SLOVENSKI STANDARD
SIST EN 2859:2001

01-januar-2001

Aerospace series - Bolts, normal hexagonal head, close tolerance normal shank, short thread, in alloy steel, cadmium plated - Classification: 1 100 MPa (at ambient temperature) / 235 °C

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Luft- und Raumfahrt - Sechskant-Paßschrauben, kurzes Gewinde, aus legiertem Stahl, verkadmet - Klasse: 1 100 MPa (bei Raumtemperatur) / 235 °C

Série aérospatiale - Vis a tete hexagonale, tige normale a tolérance serrée, filetage court, en acier allié, cadmiées - Classification: 1 100 MPa (a température ambiante) / 235 °C

Ta slovenski standard je istoveten z: **EN 2859:1995**

ICS:

49.030.20 Sorniki, vijaki, stebelni vijaki Bolts, screws, studs

SIST EN 2859:2001 **en**

EUROPEAN STANDARD **EN 2859**

NORME EUROPÉENNE

EUROPÄISCHE NORM June 1995

ICS 49.040.20

Descriptors: aircraft industry, aircraft equipment, screw, hexagonal head screw, alloy steel, cadmium, screw thread, specification, characteristic, dimension, mass, dimensional tolerance, surface treatment, designation, marking

English version

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This European Standard was approved by CEN on 1995-06-07. 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 standard was submitted for Formal Vote, and the result was positive.

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 December1995, and conflicting national standards shall be withdrawn at the latest by December 1995.

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.

1 Scope

This standard specifies the characteristics of bolts, normal hexagonal head, close tolerance normal shank, short thread, in alloy steel, cadmium plated.

Classification : 1 100 MPa [1] / 235 °C [2]

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 3193	Aerospace - Bolts, normal hexagonal head, normal shank, short or medium length MJ threads, metallic material, coated or uncoated, strength classes less than or equal to 1 100 MPa - Dimensions
ISO 3353	Aerospace - Rolled threads for bolts - Lead and runout requirements
ISO 5855-2	Aerospace - MJ threads - Part 2 : Limit dimensions for bolts and nuts
ISO 7689	Aerospace - Alloy steel bolts with strength classification 1 100 MPa and MJ threads - Procurement specification
ISO 7913	Aerospace - Bolts and screws, metric - Tolerances of form and position
EN 2000	Aerospace series - Quality assurance - EN aerospace products - Approval of the quality system of manufacturers
EN 2133	Cadmium plating of steels with maximum specified tensile strength equal to or less than 1 450 MPa and copper and copper alloys - Aerospace series [3]
EN 2424	Aerospace series - Marking of aerospace products
EN 3042	Aerospace series - Quality assurance - EN aerospace products - Qualification procedure
EN 4016	Aerospace series - Oversized bolts [4]
TR 3775	Aerospace series - Bolts and pins - National materials [5]

1) Minimum tensile strength of the material at ambient temperature
2) Maximum temperature that the bolt can withstand without continuous change in its original characteristics, after return to ambient temperature. The maximum temperature is determined by the surface treatment.
3) Published as AECMA Standard at the date of publication of this standard
4) In preparation at the date of publication of this standard
5) Published as AECMA Technical Report at the date of publication of this standard

3 Required characteristics

3.1 Configuration - Dimensions - Masses

See figure 1 and table 1.

Dimensions and tolerances are : in conformity with ISO 3193, expressed in millimetres and apply after surface treatment.

Details of form not stated are left to the manufacturer's discretion.

3.2 Tolerances of form and position

ISO 7913

3.3 Materials

TR 3775 (alloy steel, classification 1 100 MPa)

3.4 Surface treatment

EN 2133, 6 μm to 10 μm, on all surfaces which can be contacted by a 20 mm diameter ball. On all other surfaces, a continuous cadmium plating shall be present, but no value is specified.

