INTERNATIONAL STANDARD

ISO 14204

First edition
1998-04-15

Aerospace — Airframe ball bearings, double-row, rigid, diameter series 0 — Metric series

Aéronautique et espace — Roulements pour structures d'aéronefs: roulements, rigides, à deux rangées de billes, série de diamètres 0 — Série métrique

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/ebe9e2d7-b5ee-44c0-b214-4e0e1a74433f/iso-14204-1998

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 14204 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 15, *Airframe bearings*.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/ebe9e2d7-b5ee-44c0-b214-4e0e1a74433f/iso-14204-1998

© ISO 1998

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

Aerospace — Airframe ball bearings, double-row, rigid, diameter series 0 — Metric series

1 Scope

This International Standard specifies the characteristics, boundary dimensions, tolerances, internal clearances and permissible loads of metric series double-row, rigid, ball bearings of diameter series 0, in accordance with ISO 15, used in airframe applications. These bearings are full complement (without cage) with a double row of balls and filling slot. These bearings are designed to withstand only slow rotations and oscillations under load and are intended for use between fixed and moving parts of an aircraft structure and their control surfaces.

The airframe ball bearings covered by this International Standard are designed to operate in the temperature range of – 54 °C to + 150 °C.

2 Normative references

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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 14204:1998
https://standards.iteh.ai/catalog/standards/sist/ebe9e2d7-b5ee-44c0-b214-4e0e1a74433f/iso-14204-1998

ISO 15:1998, *Rolling bearings — Radial bearings — Boundary dimensions, general plan.*

ISO 683-17:—[1)], *Heat-treated steels, alloy steels and free-cutting steels — Part 17: Ball and roller bearing steels*.

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

ISO 2082:1986, *Metallic coatings — Electroplated coatings of cadmium on iron or steel*.

ISO 4520:1981, *Chromate conversion coatings on electroplated zinc and cadmium coatings*.

ISO 5593:1997, *Rolling bearings — Vocabulary*.

ISO 8075:1985, *Aerospace — Surface treatment of hardenable stainless steel parts*.

ISO 14190:1998, *Aerospace — Airframe rolling bearings: ball and spherical roller bearings — Technical specification*.

---

1) To be published. (Revision of ISO 683-17:1976)

AMS 2417E:1993, *Plating, zinc-nickel alloy.*[2)]

3 Definitions

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

4 Symbols

4.1 For the purposes of this International Standard, the symbols given in ISO 1132 apply. The symbols (except those for tolerances) shown in figure 1 and the values given in table 1 denote nominal dimensions unless specified otherwise.

4.2 Additional symbols for bearings covered by this International Standard are the following.

C_s permissible static radial load

$F_{a\,max}$ permissible static axial load

5 Required characteristics

5.1 Dimensions — Tolerances — Internal clearances — Loads

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Values are given in table 1. Where plating is specified, tolerances are applicable after plating.

NOTE — With the exception of chamfer dimensions, boundary dimensions are in accordance with ISO 15.

ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/...

Configuration is given in figure 1. The bearings may be assembled with either seals or shields. The configuration for and installation process of seals and shields are at the manufacturer's option.

5.2 Surface roughness

Inner and outer ring raceways and rolling elements shall have a surface roughness of R = 0,2 µm max.

Bore, side faces and cylindrical outer surface shall have a surface roughness of R_a = 0,8 µm max. before surface treatment.

6 Materials

6.1 Low alloy through hardening bearing steel (code letters F, D, M and Z)

Rings: bearing steel — ISO 683-17, type 1, surface hardness 59 HRC to 64 HRC (710 HV to 840 HV).

Balls: bearing steel — ISO 683-17, type 1, heat treated to 59 HRC to 64 HRC (710 HV to 840 HV).

[2)] Available from: SAE International
400 Commonwealth Drive
Warrendale, PA 15096-0001
USA

a

6.2 Corrosion-resistant stainless steel (code letters C and H)

Rings: bearing steel — ISO 683-17, type 21, hardness ⩾ 58 HRC (⩾ 670 HV).

Balls: bearing steel — ISO 683-17, type 21, hardness ⩾ 58 HRC (⩾ 670 HV).

