BRITISH STANDARD

BS EN 4127:2009

Aerospace series — Bolts, normal hexagonal head, coarse tolerance normal shank, short, in titanium alloy, aluminium IVD coated — Classification: 1 100 MPa (at ambient temperature)/ 425 °C

ICS 49.030.20

BSI
British Standards

National foreword

This British Standard is the UK implementation of EN 4127:2009.

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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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2009.

ISBN 978 0 580 56003 3

Amendments/corrigenda issued since publication

Date	Comments

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 4127

July 2009

ICS 49.030.20

English Version

Aerospace series - Bolts, normal hexagonal head, coarse tolerance normal shank, short thread, in titanium alloy, aluminium IVD coated - Classification: 1 100 MPa (at ambient temperature) / 425 °C

Série aérospatiale - Vis à tête hexagonale normale, fût normal à tolérance large, filetage court, en alliage de titane, revêtues aluminium IVD - Classification: 1 100 MPa (à température ambiante) / 425 °C

Luft- und Raumfahrt - Sechskantschrauben, kurzes Gewinde, aus Titanlegierung, Aluminium IVD beschichtet - Klasse: 1 100 MPa (bei Raumtemperatur) / 425 °C

This European Standard was approved by CEN on 20 May 2009.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 4127:2009: E

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Foreword

This document (EN 4127:2009) 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of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.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 hexagonal head, coarse tolerance normal shank, short thread, in titanium alloy, aluminium IVD coated.

Classification: 1 100 MPa [1] / 425 °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 2424, *Aerospace series — Marking of aerospace products.*

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 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 3353-1, *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 7913, *Aerospace — Bolts and screws, metric — Tolerances of form and position.*

ISO 9152, *Aerospace — Bolts, with MJ threads, in titanium alloys, strength class 1 100 MPa — Procurement specification.*

TR 3775, *Aerospace series — Bolts and pins — Materials.* [3]

MIL-DTL-83488D, *Coating, aluminium, high purity.* [4]

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.

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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 Technical Report at the date of publication of this standard.

4) Published by: Department of Defense (DOD), the Pentagon, Washington, D.C. 20301, USA.

3.2 Tolerances of form and position

ISO 7913

3.3 Materials

TR 3775 (titanium alloy, strength class 1 100 MPa)

3.4 Surface treatment

MIL-DTL-83488D, Type II, class 3, 4 µm to 12 µm.

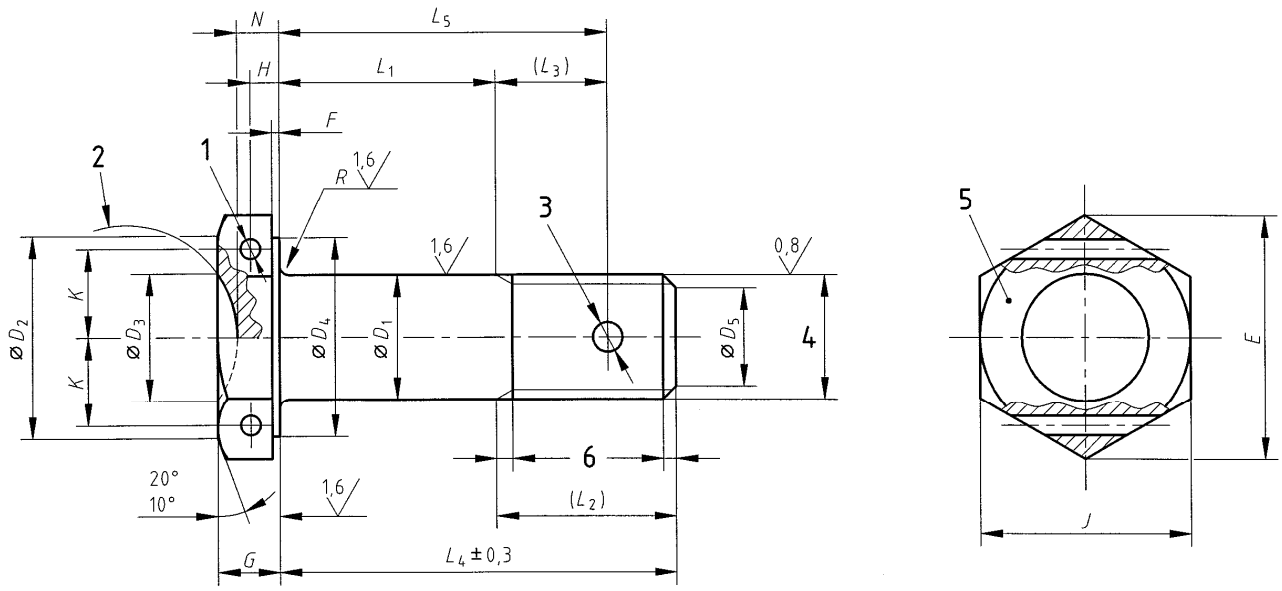
After aluminium deposit:

a) mechanical blasting, followed by a chromate conversion coating within 24 h max. 5);

b) optional lubrication with cethylic alcohol (code E).

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

Break sharp edges 0,1 to 0,4.



Key

1 Two holes $\varnothing D_6$ (optional)
2 Continuous surface
3 One hole $\varnothing D_7$ (optional)
4 Thread
5 Marking
6 Conforms to ISO 3353-1

Figure 1

5) Products used shall be in conformity with national regulation into force.

