



SLOVENSKI STANDARD
kSIST FprEN 4694:2016

01-maj-2016

Aeronavtika - Zglobna ročica z vgrajenim sornikom - Montažne kode D, E in F

Aerospace series - Tie rod with integrated bolts - Assembly code D, E and F

Luft- und Raumfahrt - Zug-Druck Stange mit integrierten Bolzen - Zusammenbaucode D, E und F

Série aérospatiale - Bielle avec axes intégrés - Code assemblage D, E et F

Ta slovenski standard je istoveten z: FprEN 4694

ICS:

49.035

Sestavni deli za letalsko in
vesoljsko gradnjo

Components for aerospace
construction

kSIST FprEN 4694:2016

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

FINAL DRAFT
FprEN 4694

March 2016

ICS 49.035

English Version

Aerospace series - Tie rod with integrated bolts - Assembly code D, E and F

Série aérospatiale - Bielle avec axes intégrés - Code assemblage D, E et F

Luft- und Raumfahrt - Zug-Druck Stange mit integrierten Bolzen - Zusammenbaucode D, E und F

This draft European Standard is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
European foreword.....	3
Introduction.....	4
1 Scope	5
2 Normative references	5
3 Requirements.....	6
4 Assembly code definitions.....	6
5 Materials	8
6 Locking clips.....	9
7 Fork and eye ends.....	10
8 Mass calculation of tie rods.....	18
9 Marking	20
10 Dimensions	21
11 Designation.....	21
12 Technical specification.....	21
Annex A (informative) Standard evolution form.....	22

European foreword

This document (FprEN 4694:2016) 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 European 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 document is currently submitted to the Formal Vote.

Introduction

Aerospace and Defence Standardization (ASD-STAN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent.

USA: US 8371767

China: CN 10104431

Japan: JP 4885140

Russia: RU 2389914

South Africa: ZA 2007/03913

Canada: 2584387

South Korea: 7011559

ASD-STAN takes no position concerning the evidence, validity and scope of this patent right.

The holder of this patent right has assured ASD-STAN that he/she is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ASD-STAN. Information may be obtained from:

GMT Gummi-Metall-Technik GmbH
Liechtersmatten 5
D-77815 Bühl

TRIGUM Engineering GmbH
Brunskamp 4
D-21220 Seevetal/Maschen

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. ASD-STAN shall not be held responsible for identifying any or all such patent rights.

1 Scope

This European Standard specifies the dimensions and tolerances of rod assemblies for aerospace applications with two adjustable ends with integrated bolts for interior and sub structure in the temperature range -55 °C to 85 °C. The rod ends should not be screwed completely apart.

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.

DIN 6799, *Retaining washers for shafts* ¹⁾

DIN 65038-1, *Aerospace — Steel, nickel- and cobalt-alloy bars — Technical specification* ¹⁾

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

EN 3311, *Aerospace series — Titanium alloy Ti-P64001 (Ti-6Al-4V) — Annealed — Bar for machining — D < 110 mm*

EN 4614, *Aerospace series — Spherical plain bearings in corrosion resisting steel with self-lubricating liner wide series — Dimensions and loads — Inch series*

EN 4691-1, *Aerospace series — Tie rod with integrated bolts — Part 1: Technical specification*

EN 4692, *Aerospace series — Tie rod with integrated bolts — Locking clip*

EN 10088-3, *Stainless steels — Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

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

LN 9368-4, *Aerospace — Designation of surface treatments — Part 4: Code numbers for methods of anodic treatment* ¹⁾

LN 9368-7, *Aerospace — Designation of surface treatments — Part 7: Code numbers for methods of organic coating* ¹⁾

WL 1.4548 (all parts), *Aerospace — Precipitation-hardening stainless chromium-nickel-copper steel with approx. 0,05C-16Cr-4Cu-4Ni* ¹⁾

WL 3.1354 (all parts), *Aerospace — Wrought aluminium alloy with approx. 4,4Cu-1,5Mg-0,6Mn* ¹⁾

FAR/JAR/CS 25.853, *Compartment Interiors* ²⁾

¹⁾ Published by: Beuth Verlag GmbH. www.beuth.de

²⁾ Published by: European Aviation Safety Agency, Postfach 101253, D-50452 Koeln, Germany

3 Requirements

3.1 Configuration, dimensions, tolerances and mass

3.1.1 Configuration

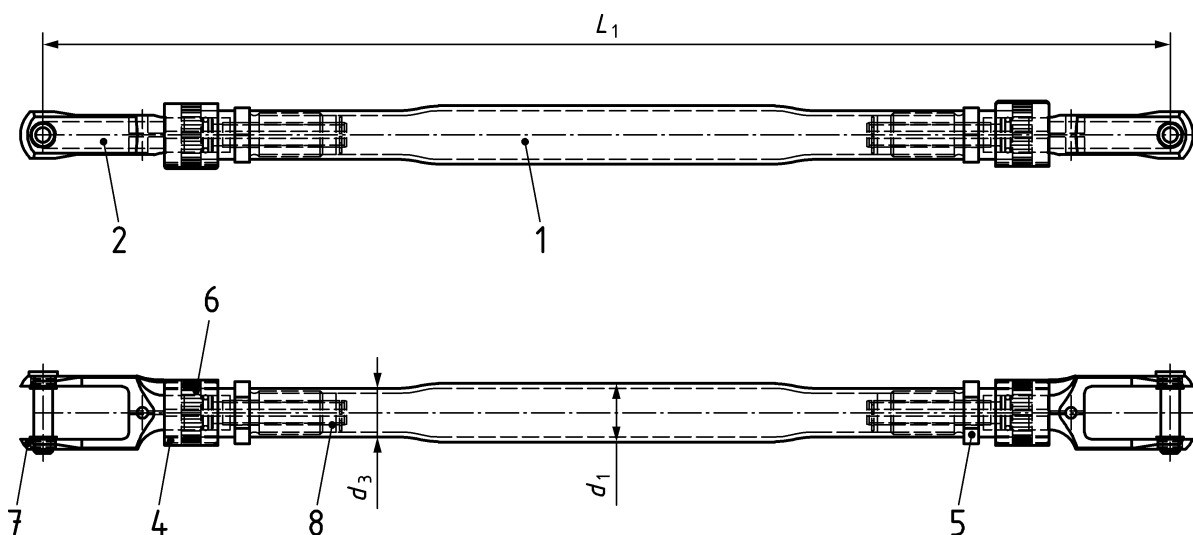
The configuration shall be in accordance with Figure 1, Figure 2 and Figure 3.

3.1.2 Dimensions, tolerances and mass

Dimensions are in millimetres, tolerances and masses in accordance to Table 4, Table 5, Table 6, Table 7 and Table 8. General tolerances shall be in accordance to ISO 2768-mK. Missing dimensions are manufacturing options.

4 Assembly code definitions

Assembly code D, E and F are shown in Figure 1, Figure 2 and Figure 3. For assembly code D, E and F: $d_1 = 25,4$ mm, $d_3 = 22,2$ mm and adjustable range for $L_1 = \pm 12,7$ mm. For L_1 less than 330 mm outer diameter of the rod body $d_3 = 22,2$ mm (no swaging).



Key

1 - 2 - 4 - 5 - 6 - 7 and 8 The position numbers and the materials are shown in Table 1 and Table 2.

Figure 1 — Assembly code D