

JIS

JAPANESE INDUSTRIAL STANDARD

Nut Taps

☎ **JIS B 4433**—1990

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.



1. Scope

This Japanese Industrial Standard specifies nut taps to be used for tapping of internal threads shown in Table 1, hereinafter referred to as the "taps".

Remarks 1. Taps specified in the body of this Standard, in the case where these are used in nut tapping machine, these are used with jointing with a bent shank or straight shank and also called nib tap.

2. Straight type nut taps are shown in Annex.

Table 1. Classes of Internal Threads to Be Applied

Class of thread	Designation of thread	Applicable Standard
Metric coarse screw threads	M 2.5 to M 24	JIS B 0205 JIS B 0209
Metric fine screw threads	M 4 × 0.5 to M 24 × 1	JIS B 0207 JIS B 0211
Unified coarse screw threads	No. 3-48 UNC to 1-8UNC	JIS B 0206 JIS B 0210
Unified fine screw threads	No. 3-56 UNF to 1-12UNF	JIS B 0208 JIS B 0212

2. Definitions

For the purposes of this Standard main definitions are in accordance with JIS B 0176 and JIS B 0101.

3. Classes and Grades

Classes of taps shall, according to the length of threaded portion (*l*), be of four classes of 20 T, 24 T, 28 T and 32 T and grades, according to pitch diameter tolerance out of accuracies of threaded portion, be two grades of grade A and grade B. Their tolerances are shown in Table 2.

Further, with appending the numeral indicating the tolerance position, symbols of tolerance zones are shown in Table 3.

Remark: The relation between the grade and the pitch diameter tolerance zone are shown in Figure.

Table 2. Grades and Pitch Diameter Tolerances

Unit: μm		
Grade	Grade A	Grade B
Tolerance	10	20

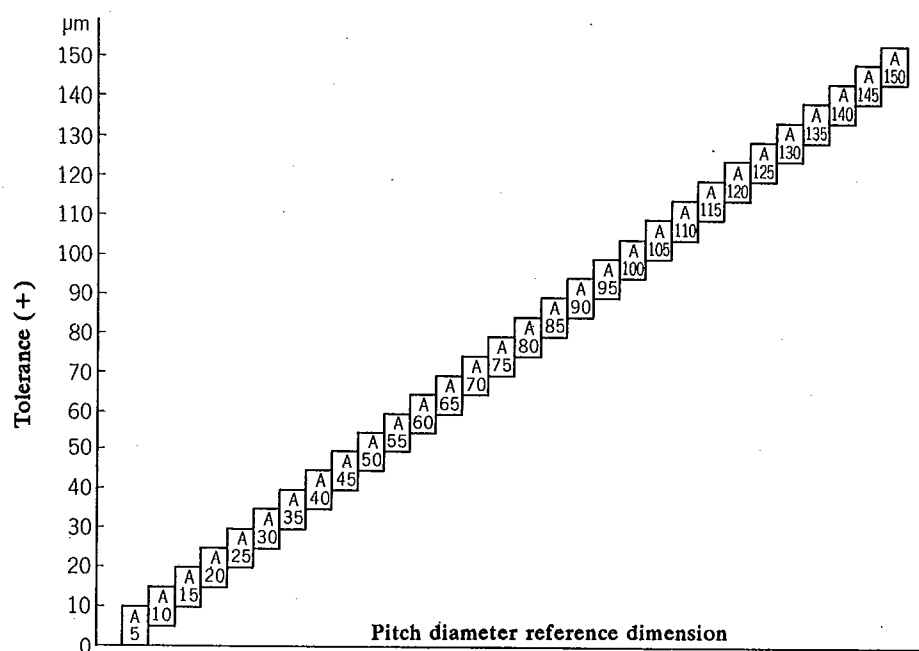
Table 3. Symbols of Pitch Diameter Tolerance Zones

