INTERNATIONAL STANDARD

ISO 9628

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Rolling bearings — Insert bearings and eccentric locking collars

Roulements — Roulements "insert" et bagues de blocage excentriques

Reference number
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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 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9628 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Sub-Committee SC 6, *Insert bearings and accessories*.

This first edition cancels and replaces ISO 2264:1972 and ISO 3145:1974, of which it constitutes a technical revision.

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Rolling bearings — Insert bearings and eccentric locking collars

1 Scope

This International Standard specifies the characteristics, boundary dimensions, tolerances and radial internal clearances of insert bearings and eccentric locking collars.

NOTE 1 An insert bearing is defined as a radial rolling bearing with a spherical outside surface and an extended inner ring with a locking device (see ISO 5593). The locking device, for fixing the inner ring to the shaft, may be an eccentric locking collar or set screws either in a concentric collar around the inner ring or directly in the inner ring.

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 5593:1984, *Rolling bearings — Vocabulary.*

3 Definitions

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

4 Symbols

NOTE 2 The symbols (except those for tolerances) shown in the figures and given in the tables denote nominal dimensions unless otherwise specified.

A	width of inner ring eccentric surface
A_1	width of collar eccentric surface
ΔA_{1s}	deviation of a single collar eccentric surface width of eccentric locking collar
B	width of inner ring
B_1	overall inner ring width including eccentric locking collar
B_2	width of eccentric locking collar
ΔB_{2s}	deviation of a single collar width of eccentric locking collar
C	width of outer ring
C_a	distance from centre of outer ring to centre of lubrication zone
C_b	width of lubrication zone
d	bore diameter of bearing and eccentric locking collar
Δd_{mp}	deviation of mean bearing bore diameter in a single plane
V_{dp}	variation of bearing bore diameter in a single radial plane
Δd_s	deviation of single bore diameter of eccentric locking collar
d_1	outside diameter of eccentric locking collar
d_2	small bore diameter of eccentric surface (at theoretical sharp corner) of eccentric locking collar
Δd_{2s}	deviation of single small bore diameter of eccentric surface of eccentric locking collar
d_3	large diameter of inner ring eccentric surface (at theoretical sharp corner)

D	outside diameter of bearing
H	eccentricity
ΔH_s	eccentricity deviation in a single radial plane
r_1	chamfer dimension of inner ring eccentric surface
$r_{1s\ min}$	smallest single chamfer dimension of inner ring eccentric surface
r_2	fillet radius of inner ring eccentric surface
$r_{2s\ max}$	largest single fillet radius of inner ring eccentric surface
r_3	fillet radius of collar eccentric surface
$r_{3s\ max}$	largest single fillet radius of collar eccentric surface
r_4	chamfer dimension of collar eccentric surface
$r_{4s\ min}$	smallest single chamfer dimension of collar eccentric surface
S	distance from centre of raceway to inner ring face on side opposite the locking device
S_1	distance from centre of raceway to the face of inner ring or locking collar limiting the overall bearing width on the locking device side.

5 Characteristics

5.1 General

The bearings on one shaft are as a rule mounted in two or more separate housings, which are not always perfectly aligned. The outer ring has a spherical outside surface so that the bearing may be mounted in a housing with a matching spherical seating to provide correct initial alignment.

The bore surface may be plated to reduce corrosion during operation.

5.2 Bore diameter

To each bearing and eccentric locking collar size there is related one bore in millimetres and one or several bores in inches. The non-preferred inch bores, which are shown in parentheses in tables 1 to 3, should be avoided wherever possible.

Contrary to general rolling bearing practice, the bore tolerance is on the plus side of the nominal bore diameter, in order that the bearing and collar may be slipped over standard shafting.

5.3 Outside diameter

The outside diameter corresponds (with respect to the metric bore diameter) to the diameter series 2 of ISO 15.

5.4 Inner ring width and locking devices

The inner ring width does not conform to the requirements of ISO 15. It is determined by the requirements of space for sealing and locking devices and by the axial extension of the shaft support considered suitable for various applications.

Where the locking device extends axially beyond the inner ring, the width over the locking device, called the overall width, and the location with respect to the outer ring centreline of the side surface limiting the overall width, are important dimensions and are therefore specified in this International Standard.

Three series of overall widths, designated wide, intermediate and narrow, are given. Each of the figures 1 to 4 shows one example only of locking device design.

NOTE 3 The figures are drawn schematically and sealing devices are not shown.

