



SLOVENSKI STANDARD

SIST EN 2584:2004

01-maj-2004

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SIST EN 2584:2001

Aerospace series - Bearings, spherical plain in corrosion resisting steel with self-lubricating liner - Narrow series - Elevated load at ambient temperature - Dimensions and loads

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Luft- und Raumfahrt - Gelenklager aus korrosionsbeständigem Stahl mit selbstschmierender

Beschichtung - Schmale Reihe - Hohe Belastung bei Raumtemperatur - Maße und Belastungen

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Série aérospatiale - Rotules en acier résistant a la corrosion a garniture autolubrifiante - Série étroite a charge élevée a température ambiante - Dimensions et charges

Ta slovenski standard je istoveten z: EN 2584:2001

ICS:

49.035	Sestavni deli za letalsko in vesoljsko gradnjo	Components for aerospace construction
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SIST EN 2584:2004

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 2584

October 2001

ICS 49.035

Supersedes EN 2584:1992

English version

**Aerospace series - Bearings, spherical plain in corrosion
resisting steel with self-lubricating liner - Narrow series -
Elevated load at ambient temperature - Dimensions and loads**

Série aérospatiale - Rotules en acier résistant à la
corrosion à garniture autolubrifiante - Série étroite à charge
élevée à température ambiante - Dimensions et charges

Luft- und Raumfahrt - Gelenklager aus
korrosionsbeständigem Stahl mit selbstschmierender
Beschichtung - Schmale Reihe - Hohe Belastung bei
Raumtemperatur - Maße und Belastungen

This European Standard was approved by CEN on 29 December 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: 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 received the approval of the National Associations and the Official Services of the member countries of AECMA, 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 April 2002, and conflicting national standards shall be withdrawn at the latest by April 2002.

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

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1 Scope

This standard specifies the characteristics of spherical plain bearings in corrosion resisting steel, with self-lubricating liner, narrow series, for elevated load at ambient temperature, with or without swaging groove, intended for use in the fixed or moving parts of the aircraft structure and control mechanisms.

They shall be used in the temperature range -55°C to $+163^{\circ}\text{C}$.

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 (including amendments).

ISO 1132-1	Rolling bearings – Tolerances – Part 1: Terms and definitions
ISO 8075	Aerospace – Surface treatment of hardenable stainless steel parts
EN 2030	Steel FE-PM43 – Hardened and tempered – Bars $D \leq 150$ mm – Aerospace series ¹⁾
EN 2132	Electrodeposition of chromium for engineering purposes – Aerospace series ¹⁾
EN 2424	Aerospace series – Marking of aerospace products
EN 2539	Aerospace series – Steel FE-PM3801 (X5CrNiCu17-4) – Air melted – Solution treated and precipitation treated – Bar d or $D \leq 200$ mm – $R_t \geq 965$ MPa ²⁾
EN 2755	Aerospace series – Bearings, spherical plain in corrosion resisting steel with self-lubricating liner – Elevated loads at ambient temperature – Technical specification ²⁾

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3 Symbols and definitions

The tolerance definitions are given in ISO 1132-1.

Δ_{dmp} = single plane mean bore diameter deviation

Δ_{ds} = deviation of a single bore diameter

Δ_{Dmp} = single plane mean outside diameter deviation

Δ_{Ds} = deviation of a single outside diameter

α = angle of tilt of the outer ring with respect to the inner ring, the spherical surface of the outer ring being completely in contact with the inner ring

4 Required characteristics

4.1 Configuration, dimensions, tolerances and mass

According to figures 1 and 2, and table 1. The dimensions are expressed in millimetres and apply after surface treatment.

