International Standard 5855/2

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Aerospace construction — MJ threads — Part 2 : Dimensions for bolts and nuts

Constructions aérospatiales — Filetage MJ — Partie 2 : Dimensions pour vis et écrous

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

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It has been approved by the member bodies of the following countries :

Austria	France	Romania
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The member body of the following country expressed disapproval of the document on technical grounds :

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Aerospace construction — MJ threads — Part 2 : Dimensions for bolts and nuts

1 Scope and field of application

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

Requirements for thread dimensions for bolts and nuts of nominal diameter 1,2 mm or less are given in ISO/R 1501.

2 References

ISO 965/1, *ISO general purpose metric screw threads — Tolerances — Principles and basic data.*

ISO/R 1501, *ISO miniature screw threads.*

ISO 5855/1, *Aerospace construction — MJ threads — Part 1 : Basic profile.*

3 Nominal diameters and pitches

See table 1.

Table 1 — Nominal diameters and pitches

Dimensions in millimetres

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

4 Tolerance classes

See table 2 and ISO 965/1.

Table 2 — Tolerance classes

Bolt threads		Nut threads	
d	6h	D_1	6H for nominal diameter $\leqslant$ 5 mm 5H for nominal diameter $\geqslant$ 6 mm
d_2	4h	D_2	4 H

5 Provisions for coated threads

Before coating, the dimensions of the threads shall be compatible with :

a) the thickness of the coating selected;

b) the maximum and minimum dimensions specified in this International Standard.

In order to reduce the number of manufacturing and inspection tools, it is recommended that, where possible, standardized tolerance classes for threads (grade and position) be used.

6 Maximum and minimum dimensions

6.1 General

Finished parts (coated or non coated) shall conform to the maximum and minimum dimensions given in tables 4 to 7. To check these dimensions, limit gauges in accordance with table 3 shall be used.

Table 3 — Thread length of limit gauges

Nominal diameter d or D mm	Thread length of limit gauges
$\leqslant$ 10	Equal to the nominal diameter
> 10	9 P

6.2 Profiles

Figures 1 and 2 illustrate the position and form of the actual profiles (maximum, minimum) in relation to the basic profile (see ISO 5855/1).

6.3 Bolt threads

See figure 1.

The connection between the root diameter d_3 and the flanks of the thread is rounded in form. This connection shall lie within the following limits :

— d_3 max. and a width of 0,312 5 P (corresponding to the point of tangency between diameter d_1 and the flanks of the thread). This implies a maximum radius equal to 0,180 42 P;

— d_3 min. and a minimum radius equal to 0,150 11 P.

Within these limits, any continuous, non-reversing blended curve is permitted, provided that it comprises radii not less than 0,150 11 P.