5.5 Width of outer ring

For bearings with spherical outside surface, the width of the outer ring is not important provided the range of width is known so that assembly slots in the housing may be properly dimensioned. This International Standard therefore gives outer ring widths which range from a minimum that conforms to dimension series 02 in ISO 15 to a maximum that provides sufficient space for various seals and lubrication holes.

5.6 Relubrication

Depending on the application, these bearings are supplied with or without means for relubrication, for example one or several small radial holes drilled through the outer ring. The exact design or location of such means is not specified in this International Standard. It gives only the width and location of a zone which any relubrication means, provided on one or both sides of the outer ring, should intersect in such a way that lubricant will satisfactorily feed into the bearing from the housing bore groove covering the zone.

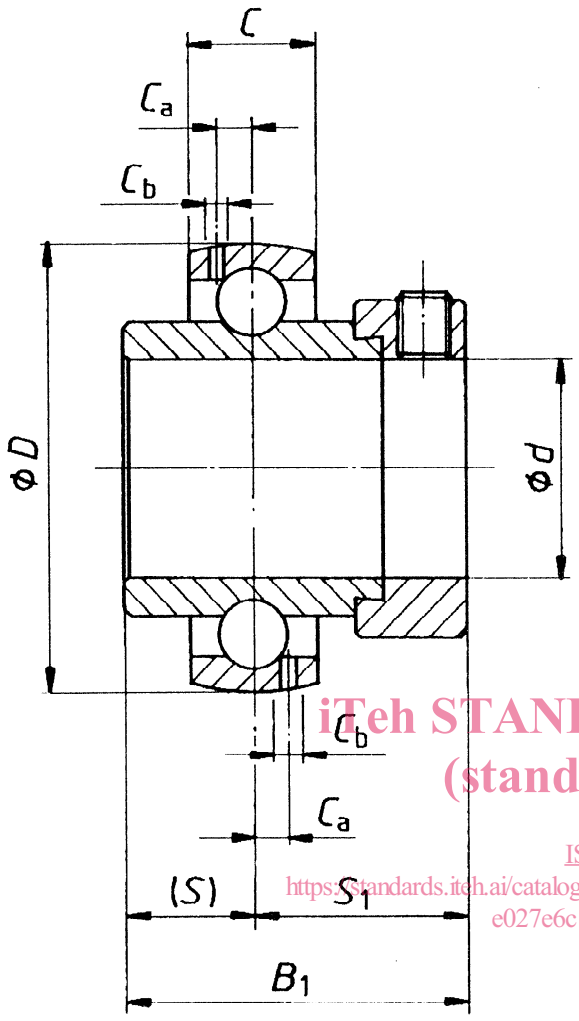


Figure 1 — Bearing with eccentric locking collar — Wide overall width (see table 1)

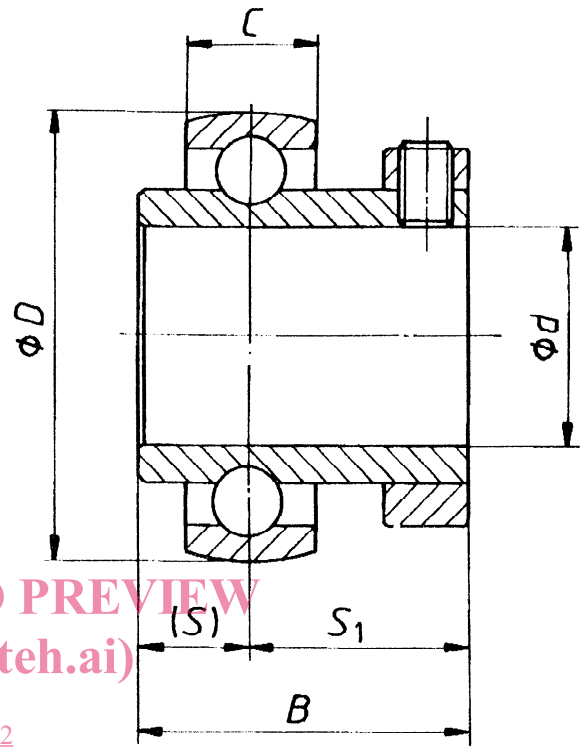


Figure 2 — Bearing with concentric locking collar around the inner ring — Intermediate overall width (see table 2)

