



SLOVENSKI STANDARD

SIST EN 3686:2008

01-september-2008

Aeronavtika - Sorniki, dvojna šestroba glava, tanko steblo, dolg navoj, iz toplotnoodpornega jekla FE-PA92HT (A286), posrebreni - Klasifikacija: 1 100 MPa/650 °C

Aerospace series - Bolts, double hexagon head, relieved shank, long thread, in heat resisting steel FE-PA92HT (A286), silver plated - Classification: 1 100 MPa/650 °C

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Luft- und Raumfahrt - Zwölfkantschrauben, Dünnschaft, langes Gewinde, aus hochwarmfestem Stahl FE-PA92HT (A286), versilbert - Klasse: 1 100 MPa/650 °C

[SIST EN 3686:2008](https://standards.iteh.ai/catalog/standards/sist/39ab678a-0ca3-4a5e-bae1-394c7c0da15/sist-en-3686-2008)

Série aérospatiale - Vis à tête bihexagonale, à tige réduite, filetage long, en acier résistant à chaud FE-PA92HT (A286), argentées - Classification: 1 100 MPa/650 °C

Ta slovenski standard je istoveten z: EN 3686:2008

ICS:

49.030.20 Sorniki, vijaki, stebelni vijaki Bolts, screws, studs

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ICS 49.030.20

English Version

**Aerospace series - Bolts, double hexagon head, relieved shank,
long thread, in heat resisting steel FE-PA92HT (A286), silver
plated - Classification: 1 100 MPa/650 °C**

Série aéronautique - Vis à tête bihexagonale, à tige réduite,
filetage long, en acier résistant à chaud FE-PA92HT
(A286), argentées - Classification: 1 100 MPa/650 °C

Luft- und Raumfahrt - Zwölfkantschrauben, Dünnschaft,
langes Gewinde, aus hochwarmfestem Stahl FE-PA92HT
(A286), versilbert - Klasse: 1 100 MPa/650 °C

This European Standard was approved by CEN on 21 December 2007.

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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.

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Foreword

This document (EN 3686:2008) 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 November 2008, and conflicting national standards shall be withdrawn at the latest by November 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.

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1 Scope

This standard specifies the characteristics of double hexagon head bolts with relieved shank and long thread, in heat resisting steel FE-PA92HT, silver plated, tensile strength class 1 100 MPa at room temperature. The maximum test temperature of the material is 650 °C.

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

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*¹⁾

EN 2786, *Aerospace series — Electrolytic silver plating of fasteners*¹⁾

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

EN 3685, *Aerospace series — Bolts, in heat resisting steel FE-PA92HT (A286) — Classification: 1 100 MPa/650 °C — Technical specification*¹⁾

EN 3761, *Aerospace series — Heat resisting alloy FE-PA2601 — Softened and cold worked — Bar for forged fasteners $D \leq 50$ mm, $1\ 100\ \text{MPa} \leq R_m \leq 1\ 300\ \text{MPa}$* ¹⁾

ISO 4095, *Aerospace — Bihexagonal drives — Wrenching configuration — Metric series*

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

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

3 Required characteristics

3.1 Configuration, dimensions, tolerances, masses

The configuration shall be in accordance with Figure 1. Dimensions, tolerances and masses shall conform with the values shown in Figure 1 and in Tables 1 and 2 after silver plating.

3.2 Surface roughness

See Figure 1.

The specified values are applicable before silver plating.

3.3 Material

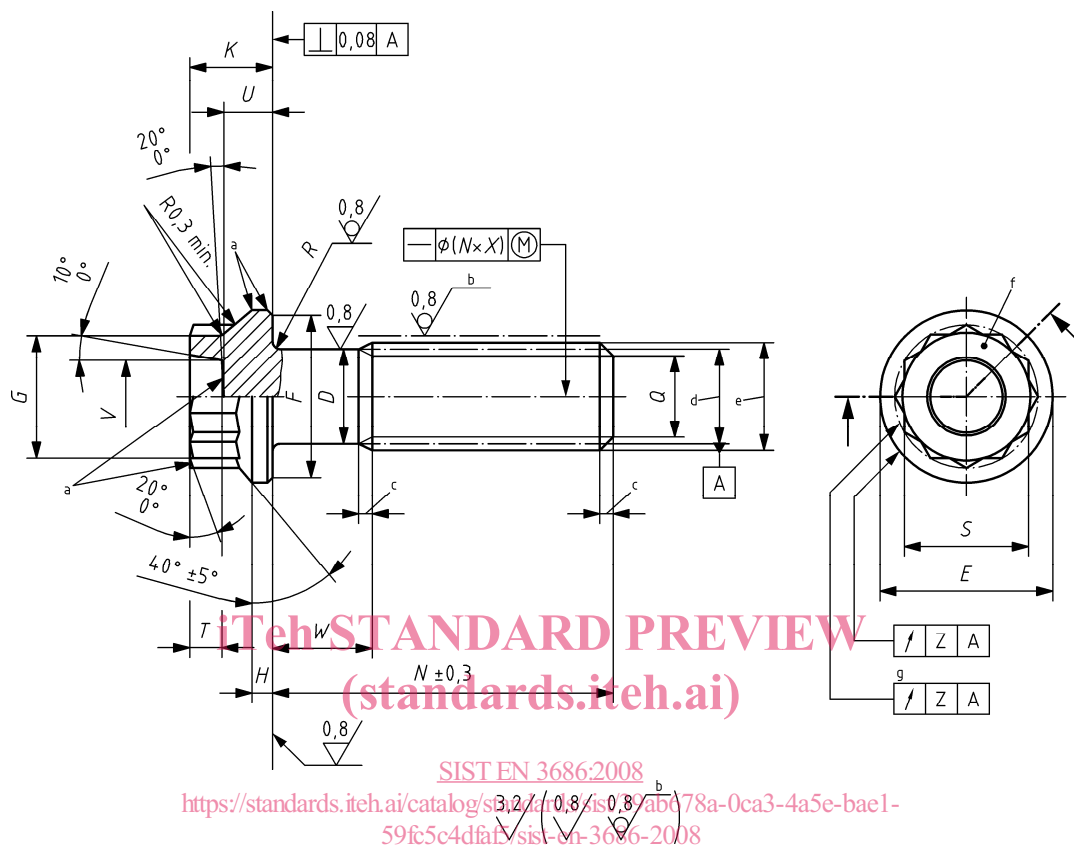
Heat resisting steel FE-PA92HT according to EN 3761.

