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Rolling bearings — Aligning thrust ball bearings and aligning seat washers — Boundary dimensions

Roulements — Butées à billes sphériques et contreplaques sphériques — Dimensions d'encombrement

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Foreword

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ISO 20516 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*.

Rolling bearings — Aligning thrust ball bearings and aligning seat washers — Boundary dimensions

1 Scope

This International Standard specifies dimensions of single-direction and double-direction aligning thrust ball bearings with and without aligning seat washers.

2 Normative references

The following referenced documents are indispensable for the application 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 582, *Rolling bearings — Chamfer dimensions — Maximum values*

ISO 5593, *Rolling bearings — Vocabulary*

ISO 15241, *Rolling bearings — Symbols for quantities*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5593 and the following apply.

3.1
aligning thrust ball bearing
⟨single-direction bearing⟩ thrust ball bearing which can accommodate permanent angular misalignment between its axis and the axis of its housing by means of an aligning housing washer

NOTE The spherical back face of the aligning housing washer mates with a matching concave spherical surface either in an aligning seat washer or its housing.

3.2
aligning thrust ball bearing
⟨double-direction bearing⟩ thrust ball bearing which can accommodate permanent angular misalignment between its axis and the axis of its housing by means of aligning housing washers

NOTE The spherical back faces of the aligning housing washers mate with matching concave spherical surfaces either in aligning seat washers or their housings.

3.3
single-direction aligning thrust ball bearing
aligning thrust ball bearing intended to support axial load in one direction only

3.4
double-direction aligning thrust ball bearing
aligning thrust ball bearing intended to support axial load in both directions

3.5
central shaft washer
central washer which is intended to be mounted on a shaft

4 Symbols

For the purposes of this document, the symbols given in ISO 15241 and the following apply.

The symbols given in Figures 1 to 4 and the values given in Tables 1 to 6 denote nominal dimensions unless specified otherwise.

NOTE Unless specified otherwise, the symbols are applicable to both single-direction and double-direction bearings.

A centre height of aligning surface

B height of central shaft washer, double-direction bearing

C height of aligning seat washer

D outside diameter of aligning housing washer

D_1 bore diameter of aligning housing washer

$D_{1s\ min}$ smallest single bore diameter of aligning housing washer

D_2 bore diameter of aligning seat washer

D_3 outside diameter of aligning seat washer

d bore diameter of shaft washer, single-direction bearing

d_1 outside diameter of shaft washer, single-direction bearing

$d_{1s\ max}$ largest single outside diameter of shaft washer, single-direction bearing

d_2 bore diameter of central shaft washer, double-direction bearing

d_3 outside diameter of central shaft washer, double-direction bearing

$d_{3s\ max}$ largest single outside diameter of central shaft washer, double-direction bearing

R radius of aligning surface of aligning housing washer and aligning seat washer

r back face chamfer dimension of shaft washer, single-direction bearing and of aligning seat washer

$r_{s\ min}$ smallest single back face chamfer dimension of shaft washer, single-direction bearing and of aligning seat washer

r_1 face chamfer dimension of central shaft washer, double-direction bearing

$r_{1s\ min}$ smallest single face chamfer dimension of central shaft washer, double-direction bearing

T bearing height, single-direction aligning thrust ball bearing

T_1 bearing height, single-direction aligning thrust ball bearing with aligning seat washer

T_2 bearing height, double-direction aligning thrust ball bearing

T_3 bearing height, double-direction aligning thrust ball bearing with aligning seat washers

