INTERNATIONAL STANDARD

ISO 2795

Fifth edition
2014-01-15

Plain bearings — Sintered bushes — Dimensions and tolerances

Paliers lisses — Coussinets frittés — Dimensions et tolérances

Reference number
ISO 2795:2014(E)

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Published in Switzerland

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Foreword

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The committee responsible for this document is ISO/TC 123, *Plain bearings*, Subcommittee SC 7, *Special types of plain bearings*.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: http://www.iso.org/iso/home/standards_development/resources-for-technical-work/foreword.htm

This fifth edition cancels and replaces the fourth edition (ISO 2795:1991), of which it constitutes a minor revision.

Introduction

The sizes given in this International Standard are based on a range of shaft diameters which are considered to correspond to the requirements of industry. For all except the smallest sizes, a thin-wall series is provided in addition to the normal series in order to introduce an element of choice and, more importantly, to provide for the possibility of the same sizes being adopted for plain bearings made from other materials.

It is envisaged that as far as possible, the same outside diameters will be recommended for all types of plain bearings.

Plain bearings — Sintered bushes — Dimensions and tolerances

1 Scope

This International Standard specifies the dimensions and tolerances applicable to sintered bearings for the following ranges of inside diameters:

— cylindrical bearings: 1 mm to 60 mm;

— flanged bearings: 1 mm to 60 mm;

— spherical bearings: 1 mm to 20 mm.

2 Normative reference

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5755, *Sintered metal materials — Specifications*

3 Material

The following materials used for manufacturing sintered bearings shall conform to ISO 5755.

4 Cylindrical bearings

4.1 Dimensions

See Figure 1 and Tables 1 and 2.

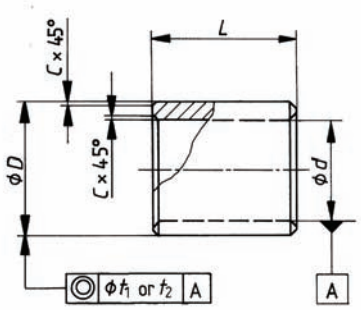

Figure 1

Table 1

Dimensions in millimetres

Inside diameter *d*	**Outside diameter,** *D*		**Length**[b] *L*
	Normal series	**Thin-wall series**[a]	
1	3	—	1-2
1,5	4	—	1-2
2	5	—	2-3
2,5	6	—	2-3
3	6	5	3-4
4	8	7	3-4-6
5	9	8	4-5-8
6	10	9	4-6-10
7	11	10	5-8-10
8	12	11	6-8-12
9	14	12	6-10-14
10	16	14	8-10-16
12	18	16	8-12-20
14	20	18	10-14-20
15	21	19	10-15-25
16	22	20	12-16-25
18	24	22	12-18-30
20	26	25	15-20-25-30
22	28	27	15-20-25-30
25	32	30	20-25-30-35
28	36	33 (34)	20-25-30-40
30	38	35 (36)	20-25-30-40
32	40	38	20-25-30-40
35	45	41	25-35-40-50
38	48	44	25-35-45-55
40	50	46	30-40-50-60
42	52	48	30-40-50-60
45	55	51	35-45-55-65
48	58	55	35-50-70
50	60	58	35-50-70
55	65	63	40-55-70
60	72	68	50-60-70

[a] For inside diameter 20 mm (included), the last value for the length is not applicable to the thin-wall series.

[b] Dimensions in parentheses shall be used as “second choice”.

Table 2

Dimensions in millimetres

Wall thickness $\frac{D-d}{2}$		**Chamfer** C
above	up to and incl.	max.
—	1	0,2
1	2	0,3
2	3	0,4
3	4	0,6
4	5	0,7
5	—	0,8

4.2 Tolerances

The tolerances for the bearings after fitting and the tolerances for the housing and insertion pin are given below. In addition, the tolerances for the inside and outside diameters of the bearing before fitting are given.

NOTE Since the actual tolerances and combinations of tolerances in the as-delivered state depend upon the characteristics of the materials and the manufacturing methods, they should be discussed with the manufacturer.

As-delivered:

— on outside diameter D: in the ranges

r6 to s7, for $D \leq 50$ mm

r7 to s8, for $D > 50$ mm

— on inside diameter d: in the ranges

F7 to G7, for $D \leq 50$ mm

F8 to G8, for $D > 50$ mm

— on bearing length L: js13

— on coaxiality of the outside diameter with respect to the inside surface diameter (tolerance based on the outside diameter, D):

t_1 = IT9, for $D \leq 50$ mm

t_2 = IT10, for $D > 50$ mm

Insertion pin: in the range m5 to m6

Housing: H7

Bearing bore after fitting (assuming the housing is rigid):

H7, for $D \leq 50$ mm

H8, for $D > 50$ mm

5 Flanged bearings

5.1 Dimensions

See Figure 2 and Tables 3 to 5.

