
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

Aéronautique et espace — Vis à tête hexagonale normale, avec tige normale et filetages MJ courts ou de longueur moyenne, en matériau métallique, revêtues ou non revêtues, des classes de résistance inférieures ou égales à 1 100 MPa — Dimensions

ISO 3193:2008

<https://standards.iteh.ai/catalog/standards/sist/e05a4866-3d38-4b1a-8b30-7ee04edab511/iso-3193-2008>



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3193 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

This second edition cancels and replaces the first edition (ISO 3193:1991) and Technical Corrigendum 1 (1992), which have been technically revised.

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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.

This International Standard is applicable to the compilation of aerospace product standards.

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.

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

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

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

ISO 7913, *Aerospace — Bolts and screws, metric — Tolerances of form and position*

3 Configuration and dimensions

See Figure 1 and Table 1.

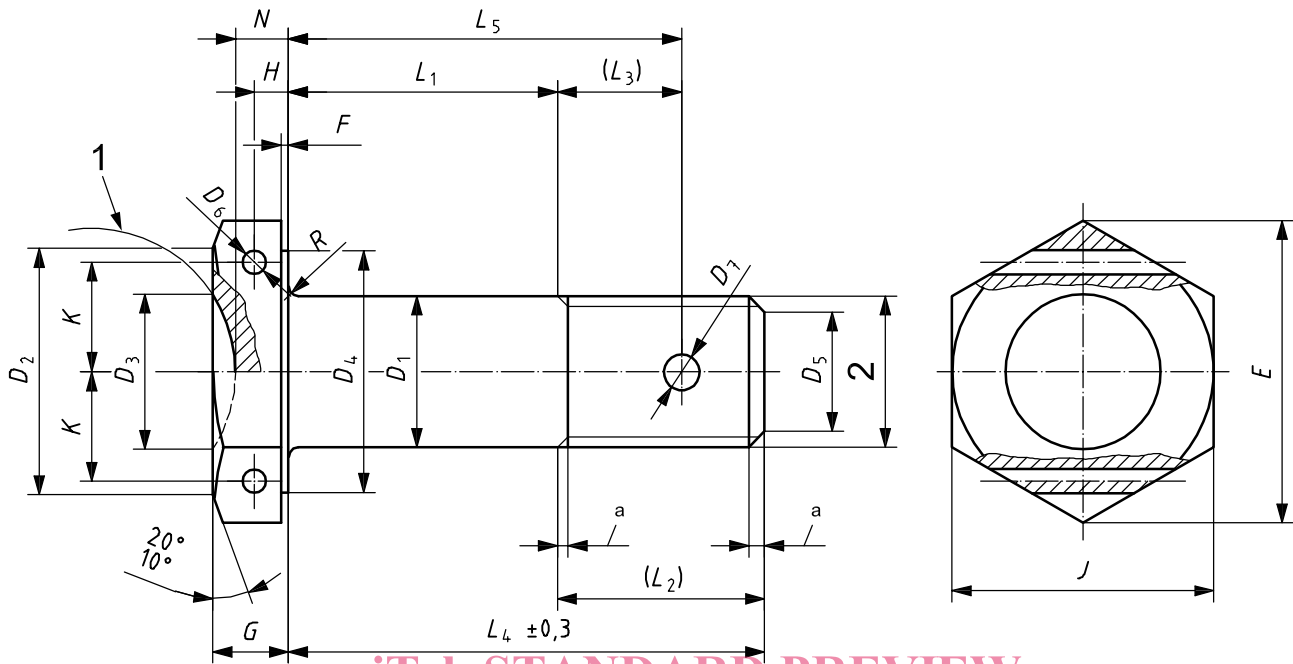
Dimensions and tolerances are expressed in millimetres. They are applicable after any coating (tolerance on shank diameter before coating is also specified for heat cured matrix coatings), but before the application of any lubricant.

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

Tolerances of form and position shall be as specified in ISO 7913 if not otherwise stated on product standard.

