
**Plain bearings — Thermoplastic
bushes — Dimensions and tolerances**

Paliers lisses — Bagues thermoplastiques — Dimensions et tolérances

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 7, *Special types of plain bearings*.

This second edition cancels and replaces the first edition (ISO 16287:2005), which has been technically revised. The main changes compared to the previous edition are as follows:

- [Clause 3](#), “Terms and definitions”, has been added;
- [Figures 2](#) and [3](#) have been revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Plain bearings — Thermoplastic bushes — Dimensions and tolerances

1 Scope

This document specifies the dimensions and tolerances for inserted thermoplastic bushes used as plain bearings with or without lubrication grooves in accordance with ISO 12128. These thermoplastic bushes are dimensionally exchangeable to wrapped bushes according to ISO 3547-1.

This document is not applicable to reinforced plastics.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 3547-2, *Plain bearings — Wrapped bushes — Part 2: Test data for outside and inside diameters*

ISO 6691, *Thermoplastics polymers for plain bearings — Classification and designation*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Symbols

B	nominal width of bush
B_{fl}	flange thickness
C_i	inside chamfer
C_o	outside chamfer
D_{fl}	flange diameter
D_H	nominal housing bore diameter
D_i	nominal inside diameter of the bush
$D_{i,ch}$	inside diameter of the bush when inserted in a ring gauge middle H7
D_o	nominal outside diameter of the bush
r	radius for flange bushes

5 Dimensions

The dimensions and tolerances of the thermoplastic bushes are shown in Figures 1 and 2, according to whether cylindrical (type C) or flanged (type F), and given, in millimetres, in Tables 1, 2, 3 and 4. The surface finishes x and y represented in Figures 1 and 2 are given in Table 5.

For the determination of the IT value (see ISO 286-1) of the coaxiality tolerance, the dimensions of D_o are applicable.

For the determination of the IT value (ISO 286-1) of the axial run-out tolerance, the dimensions of D_{fl} are applicable.