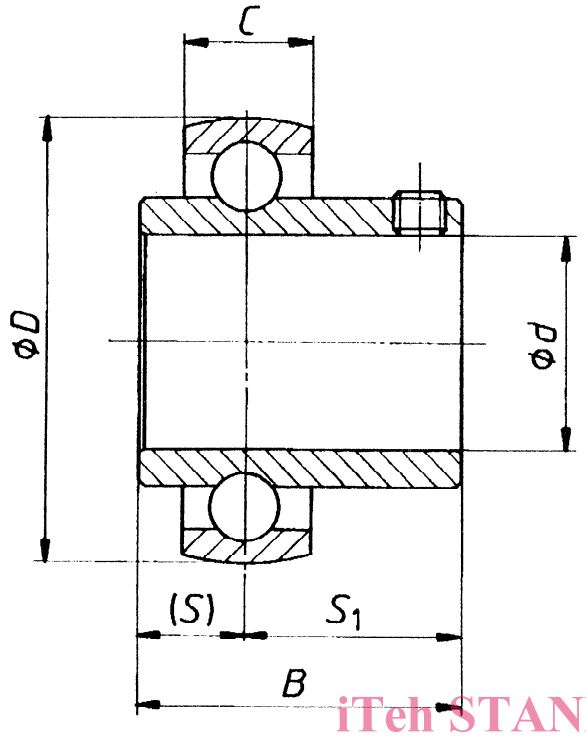


Figure 3 — Bearing with set screws in the inner ring — Intermediate overall width (see table 2)

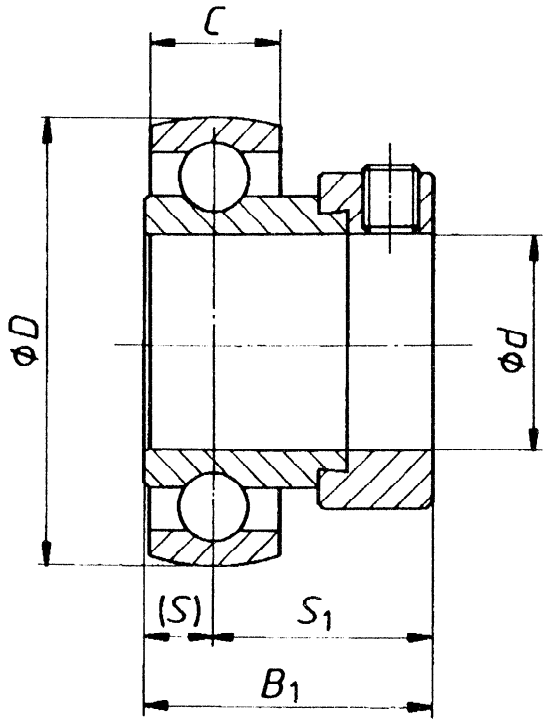


Figure 4 — Bearing with eccentric locking collar — Narrow overall width (see table 3)

