BRITISH STANDARD

BS EN
3301:2007

Aerospace series — Bolts, T-head, close tolerance medium thread length in heat resisting steel FE-PM1708 (FV535), uncoated — Classification: 1 000 MPa/550 °C

ICS 49.030.20

BSI
British Standards

National foreword

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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 January 2008

ISBN 978 0 580 60320 4

Amendments/corrigenda issued since publication

Date	Comments

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 3301

December 2007

ICS 49.030.20

English Version

Aerospace series - Bolts, T-head, close tolerance medium thread length in heat resisting steel FE-PM1708 (FV535), uncoated - Classification: 1 000 MPa/550 °C

Série aérospatiale - Vis de précision à tête anti-rotation T à filetage moyen en acier résistant à chaud FE-PM1708 (FV535), non revêtu - Classification : 1 000 MPa/550 °C

Luft- und Raumfahrt - T-Kopf-Paßschauben mittlere Gewindelänge, aus hochwarmfestem Stahl FE-PM1708 (FV535), blank - Klasse: 1 000 MPa/550 °C

This European Standard was approved by CEN on 5 November 2007.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 3301:2007: E

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Foreword

This document (EN 3301:2007) 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of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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1 Scope

This standard specifies the dimensions of uncoated T-head bolts, close tolerance, with MJ-thread, medium thread length, in heat resisting steel FE-PM1708 for aerospace applications.

Maximum test temperature of the parts is 550 °C.

These bolts are to be used in aerospace fastening systems mainly stressed in shearing force.

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.

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

ISO 5855-1, *Aerospace — MJ threads — Part 1: General requirements.*

ISO 5855-2, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts.*

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

EN 2493 [1)], *Heat resisting steel FE-PM38 — 1 000 MPa ≤ R_m ≤ 1 140 MPa — Bars — Aerospace series.* [2)]

EN 3302, *Aerospace series — Bolts in heat resisting steel FE-PM1708 (FV535) — Classification: 1 000 MPa / 550 °C — Technical specification.* [3)]

EN 4244, *Aerospace series — Heat resisting alloy FE-PM1708 — Vacuum arc remelted — Hardened and tempered — Bar — a or D ≤ 200 mm — 1 000 MPa ≤ R_m ≤ 1 140 MPa.* [3)]

EN 4245, *Aerospace series — Heat resisting alloy FE-PM1708 — Vacuum arc remelted — As forged — Forging stock — D_e ≤ 300 mm.* [3)]

3 Required characteristics

3.1 Configuration - Dimensions - Tolerances

Configuration shall be in accordance with the Figure 1. Dimensions, tolerances and masses shall conform to the Figure 1 and the Tables 1 and 2. Details of form, not stated are at the manufacturer's option.

3.2 Material

Heat resisting steel FE-PM38 according to EN 2493.

3.3 Surface treatment

None.

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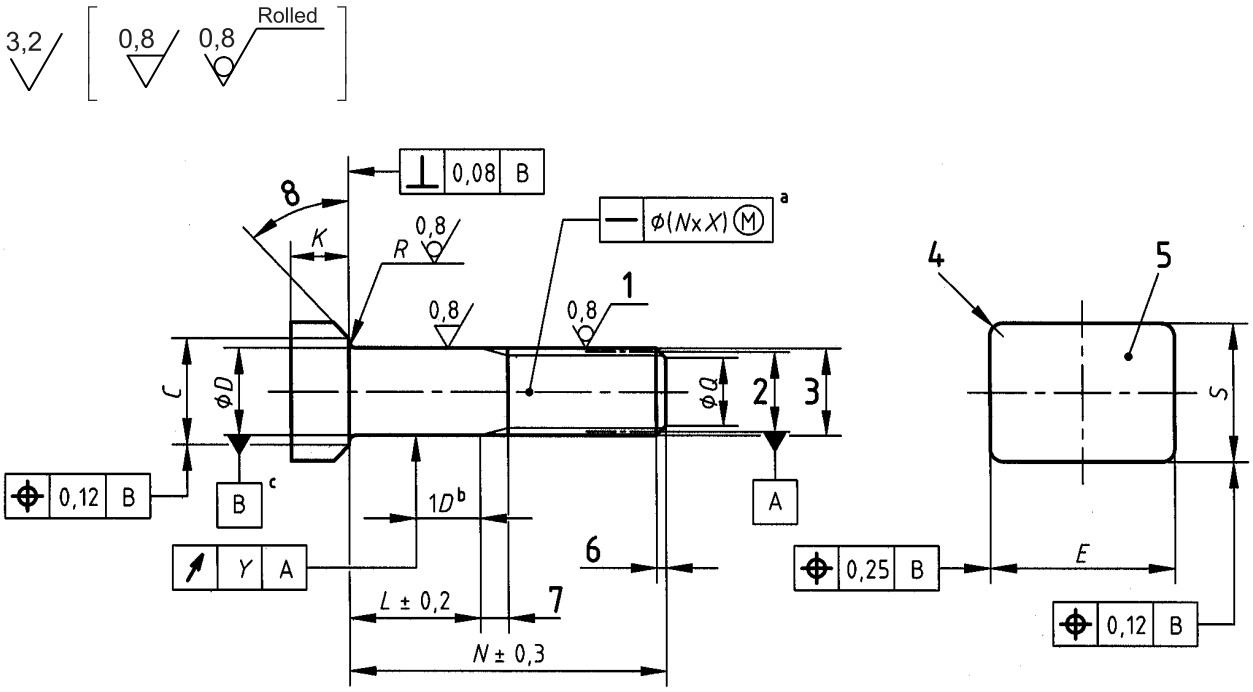
1) Inactive for new design, see EN 4244 and EN 4245.

