

## TAP DRILL SIZES FOR FORMING TAPS

### INCH

| Tap Size | Drill Size | Decimal Equivalent | Percentage of Thread |
|----------|------------|--------------------|----------------------|
| 0-80     | 1.35 mm    | 0.0531             | 75                   |
| 1-64     | 1.65 mm    | 0.0650             | 75                   |
| 1-72     | 1.65 mm    | 0.0650             | 75                   |
| 1-72     | 1.70 mm    | 0.0669             | 65                   |
| 1-72     | 51         | 0.0670             | 60                   |
| 2-56     | 1.95 mm    | 0.0768             | 75                   |
| 2-56     | 5/64       | 0.0781             | 65                   |
| 2-56     | 47         | 0.0785             | 60                   |
| 2-64     | 5/64       | 0.0781             | 75                   |
| 2-64     | 47         | 0.0785             | 70                   |
| 2-64     | 2.00 mm    | 0.0787             | 65                   |
| 3-48     | 2.25 mm    | 0.0886             | 75                   |
| 3-48     | 43         | 0.0890             | 70                   |
| 3-48     | 2.30 mm    | 0.0906             | 60                   |
| 3-56     | 43         | 0.0890             | 75                   |
| 3-56     | 2.30 mm    | 0.0906             | 65                   |
| 4-40     | 2.50 mm    | 0.0984             | 75                   |
| 4-40     | 39         | 0.0995             | 70                   |
| 4-40     | 38         | 0.1015             | 60                   |
| 4-48     | 38         | 0.1015             | 70                   |
| 4-48     | 2.60 mm    | 0.1024             | 65                   |
| 5-40     | 34         | 0.1110             | 75                   |
| 5-40     | 33         | 0.1130             | 70                   |
| 5-40     | 2.90 mm    | 0.1142             | 60                   |
| 5-44     | 33         | 0.1130             | 75                   |
| 5-44     | 2.90 mm    | 0.1142             | 70                   |
| 6-32     | 3.10 mm    | 0.1220             | 75                   |
| 6-32     | 1/8        | 0.1250             | 60                   |
| 6-40     | 1/8        | 0.1250             | 75                   |
| 6-40     | 3.20 mm    | 0.1260             | 70                   |
| 8-32     | 25         | 0.1495             | 75                   |
| 8-32     | 3.75 mm    | 0.1476             | 70                   |
| 8-32     | 3.80 mm    | 0.1496             | 65                   |
| 8-36     | 25         | 0.1495             | 75                   |
| 8-36     | 3.80 mm    | 0.1496             | 70                   |
| 8-36     | 24         | 0.1520             | 60                   |
| 10-24    | 4.25 mm    | 0.1673             | 75                   |
| 10-24    | 18         | 0.1695             | 70                   |
| 10-24    | 11/64      | 0.1719             | 65                   |
| 10-32    | 17         | 0.1730             | 75                   |
| 10-32    | 16         | 0.1770             | 60                   |
| 12-24    | 10         | 0.1935             | 75                   |
| 12-24    | 9          | 0.1960             | 70                   |
| 12-24    | 5.00 mm    | 0.1968             | 65                   |
| 12-24    | 8          | 0.1990             | 60                   |
| 12-28    | 5.00 mm    | 0.1968             | 75                   |
| 12-28    | 8          | 0.1990             | 70                   |
| 12-28    | 7          | 0.2010             | 60                   |
| 1/4-20   | 5.70 mm    | 0.2244             | 75                   |
| 1/4-20   | 1          | 0.2280             | 65                   |
| 1/4-28   | 5.90 mm    | 0.2323             | 75                   |
| 1/4-28   | A          | 0.2340             | 65                   |
| 1/4-28   | 15/64      | 0.2344             | 60                   |
| 5/16-18  | 7.20 mm    | 0.2835             | 75                   |
| 5/16-18  | 7.25 mm    | 0.2854             | 70                   |
| 5/16-18  | 7.30 mm    | 0.2874             | 65                   |
| 5/16-18  | L          | 0.2900             | 60                   |
| 5/16-24  | 7.40 mm    | 0.2913             | 75                   |
| 5/16-24  | 7.50 mm    | 0.2953             | 60                   |
| 3/8-16   | 8.75 mm    | 0.3445             | 70                   |
| 3/8-16   | 8.80 mm    | 0.3465             | 65                   |
| 3/8-24   | 9.00 mm    | 0.3443             | 70                   |
| 3/8-24   | T          | 0.3580             | 60                   |
| 7/16-14  | Y          | 0.4040             | 65                   |
| 7/16-20  | 10.50 mm   | 0.4134             | 70                   |
| 1/2-13   | 11.80 mm   | 0.4646             | 65                   |
| 1/2-20   | 12.00 mm   | 0.4724             | 75                   |
| 9/16-12  | 13.20 mm   | 0.5197             | 75                   |
| 9/16-18  | 13.50 mm   | 0.5315             | 75                   |
| 5/8-11   | 37/64      | 0.5781             | 75                   |
| 5/8-11   | 14.75 mm   | 0.5807             | 70                   |
| 5/8-18   | 19/32      | 0.5937             | 75                   |
| 5/8-18   | 15.25 mm   | 0.6004             | 65                   |
| 3/4-10   | 45/64      | 0.7031             | 65                   |
| 3/4-16   | 23/32      | 0.7187             | 70                   |