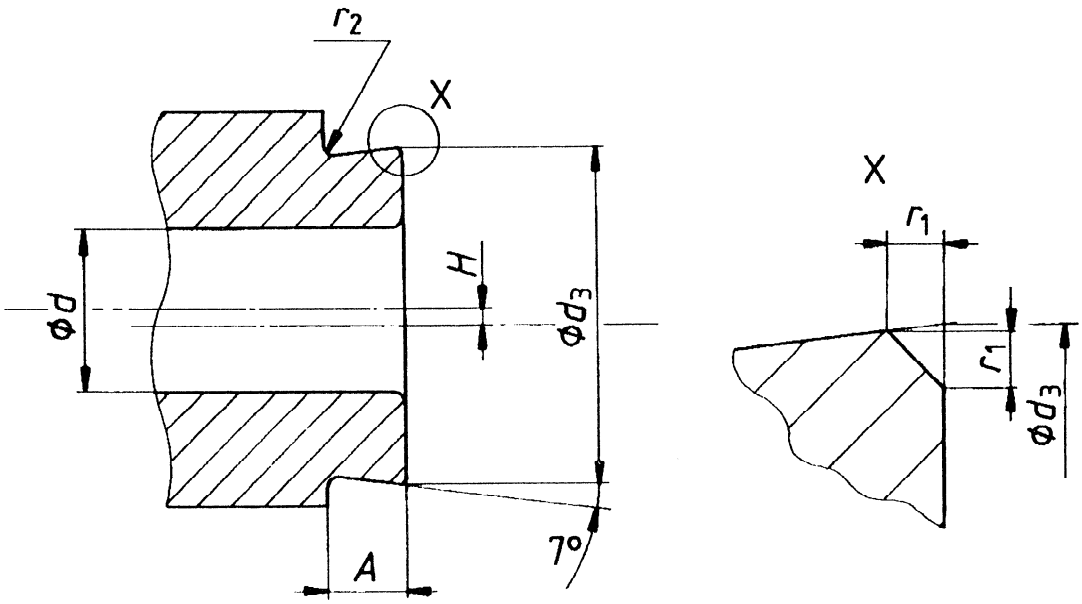
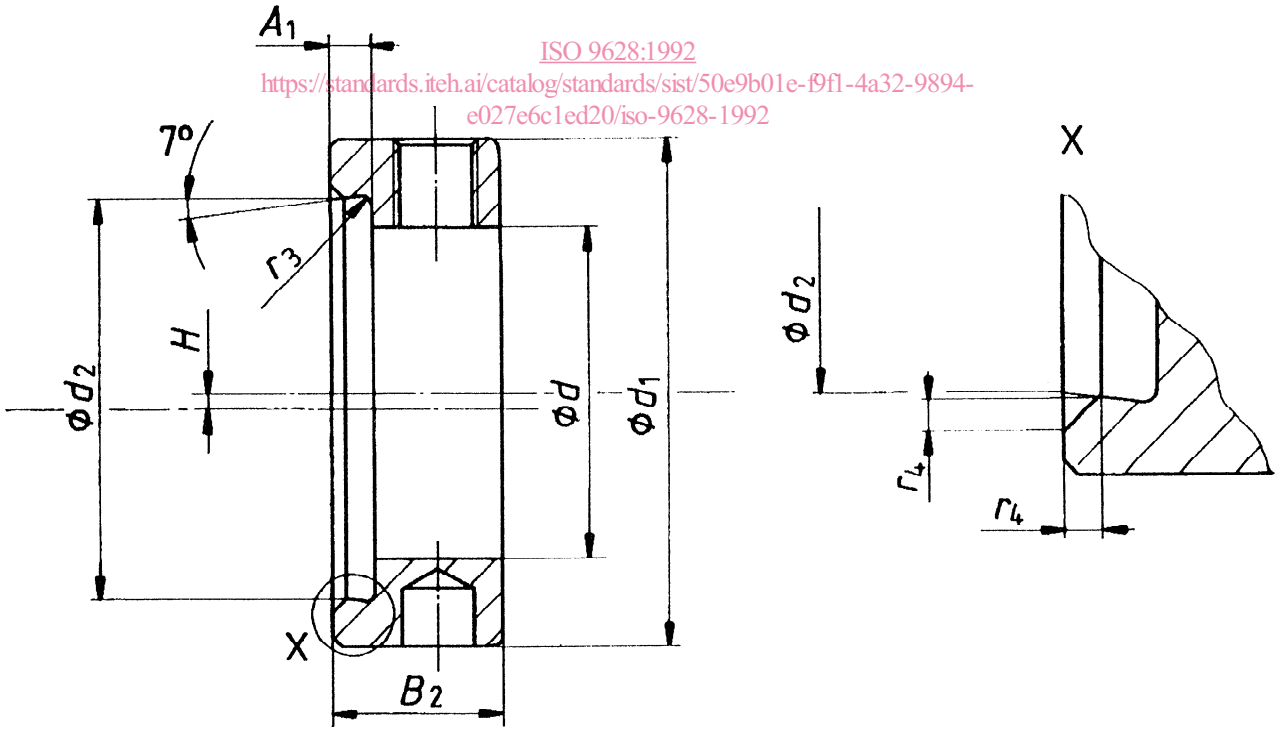


Figure 5 — Inner ring eccentric extension (see table 4)



NOTE — The relative angular position of the plain and tapped holes to each other and to the eccentricity is optional.