¹⁾ Published as AECMA prestandard at the date of publication of this standard.

3.4 Surface treatment

Silver coat all over according to EN 2786, coating thickness 3 μm to 6 μm on the thread flanks measured at the pitch diameter.

Dimensions in millimetres



Break sharp edges 0,1 mm to 0,4 mm

- a Shape in this area at manufacturer's option
- b Rolled
- c In accordance with ISO 3353-1
- d Pitch diameter
- e Thread diameter
- f Marking
- g 12 times

Figure 1 — Bolt

Table 1 — Dimensions

Dimensions in millimetres

Dia-meter code	Thread ^a	D	E	F	G	H	K	Q	R		S ^b	T	U		V		X	Z
		± 0,13	max.	min.	min.	min.	Js14	± 0,5	max.	min.	min.	min.	max.	min.	max.	min.		
050	MJ5 × 0,8–4H6H	∅4,48	∅9,1	∅8,3	6,8	1	5,5	∅3,5	0,5	0,3	7	2	2,9	2,5	∅3,7	∅3,2	0,003	0,13
060	MJ6 × 1–4H6H	∅5,35	∅10,6	∅9,8	7,8	1,2	6	∅4,2	0,7	0,5	8	2,3	3,2	2,8	∅4,6	∅4,1		0,15
070	MJ7 × 1–4H6H	∅6,35	∅12,1	∅11,3	8,8	1,4	6,5	∅5,2			9	2,6	3,7	3,3	∅5,4	∅4,9		0,18
080	MJ8 × 1–4H6H	∅7,35	∅13,6	∅12,8	9,8	1,6	7	∅6,2			10	2,8	4,1	3,7	∅5,7	∅5,2		0,2
100	MJ10 × 1,25–4H6H	∅9,19	∅16,7	∅15,7	11,8	2	8	∅7,9	0,8	0,6	12	3,1	5,1	4,7	∅7,2	∅6,7	0,002 5	0,25
120	MJ12 × 1,25–4H6H	∅11,19	∅19,9	∅18,8	13,7	2,4	9,2	∅9,9	0,9		14	3,5	6	5,6	∅8,5	∅8		0,3

^a In conformity with ISO 5855-1 and ISO 5855-2.
^b Double hexagon wrenching profile according to ISO 4095 on length T min.

Table 2 — Dimensions, masses

Masses: kg/1 000 pieces

Diameter code	Length code	N mm	050		060		070		080		100		120					
			W mm	Mass kg	W mm	Mass kg	W mm	Mass kg	W mm	Mass kg	W mm	Mass kg	W mm	Mass kg				
008	8			3,14	—	—	—	—	—	—	—	—	—	—	—	—	—	—
010	10			3,39														
012	12		2,1	3,64														
014	14			3,89														
016	16			4,14														
018	18			4,39														
020	20	4	2,5	4,64														
022	22	6	4,5	4,89	4	2,5	7											
024	24	8	6,5	5,14	6	4,5	7,36	4	2,5	10,36								
026	26	10	8,5	5,39	8	6,5	7,71	6	4,5	10,86	4	2,5	14,54					
028	28	12	10,5	5,64	10	8,5	8,07	8	6,5	11,36	6	4,5	15,22					
030	30	14	12,5	5,89	12	10,5	8,42	10	8,5	11,87	8	6,5	15,89	4	2,5	25,41		
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		
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
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
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	29,6	8	6,5
040	40	24	22,5	7,13	22	20,5	10,2	20	18,5	14,37	18	16,5	19,25	14	12,5	30,65	10	8,5
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	31,7	12	10,5
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
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	33,8	16	14,5
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
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	35,9	20	18,5
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
054	54	38	36,5	8,88	36	34,5	12,7	34	32,5	17,89	32	30,5	23,95	28	26,5	37,99	24	22,5
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
058	58	42	40,5	9,38	40	38,5	13,41	38	36,5	18,89	36	34,5	25,3	32	30,5	40,09	28	26,5
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
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
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
066	66	50	48,5	10,38	48	46,5	14,83	46	44,5	20,9	44	42,5	27,99	40	38,5	44,58	36	34,5
068	68	52	50,5	10,63	50	48,5	15,19	48	46,5	21,4	46	44,5	28,66	42	40,5	45,33	38	36,5
070	70	54	52,5	10,88	52	50,5	15,55	50	48,5	21,9	48	46,5	29,33	44	42,5	46,38	40	38,5