6.3 General

Shields: corrosion-resistant steel.

Seals: polytetrafluoroethylene (PTFE) or polytetrafluoroethylene (PTFE) sheet, glass-fabric reinforced.

7 Surface treatment

7.1 All elements manufactured from corrosion-resistant steel which are not cadmium plated or zinc-nickel plated (code letter C) shall be passivated in accordance with ISO 8075 or cleaned by a mechanical method.

7.2 If made of corrosion-resistant steel, cadmium plating (code letter H) shall be subject to agreement between the customer and the manufacturer.

7.3 Where cadmium plating is specified (code letters D, M and H), it shall be in accordance with ISO 2082. The external surfaces of bearing rings, except the bore of the inner ring, shall be cadmium plated. Plating on the internal surfaces shall be at the manufacturers option, except the raceways shall not be plated. The thickness of the plating shall not be less than 7 µm and not more than 15 µm, except plating on the chamfers of the bore may vary from the specified thickness. The bearing shall be embrittlement-relieved within 4 h of plating by heat treatment at 140 °C ± 10 °C for a minimum of 8 h followed by chromate treatment in accordance with ISO 4520 (code letters D and H only).

iTeh STANDARD PREVIEW
(standards.iteh.ai)

7.4 Where zinc-nickel plating is specified (code letter Z), it shall be in accordance with AMS 2417E, type 2. The surface coverage of the plating shall be as specified in 7.3. The thickness of the plating shall not be less than 7 µm or more than 15 µm.

ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/bbbc1d7-ae5c-4bd0-b21d-4e0e1a74433f/iso-14204-1998

8 Lubrication

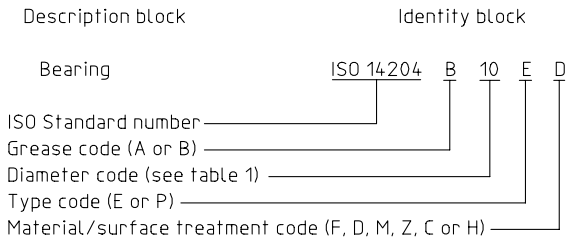
The bearing shall be prelubricated with either grease A or B, as specified by the customer.

NOTE — Descriptions of grease A and grease B are given in ISO 14190:1998, annex H.

9 Designation

Bearings in accordance by this International Standard shall be designated only as shown in the following example.

EXAMPLE



where the following codes are applied:

— greases:

A = ester type grease;
B = synthetic hydrocarbon-type grease;

— types:

E = with seals;
P = with shields;

— materials/surface treatments:

F = material: low alloy bearing steel;
surface treatment: none;
D = material: low alloy bearing steel;
surface treatment: cadmium plated with chromate treatment;
M = material: low alloy bearing steel;
surface treatment: cadmium plated without chromate treatment;
Z = material: low alloy bearing steel;
surface treatment: zinc-nickel plated;
C = material: corrosion-resistant stainless steel;
surface treatment: none;
H = material: corrosion-resistant stainless steel;
surface treatment: cadmium plated with chromate treatment.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/ebe9e2d7-b5ee-44c0-b214-4e0e1a74433f/iso-14204-1998

10 Identification marking

In addition to the manufacturer's name or trademark, each bearing shall be permanently and legibly marked, using the identity block as defined in clause 9. Marking position and method are at the manufacturer's option.

11 Technical specification

Airframe ball bearings supplied to this International Standard shall conform to the requirements of ISO 14190.