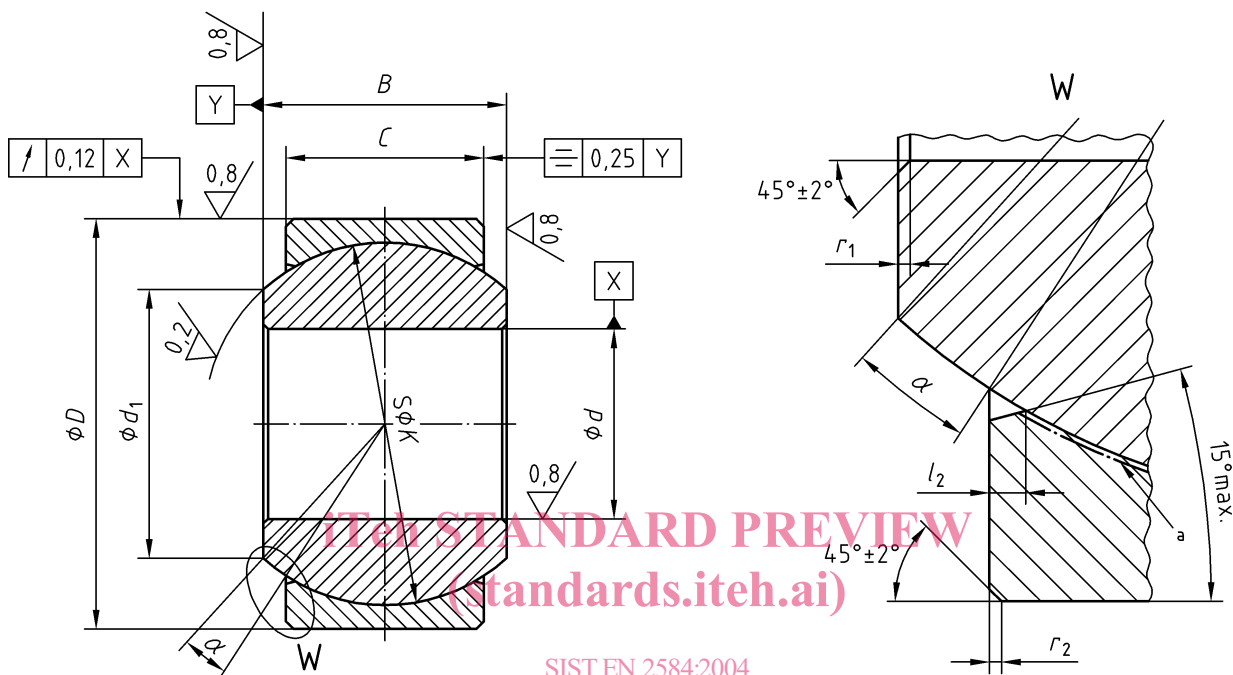
1) Published as AECMA Standard at the date of publication of this standard

2) Published as AECMA Prestandard at the date of publication of this standard

4.2 Surface roughness

According to figures 1 and 2. The values are expressed in micrometres and apply before surface treatment.