Grade	Grade A	Grade B
Symbol	A5, A10, A15, A20, A25, A30, A35, A40, A45, A50, A55, A60, A65, A70, A75, A80, A85, A90, A95, A100, A105, A110, A115, A120, A125, A130, A135, A140, A145, A150	B10, B20, B30, B40, B50, B60, B70, B80, B90, B100, B110, B120, B130, B140, B150

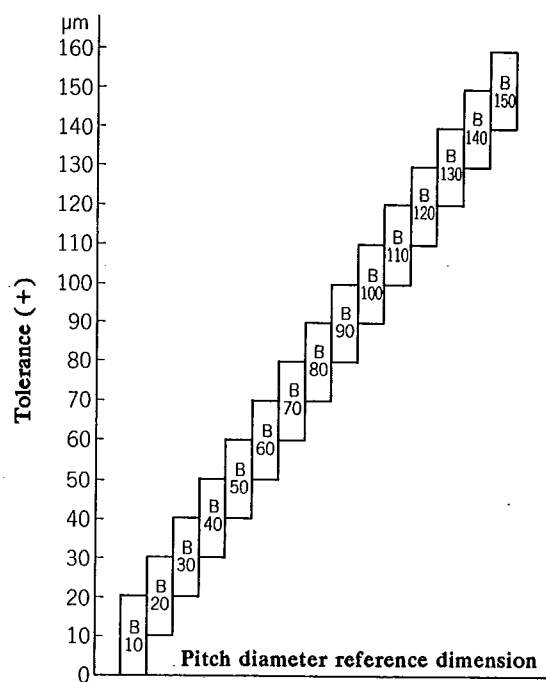
Applicable Standards and Reference Standard: See page 26.

2
B 4433-1990

Figure Relation between Grades and Pitch Diameter Tolerance Zones
Grade A



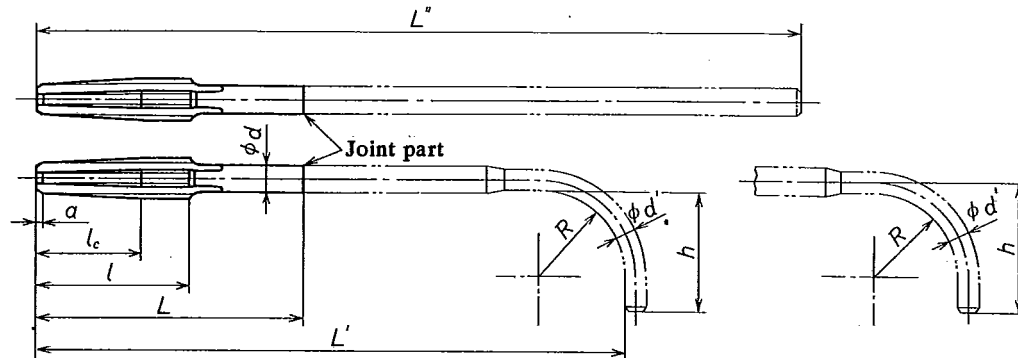
Grade B



4. Shape and Dimensions

Shapes and dimensions of taps shall be in accordance with Tables 4 to 5.

Table 4. Shapes and Dimensions of Taps for Metric Screw Threads



Remarks 1. The centre of threaded portion shall be protruding centre of centre hole.