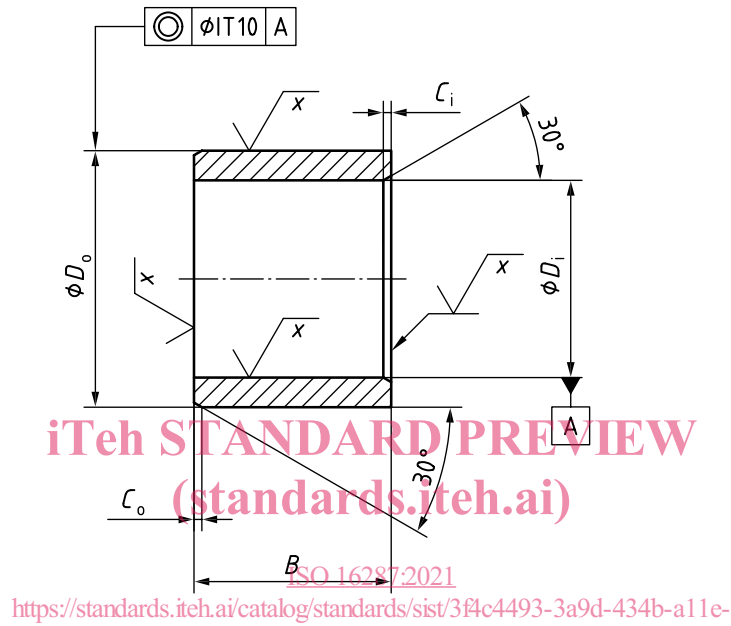


Figure 1 — Cylindrical bush

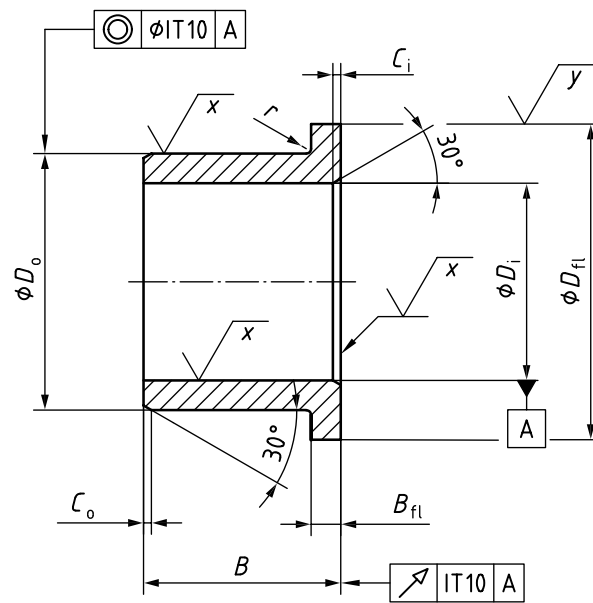


Figure 2 — Flanged bush

Table 1 — Nominal sizes and limits for thick-walled bushes type C and type F

Dimensions in millimetres

D_1^d nom.	D_o nom.		Limits for tolerance group (see Table 5)		D_{fi}^e d13	B_{fi} h13	B^a h13			C_1^b C_o^c maximum	r maximum
			A	B							
6	10	12	+0,21		14	3	6	10	—	0,8	0,5
8	12	14	+0,07		18	3	6	10	15	0,8	0,5
10	14	16	+0,27		20	3	6	10	15	0,8	0,5
12	16	18			+0,09		22	3	10	15	20
14	18	20	+0,33		25	3	10	15	20	0,8	0,8
15	18	21			+0,11		27	3	10	15	20
16	20	22	+0,45		28	3	12	15	20	0,8	0,8
18	22	24			+0,15		30	3	12	20	30
20	24	26	+0,60		32	3	15	20	30	1,5	0,8
22	26	28			+0,20		34	3	15	20	30
24	28	30	+0,69		36	3	15	20	30	1,5	0,8
25	30	32			+0,23		38	4	20	30	40
28	34	36	+0,90		42	4	20	30	40	2	0,8
30	36	38			+0,30		44	4	20	30	40
32	38	40	+0,30		46	4	20	30	40	2	0,8
35	41	45					50	5	30	40	50
38	45	48			54	5	30	40	50	2	0,8
40	48	50			58	5	30	40	60	2	0,8
42	50	52			60	5	30	40	60	2	0,8
45	53	55			63	5	30	40	60	2,5	0,8
48	56	58			66	5	40	50	60	2,5	0,8
50	58	60			68	5	40	50	60	2,5	0,8
55	63	65			73	5	40	50	70	2,5	0,8
60	70	75			83	7,5	40	60	80	2,5	0,8
65	75	80			88	7,5	50	60	80	2,5	2
70	80	85			95	7,5	50	70	90	2,5	2
75	85	90			100	7,5	50	70	90	2,5	2
80	90	95			105	7,5	60	80	100	2,5	2
85	95	100			110	7,5	60	80	100	2,5	2
90	105	110			120	10	60	80	120	2,5	2
95	110	115			125	10	60	100	120	2,5	2
100	115	120			130	10	80	100	120	2,5	2
105	120	125			135	10	80	100	120	2,5	2
110	125	130			140	10	80	100	120	2,5	2
120	135	140			150	10	100	120	150	2,5	2
130	145	150			160	10	100	120	150	3	2
140	155	160			170	10	100	150	180	3	2

^a If it is necessary to use the non-standard width B , then these should be arranged to have a final digit of 0, 2, 5 or 8.

^b As an alternative to the chamfer C_1 , a 45° angle may be used.

^c As an alternative to the chamfer C_o , a radius may be used.

^d Depending on the material, the wall thickness shall be rated so that the inside diameter D_1 of the fitted bush is within the tolerance classes F10 to D12 respectively.

^e For D_{fi} , the tolerance class d13 is preferred. Other tolerance class up to h13 are allowable and shall be subject to agreement between the manufacturer and the user.

