
Aeronavtika - Vijak, 100° ugrezna glava, spiralna vdolbina, široka toleranca, dolg navoj, iz legiranega jekla, kadmiran - Klasifikacija: 1100 MPa (pri temperaturi okolice)/235 °C

Aerospace series - Screw, 100° countersunk normal head, Spiral Drive Recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated - Classification: 1 100 MPa (at ambient temperature)/235 °C

Luft- und Raumfahrt - 100° Senkschraube, Spiral-Antrieb, grobe Schaffttoleranz, langes Gewinde, aus legiertem Stahl, kadmiert - Klasse: 1 100 MPa (bei Raumtemperatur)/235 °C

Série aérospatiale - Vis à tête fraisée normale 100°, empreinte en spirale, tige normale à tolérance large, filetage long, en acier allié, cadmiée - Classification : 1 100 MPa (à température ambiante)/235 °C

Ta slovenski standard je istoveten z: EN 4851:2022

ICS:

49.025.10	Jekla	Steels
49.030.20	Sorniki, vijaki, stebelni vijaki	Bolts, screws, studs

SIST EN 4851:2022**en,fr,de**

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[SIST EN 4851:2022](https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022)

<https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022>

EUROPEAN STANDARD

EN 4851

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2022

ICS 49.030.20

English Version

**Aerospace series - Screw, 100° countersunk normal head,
Spiral Drive Recess, coarse tolerance normal shank, long
thread, in alloy steel, cadmium plated - Classification: 1
100 MPa (at ambient temperature)/235 °C**

Série aérospatiale - Vis à tête fraisée normale 100°,
empreinte en spirale, tige normale à tolérance large,
filetage long, en acier allié, cadmiée - Classification : 1
100 MPa (à température ambiante)/235 °C

Luft- und Raumfahrt - 100° Senkschraube, Spiral-
Antrieb, grobe Schafttoleranz, langes Gewinde, aus
legiertem Stahl, kadmiert - Klasse: 1 100 MPa (bei
Raumtemperatur)/235 °C

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.

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



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

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

Contents	Page
European foreword	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions.....	5
4 Requirements.....	6
4.1 Configuration — Dimensions — Masses.....	6
4.2 Tolerances of form and position	8
4.3 Materials	8
4.4 Surface treatment.....	8
5 Designation	9
6 Marking	9
7 Technical specification	9
Bibliography.....	10

iTeh STANDARD
PREVIEW
(standards.iteh.ai)

[SIST EN 4851:2022](https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022)

<https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022>

European foreword

This document (EN 4851:2022) 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.

iTeh STANDARD
PREVIEW
(standards.iteh.ai)

[SIST EN 4851:2022](https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022)

<https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022>

EN 4851:2022 (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.

**iTeh STANDARD
PREVIEW
(standards.iteh.ai)**

[SIST EN 4851:2022](https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022)
<https://standards.iteh.ai/catalog/standards/sist/0882d114-87e0-4fe3-8359-1de6c9bb4667/sist-en-4851-2022>

1 Scope

This document specifies the characteristics of externally threaded fasteners, 100° countersunk normal head, Spiral Drive Recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated, for aerospace applications.

Classification: 1 100 MPa¹/235 °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 — $1\,100 \text{ MPa} \leq R_m \leq 1\,250 \text{ MPa}$ — Bars — $D_e \leq 100 \text{ mm}$*

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

EN 3514, *Steel FE-PL711 — Hardened and tempered — $1\,100 \leq R_m \leq 1\,300 \text{ MPa}$ — Bar and wire for bolts — $D_e \leq 25 \text{ mm}^3$*

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

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

ISO 4520, *Chromate conversion coatings on electroplated zinc and cadmium coatings*

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

ISO 7689, *Aerospace — Bolts, with MJ threads, made of alloy steel, strength class 1 100 MPa — Procurement specification*

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

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/>

¹ Minimum tensile strength of the material at ambient temperature.

² Maximum temperature that the externally threaded fastener 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).

EN 4851:2022 (E)