2. As to h of bent part, according to type of used machine, there are two classes as shown in the figure.

Unit: mm

Designation	Pitch	Overall length L	Length of threaded portion l				Shank diameter		$L' \times R \times h$ (Informative reference)	L'' ⁽¹⁾ (Informative reference)
			20 T	24 T	28 T	32 T	d	d' (Informative reference)		
M 2.5	0.45	60	9.0	11.0	12.5	—	1.8	1.8	107 × 17 × 22	125
M 3	0.5	60	10.0	12.0	14.0	—	2.2	2.2	107 × 17 × 22	125
M 3.5	0.6	60	12.0	14.5	17.0	—	2.6	2.6	107 × 17 × 22	125
M 4	0.7	60	14.0	17.0	—	—	3.0	3.0	165 × 22 × 28	210
					19.5				107 × 17 × 22	
					—				185 × 25 × 30	
M 4 × 0.5	0.5	60	—	12.0	14.0	—	3.0	3.0	165 × 22 × 28	210
						16.0			107 × 17 × 22	
						—			185 × 25 × 30	
M 4.5	0.75	60	15.0	18.0	—	—	3.4	3.4	165 × 22 × 28	210
					21.0				185 × 25 × 30	
M 4.5 × 0.5	0.5	60	—	12.0	—	—	3.6	3.6	165 × 22 × 28	210
					14.0	16.0			185 × 25 × 30	
M 5	0.8	70	16.0	19.0	—	—	3.8	3.8	165 × 22 × 28	210
					22.5				185 × 25 × 30	
M 5 × 0.5	0.5	70	—	12.0	—	—	4.0	4.0	165 × 22 × 28	210
					14.0	16.0			185 × 25 × 30	
M 5.5 × 0.5	0.5	70	—	12.0	—	—	4.7	4.7	165 × 22 × 28	210
					14.0	16.0			185 × 25 × 30	
M 6	1	76	20.0	24.0	—	—	4.7	4.4	165 × 22 × 28	280
					—				233 × 30 × 37	
					28.0				185 × 25 × 30	
					—				245 × 30 × 40	

Table 4 (Continued)

Unit: mm

Designation	Pitch	Overall length L	Length of threaded portion l				Shank diameter		$L' \times R \times h$ (Informative reference)	L'' ⁽¹⁾ (Informative reference)
			20 T	24 T	28 T	32 T	d	d' (Informative reference)		
M 6 $\times$ 0.75	0.75	76	—	18.0	—	—	5.0	4.6	165 $\times$ 22 $\times$ 28	280
					21.0	24.0			233 $\times$ 30 $\times$ 37	
									185 $\times$ 25 $\times$ 30	
									245 $\times$ 30 $\times$ 40	
M 7	1	76	20.0	24.0	—	—	5.6	5.3	165 $\times$ 22 $\times$ 28	280
					28.0	233 $\times$ 30 $\times$ 37				
						245 $\times$ 30 $\times$ 40				
M 7 $\times$ 0.75	0.75	76	—	18.0	—	—	5.6	5.5	165 $\times$ 22 $\times$ 28	280
					21.0	24.0			233 $\times$ 30 $\times$ 37	
									245 $\times$ 30 $\times$ 40	
M 8	1.25	76	25.0	30.0	—	—	6.4	5.9	165 $\times$ 22 $\times$ 28	280
					35.0	233 $\times$ 30 $\times$ 37				
						245 $\times$ 30 $\times$ 40				
M 8 $\times$ 1	1	76	—	24.0	—	—	6.6	6.1	165 $\times$ 22 $\times$ 28	280
					28.0	32.0			233 $\times$ 30 $\times$ 37	
									245 $\times$ 30 $\times$ 40	
M 8 $\times$ 0.75	0.75	76	—	18.0	—	—	6.6	6.4	165 $\times$ 22 $\times$ 28	280
					21.0	24.0			233 $\times$ 30 $\times$ 37	
									245 $\times$ 30 $\times$ 40	
M 9	1.25	89	25.0	30.0	—	—	7.3	6.8	233 $\times$ 30 $\times$ 37	280
					35.0	245 $\times$ 30 $\times$ 40				
M 9 $\times$ 1	1	89	—	24.0	—	—	7.6	7.0	233 $\times$ 30 $\times$ 37	280
					28.0	32.0			245 $\times$ 30 $\times$ 40	
M 9 $\times$ 0.75	0.75	89	—	18.0	—	—	7.6	7.3	233 $\times$ 30 $\times$ 37	280
					21.0	24.0			245 $\times$ 30 $\times$ 40	
M 10	1.5	89	30.0	36.0	—	—	8.0	7.5	233 $\times$ 30 $\times$ 37	280
					42.0	245 $\times$ 30 $\times$ 40				
M 10 $\times$ 1.25	1.25	89	—	30.0	—	—	8.3	7.7	233 $\times$ 30 $\times$ 37	280
					35.0	40.0			245 $\times$ 30 $\times$ 40	
M 10 $\times$ 1	1	89	—	24.0	—	—	8.3	7.9	233 $\times$ 30 $\times$ 37	280
					28.0	32.0			245 $\times$ 30 $\times$ 40	
M 10 $\times$ 0.75	0.75	89	—	18.0	—	—	8.8	8.2	233 $\times$ 30 $\times$ 37	280
					21.0	24.0			245 $\times$ 30 $\times$ 40	
M 11	1.5	102	30.0	36.0	—	—	8.8	8.4	233 $\times$ 30 $\times$ 37	280
					42.0	245 $\times$ 30 $\times$ 40				
M 11 $\times$ 1	1	102	—	24.0	—	—	9.5	8.8	233 $\times$ 30 $\times$ 37	280
					28.0	32.0			245 $\times$ 30 $\times$ 40	
M 11 $\times$ 0.75	0.75	102	—	18.0	—	—	9.8	9.0	233 $\times$ 30 $\times$ 37	280
					21.0	24.0			245 $\times$ 30 $\times$ 40	

