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Aerospace — MJ threads — **Part 2:** **Limit dimensions for bolts and nuts**

Aéronautique et espace — Filetage MJ —

Partie 2: Dimensions limites pour vis et écrous



Reference number
ISO 5855-2:1999(E)

Foreword

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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 5855-2 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 4, *Aerospace fastener systems*.

This third edition cancels and replaces the second edition (ISO 5855-2:1988), of which it constitutes a technical revision.

ISO 5855 consists of the following parts, under the general title *Aerospace — MJ threads*:

- *Part 1: General requirements*
- *Part 2: Limit dimensions for bolts and nuts*
- *Part 3: Limit dimensions for fittings for fluid systems*

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Aerospace — MJ threads —

Part 2: Limit dimensions for bolts and nuts

1 Scope

This part of ISO 5855 specifies limit dimensions of MJ threads for bolts and nuts of nominal diameter 1,6 mm to 39 mm for aerospace construction.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 5855. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 5855 are encouraged to investigate the possibility of applying the most recent edition of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 965-1:1998, *ISO general-purpose metric screw threads — Tolerances — Part 1: Principles and basic data*.

ISO 5855-1:1999, *Aerospace — MJ threads — Part 1: General requirements*.

3 Nominal diameters and pitches

See Table 1.

Table 1 — Nominal diameters and pitches

Dimensions in millimetres

Nominal diameter <i>d</i> or <i>D</i>	Pitch <i>P</i>	Nominal diameter <i>d</i> or <i>D</i>	Pitch <i>P</i>
1,6	0,35	14	1,5
2	0,4	16	
2,5	0,45	18	
3	0,5	20	
3,5	0,6	22	
4	0,7	24	2
5	0,8	27	
6	1	30	
7		33	
8		36	
10	1,25	39	
12			

4 Tolerance classes

See Table 2.

Table 2 — Tolerance classes

Bolt threads		Nut threads	
<i>d</i>	6h	<i>D</i> ₁	6H for nominal diameter ≤ 5 mm 5H for nominal diameter ≥ 6 mm
<i>d</i> ₂	4h	<i>D</i> ₂	4H

5 Provisions for coated threads

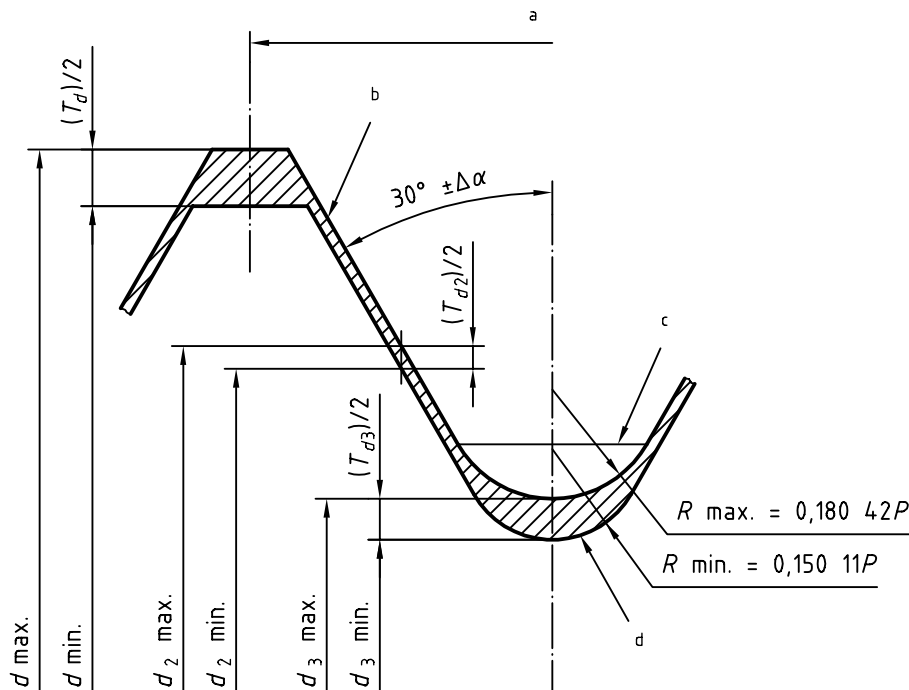
Before coating, the dimensions of the threads shall be compatible with the thickness of the coating selected and with the limit dimensions for finished parts specified in clause 6.

6 Limit dimensions for finished parts (coated or uncoated)

6.1 Bolt threads

Figure 1 illustrates the position and the form of the limit profiles (maximum and minimum) in relation to the basic profile (see ISO 5855-1).

Tables 3 and 4 specify the limit dimensions.



