

Rolling bearings: tolerances —

Part 2: Specification for tolerances of radial bearings

Committees responsible for this British Standard

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- Ball and Roller Bearing Manufacturers' Association
- Institution of Mechanical Engineers
- Society of British Aerospace Companies Ltd.

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National foreword

This British Standard has been prepared by Technical Committee MCE/7. It is identical with ISO 492:1994 *Rolling bearings — Radial bearings — Tolerances*, published by the International Organization for Standardization (ISO). ISO 492 was prepared by Technical Committee ISO/TC4, Rolling bearings, in which the UK played an active part.

BS 6107-2:1995 supersedes BS 6107-2:1987, which is withdrawn.

BS 6107 consists of a number of Parts as follows.

- *Part 1: Glossary of terms;*
- *Part 2: Specification for tolerances of radial bearings;*
- *Part 3: Specification for radial internal clearance.*

Cross-references

International Standard	Corresponding British Standard
ISO 15:1981	BS 6267:1982 <i>Specification for rolling bearings: boundary dimensions for radial bearings</i> (Identical)
ISO 355:1977	BS 3134 <i>Metric tapered roller bearings</i> Part 1:1979 <i>Specification for dimension and tolerances of single row bearings</i> (Technically equivalent)
ISO 1132:1980	BS 6107 <i>Rolling bearings: tolerances</i> Part 1:1981 <i>Glossary of terms</i> (Identical)
ISO 5593:1984	BS 6560:1984 <i>Glossary of terms for rolling bearings</i> (Identical)

Typographical error. In the first column of Table 12, headed “*D* mm”, the symbol “*d*” has been used in error for dimensions 180 mm through to 630 mm. It has been reported to ISO in a proposal to amend the text of the International Standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This International Standard specifies tolerances for boundary dimensions (except chamfer dimensions) and the running accuracy of radial rolling bearings specified in ISO 15 and ISO 355.

This International Standard does not apply to certain radial bearings of particular types (for example, drawn cup needle roller bearings) or for particular fields of application (for example, airframe bearings and instrument precision bearings). Tolerances for such bearings are given in the relevant International Standards.

Chamfer dimension limits are given in ISO 582.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 15:1981, *Rolling bearings — Radial bearings — Boundary dimensions — General plan*.

ISO 355:1977, *Rolling bearings — Metric tapered roller bearings — Boundary dimensions and series designations*.

ISO 1132:1980, *Rolling bearings — Tolerances — Definitions*.

ISO 5593:1984, *Rolling bearings — Vocabulary*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 1132 and ISO 5593 apply.

4 Symbols

The symbols (except those for tolerances) shown in the figures and the values given in the tables denote nominal dimensions unless otherwise specified.

4.1 Symbols for boundary dimensions and running accuracy

See Figure 1 for symbols for the dimensions.

d	bore diameter
d_1	diameter at the theoretical large end of a basically tapered bore
Δd_s	deviation of a single bore diameter
Δd_{mp}	deviation of mean bore diameter in a single plane (for a basically tapered bore, Δd_{mp} refers to the theoretical small end of the bore)
Δd_{1mp}	deviation of mean bore diameter in a single plane at the theoretical large end of a basically tapered bore
V_{dp}	variation of bore diameter in a single radial plane
V_{dmp}	variation of mean bore diameter (this applies only to a basically cylindrical bore)
D	outside diameter
D_1	outside diameter of outer ring flange
ΔD_s	deviation of a single outside diameter
ΔD_{mp}	deviation of mean outside diameter in a single plane
ΔD_{1s}	deviation of a single outside diameter of outer ring flange
V_{Dp}	variation of outside diameter in a single radial plane
V_{Dmp}	variation of mean outside diameter
B	inner ring width
ΔB_s	deviation of a single inner ring width

V_{Bs}	variation of inner ring width
C	outer ring width
C_1	outer ring flange width
ΔC_s	deviation of a single outer ring width
ΔC_{1s}	deviation of a single outer ring flange width
V_{Cs}	variation of outer ring width
V_{C1s}	variation of outer ring flange width
K_{ia}	radial runout of inner ring of assembled bearing
K_{ea}	radial runout of outer ring of assembled bearing
S_d	runout of inner ring reference face (back face, where applicable) with respect to the bore
S_D	variation of outer ring outside surface generatrix inclination with respect to the outer ring reference face (back face)
S_{D1}	variation of outer ring outside surface generatrix inclination with respect to the outer ring flange back face
S_{ia}	runout of inner ring face (back face) with respect to the raceway of assembled bearing
S_{ea}	runout of outer ring face (back face) with respect to the raceway of assembled bearing
S_{ea1}	runout of outer ring flange back face with respect to the raceway of assembled bearing
α	taper angle (half the cone angle) of inner ring bore