Table 4 (Continued)

Unit: mm

Designation	Pitch	Overall length L	Length of threaded portion l				Shank diameter		$L' \times R \times h$ (Informative reference)	L'' ⁽¹⁾ (Informative reference)	
			20 T	24 T	28 T	32 T	d	d' (Informative reference)			
M 12	1.75	102	35.0	42.0	—	—	9.5	9.0	233 × 30 × 37	420	
					49.0				375 × 45 × 52		
									245 × 30 × 40		
									375 × 45 × 55		
M 12 × 1.5	1.5	102	—	36.0	—	—	9.8	9.2	233 × 30 × 37	420	
					42.0				48.0		375 × 45 × 52
											245 × 30 × 40
											375 × 45 × 55
M 12 × 1.25	1.25	102	—	30.0	—	—	10.0	9.5	233 × 30 × 37	420	
					35.0				40.0		375 × 45 × 52
											245 × 30 × 40
											375 × 45 × 55
M 12 × 1	1	102	—	24.0	—	—	10.5	9.7	233 × 30 × 37	420	
					28.0				32.0		375 × 45 × 52
											245 × 30 × 40
											375 × 45 × 55
M 14	2	114	40.0	48.0	—	—	11.0	10.6	233 × 30 × 37	420	
					56.0				375 × 45 × 52		
									375 × 45 × 55		
M 14 × 1.5	1.5	114	—	36.0	—	—	11.5	11.0	233 × 30 × 37	420	
					42.0				48.0		375 × 45 × 52
											375 × 45 × 55
M 14 × 1	1	114	—	24.0	—	—	12.0	11.5	233 × 30 × 37	420	
					28.0				32.0		375 × 45 × 52
											375 × 45 × 55
M 15 × 1.5	1.5	114	—	36.0	—	—	12.5	11.9	375 × 45 × 52	540	
					42.0				48.0		480 × 65 × 80
											375 × 45 × 55
M 15 × 1	1	114	—	24.0	—	—	13.0	12.4	375 × 45 × 52	540	
					28.0				32.0		480 × 65 × 80
											375 × 45 × 55
M 16	2	127	40.0	48.0	—	—	13.0	12.4	375 × 45 × 52	540	
					56.0				375 × 45 × 55		
									480 × 65 × 80		
M 16 × 1.5	1.5	127	—	36.0	—	—	13.5	12.8	375 × 45 × 52	540	
					42.0				48.0		480 × 65 × 80
											375 × 45 × 55
M 16 × 1	1	127	—	24.0	—	—	14.0	13.3	375 × 45 × 52	540	
					28.0				32.0		480 × 65 × 80
											375 × 45 × 55

Table 4 (Continued)

