SLOVENSKI STANDARD
SIST EN 3054:2001

01-januar-2001

Aerospace series - Bearings, airframe rolling - Single row self-aligning roller bearings in steel, cadmium plated - Dimensions and loads

Aerospace series - Bearings, airframe rolling - Single row self-aligning roller bearings in steel, cadmium plated - Dimensions and loads

Luft- und Raumfahrt - Flugwerklager - Einreihige Tonnenlager aus Stahl, verkadmet - Maße und Belastungen

Série aérospatiale - Roulements pour structures d'aéronefs - Roulements en acier, cadmiés, a rotule, sur une rangée de rouleaux - Dimensions et charges

Ta slovenski standard je istoveten z: **EN 3054:1994**

ICS:

49.035	Sestavni deli za letalsko in vesoljsko gradnjo	Components for aerospace construction

SIST EN 3054:2001 **en**

EUROPEAN STANDARD **EN 3054**

NORME EUROPÉENNE

EUROPÄISCHE NORM April 1994

UDC 629.7.02:621.822.8.004.1:621.828:669.14:669.738

Descriptors: Aircraft industry, airframe bearings, self-aligning bearings, roller bearings, steel, cadmium, dimensions, static loads

English version

Aerospace series - Bearings, airframe rolling - Single row self-aligning roller bearings in steel, cadmium plated - Dimensions and loads

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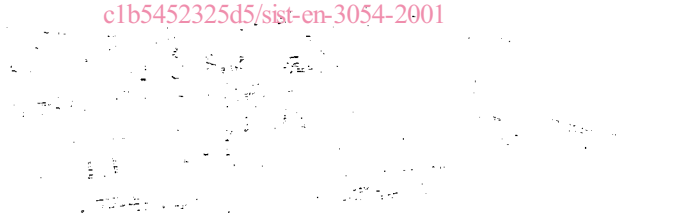

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has successively received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This standard was submitted for Formal Vote, and the result was positive.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 1994, and conflicting national standards shall be withdrawn at the latest by October 1994.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

1 Scope

This standard specifies the characteristics of single row self-aligning roller bearings in steel [1], cadmium plated, designed to withstand only slow rotations, oscillations and/or swivelling under load.

They are intended for use in bell crank lever ends or at the end of rigid flight control rods for transmission purposes, before or after servo operation.

The airframe rolling bearings defined in this standard are used from – 54 °C to + 150 °C.

However, being lubricated with the following greases :

- very high pressure grease, ester type (code A), operational range – 73 °C to + 121 °C or
- very high pressure grease, synthetic hydrocarbons, general purpose (code B), operational range – 54 °C to + 177 °C (see EN 3280),

their field of application when lubricated with code A grease is limited to + 121 °C.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 15	Rolling bearings - Radial bearings - Boundary dimensions - General plan
ISO 1132	Rolling bearings - Tolerances - Definitions
EN 2031	Steel FE-PL31 - Hardened and tempered - Bars - Aerospace series [2]
EN 2133	Cadmium plating of steels with maximum specified tensile strength equal to or less than 1450 MPa and copper and copper alloys - Aerospace series [2]
EN 2221	Steel FE-PL31 - Hardened and tempered - Hollow bars 3,5 mm ≤ a ≤ 55 mm - Aerospace series [2]
EN 2222	Steel FE-PL31 - Hardened and tempered - Hand and die forgings - Aerospace series [2]
EN 3055	Aerospace series - Bearings, airframe rolling - Single row self-aligning roller bearings in corrosion resisting steel - Dimensions and loads
EN 3280	Aerospace series - Bearings, airframe rolling, rigid or self-aligning - Technical specification

3 Definition

For the purposes of this standard, the following definition applies :

Shielded bearing : full complement of rollers (without cage). [EN 3280]

4 Symbols

The definitions of tolerances and clearances are given in ISO 1132.

Δ_{dmp}	=	single plane mean bore diameter deviation
Δ_{Dmp}	=	single plane mean outside diameter deviation
Δ_{ds}	=	deviation of a single bore diameter
Δ_{Ds}	=	deviation of a single outside diameter
G_a	=	axial internal clearance
G_r	=	radial internal clearance
K_{ia}	=	radial runout of assembled bearing inner ring
K_{ea}	=	radial runout of assembled bearing outer ring
F_a max.	=	permissible static axial load
C_s	=	permissible static radial load
P_{or}	=	static equivalent radial load
F_a	=	bearing axial load, axial component of actual bearing load
F_r	=	bearing radial load, radial component of actual bearing load.

1) For new design, use preferably bearings in corrosion resisting steel, see EN 3055.
2) Published as AECMA Standard at the date of publication of this standard.

5 Required characteristics

5.1 Dimensions - Tolerances - Clearances - Loads - Mass

Configuration : see figure 1 ; the bearings are fitted with shields (code P).
Values : see table 1 ; the dimensions and tolerances apply after protection.

