BRITISH STANDARD

BS EN 4136:2009

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

ICS 49.030.20

BSI
British Standards

National foreword

This British Standard is the UK implementation of EN 4136:2009.

The UK participation in its preparation was entrusted to Technical Committee ACE/12, Aerospace fasteners and fastening systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

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EN 4136

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ICS 49.030.30

English Version

Aerospace series - Bolts, normal bi-hexagonal head, 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 bihexagonale normale, tige normale à tolérance large, filetage long, en acier allié, cadmiées - Classification: 1 100 MPa (à température ambiante) / 235 °C

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

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4136:2009) 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

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1 Scope

This standard specifies the characteristics of bolts, normal bi-hexagonal head, coarse tolerance normal shank, long thread, in alloy steel, cadmium plated.

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

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 2133, *Aerospace series — Cadmium plating of steels with specified tensile strength ≤ 1 450 MPa, copper, copper alloys and nickel alloys.*

EN 2137, *Steel FE-PL75 — 1 100 MPa ≤ R_m ≤ 1 250 MPa — Bars D_e ≤ 100 mm — Aerospace series.* [3]

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

EN 2442 [4], *Steel FE-PL711 — 1 100 MPa ≤ R_m ≤ 1 300 MPa — Bars and wires D_e ≤ 25 mm — Aerospace series.* [3]

EN 3514, *Aerospace series — Steel FE-PL711 — Hardened and tempered — 1 100 ≤ R_m ≤ 1 300 MPa — Bar and wire for bolts — D_e ≤ 25 mm.* [5]

EN 9100, *Aerospace series — Quality management systems — Requirements (based on ISO 9001:2000) and Quality systems — Model for quality assurance in design, development, production, installation and servicing (based on ISO 9001:1994).*

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

ISO 3203, *Aerospace — Bolts, normal bihexagonal head, normal or pitch diameter shank, long length MJ threads, metallic material, coated or uncoated, strength classes less than or equal to 1 100 MPa — Dimensions.*

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

ISO 4095, *Aerospace — Bihexagonal drives — Wrenching configuration — Metric series.*

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.*

TR 3775, *Aerospace series — Bolts and pins — Materials.* [6]

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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 ASD Standard at the date of publication of this standard.

4) Inactive for new designation, see prEN 3514.

5) Published as ASD Prestandard at the date of publication of this standard.

6) Published as ASD 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 3203, 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)

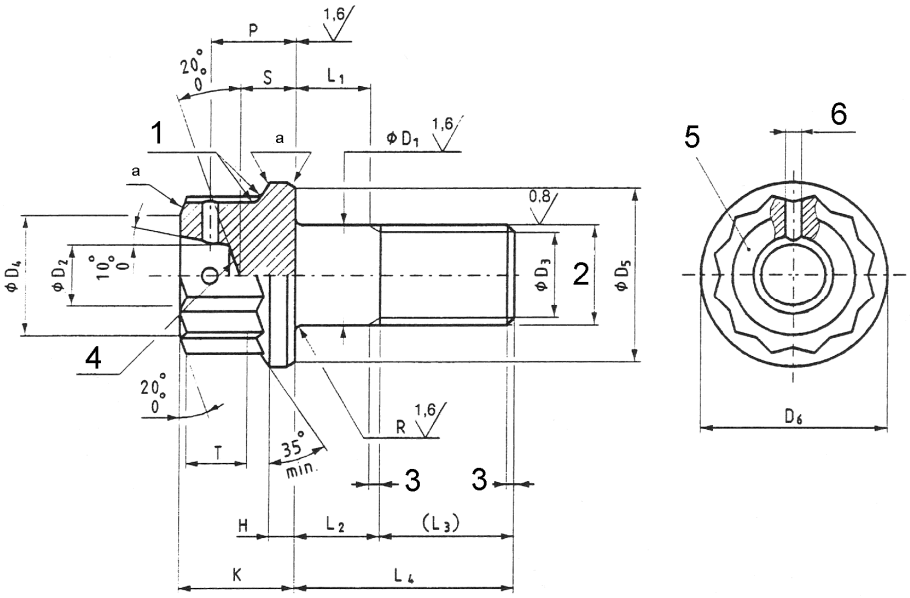
3.4 Surface treatment

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 cadmium plating shall be present, but no value is specified.

Black colour option: code B

3,2 [0,8 1,6] Values in micrometres apply prior to surface treatment.

Break sharp edges 0,1 to 0,4.



Key

1 Radius 0,3 min
2 Thread
3 Conforms to ISO 3353-1
4 Shape optional
5 Marking
6 4 holes $\varnothing D_7$ equidistant optional
a Rounded or chamfered in this area.