Black colour option : code B

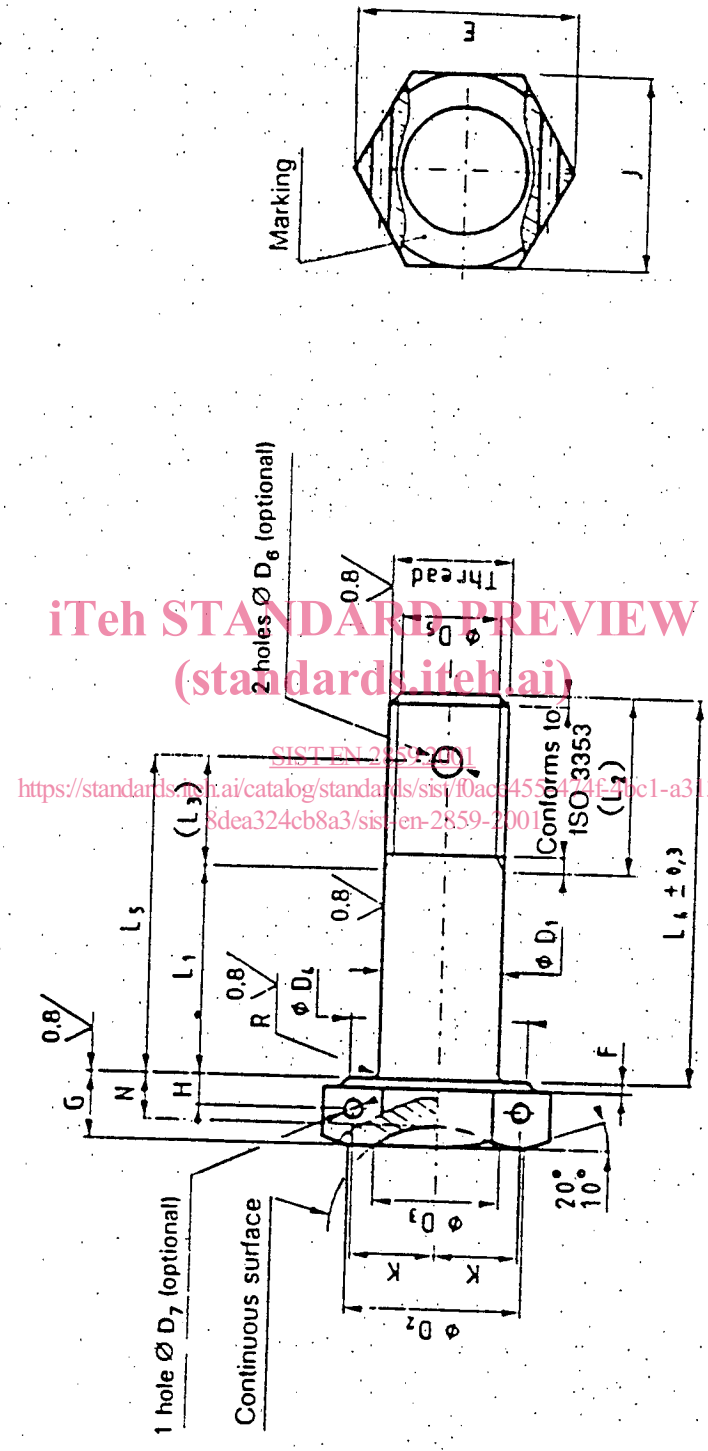

Figure 1

3,2 [0,8] Values in micrometres apply prior to surface treatment.

Break sharp edges 0,1 to 0,4

Table 1

Diameter code	Thread [1]	D_1 nom.	D_1 Tol.	D_2 min.	D_3 0 - 0,5	D_4 [2] min.	D_5 nom.	D_5 Tol.	D_6 H13	D_7 H13	E min.	F max.	F min.	G 0 - 0,3	H
030	MJ3x0,5 - 4h6h	3	- 0,006 - 0,031	5,5	—	5,4	2,3	0 - 0,5	—	—	6,5	0,4	0,2	2	—
040	MJ4x0,7 - 4h6h	4	- 0,010 - 0,035	6,4	—	6,4	3		—	1,1	7,6	0,5		2,5	—
050	MJ5x0,8 - 4h6h	5		7,4	5,25	7,4	3,4		1	1,5	8,7			3	1,35
060	MJ6x1 - 4h6h	6		9,4	6,25	9,3	4,2		1,4		10,9			3,5	1,6
070	MJ7x1 - 4h6h	7	- 0,013 - 0,038	10,3	7,25	10,2	5,2			1,9	12			4	1,85
080	MJ8x1 - 4h6h	8		12,3	8,25	12,2	6,2				14,3			4,5	2,1
100	MJ10x1,25 - 4h6h	10		16,3	10,25	16	7,9		1,6	2,4	18,9	0,6	0,3	5	2,35
120	MJ12x1,25 - 4h6h	12	- 0,016 - 0,041	18,3	12,25	18	9,8	± 0,5			21,1			6	2,85
140	MJ14x1,5 - 4h6h	14		21,3	14,25	21	11,5			3	24,5			7	3,35
160	MJ16x1,5 - 4h6h	16		23,3	16,25	23	13,5				26,8			8	3,85
180	MJ18x1,5 - 4h6h	18		26,3	18,25	26	15,5			3,8	30,2			9	4,35
200	MJ20x1,5 - 4h6h	20	- 0,020 - 0,045	29,3	20,25	29	17,5				33,6			10	4,85

Table 1 (concluded)

Diameter code	J nom.	J Tol.	K	$L_1 \pm 0{,}2$ 3) 4) Code	L_1 nom.	L_2	L_3	N $^{0}_{-0{,}3}$	R max.	R min.	Mass 5) 6)	Mass 5) 7)
030	6	h12	—	002 to 030	2 to 30	6	—	—	0,4	0,2	0,87	0,06
040	7		—	002 to 040	2 to 40	7,5	5	—			1,66	0,10
050	8		3,25	003 to 050	3 to 50	9	6	2	0,5	0,3	2,91	0,15
060	10	h13	4,1	003 to 060	3 to 60	10	7	2,3	0,7	0,5	5,44	0,22
070	11		4,5	004 to 070	4 to 70	11		2,7			7,45	0,30
080	13		5,35	004 to 080	4 to 80	11,5	7,5	3			11,22	0,39
100	17		7,1	005 to 100	5 to 100	14,5	9	3,4	0,8	0,6	21,78	0,62
120	19		7,9	006 to 120	6 to 120	16	10	4	0,9		34,82	0,89
140	22		9,2	007 to 140	7 to 140	19	12	4,7	1,1	0,8	53,61	1,21
160	24		10,05	008 to 160	8 to 160	20,5	13	5,4			78,40	1,58
180	27		11,3	009 to 180	9 to 180	22,5	14,5	6	1,3	1	110,48	2,00
200	30		12,6	010 to 200	10 to 200	24,5	15	6,7			151,14	2,47

1) In accordance with ISO 5855-2, except the thread major diameter "*d* max." which shall be equal to D_1 min. - 0,025.
2) D_4 max. shall be less than *J*.
3) Increments :
   1 for $L_1 \leq 30$
   2 for $30 < L_1 \leq 100$
   4 for $L_1 > 100$
4) If greater lengths are required, they shall be chosen using the above increments. The length code corresponds to length L_1, completed by one or two zeros to the left, where necessary, to obtain a three digit code.
5) Approximate values (kg/1 000 pieces), calculated on the basis of 7,85 kg/dm³, for information purposes only. They apply to bolts without holes.
6) Value for head and first L_4
7) Increase for each additional millimetre of L_4.