



SLOVENSKI STANDARD

SIST EN 4853:2022

01-maj-2022

Aeronavtika - Spojni elementi z zunanjim navojem, 100° ugrezna glava, spiralna vdolbina - Klasifikacije: 1 100 MPa (pri temperaturi okolice)/425 °C

Aerospace series - Externally threaded fastener, 100° countersunk normal head, Spiral Drive Recess - Classification: 1 100 MPa (at ambient temperature)/425 °C

Luft- und Raumfahrt - Verbindungselement mit Außengewinde, 100° Senkkopf, mit Spiral-Antrieb - Klasse: 1 100 MPa (bei Raumtemperatur)/425 °C

Série aérospatiale - Élément de fixation à filetage extérieur, tête fraisée normale 100°, empreinte en spirale - Classification : 1 100 MPa (à température ambiante)/425 °C

Ta slovenski standard je istoveten z: EN 4853:2022

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ICS:

49.030.01 Vezni elementi na splošno Fasteners in general

SIST EN 4853:2022

en,fr,de

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EUROPEAN STANDARD

EN 4853

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2022

ICS 49.030.01

English Version

Aerospace series - Externally threaded fastener, 100°
countersunk normal head, Spiral Drive Recess -
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°C

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Außengewinde, 100° Senkkopf, mit Spiral-Antrieb -
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This European Standard was approved by CEN on 10 January 2022.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 4853:2022) 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 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 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 September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 4853:2022 (E)

Introduction

Aerospace and Defence Standardisation (ASD-STAN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent “Spiral Drive System for Threaded Fasteners” EP1025370B1.

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:

Phillips Screw Company
301 Edgewater Drive, Suite 320
Wakefield, Massachusetts 01880
USA

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.

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1 Scope

This document specifies the characteristics of externally threaded fasteners, 100° countersunk normal head, Spiral Drive Recess, for aerospace applications.

Classification: 1 100 MPa¹/425 °C².

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 2133, *Aerospace series — Cadmium plating of steels with specified tensile strength $\leq 1\,450$ MPa, copper, copper alloys and nickel alloys*

EN 2137, *Aerospace series — Steel FE-PL75 — $1\,100$ MPa $\leq R_m \leq 1\,250$ MPa — Bars — $D_e \leq 100$ mm*

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

EN 2491, *Aerospace series — Molybdenum disulphide dry lubricants — Coating methods*

EN 2516, *Aerospace series — Passivation of corrosion resisting steels and decontamination of nickel base alloys*

EN 3021, *Aerospace series — Molybdenum disulphide dry film lubricants graphite and halogen free — Technical specification*

EN 3514, *Steel FE-PL711 — hardened and tempered — $1\,100 \leq R_m \leq 1\,300$ MPa — Bar and wire for bolts — $D_e \leq 25$ mm³*

EN 3761, *Aerospace series — Heat resisting alloy FE-PA2601 — Softened and cold worked — Bar for forged fasteners — $D \leq 50$ mm — $1\,100$ MPa $\leq R_m \leq 1\,300$ MPa*

EN 3813, *Aerospace series — Titanium alloy TI-P64001 (Ti-6Al-4V) — Annealed — Bar and wire for forged fasteners — $D_e \leq 50$ mm*

EN 4473, *Aerospace series — Aluminium pigmented coatings for fasteners — Technical specification*

EN 4609, *Aerospace series — Spiral drive recesses for threaded fasteners — Geometrical definition and technical requirements*

ISO 3161, *Aerospace — UNJ threads — General requirements and limit dimensions*

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

ISO 7913, *Aerospace — Bolts and screws, metric — Tolerances of form and position*

¹ Minimum tensile strength of the material at ambient temperature.

² Maximum temperature that the screw can withstand without continuous change in its original characteristics, after return to ambient temperature. The maximum temperature is determined by the material.

³ Published as ASD-STAN Prestandard at the date of publication of this standard by AeroSpace and Defence Industries Association of Europe — Standardization (ASD-STAN) (www.asd-stan.org).