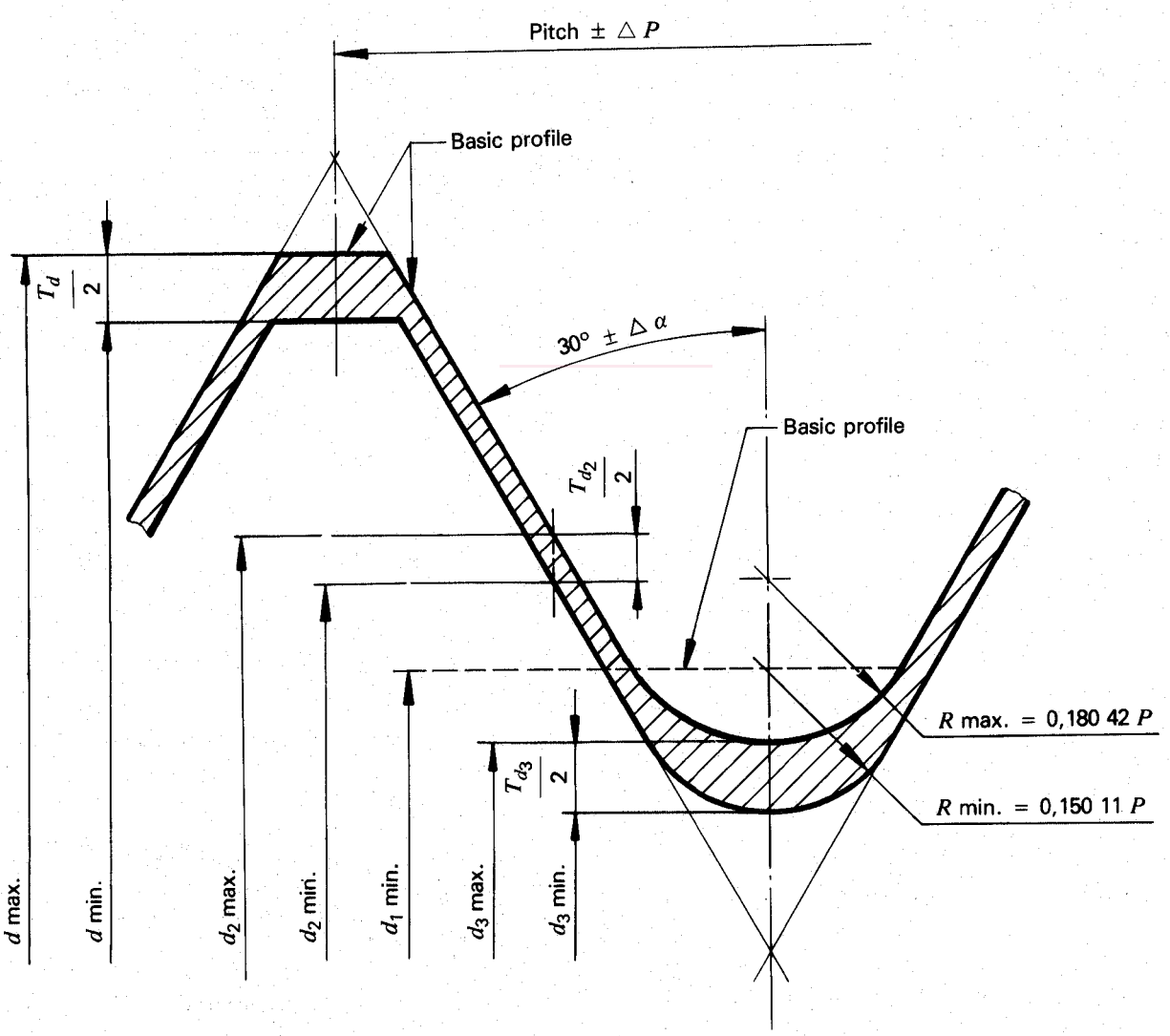

Figure 1 — Limit profiles for bolt threads

Table 4 — Maximum and minimum dimensions for bolts of tolerance class 4h6h

Dimensions in millimetres

Thread designation	Major diameter d			Pitch diameter d_2			Root diameter d_3		
	max.	min.	T_d (6h)	max.	min.	T_{d_2} (4h)	max.	min.	T_{d_3}
MJ 1,6 × 0,35 — 4h6h	1,600	1,515	0,085	1,373	1,333	0,040	1,196	1,135	0,061
MJ 2 × 0,4 — 4h6h	2,000	1,905	0,095	1,740	1,698	0,042	1,538	1,472	0,066
MJ 2,5 × 0,45 — 4h6h	2,500	2,400	0,100	2,208	2,163	0,045	1,980	1,908	0,072
MJ 3 × 0,5 — 4h6h	3,000	2,894	0,106	2,675	2,627	0,048	2,423	2,345	0,078
MJ 3,5 × 0,6 — 4h6h	3,500	3,375	0,125	3,110	3,057	0,053	2,807	2,718	0,089
MJ 4 × 0,7 — 4h6h	4,000	3,860	0,140	3,545	3,489	0,056	3,192	3,094	0,098
MJ 5 × 0,8 — 4h6h	5,000	4,850	0,150	4,480	4,420	0,060	4,076	3,968	0,108
MJ 6 × 1 — 4h6h	6,000	5,820	0,180	5,350	5,279	0,071	4,845	4,713	0,132
MJ 7 × 1 — 4h6h	7,000	6,820	0,180	6,350	6,279	0,071	5,845	5,713	0,132
MJ 8 × 1 — 4h6h	8,000	7,820	0,180	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	0,090	12,268	12,087	0,181
