



SLOVENSKI STANDARD

SIST EN 3182:2012

01-maj-2012

Aeronavtika - Kroglični ležaji iz korozijsko odpornega in kadmiranega jekla za kolute krmilnih kablov - Mere in obremenitve

Aerospace series - Ball bearings, rigid in corrosion resisting steel cadmium plated, for control cable pulleys - Dimensions and loads

Luft- und Raumfahrt - Hartkugellager aus korrosionsbeständigem Stahl, verkadmet, für Seilrollen für Steuerseile - Maße und Belastungen

Série aérospatiale - Roulements à billes, rigides en acier résistant à la corrosion cadmiés, pour poulies de câbles de commande - Dimensions et charges

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Ta slovenski standard je istoveten z: **EN 3182:2012**

ICS:

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

EN 3182

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2012

ICS 49.035

English Version

Aerospace series - Ball bearings, rigid in corrosion resisting steel cadmium plated, for control cable pulleys - Dimensions and loads

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This European Standard was approved by CEN on 24 September 2011.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Foreword

This document (EN 3182:2012) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

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

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of an identical text or by endorsement, at the latest by September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 3182:2012 (E)**1 Scope**

This European Standard specifies the characteristics of ball bearings fitted with shields or seals, for aircraft control cable pulleys.

The pulley bearings defined in this standard shall be 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 (refer to EN 2062);

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2030, *Aerospace series — Steel FE-PM3501 (X105CrMo17) — Hardened and tempered — Bar $D \leq 150\text{ mm}$* ¹⁾

EN 2062, *Fully non-metallic body pulleys, with bearing, for control cables - Technical specification - Aerospace series*¹⁾

EN 2133, *Aerospace series - Cadmium plating of steels with specified tensile strength $\leq 1\,450\text{ MPa}$, copper, copper alloys and nickel alloys*

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3 Definitions

Rigid bearings full complement (with or without cage), and one or two rows of balls.

4 Symbols and abbreviations

Δds = the deviation of a single bore diameter

ΔDs = the deviation of a single outside diameter

Δdmp = single plane mean bore diameter

ΔDmp = single plane mean outside diameter

C_S = permissible static radial load

Kia = radial runout of assembled bearing inner ring

Kea = radial runout of assembled bearing outer ring

Sia = assembled bearing inner ring face runout with raceway (groove)

Sea = assembled bearing outer ring face runout with raceway (groove)

1) Published as ASD-STAN pre-standard at the date of publication of the present standard.

5 Required characteristics

5.1 Dimensions — Tolerances — Clearances — Loads — Mass

Configuration shall correspond with Figures 1 or 2. Dimensions shall conform with values shown in the table. Bearings can be assembled with either seals or shields.

5.2 Surface roughness

$Ra = 0,2 \mu\text{m}$ for the raceway and rolling elements

$Ra = 0,8 \mu\text{m}$ for the bore, side faces and cylindrical outer surface

5.3 Materials

Inner ring: Steel EN 2030, ≥ 58 HRC

Outer ring: Steel EN 2030, ≥ 58 HRC

Balls: Steel EN 2030, ≥ 58 HRC

Shields: Corrosion resisting material

Seals: Polytetrafluorethylene (PTFE),
or polytetrafluorethylene (PTFE), glass fibre reinforced plastic material.

5.4 Surface treatment

Cadmium plating (type of passivation optional), 5 to 12 μm , of the inner and outer rings, the bore and raceway are not cadmium plated. Cadmium plating shall be in accordance with EN 2133. As soon as possible after plating, and within 16 hours 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.