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NAS621, *Fasteners, Titanium Alloy Procurement Specification*⁴

NAS4002, *Fastener, Alloy Steel, Externally Threaded, 160 KSI Ftu, 95 KSI Fsu, 450 °F*⁴

NAS4003, *Fastener, A286 Corrosion Resistant Alloy, Externally Threaded, 160 KSI Ftu, 95 KSI Fsu, 1 000 °F*⁴

NAS4004, *Fastener, 6AL-4V Titanium Alloy, Externally Threaded, 160 KSI Ftu, 95 KSI Fsu, 450 °F*⁴

NAS9800, *Head Protrusion Gaging, 100° Flush Head Fasteners, Gage Block, Gage Diameters and Stylus*⁴

SAE AMS4928W, *Titanium Alloy Bars, Wire, Forgings, Rings, and Drawn Shapes, 6Al — 4V Annealed*⁵

SAE AMS4967M, *Titanium Alloy, Bars, Wire, Forgings, and Rings 6.0Al — 4.0V Annealed, Heat Treatable*⁵

SAE AMS5731L, *Steel, Corrosion and Heat-Resistant, Bars, Wire, Forgings, Tubing, and Rings 15Cr — 25.5Ni — 1.2Mo — 2.1Ti — 0.006B — 0.30V Consumable Electrode Melted, 1 800 °F (982 °C) Solution Heat Treated*⁵

SAE AMS5732J, *Steel, Corrosion and Heat-Resistant, Bars, Wires, Forgings, Tubing, and Rings, 15Cr — 25.5Ni — 1.2Mo — 2.1Ti — 0.006B — 0.30V Consumable Electrode Melted 1 800°F (982 °C) Solution and Precipitation Heat Treated*⁵

SAE AMS5737G, *Steel, Corrosion and Heat Resistant, Bars, Wire, Forgings and Tubing 15Cr — 25.5Ni — 1.2Mo — 2.1Ti — 0.006B — 0.30V Consumable Electrode Melted 1 650 °F (899 °C) Solution and Precipitation Heat Treated*⁵

SAE AMS5853D, *Steel, Corrosion and Heat-Resistant Bars and Wire 15Cr — 25.5Ni — 1.2Mo — 2.1Ti — 0.006B — 0.30V, Consumable Electrode Melted, 1 800 °F (982 °C) Solution Treated and Work-Strengthened Capable of 160 ksi (1 103 MPa) Tensile Strength*⁵

SAE AMS6322R, *Steel Bars, Forgings, and Rings 0.50Cr — 0.55Ni — 0.25Mo (0.38 — 0.43C) (SAE 8740)*⁵

SAE AMS6382R, *Steel, Bars, Forgings, and Rings 0.95Cr — 0.20Mo (0.38 — 0.43C) (SAE 4140) Annealed*⁵

SAE AMS6415U, *Steel, Bars, Forgings, and Tubing 0.80Cr — 1.8Ni — 0.25Mo (0.38 — 0.43C) (SAE 4340)*⁵

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

⁴ Published by: Aerospace Industries Association (AIA), 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3901, USA.

⁵ Published by: Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096-0001, USA.

4 Requirements

4.1 Configuration — Dimensions

See Figure 1, Table 1, Table 2 and Table 3.

Dimensions and tolerances are expressed in millimetres and apply after surface treatment.