^f To be agreed between the manufacturer and the user.

Table 1 (continued)

D_i^d nom.	D_o Limits for tolerance group (see Table 5)		D_{fi}^e d13	B_{fi} h13	B^a h13			C_i^b	r maximum		
								A		B	C_o^c maximum
150	165	170	180	10	120	150	180	3	2		
160	180	185	200	12,5	120	150	180	3	2		
170	190	195	210	12,5	120	180	200	3	2		
180	200	210	220	15	150	180	250	3	2		
190	210	220	230	15	150	180	250	3	2		
200	220	230	240	15	180	200	250	3	2		

^a If it is necessary to use the non-standard width B , then these should be arranged to have a final digit of 0, 2, 5 or 8.

^b As an alternative to the chamfer C_i , a 45° angle may be used.

^c As an alternative to the chamfer C_o , a radius may be used.

^d Depending on the material, the wall thickness shall be rated so that the inside diameter D_i of the fitted bush is within the tolerance classes F10 to D12 respectively.

^e For D_{fi} , the tolerance class d13 is preferred. Other tolerance class up to h13 are allowable and shall be subject to agreement between the manufacturer and the user.

^f To be agreed between the manufacturer and the user.

Table 2 — Nominal sizes and limits for thin-walled cylindrical bushes type C

iTech STANDARD PREVIEW Dimensions in millimetres
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D_i^d nom.	D_o Limits for tolerance group (see Table 5)		B^a h13	B^a h13					C_i^b	C_o^c maximum		
									A		B	C_o^c maximum
6	8	+0,21	zb11	4	6	8	10	—	—	0,8		
8	10	+0,07		6	8	10	12	15	—	0,8		
10	12	+0,27		6	8	10	12	15	20	0,8		
12	14			8	10	12	15	20	25	0,8		
14	16	+0,09		10	12	15	20	25	—	0,8		
15	17	+0,33		10	12	15	20	25	—	0,8		
16	18			10	12	15	20	25	—	0,8		
18	20	+0,11		10	15	20	25	—	—	0,8		
20	23	+0,45		10	15	20	25	30	—	1,5		
22	25			—	15	20	25	30	—	1,5		
24	27			+0,15	—	15	20	25	30	—	1,5	
25	28	+0,60		—	15	20	25	30	50	1,5		
28	32			—	15	20	25	30	—	2		
30	34	+0,20		10	15	20	25	30	40	2		
32	36	+0,69		20	30	40	—	—	—	2		
35	39			20	30	35	40	50	—	2		
38	42			20	30	40	—	—	—	2		
40	44	+0,23		20	30	40	50	—	—	2		

^a If it is necessary to use the non-standard width B , then these should be arranged to have a final digit of 0, 2, 5 or 8.

^b As an alternative to the chamfer C_i , a 45° angle may be used.

^c As an alternative to the chamfer C_o , a radius may be used.

^d Depending on the material, the wall thickness shall be rated so that the inside diameter D_i of the fitted bush is within the tolerance classes F10 to D12 respectively.

^e To be agreed between the manufacturer and the user.

Table 2 (continued)

D_i^d	nom.	D_o Limits for tolerance group (see Table 5)		B^a						C_i^b C_o^c
		A	B	h13						maximum
45	50	+0,90 +0,30	za11	20	30	40	45	50	—	2,5
50	55			20	30	40	50	60	—	2,5
55	60			20	30	40	50	60	—	2,5
60	65	e		20	30	40	50	60	70	2,5
65	70			30	50	70	—	—	—	2,5
70	75			30	40	50	70	—	—	2,5
75	80			—	40	60	80	—	—	2,5
80	85			—	40	60	80	100	—	2,5
85	90			30	40	60	80	100	—	2,5
90	95			40	60	100	—	—	—	2,5
95	100			—	60	100	—	—	—	2,5
100	105			50	60	100	115	—	—	2,5
105	110			60	100	105	—	—	—	2,5
110	115			60	100	115	—	—	—	2,5
115	120			60	100	—	—	—	—	2,5
120	125	60	100	—	—	—	—	2,5		
125	130	60	100	—	—	—	—	2,5		
130	135	60	100	—	—	—	—	3		
135	140	60	100	—	—	—	—	3		
140	145	60	100	—	—	—	—	3		
150	155	60	100	—	—	—	—	3		

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^a If it is necessary to use the non-standard width B , then these should be arranged to have a final digit of 0, 2, 5 or 8.

