## SELECTION GUIDE

YG THREADING TOOLS

# HSS-PM, HSS-E & HSS YG TAP FORMING

- For Forming Ductile Materials

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOLE TYPE | | | | | | | Max. 3.0xD Blind /Through Hole | | | | | | | | | | | | | |
| TOOL MATERIAL | | | | | | | HSS-E | | | | | | | | | | | | | |
| CHAMFER LEAD | | | | | | | 4P-5P | | | | | | | | | | | | | |
| FLUTE TYPE | | | | | | | - | | | | | | | | | | | | | |
| SPIRAL FLUTE ANGLE | | | | | | | - | | | | | | | | | | | | | |
| SERIES | M | | | | | | Z8 (p.B289) | | ZA (p.B289) | | ZC (p.B289) | | | | | | | | | |
| | M/MF | | | | | | | | | | | | | | | | | | | |
| | UNC | | | | | | | | | | | | | | | | | | | |
| | UNC/UNF | | | | | | | | | | | | | | | | | | | |
| | UNC/UNF/UNS | | | | | | | | | | | | | | | | | | | |
| | UNC/UN8 | | | | | | | | | | | | | | | | | | | |
| | NPT | | | | | | | | | | | | | | | | | | | |
| | NPTF | | | | | | | | | | | | | | | | | | | |
| | NPS/NPSF | | | | | | | | | | | | | | | | | | | |
| SURFACE TREATMENT / COATING | | | | | | | Bright | | TiN | | TiCN | | | | | | | | | |
| MODEL | | | | | | |  | |  | |  | | | | | | | | | |

| ISO | VDI 3323 | Material Description | Composition / Structure / Heat Treatment | | HB | HRc | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | Non-alloy steel | About 0.15% C | Annealed | 125 | | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | |
| | 2 | | About 0.45% C | Annealed | 190 | 13 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | |
| | 3 | | About 0.45% C | Quenched & Tempered | 250 | 25 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | |
| | 4 | | About 0.75% C | Annealed | 270 | 28 | | | | | | | |
| | 5 | | About 0.75% C | Quenched & Tempered | 300 | 32 | ◎ | 6-30 | ◎ | 10-35 | ◎ | 10-35 | |
| | 6 | Low alloy steel | | Annealed | 180 | 10 | | | | | | | |
| | 7 | | | Quenched & Tempered | 275 | 29 | | | | | | | |
| | 8 | | | Quenched & Tempered | 300 | 32 | | | | | | | |
| | 9 | | | Quenched & Tempered | 350 | 38 | | | | | | | |
| | 10 | High alloyed steel, and tool steel | | Annealed | 200 | 15 | | | | | | | |
| | 11 | | | Quenched & Tempered | 325 | 35 | | | | | | | |
| M | 12 | Stainless steel | Ferritic / Martensitic | Annealed | 200 | 15 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | |
| | 13 | | Martensitic | Quenched & Tempered | 240 | 23 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | |
| | 14 | | Austenitic | | 180 | 10 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | |
| K | 15 | Grey cast iron | Pearlitic / ferritic | | 180 | 10 | | | | | | | |
| | 16 | | Pearlitic (Martensitic) | | 260 | 26 | | | | | | | |
| | 17 | Nodular cast iron | Ferritic | | 160 | 3 | | | | | | | |
| | 18 | | Pearlitic | | 250 | 25 | | | | | | | |
| | 19 | Malleable cast iron | Ferritic | | 130 | | | | | | | | |
| | 20 | | Pearlitic | | 230 | 21 | | | | | | | |
| N | 21 | Aluminum-wrought alloy | Not Curable | | 60 | | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | |
| | 22 | | Curable | Hardened | 100 | | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | |
| | 23 | Aluminum-cast, alloyed | ≤ 12% Si, Not Curable | | 75 | | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | |
| | 24 | | ≤ 12% Si, Curable | Hardened | 90 | | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | |
| | 25 | | > 12% Si, Not Curable | | 130 | | | | | | | | |
| | 26 | Copper and Copper Alloys (Bronze / Brass) | Cutting Alloys, PB>1% | | 110 | | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | |
| | 27 | | CuZn, CuSnZn (Brass) | | 90 | | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | |
| | 28 | | CuSn, lead-free copper and electrolytic copper | | 100 | | | | | | | | |
| | 29 | Non Metallic Materials | Duroplastic, Fiber Reinforced Plastic | | | | | | | | | | |
| | 30 | | Rubber, Wood, etc. | | | | | | | | | | |
| S | 31 | Heat Resistant Super Alloys | Fe Based | Annealed | 200 | 15 | | | | | | | |
| | 32 | | | Cured | 280 | 30 | | | | | | | |
| | 33 | | Ni or Co Based | Annealed | 250 | 25 | | | | | | | |
| | 34 | | | Cured | 350 | 38 | | | | | | | |
| | 35 | | | Cast | 320 | 34 | | | | | | | |
| | 36 | Titanium Alloys | Pure Titanium | | 400 Rm | | | | | | | | |
| | 37 | | Alpha + Beta Alloys | Hardened | 1050 Rm | | | | | | | | |
| H | 38 | Hardened steel | | Hardened | 550 | 55 | | | | | | | |
| | 39 | | | Hardened | 630 | 60 | | | | | | | |
| | 40 | Chilled Cast Iron | | Cast | 400 | 42 | | | | | | | |
| | 41 | Hardened Cast Iron | | Hardened | 550 | 55 | | | | | | | |



| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HOLE TYPE | | | | | | | Max. 3.0xD Blind /Through Hole | | | | | | | | | | | | | |
| TOOL MATERIAL | | | | | | | HSS-E | | | | | HSS | | | | | | | | |
| CHAMFER LEAD | | | | | | | 1.5P-2P | | | | | 4P-5P | | | | | 1.5P-2P | | | |
| FLUTE TYPE | | | | | | | - | | | | | - | | | | | - | | | |
| SPIRAL FLUTE ANGLE | | | | | | | - | | | | | - | | | | | - | | | |
| SERIES | M | | | | | | Z9 (p.B289) | | ZB (p.B289) | | ZD (p.B289) | | | | | | | | | |
| | M/MF | | | | | | | | | | | | | | | | | | | |
| | UNC | | | | | | | | | | | | | | | | | | | |
| | UNC/UNF | | | | | | | | | | | T7R01 (p.B290) | | T8R01 (p.B290) | | THR01 (p.B290) | | T7R02 (p.B291) | | T8R02 p.B291) | | THR02 (p.B291) | |
| | UNC/UNF/UNS | | | | | | | | | | | | | | | | | | | |
| | UNC/UN8 | | | | | | | | | | | | | | | | | | | |
| | NPT | | | | | | | | | | | | | | | | | | | |
| | NPTF | | | | | | | | | | | | | | | | | | | |
| | NPS/NPSF | | | | | | | | | | | | | | | | | | | |
| SURFACE TREATMENT / COATING | | | | | | | Bright | | TiN | | TiCN | | Bright | | TiN | | TiCN | | Bright | | TiN | | TiCN | |
| MODEL | | | | | | |  | |  | |  | |  | |  | |  | |  | |  | |  | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | 1 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 |
| | 2 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 |
| | 3 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 | ◎ | 25-50 | ◎ | 50-80 | ◎ | 50-80 |
| | 4 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | ◎ | 6-30 | ◎ | 10-35 | ◎ | 10-35 | ◎ | 6-30 | ◎ | 10-35 | ◎ | 10-35 | ◎ | 6-30 | ◎ | 10-35 | ◎ | 10-35 | ◎ | 6-30 | ◎ | 10-35 | ◎ | 10-35 |
| | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | | | | | | | | |
| M | 12 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 |
| | 13 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 | ◎ | 12-35 | ◎ | 20-50 | ◎ | 20-50 |
| | 14 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 | ○ | 12-15 |
| K | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | | | | | | | | | |
| N | 21 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 |
| | 22 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 | ◎ | 50-65 |
| | 23 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 |
| | 24 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 | ○ | 40-65 | ○ | 45-90 | ○ | 45-90 |
| | 25 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 26 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 |
| | 27 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 | ◎ | 30-65 |
| | 28 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 29 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 32 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 33 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 34 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 35 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 36 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 37 | | | | | | | | | | | | | | | | | | | | | | | | |
| H | 38 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 39 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 40 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 41 | | | | | | | | | | | | | | | | | | | | | | | | |

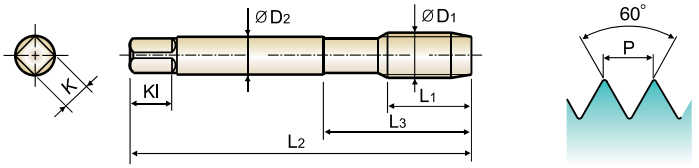
# YG TAP FORMING

**Z8/ZA/ZC SERIES**
**Z9/ZB/ZD SERIES**

## Forming Tap with Oil Groove Plug & Bottoming Style

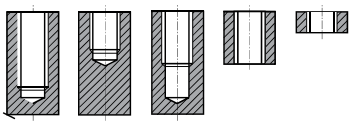
ANSI






Material groups **GV** | HSS-E | M | USCTI 302A | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN | TiCN | p.B280

