

Bag full of wisdom when you are in trouble

No. 026 How to avoid stop lines in PT internal screw threads

Helical Cutter

【Question】

Do you know how I can avoid generating stop lines when tapping internal taper screw threads with Pipe Thread PT taps? Our customer is requesting that we finish the threads without creating stop lines that appear on the threads surface.

【Request】

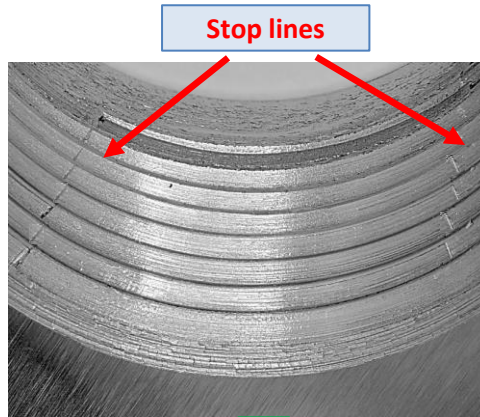
We recommend you use a Helical Cutter for a better surface finish.

【Example】

Tapping with the PT taps



Even under the best conditions where no fluctuations or misalignments exists, it is difficult to create a taper thread with a PT tap without producing stop lines. (See picture on the right.)

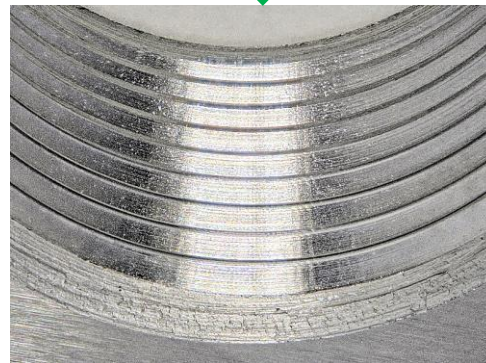


Tapping a tapered thread with a PT tap means cutting the internal thread to the correct length and thread depth with the threads on each flute of the tap. When the rotation of the tap is reversed, the thread tips of each land on each flute abruptly stop cutting the thread depth and the thread taper at the correct gage depth. This creates a stop line because the tap was interrupted in cutting the thread depth profile and the thread taper at the same time.

Cutting with the Helical Cutters



If you produce the taper thread with a Helical Cutter, you will not have a stop line problem as it creates the internal taper screw threads with a cutter that is smaller than the thread diameter by using the three axis movement of helical interpolation. This operation is similar to circular interpolation where the cutter cuts in a circular path except the thread lead is created with a third axis movement.



Cutting an internal taper screw thread with a Helical Cutter will never produce a stop line problem. The use of a Helical Cutter is limited to CNC machining centers equipped with a three axis of simultaneous movement and control function. It is not possible to use a Helical Cutter on a drilling machine or on non-CNC equipment.

It's good to learn that with Helical Cutters you can remove the problem of stop lines in internal taper screw threads!

【Advice】

Advantage of cutting with a Helical Cutter

- You can create different diameters of internal screw threads with a single Helical Cutter that has the same thread pitch.
- The same Helical Cutter can create both a right and a left thread using the machine movements and circular rotation.
- You will not encounter cutting chip problems as the Helical Cutter produces tiny chips.
- You can create large size threads with low-powered CNC machines.
- It's easy to make adjustments to the CNC program to cut undersize or oversize.
- You can create precise tapered screw threads with no stop lines that are not possible when cutting with PT taps.