### METRIC

| Tap Size    | Drill Size | Decimal Equivalent | Percentage of Thread |
|-------------|------------|--------------------|----------------------|
| M3 x 0.5    | 7/64       | 0.1094             | 65                   |
| M3.5 x 0.6  | 3.20mm     | 0.1260             | 75                   |
| M4 x 0.7    | 27         | 0.1440             | 70                   |
| M4.5 x 0.75 | 4.10mm     | 0.1614             | 80                   |
| M5 x 0.8    | 4.60mm     | 0.1811             | 75                   |
| M6 x 1      | 5.50mm     | 0.2165             | 75                   |
| M7 x 1      | 6.50mm     | 0.2559             | 75                   |
| M8 x 1.25   | L          | 0.2900             | 75                   |
| M8 x 1      | 7.50mm     | 0.2953             | 75                   |
| M10 x 1.5   | 9.20mm     | 0.3622             | 75                   |
| M10 x 1.25  | U          | 0.3680             | 75                   |
| M12 x 1.75  | 7/16       | 0.4375             | 75                   |
| M12 x 1.25  | *0.447     | 0.4470             | 75                   |
| M14 x 2     | 13.00mm    | 0.5118             | 75                   |
| M14 x 1.5   | 13.20mm    | 0.5197             | 75                   |
| M16 x 2     | 15.00mm    | 0.5906             | 75                   |
| M16 x 1.5   | 15.25mm    | 0.6004             | 75                   |
| M18 x 2.5   | 16.75mm    | 0.6594             | 75                   |
| M18 x 1.5   | 17.25mm    | 0.6791             | 75                   |
| M20 x 2.5   | 47/64      | 0.7344             | 80                   |
| M20 x 1.5   | *0.757     | 0.7570             | 75                   |

\*Non-standard drill sizes - reaming of the hole may be necessary.

### PRACTICAL FORMULA - INCH SIZES

#### TO ESTABLISH TAP DRILL SIZES FOR INCH SIZE ROLL FORMING TAPS

$$\text{TAP DRILL SIZE} = \text{Basic Tap O.D.} - \frac{(.0068 \times \% \text{ of Thread Desired})}{\text{Threads Per Inch}}$$

$$(\text{EXAMPLE } 1/4\text{-}20 \text{ Tap with } 65\% \text{ Thread}) = .250 - \frac{(.0068 \times 65)}{20} = .228 \text{ Dia.}$$

### PRACTICAL FORMULA - METRIC SIZES

#### TO ESTABLISH TAP DRILL SIZES FOR METRIC SIZE ROLL FORMING TAPS

$$\text{TAP DRILL SIZE} = \text{Basic Tap O.D. (mm)} - \frac{(\% \text{ of Thread Desired} \times \text{mm Pitch})}{147.06}$$

$$(\text{EXAMPLE } M8 \times 1.25 \text{ Tap with } 65\% \text{ Thread}) = 8 - \frac{(65 \times 1.25)}{147.06} = 7.45 \text{ mm Dia.}$$

### APPLICATION

Forming Taps cold form threads in ductile materials such as brass, copper, aluminum and leaded steels as well as series 301 to 347 stainless steels. Thread size can be maintained closely since taps have no cutting edges. Unusually smooth threads can be formed throughout the full depth of the holes.