Thread Depth / Hole Type 3.0×D



Unit : Inch

| Size D1 | Pitch P | EDP No. Plug Bright | Plug TiN | Plug TiCN | Limit | Overall Length L2 | Thread Length L1 | Neck Length L3 | Shank Diameter D2 | Square Size K | Square Length Kl | No. of Lobe |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M3 | 0.5 | Z8205 | ZA205 | ZC205 | D5 | 1.937 | .618 | .882 | .141 | .110 | .190 | 4 |
| M4 | 0.7 | Z8246 | ZA246 | ZC246 | D6 | 2.126 | .500 | .752 | .168 | .131 | .250 | 4 |
| M5 | 0.8 | Z8287 | ZA287 | ZC287 | D7 | 2.374 | .630 | .906 | .194 | .152 | .250 | 4 |
| M6 | 1.0 | Z8318 | ZA318 | ZC318 | D8 | 2.500 | .858 | 1.000 | .255 | .191 | .310 | 4 |
| M8 | 1.25 | Z8369 | ZA369 | ZC369 | D9 | 2.720 | .929 | 1.126 | .318 | .238 | .380 | 4 |
| M10 | 1.5 | Z8420 | ZA420 | ZC420 | D10 | 2.937 | .980 | 1.252 | .381 | .286 | .440 | 4 |
| M12 | 1.75 | Z850A | ZA50A | ZC50A | D11 | 3.374 | 1.000 | 1.594 | .367 | .275 | .440 | 4 |

Unit : Inch

| Size D1 | Pitch P | EDP No. Bottom Bright | Bottom TiN | Bottom TiCN | Limit | Overall Length L2 | Thread Length L1 | Neck Length L3 | Shank Diameter D2 | Square Size K | Square Length Kl | No. of Lobe |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M2 | 0.4 | Z9133 | ZB133 | ZD133 | D3 | 1.752 | .394 | - | .141 | .110 | .190 | 4 |
| M3 | 0.5 | Z9205 | ZB205 | ZD205 | D5 | 1.937 | .618 | .882 | .141 | .110 | .190 | 4 |
| M4 | 0.7 | Z9246 | ZB246 | ZD246 | D6 | 2.126 | .500 | .752 | .168 | .131 | .250 | 4 |
| M5 | 0.8 | Z9287 | ZB287 | ZD287 | D7 | 2.374 | .630 | .906 | .194 | .152 | .250 | 4 |
| M6 | 1.0 | Z9318 | ZB318 | ZD318 | D8 | 2.500 | .858 | 1.000 | .255 | .191 | .310 | 4 |
| M8 | 1.25 | Z9369 | ZB369 | ZD369 | D9 | 2.720 | .929 | 1.126 | .318 | .238 | .380 | 4 |
| M10 | 1.5 | Z9420 | ZB420 | ZD420 | D10 | 2.937 | .980 | 1.252 | .381 | .286 | .440 | 4 |
| M12 | 1.75 | Z950A | ZB50A | ZD50A | D11 | 3.374 | 1.000 | 1.594 | .367 | .275 | .440 | 4 |

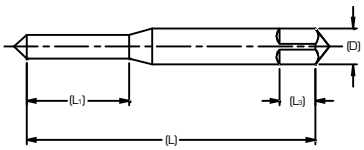
▶ Hardslick coating is available on your request (Bright Finish EDP No + H)

◎ : Excellent ○ : Good

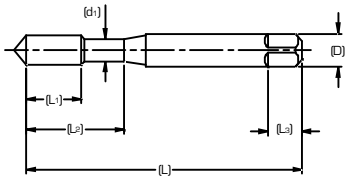
| ISO | P | | | | | | | | | | | M | | | K | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Description | Non-alloy steel | | | | | Low alloy steel | | | | High alloyed steel, and tool steel | | Stainless steel | | | Grey cast iron | | Nodular cast iron | | Malleable cast iron | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | | 13 | 25 | 28 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommended | ◎ | ◎ | ◎ | | ◎ | | | | | | | ◎ | ◎ | ○ | | | | | | |

| ISO | N | | | | | | | | | | S | | | | | | | H | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Description | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | | | Titanium Alloys | | Hardened steel | | Chilled Cast Iron | Hardened Cast Iron |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400 Rm | 1050 Rm | 550 | 630 | 400 | 550 |
| Recommended | ◎ | ◎ | ○ | ○ | | ◎ | ◎ | | | | | | | | | | | | | | |

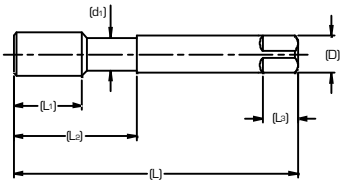
## STANDARD FORMING TAP DIMENSION



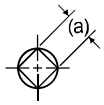

Blank Design (1)




Blank Design (2)




Blank Design (3)




