

INTERNATIONAL STANDARD

ISO
3193

First edition
1991-01-15

**Aerospace — Bolts, normal hexagonal head,
normal shank, short or medium length MJ
threads, metallic material, coated or uncoated,
strength classes less than or equal to
1 100 MPa — Dimensions**
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Aéronautique et espace — Vis à tête hexagonale normale, avec tige normale et filetage MJ court ou de longueur moyenne, en matériau métallique, revêtues ou non revêtues, des classes de résistance inférieures ou égales à 1 100 MPa — Dimensions



Reference number
ISO 3193:1991(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3193 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

ISO 3193:1991

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Aerospace — Bolts, normal hexagonal head, normal shank, short or medium length MJ threads, metallic material, coated or uncoated, strength classes less than or equal to 1 100 MPa — Dimensions

1 Scope

This International Standard specifies the dimensions of normal hexagonal head bolts with close or large tolerance normal shank, and short or medium length MJ threads, in metallic material, coated or uncoated, with strength classes less than or equal to 1 100 MPa.

It is intended for the drawing up of aerospace product standards.

plying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO 3353:1976, *Aerospace construction — Rolled threads — Runout and lead threads.*

ISO 5855-2:1988, *Aerospace — MJ threads — Part 2: Limit dimensions for bolts and nuts.*

2 Normative references

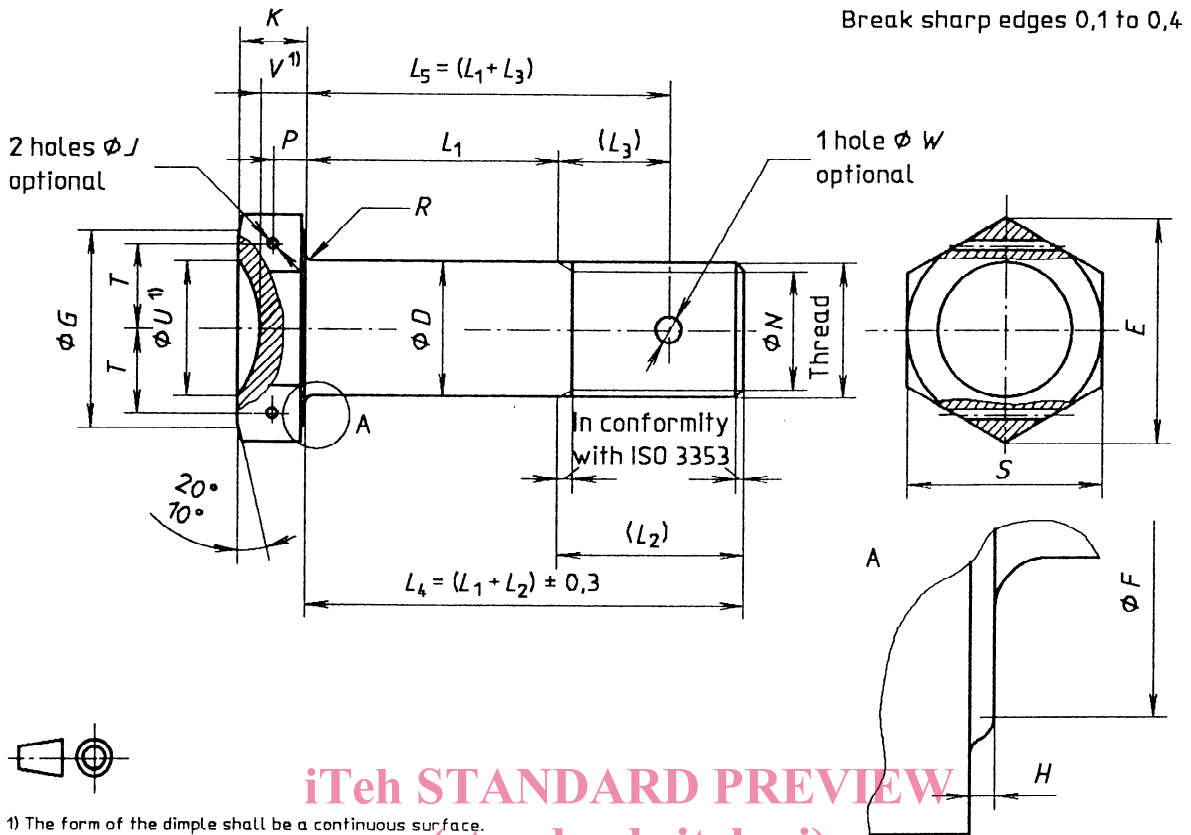
The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of ap-

3 Configuration and dimensions

See figure 1 and table 1. Dimensions and tolerances are expressed in millimetres. They are applicable after any surface coating, but before the application of any lubricant.

