
International Standard



6864

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Plain bearings — Thin-walled flanged half bearings — Dimensions, tolerances and methods of checking

Paliers lisses — Demi-coussinets minces à collerettes — Dimensions, tolérances et méthodes de contrôle

First edition — 1984-03-15

UDC 621.822.5

Ref. No. ISO 6864-1984 (E)

Descriptors : bearings, plain bearings, dimensions, dimensional tolerances.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6864 was developed by Technical Committee ISO/TC 123, *Plain bearings*, and was circulated to the member bodies in April 1982.

It has been approved by the member bodies of the following countries:

Czechoslovakia	India	Sweden
Egypt, Arab Rep. of	Italy	United Kingdom
France	Poland	USA
Germany, F.R.	Romania	USSR

No member body expressed disapproval of the document.

Plain bearings — Thin-walled flanged half bearings — Dimensions, tolerances and methods of checking

1 Scope and field of application

This International Standard lays down the main dimensions and tolerances for thin-walled flanged half bearings used in reciprocating machinery. It is not expected that all flanged half bearings with the main dimensions listed will be available from stock but adoption of standard sizes should lead to economies in tooling costs.

The main dimensions and tolerances are fixed for a series of thin-walled flanged half bearings suitable for housings having inside diameters from 40 to 250 mm. Flanged half bearings for larger or smaller inside diameters are only rarely used.

This International Standard also lays down dimensions and tolerances for characteristic features of thin-walled flanged half bearings. The introduction of such features into a particular design is a decision that shall be made by the user in the light of his knowledge of the application.

Flanged half bearings are generally used in connection with half bearings without flange according to ISO 3548.

Alternatively to serve as a flanged half bearing, it is admittedly possible to use a prefitted assembly of a half bearing without flange with two half thrust washers, the specifications of which should be agreed between user and manufacturer, taking account of ISO 3548 and ISO 6526.

NOTE — All the dimensions and tolerances are expressed in millimetres unless otherwise indicated.

2 References

ISO 497, *Guide to the choice of series to the use of preferred numbers and of series containing more rounded values of preferred numbers.*

ISO 3548, *Plain bearings — Thin-walled half bearings — Dimensions, tolerances and methods of checking.*

ISO 4383, *Plain bearings — Metallic multilayer materials for thin-walled plain bearings.*

ISO 4384, *Plain bearings — Hardness testing of bearing materials.*

ISO 6282, *Thin-walled plain bearings — Determination of $\delta_{0,01}$ * limit.*

ISO 6526, *Plain bearings — Pressed bimetallic half thrust washers — Features and tolerances.*

3 Definition

For the purpose of this International Standard, the following definition is applicable:

flanged bearing : A combination of a radial bearing (cylindrical radial part) with an axial bearing (flanges at the ends) (see figure 1).

