



SLOVENSKI STANDARD
SIST EN 2068:2001
01-januar-2001

**Aerospace series - Rod ends with self-lubricating self-aligning bearings -
Technical specification**

Aerospace series - Rod ends with self-lubricating self-aligning bearings - Technical specification

Luft- und Raumfahrt - Ösenköpfe mit Gelenklager mit selbstschmierender Beschichtung - Technische Lieferbedingungen

Série aérospatiale - Embouts a rotule a garniture autolubrifiante - Spécification technique

Ta slovenski standard je istoveten z: EN 2068:1996

ICS:

49.035	Sestavni deli za letalsko in vesoljsko gradnjo	Components for aerospace construction
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SIST EN 2068:2001

en

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EUROPEAN STANDARD

EN 2068

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 1996

ICS 49.040.30

Descriptors: aircraft industry, aircraft control, rod-end, rod-end with self-aligning bearing, anti-frictioning, self-lubricating part, threaded shank, specification

English version

Aerospace series - Rod ends with self-lubricating self-aligning bearings - Technical specification

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Série aéronautique - Embouts à rotule à garniture autolubrifiante - Spécification technique

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This European Standard was approved by CEN on 1995-08-31. 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.

The European Standards exist 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.

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

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 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 July 1996, and conflicting national standards shall be withdrawn at the latest by July 1996.

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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1 Scope

This standard specifies the required characteristics, inspection and test methods, qualification and acceptance conditions for rod ends with self-aligning self-lubricating bearings designed to withstand (under load) slight swivelling and slow rotations only.

It is applicable whenever referenced.

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 5855-1	Aerospace - MJ threads - Part 1 : General requirements
ISO 5855-2	Aerospace - MJ threads - Part 2 : Limit dimensions for bolts and nuts
EN 2002-16	Aerospace series - Test methods for metallic materials - Part 16 : Dye penetrant testing ¹⁾
EN 2501	Aerospace series - Bearing, spherical plain, in corrosion resisting steel with self-lubricating liner and wide inner ring - Dimensions and loads
EN 3042	Aerospace series - Quality assurance - EN aerospace products - Qualification procedure

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 Surface discontinuities

3.1.1 Crack

Break in the material which may extend in all directions and be intercrystalline or transcrystalline in character

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3.1.2 Score, scratch

Open surface defect

3.1.3 Lap

Surface defect where particles of metal or sharp edges are folded over and then rolled or forged into the surface

3.1.4 Seam

Unwelded fold which appears as an open defect in the material

3.2 Starting torque at zero load

Maximum torque required to start the rotation of the inner ring of the bearing, with the rod end body held stationary

3.3 Production batch

Batch consisting of rod ends of the same type, the same dimensions and from the same material batch, defined by the same product standard

3.4 Delivery batch

Batch consisting of rod ends with the same identity block which may come from different production batches

¹⁾ In preparation at the date of publication of this standard

4 Required characteristics, inspection and test methods

See table 1.

