

SLOVENSKI STANDARD
SIST EN 2927:2001**01-januar-2001**

Aerospace series - Bolts, double hexagon head, relieved shank, long thread, in heat resisting nickel base alloy NI-P100HT (Inconel 718) - Classification: 1 275 MPa (at ambient temperature)/650 °C

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Luft- und Raumfahrt - Zwölfkantschrauben, Dünnschaft, langes Gewinde, aus hochwarmfester Nickelbasislegierung NI-P100HT (Inconel 718) - Klasse: 1275 MPa (bei Raumtemperatur)/650°C

Série aérospatiale - Vis à tête bihexagonale, fut dégagé, filetage long, en alliage résistant à chaud à base de nickel NI-P100HT (Inconel 718) - Classification: 1275 MPa (à température ambiante)/650°C

Ta slovenski standard je istoveten z: EN 2927:1996

ICS:

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

SIST EN 2927:2001**en**

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EUROPEAN STANDARD

EN 2927

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1996

ICS 49.040.20

Descriptors: aircraft industry, double hexagonal head screw, nickel alloy, heat resistant material, classification, dimension, designation

English version

**Aerospace series - Bolts, double hexagon head,
relieved shank, long thread, in heat resisting nickel
base alloy NI-P100HT (Inconel 718) -Classification
: 1 275 MPa (at ambient temperature) / 650 °C**

Série aérospatiale - Vis à tête bixagonale,
fût dégagé, filetage long, en alliage résistant
à chaud à base de nickel NI-P100HT (Inconel
718) - Classification : 1 275 MPa (à
température ambiante) / 650 °C

Luft- und Raumfahrt - Zwölfkantschrauben,
Dünnschaft, langes Gewinde, aus hochwarmfester
Nickelbasislegierung NI-P100HT (Inconel 718) -
Klasse : 1 275 MPa (bei Raumtemperatur) / 650
°C

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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 members countries of AECMA, 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 1996, and conflicting national standards shall be withdrawn at the latest by September 1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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

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1 Scope

This standard specifies the characteristics of double hexagon headed bolts with relieved shank and long thread, in NI-P100HT, for aerospace applications.

Classification : 1 275 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 2424 | Aerospace series - Marking of aerospace products |
| EN 2583 | Aerospace series - Bolts in heat resisting nickel base alloy NI-P100HT (Inco 718) - Classification : 1 275 MPa / 650 °C - Technical specification ³⁾ |
| EN 2952 | Aerospace series - Heat resisting alloy NI-PH2601 - Solution treated and cold worked - Bar for forged fasteners - $D \leq 50$ mm - $1\ 270$ MPa $\leq R_m \leq 1\ 550$ MPa ³⁾ |
| EN 3219 | Aerospace series - Heat resisting nickel base alloy (NI-P100HT) - Cold worked and softened - Bar and wire for continuous forging or extrusion for fasteners - $3 \leq D \leq 30$ mm ³⁾ |

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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 2952 or EN 3219

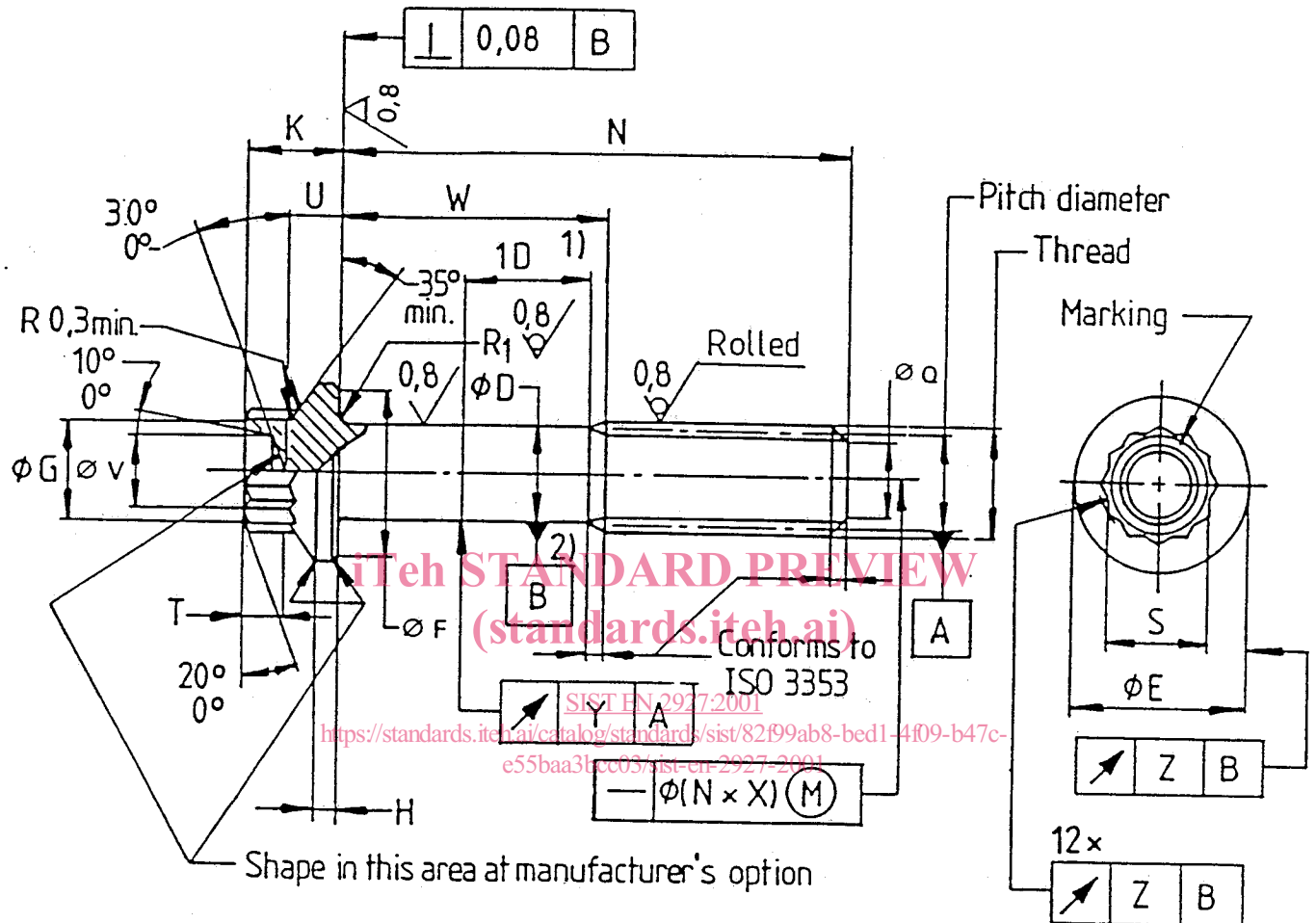
1) Minimum tensile strength of the material at ambient temperature

