

SLOVENSKI STANDARD

SIST EN 2930:2001

01-januar-2001

Aerospace series - Bolts, double hexagon head, relieved shank, long thread, in heat resisting nickel base alloy NI-P101HT (Waspaloy), silver plated - Classification: 1 210 MPa (at ambient temperature)/730 °C

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Luft- und Raumfahrt - Zwölfkantschrauben, Dünnschaft, langes Gewinde, aus hochwarmfester Nickelbasislegierung NI-P101HT (Waspaloy), versilbert - Klasse: 1210 MPa (bei Raumtemperatur)/730°C

Série aérospatiale - Vis à tête bihexagonale, fut dégagé, filetage long, en alliage résistant à chaud à base de nickel NI-101HT (Waspaloy), argentées - Classification: 1210 MPa (à température ambiante)/730°C

Ta slovenski standard je istoveten z: EN 2930:1996

ICS:

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

SIST EN 2930:2001

en

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EUROPEAN STANDARD

EN 2930

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 1996

ICS 49.040.20

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

English version

**Aerospace series - Bolts, double hexagon head,
relieved shank, long thread, in heat resisting nickel
base alloy NI-P101HT (Waspaloy), silver plated -
Classification : 1 210 MPa (at ambient
temperature) / 730 °C**

Série aérospatiale - Vis à tête bihexagonale,
fût dégagé, filetage long, en alliage résistant
à chaud à base de nickel NI-P101HT (Waspaloy),
argentées - Classification : 1 210 MPa (à
température ambiante) / 730 °C

Luft- und Raumfahrt - Zwölfkantschrauben,
Dünnschaft, langes Gewinde, aus hochwarmfester
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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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STANDARDS INSTITUTIONS COVERED BY INTERNATIONAL ORGANIZATION OF STANDARDIZATION AS PART OF ITS AMALGAMATED

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INTERNATIONAL ORGANIZATION OF STANDARDIZATION



1 Scope

This standard specifies the characteristics of double hexagon headed bolts with relieved shank and long thread, in NI-P101HT, silver plated, for aerospace applications.

Classification : 1 210 MPa ¹⁾ / 730 °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 2582	Aerospace series - Bolts in heat resisting nickel base alloy NI-P101HT (Waspaloy) - Classification : 1 210 MPa / 730 °C - Technical specification ³⁾
EN 2786	Aerospace series - Electrolytic silver plating of fasteners ³⁾
EN 2959	Aerospace series - Heat resisting nickel base alloy (NI-P101HT) - Solution treated and cold worked - Bar for hot upset forging for fasteners - $3 \leq D \leq 30$ mm ³⁾
EN 3220	Aerospace series - Heat resisting nickel base alloy (NI-P101HT) - Cold worked and softened - Bar and wire for continuous forging or extrusion for fasteners - $3 \leq D \leq 30$ mm ³⁾

3 Required characteristics

3.1 Configuration - Dimensions - Tolerances - Masses

See figure 1 and tables 1 and 2. Dimensions and tolerances are in millimetres. They apply after silver plating.

3.2 Materials

EN 2959 or 3220

3.3 Surface treatment

EN 2786

Thickness :

- thread : 3 μ m to 6 μ m, shall be measured at the pitch diameter ;
- other areas may show complete coverage, without thickness requirement.

