# CLEARANCE HOLES FOR METRIC THREADED FASTENERS



## 1. Scope

1.1 This Recommended Practice presents clearance holes for metric threaded fasteners.

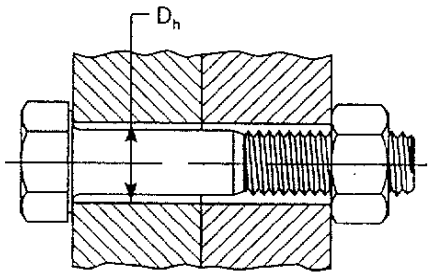
1.2 This Recommended Practice is in essential agreement with ISO 273. The differences are that the ISO standard does not include clearance holes for tapping screws and the recommended hole tolerances are slightly simplified over those suggested in the ISO standard.

## 2. Clearance Holes

2.1 Basic clearance hole diameters for bolts, screws and studs are given in Table 1, and for tapping screws in Table 2.

**Table 1 Clearance Holes for Bolts, Screws and Studs**

| Nom Fastener Size | $D_h$ — Clearance Hole Dia, Basic | | |
|---|---|---|---|
| | Close Clearance | Normal Clearance (Preferred) | Loose Clearance |
| 1.6 | 1.7 | 1.8 | 2.0 |
| 2 | 2.2 | 2.4 | 2.6 |
| 2.5 | 2.7 | 2.9 | 3.1 |
| 3 | 3.2 | 3.4 | 3.6 |
| 3.5 | 3.7 | 3.9 | 4.2 |
| 4 | 4.3 | 4.5 | 4.8 |
| 5 | 5.3 | 5.5 | 5.8 |
| 6 | 6.4 | 6.6 | 7.0 |
| 8 | 8.4 | 9.0 | 10.0 |
| 10 | 10.5 | 11.0 | 12.0 |
| 12 | 13.0 | 13.5 | 14.5 |
| 14 | 15.0 | 15.5 | 16.5 |
| 16 | 17.0 | 17.5 | 18.5 |
| 20 | 21.0 | 22.0 | 24.0 |
| 22 | — | 24.0 | — |
| 24 | 25.0 | 26.0 | 28.0 |
| 27 | — | 30.0 | — |
| 30 | 31.0 | 33.0 | 35.0 |
| 36 | 37.0 | 39.0 | 42.0 |
| 42 | 43.0 | 45.0 | 48.0 |
| 48 | 50.0 | 52.0 | 56.0 |
| 56 | 58.0 | 62.0 | 66.0 |
| 64 | 66.0 | 70.0 | 74.0 |
| 72 | 74.0 | 78.0 | 82.0 |
| 80 | 82.0 | 86.0 | 91.0 |
| 90 | 93.0 | 96.0 | 101.0 |
| 100 | 104.0 | 107.0 | 112.0 |



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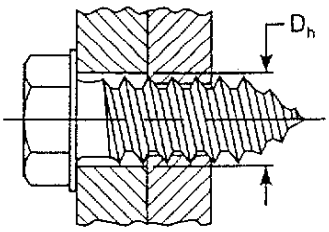


**Table 2 Clearance Holes for Tapping Screws**

| Nom Screw Size | $D_h$ — Clearance Hole Dia, Basic | | |
|---|---|---|---|
| | Close Clearance | Normal Clearance (Preferred) | Loose Clearance |
| 2.2<br>2.9<br>3.5 | 2.4<br>3.1<br>3.7 | 2.6<br>3.3<br>3.9 | 2.8<br>3.5<br>4.2 |
| 4.2<br>4.8<br>5.5 | 4.5<br>5.1<br>5.9 | 4.7<br>5.3<br>6.1 | 5.0<br>5.6<br>6.5 |
| 6.3<br>8.0<br>9.5 | 6.7<br>8.4<br>10.0 | 6.9<br>9.0<br>10.5 | 7.3<br>10.0<br>11.5 |

**2.1.1 Normal Clearance.** Normal clearance hole sizes are preferred for general purpose applications, and should be specified unless special design considerations dictate the need for either a close or loose clearance hole.

**2.1.2 Close Clearance.** Close clearance hole sizes should be specified only where conditions such as critical alignment of assembled parts, wall thickness or other limitations necessitate use of a minimal hole.

When close clearance holes are specified, special provision (e.g., countersinking) must be provided at the fastener entry side to permit proper seating of the head.

**2.1.3 Loose Clearance.** Loose clearance hole sizes should be specified only for applications where maximum adjustment capability between components being assembled is necessary.

**2.2 Recommended Tolerances.** The clearance hole diameters given in the tables are minimum sizes. Recommended tolerances for normal clearance holes are plus 0.2 mm for hole diameters 5.8 mm and smaller, plus 0.3 mm for hole diameters over 5.8 mm thru 18.5 mm, plus 0.4 mm for hole diameters over 18.5 thru 48.0 mm, plus 0.5 mm for hole diameters over 48.0 thru 78.0 mm, and plus 0.6 mm for hole diameters larger than 78.0 mm. Recommended tolerances for close clearance holes are 0.6 times the recommended tolerances for normal clearance holes and for loose clearance holes 1.5 times the tolerances recommended for normal clearance holes.

2.3 All dimensions are in millimeters.

***(IFI Note: At the time of this publication, ASME B18 was developing ASME B18.2.8, Clearance Holes for Bolts, Screws and Studs. This IFI standard will be withdrawn following its publication.)***