BRITISH STANDARD AEROSPACE SERIES

BS EN
2925 : 1994

Bolts, double hexagon head, relieved shank, long thread, in heat resisting steel FE-PA92HT (A286) Classification : 900 MPa (at ambient temperature)/650 °C

The European Standard EN 2925 : 1994 has the status of a British Standard

Série aérospatiale Vis à tête bihexagonale, fût dégagé, filetage long, en acier résistant à chaud FE-PA92HT (A286) Classification : 900 MPa (à température ambiante)/650 °C

Luft- und Raumfahrt Zwölfkantschrauben, Dünnschaft, langes Gewinde, aus hochwarmfestem Stahl FE-PA92HT (A286) Klasse : 900 MPa (bei Raumtemperatur)/650 °C

UDC 621.882.214-034.018.44:629.7

BSI
STANDARDS

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United Kingdom	British Standards Institution

This British Standard, having been prepared under the direction of the Aerospace Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 November 1994

The following BSI references relate to the work on this standard:
Committee reference ACE/12
Draft for comment 88/76308 DC

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Contents

National foreword

This British Standard has been prepared under the direction of the Aerospace Standards Policy Committee and is the English language version of EN 2925 : 1994 *Aerospace series — Bolts, double hexagon head, relieved shank, long thread, in heat resisting steel FE-PA92HT (A286) Classification: 900 MPa (at ambient temperature)/650 °C*, published by the European Committee for Standardization (CEN).

EN 2925 : 1994 was produced as a result of international discussions in which the United Kingdom took an active part.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 2925

August 1994

UDC: 621.882.214-034.018.44:629.7

Descriptors: Aircraft industry, fastener, screw, double hexagonal head screw, heat resistant steel, classification, characteristic, dimension, screw thread, code, designation, marking

English version

Aerospace series
Bolts, double hexagon head, relieved shank, long thread, in heat resisting steel FE-PA92HT (A286) Classification : 900 MPa (at ambient temperature)/650 °C

Série aérospatiale
Vis à tête bihexagonale, fût dégagé, filetage long, en acier résistant à chaud FE-PA92HT (A286)
Classification : 900 MPa (à température ambiante)/650 °C

Luft- und Raumfahrt
Zwölfkantschrauben, Dünnschaft, langes Gewinde, aus hochwarmfestem Stahl FE-PA92HT (A286) Klasse : 900 MPa (bei Raumtemperatur)/650 °C

This European Standard was approved by CEN on 1994-08-17. 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 Central Secretariat or to any CEN member.

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CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this standard has successively received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This standard was submitted for Formal Vote, and the result was positive.

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 February 1995, and conflicting national standards shall be withdrawn at the latest by February 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This standard specifies the characteristics of double hexagon headed bolts with relieved shank and long thread, in FE-PA92HT, for aerospace applications.

Classification : 900 MPa [1] / 650 °C [2]

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 3353 Aerospace - Rolled threads for bolts - Lead and runout requirements

ISO 4095 Fasteners for aerospace construction - Bi-hexagonal wrenching configuration

ISO 5855-2 Aerospace - MJ threads - Part 2 : Limit dimensions for bolts and nuts

EN 2399 Heat resisting steel FE-PA92-HT - $R_m \geq 900$ MPa - Bars for forged bolts - $D \leq 25$ mm - Aerospace series [3]

EN 2424 Aerospace series - Marking of aerospace products [3]

EN 2576 Aerospace series - Bolts in heat resisting steel FE-PA92HT (A286) - Classification : 900 MPa / 650 °C - Technical specification [4]

EN 3639 Aerospace series - Heat resisting alloy FE-PA2601 - Softened and cold worked - Wire for forged fasteners - $D \leq 15$ mm - 900 MPa $\leq R_m \leq$ 1 100 MPa [4]