- a Pitch ± ΔP
- b Basic and maximum profiles
- c Basic profile
- d Minimum profile

Figure 1 — Limit profiles for bolt threads

Table 3 — Limit dimensions for 4h6h threads for bolts

Dimensions in millimetres

Thread designation	Major diameter d			Pitch diameter d_2			Minor diameter d_3		
	max.	min.	T_d	max.	min.	T_{d2}	max.	min.	T_{d3}
			(6h) ^a			(4h) ^a			
MJ1,6 × 0,35-4h6h	1,600	1,515	0,085	1,373	1,333	0,04	1,196	1,135	0,061
MJ2 × 0,4-4h6h	2,000	1,905	0,095	1,740	1,698	0,042	1,538	1,472	0,066
MJ2,5 × 0,45-4h6h	2,5	2,4	0,1	2,208	2,163	0,045	1,980	1,908	0,072
MJ3 × 0,5-4h6h	3,000	2,894	0,106	2,675	2,627	0,048	2,423	2,345	0,078
MJ3,5 × 0,6-4h6h	3,500	3,375	0,125	3,110	3,057	0,053	2,807	2,718	0,089
MJ4 × 0,7-4h6h	4,00	3,86	0,14	3,545	3,489	0,056	3,192	3,094	0,098
MJ5 × 0,8-4h6h	5,00	4,85	0,15	4,48	4,42	0,06	4,076	3,968	0,108
MJ6 × 1-4h6h	6,00	5,82	0,18	5,350	5,279	0,071	4,845	4,713	0,132
MJ7 × 1-4h6h	7,00	6,82	0,18	6,350	6,279	0,071	5,845	5,713	0,132
MJ8 × 1-4h6h	8,00	7,82	0,18	7,350	7,279	0,071	6,845	6,713	0,132
MJ10 × 1,25-4h6h	10,000	9,788	0,212	9,188	9,113	0,075	8,557	8,406	0,151
MJ12 × 1,25-4h6h	12,000	11,788	0,212	11,188	11,103	0,085	10,557	10,396	0,161
MJ14 × 1,5-4h6h	14,000	13,764	0,236	13,026	12,936	0,09	12,268	12,087	0,181
MJ16 × 1,5-4h6h	16,000	15,764	0,236	15,026	14,936	0,09	14,268	14,087	0,181
MJ18 × 1,5-4h6h	18,000	17,764	0,236	17,026	16,936	0,09	16,268	16,087	0,181
MJ20 × 1,5-4h6h	20,000	19,764	0,236	19,026	18,936	0,09	18,268	18,087	0,181
MJ22 × 1,5-4h6h	22,000	21,764	0,236	21,026	20,936	0,09	20,268	20,087	0,181
MJ24 × 2-4h6h	24,00	23,72	0,28	22,701	22,595	0,106	21,691	21,464	0,227
MJ27 × 2-4h6h	27,00	26,72	0,28	25,701	25,595	0,106	24,691	24,464	0,227
MJ30 × 2-4h6h	30,00	29,72	0,28	28,701	28,595	0,106	27,691	27,464	0,227
MJ33 × 2-4h6h	33,00	32,72	0,28	31,701	31,595	0,106	30,691	30,464	0,227
MJ36 × 2-4h6h	36,00	35,72	0,28	34,701	34,595	0,106	33,691	33,464	0,227
MJ39 × 2-4h6h	39,00	38,72	0,28	37,701	37,595	0,106	36,691	36,464	0,227

^a In accordance with ISO 965-1

Table 4 — Root radii for bolt threads

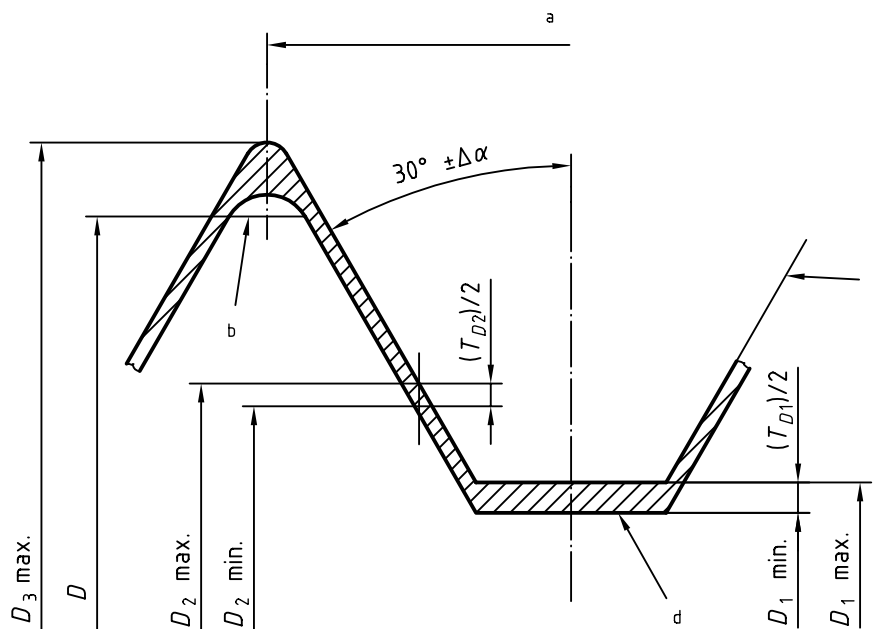
Dimensions in millimetres

Pitch P	Root radius R	
	max.	min.
0,35	0,063	0,053
0,4	0,072	0,060
0,45	0,081	0,068
0,5	0,090	0,075
0,6	0,108	0,090
0,7	0,126	0,105
0,8	0,144	0,120
1	0,18	0,15
1,25	0,226	0,188
1,5	0,271	0,225
2	0,361	0,300

6.2 Nut threads

Figure 2 illustrates the position and the form of the limit profiles (maximum and minimum) in relation to the basic profile (see ISO 5855-1).

