

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

The European Standard EN 3010:1998 has the status of a
British Standard

ICS 49.030.20

National foreword

This British Standard is the English language version of EN 3010:1998.

The UK participation in its preparation was entrusted by Technical Committee ACE/12, Aerospace fasteners and fastening systems, to ACE/12/1, Aerospace fasteners and fastening systems (International), which has the responsibility to:

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- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 7 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on 15 August 1998

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Amendments issued since publication

Amd. No.	Date	Comments

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EUROPEAN STANDARD

EN 3010

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 1998

ICS 49.030.20

Descriptors: Aircraft industry, screw, hexagonal head screw, nickel alloy, heat resistant material, characteristic, screw thread, code, dimension, designation, marking

English version

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

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

Luft- und Raumfahrt — Sechskantschrauben, Dünnschaft, langes Gewinde, aus hochwarmfester Nickelbasislegierung NI-P101HT (Waspaloy) — Klasse: 1 210 MPa (bei Raumtemperatur)/730 °C

This European Standard was approved by CEN on 23 February 1998.

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.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, 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 received the approval of the National Associations and the Official Services of the member 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 November 1998, and conflicting national standards shall be withdrawn at the latest by November 1998.

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

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1 Scope

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

Classification: 1 210 MPa¹⁾/730 °C²⁾

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 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 specification³⁾.*

EN 2959, *Aerospace series — Heat resisting nickel base alloy (NI-P101HT) — Solution treated and cold worked — Bar for hot upset forging for fasteners — $3 \leq D \leq 30$ mm³⁾.*

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 — $3 \leq D \leq 30$ mm³⁾.*

3 Required characteristics

3.1 Configuration — Dimensions — Tolerances — Masses

See Figure 1 and Table 1 and Table 2. Dimensions and tolerances are in millimetres.