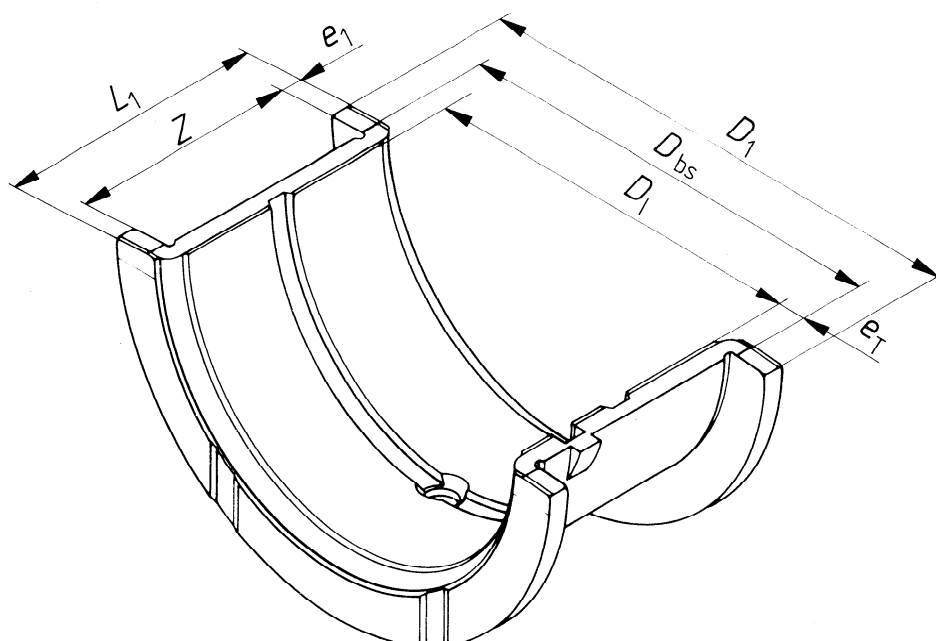


Figure 1 — Flanged half bearing

4 Symbols

D_L	=	housing diameter
D_I	=	inside diameter of the bearing
D_{bs}	=	outside diameter of the bearing
D_1	=	outside diameter of flange
D_{cb}	=	diameter of the checking block bore
e_T	=	bearing wall thickness
e_1	=	flange thickness
Z	=	distance between flanges
L_L	=	housing width
L_1	=	overall bearing width
S_N or $S_{N1} + S_{N2}$	=	nip
F	=	$F_1 = F_2$ = checking load, in newtons
E_x	=	eccentricity
A	=	locating nick width
B	=	locating nick length
N_D	=	locating nick height
H	=	distance between nick and flange
h	=	height and width at transition between radial part and flange
J	=	distance between nick and groove
E	=	notch recess width
N_Z	=	notch recess length
G	=	notch recess height
H_D	=	height of the joint face bore relief
P_D	=	depth of the joint face bore relief
e_J	=	wall thickness at the joint face
l	=	height of the flange relief
t	=	depth of the flange relief
G_W	=	groove width

G_E	=	wall thickness at the back of the groove
α	=	groove side angle
r_1	=	radius at the back of the groove
r_2	=	oil pocket radius
G_X	=	distance between grooves and the flange axis.

5 Main dimensions and tolerances

All sharp edges should be free of burrs. If chamfers are desired, they should have an angle of 45°.

5.1 Nominal dimensions

The nominal dimensions of housing (inside) diameter, inside diameter and wall thickness are given in table 1.

The nominal overall width should be equal to the nominal distance between flanges plus two times the nominal wall thickness.

5.2 Tolerance for the housing

Ferrous housings should be manufactured to ISO H6, but in the case of housings made from materials having a high coefficient of expansion, or where other factors such as housing dimensional stability are involved, then the housing size may depart from ISO H6 limits but should always be produced in accordance with a grade 6 tolerance.

5.3 Tolerance for nip and wall thickness

The bearings that are the subject of this International Standard are thin and flexible and their outside diameter cannot be measured by conventional means. The peripheral length is therefore usually measured by use of the checking method given in clause 10.

It is not possible to specify the actual size of peripheral length in this International Standard since it will be dependent upon the precise application (for example factors such as housing rigidity and material and operating temperatures, have to be taken into account).

However for bearings that are finished by machining on joint faces, the manufacturing tolerances on peripheral length should be in accordance with the values of the tolerance on measured nip S_N , (see figure 11) given in table 2.

The tolerance for wall thickness e_T depends on the fact whether the bearings inside diameter is subject to a final machining operation (i.e. "as machined") or whether the bearing inside diameter is electroplated without further machining (i.e. "as plated"). The relevant tolerances are included in table 2.

Slight surface depressions are acceptable on the outside diameter of the bearing provided that they are not numerous. However, the measurement of the wall thickness shall not be carried out in these areas.

Table 1 — Housing diameter, inside diameters, wall thicknesses, outside diameter of flange and distance between flanges

Housing diameter ¹⁾ D_L	Inside diameters, D_I , for wall thickness, e_T							D_1	Z		
	2,0	2,5	3,0	3,5	4,0	5,0	6,0				
40	36	35						52	15	17	21
42	38	37						54	16	18	22
45	41	40						57	17	19	24
48	44	43						60	18	21	25
50	46	45						62	18	21	26
53	49	48						65	19	23	28
56	52	51						68	20	24	29
60	56	55						72	22	25	31
63	59	58						79	23	27	33
67		62	61					83	24	28	34
71		66	65					87	25	29	36
75		70	69					91	26	31	38
80		75	74					96	28	33	41
85		80	79					105	30	35	43
90			84	83				110	31	37	45
95			89	88				115	33	39	48
100			94	93				120	34	41	50
105			99	98				129	36	43	53
110			104	103				134	38	45	55
120			114	113				144	41	49	60
125				118	117			149	42	50	62
130				123	122			154	44	52	65
140				133	132			170	47	56	70
150				143	142			180	51	60	75
160				153	152			190	54	64	80
170					162	160		200	57	68	84
180					172	170		210	60	72	89
190					182	180		220	64	76	94
200					192	190		230	67	80	99
210						200	198	250	70	83	103
220						210	208	260	73	87	108
240						230	228	280	80	95	118
250						240	238	290	83	99	123

1) Based on the R' 40 series of preferred numbers (ISO 497)

Table 2 — Tolerances for measured nip S_N and wall thickness e_T

Housing diameter D_L		Tolerance for S_N ($S_{N \max} - S_{N \min}$)	Tolerance for e_T	
above	up to		"as machined" bearing	"as plated" bearing
—	45	0,030	0,008	0,012
45	75	0,035	0,008	0,012
75	110	0,040	0,010	0,015
110	160	0,045	0,015	0,022
160	200	0,050	0,015	0,022
200	250	0,055	0,020	0,030

NOTE — Closer tolerances should be subject to agreement between user and manufacturer.