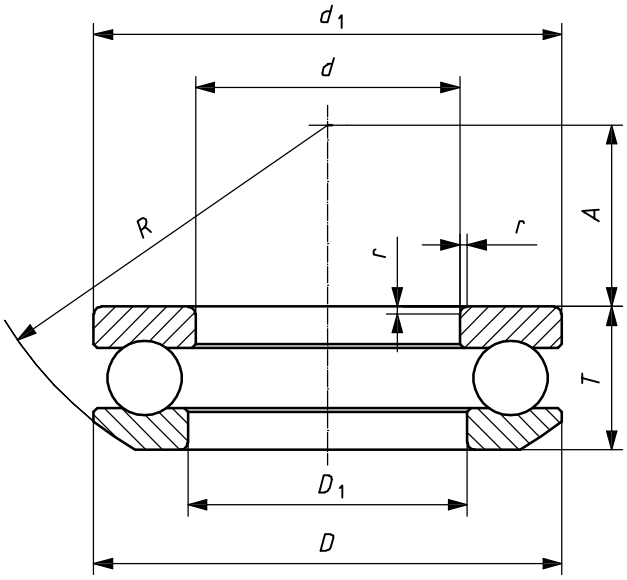

Figure 1 — Single-direction aligning thrust ball bearing

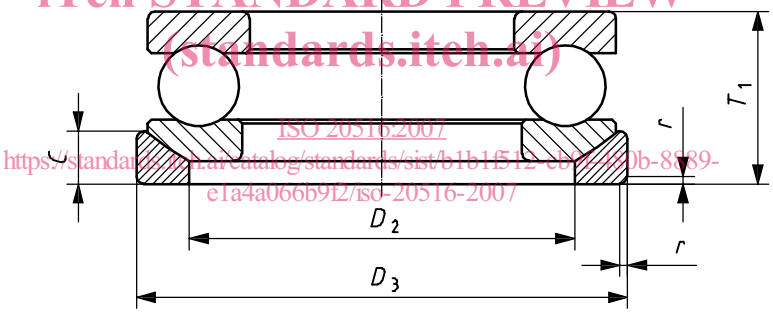

Figure 2 — Single-direction aligning thrust ball bearing with aligning seat washer

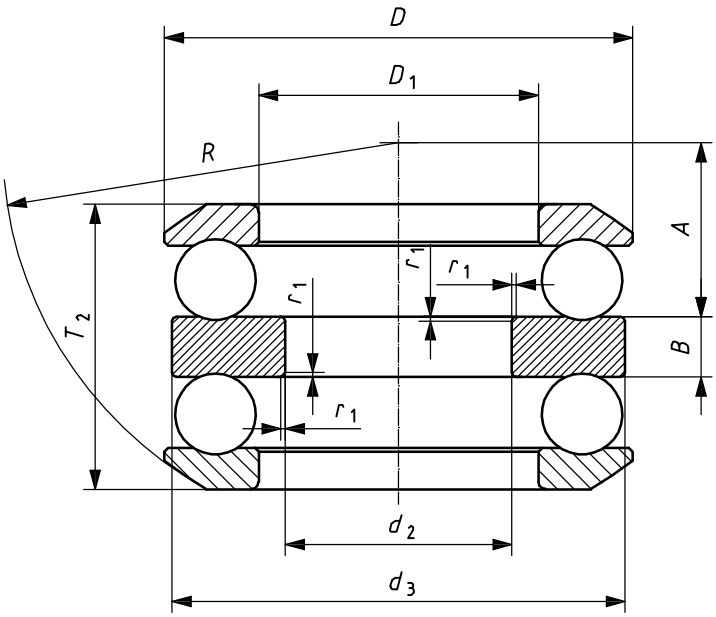

Figure 3 — Double-direction aligning thrust ball bearing

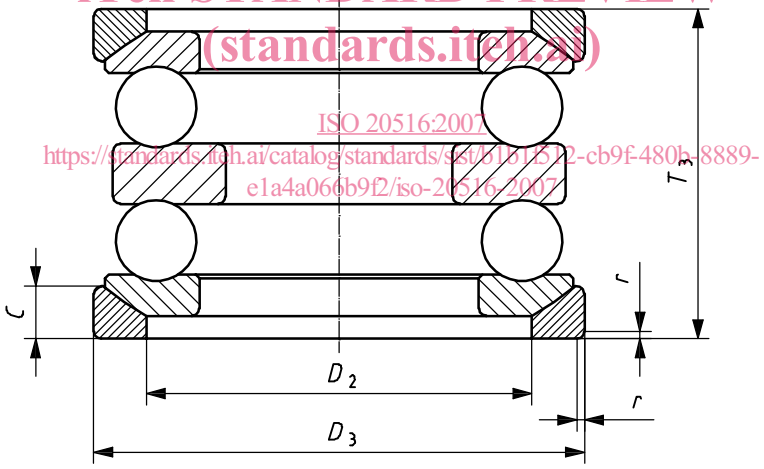

Figure 4 — Double-direction aligning thrust ball bearing with aligning seat washers

5 Boundary dimensions

5.1 General

The corresponding largest single chamfer dimensions to the $r_{s\,min}$ and $r_{1s\,min}$ dimensions in Tables 1 to 6 are given in ISO 582. The exact shape of the chamfer surface is not specified, but its contour in an axial plane shall not be allowed to project beyond an imaginary circular arc, of radius $r_{s\,min}$, tangential to the washer back face and the bore or outside cylindrical surface of the washer. For the washer face and the bore cylindrical surface, the same applies to $r_{1s\,min}$.