### Forming Tap Blank (Inch)

| Nominal Size | Overall Length (L) | Thread Length ($L_1$) | Neck Length ($L_2$) | Shank Diameter (D) | Square Length ($L_3$) | Square Size (a) | Blank Design No. |
|---|---|---|---|---|---|---|---|
| #0 | 1.63 | .31 | – | .141 | .19 | .110 | 1 |
| #1 | 1.69 | .38 | – | .141 | .19 | .110 | 1 |
| #2 | 1.75 | .44 | – | .141 | .19 | .110 | 1 |
| #3 | 1.81 | .50 | – | .141 | .19 | .110 | 1 |
| #4 | 1.88 | .56 | – | .141 | .19 | .110 | 1 |
| #5 | 1.94 | .63 | – | .141 | .19 | .110 | 1 |
| #6 | 2.00 | .48 | .69 | .141 | .19 | .110 | 1 |
| #8 | 2.13 | .50 | .75 | .168 | .25 | .131 | 1 |
| #10 | 2.38 | .63 | .88 | .194 | .25 | .152 | 1 |
| #12 | 2.38 | .63 | .94 | .220 | .28 | .165 | 1 |
| 1/4 | 2.50 | .86 | 1.00 | .255 | .31 | .191 | 2 |
| 5/16 | 2.72 | .93 | 1.13 | .318 | .38 | .238 | 2 |
| 3/8 | 2.94 | .98 | 1.25 | .381 | .44 | .286 | 2 |
| 7/16 | 3.16 | .95 | 1.44 | .323 | .41 | .242 | 3 |
| 1/2 | 3.38 | 1.00 | 1.60 | .367 | .44 | .275 | 3 |
| 9/16 | 3.59 | 1.00 | 1.66 | .429 | .50 | .322 | 3 |
| 5/8 | 3.81 | 1.00 | 1.81 | .480 | .56 | .360 | 3 |
| 3/4 | 4.25 | 1.00 | 2.0 | .590 | .69 | .442 | 3 |

### Forming Tap Blank (Metric)

| Nominal Size | Overall Length (L) | Thread Length ($L_1$) | Neck Length ($L_2$) | Shank Diameter (D) | Square Length ($L_3$) | Square Size (a) | Blank Design No. |
|---|---|---|---|---|---|---|---|
| M2 | 1.75 | .40 | – | .141 | .19 | .110 | 1 |
| M3 | 1.94 | .63 | – | .141 | .19 | .110 | 1 |
| M4 | 2.13 | .50 | .75 | .168 | .25 | .131 | 1 |
| M5 | 2.38 | .63 | .88 | .194 | .25 | .152 | 1 |
| M6 | 2.50 | .86 | 1.0 | .255 | .31 | .191 | 2 |
| M8 | 2.72 | .93 | 1.13 | .318 | .38 | .238 | 2 |
| M10 | 2.94 | .98 | 1.25 | .381 | .44 | .286 | 2 |
| M12 | 3.38 | 1.00 | 1.60 | .367 | .44 | .275 | 3 |

