Bag full of wisdom when you are in trouble

No.127

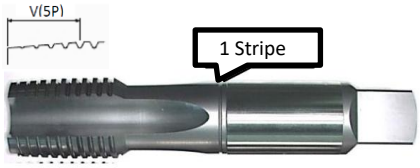
【Question】

I need to carry out tapping for M30 and larger sizes, but because the workpiece is so big, it can't be set on the machine, so I have to tap by hand. I've heard that using Incremental (Serial) taps make the process easier. Could you explain what incremental taps are?

【Answer】

For hand tapping with large-diameter taps, there is a method that allows the work to be done "easily," "accurately," and "stably" — the incremental taps. The incremental taps divide the thread cutting into three stages, so that tapping can be completed with less than half the usual tapping torque.

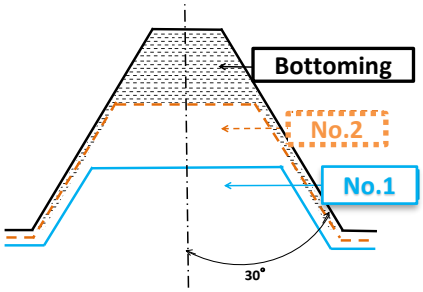
【Explanation】



Incremental Tap No.1

Incremental Tap No.2

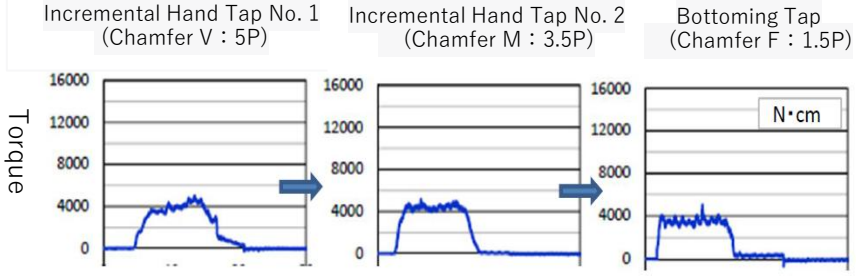
Bottoming Tap



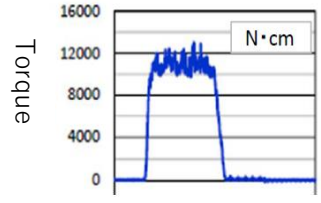
As shown in the photo above, the incremental tap is similar in shape to a standard hand tap, but the height of the screw thread's crest increases in three steps, as illustrated in the left diagram. Because of this, as you can see from the machining torque diagram below, the cutting torque of each tap is less than half that of a standard tap.The bottoming tap, meanwhile, is the same as a standard hand tap.

The machining torque diagram below compares tapping torque when machining SS400 material using M30 × 3.5 incremental taps (three-step process) and the tapping torque of a standard hand tap (single-pass process). You can see that the machining torque of each incremental tap is about one-third that of the standard hand tap.

Machining torque for Incremental Hand Tap (three-piece set)



Machining torque for standard HT
(Bottoming: 1.5P)



Incremental taps are made to order items. If you're having trouble with manual machining of large-diameter taps, please feel free to consult YAMAWA.