80	150 · 180 · 250	8.4 – 14.0	2 / 5
200	+129 / +100	210 5	220 10	230 15	+109 / +80	180 · 200 · 250	10.6 – 14.7	2 / 5

Tolerances – ISO 4379 Table 3 with ISO 286-2 deviations

Nominal range mm	Bore d E6 as delivered	Outside D s6 / r6 s6 to 120, r6 above	Flange Ø d11	Length h13	Housing H7	Shaft e7	Shaft e8	Shaft g7	Bore approx. H8 after pressing
> 6 ... 10	+34 / +25	+32 / +23	−40 / −130	0 / −220	+15 / 0	−25 / −40	−25 / −47	−5 / −20	+22 / 0
> 10 ... 18	+43 / +32	+39 / +28	−50 / −160	0 / −270	+18 / 0	−32 / −50	−32 / −59	−6 / −24	+27 / 0
> 18 ... 30	+53 / +40	+48 / +35	−65 / −195	0 / −330	+21 / 0	−40 / −61	−40 / −73	−7 / −28	+33 / 0
> 30 ... 50	+66 / +50	+59 / +43	−80 / −240	0 / −390	+25 / 0	−50 / −75	−50 / −89	−9 / −34	+39 / 0
> 50 ... 65	+79 / +60	+72 / +53	−100 / −290	0 / −460	+30 / 0	−60 / −90	−60 / −106	−10 / −40	+46 / 0
> 65 ... 80	+79 / +60	+78 / +59	−100 / −290	0 / −460	+30 / 0	−60 / −90	−60 / −106	−10 / −40	+46 / 0
> 80 ... 100	+94 / +72	+93 / +71	−120 / −340	0 / −540	+35 / 0	−72 / −107	−72 / −126	−12 / −47	+54 / 0
> 100 ... 120	+94 / +72	+101 / +79	−120 / −340	0 / −540	+35 / 0	−72 / −107	−72 / −126	−12 / −47	+54 / 0
> 120 ... 140	+110 / +85	+88 / +63	−145 / −395	0 / −630	+40 / 0	−85 / −125	−85 / −148	−14 / −54	+63 / 0
> 140 ... 160	+110 / +85	+90 / +65	−145 / −395	0 / −630	+40 / 0	−85 / −125	−85 / −148	−14 / −54	+63 / 0
> 160 ... 180	+110 / +85	+93 / +68	−145 / −395	0 / −630	+40 / 0	−85 / −125	−85 / −148	−14 / −54	+63 / 0
> 180 ... 200	+129 / +100	+106 / +77	−170 / −460	0 / −720	+46 / 0	−100 / −146	−100 / −172	−15 / −61	+72 / 0
> 200 ... 225	+129 / +100	+109 / +80	−170 / −460	0 / −720	+46 / 0	−100 / −146	−100 / −172	−15 / −61	+72 / 0
> 225 ... 250	+129 / +100	+113 / +84	−170 / −460	0 / −720	+46 / 0	−100 / −146	−100 / −172	−15 / −61	+72 / 0

Deviations in µm, upper / lower. Interference of the bush in the housing = D deviations minus H7 deviations (e.g. Ø40: +59 / +43 against +25 / 0 gives 18 – 59 µm); running clearance = bore after pressing (approx. H8) minus shaft deviations (Ø40 with e7: 0 / +39 against −50 / −75 gives 50 – 114 µm). Housing edge chamfered, Ra max. 1.6 µm; shaft Ra max. 0.8 µm. Bushes are delivered finished; a bore for reaming in place is machined with stock on request.

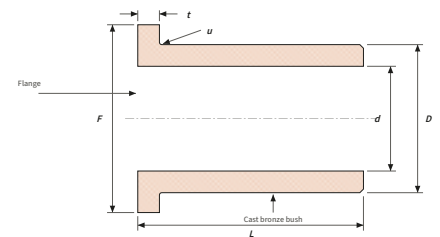


Cast Bronze Bushings – Metric Size Chart

ISO 4379 Type C sleeve · Type F flanged · thrust washers · tolerances · mm

Flanged bushings to ISO 4379 Type F: the sleeve of Type C with a locating flange that takes light axial thrust and stops the bush walking. Two series per bore – **Series 1** with a thin flange ($t = 1 - 5$ mm) for space-limited housings, **Series 2** with a heavy flange for axial load and press-fitting from the flange side. Length L includes the flange; u is the undercut at the flange root; the flange face is plain unless G7 radial grooves are ordered.

Order code: grade F – bore – outside $\varnothing$ – length. 660F-253230 = C93200 flanged $\varnothing 25 \times \varnothing 32 \times 30$, Series 2 (F 38, t 4 follow from the bore and outside diameter); 660F-252830 = Series 1, $\varnothing 25 \times \varnothing 28 \times 30$ with F 31, t 1.5. Tolerances as for sleeve bushings: bore E6, outside s6 / r6, flange $\varnothing$ d11, length h13.

