SLOVENSKI STANDARD
SIST EN 4198:2009

01-september-2009

Aeronavtika - Drsni zgibi, nastavljivi drsni ležaji s samomazalno oblogo in navojnim steblom, iz korozijsko odpornega jekla - Mere in nosilnosti

Aerospace series - Rod-ends, adjustable self-aligning plain bearing with self-lubricating liner and threaded shank in corrosion resisting steel - Dimensions and loads

Luft- und Raumfahrt - Ösenkopf, einstellbar mit Gelenklager mit selbstschmierender Beschichtung und Gewindeschaft aus korrosionsbeständigem Stahl - Maße und Belastungen

Série aérospatiale - Embouts réglables à rotule, à garniture autolubrifiante, à tige filetée, en acier résistant à la corrosion - Dimensions et charges

Ta slovenski standard je istoveten z: **EN 4198:2006**

ICS:

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

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EUROPEAN STANDARD

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English Version

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This European Standard was approved by CEN on 20 April 2006.

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Foreword

This European Standard (EN 4198:2006) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-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 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of an identical text or by endorsement, at the latest by December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006.

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1 Scope

This standard specifies the characteristics of adjustable rod-ends consisting of:

— a self-aligning ball bearing with self-lubricating liner, EN 2501,

— a rod-end with threaded shank consisting of:

  — a circumferential groove to identity location,

  — an optional longitudinal groove for locking purposes.

These rod-ends are intended for use with flying control rods or rods for aerospace structures. They shall be used within the temperature range from: – 55 °C to 163 °C.

2 Normative references

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

ISO 1132-1, *Rolling bearings — Tolerances — Part 1: Terms and definitions.*

ISO 3353-1, *Aerospace — Lead and runout threads — Part 1: Rolled external threads.*

ISO 5855-2, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts.*

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

EN 2068, *Aerospace series — Rod ends with self-lubricating self-aligning bearings — Technical specification.*

EN 2424, *Aerospace series — Marking of aerospace products.*

EN 2501, *Aerospace series — Bearings, spherical plain in corrosion resisting steel with self-lubricating liner and wide inner ring — Dimensions and loads.*

EN 2539 [1], *Aerospace series — Steel FE-PM3801 (X5CrNiCu17-4) — Air melted — Solution treated and precipitation treated — Bar — a or D ≤ 200 mm — R_m ≥ 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.*

EN 3161, *Aerospace series — Steel FE-PM3801 (X5CrNiCu17-4) — Air melted — Solution treated and precipitation treated — Bar — a or D ≤ 200 mm — R_m ≥ 930 MPa.* [2]

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in ISO 1132-1 apply.

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1) Inactive for new design, see EN 3161.

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

4 Symbols and abbreviations

Δ_{ds} = deviation of a single bore diameter

Δ_{dmp} = single plane mean bore diameter deviation

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

C_{25} = permissible dynamic radial load by 25 000 cycles (for definitions: EN 2755)

5 Required characteristics

5.1 Dimensions – Masses

Configuration: according to Figure 1.

The dimensions and the tolerances shall conform with the values indicated in the Figure 1 and Tables 1 and 2; values after passivating.

5.2 Surface roughness

According to Figure 1. Values in micrometres, apply prior to surface treatment.

5.3 Loads and rotational starting torques

According to Table 2.

