



SLOVENSKI STANDARD
SIST EN 3057:2001

01-januar-2001

Aerospace series - Bearings, airframe rolling - Rigid double row ball bearings in steel, cadmium plated - Dimensions and loads

Aerospace series - Bearings, airframe rolling - Rigid double row ball bearings in steel, cadmium plated - Dimensions and loads

Luft- und Raumfahrt - Flugwerklager - Zweireihige Rillenkugellager aus Stahl, verkadmet - Maße und Belastungen

Série aérospatiale - Roulements pour structures d'aéronefs - Roulements en acier, cadmiés, rigides, a deux rangées de billes - Dimensions et charges

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Ta slovenski standard je istoveten z: EN 3057:1994

ICS:

49.035

Sestavni deli za letalsko in vesoljsko gradnjo

Components for aerospace construction

SIST EN 3057:2001

en

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EUROPEAN STANDARD

EN 3057

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 1994

UDC 629.7.02:621.822.74.004.1:669.14.669.738

Descriptors: Aircraft industry, airframe bearings, ball bearings, steel, cadmium, dimensions, static loads

English version

**Aerospace series - Bearings, airframe rolling -
Rigid double row ball bearings in steel, cadmium
plated - Dimensions and loads**

Série aérospatiale - Roulements pour structures
d'aéronefs - Roulements en acier, cadmiés,
rigides, à deux rangées de billes - Dimensions
et charges

Luft- und Raumfahrt - Flugwerklager -
Zweireihige Rillenkugellager aus Stahl,
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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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.

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EUROPEAN ASSOCIATION OF AEROSPACE MANUFACTURERS

1 Scope

This standard specifies the characteristics of rigid double row ball bearings in steel ¹⁾, cadmium plated, designed to withstand only slow rotations and oscillations under load.

They are intended for use in the hubs of bell crank levers fitted with a single bearing.

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 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 3058	Aerospace series - Bearings, airframe rolling - Rigid double row ball 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 :

Bearing : full complement of balls (without cage), with filling slot.

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 outside diameter
G_d	=	diagonal internal clearance
S_{ia}	=	assembled bearing inner ring face runout with raceway
S_{ea}	=	assembled bearing outer ring face runout with raceway
K_{ia}	=	radial runout of assembled bearing inner ring
K_{ea}	=	radial runout of assembled bearing outer ring
$F_a \text{ max.}$	=	permissible static axial load
C_s	=	permissible static radial load.

1) For new design, use preferably bearings in corrosion resisting steel, see EN 3058.

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 either seals or shields.

Values : see table 1 ; the dimensions and tolerances apply after protection.