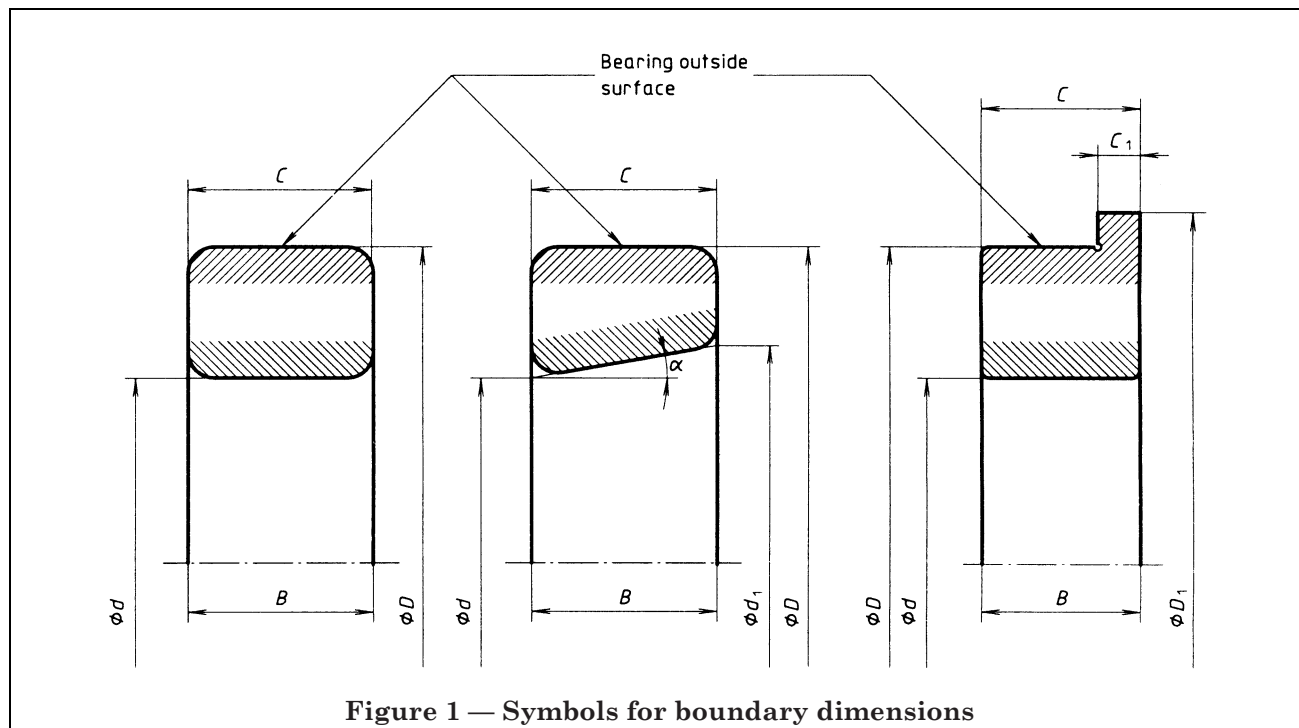


Figure 1 — Symbols for boundary dimensions

4.2 Additional symbols for tapered roller bearings

See Figure 2.

T	bearing width
ΔT_s	deviation of the actual bearing width
T_1	effective inner subunit width
ΔT_{1s}	deviation of the actual effective inner subunit width
T_2	effective outer subunit width
ΔT_{2s}	deviation of the actual effective outer subunit width