2) Published as ASD Standard at the date of publication of this standard.

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

3.4 Thread surface

See Figure 1.



Key

1 Rolled
2 Thread pitch-∅
3 Thread major diameter:
max.: actual shank diameter minus 0,025 mm
min.: defined by 6h tolerance
4 $R\ ^{0,9}_{0,4}$ typical
5 Identity marking
6 Lead thread ISO 3353-1
7 Thread runout ISO 3353-1
8 43° to 47°

[a] Total straightness with reference to nominal length N.

[b] When the length of the shank is less than one time the nominal value of the shank diameter, D, the runout is measured at a distance equal to half the actual shank length.

[c] For bolts having a shank length less than one time the nominal value of the shank diameter, D, the pitch diameter axis shall be used as datum.

Figure 1 — Configuration

Table 1 — Dimensions

Dimensions in millimetres

Code	Description [a] [b]	C		$\varnothing D$	E		K		$\varnothing Q$	R		S		X	Y
		max.	min.	f7	max.	min.	max.	min.	± 0,5	max.	min.	max.	min.		
050	MJ5×0,8-4h6h	6,3	6,1	5	11,6	11,1	3,4	2,9	3,5	0,5	0,3	8,4	8,1	0,002	0,12
060	MJ6×1-4h6h	7,3	7,1	6	12,5	12,0	3,9	3,4	4,2	0,7	0,5	9,5	9,2		
070	MJ7×1-4h6h	8,4	8,2	7	13,9	13,4	4,5	4,0	5,2	0,7	0,5	10,5	10,2		0,15
080	MJ8×1-4h6h	9,4	9,2	8	14,5	14,0	5,0	4,5	6,2	0,7	0,5	11,5	11,2		
100	MJ10×1,25-4h6h	11,2	11,0	10	17,0	16,5	5,8	5,3	7,9	0,8	0,6	13,3	13,0	0,0015	

[a] According to ISO 5855-1 and ISO 5855-2.

[b] The tolerance on the thread major diameter shall be modified as shown in the Figure 1.

Table 2 — Lengths and masses

Dimensions in millimetres

Length code	L ± 0,2	Nominal diameter code									
		050		060		070		080		100	
		N	Mass [a]	N	Mass [a]	N	Mass [a]	N	Mass [a]	N	Mass [a]
003	3	16,5	4,31	18,5	6,50	–	–	–	–	–	–
004	4	17,5	4,46	19,5	6,72	20,5	9,81	22	13,35	–	–
005	5	18,5	4,62	20,5	6,95	21,5	10,11	23	13,74	26,5	23,49
006	6	19,5	4,77	21,5	7,17	22,5	10,40	24	14,13	27,5	24,10
007	7	20,5	4,92	22,5	7,38	23,5	10,71	25	14,53	28,5	24,72
008	8	21,5	5,07	23,5	7,60	24,5	11,01	26	14,91	29,5	25,32
009	9	22,5	5,22	24,5	7,83	25,5	11,31	27	15,31	30,5	25,94
010	10	23,5	5,37	25,5	8,04	26,5	11,61	28	15,70	31,5	26,55
011	11	24,5	5,53	26,5	8,26	27,5	11,91	29	16,09	32,5	27,17
012	12	25,5	5,69	27,5	8,49	28,5	12,21	30	16,48	33,5	27,77
013	13	26,5	5,84	28,5	8,71	29,5	12,51	31	16,88	34,5	28,38
014	14	27,5	5,99	29,5	8,92	30,5	12,81	32	17,28	35,5	28,99
015	15	28,5	6,15	30,5	9,13	31,5	13,11	33	17,65	36,5	29,61
016	16	29,5	6,30	31,5	9,37	32,5	13,41	34	18,05	37,5	30,22
017	17	30,5	6,45	32,5	9,59	33,5	13,71	35	18,44	38,5	30,83
018	18	31,5	6,60	33,5	9,81	34,5	14,01	36	18,84	39,5	31,45
019	19	32,5	6,75	34,5	10,03	35,5	14,31	37	19,22	40,5	32,06
020	20	33,5	6,91	35,5	10,25	36,5	14,61	38	19,62	41,5	32,67
021	21	34,5	7,07	36,5	10,47	37,5	14,91	39	20,01	42,5	33,28
022	22	35,5	7,22	37,5	10,69	38,5	15,21	40	20,40	43,5	33,90
023	23	36,5	7,37	38,5	10,91	39,5	15,51	41	20,79	44,5	34,51
024	24	37,5	7,52	39,5	11,14	40,5	15,81	42	21,18	45,5	35,12
025	25	38,5	7,68	40,5	11,35	41,5	16,11	43	21,58	46,5	35,73
026	26	39,5	7,84	41,5	11,57	42,5	16,41	44	21,96	47,5	36,35
027	27	40,5	7,98	42,5	11,79	43,5	16,71	45	22,36	48,5	36,96
028	28	41,5	9,13	43,5	12,01	44,5	17,01	46	22,75	49,5	37,57
029	29	42,5	8,29	44,5	12,23	45,5	17,31	47	23,15	50,5	38,18
030	30	43,5	8,45	45,5	12,45	46,5	17,61	48	23,59	51,5	38,80
032	32	46,5	8,87	48,5	13,06	49,5	18,45	51	24,62	54,5	40,54
034	34	48,5	9,17	50,5	13,51	51,5	19,05	53	25,43	56,5	41,76
036	36	50,5	9,48	52,5	13,94	53,5	19,65	55	26,22	58,5	42,99
038	38	52,5	9,79	54,5	14,39	55,5	20,25	57	27,00	60,5	44,21
040	40	54,5	10,09	56,5	14,83	57,5	20,85	59	27,79	62,5	45,44
042	42	56,5	10,40	58,5	15,27	59,5	21,45	61	28,57	64,5	46,66
044	44	58,5	10,70	60,5	15,71	61,5	22,05	63	29,35	66,5	47,89
046	46	60,5	11,02	62,5	16,16	63,5	22,65	65	30,13	68,5	49,11

