

INTERNATIONAL  
STANDARD

ISO  
12240-2

First edition  
1998-08-15

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**Spherical plain bearings —**

**Part 2:**

**Angular contact radial spherical plain bearings**

*Rotules lisses —*

*Partie 2: Rotules lisses radiales à contact oblique*



Reference number  
ISO 12240-2:1998(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standard 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 12240-1 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 7, *Spherical plain bearings*.

This first edition cancels and replaces ISO 6124-1:1987, ISO 6124-2:1982, ISO 6124-3:1982 and ISO 6125:1982 of which it constitutes a technical revision.

ISO 12240 consists of the following parts, under the general title *Spherical plain bearings*:

- *Part 1: Radial spherical plain bearings*
- *Part 2: Angular contact radial spherical plain bearings*
- *Part 3: Thrust spherical plain bearings*
- *Part 4: Spherical plain bearing rod ends*

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International Organization for Standardization  
Case postale 56 • CH-1211 Genève 20 • Switzerland  
Internet iso@iso.ch

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## Contents

	Page
Foreword	iii
1 Scope	1
2 Normative references	1
3 Definitions and symbols	1
4 Dimensions and tolerances	1
Figure 1 — Angular contact radial spherical plain bearing, dimension series A	1
Table 1 — Dimensions for angular contact radial spherical plain bearings, dimension series A	2
Table 2 — Tolerances for inner ring and bearing width	3
Table 3 — Tolerances for outer ring	3

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- *Part 4: Spherical plain bearing rod ends.*

**Descriptors:** Bearings, plain bearings, spherical bearings, radial bearings, form specifications, dimensions, dimensional tolerances.



**1 Scope**

This part of ISO 12240 specifies dimensions and tolerances for angular contact radial spherical plain bearings.

The specified tolerance values apply to finished, angular contact radial spherical plain bearings before any coating or plating.

Angular contact radial spherical plain bearings need not conform to the design illustrated but compliance is required as regards dimensions and tolerances specified.

NOTE Angular contact radial spherical plain bearings for airframe applications are not covered by this part of ISO 12240.

**2 Normative references**

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 12240. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 12240 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 582:1995, *Rolling bearings — Chamfer dimensions — Maximum values.*

ISO 1132-1:—, *Rolling bearings — Tolerances — Part 1: Terms and definitions*<sup>1)</sup>.

ISO 6811:1998, *Spherical plain bearings — Vocabulary.*

**3 Definitions and symbols**

For the purposes of this part of ISO 12240, the definitions given in ISO 1132-1 and ISO 6811 apply. The symbols (except those for tolerances) shown in Figure 1 and the values given in the tables denote nominal dimensions unless specified otherwise.

- $B$  Inner ring width
- $C$  Outer ring width
- $D$  Outside diameter
- $D_1$  Bore diameter of outer ring
- $d$  Bore diameter
- $d_1$  Outside diameter of inner ring
- $d_k$  Sphere diameter
- $r_{s \min}^a$  Smallest single chamfer dimension, inner ring
- $r_{1s \min}^a$  Smallest single chamfer dimension, outer ring
- $s$  Distance between sphere diameter centre and inner ring back face

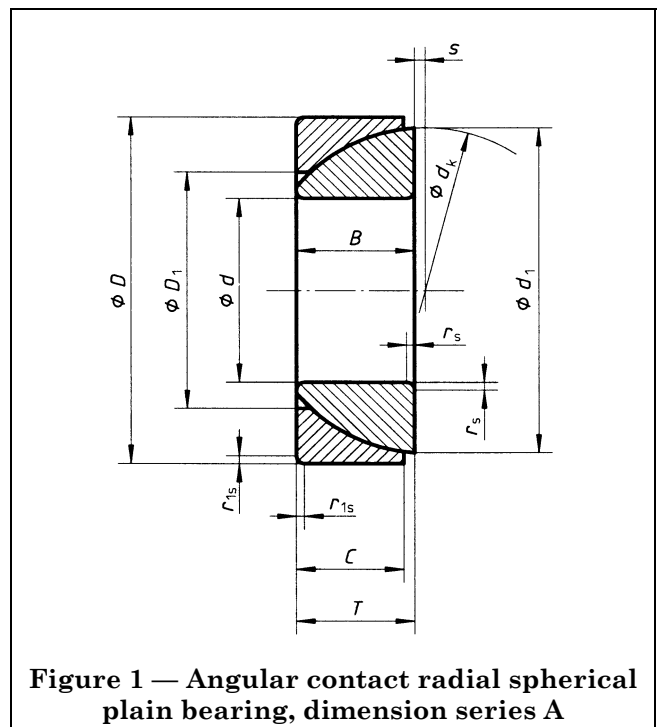
- $T$  Bearing width
- $V_{Dmp}$  Variation of mean outside diameter
- $V_{dmp}$  Variation of mean bore diameter
- $V_{Dp}$  Variation of outside diameter in a single radial plane
- $V_{dp}$  Variation of bore diameter in a single radial plane
- $\Delta_{Bs}$  Deviation of a single inner ring width
- $\Delta_{Cs}$  Deviation of a single outer ring width
- $\Delta_{Dmp}$  Deviation of mean outside diameter in a single plane
- $\Delta_{dmp}$  Deviation of mean bore diameter in a single plane
- $\Delta_{Ts}$  Deviation of the actual bearing width

