

No.121

Tapping Length

【Question】



I would like to specify the length of the internal thread on the drawing. How the appropriate thread length in general is? If the length is too long, it will be difficult to tap. If it is too short, I am worried that the thread strength will be insufficient.

【Answer】

JIS B 0209 specifies the "Thread engagement length" of the screw threads. In general, it is recommended to use the value of "Normal engagement length: N".
 For the actual values, please refer to the following table.



【Data】

The table below shows "The thread engagement length :Normal is shown by the Symbol:N" for Metric coarse threads.

Unit : mm

| Size | Engagement length : N | | Size | Engagement length : N | | Size | Engagement length : N | |
|-------------|-----------------------|---------------------|------------|-----------------------|---------------------|-----------|-----------------------|---------------------|
| | over | up to and including | | over | up to and including | | over | up to and including |
| M1 × 0.25 | 0.6 | 1.7 | M6 × 1 | 3 | 9 | M27 × 3 | 12 | 36 |
| M1.2 × 0.25 | 0.6 | 1.7 | M7 × 1 | 3 | 9 | M30 × 3.5 | 15 | 45 |
| M1.4 × 0.3 | 0.7 | 2 | M8 × 1.25 | 4 | 12 | M33 × 3.5 | 15 | 45 |
| M1.6 × 0.35 | 0.8 | 2.6 | M10 × 1.5 | 5 | 15 | M36 × 4 | 18 | 53 |
| M1.8 × 0.35 | 0.8 | 2.6 | M12 × 1.75 | 6 | 18 | M39 × 4 | 18 | 53 |
| M2 × 0.4 | 1 | 3 | M14 × 2 | 8 | 24 | M42 × 4.5 | 21 | 63 |
| M2.5 × 0.45 | 1.3 | 3.8 | M16 × 2 | 8 | 24 | M45 × 4.5 | 21 | 63 |
| M3 × 0.5 | 1.5 | 4.5 | M18 × 2.5 | 10 | 30 | M48 × 5 | 24 | 71 |
| M3.5 × 0.6 | 1.7 | 5 | M20 × 2.5 | 10 | 30 | M52 × 5 | 24 | 71 |
| M4 × 0.7 | 2 | 6 | M22 × 2.5 | 10 | 30 | M56 × 5.5 | 28 | 85 |
| M5 × 0.8 | 2.5 | 7.5 | M24 × 3 | 12 | 36 | M60 × 5.5 | 28 | 85 |

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Engagement length: N is between 0.5D and 1.5D (D = nominal diameter). So there is no need to make any longer, correct?

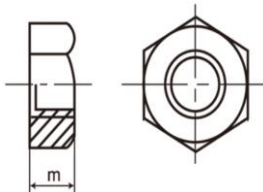


That's right. An engagement length of 1D is generally sufficient. 3D and 4D thread depths will only create problems for the operator. The length of the threads (K1) of the thread plug gage is also not very long.



As a reference, the thickness of a common hexagon nut (JIS B 1181) is listed below. They are all between 0.8D and 0.95D.

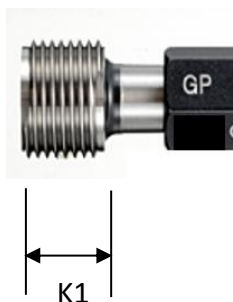
Unit : mm



| Size | m (Max) | Size | m (Max) | Size | m (Max) |
|-------------|---------|------------|---------|-----------|---------|
| M1.6 × 0.35 | 1.3 | M6 × 1 | 5.2 | M20 × 2.5 | 18.0 |
| M2 × 0.4 | 1.6 | M8 × 1.25 | 6.8 | M24 × 3 | 21.5 |
| M3 × 0.5 | 2.4 | M10 × 1.5 | 8.4 | M30 × 3.5 | 25.6 |
| M4 × 0.7 | 3.2 | M12 × 1.75 | 10.8 | M36 × 4 | 31.0 |
| M5 × 0.8 | 4.7 | M16 × 2 | 14.8 | M42 × 4.5 | 34.0 |

As specified in JIS B 3102, the length of the threaded section (K1) of a thread plug gage (GP) is also generally 1.5D or less.

Unit : mm



| Size | K1 | Size | K1 | Size | K1 |
|-------------|-----|------------|----|-----------|----|
| M1.6 × 0.35 | 3.5 | M6 × 1 | 8 | M20 × 2.5 | 20 |
| M2 × 0.4 | 4.5 | M8 × 1.25 | 12 | M24 × 3 | 24 |
| M3 × 0.5 | 4.5 | M10 × 1.5 | 12 | M30 × 3.5 | 28 |
| M4 × 0.7 | 6 | M12 × 1.75 | 16 | M36 × 4 | 32 |
| M5 × 0.8 | 8 | M16 × 2 | 16 | M42 × 4.5 | 40 |