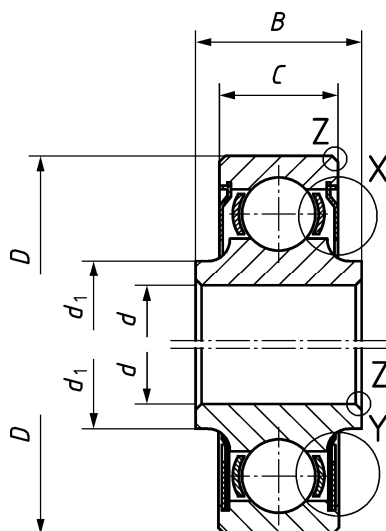
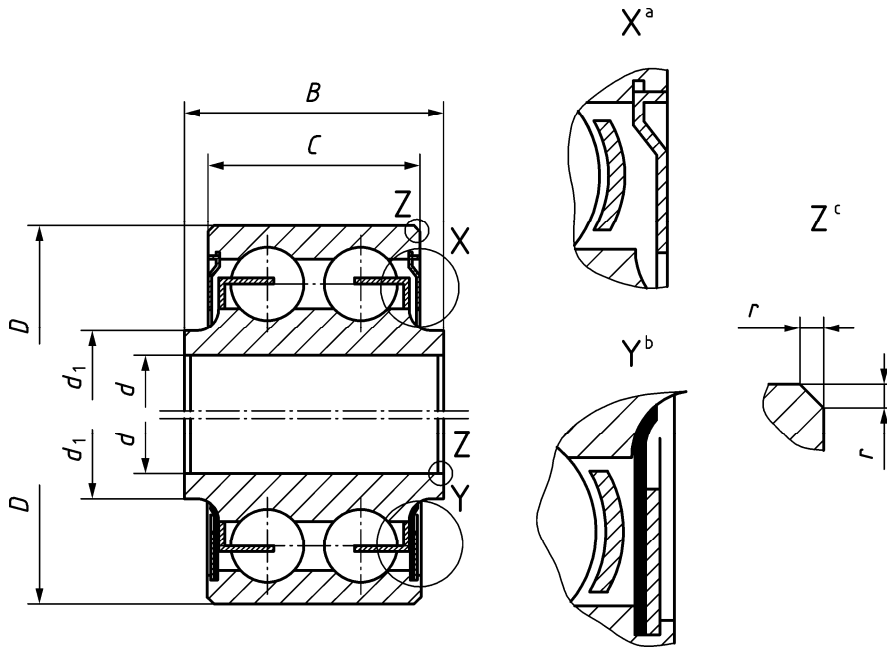


Figure 1

Code 05 without cage

Code 06 with cage

**Key**

- a bearing with shields code P
- b bearing with seals code E
- c of chamfer applicable to bore and outer surface

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Figure 2

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Code 08 to 12 with cage

Code 15 without cage

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The process for installation of seals and shields is at manufacturer's option.

Table 1

Dimensions in millimetres

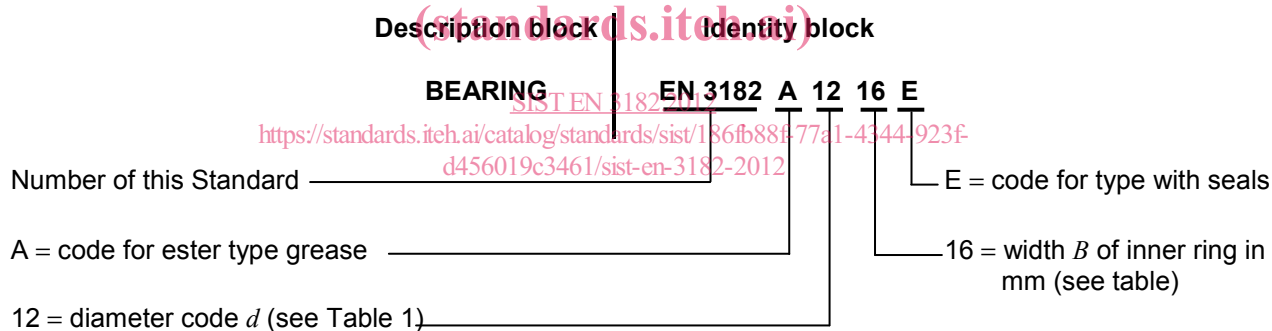
d		D	C 0 -0,12	B 0 -0,12	d_1 nom.	Tolerances μm				r	Mass kg/1 000 Parts \geq
Code	Nominal					Δd_{mp}	ΔD_{mp}	Δds	ΔDs		
05	5	16	5	7	7,1	0 -8	0 -8	+2 -10	0,3 to 0,8	4	
06	6	19	6	8	8,8		+2 -10				9
08	8	22	10	12	10,6						
10	10	26	12	14	13,2		+3 -11	30			
12	12	28	14	16	15,5						+3 -11
		32	15	17	16,0	55					
15	15	32	16	18	17,7		-11	-14	65		

d		D	Axial internal clearance	Radial internal clearance	Diagonal clearance	Axial runout max. μm		Radial runout max. μm		Starting torque mNm^a		Permissible static radial load C_S kN
Code	Nominal		μm^a	μm^a	μm^a	d (<i>Sia</i>)	D (<i>Sea</i>)	d (<i>Kia</i>)	D (<i>Kea</i>)	Shields	Seals	
05	5	16	8 to 16	120	–	40	40	25	40	1,0	1,6	6,1
06	6	19		0,6	1,0					4,5		
08	8	22		1,2	1,9					9,7		
10	10	26		2,4	3,7					13,8		
12	12	28		3,0	4,6					19,4		
		32		3,5	5,2					25,2		
15	15	32	8 to 22	–	500 to 1 000	–	–	–	5,0	8,5	42,3	

^a Measured on ball bearing not fitted on pulley.

6 Designation

Each bearing shall only be designated as in the following example:



Where the following codes are applied:

Greases

A = ester type grease

B = synthetic hydrocarbon type grease

Types

E = with seals

P = with shields

NOTE If necessary, the originator code S 9005 may be introduced between the description block and the identity block.