

**Aerospace series —  
Bolts, T-head, relieved  
shank, long thread, in  
heat resisting steel,  
FE-PM1708 (FV535) —  
Classification:  
1 000 MPa/550 °C —  
Unplated**

ICS 49.030.20

## National foreword

This British Standard is the UK implementation of EN 3325:2007.

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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 January 2008

© BSI 2008

ISBN 978 0 580 60323 5

### Amendments/corrigenda issued since publication

Date	Comments

---

ICS 49.030.20

English Version

**Aerospace series - Bolts, T-head, relieved shank, long thread, in  
heat resisting steel, FE-PM1708 (FV535) - Classification: 1 000  
MPa/550 °C - Unplated**

Série aéronautique - Vis à tête anti-rotation "T", fût dégagé,  
filetage long, en acier résistant à chaud FE-PM1708  
(FV535) - Classification: 1 000 MPa/550 °C - Non revêtues

Luft- und Raumfahrt - T-Kopfschrauben, Dünnschaft,  
langes Gewinde, aus hochwarmfestem Stahl FE-PM1708  
(FV535) - Klasse: 1 000 MPa/550 °C - Blank

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

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

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

## Contents

Page

Foreword.....	3
1 <b>Scope</b> .....	4
2 <b>Normative references</b> .....	4
3 <b>Required characteristics</b> .....	4
4 <b>Designation</b> .....	8
5 <b>Marking</b> .....	8
6 <b>Technical specification</b> .....	8

## Foreword

This document (EN 3325:2007) 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.

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.

## 1 Scope

This standard specifies the characteristics of T-head bolts with relieved shank and long thread, in FE-PM1708 (FV535), for aerospace applications.

Classification: 1 000 MPa <sup>1)</sup> / 550 °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.

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.*

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

EN 2493 <sup>3)</sup>, *Heat resisting steel FE-PM38 — 1 000 MPa ≤ R<sub>m</sub> ≤ 1 140 MPa — Bars — Aerospace series.* <sup>4)</sup>

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

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<sub>m</sub> ≤ 1 140 MPa.* <sup>5)</sup>

EN 4245, *Aerospace series — Heat resisting alloy FE-PM1708 — Vacuum arc remelted — As forged — Forging stock — D<sub>e</sub> ≤ 300 mm.* <sup>5)</sup>

## 3 Required characteristics

### 3.1 Configuration – Dimensions – Tolerances – Masses

See Figure 1 and Tables 1 and 2.

Dimensions and tolerances are in millimetres.