Dimensions in millimetres

Break sharp edges 0,1 to 0,4



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Key

- 1 continuous surface
- 2 thread

a In accordance with ISO 3353-1.

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Figure 1

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Table 1

Diameter code	Thread ^a	nom.	D_1					D_2 min.	D_3 $0_{-0,5}$	D_4^d min.	D_5		D_6 Two holes, optional H13 ^c	D_7 One hole, optional H13 ^c
			Coated bolts			Uncoated bolts					nom.	Tol.		
			before coating ^b	Tol. close large		Tol. close large								
030	MJ3 × 0,5-4h6h	3	-0,026 -0,041	-0,006 -0,031						2,3	0 -0,5	—	—	
040	MJ4 × 0,7-4h6h	4							3	—		—	1,1	
050	MJ5 × 0,8-4h6h	5	-0,030 -0,045	-0,010 -0,035					3,4		± 0,5	1	1,5	
060	MJ6 × 1-4h6h	6							4,2			1,4	1,9	
070	MJ7 × 1-4h6h	7							5,2					
080	MJ8 × 1-4h6h	8	-0,033 -0,048	-0,013 -0,038					6,2					
100	MJ10 × 1,25-4h6h	10			h12 ^c	f7 ^c	h12 ^c		7,9				2,4	
120	MJ12 × 1,25-4h6h	12							9,8					
140	MJ14 × 1,5-4h6h	14	-0,036 -0,051	-0,016 -0,041					11,5			1,6	3	
160	MJ16 × 1,5-4h6h	16							13,5					
180	MJ18 × 1,5-4h6h	18							15,5					
200	MJ20 × 1,5-4h6h	20	-0,040 -0,055	-0,020 -0,045					17,5				3,8	

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Table 1 (continued)

E	F		G	H	J		K	$L_1 \pm 0,2^e$	L_2		L_3		N	R			
	min.	max.			min.	$\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$			nom.	Tol.	short	medium		short	medium	$\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$	nom.
6,5	0,4	0,5	0,2	2	–	6	h12	–	2 to 30	6	7,5	–	–	–	0,4	$\begin{smallmatrix} 0 \\ -0,2 \end{smallmatrix}$	
7,6				2,5	–	7		–	2 to 40	7,5	10	5	6	–			
8,7				3	1,35	8		3,25	3 to 50	9	12	6	7,5	2			0,5
10,9				3,5	1,6	10		h13	4,1	3 to 60	10	14	7	8,5	2,3		0,7
12				4	1,85	11			4,5	4 to 70	11	15		9,5	2,7		
14,3				4,5	2,1	13			5,35	4 to 80	11,5	16,5	7,5	10,5	3		
18,9		5	2,35	17	7,1	5 to 100	14,5		20,5	9	13	3,4	0,8				
21,1		6	2,85	19	7,9	6 to 120	16		22,5	10	14,5	4	0,9				
24,5	0,6	0,3	0,3	7	3,35	22	9,2	7 to 140	19	26	12	17	4,7	1,1	$\begin{smallmatrix} 0 \\ -0,3 \end{smallmatrix}$		
26,8				8	3,85	24	10,05	8 to 160	20,5	28,5	12,5	18,5	5,4				
30,2				9	4,35	27	11,3	9 to 180	22,5	31	14,5	21	6	1,3			
33,6				10	4,85	30	12,6	10 to 200	24,5	33,5	15	22,5	6,7				

a In conformity with ISO 5855-2, except for the maximum thread major diameter, d_{max} , of bolts with a close tolerance on D_1 , which shall be equal to $(D_{1,min} - 0,025)$.

b Heat cured organic matrix coatings for close tolerance normal shanks.

c See ISO 286-2.

d $D_{4,max}$ shall be less than J .

e Increments: 1 for $L_1 \leq 30$;
 2 for $30 < L_1 \leq 100$;
 4 for $L_1 > 100$.

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