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 Materials

EN 2399 or EN 3639

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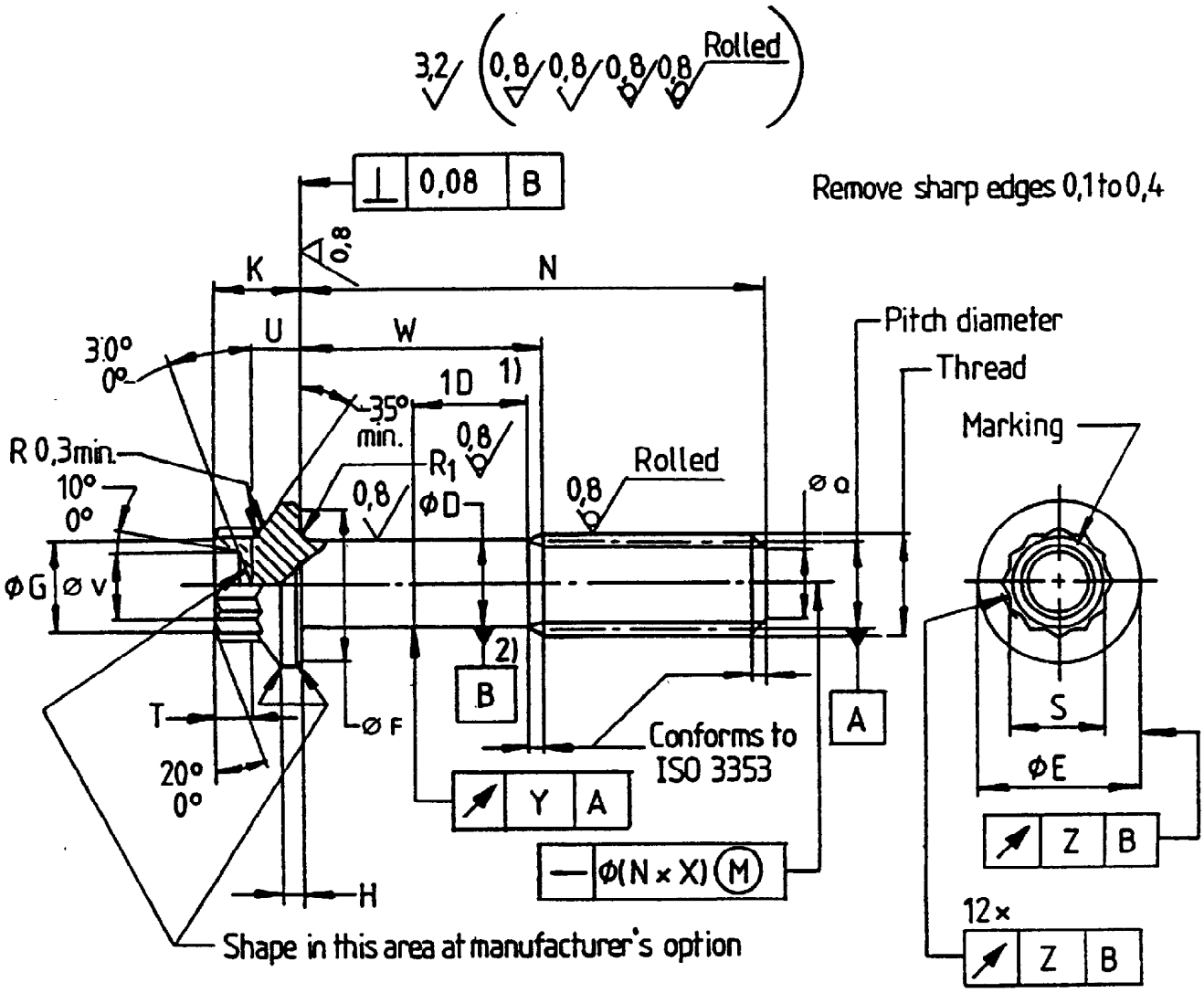
1) Minimum tensile strength of the material at ambient temperature
2) Maximum test temperature of the parts
3) Published as AECMA Standard at the date of publication of this standard
4) Published as AECMA Prestandard at the date of publication of this standard



1) 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 actual shank length.
2) For bolts having a shank length less than one times the nominal value of the shank diameter *D*, and for those threaded to head, the pitch diameter axis shall be used as the datum.