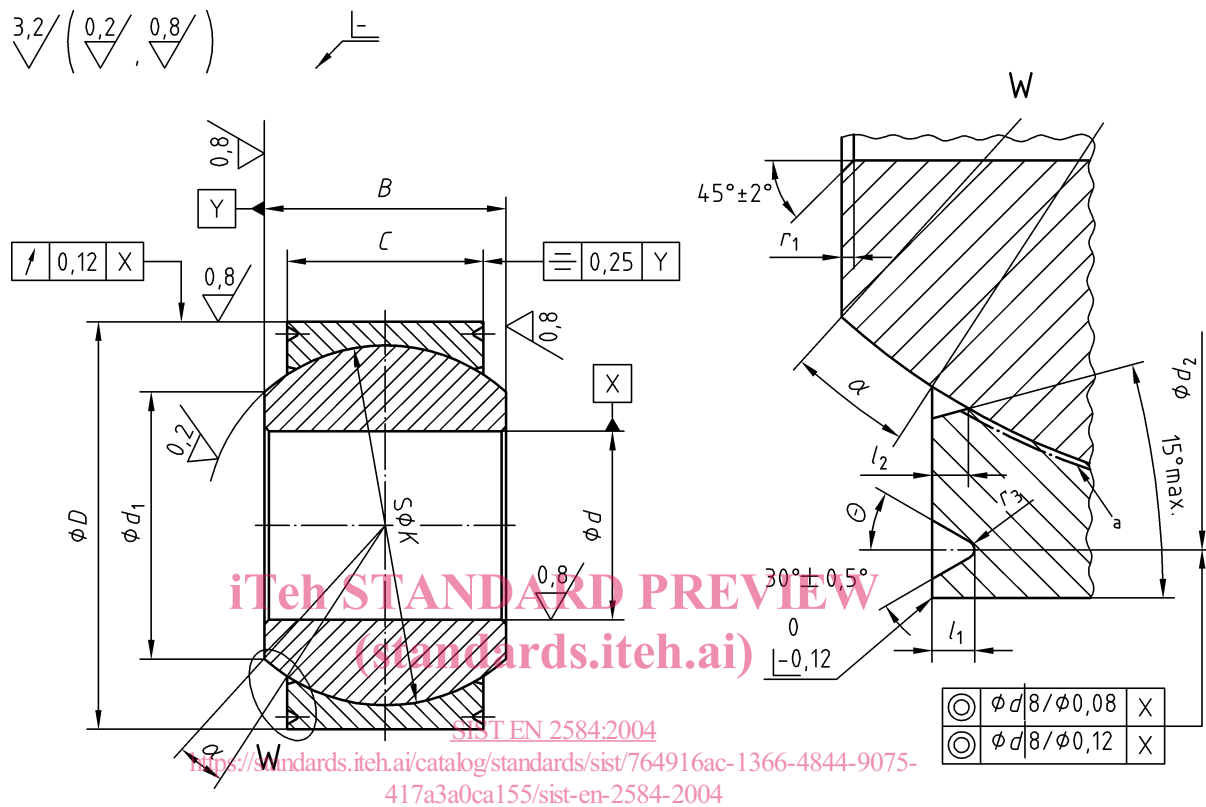
$$3,2 / \left(\sqrt{0,2} / \sqrt{0,8} \right)$$



Key
a liner

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Figure 1 – Bearing without swaging groove, code S



Key

a liner

Figure 2 – Bearing with swaging grooves, code R

Table 1

d		B	C	D	Tolerances μm				d_1	d_2	K	l_1	l_2	r_1	r_2	r_3	α°	θ°	Mass g/piece									
Code	nom.	0 -0,06	$\pm 0,1$		Δ_{dmp}	Δ_{ds}	Δ_{Dmp}	Δ_{Ds}	min.	+0,1 0	\approx	0 -0,2	max.			+0,1 0	min. ^a	$\pm 0,5^\circ$	\approx									
05	5	7	5,5	14	0 -8	+2 -10	0 -8	+5 -13	8,6	12,2	11,1	0,7	0,8	0,5 to 0,8	0,2	9	20	7										
06	6	9	6,5	16					9	14,2	12,8							9										
08	8	10	7	18					10,2	16,2	14,3							15										
10	10	10,5	8	21		+3 -11	0 -9	+6 -15	11,9	18,4	15,9	0,9	0,9		0,6 to 1	0,3	8	30	20									
12	12	13	10	25					15	22,4	19,8								10									
15	15	15	12	29					20,5	26,4	25,4								8									
17	17	16	13,5	31					21,7	28,4	27								7									
22	22	22	18	40					0 -10	+3 -13	-11								+8 -19	27,1	36,8	34,9	1,2	0,6 to 1	0,3	8	30	126
25	25	25	20	45																29,6	41,8	38,8						8
30	30	28	24	51																35,5	47,8	45,2						6
35	35	31	26	57	0 -12	+3 -15	-13	+10 -23				41,7	53,8	52	1,4	0,8 to 1,2	0,3	7		30	340							
40	40	34	29	64								47	60,8	56							6							
45	45	37	32	72					52,2	68,8	64	5																
50	50	41	34	80	0 -15	+3 -15	-15	+13 -28	59,2	76,8	72	1,5	0,8 to 1,2	0,3	7	30	870											

