

【Question】



How I can calculate the hole size before tapping when I use a Spiral Fluted Tap size M12 x 1.5?

【Answer】

The best way is to check the hole size in a drill/tap table. (See the table below)
 You can also calculate it with a simple formula if there is no such table available. Note: The following suggestion is based on how to calculate the hole size of a **Cutting Tap** such as Spiral Fluted Taps (SP).



【Guide】

In case of Cutting Taps (SP, HT, and PO), the hole size can be calculated by using the following formula.

Hole size = Thread Size Major Diameter minus Thread Pitch

For a M12 x 1.5 Spiral Flute SP tap, the hole size before tapping can be calculated as

$$12\text{mm} - 1.5\text{mm} = 10.5\text{mm}$$

Hole size table for Cutting Taps

Size	Minor diameter (D ₁)		(Ref) Drill size
	Max.	Min.	
M 8X1.25	6.912	6.647	6.8
M 8X1	7.153	6.917	7.0
M 8X0.75	7.378	7.188	7.3
M10X1.5	8.676	8.376	8.5
M10X1.25	8.912	8.647	8.8
M10X1	9.153	8.917	9.0
M12X1.75	10.441	10.106	10.3
M12X1.5	10.676	10.376	10.5
M12X1.25	10.912	10.647	10.8
M12X1	11.153	10.917	11.0
M14X2	12.210	11.835	12.0
M14X1.5	12.676	12.376	12.5
M14X1	13.153	12.917	13.0
M16X2	14.210	13.835	14.0

You can also check the hole sizes in the table to the right.
 The hole size for M12 x 1.5 is defined from 10.376min to 10.676max.

This justifies the effectiveness of the 10.5mm calculated from the formula above.

【Remarks】

If you use the formula above to calculate the hole size for M8 x 1, you would use 8mm - 1mm = 7mm exactly.

A M12 x 1.75 is calculated as 12mm - 1.75mm = 10.25mm and is taken to a second decimal place.

The drill size for the same M12 x 1.75 can be calculated by the same formula but rounded up to a one decimal place or 10.3 to accommodate a standard drill size.

Special

The formula above should not be used when tapping with Roll Taps.

Example of Hole size table for Roll Taps.

Size	Class	Recommended hole size	
		Max.	Min.
M 8X1	G 7	7.59	7.48
M12X1.75	G 8	11.23	11.09
M12X1.5	G 8	11.34	11.22

The hole sizes for Roll Taps are defined differently from those used for Cutting Taps as Roll Taps produce internal threads through material deformation.

The hole sizes for tapping with Roll Taps can be calculated by using a different formula, but we will explain this at another time as it is a