Figure 1

Table 1

Thread [1]		*D*	*E*	*F*	*G*	*H*	*K*		*Q*	R_1		*S* [2]	*T*	*U*		*V*		*X*	*Y*	*Z*
Code	Designation	± 0,13	max.	min.	min.	min.	max.	min.	± 0,5	max.	min.		min.	max.	min.	max.	min.			
050	MJ5x0,8-4h6h	4,48	9,1	8,3	6,8	1	5,65	5,02	3,4	0,5	0,3	7	2	2,9	2,5	3,7	3,2	0,003	0,12	0,13
060	MJ6x1-4h6h	5,35	10,6	9,8	7,8	1,2	6,15	5,52	4,2	0,7	0,5	8	2,3	3,2	2,8	4,6	4,1			0,15
070	MJ7x1-4h6h	6,35	12,1	11,3	8,8	1,4	6,68	5,92	5,2			9	2,6	3,7	3,3	5,4	4,9		0,15	0,18
080	MJ8x1-4h6h	7,35	13,6	12,8	9,8	1,6	7,18	6,42	6,2			10	2,8	4,1	3,7	5,7	5,2			0,2
100	MJ10x1,25-4h6h	9,19	16,7	15,7	11,8	2	8,18	7,42	7,9	0,8	0,6	12	3,1	5,1	4,7	7,2	6,7	0,0025		0,25
120	MJ12x1,25-4h6h	11,19	19,9	18,8	13,7	2,4	9,38	8,62	9,8	0,9		14	3,5	6	5,6	8,5	8		0,18	0,3

1) In accordance with ISO 5855-2
2) Bihexagonal wrenching configuration in conformity with ISO 4095 over length *T* min.