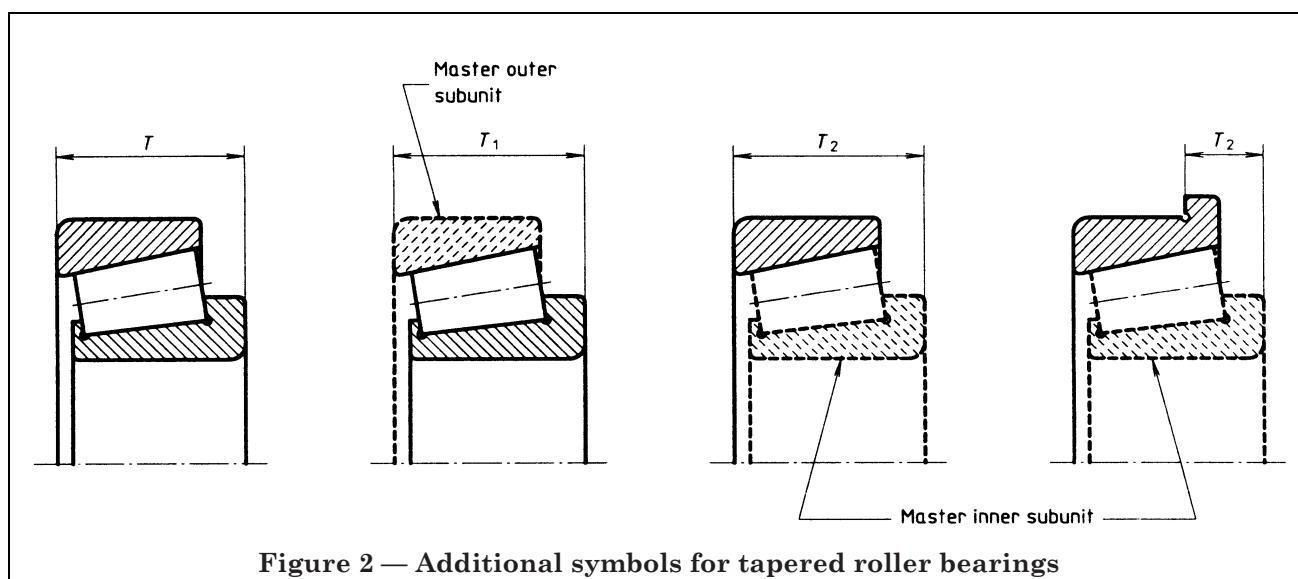


Figure 2 — Additional symbols for tapered roller bearings

5 Tolerances

5.1 Radial bearings except tapered roller bearings

The bore diameter tolerances given in this subclause apply to basically cylindrical bores. Tolerances for tapered bores are given in 5.4.

The diameter series referred to in Table 1 to Table 8 are those defined in ISO 15.

5.1.1 Normal tolerance class

See Table 1 and Table 2.

Table 1 — Inner ring

Tolerance values in micrometres

d mm	Δd_{mp}		V_{dp}			$V_{d\text{mp}}$	K_{ia}	ΔB_s			V_{B_s}
			Diameter series					all	normal	modified ^a	
	9	0,1	2,3,4								
	high	low	max.			max.	max.	high	low		max.
$0,6 \leq d \leq 2,5$	0	− 8	10	8	6	6	10	0	− 40	—	12
$2,5 < d \leq 10$	0	− 8	10	8	6	6	10	0	− 120	− 250	15
$10 < d \leq 18$	0	− 8	10	8	6	6	10	0	− 120	− 250	20
$18 < d \leq 30$	0	− 10	13	10	8	8	13	0	− 120	− 250	20
$30 < d \leq 50$	0	− 12	15	12	9	9	15	0	− 120	− 250	20
$50 < d \leq 80$	0	− 15	19	19	11	11	20	0	− 150	− 380	25
$80 < d \leq 120$	0	− 20	25	25	15	15	25	0	− 200	− 380	25
$120 < d \leq 180$	0	− 25	31	31	19	19	30	0	− 250	− 500	30
$180 < d \leq 250$	0	− 30	38	38	23	23	40	0	− 300	− 500	30
$250 < d \leq 315$	0	− 35	44	44	26	26	50	0	− 350	− 500	35
$315 < d \leq 400$	0	− 40	50	50	30	30	60	0	− 400	− 630	40
$400 < d \leq 500$	0	− 45	56	56	34	34	65	0	− 450	—	50
$500 < d \leq 630$	0	− 50	63	63	38	38	70	0	− 500	—	60
$630 < d \leq 800$	0	− 75	—	—	—	—	80	0	− 750	—	70
$800 < d \leq 1\,000$	0	− 100	—	—	—	—	90	0	− 1\,000	—	80
$1\,000 < d \leq 1\,250$	0	− 125	—	—	—	—	100	0	− 1\,250	—	100
$1\,250 < d \leq 1\,600$	0	− 160	—	—	—	—	120	0	− 1\,600	—	120
$1\,600 < d \leq 2\,000$	0	− 200	—	—	—	—	140	0	− 2\,000	—	140

^a This refers to the rings of single bearings made for paired or stack assemblies.

^a This refers to the rings of single bearings made for paired or stack assemblies.