^a Maximum values for the user

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4.3 Loads and starting torques

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According to table 2

Table 2

d Code	Permissible static loads		Permissible dynamic radial loads 25 000 cycles kN	Starting torques Nm
	radial C_s kN	axial ^a C_a kN		
05	20,5	1,9	12,3	0,08 to 0,5
06	29,2	3,5	17,5	
08	37	3,9	22,2	
10	47,2	6,5	28,3	0,12 to 0,8
12	78,1	11,7	43	
15	121,9	18	67	
17	148,3	24,3	81	
22	268,6	45,5	147	0,25 to 1
25	324,7	55,9	162,4	
30	433,4	77,8	216,7	0,4 to 2
35	543,4	92,2	271,7	
40	680,9	113,4	340,3	0,6 to 2,7
45	833,9	135,9	416,9	
50	981,4	154,2	490,7	

^a These values apply to bearings without swaging groove. For bearings with swaging grooves, the push-out loads may be smaller than these values.

4.4 Materials

Inner ring: steel according to EN 2030, hardness 55 HRC to 62 HRC

Outer ring: steel according to EN 2539, hardness 28 HRC to 37 HRC before swaging

Liner: self-lubricating low friction wear resistant material consistent with the requirements of EN 2755

4.5 Surface treatment on the inner ring solely

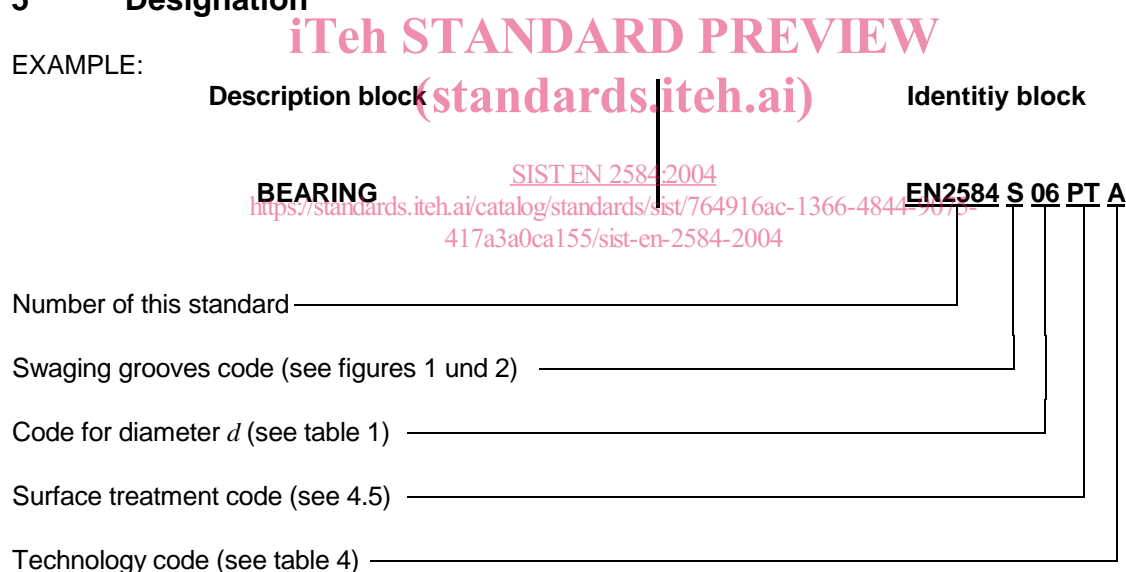
See table 3

Table 3

Treatment	Specification	Code
Chromium plating on the spherical surface	EN 2132, thickness 15 µm to 50 µm	P
Passivation	ISO 8075	T
without (neither chromium plating, nor passivation)	–	(no code)

5 Designation

EXAMPLE:



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

Table 4

Technology	Code
bonded liner	A
injected or moulded liner	B
bonded liner or injected or moulded liner, at the manufacturer's option	(no code)