# TECHNICAL DATA

## TAP DRILL SIZES - METRIC THREAD / FORMING TAPS

| Size | Pitch | | Minor dia. | | Tap Drill Diameter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | MF | Min. 6H | Max. 6H | 75% Thread | | 70% Thread | | 65% Thread | | 60% Thread | | 55% Thread | |
| | | | | | mm | Inch | mm | Inch | mm | Inch | mm | Inch | mm | Inch |
| M1 | 0.25 | – | 0.729 | 0.798 | 0.87 | .0344 | 0.88 | .0347 | 0.89 | .0350 | 0.90 | .0354 | 0.91 | .03569 |
| | – | 0.2 | 0.783 | 0.841 | 0.90 | .0354 | 0.90 | .0356 | 0.91 | .0359 | 0.92 | .0362 | 0.93 | .03643 |
| M1.1 | 0.25 | – | 0.829 | 0.898 | 0.97 | .0383 | 0.98 | .0386 | 0.99 | .0390 | 1.00 | .0393 | 1.01 | .03963 |
| | – | 0.2 | 0.883 | 0.941 | 1.00 | .0393 | 1.00 | .0396 | 1.01 | .0398 | 1.02 | .0401 | 1.03 | .04036 |
| M1.2 | 0.25 | – | 0.929 | 0.998 | 1.07 | .0422 | 1.08 | .0426 | 1.09 | .0429 | 1.10 | .0432 | 1.11 | .04356 |
| | – | 0.2 | 0.983 | 1.041 | 1.10 | .0432 | 1.10 | .0435 | 1.11 | .0438 | 1.12 | .0440 | 1.13 | .04430 |
| M1.4 | 0.3 | – | 1.075 | 1.159 | 1.25 | .0491 | 1.26 | .0495 | 1.27 | .0499 | 1.28 | .0503 | 1.29 | .05070 |
| | – | 0.2 | 1.183 | 1.241 | 1.30 | .0511 | 1.30 | .0514 | 1.31 | .0516 | 1.32 | .0519 | 1.33 | .05217 |
| M1.6 | 0.35 | – | 1.221 | 1.321 | 1.42 | .0560 | 1.43 | .0564 | 1.45 | .0569 | 1.46 | .0574 | 1.47 | .05784 |
| | – | 0.2 | 1.383 | 1.441 | 1.50 | .0590 | 1.50 | .0592 | 1.51 | .0595 | 1.52 | .0598 | 1.53 | .06005 |
| M1.7 | 0.35 | – | 1.321 | 1.421 | 1.52 | .0599 | 1.53 | .0604 | 1.55 | .0608 | 1.56 | .0613 | 1.57 | .06178 |
| | – | 0.3 | 1.375 | 1.459 | 1.55 | .0609 | 1.56 | .0613 | 1.57 | .0617 | 1.58 | .0621 | 1.59 | .06251 |
| | – | 0.25 | 1.429 | 1.498 | 1.57 | .0619 | 1.58 | .0622 | 1.59 | .0626 | 1.60 | .0629 | 1.61 | .06325 |
| | – | 0.2 | 1.483 | 1.541 | 1.60 | .0629 | 1.60 | .0632 | 1.61 | .0634 | 1.62 | .0637 | 1.63 | .06398 |
| M1.8 | 0.35 | – | 1.421 | 1.521 | 1.62 | .0638 | 1.63 | .0643 | 1.65 | .0648 | 1.66 | .0652 | 1.67 | .06571 |
| | – | 0.2 | 1.583 | 1.641 | 1.70 | .0669 | 1.70 | .0671 | 1.71 | .0674 | 1.72 | .0677 | 1.73 | .06792 |
| M2 | 0.4 | – | 1.567 | 1.679 | 1.80 | .0707 | 1.81 | .0712 | 1.82 | .0718 | 1.84 | .0723 | 1.85 | .07285 |
| | – | 0.25 | 1.729 | 1.798 | 1.87 | .0737 | 1.88 | .0741 | 1.89 | .0744 | 1.90 | .0747 | 1.91 | .07506 |
| M2.2 | 0.45 | – | 1.713 | 1.838 | 1.97 | .0776 | 1.99 | .0782 | 2.00 | .0788 | 2.02 | .0794 | 2.03 | .07999 |
| | – | 0.25 | 1.929 | 1.998 | 2.07 | .0816 | 2.08 | .0819 | 2.09 | .0823 | 2.10 | .0826 | 2.11 | .08293 |
| M2.3 | 0.4 | – | 1.867 | 1.979 | 2.10 | .0825 | 2.11 | .0831 | 2.12 | .0836 | 2.14 | .0841 | 2.15 | .08466 |
| | – | 0.35 | 1.921 | 2.021 | 2.12 | .0835 | 2.13 | .0840 | 2.15 | .0845 | 2.16 | .0849 | 2.17 | .08540 |
| | – | 0.25 | 2.029 | 2.098 | 2.17 | .0855 | 2.18 | .0859 | 2.19 | .0862 | 2.20 | .0865 | 2.21 | .08687 |
| M2.5 | 0.45 | – | 2.013 | 2.138 | 2.27 | .0894 | 2.29 | .0900 | 2.30 | .0906 | 2.32 | .0912 | 2.33 | .09180 |