Details of form not stated are left to the manufacturer's discretion.

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1) The form of the dimple shall be a continuous surface.

Figure 1

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Table 1

Size code	Thread ^{1) 2)}	D						E	F ³⁾	G	H		J	K	L ₁ ⁵⁾		
		nom.	Coated bolts		Uncoated bolts		max.				min.	H ¹³⁴⁾			0 -0,3	nom.	tol.
			tol. close	large	tol. close	large											
030	MJ3 × 0,5 – 4h6h	3	-0,007 -0,032				6,5	5,4	5,5	0,4	0,2	—	2	2 to 30	± 0,2		
040	MJ4 × 0,7 – 4h6h	4	-0,010 -0,035	h ¹²⁴⁾	f ⁷⁴⁾	h ¹²⁴⁾	7,6	6,4	6,4	0,5	0,2	—	2,5	2 to 40			
050	MJ5 × 0,8 – 4h6h	5					8,7	7,4	7,4			1	3	3 to 50			
060	MJ6 × 1 – 4h6h	6					10,9	9,3	9,4			3,5	3 to 60				
070	MJ7 × 1 – 4h6h	7	12				10,2	10,3	4	4 to 70							
080	MJ8 × 1 – 4h6h	8	-0,013 -0,038				14,3	12,2	12,3	4,5	4 to 80						
100	MJ10 × 1,25 – 4h6h	10	-0,016 -0,041				18,9	16	16,3	5	5 to 100						
120	MJ12 × 1,25 – 4h6h	12					21,1	18	18,3	6	6 to 120						
140	MJ14 × 1,5 – 4h6h	14					24,5	21	21,3	7	7 to 140						
160	MJ16 × 1,5 – 4h6h	16	-0,020 -0,045				26,8	23	23,3	8	8 to 160						
180	MJ18 × 1,5 – 4h6h	18					30,2	26	26,3	9	9 to 180						
200	MJ20 × 1,5 – 4h6h	20					33,6	29	29,3	10	10 to 200						

Size code	I_2		I_3		N		P	R		S		T	U 0 -0,5	V 0 -0,3	W H134)
	Short thread	Medium thread	Short thread	Medium thread	nom.	tol.		max.	min.	nom.	tol.				
030	6	7,5	—	—	2,3	0 -0,5	—	0,4	0,2	6	h124)	—	—	—	—
040	7,5	10	5	6	3		—			7		—	—	—	—
050	9	12	6	7,5	3,4	± 0,5	1,35	0,5	0,3	8	h134)	3,25	5,25	2	1,5
060	10	14	7	8,5	4,2		1,6	0,7	0,5	10		4,1	6,25	2,3	1,9
070	11	15	7	9,5	5,2		1,85			11		4,5	7,25	2,7	
080	11,5	16,5	7,5	10,5	6,2		2,1	0,8	0,6	13		5,35	8,25	3	2,4
100	14,5	20,5	9	13	7,9		2,35			17		7,1	10,25	3,4	
120	16	22,5	10	14,5	9,8		2,85	0,9	0,6	19		7,9	12,25	4	3
140	19	26	12	17	11,5		3,35	1,1	0,8	22		9,2	14,25	4,7	
160	20,5	28,5	13	18,5	13,5		3,85			24		10,05	16,25	5,4	
180	22,5	31	14,5	21	15,5		4,35	1,3	1,0	27		11,3	18,25	6	3,8
200	24,5	33,5	15	22,5	17,5		4,85			30		12,6	20,25	6,7	

- 1) In accordance with ISO 5855-2.
 2) For coated or uncoated bolts, with a close tolerance on D , the thread major diameter, d , shall be
 $d \text{ max.} = D \text{ min.} - 0,025 \text{ mm}$
 $d \text{ min.}$: see ISO 5855-2.

- 3) $F \text{ max.}$ shall not interfere with S
 4) See ISO 286-2.
 5) Increments:

- 1 mm for $L_1 \leq 30 \text{ mm}$
 2 mm for $30 \text{ mm} < L_1 < 100 \text{ mm}$
 4 mm for $L_1 \geq 100 \text{ mm}$

If greater lengths are required, they shall be calculated using these increments.

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