SLOVENSKI STANDARD
SIST EN 4036:2009

01-september-2009

Aeronavtika - Nastavljivi drsni zgibi s samovarovalnim dvorednim nihalnim krogliļ nim leģajem in navojnim steblom iz korozijsko odpornega jekla, z zmanjģanim radialnim ohlapom leģaja - Mere in nosilnosti

Aerospace series - Rod ends, adjustable with self-aligning double row ball bearing and threaded shank in corrosion resisting steel, reduced internal radial clearance - Dimensions and loads

Luft- und Raumfahrt - Einstellbare Ösenköpfe mit zweireihigem Pendelkugellager und Gewindeschaft aus korrosionsbeständigem Stahl, reduzierte radiale Lagerluft - Maße und Belastungen

Série aérospatiale - Embouts réglables à rotule sur deux rangées de billes et à tige filetée en acier résistant à la corrosion, jeu radial réduit - Dimensions et charges

Ta slovenski standard je istoveten z: **EN 4036:2006**

ICS:

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

SIST EN 4036:2009 **en,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4036

May 2006

ICS 49.035

English Version

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This European Standard was approved by CEN on 16 March 2006.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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Foreword

This European Standard (EN 4036:2006) 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 November 2006, and conflicting national standards shall be withdrawn at the latest by November 2006.

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1 Scope

This standard specifies the characteristics of adjustable rod ends with self-aligning double row ball bearing with reduced internal radial clearance and threaded shank in corrosion resisting steel, designed to withstand only slow rotations and oscillations under load.

They consist of:

— a rod end comprising:

  — circumferential groove to identify location;

  — either seals or shields;

  — an optional longitudinal groove for locking purpose;

— an inner ring with balls.

These rod ends are intended for use with flight control rods or rods for aerospace structures.

They are intended to be used in the temperature range: – 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 2067),

their field of application when lubricated with code A grease is limited to 121 °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 8074, *Aerospace — Surface treatment of austenitic stainless steel parts.*

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

EN 2030, *Steel FE-PM43 — Hardened and tempered — Bars D ≤ 150 mm — Aerospace series.* [1)]

EN 2067, *Aerospace series — Rod ends with self-aligning ball bearings — Technical specification.*

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

EN 2136 [2] , *Steel FE-PM42 — 900 MPa ≤ R_m ≤ 1100 MPa — Bars D_e ≤ 100 mm — Aerospace series.* [1]

EN 2226, *Steel FE-PM43 — Hardened and tempered — Hand and die forgings D_e ≤ 150 mm — Aerospace series.* [1]

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

EN 3490, *Aerospace series — Steel FE-PM3901 (X15CrNi17-3) — Air melted — Hardened and tempered — Bar for machining — D_e ≤ 200 mm — 900 MPa ≤ Rm ≤ 1 100 MPa.* [3]

TR 3775, *Aerospace series — Bolts and pins — Materials.* [4]

3 Terms and definitions

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

4 Symbols and abbreviations

Δ_{ds} = deviation of a single bore diameter

Δ_{dmp} = single plane mean bore diameter deviation

C_s = permissible static radial load

$F_{a\ max.}$ = permissible static axial load

5 Required characteristics

5.1 Dimensions – Tolerances – Masses

Configuration : see Figure 1; the bearings are fitted with either seals or shields.

Values : see Figure 1 and Table 1: values after surface treatment.

5.2 Surfaces roughness

Rolling elements and raceway: $R_a = 0{,}2$ µm

Bore, side faces and cylindrical outer surface: $R_a = 0{,}8$ µm

For code T values prior to the surface treatment

2) Inactive for new design, see EN 3490.

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

4) Published as AECMA Technical Report at the date of publication of this standard.

5.3 Materials

Rod ends : steel EN 2136 or TR 3775; heat treated to obtain:

— by case hardening, hardening and tempering a surface hardness of ≥ 58 HRC on the raceway;

— by hardening and tempering to a strength of R_m > 830 MPa on the whole rod end.