5.2 Surface roughness

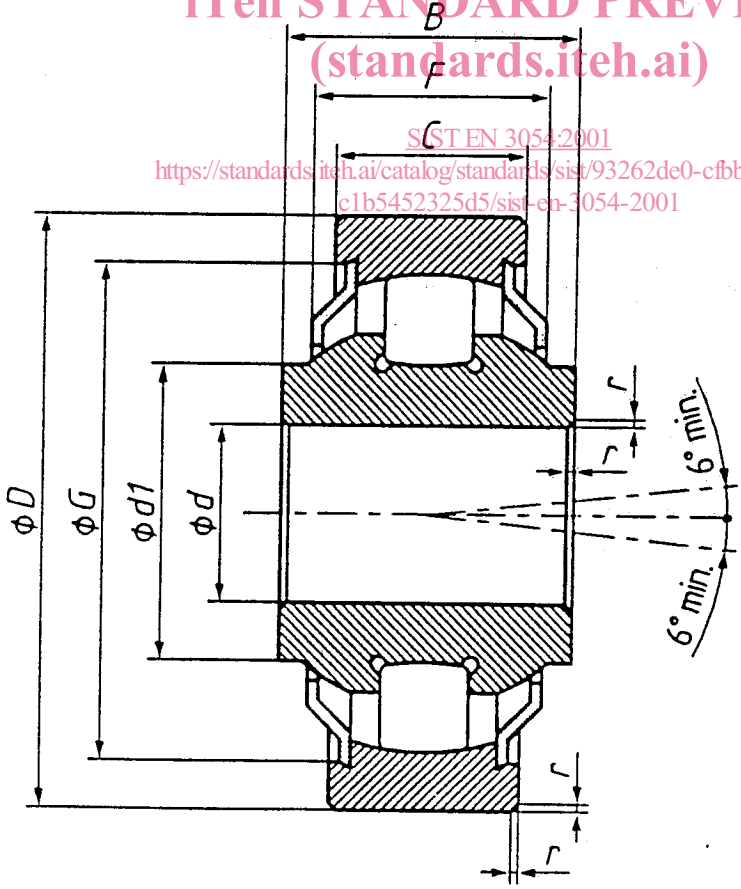
Raceways and rolling elements : R_a = 0,2 µm
Bore, side faces and cylindrical outer surface : R_a = 0,8 µm
The values apply prior to cadmium plating.

5.3 Materials

Inner ring : EN 2031 or EN 2221 or EN 2222, 59 HRC to 64 HRC
Outer ring : EN 2031 or EN 2221 or EN 2222, 59 HRC to 64 HRC
Rollers : EN 2031, 59 HRC to 64 HRC
Shields : Corrosion resisting material.

5.4 Surface treatment

EN 2133 thickness, 5 µm to 12 µm, on the inner and outer rings, the bore and raceways are not cadmium plated.
As soon as possible after plating, and within 16 h de-embrittlement heat treatment shall be carried out at a temperature and for a time (compatible with the performance requirements of the bearing) which shall be subject to written approval of the qualifying authorities.



NOTE : The installation of shields is at the manufacturer's option.

Figure 1

Table 1

Dimensions in millimetres

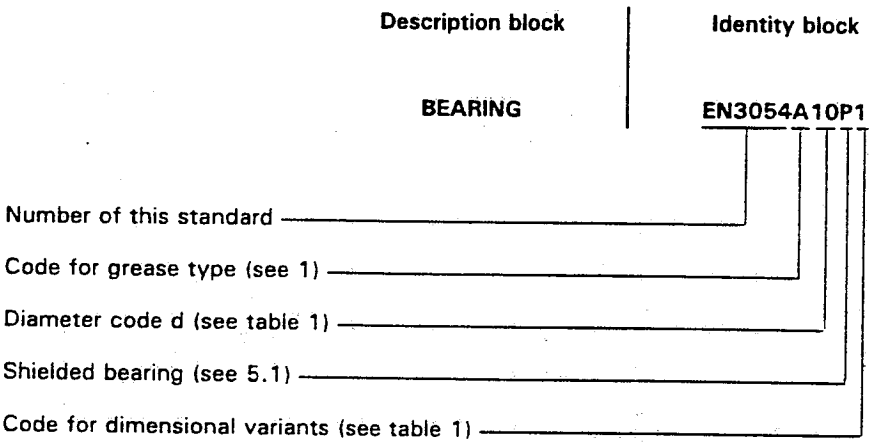
d Code	d Nominal	B 0 − 0,12	C 0 − 0,12	D	d1 min.	F max. 2)	G max. 2)	Tolerances µm Δ_{dmp}	Tolerances µm Δ_{Dmp}	Tolerances µm Δ_{ds}	Tolerances µm Δ_{Ds}	r	Mass kg/1000 parts ≈
06	6	12	8	24	11,9	10	20,5	0 − 8	0 − 9	+ 2 − 10	+ 2 − 11	0,3 to 0,8	21
08	8	15	10	26	12,3	13	22						37
08 1)	8			30	14,3	12	25						49
10	10	16	12	35	16,9	13	29		0 − 11		+ 3 − 14		70
10 1)	10	20				17							72
12	12		13	40	19,9		33,5			+ 3 − 11			108
15	15	24	14	47	23,9	20	40						153
17	17		15		25,9		41						163

d Code	Internal clearances µm: Axial max. G_a	Internal clearances µm: Radial G_r	Radial runout tolerances max. µm: K_{ia}	Radial runout tolerances max. µm: K_{ea}	Starting torque 3) in mN.m	Permissible static loads 4) kN: Axial F_a max.	Permissible static loads 4) kN: Radial C_s
06	180	2 to 6	25	40	6	4,8	15,9
08	210	2 to 7			8	6,9	22,8
08 1)					12	8,4	27,8
10					16	10	32,9
10 1)							
12					20	13,6	45
15		3 to 9			25	16,4	54,2
17					30	21	69,4

1) In the designation add code 1 to the end of the identity block.
2) Dimensions of the shields are at the manufacturer's option within the limits of F and G.
3) Definition, see EN 3280.
4) $F_r + 3{,}3\ F_a = P_{or}$; P_{or} shall be ≤ C_s.
For ultimate static loads, see EN 3280.

6 Designation

EXAMPLE :



NOTE : If necessary, the code I9005 shall be placed between the description block and the identity block.

7 Marking

In addition to the manufacturer's own marking, each bearing shall be marked, on one side face only, using the identity block, see 6.

Marking position and method are at the manufacturer's option.

8 Technical specification

See EN 3280.