<sup>a</sup> The corresponding maximum chamfer dimensions are given in Table 1 of ISO 582:1995.

**4 Dimensions and tolerances**

**4.1 Dimensions**

See Figure 1 and Table 1.



**Figure 1 — Angular contact radial spherical plain bearing, dimension series A**

<sup>1)</sup> To be published. (Revision of ISO 1132:1980)

**Table 1 — Dimensions for angular contact radial spherical plain bearings, dimension series A**

Dimensions in millimetres

$d$	$D$	$B$ max.	$C$ max.	$T$	$d_k^a$	$d_1$ $\approx$	$D_1$ max.	$s$ $\approx$	$r_s, r_{1s}$ min.
25	47	15	14	15	42	41,5	32	1	0,6
28	52	16	15	16	47	46,5	36	1	1
30	55	17	16	17	50	49,5	37	2	1
32	58	17	16	17	52	51,5	40	2	1
35	62	18	17	18	56	55,5	43	2	1
40	68	19	18	19	61	60,5	48	2	1
45	75	20	19	20	67	66,5	54	3	1
50	80	20	19	20	74	73,5	60	4	1
55	90	23	22	23	81	80	63	5	1,5
60	95	23	22	23	87	86	69	5	1,5
65	100	23	22	23	93	92	77	6	1,5
70	110	25	24	25	102	101	83	7	1,5
75	115	25	24	25	106	105	87	7	1,5
80	125	29	27	29	115	113,5	92	9	1,5
85	130	29	27	29	121	119	98	10	1,5
90	140	32	30	32	129	127	104	11	2
95	145	32	30	32	133	131,5	109	9	2
100	150	32	31	32	141	138,5	115	12	2
105	160	35	33	35	149	146,5	120	13	2,5
110	170	38	36	38	158	155	127	14	2,5
120	180	38	37	38	169	165	137	16	2,5
130	200	45	43	45	188	184	149	18	2,5
140	210	45	43	45	198	194	162	19	2,5
150	225	48	46	48	211	207	172	20	3
160	240	51	49	51	225	221	183	20	3
170	260	57	55	57	246	242	195	21	3
180	280	64	61	64	260	256	207	21	3
190	290	64	62	64	275	270	213	26	3
200	310	70	66	70	290	285	230	26	3

<sup>a</sup>Reference only.

## 4.2 Tolerances

See Table 2 and Table 3.

**Table 2 — Tolerances for inner ring and bearing width**

$d$ mm		$\Delta_{dmp}$ $\mu\text{m}$		$V_{dp}$ $\mu\text{m}$	$V_{dmp}$ $\mu\text{m}$	$\Delta_{Bs}$ $\mu\text{m}$		$\Delta_{Ts}$ $\mu\text{m}$	
over	including	high	low	max.	max.	high	low	high	low
—	50	0	– 12	12	9	0	– 240	+ 250	– 400
50	80	0	– 15	15	11	0	– 300	+ 250	– 500
80	120	0	– 20	20	15	0	– 400	+ 250	– 600
120	180	0	– 25	25	19	0	– 500	+ 350	– 700
180	200	0	– 30	30	23	0	– 600	+ 350	– 800

**Table 3 — Tolerances for outer ring**

$D$ mm		$\Delta_{Dmp}$ $\mu\text{m}$		$V_{Dp}$ $\mu\text{m}$	$V_{Dmp}$ $\mu\text{m}$	$\Delta_{Cs}$ $\mu\text{m}$	
over	including	high	low	max.	max.	high	low
—	50	0	– 14	14	11	0	– 240
50	80	0	– 16	16	12	0	– 300
80	120	0	– 18	18	14	0	– 400
120	150	0	– 20	20	15	0	– 500
150	180	0	– 25	25	19	0	– 500
180	250	0	– 30	30	23	0	– 600
250	315	0	– 35	35	26	0	– 700