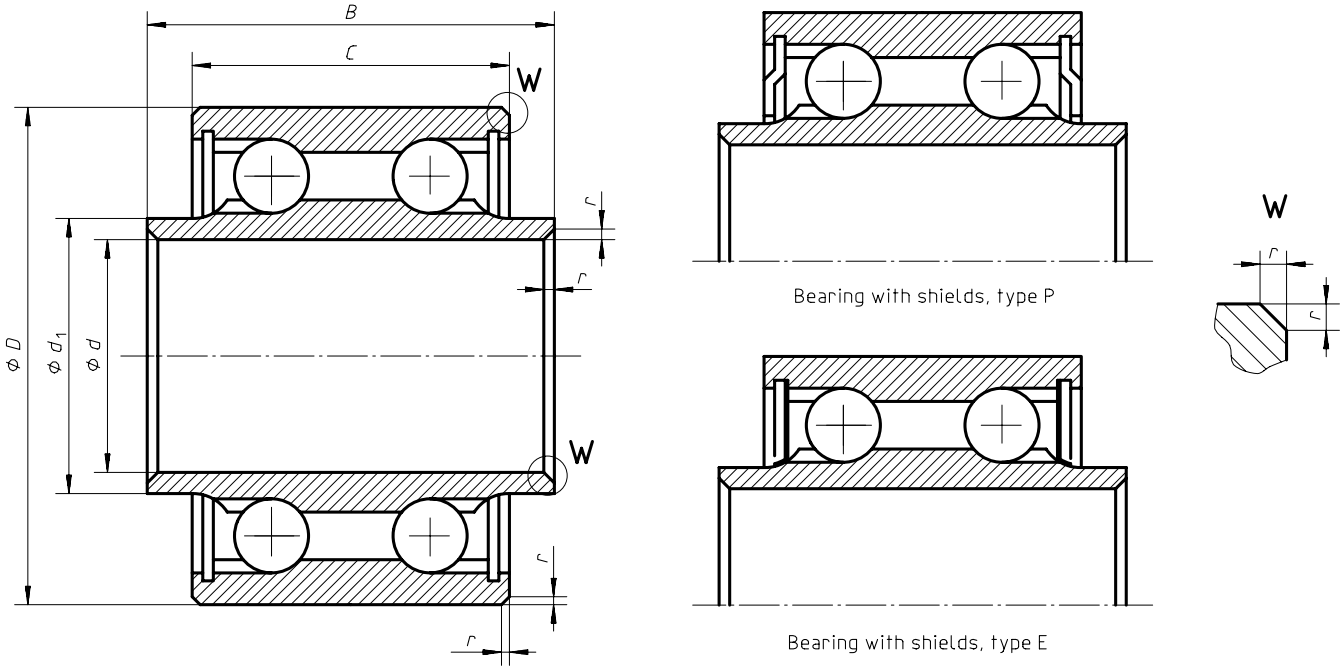


Figure 1

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Table 1

Dimensions in millimetres, tolerances in micrometres

Diameter code	d	D	B $^{0}_{-120}$	C $^{0}_{-120}$	d_1 min.	Δ_{dmp}	Δ_{Dmp}	Δ_{Ds}	V_{Bs} max.	V_{Cs} max.	r	Mass g ≈
08	8	22	22	17	10,6	$^{+8}_{-7}$	$^{0}_{-8}$	$^{+2}_{-11}$	20	20	0,3 to 0,8	30
10	10	26	24	18	12,6							52
12	12	28			14,7							60
15	15	32	26	20	17,7		$^{0}_{-9}$	$^{+3}_{-14}$				80
17	17	35	28	22	20,2							100
20	20	42	32	26	23,5	$^{+12}_{-9}$						165

ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/ebe9e2d7-b5ee-44c0-b214-4e0e1a744334/iso-14204-1998

Diameter code	Internal clearances μm	Runout tolerances max. μm				Starting torque max. mN·m		Permissible static radial load	Permissible static axial load
	Diagonal	Radial		Axial					
	G_d	K_{ia}	K_{ea}	S_{ia}	S_{ea}	Shields	Seals	C_s kN	$F_{a\,max}$ kN
08	50 to 250	25	40	40	40	4	6	24	10,9
10						6	9	34,4	15,6
12						7	11	40,4	18,4
15						9	14	47	21,4
17						11	17	53,8	24,5
20						15	23	83	37,7

$^{+10}_{-8}$

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 14204:1998
https://standards.iteh.ai/catalog/standards/sist/ebe9e2d7-b5ee-44c0-b214-4e0e1a74433f/iso-14204-1998

ICS 49.035

Descriptors: aircraft industry, rolling bearings, airframe bearings, ball bearings, double-row bearings, specifications, materials specifications, characteristics, load capacity, dimensions, overall dimensions, lubrication, designation, marking, metric system.

Price based on 5 pages