Bearing : Inner ring : Steel EN 2030 or EN 2226, ≥ 58 HRC

Balls : Steel EN 2030 or EN 2226, ≥ 58 HRC

Seals : Polytetrafluoroethylene (PTFE) or glass fabric reinforced polytetrafluoroethylene (PTFE)

Shields : Corrosion resisting material

5.4 Surface treatment

Rod end : passivation ISO 8074

Bearing : passivation ISO 8075: code T

with no surface treatment: no code

5.5 Thread

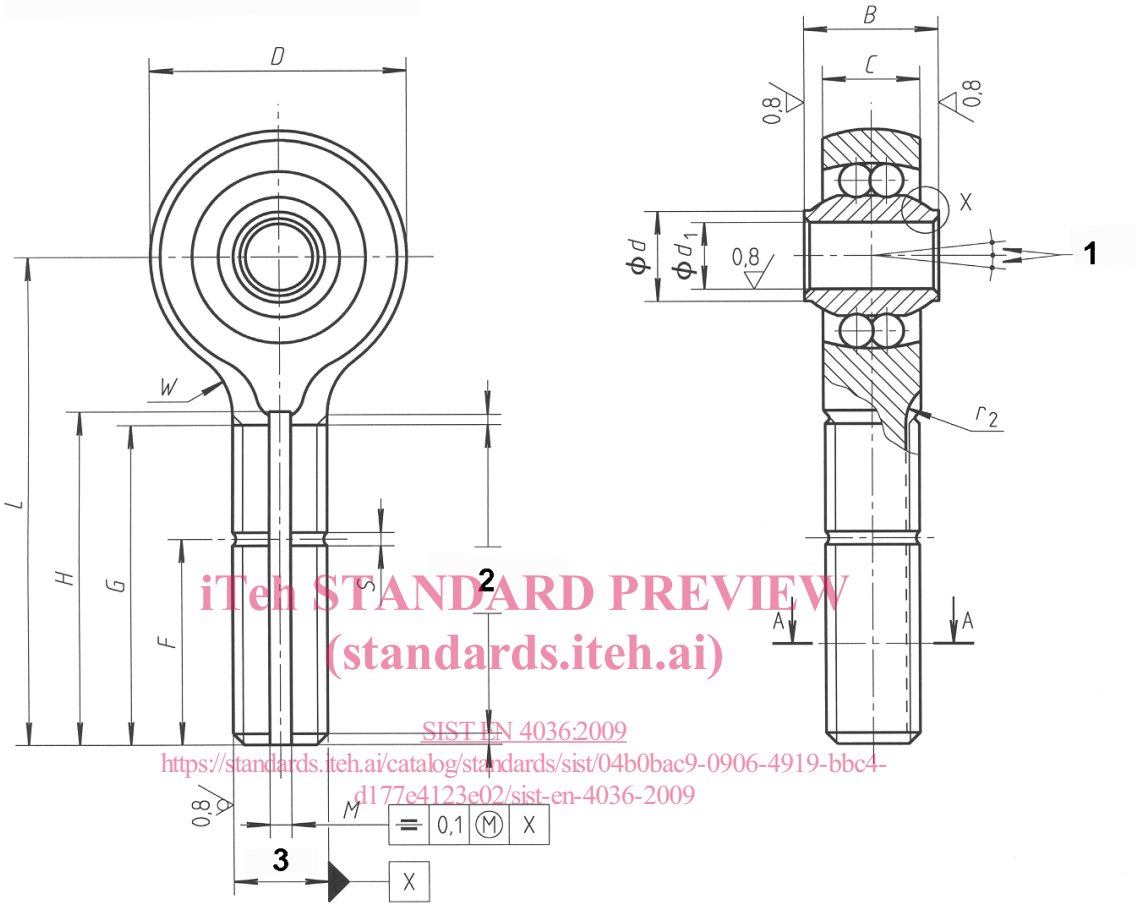
MJ thread to ISO 5855-2, rolled

Right hand thread, code R

Left hand thread, code L

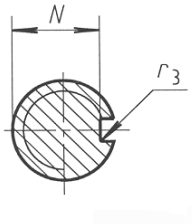
3,2 [0,8 0,8]

Break sharp edges and corners and remove all burrs and slivers

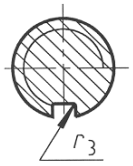


A-A
Longitudinal groove

Type 1
Code K

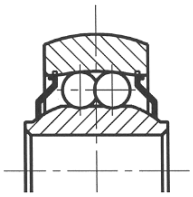


Type 2
Code M

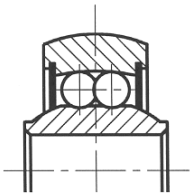


Type 3 without groove
Code N

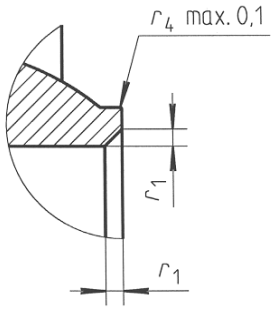
Type with shields
Code P



Type with seals
Code E



X (3:1)
Break sharp corner



Key

1 6° min. The acceptance value is the maximum value for the user.
2 Conform to ISO 3353-1.
3 Thread

Figure 1