Unit: mm

Designation	Pitch	Overall length L	Length of threaded portion l				Shank diameter		$L' \times R \times h$ (Informative reference)	L'' ⁽¹⁾ (Informative reference)
			20 T	24 T	28 T	32 T	d	d' (Informative reference)		
M 17 $\times$ 1.5	1.5	127	—	36.0	—	—	14.5	13.7	375 $\times$ 45 $\times$ 52	540
					42.0	—			480 $\times$ 65 $\times$ 80	
					—	48.0			375 $\times$ 45 $\times$ 55	
M 17 $\times$ 1	1	127	—	24.0	—	—	15.0	14.2	375 $\times$ 45 $\times$ 52	540
					28.0	—			480 $\times$ 65 $\times$ 80	
					—	32.0			375 $\times$ 45 $\times$ 55	
M 18	2.5	133	50.0	60.0	—	—	14.5	13.7	375 $\times$ 45 $\times$ 52	540
					70.0	—			375 $\times$ 45 $\times$ 55	
					—	—			480 $\times$ 65 $\times$ 80	
M 18 $\times$ 2	2	133	—	48.0	—	—	15.0	14.1	375 $\times$ 45 $\times$ 52	540
					56.0	—			480 $\times$ 65 $\times$ 80	
					—	64.0			375 $\times$ 45 $\times$ 55	
M 18 $\times$ 1.5	1.5	133	—	36.0	—	—	15.5	14.6	375 $\times$ 45 $\times$ 52	540
					42.0	—			480 $\times$ 65 $\times$ 80	
					—	48.0			375 $\times$ 45 $\times$ 55	
M 18 $\times$ 1	1	133	—	24.0	—	—	16.0	15.1	375 $\times$ 45 $\times$ 52	540
					28.0	—			480 $\times$ 65 $\times$ 80	
					—	32.0			375 $\times$ 45 $\times$ 55	
M 20	2.5	133	50.0	60.0	—	—	16.5	15.4	375 $\times$ 45 $\times$ 52	580
					70.0	—			375 $\times$ 45 $\times$ 55	
					—	—			480 $\times$ 65 $\times$ 80	
					—	—			520 $\times$ 65 $\times$ 75	
M 20 $\times$ 2	2	133	—	48.0	—	—	17.0	15.9	375 $\times$ 45 $\times$ 52	580
					56.0	—			480 $\times$ 65 $\times$ 80	
					—	64.0			375 $\times$ 45 $\times$ 55	
					—	—			520 $\times$ 65 $\times$ 75	
M 20 $\times$ 1.5	1.5	133	—	36.0	—	—	17.5	16.4	375 $\times$ 45 $\times$ 52	580
					42.0	—			480 $\times$ 65 $\times$ 80	
					—	48.0			375 $\times$ 45 $\times$ 55	
					—	—			520 $\times$ 65 $\times$ 75	
M 20 $\times$ 1	1	133	—	24.0	—	—	18.0	16.8	375 $\times$ 45 $\times$ 52	585
					28.0	—			480 $\times$ 65 $\times$ 80	
					—	32.0			375 $\times$ 45 $\times$ 55	
					—	—			520 $\times$ 65 $\times$ 75	
M 22	2.5	146	50.0	60.0	70.0	—	18.5	17.2	480 $\times$ 65 $\times$ 80	585
			—						520 $\times$ 65 $\times$ 75	
M 22 $\times$ 2	2	146	—	48.0	56.0	—	19.0	17.7	480 $\times$ 65 $\times$ 80	585
						64.0			520 $\times$ 65 $\times$ 75	
M 22 $\times$ 1.5	1.5	146	—	36.0	42.0	—	19.5	18.1	480 $\times$ 65 $\times$ 80	585
						48.0			520 $\times$ 65 $\times$ 75	

Table 4 (Continued)