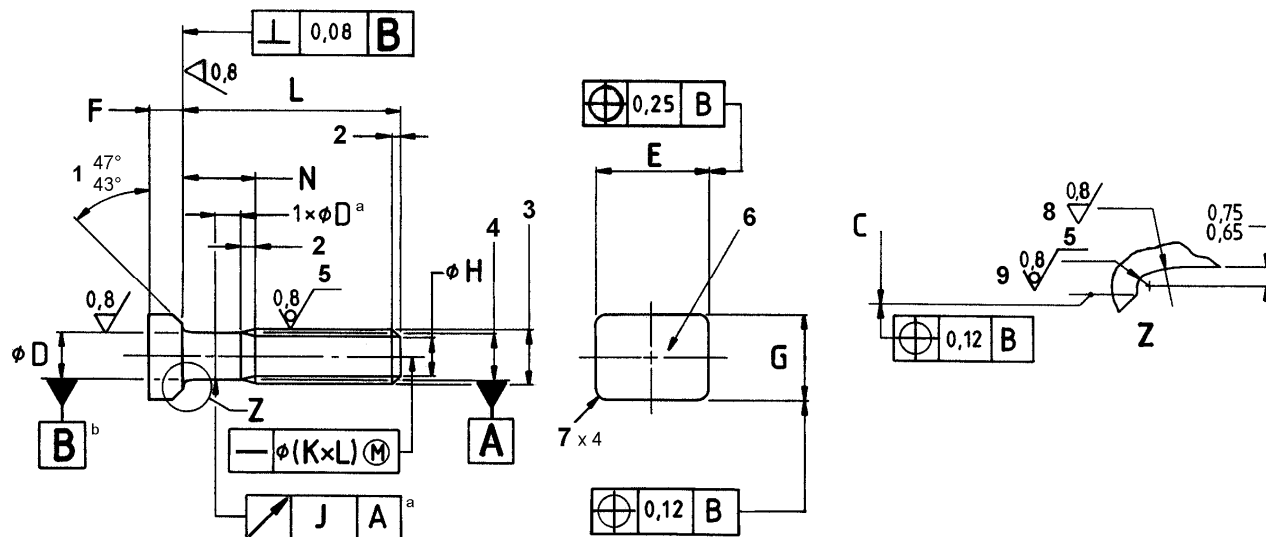
### 3.2 Material

EN 2493

- 
- 1) Minimum tensile strength of material at ambient temperature.
  - 2) Maximum test temperature of the parts.
  - 3) Inactive for new designation, see EN 4244 and EN 4245.
  - 4) Published as ASD Standard at the date of publication of this standard.
  - 5) Published as ASD Prestandard at the date of publication of this standard.



Remove sharp edges 0,1 to 0,4



**Key**

- |                            |                    |
|----------------------------|--------------------|
| 1 Both sides               | 6 Marking          |
| 2 Conforms to ISO 3353-1   | 7 $R$ 0,40 to 0,9  |
| 3 Thread $\emptyset$       | 8 $R$ 2,30 to 2,50 |
| 4 Thread pitch $\emptyset$ | 9 $R$ 0,25 to 0,40 |
| 5 Rolled                   |                    |

<sup>a</sup> When the length of the shank is less than one times the nominal value of the shank diameter,  $D$ , the run out is measured at a distance equal to half the length.

<sup>b</sup> For bolts having a shank length less than one times the nominal value of the shank diameter,  $D$ , the pitch diameter axis shall be used as the datum.

**Figure 1**

**Table 1**

Code	Thread <sup>a</sup>	$C$	$D$	$E$	$F$	$G$	$H$	$K$	$J$
	Designation	$\pm 0,1$	$\pm 0,13$	$+0,5$ $0$	$+0,5$ $0$	$+0,3$ $0$	$\pm 0,5$		
050	MJ 5 $\times$ 0,8 - 4h6h	6,2	4,48	11,1	2,9	8,1	3,4	0,003	0,12
060	MJ 6 $\times$ 1,0 - 4h6h	7,2	5,35	12,0	3,4	9,2	4,2		
070	MJ 7 $\times$ 1,0 - 4h6h	8,3	6,35	13,4	4,0	10,2	5,2		0,15
080	MJ 8 $\times$ 1,0 - 4h6h	9,11	7,35	14,0	4,5	11,2	6,2		
100	MJ 10 $\times$ 1,25 - 4h6h	11,1	9,19	16,5	5,3	13,0	7,9	0,0025	

<sup>a</sup> In accordance with ISO 5855-2.