5.2 Surface roughness

Raceways and rolling elements : $R_a = 0,2 \mu\text{m}$

Bore, side faces and cylindrical outer surface : $R_a = 0,8 \mu\text{m}$

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

Balls : EN 2031, 59 HRC to 64 HRC

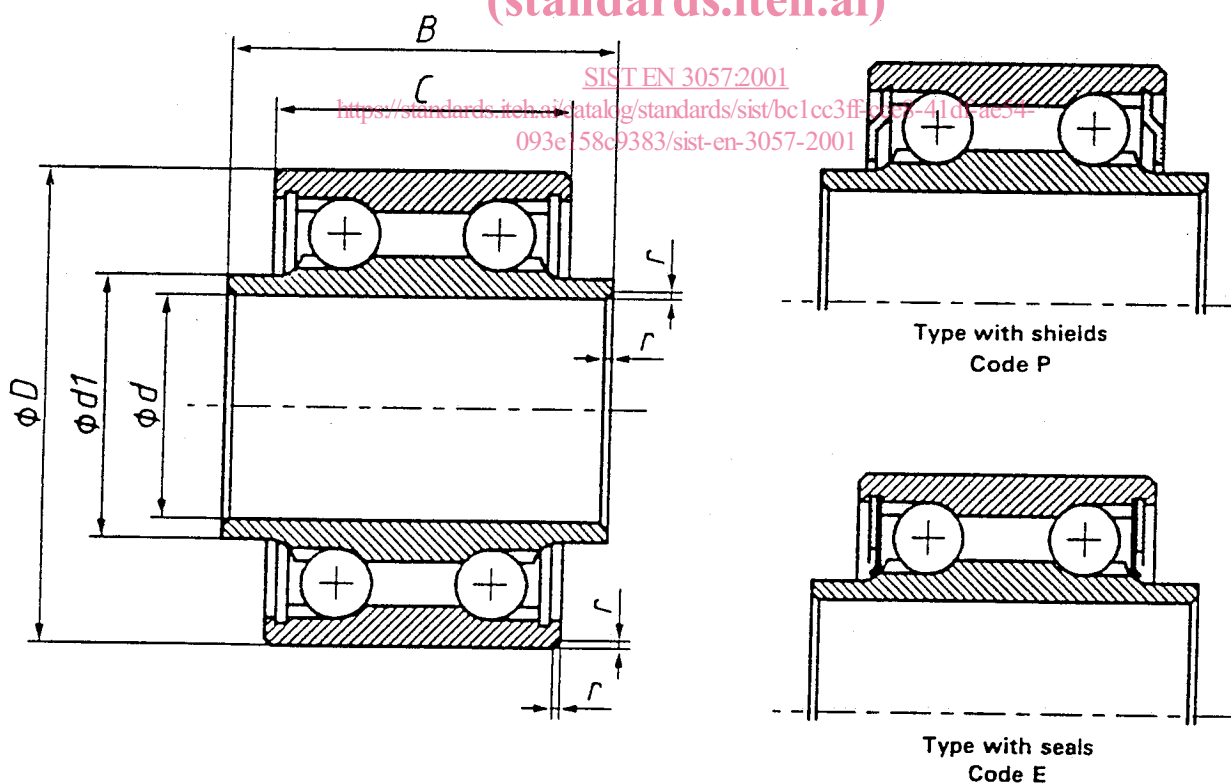
Shields : Corrosion resisting material

Seals : Polytetrafluoroethylene (PTFE) or polytetrafluoroethylene (PTFE) reinforced with fibreglass.

5.4 Surface treatment

EN 2133 thickness, $5 \mu\text{m}$ to $12 \mu\text{m}$, 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 1 : The installation of seals and shields is at the manufacturer's option.

NOTE 2 : The shields shall not extend beyond « C ».

Figure 1

Table 1

Dimensions in millimetres

d		B	C	D	d1	Tolerances μm			r	Mass kg/1000 parts \approx
Code	Nominal	0 - 0,12	0 - 0,12		min.	Δ_{dmp}	Δ_{Dmp}	Δ_{Ds}		
08	8	22	17	22	10,6	J7	0 - 8	+ 2 - 11	0,3 to 0,8	30
10	10	24	18	26	12,6					60
12	12			28	14,7					
15	15	26	20	32	17,7		0 - 9	+ 3 - 14		80
17	17	28	22	35	20,2					100
20	20	32	26	42	23,5					165

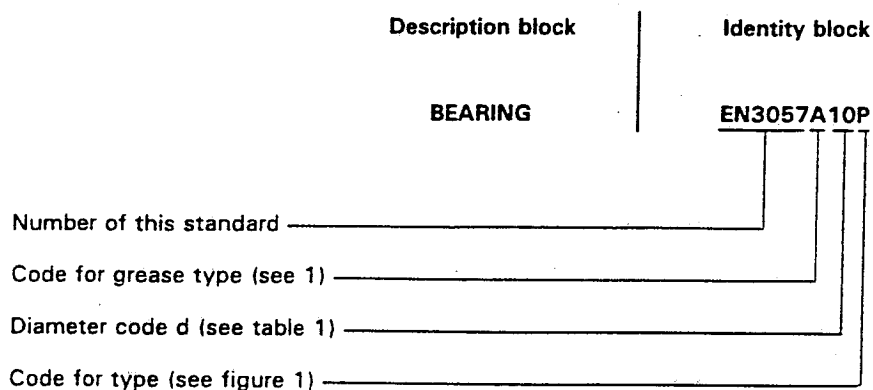
d Code	Diagonal internal clearance G_d μm	Runout tolerances max. μm				Starting torque 1) in mN.m		Permissible static loads 2) kN	
		Axial		Radial		Code	Code	Axial	Radial
		S_{ia}	S_{ea}	K_{ia}	K_{ea}	P	E	F_a max.	C_s
08	50 to 250	40	40	25	40	4	6	10,9	24
10						6	9	15,6	34,4
12						7	11	18,4	40,4
15						9	14	21,4	47
17						11	17	24,5	53,8
20						15	23	37,7	83

1) Definition, see EN 3280.

2) Axial and radial loads may be applied simultaneously.
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.

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8 Technical specification

See EN 3280.