Flanged bushings $\varnothing 6 - 200$ mmmm · D outside $\varnothing$ · F flange $\varnothing$ · t flange thickness · weights C93200, Series 2

d bore E6	Series 1 · thin flange			Series 2 · heavy flange			Lengths L incl. flange, h13	Weight kg, Series 2 $\times$ L	u undercut	Chamfer 45° / 15°
	D s6 / r6	F d11	t	D s6 / r6	F d11	t				
6	8	10	1	12	14	3	6 · 10	0.006 – 0.009	1	0.3 / 1
8	10	12	1	14	18	3	6 · 10	0.008 – 0.012	1	0.3 / 1
10	12	14	1	16	20	3	6 · 10	0.010 – 0.014	1	0.3 / 1
12	14	16	1	18	22	3	10 · 15 · 20	0.016 – 0.029	1	0.5 / 2
14	16	18	1	20	25	3	10 · 15 · 20	0.019 – 0.033	1	0.5 / 2
15	17	19	1	21	27	3	10 · 15 · 20	0.021 – 0.036	1	0.5 / 2
16	18	20	1	22	28	3	12 · 15 · 20	0.026 – 0.038	1.5	0.5 / 2
18	20	22	1	24	30	3	12 · 20 · 30	0.028 – 0.060	1.5	0.5 / 2
20	23	26	1.5	26	32	3	15 · 20 · 30	0.036 – 0.065	1.5	0.5 / 2
22	25	28	1.5	28	34	3	15 · 20 · 30	0.039 – 0.071	1.5	0.5 / 2
(24)	27	30	1.5	30	36	3	15 · 20 · 30	0.042 – 0.077	1.5	0.5 / 2
25	28	31	1.5	32	38	4	20 · 30 · 40	0.068 – 0.12	1.5	0.5 / 2
(27)	30	33	1.5	34	40	4	20 · 30 · 40	0.072 – 0.13	1.5	0.5 / 2
28	32	36	2	36	42	4	20 · 30 · 40	0.085 – 0.16	1.5	0.5 / 2
30	34	38	2	38	44	4	20 · 30 · 40	0.090 – 0.17	2	0.5 / 2
32	36	40	2	40	46	4	20 · 30 · 40	0.095 – 0.18	2	0.8 / 3
(33)	37	41	2	42	48	5	20 · 30 · 40	0.11 – 0.21	2	0.8 / 3
35	39	43	2	45	50	5	30 · 40 · 50	0.18 – 0.30	2	0.8 / 3
(36)	40	44	2	46	52	5	30 · 40 · 50	0.19 – 0.31	2	0.8 / 3
38	42	46	2	48	54	5	30 · 40 · 50	0.20 – 0.32	2	0.8 / 3
40	44	48	2	50	58	5	30 · 40 · 60	0.22 – 0.41	2	0.8 / 3
42	46	50	2	52	60	5	30 · 40 · 60	0.23 – 0.43	2	0.8 / 3
45	50	55	2.5	55	63	5	30 · 40 · 60	0.24 – 0.45	2	0.8 / 3
48	53	58	2.5	58	66	5	40 · 50 · 60	0.33 – 0.48	2	0.8 / 3
50	55	60	2.5	60	68	5	40 · 50 · 60	0.34 – 0.50	2	0.8 / 3
55	60	65	2.5	65	73	5	40 · 50 · 70	0.38 – 0.63	2	0.8 / 3
60	65	70	2.5	75	83	7.5	40 · 60 · 80	0.63 – 1.2	2	0.8 / 3
65	70	75	2.5	80	88	7.5	50 · 60 · 80	0.83 – 1.3	2	1 / 4
70	75	80	2.5	85	95	7.5	50 · 70 · 90	0.91 – 1.6	2	1 / 4
75	80	85	2.5	90	100	7.5	50 · 70 · 90	0.97 – 1.7	3	1 / 4
80	85	90	2.5	95	105	7.5	60 · 80 · 100	1.2 – 1.9	3	1 / 4
85	90	95	2.5	100	110	7.5	60 · 80 · 100	1.3 – 2.1	3	1 / 4
90	100	110	5	110	120	10	60 · 80 · 120	1.8 – 3.5	3	1 / 4
95	105	115	5	115	125	10	60 · 100 · 120	1.9 – 3.7	3	1 / 4
100	110	120	5	120	130	10	80 · 100 · 120	2.6 – 3.9	3	1 / 4
105	115	125	5	125	135	10	80 · 100 · 120	2.8 – 4.1	3	1 / 4
110	120	130	5	130	140	10	80 · 100 · 120	2.9 – 4.2	3	1 / 4
120	130	140	5	140	150	10	100 · 120 · 150	3.9 – 5.7	3	1 / 4
130	140	150	5	150	160	10	100 · 120 · 150	4.1 – 6.1	4	2 / 5
140	150	160	5	160	170	10	100 · 150 · 180	4.4 – 7.8	4	2 / 5
150	160	170	5	170	180	10	120 · 150 · 180	5.6 – 8.3	4	2 / 5
160	170	180	5	185	200	12.5	120 · 150 · 180	7.8 – 11.4	4	2 / 5
170	180	190	5	195	210	12.5	120 · 180 · 200	8.2 – 13.3	4	2 / 5
180	190	200	5	210	220	15	150 · 180 · 250	12.8 – 21.0	4	2 / 5
190	200	210	5	220	230	15	150 · 180 · 250	13.4 – 22.0	4	2 / 5
200	210	220	5	230	240	15	180 · 200 · 250	16.8 – 23.1	4	2 / 5