Table 2 — Dimensional codes, lengths

Length code	$L$ $\pm 0,3$	Thread code														
		050			060			070			080			100		
		$N$		Mass <sup>a</sup>	$N$		Mass <sup>a</sup>	$N$		Mass <sup>a</sup>	$N$		Mass <sup>a</sup>	$N$		Mass <sup>a</sup>
		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.	
014	14	4,0	2,5	4,17												
016	16	4,0	2,5	4,42	4,0	2,5	6,25									
018	18	4,0	2,5	4,67	4,0	2,5	6,60	4,0	2,5	9,4						
020	20	4,0	2,5	4,92	4,0	2,5	6,95	4,0	2,5	9,53	4,0	2,5	12,87			
022	22	6,0	4,5	5,17	4,0	2,5	7,30	4,0	2,5	10,02	4,0	2,5	13,53			
024	24	8,0	6,5	5,41	6,0	4,5	7,65	4,0	2,5	10,51	4,0	2,5	14,19			
026	26	10,0	8,5	5,66	8,0	6,5	8,01	6,0	4,5	11,00	4,0	2,5	14,85	4,0	2,7	23,28
028	28	12,0	10,5	5,90	10,0	8,5	8,36	8,0	6,5	11,50	6,0	4,5	15,50	4,0	2,7	24,31
030	30	14,0	12,5	6,13	12,0	10,5	8,71	10,0	8,5	11,99	8,0	6,5	16,16	4,0	2,7	25,34
032	32	16,0	14,5	6,39	14,0	12,5	9,06	12,0	10,5	12,48	10,0	8,5	16,82	6,0	4,5	26,37
034	34	18,0	16,5	6,63	16,0	14,5	9,41	14,0	12,5	12,97	12,0	10,5	17,49	8,0	6,5	27,40
036	36	20,0	18,5	6,88	18,0	16,5	9,76	16,0	14,5	13,46	14,0	12,5	18,14	10,0	8,5	28,43
038	38	22,0	20,5	7,13	20,0	18,5	10,11	18,0	16,5	13,96	16,0	14,5	18,80	12,0	10,5	29,47
040	40	24,0	22,5	7,37	22,0	20,5	10,46	20,0	18,5	14,45	18,0	16,5	19,46	14,0	12,5	30,50
042	42	26,0	24,5	7,62	24,0	22,5	10,81	22,0	20,5	14,94	20,0	18,5	20,13	16,0	14,5	31,53
044	44	28,0	26,5	7,86	26,0	24,5	11,16	24,0	22,5	15,43	22,0	20,5	20,78	18,0	16,5	32,55
046	46	30,0	28,5	8,11	28,0	26,5	11,51	26,0	24,5	15,93	24,0	22,5	21,44	20,0	18,5	33,58
048	48	32,0	30,5	8,36	30,0	28,5	11,86	28,0	26,5	16,42	26,0	24,5	22,10	22,0	20,5	34,61
050	50	34,0	32,5	8,60	32,0	30,5	12,21	30,0	28,5	16,92	28,0	26,5	22,77	24,0	22,5	35,64
052	52	36,0	34,5	8,84	34,0	32,5	12,55	32,0	30,5	17,41	30,0	28,5	23,43	26,0	24,5	36,68
054	54	38,0	36,5	9,08	36,0	34,5	12,90	34,0	32,5	17,90	32,0	30,5	24,08	28,0	26,5	37,71
056	56	40,0	38,5	9,33	38,0	36,5	13,25	36,0	34,5	18,39	34,0	32,5	24,74	30,0	28,5	38,73
058	58	42,0	40,5	9,58	40,0	38,5	13,60	38,0	36,5	18,89	36,0	34,5	25,41	32,0	30,5	39,76
060	60	44,0	42,5	9,82	42,0	40,5	13,95	40,0	38,5	19,38	38,0	36,5	26,07	34,0	32,5	40,79
062	62	46,0	44,5	10,07	44,0	42,5	14,30	42,0	40,5	19,87	40,0	38,5	26,72	36,0	34,5	41,82
064	64	48,0	46,5	10,31	46,0	44,5	14,65	44,0	42,5	20,36	42,0	40,5	27,38	38,0	36,5	42,85
066	66	50,0	48,5	10,56	48,0	46,5	15,00	46,0	44,5	20,85	44,0	42,5	28,05	40,0	38,5	43,89
068	68	52,0	50,5	10,81	50,0	48,5	15,35	48,0	46,5	21,35	46,0	44,5	28,71	42,0	40,5	44,91
070	70	54,0	52,5	11,05	52,0	50,5	15,70	50,0	48,5	21,84	48,0	46,5	29,36	44,0	42,5	45,94

continued



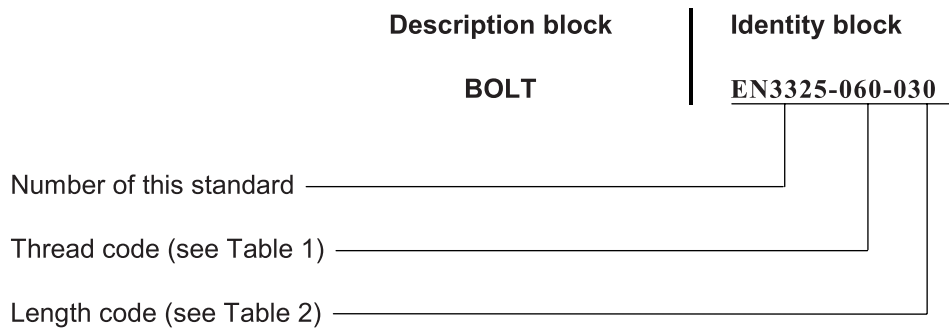
Table 2 (concluded)