4 Requirements

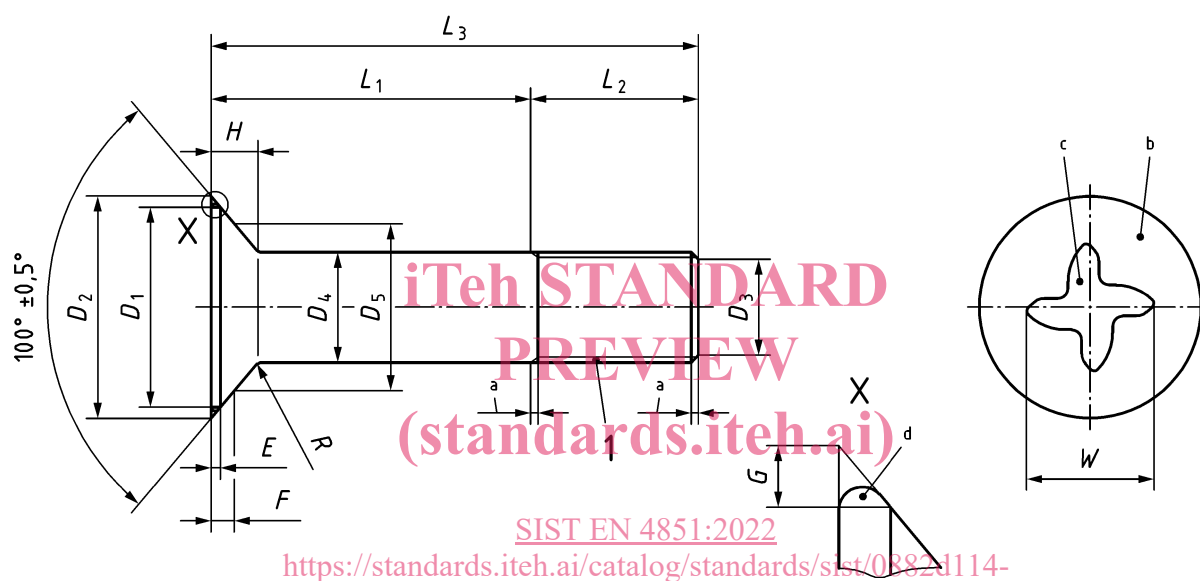
4.1 Configuration — Dimensions — Masses

See Figure 1 and Table 1.

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.



Key

- 1 Thread
- a According to ISO 3353-1.
- b Marking
- c MORTORQ® Spiral Drive Recess⁴
- d Rounded form permitted

NOTE Dimensions not specified are at the manufacturer's option provided that the qualification and acceptance requirements of EN 4609 and technical specification are met.

Figure 1 — Externally threaded fastener, 100° countersunk

⁴ 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 and masses

Diameter code	Thread ^a	D_1	D_2	D_3		D_4	D_5	E	F	G	H	$L_1^{b,c}$		L_2	$L_3 \pm 0,3^{c,d}$		Recess Code	W ref	Gauge Penetration		R		Mass ^e																						
		min.	max.	nom.	Tol.	nom.	min.	0 -0,08	nom.	Tol.	nom.	Tol.	Length Code	nom.	max.	min.			max.	min.	f	g																							
050	MJ5 × 0,8 4h6h	9,0	10	3,4	±0,5	5	7,71	0,1	0,96	0,5	2,12	6	0 -0,8	16	022 to 070	22 to 70	1	6,11	0,69	0,51	0,7	0,5	3,009	0,306																					
060	MJ6 × 1 4h6h	10,8	12	4,2		6	9,00		1,26	0,6	3,39	8	5,08	6	0 -1	18	024 to 084	24 to 84	1	6,11					1,19	0,97	0,8	0,6	4,699	0,444															
070	MJ7 × 1 4h6h	12,8	14	5,2		7	10,28		1,57					8	0 1	20	028 to 098	28 to 98	2	7,82					1,27	1,04					0,9	1,45	0,8	19,337	1,232										
080	MJ8 × 1 4h6h	14,8	16	6,2		8	12,21		1,60					8	0 -1	22	030 to 112	30 to 112	2	7,82					1,57	1,35										0,9	1,7	0,9	33,504	1,774					
100	MJ10 × 1,25 4h6h	18,8	20	7,9		10	15,43		1,93					8	0 -1,25	26	034 to 140	34 to 140	3	8,98					1,83	1,45															0,9	1,7	0,9	33,504	1,774
120	MJ12 × 1,25 4h6h	22,8	24	9,8		12	18,00		2,53					10	0 -1,25	30	040 to 168	40 to 168	5	12,86					2,08	1,7																			

^a In accordance with ISO 5855-2.

^b First length corresponding to first L_3 length.

^c Increments: 2 for $L_3 \leq 100$;
4 for $L_3 > 100$.

^d If greater lengths are required, they shall be chosen using the above increments. The length code corresponds to the length L_3 , completed by one or two zeros to the left, where necessary, to obtain a three digit code.

^e Approximate values (kg/1 000 pieces), calculated on the basis of 7,85 kg/dm³, given for information purposes only.

^f Value for first L_3 .

^g Increase for each additional 2 mm of L_3 .

EN 4851:2022 (E)

4.2 Tolerances of form and position

Tolerances of form and position shall be according to ISO 7913.

4.3 Materials

Materials shall be according to EN 2137 or EN 3514.

4.4 Surface treatment

Surface treatment shall be according to EN 2133, 8 µm to 14 µm, on all surfaces which can be contacted by a 20 mm diameter ball. On all other surfaces, a continuous deposit shall be present, but no value is specified.

Post treatment process codes shall be according to Table 2.

Table 2 — Post treatment process code

Process code	Standard/Type	Post treatment for cadmium surface
- (no code)	EN 2133, type 2	+ hexavalent chromium after hydrogen-embrittlement relief heat treatment
A	EN 2133, type 1	without post treatment
B	EN 2133, type 1 + ISO 4520, class 1, designation B	+ transparent conversion coating slight iridescence; coating mass per unit area ≤ 1,0 g/m ²
C	EN 2133, type 1 + ISO 4520, class 2, designation D	+ transparent conversion coating with black conversion coating; coating mass per unit area > 1,5 g/m ²
D	EN 2133, type 3	+ hexavalent chromium before or after hydrogen-embrittlement relief heat treatment

If available it is preferable to use EN 2133, type 3, Code "C" as a non-chromium (VI) passivation post surface treatment. EN 2133, type 3, Code "C" chromate (VI) free post treatment to be agreed between manufacturer and customer.