MJ16 × 1,5 — 4h6h	16,000	15,764	0,236	15,026	14,936	0,090	14,268	14,087	0,181
MJ18 × 1,5 — 4h6h	18,000	17,764	0,236	17,026	16,936	0,090	16,268	16,087	0,181
MJ20 × 1,5 — 4h6h	20,000	19,764	0,236	19,026	18,936	0,090	18,268	18,087	0,181
MJ22 × 1,5 — 4h6h	22,000	21,764	0,236	21,026	20,936	0,090	20,268	20,087	0,181
MJ24 × 2 — 4h6h	24,000	23,720	0,280	22,701	22,595	0,106	21,691	21,464	0,227
MJ27 × 2 — 4h6h	27,000	26,720	0,280	25,701	25,595	0,106	24,691	24,464	0,227
MJ30 × 2 — 4h6h	30,000	29,720	0,280	28,701	28,595	0,106	27,691	27,464	0,227
MJ33 × 2 — 4h6h	33,000	32,720	0,280	31,701	31,595	0,106	30,691	30,464	0,227
MJ36 × 2 — 4h6h	36,000	35,720	0,280	34,701	34,595	0,106	33,691	33,464	0,227
MJ39 × 2 — 4h6h	39,000	38,720	0,280	37,701	37,595	0,106	36,691	36,464	0,227

Table 5 — 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	0,180	0,150
1,25	0,226	0,188
1,5	0,271	0,225
2	0,361	0,300

6.4 Nut thread

See figure 2.

The form of the connection between the root diameter D_3 and the thread flanks is not mandatory. However, in practice, the root is generally rounded beyond the nominal diameter (d,D). The value of the radius is not specified.