^b As an alternative to the chamfer C_i , a 45° angle may be used.

^c As an alternative to the chamfer C_o , a radius may be used.

^d Depending on the material, the wall thickness shall be rated so that the inside diameter D_i of the fitted bush is within the tolerance classes F10 to D12 respectively.

^e To be agreed between the manufacturer and the user.

Table 3 — Nominal sizes and limits for thin-walled flanged bushes type F

Dimensions in millimetres

D_i^d nom.	nom.	D_o Limits for tolerance group (see Table 5)		D_{fi}^e d13	B_{fi} h13	B^a			C_i^b C_o^c maximum	r maximum
		A	B			h13				
6	8	+0,21	z11	12	1	6	10	—	0,8	0,5
8	10	+0,07		15	1	6	10	15	0,8	0,5
10	12	+0,27		18	1	6	10	15	0,8	0,5
12	14			+0,09	20	1	10	15	20	0,8
14	16	+0,33		22	1	10	15	20	0,8	0,8
15	17			+0,11	23	1	10	15	20	0,8
16	18	+0,45		24	1	12	15	20	0,8	0,8
18	20			+0,15	26	1	12	20	30	0,8
20	23	+0,60		30	1,5	15	20	30	1,5	0,8
22	25			+0,20	31	1,5	15	20	30	1,5
24	27	+0,69		34	1,5	15	20	30	1,5	0,8
25	28			+0,23	35	1,5	20	30	40	1,5
28	32	+0,90		39	2	20	30	40	2	0,8
30	34			+0,30	42	2	20	30	40	2
32	36	+0,90		44	2	20	30	40	2	0,8
35	39			+0,30	47	2	30	40	50	2
38	42	+0,90		50	2	30	40	50	2	0,8
40	44			+0,30	53	2	30	40	60	2
42	47	+0,90		55	2,5	30	40	60	2	0,8
45	50			+0,30	58	2,5	30	40	60	2,5
48	53	+0,90	62	2,5	40	50	60	2,5	0,8	
50	55		+0,30	65	2,5	40	50	60	2,5	0,8
55	60	+0,90	70	2,5	40	50	70	2,5	0,8	
60	65		+0,30	75	2,5	40	60	80	2,5	0,8
65	70	+0,90	80	2,5	50	60	80	2,5	2	
70	75		+0,30	85	2,5	50	70	90	2,5	2
75	80	+0,90	90	2,5	50	70	90	2,5	2	
80	85		+0,30	95	2,5	60	80	100	2,5	2
85	90	+0,90	100	2,5	60	80	100	2,5	2	
90	95		+0,30	110	2,5	60	80	120	2,5	2
95	100	+0,90	115	2,5	60	100	—	2,5	2	
100	105		+0,30	120	2,5	80	100	120	2,5	2

^a If it is necessary to use the non-standard width B , then these should be arranged to have a final digit of 0, 2, 5 or 8.
^b As an alternative to the chamfer C_i , a 45° angle may be used.
^c As an alternative to the chamfer C_o , a radius may be used.
^d Depending on the material, the wall thickness shall be rated so that the inside diameter D_i of the fitted bush is within the tolerance classes F10 to D12 respectively.
^e For D_{fi} , the tolerance class d13 is preferred. Other tolerance class up to h13 are allowable and shall be subject to agreement between manufacturer and user.
^f To be agreed between manufacturer and user.