Table 1

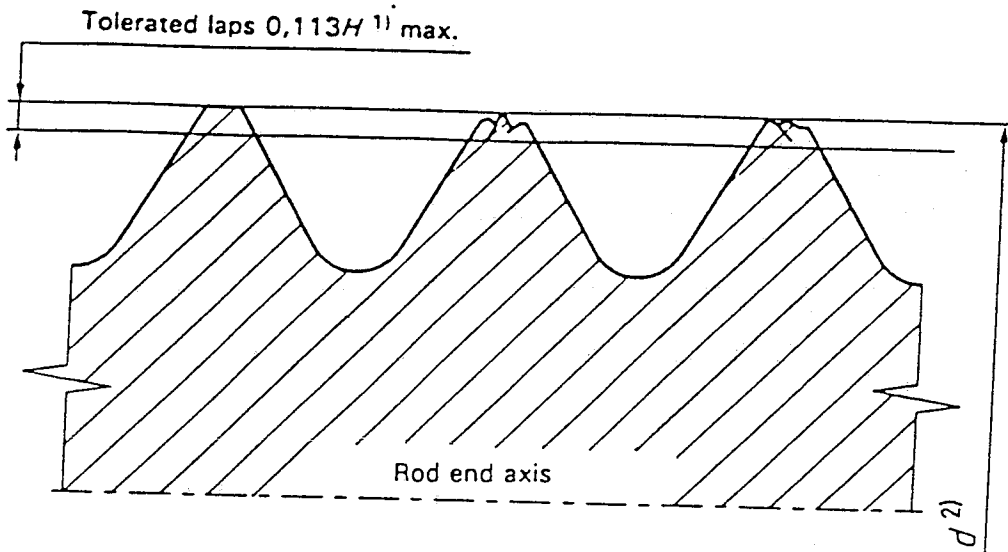
Sub-clause	Characteristics	Requirements	Inspection and test methods	Q 1)	A 2)
4.1	Materials	Shall conform with the product standards or design documentation	Chemical analysis or certificate of conformity issued by semi-finished products manufacturer	X	X
4.2	Dimensions and tolerances	Shall conform with the product standards or design documentation	Suitable measuring instruments	X	X
4.3	Masses	Shall conform with the product standards or design documentation	Suitable methods	X	X
4.4	Marking	Shall conform with the product standards or design documentation It shall be legible and shall not alter the material or the functioning of the rod end.	Visual examination	X	X
4.5	Surface appearance				
4.5.1	of rod end body (except thread)	No surface discontinuity	3) Suitable inspection methods Look for seams and cracks by dye penetrant process according to EN 2002-16 or magnetic process.	X	X
4.5.2	of complete rod end	No cracks in the swaging groove area	Visual check using suitable magnification		X
		The bearing shall be correctly swaged into position. There shall be no cracks in the swaging groove area.	Magnetic or dye penetrant inspection	X	
4.6	Grooves	Shall not change the thread function	Visual examination and threaded gauge	X	X
4.7	Hardness	Shall conform with the product standards or design documentation	3) Suitable processes and measuring instruments	X	X
4.8	Surface roughness	Shall conform with the product standards or design documentation	Suitable measuring instruments or visual-tactile samples	X	X

(continued)

Table 1 (concluded)