2) Maximum test temperature of the parts

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

3,2 / (0,8 / 0,8 / 0,8 / 0,8 / 0,8 / Rolled)

Remove sharp edges 0,1 to 0,4



- 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⁾		U		V		X	Y	Z	
Code	Designation	$\pm 0,13$	max.	min.	min.	min.	max.	min.	$\pm 0,5$	max.	min.	min.	max.	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			0,18	
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	0,15	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	0,18	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			0,3	

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 max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾			
008	8			3,26																		
010	10			3,52																		
012	12			3,78																		
014	14	2,1	1,7	4,04																		
016	16			4,29	2,7	2,2	2,7	2,2	2,2	2,7	2,2	2,7	2,2	2,2	2,7	2,2	2,7	2,2	2,2	2,7	2,2	
018	18			4,55																		
020	20	4	2,5	4,81																		
022	22	6	4,5	5,07	4	2,5	7,32															
024	24	8	6,5	5,33	6	4,5	7,69	4	2,5	10,83												
026	26	10	8,5	5,59	8	6,5	8,06	6	4,5	11,36	4	2,5	15,20									
028	28	12	10,5	5,85	10	8,5	8,43	8	6,5	11,88	6	4,5	15,90									
030	30	14	12,5	6,11	12	10,5	8,80	10	8,5	12,40	8	6,5	16,60									
032	32	16	14,5	6,37	14	12,5	9,17	12	10,5	12,92	10	8,5	17,30	4	2,7	26,72						
034	34	18	16,5	6,63	16	14,5	9,54	14	12,5	13,44	12	10,5	17,99	6	4,5	27,81						
036	36	20	18,5	6,89	18	16,5	9,91	16	14,5	13,96	14	12,5	18,69	8	6,5	28,90	4	2,8			43,94	
038	38	22	20,5	7,15	20	18,5	10,28	18	16,5	14,48	16	14,5	19,39	10	8,5	29,98	6	4,5			45,55	
040	40	24	22,5	7,40	22	20,5	10,65	20	18,5	15,00	18	16,5	20,09	12	10,5	31,07	8	6,5			47,17	
042	42	26	24,5	7,66	24	22,5	11,02	22	20,5	15,52	20	18,5	20,78	14	12,5	32,16	10	8,5			48,78	
044	44	28	26,5	7,92	26	24,5	11,39	24	22,5	16,04	22	20,5	21,48	16	14,5	33,25	12	10,5			50,40	
046	46	30	28,5	8,18	28	26,5	11,76	26	24,5	16,56	24	22,5	22,18	18	16,5	34,34	14	12,5			52,01	
048	48	32	30,5	8,44	30	28,5	12,13	28	26,5	17,08	26	24,5	22,88	20	18,5	35,43	16	14,5			53,62	
050	50	34	32,5	8,70	32	30,5	12,50	30	28,5	17,60	28	26,5	23,57	22	20,5	36,51	18	16,5			55,24	
052	52	36	34,5	8,96	34	32,5	12,87	32	30,5	18,12	30	28,5	24,27	24	22,5	37,60	20	18,5			56,85	
054	54	38	36,5	9,22	36	34,5	13,24	34	32,5	18,65	32	30,5	24,97	26	24,5	38,69	22	20,5			58,47	
056	56	40	38,5	9,48	38	36,5	13,61	36	34,5	19,17	34	32,5	25,67	28	26,5	39,78	24	22,5			60,08	
058	58	42	40,5	9,74	40	38,5	13,98	38	36,5	19,69	36	34,5	26,36	30	28,5	40,87	26	24,5			61,69	
060	60	44	42,5	10,00	42	40,5	14,35	40	38,5	20,21	38	36,5	27,06	32	30,5	41,96	28	26,5			63,31	
062	62	46	44,5	10,26	44	42,5	14,72	42	40,5	20,73	40	38,5	27,76	34	32,5	43,04	30	28,5			64,92	
064	64	48	46,5	10,51	46	44,5	15,09	44	42,5	21,25	42	40,5	28,46	36	34,5	44,13	32	30,5			66,54	
066	66	50	48,5	10,77	48	46,5	15,46	46	44,5	21,77	44	42,5	29,16	38	36,5	45,22	34	32,5			68,15	
068	68	52	50,5	11,03	50	48,5	15,83	48	46,5	22,29	46	44,5	29,85	40	38,5	46,31	36	34,5			69,76	
																						71,38