Figure 1

Table 1

Diameter code	Thread [a]	D_1 h12	D_2 $^{0}_{-0,5}$	D_3 ± 0,5	D_4 min.	D_5 min.	D_6 max.	D_7 H13	H min.	K h15	L_1 [b, c, d] min.	L_2 [b, c, d] max.
050	MJ5×0,8 - 4h6h	5	3,2	3,4	6,8	8,3	9,1	1	1	6,5	0,5	4
060	MJ6×1 - 4h6h	6	4,1	4,2	7,8	9,8	10,6	1,4	1,2	7,5	0,7	
070	MJ7×1 - 4h6h	7	4,9	5,2	8,8	11,3	12,1		1,4	8,2		
080	MJ8×1 - 4h6h	8	5,2	6,2	9,8	12,8	13,6		1,6	8,6		
100	MJ10×1,25 - 4h6h	10	6,7	7,9	11,8	15,7	16,7	1,6	2	10,1	0,8	6
120	MJ12×1,25 - 4h6h	12	8	9,8	13,7	18,8	19,9		2,4	11,4	0,9	

Diameter code	L_3	L_4 ± 0,3 [d, e]		P	R		S $^{+0,4}_{0}$	T min.	Wrenching dash number [f]	Mass [g]	
		Length code	nom.		nom.	Tol.				h	i
050	16	020 to 070	20 to 70	4,5	0,5	$^{0}_{-0,2}$	2,5	2,8	7	4,410	0,306
060	18	022 to 084	22 to 84	5,2	0,7		2,8	3,5	8	6,655	0,444
070	20	024 to 098	24 to 98	5,9			3,3	3,8	9	9,716	0,604
080	22	026 to 112	26 to 112	6,3			3,7	3,9	10	13,956	0,790
100	26	032 to 140	32 to 140	7,7	0,8		4,7	4,2	12	25,653	1,232
120	30	036 to 168	36 to 168	8,8	0,9	$^{0}_{-0,3}$	5,6	4,5	14	42,337	1,774

[a] In accordance with ISO 5855-2.

[b] First length corresponding to first L_4 length.

[c] Condition L_1 min. and L_2 max. cannot be obtained simultaneously.

[d] Increments:
- 2 for $L_4 \leq 100$;
- 4 for $L_4 > 100$.

[e] If greater lengths are required, they shall be chosen using the above increments. The length code corresponds to the length L_4, completed by one or two zeros to the left, where necessary, to obtain a three digit code.

[f] In accordance with ISO 4095 over T min.

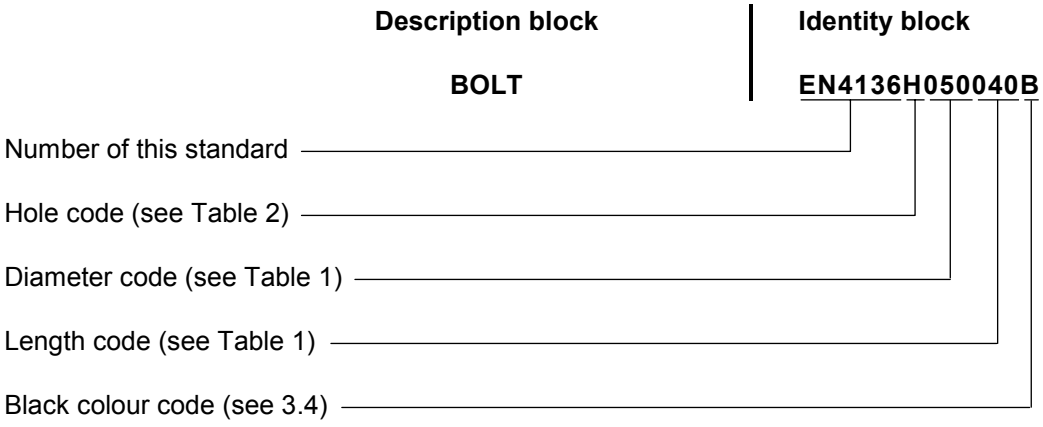
[g] Approximate values (kg/1 000 pieces), calculated on the basis of 7,85 kg/dm^3, given for information purposes only. They apply to bolts without holes.

[h] Value for head and first L_4.

[i] Increase for each additional 2 mm of L_4.

4 Designation

EXAMPLE



NOTE If necessary the originator code I9005 should be placed between the description block and the identity block.

Table 2

Holes	Code
with	H
without	— (hyphen)

5 Marking

EN 2424, style B (see Figure 1).

6 Technical specification

ISO 7689, except for clauses:

a) Approval of manufacturers: see EN 9100;

b) Qualification of bolts: see EN 9133.

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