continued

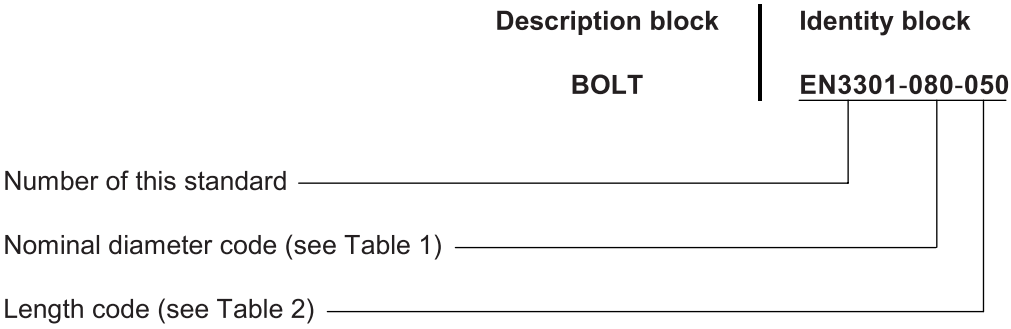
Table 2 — Lengths and masses *(concluded)*

Length code	L ± 0,2	Nominal diameter code									
		050		060		070		080		100	
		N	Mass [a]	N	Mass [a]	N	Mass [a]	N	Mass [a]	N	Mass [a]
048	48	62,5	11,32	64,5	16,59	65,5	23,25	67	30,92	70,5	50,34
050	50	64,5	11,62	66,5	17,04	67,5	23,85	69	31,70	72,5	51,56
052	52			68,5	17,47	69,5	24,45	71	32,49	74,5	52,79
054	54			70,5	17,91	71,5	25,05	73	33,27	76,5	54,01
056	56			72,5	18,36	73,5	25,65	75	34,06	78,5	55,24
058	58			74,5	18,79	75,5	26,25	77	34,84	80,5	56,46
060	60			76,5	19,24	77,5	26,85	79	35,63	82,5	57,68
062	62					79,5	27,45	81	36,41	84,5	58,81
064	64					81,5	28,05	83	37,19	86,5	59,23
066	66					83,5	28,665	85	37,97	88,5	61,35
068	68					85,5	29,25	87	38,76	90,5	62,58
070	70					87,5	29,85	89	39,54	92,5	63,80
072	72							91	40,32	94,5	65,03
074	74							93	41,11	96,5	66,25
076	76							95	41,89	98,5	67,48
078	78							97	42,68	100,5	68,70
080	80							99	43,45	102,5	69,93
082	82									104,5	70,15
084	84									106,5	72,38
086	86									108,5	73,60
088	88									110,5	74,83
090	90									112,5	76,05
092	92									114,5	77,28
094	94									116,5	78,49
096	96									118,5	79,72
098	98									120,5	80,94
100	100									122,5	82,17

[a] Masses (7,8 kg/dm^3): kg/1 000 pieces.

4 Designation

EXAMPLE Each T-head bolt, close tolerance, shall only be designated as in the following example:



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

5 Marking

Each T-head bolt, close tolerance, shall be marked in accordance with EN 2424, class A.

6 Technical specification

T-head bolts, close tolerance shall conform to the requirements of EN 3302.

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