BS EN 4128:2016

BSI Standards Publication

Aerospace series — Bolts, normal hexagonal head, coarse tolerance shank, short thread, in heat resisting nickel base alloy, aluminium IVD coated — Classfication: 1 250 MPa (at ambient temperature) / 425 °C

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National foreword

This British Standard is the UK implementation of EN 4128:2016. It supersedes BS EN 4128:2009 which is withdrawn.

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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EN 4128

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English Version

Aerospace series - Bolts, normal hexagonal head, coarse tolerance shank, short thread, in heat resisting nickel base alloy, aluminium IVD coated - Classification: 1 250 MPa (at ambient temperature) / 425 °C

Série aérospatiale - Vis à tête hexagonale normale, fût à tolérance large, filetage court, en alliage résistant à chaud à base de nickel, revêtues aluminium IVF - Classification: 1 250 MPa (à température ambiante) / 425 °C

Luft- und Raumfahrt - Sechskantschrauben, kurzes Gewinde, aus hochwarmfester Nickelbasislegierung, Aluminium IVD beschichtet - Klasse: 1 250 MPa (bei Raumtemperatur) / 425 °C

This European Standard was approved by CEN on 27 September 2015.

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COMITÉ EUROPÉEN DE NORMALISATION
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European Foreword

This document (EN 4128:2016) 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of an identical text or by endorsement, at the latest by September 2016, and conflicting national standards shall be withdrawn at the latest by September 2016.

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1 Scope

This European Standard specifies the characteristics of bolts, normal hexagonal head, coarse tolerance shank, short thread, in heat resisting nickel base alloy, aluminium IVD coated.

Classification: 1 250 MPa[1)] / 425 °C[2)].

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 6118, *Aerospace series — Process specification — Aluminium base protection for fasteners*

EN 9100, *Quality Management Systems — Requirements for Aviation, Space and Defense Organizations*

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 9154, *Aerospace — Bolts, with MJ threads, made of heat-resistant nickel-based alloy, strength class 1 550 MPa — Procurement specification*

TR 3775, *Aerospace series — Bolts and pins — Materials*

MIL-DTL-83488, *Coating, aluminium, high purity*

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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 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: heat resisting nickel base alloy, strength class 1 250 MPa

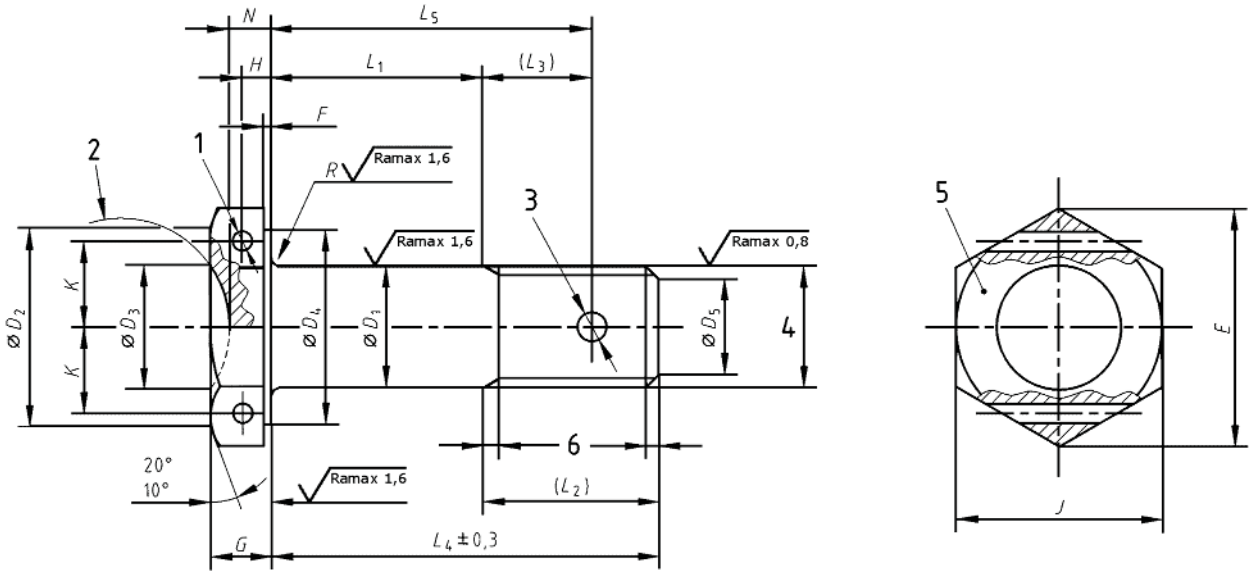
3.4 Surface treatment

MIL-DTL-83488, type II, class 3, thickness 4 µm to 12 µm, or EN 6118. After aluminium deposit:

— mechanical blasting, followed by a chromate conversion coating within 24 h max.[3)];
— optional lubrication with cethylic alcohol (code E).

Ramax 3,2 (Ramax 1,6 Ramax 0,8) Values in micrometres apply prior to surface treatment.

Break sharp edges 0,1 to 0,4.