Table 1

Diameter code	Thread [a]	D_1 h12	D_2 min.	D_3 0 − 0,5	D_4 [b] min.	D_5 nom.	D_5 Tol.	D_6 H13	D_7 H13	E min.	F max.	F min.	G 0 − 0,3
030	MJ3×0,5 – 4h6h	3	5,5	—	5,4	2,3	0 − 0,5	—	—	6,5	0,4	0,2	2
040	MJ4×0,7 – 4h6h	4	6,4	—	6,4	3		—	1,1	7,6	0,5		2,5
050	MJ5×0,8 – 4h6h	5	7,4	5,25	7,4	3,4	± 0,5	1	1,5	8,7			3
060	MJ6×1 – 4h6h	6	9,4	6,25	9,3	4,2		1,4		10,9			3,5
070	MJ7×1 – 4h6h	7	10,3	7,25	10,2	5,2			1,9	12			4
080	MJ8×1 – 4h6h	8	12,3	8,25	12,2	6,2				14,3			4,5
100	MJ10×1,25 – 4h6h	10	16,3	10,25	16	7,9		1,6	2,4	18,9	0,6	0,3	5
120	MJ12×1,25 – 4h6h	12	18,3	12,25	18	9,8				21,1			6
140	MJ14×1,5 – 4h6h	14	21,3	14,25	21	11,5			3	24,5			7
160	MJ16×1,5 – 4h6h	16	23,3	16,25	23	13,5				26,8			8
180	MJ18×1,5 – 4h6h	18	26,3	18,25	26	15,5			3,8	30,2			9
200	MJ20×1,5 – 4h6h	20	29,3	20,25	29	17,5				33,6			10

Diameter code	H	J nom.	J Tol.	K	$L_1 \pm 0,2$ [c, d] Length code	$L_1 \pm 0,2$ [c, d] nom.	L_2	L_3	N 0 − 0,3	R max.	R min.	Mass [e] f	Mass [e] g
030	—	6	h12	—	002 to 030	2 to 30	6	—	—	0,4	0,2	0,487	0,031
040	—	7		—	002 to 040	2 to 40	7,5	5	—			0,929	0,055
050	1,35	8		3,25	003 to 050	3 to 50	9	6	2	0,5	0,3	1,629	0,086
060	1,6	10	h13	4,1	003 to 060	3 to 60	10	7	2,3	0,7	0,5	3,045	0,124
070	1,85	11		4,5	004 to 070	4 to 70	11		2,7			4,170	0,169
080	2,1	13		5,35	004 to 080	4 to 80	11,5	7,5	3			6,280	0,221
100	2,35	17		7,1	005 to 100	5 to 100	14,5	9	3,4	0,8	0,6	12,191	0,345
120	2,85	19		7,9	006 to 120	6 to 120	16	10	4	0,9		19,490	0,497
140	3,35	22		9,2	007 to 140	7 to 140	19	12	4,7	1,1	0,8	30,008	0,676
160	3,85	24		10,05	008 to 160	8 to 160	20,5	12,5	5,4			43,884	0,884
180	4,35	27		11,3	009 to 180	9 to 180	22,5	14,5	6	1,3	1	61,841	1,18
200	4,85	30		12,6	010 to 200	10 to 200	24,5	15	6,7			84,600	1,380

[a] In accordance with ISO 5855-2.

[b] D_4 max. shall be less than J.

[c] Increments:
- 1 for $L_1 \leq 30$;
- 2 for $30 < L_1 \leq 100$;
- 4 for $L_1 > 100$.

[d] If greater lengths are required, they shall be chosen using the above increments. The length code corresponds to the length L_1, completed by one or two zeros to the left, where necessary, to obtain a three digit code.

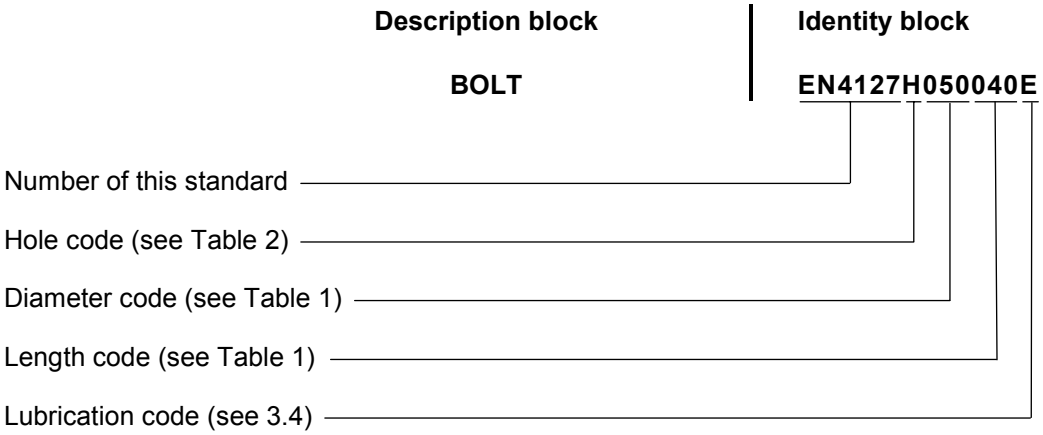
[e] Approximate values (kg/1 000 pieces), calculated on the basis of 4,45 kg/dm^3, for information purposes only. They apply to bolts without holes.

[f] Value for head and first L_4.

[g] Increase for each additional millimetre of L_4.

4 Designation

EXAMPLE



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

Table 2

Holes	Code
Lockwire	H
Split pin	D
Lockwire and split pin	C
No hole	— (hyphen)

5 Marking

See Table 3 and Figure 1, indented.

Table 3

Diameter code	EN 2424 Style
030 and 040	N
050 to 200	C + MJ

6 Technical specification

6.1 General

ISO 9152, with the following modifications.

6.2 Approval of manufacturers

EN 9100

6.3 Qualification of bolts

EN 9133

6.4 Requirement deleted

Double shear strength

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