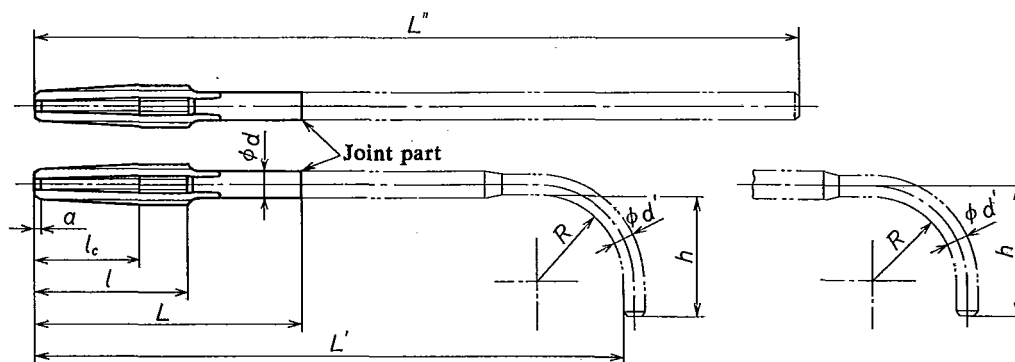
Unit: mm

Designation	Pitch	Overall length L	Length of threaded portion l				Shank diameter		$L' \times R \times h$ (Informative reference)	L'' ⁽¹⁾ (Informative reference)
			20 T	24 T	28 T	32 T	d	d' (Informative reference)		
M 22 $\times$ 1	1	146	—	24.0	28.0	— 32.0	20.0	18.6	480 $\times$ 65 $\times$ 80 520 $\times$ 65 $\times$ 75	585
M 24	3	165	60.0 —	72.0	84.0	—	20.0	18.5	480 $\times$ 65 $\times$ 80 520 $\times$ 65 $\times$ 75	585
M 24 $\times$ 2	2	165	—	48.0	56.0	— 64.0	21.0	19.4	480 $\times$ 65 $\times$ 80 520 $\times$ 65 $\times$ 75	585
M 24 $\times$ 1.5	1.5	165	—	36.0	42.0	— 48.0	21.5	19.9	480 $\times$ 65 $\times$ 80 520 $\times$ 65 $\times$ 75	585
M 24 $\times$ 1	1	165	—	24.0	28.0	— 32.0	22.0	20.4	480 $\times$ 65 $\times$ 80 520 $\times$ 65 $\times$ 75	585

Note ⁽¹⁾ L'' of straight shank shows that in the case where it is used by processing the bent shank at the user side.

- Remarks
1. The permissible deviation of l shall be js 17 specified in JIS B 0401.
 2. The permissible deviation of d shall be h 12 specified in JIS B 0401.
 3. The length l_c of lead-in part shall be, as a rule, 70 % of l .
 4. The chamfering length a of lead-in part shall be, as a rule, two threads.
 5. The number of flutes shall, according to designation, using conditions, etc., be 3, 4, 5 or 6.
 6. The overall length L , according to agreement between the parties concerned with delivery, may be made different dimension from that shown in the table.

Table 5. Shapes and Dimensions of Taps for Unified Screw Threads



- Remarks
1. The centre of threaded portion shall be protruding centre or centre hole.
 2. As to h of bent part, according to type of used machine, there are two classes.

Unit: mm

Designation	Pitch	Overall length L	Length of threaded portion l				Shank diameter		$L' \times R \times h$ (Informative reference)	L'' ⁽¹⁾ (Informative reference)
			20 T	24 T	28 T	32 T	d	d' (Informative reference)		
No. 3-48 UNC	0.5292	60	10.5	12.5	15.0	—	1.8	1.8	107 $\times$ 17 $\times$ 22	125
No. 3-56 UNF	0.4536	60	—	11.0	12.5	14.5	1.8	1.8	107 $\times$ 17 $\times$ 22	125
No. 4-40 UNC	0.6350	60	12.5	15.0	18.0	—	2.0	2.0	107 $\times$ 17 $\times$ 22	125
No. 4-48 UNF	0.5292	60	—	12.5	15.0	17.0	2.0	2.0	107 $\times$ 17 $\times$ 22	125