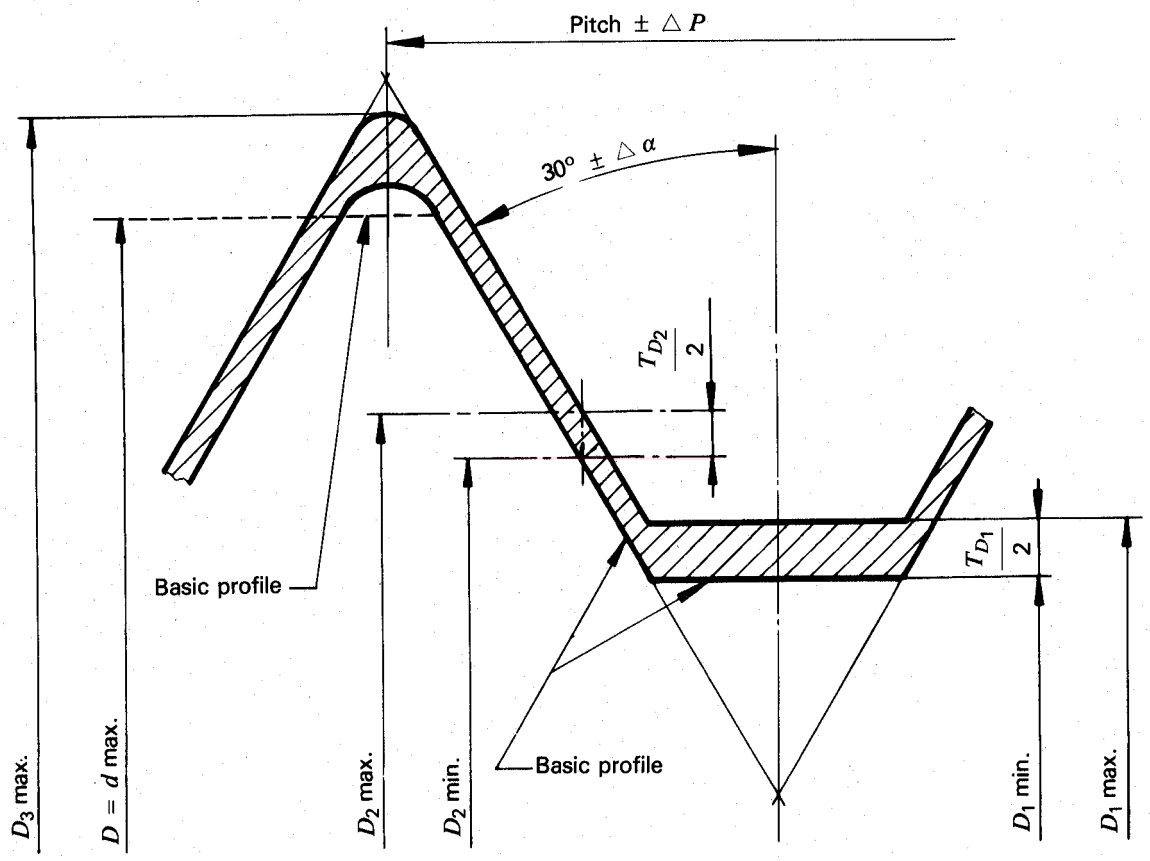

Figure 2 — Limit profiles for nut threads

Table 6 — Maximum and minimum dimensions for nuts of tolerance classes 4H6H up to and including MJ5 and 4H5H for MJ6 and above

Dimensions in millimetres

Thread designation	Root diameter D_3[1]	Pitch diameter D_2			Minor diameter D_1			
	max.	max.	min.	T_{D_2} (4H)	max.	min.	T_{D_1} (6H)	(5H)
MJ 1,6 × 0,35 — 4H6H	1,704	1,426	1,373	0,053	1,359	1,259	0,100	
MJ 2 × 0,4 — 4H6H	2,114	1,796	1,740	0,056	1,722	1,610	0,112	
MJ 2,5 × 0,45 — 4H6H	2,625	2,268	2,208	0,060	2,187	2,062	0,125	
MJ 3 × 0,5 — 4H6H	3,135	2,738	2,675	0,063	2,653	2,513	0,140	
MJ 3,5 × 0,6 — 4H6H	3,658	3,181	3,110	0,071	3,075	2,915	0,160	
MJ 4 × 0,7 — 4H6H	4,176	3,620	3,545	0,075	3,498	3,318	0,180	
MJ 5 × 0,8 — 4H6H	5,195	4,560	4,480	0,080	4,421	4,221	0,200	
MJ 6 × 1 — 4H5H	6,239	5,445	5,350	0,095	5,216	5,026		0,190
MJ 7 × 1 — 4H5H	7,239	6,445	6,350	0,095	6,216	6,026		0,190
MJ 8 × 1 — 4H5H	8,239	7,445	7,350	0,095	7,216	7,026		0,190
MJ10 × 1,25 — 4H5H	10,280	9,288	9,188	0,100	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	14,334	13,144	13,026	0,118	12,775	12,539		0,236
MJ16 × 1,5 — 4H5H	16,334	15,144	15,026	0,118	14,775	14,539		0,236
MJ18 × 1,5 — 4H5H	18,334	17,144	17,026	0,118	16,775	16,539		0,236
MJ20 × 1,5 — 4H5H	20,334	19,144	19,026	0,118	18,775	18,539		0,236
MJ22 × 1,5 — 4H5H	22,334	21,144	21,026	0,118	20,775	20,539		0,236
MJ24 × 2 — 4H5H	24,429	22,841	22,701	0,140	22,351	22,051		0,300
MJ27 × 2 — 4H5H	27,429	25,841	25,701	0,140	25,351	25,051		0,300
MJ30 × 2 — 4H5H	30,429	28,841	28,701	0,140	28,351	28,051		0,300
MJ33 × 2 — 4H5H	33,429	31,841	31,701	0,140	31,351	31,051		0,300
MJ36 × 2 — 4H5H	36,429	34,841	34,701	0,140	34,351	34,051		0,300
MJ39 × 2 — 4H5H	39,429	37,841	37,701	0,140	37,351	37,051		0,300

1) D_3 min. is not specified. However, it shall not be less than D (see figure 2).