5.4 Materials

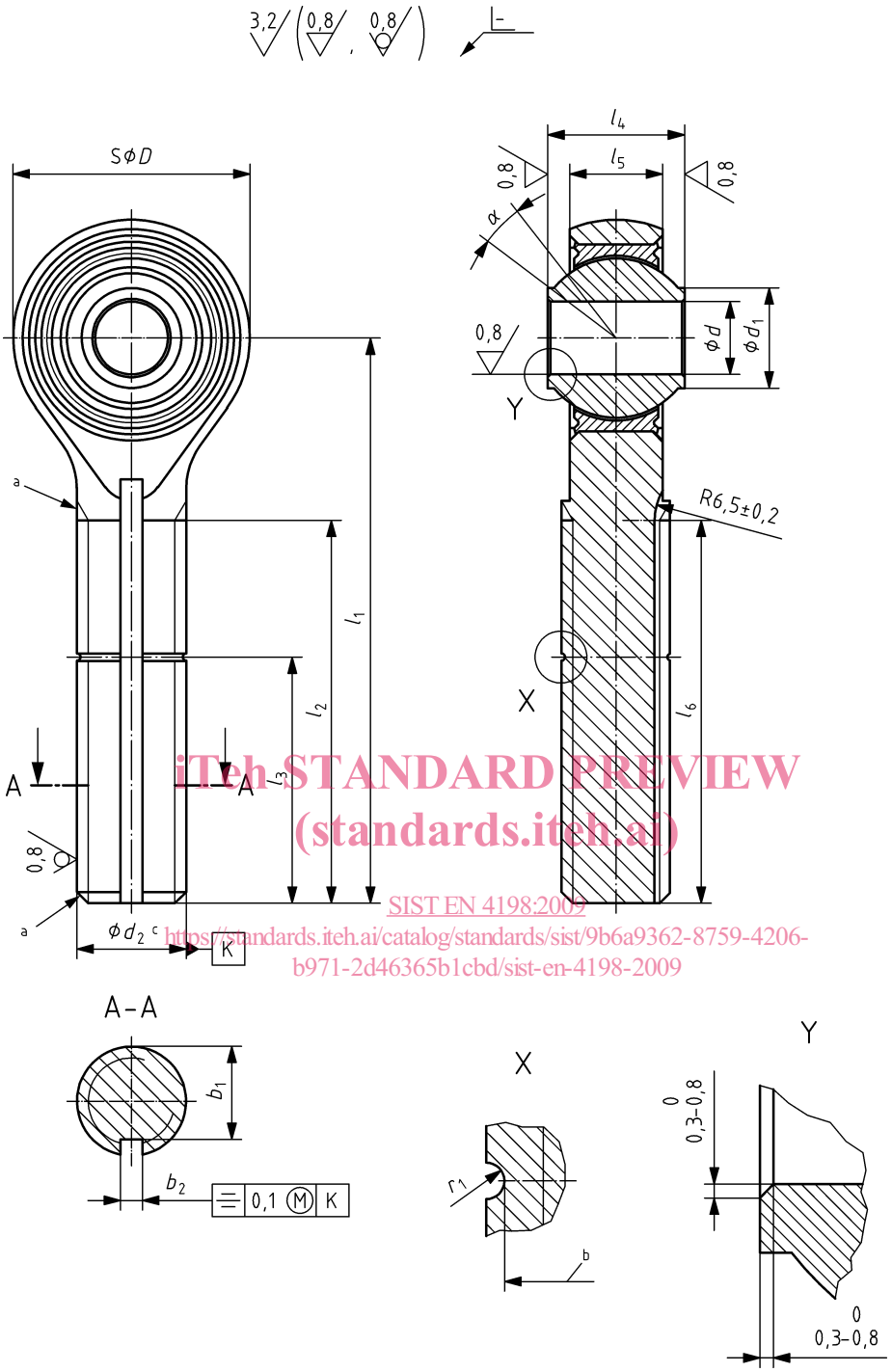
Rod-end body: steel according to EN 2539, hardness 35 ≤ HRC ≤ 42

Plain bearing: according to EN 2501.

5.5 Surface treatment

According to ISO 8075: code T

No surface treatment: without code



a In conformity with ISO 3353-1

b ∅ of base of groove: ∅ d_3 min. (according to ISO 5855-2)

c Thread, pitch diameter

NOTE The circumferential indication groove and the longitudinal groove over the distance l_3 shall be painted red.

Figure 1

Table 1

Code	d Nominal diameter	d Limit dev. µm Δ_{dmp}	d Limit dev. µm Δ_{ds}	D	d_1 min	α in degrees min.	b_1 $^{0}_{-0,1}$	b_2 $^{+0,1}_{0}$
06	6	$^{0}_{-8}$	$^{+2}_{-10}$	22,5	9,0	9	8,0	2,4
08	8			26,0	11,0	8	10,2	
10	10			32,0	13,5	10	12,2	3,2

d_2 Thread [a] designation	l_1 ± 0,5	l_2 [b] min.	l_3 [c] min.	l_4 $^{0}_{-0,06}$	l_5 $^{+0,1}_{0}$	l_6 $^{+0,5}_{-1,0}$	r_1 ± 0,1	**Mass** ≈ g
MJ10×1,26 - 4h6h	54	37	23	14	8,2	37	0,4	46
MJ12×1,25 - 4h6h	62	42	27	15	10,2	42		76
MJ14×1,5 - 4h6h	73	48	31	20	13,2	48	0,5	135

a Thread ISO 5855-2; rolled.

b Minimum length of useful threads.

c Minimum length of engaged threads; includes thickness of lock washers and height of nut.

Table 2

After swaging on rod-end			
Permissible dynamic radial load [a] C_{25} kN	**Axial push out load** kN	**Starting torque** Nm	**Ultimate static load** [b] kN
16,6	4,5	0,45 to 1,3	27
25,2	6,5	0,7 to 2,0	39
38,6 [c]	10,5		58

a In direction of the axis of the rod-end fitting.

b Ultimate loads are listed because failure will occur in the rod-end, not the bearing. Users shall apply their own factors to obtain the permissible static load.

c This load is a maximum of 2/3 ultimate static load the rod-end and not the load from EN 2501.