Table 5 specifies the limit dimensions.



- a Pitch $\pm \Delta P$
- b Basic profile
- c Maximum profile
- d Basic and minimum profiles

Figure 2 — Limit profiles for nut threads

Table 5 — Limit dimensions of 4H6H threads for nuts of diameter MJ1,6 to MJ5 and limit dimensions of 4H5H threads for nuts of diameter MJ6 to MJ39

Dimensions in millimetres

Thread designation	Major D_3 ^a max.	Pitch diameter			Minor diameter			
		D_2		T_{D2} (4H) ^b	D_1			T_{D1} (6H) ^b (5H) ^b
		max.	min.		max.	min.	(6H) ^b	
MJ1,6 × 0,35-4H6H	1,704	1,426	1,373	0,053	1,359	1,259	0,1	
MJ2 × 0,4-4H6H	2,114	1,796	1,740	0,056	1,722	1,610	0,112	
MJ2,5 × 0,45-4H6H	2,625	2,268	2,208	0,06	2,187	2,062	0,125	
MJ3 × 0,5-4H6H	3,135	2,738	2,675	0,063	2,653	2,513	0,14	
MJ3,5 × 0,6-4H6H	3,658	3,181	3,110	0,071	3,075	2,915	0,16	
MJ4 × 0,7-4H6H	4,176	3,620	3,545	0,075	3,498	3,318	0,18	
MJ5 × 0,8-4H6H	5,195	4,56	4,48	0,08	4,421	4,221	0,2	
MJ6 × 1-4H5H	6,239	5,445	5,350	0,095	5,216	5,026		0,19
MJ7 × 1-4H5H	7,239	6,445	6,350	0,095	6,216	6,026		0,19
MJ8 × 1-4H5H	8,239	7,445	7,350	0,095	7,216	7,026		0,19
MJ10 × 1,25-4H5H	10,28	9,288	9,188	0,1	8,994	8,782		0,212
MJ12 × 1,25-4H5H	12,292	11,300	11,188	0,112	10,994	10,782		0,212
MJ14 × 1,5-4H5H	14,335	13,144	13,026	0,118	12,775	12,539		0,236
MJ16 × 1,5-4H5H	16,335	15,144	15,026	0,118	14,775	14,539		0,236
MJ18 × 1,5-4H5H	18,335	17,144	17,026	0,118	16,775	16,539		0,236
MJ20 × 1,5-4H5H	20,335	19,144	19,026	0,118	18,775	18,539		0,236
MJ22 × 1,5-4H5H	22,335	21,144	21,026	0,118	20,775	20,539		0,236
MJ24 × 2-4H5H	24,429	22,841	22,701	0,14	22,351	22,051		0,3
MJ27 × 2-4H5H	27,429	25,841	25,701	0,14	25,351	25,051		0,3
MJ30 × 2-4H5H	30,429	28,841	28,701	0,14	28,351	28,051		0,3
MJ33 × 2-4H5H	33,429	31,841	31,701	0,14	31,351	31,051		0,3
MJ36 × 2-4H5H	36,429	34,841	34,701	0,14	34,351	34,051		0,3
MJ39 × 2-4H5H	39,429	37,841	37,701	0,14	37,351	37,051		0,3

^a D_3 min. is not specified. However, it shall be greater than D (see Figure 2).
^b In accordance with ISO 965-1

6.3 Maximum permissible deviations on pitch (lead) and on half flank angle

Values given in Table 6 have been taken from Table 6 of ISO 5855-1.

Table 6 — Maximum permissible deviations on pitch (lead) and on half flank angle

Nominal diameter <i>d</i> or <i>D</i> mm	Pitch <i>P</i> mm	Bolt thread		Nut thread	
		ΔP μm	$\Delta\alpha$	ΔP μm	$\Delta\alpha$
1,6	0,35	9,2	1° 45'	12,2	2° 19'
2	0,4	9,7	1° 37'	12,9	2° 8'
2,5	0,45	10,4	1° 32'	13,9	2° 2'
3	0,5	11,1	1° 28'	14,5	1° 55'
3,5	0,6	12,2	1° 21'	16,4	1° 48'
4	0,7	12,9	1° 13'	17,3	1° 38'
5	0,8	13,9	1° 9'	18,5	1° 32'
6-7-8	1	16,4	1° 5'	21,9	1° 27'
10	1,25	17,3	0° 55'	23,1	1° 13'
12	1,25	19,6	1° 2'	25,9	1° 22'
14 – 16 – 18 } 20 – 22 }	1,5	20,8	0° 55'	27,2	1° 12'
24 – 27 – 30 } 33 – 36 – 39 }	2	24,5	0° 49'	32,3	1° 4'

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