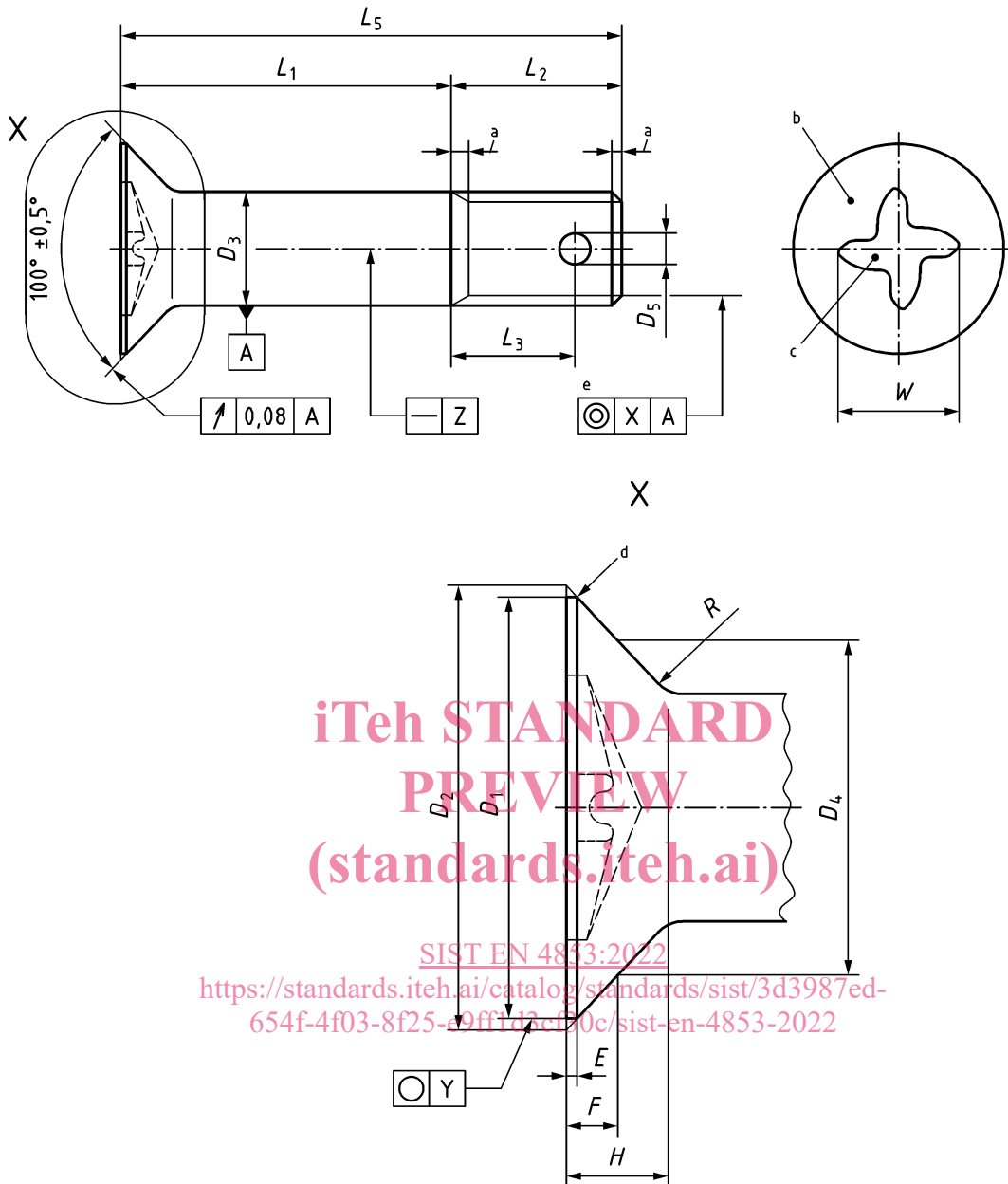
Roughness shall be as follows:

- bearing surfaces (underhead face, fillet radius, shank, thread): $R_{\text{max}} = 0,8 \mu\text{m}$;
- all other surfaces: $R_{\text{max}} = 3,2 \mu\text{m}$;
- break sharp edges 0,1 to 0,4.

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**Key**

- 1 Thread
- a According to ISO 3353-1
- b Marking
- c MORTORQ® Spiral Drive Recess⁶ (see Table 2)
- d Rounded form permitted
- e Concentricity of the effective diameter to the shank diameter

Figure 1 — Externally threaded fastener, 100° countersunk head

⁶ MORTORQ® is the trade name of a product supplied by licensees of the Phillips Screw Company. This information is given for the convenience of users of this document and does not constitute an endorsement by ASD-STAN nor CEN of the product named. Equivalent products may be used if they can be shown to lead to the same results.

Table 1 — Dimensions

Code	Thread ^a Designation	D_1 min.	D_2 max.	D_3		D_5	E max.	H	L_2	L_3	R
				Plated	Unplated						
030	.190"-32	8,61	9,68	4,813 4,788	4,813 4,801	2,03 1,78	0,38	2,11	8,59	5,64	0,89
040	.250"-28	11,79	12,85	6,337 6,312	6,337 6,325	2,18	0,38	2,82	10,80	7,85	0,38
050	.3125"-24	14,68	16,10	7,925 7,899	7,925 7,912	1,93	0,38	3,56	11,91	8,86	1,14
060	.375"-24	18,21	19,30	9,512 9,487	9,512 9,500	2,95	0,38	4,24	14,68	11,63	0,64
070	.4375"-20	20,98	22,58	11,100 11,074	11,100 11,087	2,70	0,56	4,95	17,63	14,48	1,40
080	.500"-20	24,16	25,76	12,687 12,662	12,687 12,675	2,57	0,56	5,64	18,67	15,52	0,89
090	.5625"-18	27,20	28,98	14,262 14,237	14,262 14,249	3,83	0,64	6,35	21,34	18,19	0,89
010	.625"-18	30,51	32,31	15,850 15,824	15,850 15,837	3,58	0,64	7,11	22,91	19,76	0,89

^a Threads: Unified (UNJF) to ISO 3161 Class 3A. Major diameter shall be a minimum of $0,025 <$ shank diameter D .