Table 2

Length code	*N* ± 0,3	Thread code																	
		050			060			070			080			100			120		
		W		Mass [1]	*W*		Mass [1]	*W*		Mass [1]	*W*		Mass [1]	*W*		Mass [1]	*W*		Mass [1]
		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.	
008	8	2,1	1,7	3,14															
010	10			3,39			4,86			6,85			9,17						
012	12			3,64			5,22			7,35			9,84						
014	14			3,89	2,7	2,2	5,57			7,85			10,51			17,02			
016	16			4,14			5,93	2,7	2,2	8,35	2,7	2,2	11,18			18,07			28,34
018	18			4,39			6,29			8,86			11,86			19,12			29,89
020	20	4	2,5	4,64			6,64			9,36			12,53	3,3	2,7	20,17			31,45
022	22	6	4,5	4,89	4	2,5	7,00			9,86			13,20			21,22	3,4	2,8	33,00
024	24	8	6,5	5,14	6	4,5	7,36	4	2,5	10,36			13,87			22,26			34,56
026	26	10	8,5	5,39	8	6,5	7,71	6	4,5	10,86	4	2,5	14,54			23,31			36,11
028	28	12	10,5	5,64	10	8,5	8,07	8	6,5	11,36	6	4,5	15,22			24,36			37,67
030	30	14	12,5	5,89	12	10,5	8,42	10	8,5	11,87	8	6,5	15,89	4	2,7	25,41			39,22
032	32	16	14,5	6,14	14	12,5	8,78	12	10,5	12,37	10	8,5	16,56	6	4,5	26,46			40,78
034	34	18	16,5	6,39	16	14,5	9,14	14	12,5	12,87	12	10,5	17,23	8	6,5	27,51	4	2,8	42,34
036	36	20	18,5	6,63	18	16,5	9,49	16	14,5	13,37	14	12,5	17,91	10	8,5	28,56	6	4,5	43,89
038	38	22	20,5	6,88	20	18,5	9,85	18	16,5	13,87	16	14,5	18,58	12	10,5	29,60	8	6,5	45,45
040	40	24	22,5	7,13	22	20,5	10,20	20	18,5	14,37	18	16,5	19,25	14	12,5	30,65	10	8,5	47,00
042	42	26	24,5	7,38	24	22,5	10,56	22	20,5	14,88	20	18,5	19,92	16	14,5	31,70	12	10,5	48,56
044	44	28	26,5	7,63	26	24,5	10,92	24	22,5	15,38	22	20,5	20,59	18	16,5	32,75	14	12,5	50,11
046	46	30	28,5	7,88	28	26,5	11,27	26	24,5	15,88	24	22,5	21,27	20	18,5	33,80	16	14,5	51,67
048	48	32	30,5	8,13	30	28,5	11,63	28	26,5	16,38	26	24,5	21,94	22	20,5	34,85	18	16,5	53,22
050	50	34	32,5	8,38	32	30,5	11,99	30	28,5	16,88	28	26,5	22,61	24	22,5	35,90	20	18,5	54,78
052	52	36	34,5	8,63	34	32,5	12,34	32	30,5	17,38	30	28,5	23,28	26	24,5	36,94	22	20,5	56,33
054	54	38	36,5	8,88	36	34,5	12,70	34	32,5	17,89	32	30,5	23,95	28	26,5	37,99	24	22,5	57,89
056	56	40	38,5	9,13	38	36,5	13,05	36	34,5	18,39	34	32,5	24,63	30	28,5	39,04	26	24,5	59,04
058	58	42	40,5	9,38	40	38,5	13,41	38	36,5	18,89	36	34,5	25,30	32	30,5	40,09	28	26,5	61,00
060	60	44	42,5	9,63	42	40,5	13,77	40	38,5	19,39	38	36,5	25,97	34	32,5	41,14	30	28,5	62,55
062	62	46	44,5	9,88	44	42,5	14,12	42	40,5	19,89	40	38,5	26,64	36	34,5	42,19	32	30,5	64,11
064	64	48	46,5	10,13	46	44,5	14,48	44	42,5	20,39	42	40,5	27,32	38	36,5	43,24	34	32,5	65,66
066	66	50	48,5	10,38	48	46,5	14,83	46	44,5	20,90	44	42,5	27,99	40	38,5	44,28	36	34,5	67,22
068	68	52	50,5	10,63	50	48,5	15,19	48	46,5	21,40	46	44,5	28,66	42	40,5	45,33	38	36,5	68,77

(continued)

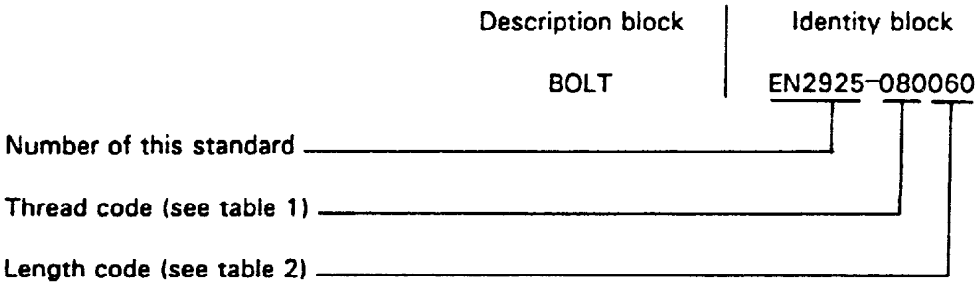
Table 2 (concluded)