| | – | 0.35 | 2.121 | 2.221 | 2.32 | .0914 | 2.33 | .0919 | 2.35 | .0923 | 2.36 | .0928 | 2.37 | .09327 |
| M2.6 | 0.45 | – | 2.113 | 2.238 | 2.37 | .0933 | 2.39 | .0939 | 2.40 | .0945 | 2.42 | .0951 | 2.43 | .09574 |
| | – | 0.35 | 2.221 | 2.321 | 2.42 | .0953 | 2.43 | .0958 | 2.45 | .0963 | 2.46 | .0967 | 2.47 | .09721 |
| M3 | 0.5 | – | 2.459 | 2.599 | 2.75 | .1081 | 2.76 | .1087 | 2.78 | .1094 | 2.80 | .1101 | 2.81 | .11075 |
| | – | 0.35 | 2.621 | 2.721 | 2.82 | .1111 | 2.83 | .1116 | 2.85 | .1120 | 2.86 | .1125 | 2.87 | .11296 |
| M3.5 | 0.6 | – | 2.850 | 3.010 | 3.19 | .1257 | 3.21 | .1266 | 3.23 | .1274 | 3.26 | .1282 | 3.28 | .12896 |
| | – | 0.35 | 3.121 | 3.221 | 3.32 | .1308 | 3.33 | .1312 | 3.35 | .1317 | 3.36 | .1322 | 3.37 | .13264 |
| M4 | 0.7 | – | 3.242 | 3.422 | 3.64 | .1434 | 3.67 | .1444 | 3.69 | .1453 | 3.71 | .1462 | 3.74 | .14717 |
| | – | 0.5 | 3.459 | 3.599 | 3.75 | .1474 | 3.76 | .1481 | 3.78 | .1488 | 3.80 | .1494 | 3.81 | .15012 |
| M4.5 | 0.75 | – | 3.688 | 3.878 | 4.12 | .1621 | 4.14 | .1631 | 4.17 | .1641 | 4.19 | .1651 | 4.22 | .16612 |
| | – | 0.5 | 3.959 | 4.099 | 4.25 | .1671 | 4.26 | .1678 | 4.28 | .1685 | 4.30 | .1691 | 4.31 | .16980 |
| M5 | 0.9 | – | 4.026 | 4.226 | 4.54 | .1788 | 4.57 | .1800 | 4.60 | .1812 | 4.63 | .1824 | 4.66 | .18360 |
| | 0.8 | – | 4.134 | 4.334 | 4.59 | .1808 | 4.62 | .1819 | 4.65 | .1829 | 4.67 | .1840 | 4.70 | .18507 |
| | – | 0.5 | 4.459 | 4.599 | 4.75 | .1868 | 4.76 | .1875 | 4.78 | .1881 | 4.80 | .1888 | 4.81 | .18949 |
| M6 | 1 | – | 4.917 | 5.153 | 5.49 | .2161 | 5.52 | .2175 | 5.56 | .2188 | 5.59 | .2202 | 5.63 | .22150 |
| | – | 0.75 | 5.188 | 5.378 | 5.62 | .2212 | 5.64 | .2222 | 5.67 | .2232 | 5.69 | .2242 | 5.72 | .22518 |
| | – | 0.5 | 5.459 | 5.599 | 5.75 | .2262 | 5.76 | .2269 | 5.78 | .2275 | 5.80 | .2282 | 5.81 | .22886 |
| M7 | 1 | – | 5.917 | 6.153 | 6.49 | .2555 | 6.52 | .2569 | 6.56 | .2582 | 6.59 | .2595 | 6.63 | .26087 |
| | – | 0.75 | 6.188 | 6.378 | 6.62 | .2605 | 6.64 | .2615 | 6.67 | .2625 | 6.69 | .2635 | 6.72 | .26455 |
| | – | 0.5 | 6.459 | 6.599 | 6.75 | .2656 | 6.76 | .2662 | 6.78 | .2669 | 6.80 | .2676 | 6.81 | .26823 |
| M8 | 1.25 | – | 6.647 | 6.912 | 7.36 | .2899 | 7.41 | .2915 | 7.45 | .2932 | 7.49 | .2949 | 7.53 | .29656 |
| | – | 1 | 6.917 | 7.153 | 7.49 | .2949 | 7.52 | .2962 | 7.56 | .2976 | 7.59 | .2989 | 7.63 | .30024 |
| | – | 0.75 | 7.188 | 7.378 | 7.62 | .2999 | 7.64 | .3009 | 7.67 | .3019 | 7.69 | .3029 | 7.72 | .30392 |
| | – | 0.5 | 7.459 | 7.599 | 7.75 | .3049 | 7.76 | .3056 | 7.78 | .3063 | 7.80 | .3069 | 7.81 | .30760 |
| M9 | 1.25 | – | 7.647 | 7.912 | 8.36 | .3292 | 8.41 | .3309 | 8.45 | .3326 | 8.49 | .3343 | 8.53 | .33593 |
| | – | 1 | 7.917 | 8.153 | 8.49 | .3343 | 8.52 | .3356 | 8.56 | .3369 | 8.59 | .3383 | 8.63 | .33961 |
| | – | 0.75 | 8.188 | 8.378 | 8.62 | .3393 | 8.64 | .3403 | 8.67 | .3413 | 8.69 | .3423 | 8.72 | .34329 |
| | – | 0.5 | 8.459 | 8.599 | 8.75 | .3443 | 8.76 | .3450 | 8.78 | .3456 | 8.80 | .3463 | 8.81 | .34697 |