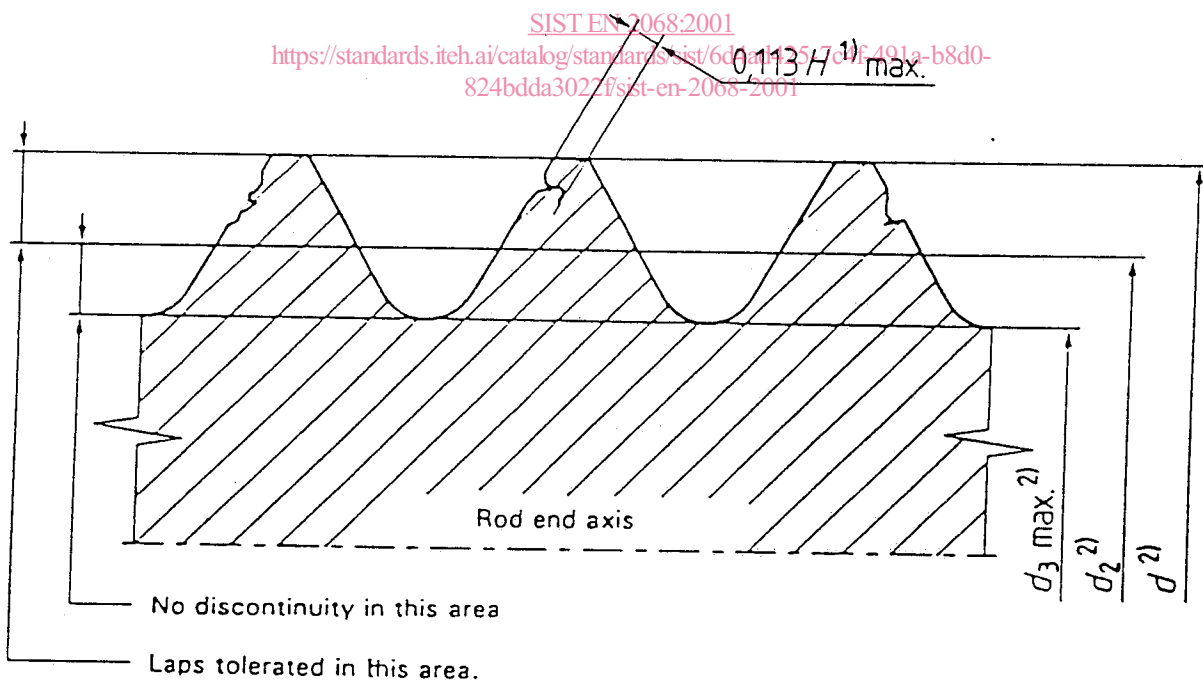
Sub-clause	Characteristics	Requirements	Inspection and test methods	Q 1)	A 2)
4.9	Surface treatment	Shall conform with the product standards or design documentation	Visual inspection As per surface treatment standard	X	X
4.10	Thread discontinuities	See figures 1 and 2	3) Examination of micrographic section for : - qualification : on finished parts ; - acceptance : by sampling during manufacture	X	X
4.11	Internal clearances	No clearance, whether axial or radial shall be perceptible.	Suitable methods	X	X
4.12	Starting torque at zero load	Shall conform with the product standards or design documentation.	Suitable procedures and measuring instruments - Measurement of the starting torque shall be preceded by some rotations and a few swivelling movements by hand. - Measure at least five times the torque applied progressively to the inner ring of the bearing, in both directions, with the rod end held stationary. Only the highest value shall be taken into account.	X	X
4.13	Ultimate static load	Shall conform with the product standards or design documentation After the removal of the load, there shall be no cracks or deterioration of the rod end.	See annexe A.	X	
4.14	Push-out proof load	Shall conform with the product standards or design documentation When maintaining the load, there shall be no displacement of the bearing in the rod end.	See annexe B.	X	

1) Q = Qualification test
2) A = Acceptance test
3) These inspections shall be made in the absence of surface treatment, which, for the purpose of qualification, may be removed by a chemical process.



- 1) See ISO 5855-1.
- 2) See ISO 5855-2.

Figure 1 - Discontinuities on crest of thread
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- 1) See ISO 5855-1.
- 2) See ISO 5855-2.

Figure 2 - Discontinuities on thread flank

5 Quality assurance

5.1 Product qualification

See EN 3042 and tables 2 and 3.

Qualification shall be obtained for each rod end.

5.2 Acceptance conditions

5.2.1 Inspections and tests to be carried out by the manufacturer

See table 4.

5.2.2 User's quality control

The user may, on acceptance of a delivery batch, proceed to inspect it by using the inspections specified in table 4, in full or in part, to ensure that the items conform to the required quality level, and to determine whether the delivery batch is acceptable.

This inspection can be carried out in the user's factory, or by special agreement with the manufacturer in the manufacturer's factory.

6 Packaging

The rod ends shall be packaged individually and in such a way that they will not be damaged during transportation.

They shall be protected against moisture, corrosion, dirt and other harmful substance.

The packaging material in contact with the bearing shall provide this protection.

The following indications shall be affixed to each individual package :

- manufacturer's name and address;
- identity block as defined by product standards or design documentation;
- packaging date.

The following indications at least shall appear on collective packaging :

- manufacturer's name and address;
- number of order;
- quantity;
- identity block(s) as defined by product standards or design documentation.

7 Certificate of conformity

All the rod ends supplied in accordance with this standard shall be accompanied by a certificate of conformity from the manufacturer.