(continued)

Table 2 (concluded)

Length code	N ± 0,3	Thread code																		
		050			060			070			080			100			120			
		W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	W max.	W min.	Mass ¹⁾	
070	70	54	52,5	11,29			50	48,5	22,81	48	46,5	30,55	44	42,5	48,48	40	38,5	72,99		
072	72				52	50,5	16,20	52	50,5	23,33	50	48,5	31,25	46	44,5	49,57	42	40,5	74,61	
074	74				54	52,5	16,93	54	52,5	23,85	52	50,5	31,95	48	46,5	50,66	44	42,5	76,22	
076	76				56	54,5	17,30	56	54,5	24,37	54	52,5	32,67	50	48,5	51,75	46	44,5	77,83	
078	78				58	56,5	17,67	58	56,5	24,89	56	54,5	33,34	52	50,5	52,84	48	46,5	79,45	
080	80				60	58,5	18,04	60	58,5	25,41	58	56,5	34,04	54	52,5	53,93	50	48,5	81,06	
082	82				62	60,5	18,41	62	60,5	25,94	60	58,5	34,74	56	54,5	55,01	52	50,5	82,68	
084	84				64	62,5	18,78	64	62,5	26,46	62	60,5	35,43	58	56,5	56,10	54	52,5	84,29	
086	86				66			66	64,5	26,98	64	62,5	36,13	60	58,5	57,19	56	54,5	85,91	
088	88							68	66,5	27,50	66	64,5	36,83	62	60,5	58,28	58	56,5	87,52	
090	90				70	68,5		70	68,5	28,02	68	66,5	37,53	64	62,5	59,37	60	58,5	89,13	
092	92				72	70,5		72	70,5	28,54	70	68,5	38,22	66	64,5	60,46	62	60,5	90,75	
094	94				74	72,5		74	72,5	29,06	72	70,5	38,92	68	66,5	61,54	64	62,5	92,36	
096	96				76	74,5		76	74,5	29,58	74	72,5	39,62	70	68,5	62,63	66	64,5	93,98	
098	98				78	76,5		78	76,5	30,10	76	74,5	40,32	72	70,5	63,72	68	66,5	95,59	
100	100										78	76,5	41,02	74	72,5	64,81	70	68,5	97,20	
104	104										82	80,5	42,41	78	76,5	66,99	74	72,5	100,43	
108	108										86	84,5	43,81	82	80,5	69,16	78	76,5	103,66	
112	112										90	88,5	45,20	86	84,5	71,34	82	80,5	106,89	
116	116										94	92,5		90	88,5	73,51	86	84,5	110,12	
120	120										98	96,5		94	92,5	75,69	90	88,5	113,35	
124	124											98	96,5	77,87	94	92,5	77,87	90	88,5	116,57
128	128											102	100,5	80,04	98	96,5	80,04	94	92,5	119,80
132	132											106	104,5	82,22	102	100,5	82,22	98	96,5	123,03
136	136											110	108,5	84,40	106	104,5	84,40	102	100,5	126,26
140	140											114	112,5	86,57	110	108,5	86,57	106	104,5	129,49
144	144														114	112,5	88,75	110	108,5	132,71
148	148														118	116,5	90,93	114	112,5	135,94
152	152														122	120,5	93,11	118	116,5	139,17
156	156														126	124,5	95,29	122	120,5	142,40
160	160														130	128,5	97,47	126	124,5	145,63
164	164														134	132,5	99,65	130	128,5	148,86
168	168														138	136,5	101,83	134	132,5	152,09

1) Mass ≈ quoted in kg/1 000 parts