# TECHNICAL DATA

| Size | Pitch | | Minor dia. | | Tap Drill Diameter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | MF | Min. 6H | Max. 6H | 75% Thread | | 70% Thread | | 65% Thread | | 60% Thread | | 55% Thread | |
| | | | | | mm | Inch | mm | Inch | mm | Inch | mm | Inch | mm | Inch |
| M10 | 1.5 | – | 8.376 | 8.676 | 9.24 | .3636 | 9.29 | .3656 | 9.34 | .3676 | 9.39 | .3696 | 9.44 | .37161 |
| | – | 1.25 | 8.647 | 8.912 | 9.36 | .3686 | 9.41 | .3703 | 9.45 | .3719 | 9.49 | .3736 | 9.53 | .37530 |
| | – | 1 | 8.917 | 9.153 | 9.49 | .3736 | 9.52 | .3750 | 9.56 | .3763 | 9.59 | .3776 | 9.63 | .37898 |
| | – | 0.75 | 9.188 | 9.378 | 9.62 | .3786 | 9.64 | .3796 | 9.67 | .3806 | 9.69 | .3817 | 9.72 | .38266 |
| | – | 0.5 | 9.459 | 9.599 | 9.75 | .3837 | 9.76 | .3843 | 9.78 | .3850 | 9.80 | .3857 | 9.81 | .38634 |
| M12 | 1.75 | – | 10.106 | 10.441 | 11.11 | .4373 | 11.17 | .4396 | 11.23 | .4420 | 11.29 | .4443 | 11.35 | .44667 |
| | – | 1.5 | 10.376 | 10.676 | 11.24 | .4423 | 11.29 | .4443 | 11.34 | .4463 | 11.39 | .4483 | 11.44 | .45035 |
| | – | 1.25 | 10.647 | 10.912 | 11.36 | .4473 | 11.41 | .4490 | 11.45 | .4507 | 11.49 | .4524 | 11.53 | .45404 |
| | – | 1 | 10.917 | 11.153 | 11.49 | .4524 | 11.52 | .4537 | 11.56 | .4550 | 11.59 | .4564 | 11.63 | .45772 |
| | – | 0.75 | 11.188 | 11.378 | 11.62 | .4574 | 11.64 | .4584 | 11.67 | .4594 | 11.69 | .4604 | 11.72 | .46140 |
| | – | 0.5 | 11.459 | 11.599 | 11.75 | .4624 | 11.76 | .4631 | 11.78 | .4637 | 11.80 | .4644 | 11.81 | .46508 |
| M14 | 2 | – | 11.835 | 12.210 | 12.98 | .5110 | 13.05 | .5137 | 13.12 | .5164 | 13.18 | .5191 | 13.25 | .52173 |
| | – | 1.5 | 12.376 | 12.676 | 13.24 | .5211 | 13.29 | .5231 | 13.34 | .5251 | 13.39 | .5271 | 13.44 | .52909 |
| | – | 1.25 | 12.647 | 12.912 | 13.36 | .5261 | 13.41 | .5278 | 13.45 | .5294 | 13.49 | .5311 | 13.53 | .53278 |
| | – | 1 | 12.917 | 13.153 | 13.49 | .5311 | 13.52 | .5324 | 13.56 | .5338 | 13.59 | .5351 | 13.63 | .53646 |
| | – | 0.75 | 13.188 | 13.378 | 13.62 | .5361 | 13.64 | .5371 | 13.67 | .5381 | 13.69 | .5391 | 13.72 | .54014 |
| | – | 0.5 | 13.459 | 13.599 | 13.75 | .5411 | 13.76 | .5418 | 13.78 | .5425 | 13.80 | .5431 | 13.81 | .54382 |
| M16 | 2 | – | 13.835 | 14.210 | 14.98 | .5898 | 15.05 | .5924 | 15.12 | .5951 | 15.18 | .5978 | 15.25 | .60047 |
| | – | 1.5 | 14.376 | 14.676 | 15.24 | .5998 | 15.29 | .6018 | 15.34 | .6038 | 15.39 | .6058 | 15.44 | .60783 |
| | – | 1 | 14.917 | 15.153 | 15.49 | .6098 | 15.52 | .6112 | 15.56 | .6125 | 15.59 | .6139 | 15.63 | .61520 |
| M18 | 2.5 | – | 15.294 | 15.744 | 16.73 | .6585 | 16.81 | .6618 | 16.90 | .6652 | 16.98 | .6685 | 17.07 | .67185 |
| | – | 2 | 15.835 | 16.210 | 16.98 | .6685 | 17.05 | .6712 | 17.12 | .6739 | 17.18 | .6765 | 17.25 | .67921 |
| | – | 1.5 | 16.376 | 16.676 | 17.24 | .6785 | 17.29 | .6806 | 17.34 | .6826 | 17.39 | .6846 | 17.44 | .68657 |