Figure 6 — Eccentric locking collar (see table 5)

Table 1 — Insert bearings — Diameter series 2 — Wide overall width — Axially extending eccentric locking collar (see figure 1)

d		D	B_1		(S)		S_1		C [1] min.	C [1] max.	C_a [2]	C_b [2]
mm	in	mm	mm	in	mm	in	mm	in	mm			
12,7 (14,288) 15,875 17 (17,462)	1/2 (9/16) 5/8 (11/16)	40	37,3	1,471	13,9	0,549	23,4	0,922	12	15	3,4	2
19,05 20	3/4	47	43,7	1,721	17,1	0,672	26,6	1,049	14	17	3,7	2
(20,638) 22,225 (23,812) 25 25,4	(13/16) 7/8 (15/16) 1	52	44,4	1,75	17,5	0,688	26,9	1,062	15	17	3,9	2,5
(26,988) 28,575 30 30,162 (31,75)	(1 1/16) 1 1/8 1 3/16 (1 1/4)	62	48,4	1,907	18,3	0,719	30,1	1,188	16	19	5	2,5
31,75 (33,338) 34,925 35 36,512	1 1/4 (1 5/16) 1 3/8 1 7/16	72	51,1	2,015	18,8	0,742	32,3	1,273	17	20	5,7	3
38,1 (39,688) 40	1 1/2 (1 9/16)	80	56,3	2,219	21,4	0,844	34,9	1,375	18	21	6,2	3
(41,275) 42,862 44,45 45	(1 5/8) 1 11/16 1 3/4	85	56,3	2,219	21,4	0,844	34,9	1,375	19	22	6,4	3
(46,038) (47,625) 49,212 50 (50,8)	(1 13/16) (1 7/8) 1 15/16 (2)	90	62,7	2,469	24,6	0,969	38,1	1,5	20	24	6,5	3,5
50,8 (52,388) (53,975) 55 55,562	2 (2 1/16) (2 1/8) 2 3/16	100	71,4	2,813	27,8	1,094	43,6	1,719	21	25	7	3,5
57,15 (58,738) 60 (60,325) 61,912	2 1/4 (2 5/16) (2 3/8) 2 7/16	110	77,8	3,063	31	1,219	46,8	1,844	22	27	7,6	4

1) The min. and max. widths are not tolerances; they indicate a range within which the nominal value shall fall.

2) The relubrication means in the outer ring, if used, shall be located on one or both sides of the outer ring zones defined by the dimensions C_a and C_b, in such a way that lubricant will satisfactorily feed into the bearing from a housing bore groove covering the zone.

Table 2 — Insert bearings — Diameter series 2 — Intermediate overall width — Locking device not axially extending (see figures 2 and 3)

d		D	B		(S)		S_1		C [1] min.	C [1] max.	C_a [2]	C_b [2]
mm	in	mm	mm	in	mm	in	mm	in	mm			
(12,7) (14,288) 15,875 17 (17,462)	(1/2) (9/16) 5/8 (11/16)	40	27,4	1,078	11,5	0,453	15,9	0,625	12	15	3,4	2
19,05 20	3/4	47	31	1,219	12,7	0,5	18,3	0,719	14	17	3,7	2
(20,638) 22,225 (23,812) 25 25,4	(13/16) 7/8 (15/16) 1	52	34,1	1,343	14,3	0,562	19,8	0,781	15	17	3,9	2,5
(26,988) 28,575 30 30,162 (31,75)	(1 1/16) 1 1/8 1 3/16 (1 1/4)	62	38,1	1,5	15,9	0,625	22,2	0,875	16	19	5	2,5
31,75 (33,338) 34,925 35 36,512	1 1/4 (1 5/16) 1 3/8 1 7/16	72	42,9	1,688	17,5	0,688	25,4	1	17	20	5,7	3
38,1 (39,688) 40	1 1/2 (1 9/16)	80	49,2	1,938	19	0,75	30,2	1,188	18	21	6,2	3
(41,275) 42,862 44,45 45	(1 5/8) 1 11/16 1 3/4	85	49,2	1,938	19	0,75	30,2	1,188	19	22	6,4	3
(46,038) (47,625) 49,212 50 (50,8)	(1 13/16) (1 7/8) 1 15/16 (2)	90	51,6	2,031	19	0,75	32,6	1,281	20	24	6,5	3,5
50,8 (52,388) (53,975) 55 55,562	2 (2 1/16) (2 1/8) 2 3/16	100	55,6	2,187	22,2	0,875	33,4	1,312	21	25	7	3,5
57,15 (58,738) 60 (60,325) 61,912	2 1/4 (2 5/16) (2 3/8) 2 7/16	110	65,1	2,562	25,4	1	39,7	1,562	22	27	7,6	4

1) The min. and max. widths are not tolerances; they indicate a range within which the nominal value shall fall.

2) The relubrication means in the outer ring, if used, shall be located on one or both sides of the outer ring zones defined by the dimensions C_a and C_b, in such a way that lubricant will satisfactorily feed into the bearing from a housing bore groove covering the zone.