Length code	*N* ± 0,3	Thread code																	
		050			060			070			080			100			120		
		W		Mass [1]	*W*		Mass [1]	*W*		Mass [1]	*W*		Mass [1]	*W*		Mass [1]	*W*		Mass [1]
		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.	
070	70	54	52,5	10,88	52	50,5	15,55	50	48,5	21,90	48	46,5	29,33	44	42,5	46,38	40	38,5	70,33
072	72				54	52,5	15,90	52	50,5	22,40	50	48,5	30,00	46	44,5	47,43	42	40,5	71,88
074	74				56	54,5	16,26	54	52,5	22,90	52	50,5	30,68	48	46,5	48,48	44	42,5	73,44
076	76				58	56,5	16,61	56	54,5	23,40	54	52,5	31,35	50	48,5	49,53	46	44,5	74,99
078	78				60	58,5	16,97	58	56,5	23,91	56	54,5	32,02	52	50,5	50,57	48	46,5	76,55
080	80				62	60,5	17,33	60	58,5	24,41	58	56,5	32,69	54	52,5	51,62	50	48,5	78,10
082	82				64	62,5	17,68	62	60,5	24,91	60	58,5	33,37	56	54,5	52,67	52	50,5	79,66
084	84				66	64,5	18,04	64	62,5	25,41	62	60,5	34,04	58	56,5	53,72	54	52,5	81,21
086	86							66	64,5	25,91	64	62,5	34,71	60	58,5	54,77	56	54,5	82,77
088	88							68	66,5	26,41	66	64,5	35,38	62	60,5	55,82	58	56,5	84,33
090	90							70	68,5	26,92	68	66,5	36,05	64	62,5	56,87	60	58,5	85,88
092	92							72	70,5	27,42	70	68,5	36,73	66	64,5	57,91	62	60,5	87,44
094	94							74	72,5	27,92	72	70,5	37,40	68	66,5	58,96	64	62,5	88,99
096	96							76	74,5	28,42	74	72,5	38,07	70	68,5	60,01	66	64,5	90,55
098	98							78	76,5	28,92	76	74,5	38,74	72	70,5	61,06	68	66,5	92,10
100	100										78	76,5	39,41	74	72,5	62,11	70	68,5	93,66
104	104										82	80,5	40,76	78	76,5	64,21	74	72,5	96,77
108	108										86	84,5	42,10	82	80,5	66,30	78	76,5	99,88
112	112										90	88,5	43,45	86	84,5	68,40	82	80,5	102,99
116	116													90	88,5	70,50	86	84,5	106,10
120	120													94	92,5	72,59	90	88,5	109,21
124	124													98	96,5	74,69	94	92,5	112,32
128	128													102	100,5	76,79	98	96,5	115,43
132	132													106	104,5	78,89	102	100,5	118,54
136	136													110	108,5	80,98	106	104,5	121,65
140	140													114	112,5	83,08	110	108,5	124,76
144	144																114	112,5	127,87
148	148																118	116,5	130,98
152	152																122	120,5	134,09
156	156																126	124,5	137,20
160	160																130	128,5	140,31
164	164																134	132,5	143,42
168	168																138	136,5	146,53

1) Mass ≈ quoted in kg/1 000 parts

4 Designation

EXAMPLE :



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

5 Marking

EN 2424, style A, as indicated on figure 1.

6 Technical specification

EN 2576

National annex NA (informative)

Committees responsible

The United Kingdom participation in the preparation of this European Standard was entrusted by the Aerospace Standards Policy Committee (ACE/-) to Technical Committee ACE/12, upon which the following bodies were represented:

Association of Electronics, Telecommunications and Business Equipment Industries
British Industrial Fasteners Federation
Ministry of Defence
Society of British Aerospace Companies Ltd.

National annex NB (informative)

Cross-references

The British Standards corresponding to the international standards referred to in the text are as follows.

International standard	Corresponding British Standard
ISO 3353 : 1992	BS 2A 231 : 1993 *Rolled threads for bolts — Lead and runout requirements*
ISO 5855-2 : 1988	BS 6293 *MJ threads for aerospace construction* Part 2 : 1982 *Specification for dimensions for bolts and nuts*

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