| | – | 1 | 16.917 | 17.153 | 17.49 | .6886 | 17.52 | .6899 | 17.56 | .6913 | 17.59 | .6926 | 17.63 | .69394 |
| M20 | 2.5 | – | 17.294 | 17.744 | 18.73 | .7372 | 18.81 | .7406 | 18.90 | .7439 | 18.98 | .7472 | 19.07 | .75059 |
| | – | 2 | 17.835 | 18.210 | 18.98 | .7472 | 19.05 | .7499 | 19.12 | .7526 | 19.18 | .7553 | 19.25 | .75795 |
| | – | 1.5 | 18.376 | 18.676 | 19.24 | .7573 | 19.29 | .7593 | 19.34 | .7613 | 19.39 | .7633 | 19.44 | .76531 |
| | – | 1 | 18.917 | 19.153 | 19.49 | .7673 | 19.52 | .7687 | 19.56 | .7700 | 19.59 | .7713 | 19.63 | .77268 |
| M22 | 2.5 | – | 19.294 | 19.744 | 20.73 | .8159 | 20.81 | .8193 | 20.90 | .8226 | 20.98 | .8260 | 21.07 | .82933 |
| | – | 2 | 19.835 | 20.210 | 20.98 | .8260 | 21.05 | .8287 | 21.12 | .8313 | 21.18 | .8340 | 21.25 | .83669 |
| | – | 1.5 | 20.376 | 20.676 | 21.24 | .8360 | 21.29 | .8380 | 21.34 | .8400 | 21.39 | .8420 | 21.44 | .84406 |
| | – | 1 | 20.917 | 21.153 | 21.49 | .8461 | 21.52 | .8474 | 21.56 | .8487 | 21.59 | .8501 | 21.63 | .85142 |
| M24 | 3 | – | 20.752 | 21.252 | 22.47 | .8846 | 22.57 | .8887 | 22.67 | .8927 | 22.78 | .8967 | 22.88 | .90071 |
| | – | 2 | 21.835 | 22.210 | 22.98 | .9047 | 23.05 | .9074 | 23.12 | .9101 | 23.18 | .9128 | 23.25 | .91543 |
| | – | 1.5 | 22.376 | 22.676 | 23.24 | .9148 | 23.29 | .9168 | 23.34 | .9188 | 23.39 | .9208 | 23.44 | .92280 |
| | – | 1 | 22.917 | 23.153 | 23.49 | .9248 | 23.52 | .9261 | 23.56 | .9275 | 23.59 | .9288 | 23.63 | .93016 |
| M26 | – | 3 | 22.752 | 23.252 | 24.47 | .9634 | 24.57 | .9674 | 24.67 | .9714 | 24.78 | .9754 | 24.88 | .97945 |
| | – | 2 | 23.835 | 24.210 | 24.98 | .9835 | 25.05 | .9861 | 25.12 | .9888 | 25.18 | .9915 | 25.25 | .99417 |
| | – | 1.5 | 24.376 | 24.676 | 25.24 | .9935 | 25.29 | .9955 | 25.34 | .9975 | 25.39 | .9995 | 25.44 | 1.00154 |
| M27 | 3 | – | 23.752 | 24.252 | 25.47 | 1.0028 | 25.57 | 1.0068 | 25.67 | 1.0108 | 25.78 | 1.0148 | 25.88 | 1.01882 |
| | – | 2.5 | 24.294 | 24.744 | 25.73 | 1.0128 | 25.81 | 1.0161 | 25.90 | 1.0195 | 25.98 | 1.0228 | 26.07 | 1.02618 |
| | – | 2 | 24.835 | 25.210 | 25.98 | 1.0228 | 26.05 | 1.0255 | 26.12 | 1.0282 | 26.18 | 1.0309 | 26.25 | 1.03354 |
| | – | 1.5 | 25.376 | 25.676 | 26.24 | 1.0329 | 26.29 | 1.0349 | 26.34 | 1.0369 | 26.39 | 1.0389 | 26.44 | 1.04091 |
| | – | 1 | 25.917 | 26.153 | 26.49 | 1.0429 | 26.52 | 1.0443 | 26.56 | 1.0456 | 26.59 | 1.0469 | 26.63 | 1.04827 |
| M30 | 3.5 | – | 26.211 | 26.771 | 28.22 | 1.1108 | 28.33 | 1.1155 | 28.45 | 1.1202 | 28.57 | 1.1249 | 28.69 | 1.12957 |
| | – | 3 | 26.752 | 27.252 | 28.47 | 1.1209 | 28.57 | 1.1249 | 28.67 | 1.1289 | 28.78 | 1.1329 | 28.88 | 1.13693 |
| | – | 2 | 27.835 | 28.210 | 28.98 | 1.1409 | 29.05 | 1.1436 | 29.12 | 1.1463 | 29.18 | 1.1490 | 29.25 | 1.15165 |
| | – | 1.5 | 28.376 | 28.676 | 29.24 | 1.1510 | 29.29 | 1.1530 | 29.34 | 1.1550 | 29.39 | 1.1570 | 29.44 | 1.15902 |
| | – | 1 | 28.917 | 29.153 | 29.49 | 1.1610 | 29.52 | 1.1624 | 29.56 | 1.1637 | 29.59 | 1.1650 | 29.63 | 1.16638 |