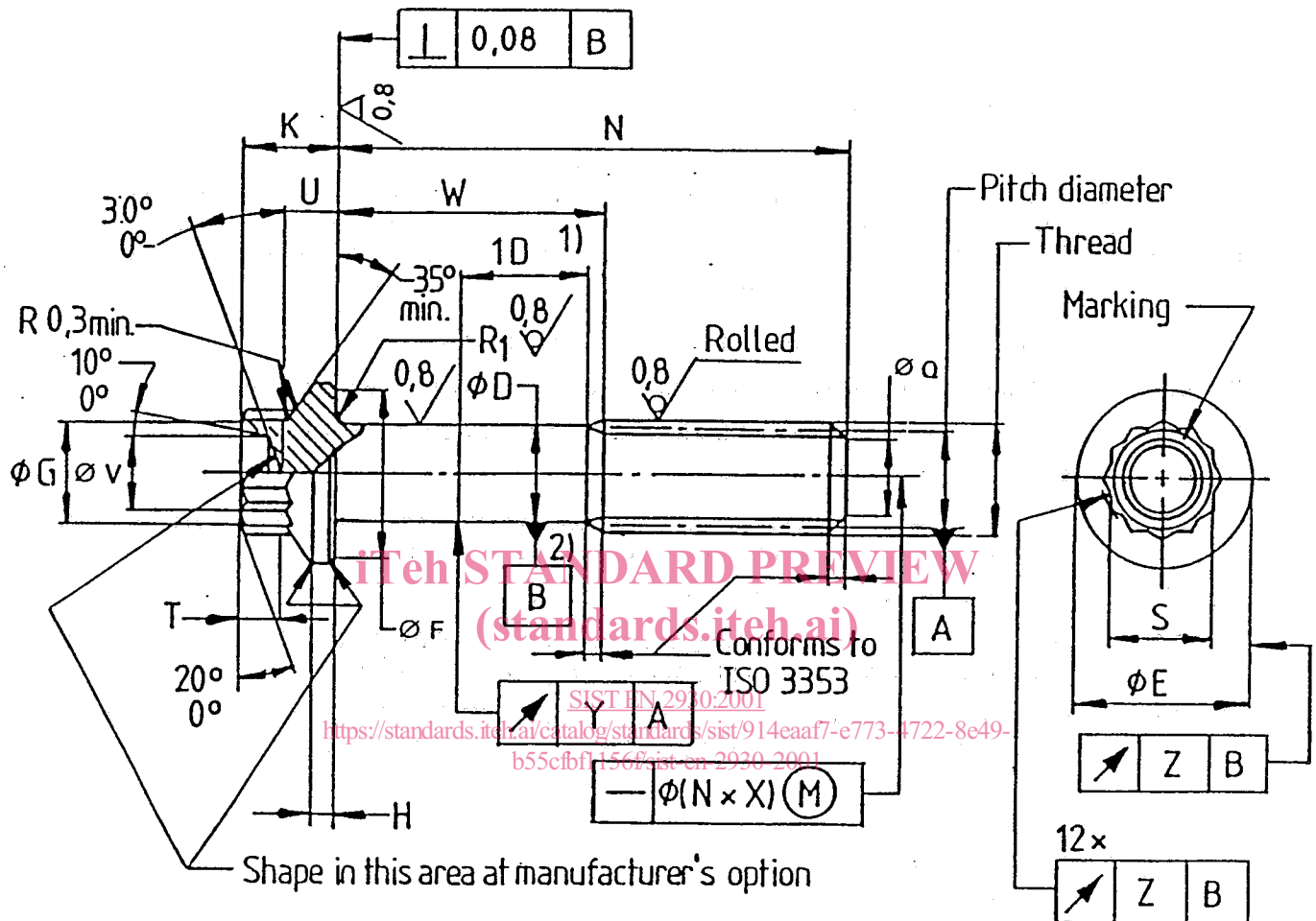
1) Minimum tensile strength of the material at ambient temperature

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}) Values apply before silver plating.

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⁾	T	U	V	X	Y	Z				
Code	Designation	$\pm 0,13$	max.	min.	min.	min.	max.	min.	$\pm 0,5$	max.	min.	max.	min.	max.	min.	max.				
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			
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	0,2	
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	0,25				
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	0,3
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			