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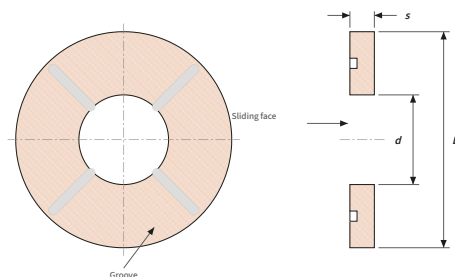
ISO 4379 Type C sleeve · Type F flanged · thrust washers · tolerances · mm

Thrust washers carry axial load between a shaft collar and a housing face. ISO 4379 has no washer table, so this series is **Slidura's proposal**: bore = shaft + 0.5 mm to Ø50 and + 1 mm above, outside diameter and thickness in the proportions common in bronze washer catalogues. Any other d, D or s, and washers with bolt holes, lugs or a locating tab, are machined to drawing. Sliding face Ra 1.6 µm; thickness tolerance 0 / -0.1 mm; plain face or G7 radial grease grooves (four to eight, stopping short of the outside).

Thrust washers – shaft 12 – 200 mm

mm · weight C93200

Shaft	Bore d	Outside D	s	kg	Code
12	12.5	24	2	0.006	660W-12
15	15.5	28	2	0.008	660W-15
16	16.5	30	2	0.009	660W-16
18	18.5	32	2.5	0.012	660W-18
20	20.5	36	2.5	0.015	660W-20
22	22.5	38	2.5	0.016	660W-22
25	25.5	42	3	0.023	660W-25
28	28.5	48	3	0.031	660W-28
30	30.5	50	3	0.033	660W-30
32	32.5	54	3	0.039	660W-32
35	35.5	58	3	0.044	660W-35
40	40.5	62	4	0.062	660W-40
45	45.5	70	4	0.079	660W-45
50	50.5	78	4	0.099	660W-50
55	56	82	5	0.13	660W-55
60	61	90	5	0.15	660W-60
65	66	95	5	0.16	660W-65
70	71	100	5	0.17	660W-70
75	76	110	6	0.27	660W-75
80	81	115	6	0.28	660W-80
90	91	130	6	0.36	660W-90
100	101	140	8	0.53	660W-100
110	111	160	8	0.75	660W-110
120	121	170	8	0.80	660W-120
140	141	200	10	1.4	660W-140
160	161	220	10	1.6	660W-160
180	181	250	10	2.1	660W-180
200	201	280	12	3.2	660W-200



Reading the chart

- Every listed size is machined per order from continuous-cast tube in the grade you name; standard sizes are not stocked as finished parts. Samples in 3 – 5 working days, no minimum quantity.
- Twelve grades in the same sizes: C93200 / SAE 660 (default), C93700 / SAE 64, C93800 / SAE 67, CuSn12, CuSn10P, CuSn10, C90500, LG2 / C83600, C95400, C95500, CuAl10Fe3Mn2, C86300.
- Weights are calculated from the dimensions at 8.93 g/cm³; aluminium bronze is about 16 % lighter, SAE 67 about 4 % heavier. Use them for freight and for price-per-kilogram comparisons.
- Anything not in the tables – Ø3 to Ø1000 mm, inch sizes, other walls, steps, grooves, holes, half bearings – is quoted from a drawing or from the three dimensions of the worn part at the same lead time.

Enquiry checklist

Dimensions	d × D × L or the order code; flange F × t; washer d × D × s
Alloy	grade or the designation on the drawing (Rg7, LG2, B101, TM 23, CAC406 ...)
Fit	housing and shaft tolerances if not H7 / e7; bore to be finished after fitting?
Lubrication	grease or oil; groove pattern G1 – G8; oil hole position
Duty	load, movement, speed, temperature, medium – for an alloy recommendation
Quantity	sample, batch, annual; delivery country for DDP / duty

Code: grade W – shaft size; 483W-60 is the Ø60 washer in CuSn12. Face grooves: add -G7.