Chamfer dimensions r and r_1 apply only at the corners indicated in Figures 1 to 4. No dimensions are given for other corners; however, they should not be sharp.

5.2 Single-direction aligning thrust ball bearings and single-direction aligning thrust ball bearings with aligning seat washer

Dimensions for single-direction aligning thrust ball bearings and single-direction aligning thrust ball bearings with aligning seat washer are given in Tables 1 to 3.

Table 1 — Single-direction bearings — Diameter series 2

Dimensions in millimetres

d	D	$d_{1s\ max}$	$D_{1s\ min}$	T max.	A	R	D_2	D_3	T_1	C	$r_{s\ min}$
10	26	26 [a]	12	11,6	8,5	22	18	28	13	3,5	0,6
12	28	28 [a]	14	11,4	11,5	25	20	30	13	3,5	0,6
15	32	32 [a]	17	13,3	12	28	24	35	15	4	0,6
17	35	35 [a]	19	13,2	16	32	26	38	15	4	0,6
20	40	40 [a]	22	14,7	18	36	30	42	17	5	0,6
25	47	47 [a]	27	16,7	19	40	36	50	19	5,5	0,6
30	52	52 [a]	32	17,8	22	45	42	55	20	5,5	0,6
35	62	62 [a]	37	19,9	24	50	48	65	22	7	1
40	68	68 [a]	42	20,3	28,5	56	55	72	23	7	1
45	73	73 [a]	47	21,3	26	56	60	78	24	7,5	1
50	78	78 [a]	52	23,5	32,5	64	62	82	26	7,5	1
55	90	90 [a]	57	27,3	35	72	72	95	30	9	1
60	95	95 [a]	62	28	32,5	72	78	100	31	9	1
65	100	100 [a]	67	28,7	40	80	82	105	32	9	1
70	105	105 [a]	72	28,8	38	80	88	110	32	9	1
75	110	110 [a]	77	28,3	49	90	92	115	32	9,5	1
80	115	115 [a]	82	29,5	46	90	98	120	33	10	1
85	125	125 [a]	88	33,1	52	100	105	130	37	11	1
90	135	135 [a]	93	38,5	45	100	110	140	42	13,5	1,1
100	150	150 [a]	103	40,9	52	112	125	155	45	14	1,1
110	160	160 [a]	113	40,2	65	125	135	165	45	14	1,1
120	170	170 [a]	123	40,8	61	125	145	175	46	15	1,1
130	190	187	133	47,9	67	140	160	195	53	17	1,5
140	200	197	143	48,6	87	160	170	210	55	17	1,5
150	215	212	153	53,3	79	160	180	225	60	20,5	1,5
160	225	222	163	54,7	74	160	190	235	61	21	1,5
170	240	237	173	58,7	91	180	200	250	65	21,5	1,5
180	250	247	183	58,2	112	200	210	260	66	21,5	1,5
190	270	267	194	65,7	98	200	230	280	73	23	2
200	280	277	204	65,3	125	225	240	290	74	23	2
220	300	297	224	65,6	118	225	260	310	75	25	2
240	340	335	244	81,6	122	250	290	350	92	30	2,1
260	360	355	264	82,8	152	280	305	370	93	30	2,1
280	380	375	284	85	143	280	325	390	94	31	2,1
300	420	415	304	100,5	164	320	360	430	112	34	3
320	440	435	325	100,5	157	320	380	450	112	36	3
340	460	455	345	100,3	199	360	400	470	113	36	3
360	500	495	365	116,7	172	360	430	510	130	43	4

[a] If $d_{1s\ max}$ and D have the same nominal value, their tolerances shall be specified so that there is clearance between the shaft washer outside surface and the bore of a housing with nominal diameter equal to D.