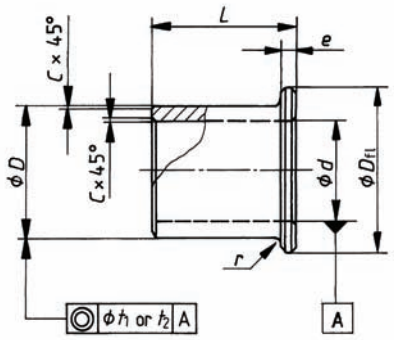

Figure 2

Table 3

Dimensions in millimetres

Inside diameter d	Outside diameter D	Flange diameter D_{fl}	Flange thickness e	Length L
Normal series				
1	3	5	1	2
1,5	4	6	1	2
2	5	8	1,5	3
2,5	6	9	1,5	3
3	6	9	1,5	4
4	8	12	2	3-4-6
5	9	13	2	4-5-8
6	10	14	2	4-6-10
7	11	15	2	5-8-10
8	12	16	2	6-8-12
9	14	19	2,5	6-10-14
10	16	22	3	8-10-16
12	18	24	3	8-12-20
14	20	26	3	10-14-20
15	21	27	3	10-15-25
16	22	28	3	12-16-25
18	24	30	3	12-18-30
20	26	32	3	15-20-25-30
22	28	34	3	15-20-25-30
25	32	39	3,5	20-25-30
28	36	44	4	20-25-30

Table 3

Inside diameter d	Outside diameter D	Flange diameter D_{fl}	Flange thickness e	Length L
Normal series				
30	38	46	4	20-25-30
32	40	48	4	20-25-30
35	45	55	5	25-35-40
38	48	58	5	25-35-45
40	50	60	5	30-40-50
42	52	62	5	30-40-50
45	55	65	5	35-45-55
48	58	68	5	35-50
50	60	70	5	35-50
55	65	75	5	40-55
60	72	84	6	50-60
Thin-wall series				
10	14	18	2	8-10-16
12	16	20	2	8-12-20
14	18	22	2	10-14-20
15	19	23	2	10-15-25
16	20	24	2	12-16-25
18	22	26	2	12-18-30
20	25	30	2,5	15-20-25
22	27	32	2,5	15-20-25
25	30	35	2,5	20-25-30

Table 4

Dimensions in millimetres

Wall thickness $\frac{D-d}{2}$		Chamfer C
above	up to and incl.	max.
—	1	0,2
1	2	0,3
2	3	0,4
3	4	0,6
4	5	0,7
5	—	0,8

Table 5

Dimensions in millimetres

Outside diameter *D*		*r*
above	up to and incl.	max.
—	12	0,3
12	30	0,6
30	—	0,8

5.2 Tolerances

The tolerances for the bearings after fitting and the tolerances for the housing and insertion pin are given below. In addition, the tolerances for the inside and outside diameters of the bearing and on the flange before fitting are given.

NOTE Since the actual tolerances and combinations of tolerances in the as-delivered state depend upon the characteristics of the materials and the manufacturing methods, they should be discussed with the manufacturer.

As-delivered:

— on outside diameter *D*: in the ranges

r6 to s7, for $D \leq 50$ mm

r7 to s8, for $D > 50$ mm

— on inside diameter d: in the ranges

F7 to G7, for $D \leq 50$ mm

F8 to G8, for $D > 50$ mm

— on bearing length *L*: js13

— on flange diameter D_{fl}: js13

— on flange thickness *e*: js13

— on coaxiality of the outside diameter with respect to the inside surface diameter (tolerance based on the outside diameter, *D*):

t_1 = IT9, for $D \leq 50$ mm

t_2 = IT10, for $D > 50$ mm

Insertion pin: in the range m5 to m6

Housing: H7

Bearing bore after fitting (assuming the housing is rigid):

H7, for $D \leq 50$ mm

H8, for $D > 50$ mm

6 Spherical bearings

6.1 Dimensions

See Figure 3 and Table 6.

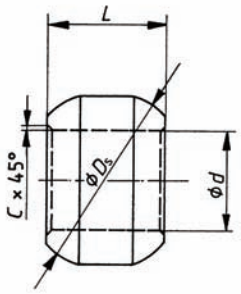

Figure 3

NOTE A cylindrical surface is permissible on the sphere at the centre of the bearing length, the diameter of which should be agreed upon by the user and the manufacturer.

Table 6

Dimensions in millimetres

Inside diameter d	**Spherical diameter** D_S	**Length** L	**Chamfer** C max.
1	3	2	0,3
1,5	4,5	3	
2	5	3	
2,5	6	4	
3	8	6	
4	10	8	
5	12	9	0,5
6	14	10	
7	16	11	
8	16	11	
9	18	12	
10	20	13	
10	22	14	
12	22	15	
14	24	17	
15	27	20	
16	28	20	
18	30	20	
20	36	25	

6.2 Tolerances

a) Inside diameter, *d*: H7

b) Spherical diameter, D_S: h11

c) Bearing length, *L:* js13

Tolerance for the housing diameter should normally be H10 but this depends on the method of assembly.

Where an easier fit is preferred for lighter self-alignment, G10 is suggested.

Bibliography

[1] ISO 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

[2] ISO 286-2, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*

ICS 21.100.10

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