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.	Mass ¹⁾ min.	W max.	Mass ¹⁾ min.	W max.	Mass ¹⁾ min.	W max.	Mass ¹⁾ min.	W max.	Mass ¹⁾ min.	W max.	Mass ¹⁾ min.			
008	8		3,26													
010	10		3,52		5,11		7,19		9,62							
012	12		3,78		5,48		7,71		10,32							
014	14	2,1	4,04	2,2	5,85		8,23		11,02		18,01					
016	16		4,29		6,22	2,2	8,75	2,7	11,71		19,10				29,41	
018	18		4,55		6,59		9,27		12,41		20,19				31,03	
020	20	4	4,81		6,95		9,79		13,11		21,28				32,64	
022	22	6	5,07	4	7,32		10,31		13,81		22,37				34,25	
024	24	8	5,33	6	7,69	4	10,83		14,51		23,45				35,87	
026	26	10	5,59	8	8,06	6	11,36	4	15,20		24,54				37,48	
028	28	12	5,85	10	8,43	8	11,88	6	15,90		25,63				39,10	
030	30	14	6,11	12	8,80	10	12,40	8	16,60		26,72				40,71	
032	32	16	6,37	14	9,17	12	12,92	10	17,30		27,81				42,32	
034	34	18	6,63	16	9,54	14	13,44	12	17,99		28,90				43,94	
036	36	20	6,89	18	9,91	16	13,96	14	18,69		29,98				45,55	
038	38	22	7,15	20	10,28	18	14,48	16	19,39		31,07				47,17	
040	40	24	7,40	22	10,65	20	15,00	18	20,09		32,16				48,78	
042	42	26	7,66	24	11,02	22	15,52	20	20,78		33,25				50,40	
044	44	28	7,92	26	11,39	24	16,04	22	21,48		34,34				52,01	
046	46	30	8,18	28	11,76	26	16,56	24	22,18		35,43				53,62	
048	48	32	8,44	30	12,13	28	17,08	26	22,88		36,51				55,24	
050	50	34	8,70	32	12,50	30	17,60	28	23,57		37,60				56,85	
052	52	36	8,96	34	12,87	32	18,12	30	24,27		38,69				58,47	
054	54	38	9,22	36	13,24	34	18,65	32	24,97		39,78				60,08	
056	56	40	9,48	38	13,61	36	19,17	34	25,67		40,87				61,69	
058	58	42	9,74	40	13,98	38	19,69	36	26,36		41,96				63,31	
060	60	44	10,00	42	14,35	40	20,21	38	27,06		43,04				64,92	
062	62	46	10,26	44	14,72	42	20,73	40	27,76		44,13				66,54	
064	64	48	10,51	46	15,09	44	21,25	42	28,46		45,22				68,15	
066	66	50	10,77	48	15,46	46	21,77	44	29,16		46,31				69,76	
068	68	52	11,03	50	15,83	48	22,29	46	29,85		47,40				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	52	50,5	16,20	22,81	48	46,5	30,55	44	42,5	48,48	40	38,5	48,48	40	38,5	72,99
072	72				54	52,5	16,56	23,33	50	48,5	31,25	46	44,5	49,57	42	40,5	49,57	42	40,5	74,61
074	74				56	54,5	16,93	23,85	52	50,5	31,95	48	46,5	50,66	44	42,5	50,66	44	42,5	76,22
076	76				58	56,5	17,30	24,37	54	52,5	32,67	50	48,5	51,75	46	44,5	51,75	46	44,5	77,83
078	78				60	58,5	17,67	24,89	56	54,5	33,34	52	50,5	52,84	48	46,5	52,84	48	46,5	79,45
080	80				62	60,5	18,04	25,41	58	56,5	34,04	54	52,5	53,93	50	48,5	53,93	50	48,5	81,06
082	82				64	62,5	18,41	25,94	60	58,5	34,74	56	54,5	55,01	52	50,5	55,01	52	50,5	82,68
084	84				66	64,5	18,78	26,46	62	60,5	35,43	58	56,5	56,10	54	52,5	56,10	54	52,5	84,29
086	86							26,98	64	62,5	36,13	60	58,5	57,19	56	54,5	57,19	56	54,5	85,91
088	88							27,50	66	64,5	36,83	62	60,5	58,28	58	56,5	58,28	58	56,5	87,52
090	90							28,02	70	68,5	37,53	64	62,5	59,37	60	58,5	59,37	60	58,5	89,13
092	92							28,54	72	70,5	38,22	66	64,5	60,46	62	60,5	60,46	62	60,5	90,75
094	94							29,06	74	72,5	38,92	68	66,5	61,54	64	62,5	61,54	64	62,5	92,36
096	96							29,58	76	74,5	39,62	70	68,5	62,63	66	64,5	62,63	66	64,5	93,98
098	98							30,10	78	76,5	40,32	72	70,5	63,72	68	66,5	63,72	68	66,5	95,59
100	100										41,02	74	72,5	64,81	70	68,5	64,81	70	68,5	97,20
104	104										42,41	78	76,5	66,99	74	72,5	66,99	74	72,5	100,43
108	108										43,81	82	80,5	69,16	78	76,5	69,16	78	76,5	103,66
112	112										45,20	86	84,5	71,34	82	80,5	71,34	82	80,5	106,89
116	116											90	88,5	73,51	86	84,5	73,51	86	84,5	110,12
120	120											94	92,5	75,69	90	88,5	75,69	90	88,5	113,35
124	124											98	96,5	77,87	94	92,5	77,87	94	92,5	116,57
128	128											102	100,5	80,04	98	96,5	80,04	98	96,5	119,80
132	132											106	104,5	82,22	102	100,5	82,22	102	100,5	123,03
136	136											110	108,5	84,40	106	104,5	84,40	106	104,5	126,26
140	140											114	112,5	86,57	110	108,5	86,57	110	108,5	129,49
144	144																	114	112,5	132,71
148	148																	118	116,5	135,94
152	152																	122	120,5	139,17
156	156																	126	124,5	142,40
160	160																	130	128,5	145,63
164	164																	134	132,5	148,86
168	168																	138	136,5	152,09

1) Mass ≈ quoted in kg/1 000 parts