

【Question】



I am currently tapping various materials using Spiral Fluted Taps. I occasionally have problems like Chipping of the tap, Tap Breakage, Tap welding among other issues. Are there ways to improve these situations ?

【Answer】

One solutions is to make the bored hole diameter as large as possible. I think if you adjust the bored hole to a larger and acceptable diameter, you may be able to solve all your problems.



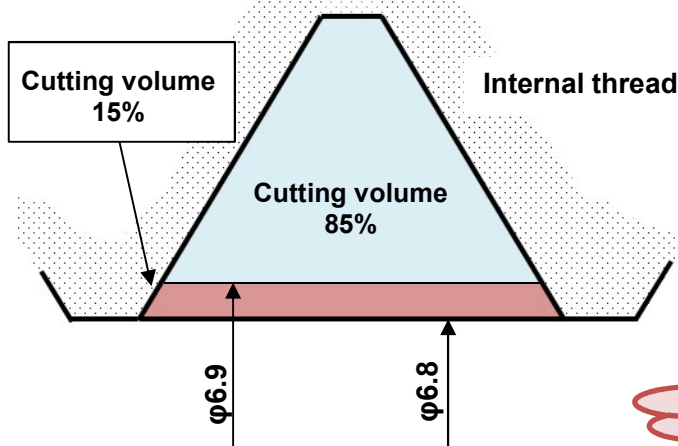
The bored hole diameter is usually an issue least emphasized.

By having a better understanding of the bored hole diameter, there is a possibility that your problems can be solved all at once.

【Improvement】



Isn't it true that there is only one bored hole diameter for each tap size? That is, in a M8x1.25 thread the bored hole can only be 6.8mm.



It is not universally stated that the bored hole for a M8x1.25 thread is a 6.8mm diameter. In standard 6H class and 2nd class internal threads the minor diameter is specified to be within the range of 6.912mm to 6.647mm. When tapping problems occur, the first solution is to enlarge the bored hole diameter as large as possible.

In a M8x1.25 thread, by adjusting the bored hole diameter from 6.8mm to 6.9mm the volume of chips decreases by 15%. Further, the tapping load decreases as well by 13%. Larger bored holes can decrease tap breakage and welding problems.



It is helpfull to enlarge the bored hole diameter by all means, isn't it ?



Table for bored hole diameters of main metric threads

Unit: mm

Size	Minor dia. of internal threads(D1)		Bored hole size (ref.)	Size	Minor dia. of internal threads(D1)		Bored hole size (ref.)
	Max.	Min.			Max.	Min.	
M1.4 X 0.3	(1.142)	(1.075)	1.13	M12 X 1.75	10.441	10.106	10.4
M1.6 X 0.35	1.321	1.221	1.30	M12 X 1.5	10.676	10.376	10.60
M1.7 X 0.35	1.421	1.321	1.40	M14 X 2	12.210	11.835	12.1
M2 X 0.4	1.679	1.567	1.65	M14 X 1.5	12.676	12.376	12.60
M2.5 X 0.45	2.138	2.013	2.11	M16 X 2	14.210	13.835	14.1
M3 X 0.5	2.599	2.459	2.56	M16 X 1.5	14.676	14.376	14.60
M4 X 0.7	3.422	3.242	3.38	M18 X 2.5	15.744	15.294	15.6
M5 X 0.8	4.334	4.134	4.28	M18 X 1.5	16.676	16.376	16.60
M6 X 1	5.153	4.917	5.09	M20 X 2.5	17.744	17.294	17.6
M8 X 1.25	6.912	6.647	6.85	M20 X 1.5	18.676	18.376	18.60
M10 X 1.5	8.676	8.376	8.60	M24 X 3	21.252	20.752	21.1
M10 X 1.25	8.912	8.647	8.85	M24 X 1.5	22.676	20.376	22.60

Use a bored hole diameter as close to the maximum minor diameter(D1) of internal threads as possible.