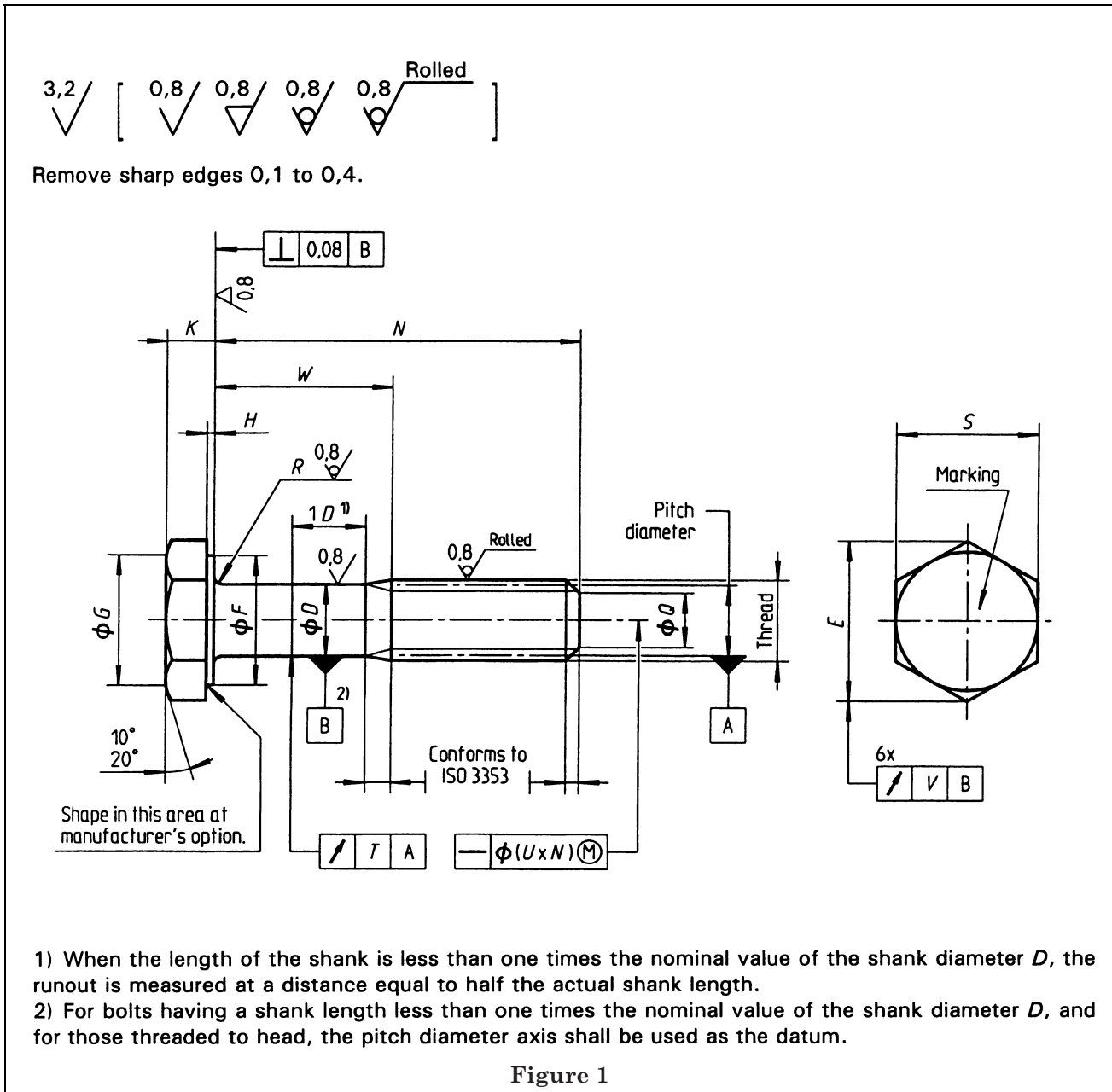
3.2 Materials

EN 2959 or EN 3220

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



- 1) When the length of the shank is less than one times the nominal value of the shank diameter D , the runout 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.

Table 1

Code	Thread ^a Designation	D	E	F	G	H	K	Q	R		S	T	U	V
		± 0,13	min.	min.	min.	0 -0,3	0 -0,3	± 0,5	max.	min.	h13			
050	MJ5 × 0,8-4h6h	4,48	9,8	8,3	8,4	0,5	3	3,4	0,5	0,3	9	0,12	0,003	0,25
060	MJ6 × 1-4h6h	5,35	12	10,2	10,3		3,5	4,2	0,7	0,5	11			0,3
070	MJ7 × 1-4h6h	6,35	13,2	11,2	11,3		4	5,2			12	0,4		
080	MJ8 × 1-4h6h	7,35	15,5	13,2	13,3	0,6	4,5	6,2	0,6	0,6	14	0,15	0,0025	0,4
100	MJ10 × 1,25-4h6h	9,19	18,9	16	16,3		5	7,9			0,8			17
120	MJ12 × 1,25-4h6h	11,19	21,1	18	18,3		6	9,8			0,9	19		0,6

^a In accordance with ISO 5855-2

Table 2

Length code	N ± 0,3	Thread code																	
		050			060			070			080			100			120		
		W		Mass ^a	W		Mass ^a	W		Mass ^a	W		Mass ^a	W		Mass ^a	W		Mass ^a
max.	min.		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.			
008	8			2,76															
010	10			3,02															
012	12			3,28															
014	14	2,1	1,7	3,54															
016	16			3,80	2,7	2,2												25,66	
018	18			4,06														27,14	
020	20	4	2,5	4,32														28,61	
022	22	6	4,5	4,58	4	2,5												30,09	
024	24	8	6,5	4,84	6	4,5												31,56	
026	26	10	8,5	5,10	8	6,5												33,04	
028	28	12	10,5	5,35	10	8,5												34,51	
030	30	14	12,5	5,61	12	10,5												35,98	
032	32	16	14,5	5,87	14	12,5												37,46	
034	34	18	16,5	6,13	16	14,5												38,93	
036	36	20	18,5	6,39	18	16,5												40,4	
038	38	22	20,5	6,65	20	18,5												42,1	
040	40	24	22,5	6,91	22	20,5												43,7	
042	42	26	24,5	7,17	24	22,5												45,4	
044	44	28	26,5	7,43	26	24,5												47,0	
046	46	30	28,5	7,69	28	26,5												48,7	
048	48	32	30,5	7,95	30	28,5												50,3	
050	50	34	32,5	8,21	32	30,5												52,0	
052	52	36	34,5	8,46	34	32,5												53,6	
054	54	38	36,5	8,72	36	34,5												55,3	
056	56	40	38,5	8,98	38	36,5												56,9	
058	58	42	40,5	9,24	40	38,5												58,6	
060	60	44	42,5	9,50	42	40,5												60,3	
062	62	46	44,5	9,76	44	42,5												61,9	
064	64	48	46,5	10,02	46	44,5												63,6	
066	66	50	48,5	10,28	48	46,5												65,2	
068	68	52	50,5	10,54	50	48,5												66,9	
																		68,5	

