

FINAL
DRAFT

INTERNATIONAL
STANDARD

ISO/FDIS
16287

ISO/TC 123/SC 7

Secretariat: JISC

Voting begins on:
2020-12-29

Voting terminates on:
2021-02-23

Plain bearings — Thermoplastic bushes — Dimensions and tolerances

Paliers lisses — Bagues thermoplastiques — Dimensions et tolérances

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/FDIS 16287](https://standards.iteh.ai/catalog/standards/sist/3f4c4493-3a9d-434b-a11e-f9e663bb1a68/iso-fdis-16287)

<https://standards.iteh.ai/catalog/standards/sist/3f4c4493-3a9d-434b-a11e-f9e663bb1a68/iso-fdis-16287>

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.



Reference number
ISO/FDIS 16287:2020(E)

© ISO 2020

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/FDIS 16287](https://standards.iteh.ai/catalog/standards/sist/3f4c4493-3a9d-434b-a11e-f9e663bb1a68/iso-fdis-16287)

<https://standards.iteh.ai/catalog/standards/sist/3f4c4493-3a9d-434b-a11e-f9e663bb1a68/iso-fdis-16287>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	1
5 Dimensions	2
6 Material	8
7 Design	9
8 Testing	9
8.1 General	9
8.2 Outside diameter, D_o	9
8.3 Inside diameter, D_i	9
9 Assembling	10
10 Designation	11
Bibliography	13

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/FDIS 16287](https://standards.iteh.ai/catalog/standards/sist/3f4c4493-3a9d-434b-a11e-f9e663bb1a68/iso-fdis-16287)

<https://standards.iteh.ai/catalog/standards/sist/3f4c4493-3a9d-434b-a11e-f9e663bb1a68/iso-fdis-16287>

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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

ISO/FDIS 16287

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.

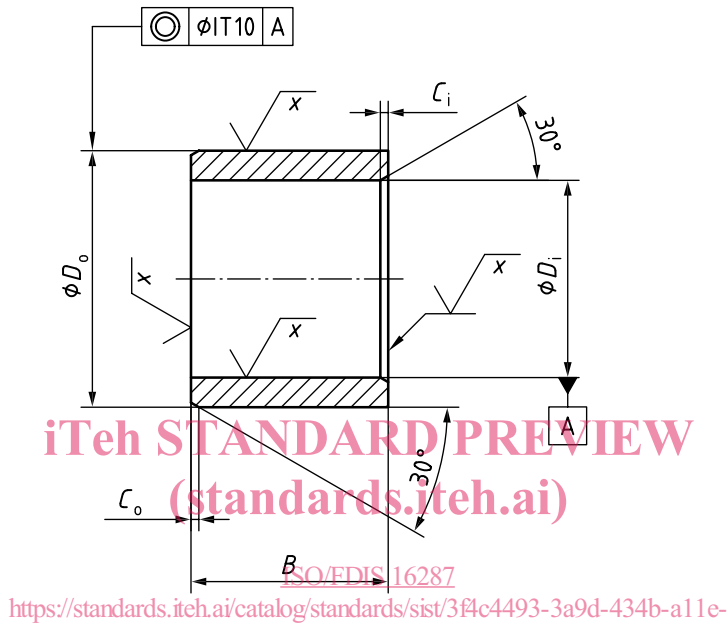


Figure 1 — Cylindrical bush

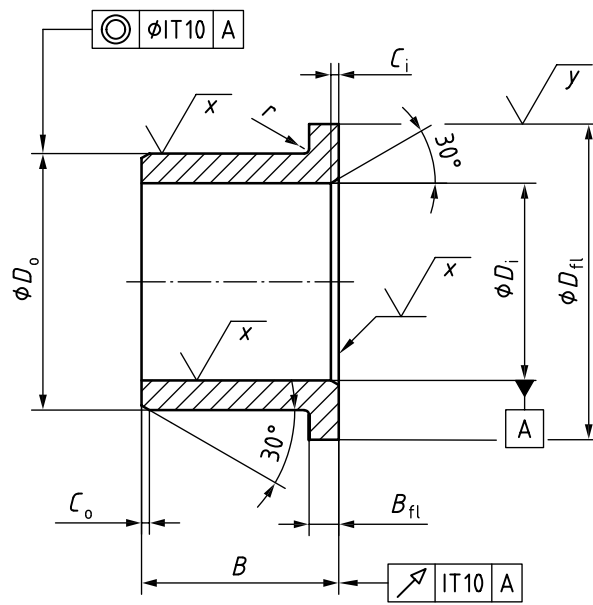


Figure 2 — Flanged bush

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	0,8
14	18	20	+0,33		25	3	10	15	20	0,8	0,8
15	18	21			+0,11	27	3	10	15	20	0,8
16	20	22	+0,45		28	3	12	15	20	0,8	0,8
18	22	24			+0,15	30	3	12	20	30	0,8
20	24	26	+0,60		32	3	15	20	30	1,5	0,8
22	26	28			+0,20	34	3	15	20	30	1,5
24	28	30	+0,69		36	3	15	20	30	1,5	0,8
25	30	32			+0,23	38	4	20	30	40	1,5
28	34	36	+0,90		42	4	20	30	40	2	0,8
30	36	38			+0,30	44	4	20	30	40	2
32	38	40	+0,30		46	4	20	30	40	2	0,8
35	41	45			+0,23	50	5	30	40	50	2
38	45	48	+0,30		54	5	30	40	50	2	0,8
40	48	50			+0,23	58	5	30	40	60	2
42	50	52	+0,30		60	5	30	40	60	2	0,8
45	53	55			+0,30	63	5	30	40	60	2,5
48	56	58	+0,30		66	5	40	50	60	2,5	0,8
50	58	60			+0,30	68	5	40	50	60	2,5
55	63	65	+0,30		73	5	40	50	70	2,5	0,8
60	70	75			+0,30	83	7,5	40	60	80	2,5
65	75	80	+0,30		88	7,5	50	60	80	2,5	2
70	80	85			+0,30	95	7,5	50	70	90	2,5
75	85	90	+0,30		100	7,5	50	70	90	2,5	2
80	90	95			+0,30	105	7,5	60	80	100	2,5
85	95	100	+0,30		110	7,5	60	80	100	2,5	2
90	105	110			+0,30	120	10	60	80	120	2,5
95	110	115	+0,30		125	10	60	100	120	2,5	2
100	115	120			+0,30	130	10	80	100	120	2,5
105	120	125	+0,30		135	10	80	100	120	2,5	2
110	125	130			+0,30	140	10	80	100	120	2,5
120	135	140	+0,30		150	10	100	120	150	2,5	2
130	145	150			+0,30	160	10	100	120	150	3
140	155	160	+0,30		170	10	100	150	180	3	2
					+0,30						

^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
(standards.itech.ai)

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		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				za11		40	60	100	—	—	—
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				

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/FDIS 16287

https://standards.iteh.ai/catalog/standards/sst/31404493-3a9d-434b-a11e-f9e663bb1a60/iso-fdis-16287

^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.