Length code	L ± 0,3	Thread code														
		050			060			070			080			100		
		N		Mass <sup>a</sup>	N		Mass <sup>a</sup>	N		Mass <sup>a</sup>	N		Mass <sup>a</sup>	N		Mass <sup>a</sup>
		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.	
072	72				54,0	52,5	16,05	52,0	50,5	22,33	50,0	48,5	30,02	46,0	44,5	46,97
074	74				56,0	54,5	16,40	54,0	52,5	22,82	52,0	50,5	30,69	48,0	44,5	48,00
076	76				58,0	56,5	16,75	56,0	54,5	23,32	54,0	52,5	31,35	50,0	48,5	49,03
078	78				60,0	58,5	17,10	58,0	56,5	23,82	56,0	54,5	32,00	52,0	50,5	50,06
080	80				62,0	60,5	17,45	60,0	58,5	24,31	58,0	56,5	32,66	54,0	52,5	51,09
082	82				64,0	62,5	17,80	62,0	60,5	24,80	60,0	58,5	33,33	56,0	54,5	52,12
084	84				66,0	64,5	18,15	64,0	62,5	25,29	62,0	60,5	33,99	58,0	56,5	53,15
086	86							66,0	64,5	25,78	64,0	62,5	34,65	60,0	58,5	54,18
088	88							68,0	66,5	26,28	66,0	64,5	35,30	62,0	60,4	55,21
090	90							70,0	68,5	26,77	68,0	66,5	35,97	64,0	62,5	56,23
092	92							72,0	70,5	27,26	70,0	68,5	36,63	66,0	64,5	57,27
094	94							74,0	72,5	27,75	72,0	70,5	37,29	68,0	66,5	58,30
096	96							76,0	74,5	28,24	74,0	72,5	37,94	70,0	68,5	59,33
098	98							78,0	76,5	28,74	76,0	74,5	38,61	72,0	70,5	60,36
100	100										78,0	76,5	39,27	74,0	72,5	61,39
104	104										82,0	80,5	40,58	78,0	76,5	63,44
108	108										86,0	84,5	41,91	82,0	80,5	65,51
112	112										90,0	88,5	43,22	86,0	84,5	67,57
116	116													90,0	88,5	69,62
120	120													94,0	92,5	71,69
124	124													98,0	96,5	73,74
128	128													102,0	100,5	75,80
132	132													106,0	104,5	77,87
136	136													110,0	108,5	79,92
140	140													114,0	112,5	81,98
144	144													118,0	116,5	84,04

<sup>a</sup> Mass ≈ quoted in kg/1 000 pieces.

## 4 Designation

EXAMPLE



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

## 5 Marking

EN 2424, category A, as indicated on Figure 1.

## 6 Technical specification

EN 3302



---

---

## BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

### Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover.  
Tel: +44 (0)20 8996 9000. Fax: +44 (0)20 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

### Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: +44 (0)20 8996 9001.  
Fax: +44 (0)20 8996 7001. Email: [orders@bsi-global.com](mailto:orders@bsi-global.com). Standards are also available from the BSI website at <http://www.bsi-global.com>.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

### Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre.  
Tel: +44 (0)20 8996 7111. Fax: +44 (0)20 8996 7048. Email: [info@bsi-global.com](mailto:info@bsi-global.com).

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration.  
Tel: +44 (0)20 8996 7002. Fax: +44 (0)20 8996 7001.  
Email: [membership@bsi-global.com](mailto:membership@bsi-global.com).

Information regarding online access to British Standards via British Standards Online can be found at <http://www.bsi-global.com/bsonline>.

Further information about BSI is available on the BSI website at <http://www.bsi-global.com>.

### Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

Details and advice can be obtained from the Copyright & Licensing Manager.  
Tel: +44 (0)20 8996 7070. Fax: +44 (0)20 8996 7553.  
Email: [copyright@bsi-global.com](mailto:copyright@bsi-global.com).