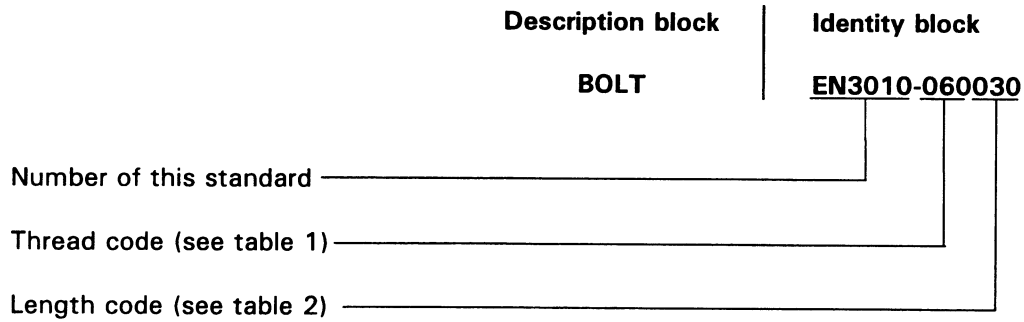
Table 2

Length code	N ± 0,3	Thread code																		
		050			060			070			080			100			120			
		W		Mass ^a	W		Mass ^a	W		Mass ^a	W		Mass ^a	W		Mass ^a	W		Mass ^a	
max.	min.		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.		max.	min.	
070	70	54	52,5	10,80	52	50,5	15,94	50	48,5	22,32	48	46,5	30,68	44	42,5	48,35	40	38,5	70,2	
072	72				54	52,5	16,31	52	50,5	22,84	50	48,5	31,38	46	44,5	49,44	42	40,5	71,8	
074	74				56	54,5	16,68	54	52,5	23,26	52	50,5	32,08	48	46,5	50,53	44	42,5	73,5	
076	76				58	56,5	17,05	56	54,5	23,88	54	52,5	32,77	50	48,5	51,62	46	44,5	75,2	
078	78				60	58,5	17,42	58	56,5	24,40	56	54,5	33,47	52	50,5	52,71	48	46,5	76,8	
080	80				62	60,5	17,79	60	58,5	24,92	58	56,5	34,17	54	52,5	53,79	50	48,5	78,5	
082	82				64	62,5	18,16	62	60,5	25,44	60	58,5	34,87	56	54,5	54,88	52	50,5	80,1	
084	84				66	64,5	18,53	64	62,5	25,96	62	60,5	35,56	58	56,5	55,97	54	52,5	81,8	
086	86							66	64,5	26,48	64	62,5	36,26	60	58,5	57,06	56	54,5	83,4	
088	88							68	66,5	27,00	66	64,5	36,96	62	60,5	58,15	58	56,5	85,1	
090	90							70	68,5	27,52	68	66,5	37,66	64	62,5	59,23	60	58,5	86,7	
092	92							72	70,5	28,04	70	68,5	38,36	66	64,5	60,32	62	60,5	88,4	
094	94							74	72,5	28,56	72	70,5	39,05	68	66,5	61,41	64	62,5	90,0	
096	96							76	74,5	29,09	74	72,5	39,75	70	68,5	62,50	66	64,5	91,7	
098	98							78	76,5	29,61	76	74,5	40,45	72	70,5	63,59	68	66,5	93,4	
100	100										78	76,5	41,15	74	72,5	64,68	70	68,5	95,0	
104	104										82	80,5	42,54	78	76,5	66,85	74	72,5	98,3	
108	108										86	84,5	43,94	82	80,5	69,03	78	76,5	101,6	
112	112										90	88,5	45,33	86	84,5	71,21	82	80,5	104,9	
116	116													90	88,5	73,38	86	84,5	108,3	
120	120													94	92,5	75,56	90	88,5	111,6	
124	124													98	96,5	77,74	94	92,5	114,9	
128	128													102	100,5	79,91	98	96,5	118,2	
132	132													106	104,5	82,09	102	100,5	121,4	
136	136													110	108,5	84,26	106	104,5	124,7	
140	140													114	112,5	86,44	110	108,5	128,1	
144	144																114	112,5	131,5	
148	148																118	116,5	134,7	
152	152																122	120,5	138,0	
156	156																126	124,5	141,4	
160	160																130	128,5	144,7	
164	164																134	132,5	148,0	
168	168																138	136,5	151,2	

^a Mass ≈ quoted in kg/1 000 parts

4 Designation

EXAMPLE:



NOTE If necessary, the code 19005 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 2582

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