Key

1 Two holes Ø *D*6 (optional, see Table 2)

2 Continuous surface

3 One hole Ø *D*7 (optional, see Table 2)

4 Thread

5 Marking

6 Conforms to ISO 3353-1

Figure 1

[3)] 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	H
030	MJ3×0,5 - 4h6h	3	5,5	—	5,4	2,3	0 − 0,5	—	—	6,5	0,4	0,2	2,0	—
040	MJ4×0,7 - 4h6h	4	6,4	—	6,4	3,0		—	1,1	7,6	0,5		2,5	—
050	MJ5×0,8 - 4h6h	5	7,4	5,25	7,4	3,4	± 0,5	1,0	1,5	8,7			3,0	1,35
060	MJ6×1 - 4h6h	6	9,4	6,25	9,3	4,2		1,4		10,9			3,5	1,60
070	MJ7×1 - 4h6h	7	10,3	7,25	10,2	5,2			1,9	12,0			4,0	1,85
080	MJ8×1 - 4h6h	8	12,3	8,25	12,2	6,2				14,3			4,5	2,10
100	MJ10×1,25 - 4h6h	10	16,3	10,25	16,0	7,9		1,6	2,4	18,9	0,6	0,3	5,0	2,35
120	MJ12×1,25 - 4h6h	12	18,3	12,25	18,0	9,8				21,1			6,0	2,85
140	MJ14×1,5 - 4h6h	14	21,3	14,25	21,0	11,5			3,0	24,5			7,0	3,35
160	MJ16×1,5 - 4h6h	16	23,3	16,25	23,0	13,5				26,8			8,0	3,85
180	MJ18×1,5 - 4h6h	18	26,3	18,25	26,0	15,5			3,8	30,2			9,0	4,35
200	MJ20×1,5 - 4h6h	20	29,3	20,25	29,0	17,5				33,6			10,0	4,85

Diameter code	J nom.	J Tol.	K	L_1 ± 0,2 [c, d] Code	L_1 ± 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	—	—	0,4	0,2	0,896	0,057
040	7		—	002 to 040	2 to 40	7,5	5,0	—			1,711	0,101
050	8		3,25	003 to 050	3 to 50	9,0	6,0	2,0	0,5	0,3	3,000	0,158
060	10	h13	4,10	003 to 060	3 to 60	10,0	7,0	2,3	0,7	0,5	5,607	0,228
070	11		4,50	004 to 070	4 to 70	11,0		2,7			7,679	0,311
080	13		5,35	004 to 080	4 to 80	11,5	7,5	3,0			11,565	0,407
100	17		7,10	005 to 100	5 to 100	14,5	9,0	3,4	0,8	0,6	22,451	0,635
120	19		7,90	006 to 120	6 to 120	16,0	10,0	4,0	0,9		35,892	0,915
140	22		9,20	007 to 140	7 to 140	19,0	12,0	4,7	1,1	0,8	55,262	1,245
160	24		10,05	008 to 160	8 to 160	20,5	12,5	5,4			80,815	1,628
180	27		11,30	009 to 180	9 to 180	22,5	14,5	6,0	1,3	1,0	113,885	2,059
200	30		12,60	010 to 200	10 to 200	24,5	15,0	6,7			155,797	2,541

[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.

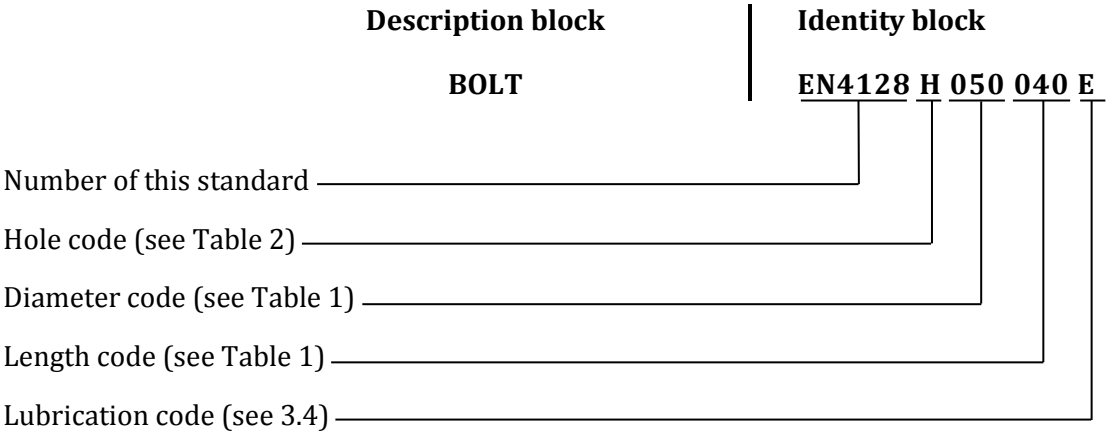
[e] Approximate values (kg/1 000 pieces), calculated on the basis of 8,195 kg/dm^3, for information purposes only. They apply to bolts without holes.

[f] Value for head and first L_4.

[g] Increase for each additional millimetre of L_4.

4 Designation

EXAMPLE



NOTE If necessary, the 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 9154, with the following modifications.

6.2 Approval of manufacturers

EN 9100.

6.3 Qualification of bolts

EN 9133.

6.4 Other modified requirement

Minimum tensile strength test load and double shear test loads and tension fatigue test: apply the coefficient 0,806.

Annex A
(informative)

Standard evolution form

MODIFICATION	REASON AND VALIDATION
Replace 6.4 "Minimum tensile strength test loads: apply the coefficient 0,806." *By* "Minimum tensile strength test load and double shear test loads and tension fatigue test: apply the coefficient 0,806."	The coefficient 0,806 is the ratio of UTS 1250/1550 and should be used for double shear and tension fatigue test too.
The symbols inside and above of the drawing for roughness are not valid anymore. Add Ra max for each value	Modify symbols according to ISO 1302.
Replace MIL-C-83488C *By* MIL-DTL-83488 or EN 6118	Reference to EN 6118 is added as an alternative. The issue letter of MIL-DTL-83488 is removed.

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