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**Aeronavtika - Vijaki, valjasta glava, križna zareza, široka toleranca, dolg navoj, iz legiranega jekla, kadmironi - Klasifikacija: 1100 MPa (pri temperaturi okolice)/235 °C**

Aerospace series - Screws, pan head, offset cruciform recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated - Classification: 1100 PMA (at ambient temperature)/235 °C

Luft- und Raumfahrt - Flachkopfschrauben, mit Flügelkreuzschlitz, langes Gewinde, aus legiertem Stahl, verkadmet - Klasse: 1100 MPa (bei Raumtemperatur)/235 °C

Série aérospatiale - Vis à tête cylindrique, à empreinte cruciforme déportée, tige normale à tolérance large, filetage long, en acier allié, cadmiées - Classification: 1100 MPa (à température ambiante)/235 °C

**Ta slovenski standard je istoveten z: EN 4161:2009**

**ICS:**

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

**SIST EN 4161:2010**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 4161**

November 2009

ICS 49.030.20

English Version

**Aerospace series - Screws, pan head, offset cruciform recess,  
coarse tolerance normal shank, long thread, in alloy steel,  
cadmium plated - Classification : 1 100 PMa (at ambient  
temperature) / 235 °C**

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

Luft- und Raumfahrt - Flachkopfschrauben, mit  
Flügelkreuzschlitz, langes Gewinde, aus legiertem Stahl,  
verkadmet - Klasse : 1 100 MPa (bei Raumtemperatur) /  
235 °C

This European Standard was approved by CEN on 15 September 2009.

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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 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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## Foreword

This document (EN 4161:2009) 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 May 2010, and conflicting national standards shall be withdrawn at the latest by May 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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## EN 4161:2009 (E)

## 1 Scope

This European Standard specifies the characteristics of screws, pan head, offset cruciform recess, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated.

Classification: 1 100 MPa<sup>1)</sup> / 235 °C<sup>2)</sup>.

## 2 Normative references

The following referenced documents are indispensable for the application 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 2000, *Aerospace series — Quality assurance — EN aerospace products — Approval of the quality system manufacturers*

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 —  $D_e \leq 100\text{ mm}^3$*

EN 2424, *Aerospace series — Marking of aerospace products<sup>3)</sup>*

EN 2442, *Aerospace series — Steel FE-PL711 —  $1\,100\text{ MPa} \leq R_m \leq 1\,300\text{ MPa}$  — Bars and wires —  $D_e \leq 25\text{ mm}^3$*

EN 9133, *Aerospace series — Quality management systems — Qualification procedure for aerospace standard parts*

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TR 3775, *Aerospace series — Bolts and pins — Materials<sup>4)</sup>*

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

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*

ISO 7994, *Aerospace — Internal drive, offset cruciform recess (Torq-Set®) for rotary fastening devices — Metric series*

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 surface treatment.

3) Published as ASD-STAN Pre-Standard at the date of publication of this standard.

4) Published as ASD-STAN 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 expressed in millimetres and apply after surface treatment.

#### 3.2 Tolerances of form and position

ISO 7913.

#### 3.3 Materials

EN 2137, EN 2442

or

TR 3775 (alloy steel, classification 1 100 MPa).

#### 3.4 Surface treatment

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.

Black colour option: code B.

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Table 1

Diameter Code	Threads <sup>1)</sup>	D <sub>1</sub> h12	D <sub>2</sub> O -0,3	D <sub>3</sub> min.	D <sub>4</sub> nom.	E			L <sub>1</sub> <sup>2) 3) 4)</sup> min.	L <sub>2</sub> <sup>2) 3) 4)</sup> max.	L <sub>3</sub>
						Tol.	nom.	Tol.			
030	MJ3x0,5 – 4h6h	3	6	4,7	2,3	0	1,8	0	0,4	2	12
040	MJ4x0,7 – 4h6h	4	8	6,7	3	-0,5	2,4	-0,2			14
050	MJ5x0,8 – 4h6h	5	10	8,7	3,4	± 0,5	3	0 -0,3	0,5	4	16
060	MJ6x1 – 4h6h	6	12	10,7	4,2		3,6				18
070	MJ7x1 – 4h6h	7	14	12,7	5,2		4,2				20
080	MJ8x1 – 4h6h	8	16	14,7	6,2		4,8		22		
100	MJ10x1,25 – 4h6h	10	20	18,7	7,9		6		0,8	6	26
120	MJ12x1,25 – 4h6h	12	24	22,7	9,8		7,2		0,9		30

Diameter code	L <sub>4</sub> ± 0,2 <sup>4) 5)</sup>		R		S		Mass <sup>6)</sup>	
	Length code	nom.	nom.	Tol.	max.	min.	<sup>7)</sup>	<sup>8)</sup>
030	014 to 042	14 to 42	0,4	0	1,2	0,3	0,979	0,110
040	016 to 056	16 to 56			1,6	0,4	2,242	0,198
050	020 to 070	20 to 70	0,5	-0,2	2	0,5	4,528	0,306
060	022 to 084	22 to 84	0,6		2,4	0,6	7,457	0,444
070	024 to 098	24 to 98	0,7	2,8	0,7	12,095	0,604	
080	026 to 112	26 to 112	0,8	3,2	0,8	16,923	0,790	
100	032 to 140	32 to 140	0,8	4	1	33,023	1,232	
120	036 to 168	36 to 168	0,9	0 -0,3	4,8	1,2	57,123	1,774

1) In accordance with ISO 5855-2.

2) First length corresponding to first L<sub>4</sub> length.

3) Condition L<sub>1</sub> min. and L<sub>2</sub> max. cannot be obtained simultaneously.

4) Increments:

2 for L<sub>4</sub> < 100;

4 for L<sub>4</sub> > 100.

5) If greater lengths are required, they shall be chosen using the above increments. The length code corresponds to the length L<sub>4</sub>, completed by one or two zeros to the left, where necessary, to obtain a three digit code.

6) Approximate values (kg/1 100 pieces), calculated on the basis of 7,85 kg/dm<sup>3</sup>, given for information purposes only.

7) Value for head and first L<sub>4</sub>.

8) Increase for each additional 2 mm of L<sub>4</sub>.