Table 2 (continued)

Masses: kg/1 000 pieces

Diameter code	Length code	N mm	050			060			070			080			100			120		
			W mm		Mass kg	W mm		Mass kg	W mm		Mass kg	W mm		Mass kg	W mm		Mass kg	W mm		Mass kg
			max.	min.		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.	
072	72	72	–	–	–	54	52,5	15,9	52	50,5	22,4	50	48,5	30	46	44,5	47,43	42	40,5	71,88
074	74	74	–	–	–	56	54,5	16,26	54	52,5	22,9	52	50,5	30,68	48	46,5	48,48	44	42,5	73,44
076	76	76	–	–	–	58	56,5	16,61	56	54,5	23,4	54	52,5	31,35	50	48,5	49,53	46	44,5	74,99
078	78	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	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	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	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	86	–	–	–	–	–	–	66	64,5	25,91	64	62,5	34,71	60	58,5	54,77	56	54,5	82,77
088	88	88	–	–	–	–	–	–	68	66,5	26,41	66	64,5	35,38	62	60,5	55,82	58	56,5	84,33
090	90	90	–	–	–	–	–	–	70	68,5	26,92	68	66,5	36,05	64	62,5	56,87	60	58,5	85,88
092	92	92	–	–	–	–	–	–	72	70,5	27,42	70	68,5	36,73	66	64,5	57,91	62	60,5	87,44
094	94	94	–	–	–	–	–	–	74	72,5	27,92	72	70,5	37,4	68	66,5	58,96	64	62,5	88,99
096	96	96	–	–	–	–	–	–	76	74,5	28,42	74	72,5	38,07	70	68,5	60,01	66	64,5	90,55
098	98	98	–	–	–	–	–	–	78	76,5	28,92	76	74,5	38,74	72	70,5	61,06	68	66,5	92,1
100	100	100	–	–	–	–	–	–	80	78,5	29,42	78	76,5	39,41	74	72,5	62,11	70	68,5	93,66
104	104	104	–	–	–	–	–	–	82	80,5	30,06	80	78,5	40,16	78	76,5	63,21	74	72,5	95,21
108	108	108	–	–	–	–	–	–	84	82,5	30,71	82	80,5	40,91	80	78,5	64,31	76	74,5	96,77
112	112	112	–	–	–	–	–	–	86	84,5	31,41	84	82,5	41,66	82	80,5	65,41	78	76,5	98,33
116	116	116	–	–	–	–	–	–	88	86,5	32,11	86	84,5	42,41	84	82,5	66,51	80	78,5	99,88
120	120	120	–	–	–	–	–	–	90	88,5	32,81	88	86,5	43,16	86	84,5	67,61	82	80,5	101,44
124	124	124	–	–	–	–	–	–	92	90,5	33,51	90	88,5	43,91	88	86,5	68,71	84	82,5	103,00
128	128	128	–	–	–	–	–	–	94	92,5	34,21	92	90,5	44,66	90	88,5	69,81	86	84,5	104,55
132	132	132	–	–	–	–	–	–	96	94,5	34,91	94	92,5	45,41	92	90,5	70,91	88	86,5	106,11
136	136	136	–	–	–	–	–	–	98	96,5	35,61	96	94,5	46,16	94	92,5	72,01	90	88,5	107,66
140	140	140	–	–	–	–	–	–	100	98,5	36,31	98	96,5	46,91	96	94,5	73,11	92	90,5	109,22
144	144	144	–	–	–	–	–	–	102	100,5	37,01	100	98,5	47,66	98	96,5	74,21	94	92,5	110,77
148	148	148	–	–	–	–	–	–	104	102,5	37,71	102	100,5	48,41	100	98,5	75,31	96	94,5	112,33
152	152	152	–	–	–	–	–	–	106	104,5	38,41	104	102,5	49,16	102	100,5	76,41	98	96,5	113,88
156	156	156	–	–	–	–	–	–	108	106,5	39,11	106	104,5	49,91	104	102,5	77,51	100	98,5	115,44
160	160	160	–	–	–	–	–	–	110	108,5	39,81	108	106,5	50,66	106	104,5	78,61	102	100,5	117,00
164	164	164	–	–	–	–	–	–	112	110,5	40,51	110	108,5	51,41	108	106,5	79,71	104	102,5	118,55
168	168	168	–	–	–	–	–	–	114	112,5	41,21	112	110,5	52,16	110	108,5	80,81	106	104,5	120,11