Selection Guide

Synchronous

With the advent of 32 bit microprocessors, modern machine tools have the capability of synchronizing the spindle rotation and spindle feed. This has made it possible to eliminate the spring compression and tension stroke utilized in traditional tapping heads. The advantage that this brings to threading is the speed the cycle can operate. The cost of building tapping heads has also been reduced by the elimination of the axial float mechanism.

Radial float is still a very important component of your threading operation. The absence of radial float will restrict the tap's ability to follow the drilled hole. The lack of radial float will force the tap to flex to meet the hole, or to cut like a mill, causing premature tap wear.

Parlec offers many solutions for synchronous tapping cycles. We recommend the use of our tension only tapping heads. This system will allow the tap to hard start, has radial float, a tension stroke to compensate for any spindle over rotation, and quick change of tap adapters. Any Parlec TA style tapping head can be adjusted or purchased as a tension only (TT). Parlec offers TR (tapping rigid) or FS (fixed shank) tapping heads in all of our non-torque controlled systems. These units have no tension or compression stroke but do offer radial float and quick change tap adapters. In addition, Parlec offers ER style tap collets with no float, and with tension and float. These are available to use with standard ER collet chucks and with ER tap collet adapters. (Use with a NUMERTAP® collet adapter provides radial float).

Tension & Compression

Tension and compression tapping heads have been the main stay of machine tool tapping for many years. Parlec offers a wide range and style of these heads. We offer the widely used BILZ-style as well as the rugged NUMERTAP® systems. Identified as (TA) in the part number.

Torque Control

Torque control tapping is still the best solution for protecting your taps and work pieces from tap breakage. Bottom tapping or close blind hole tapping where chip evacuation is a concern, are prime operations for torque control tapping. Parlec offers torque control tapping from #4 through 1". Refer to the following pages for more detailed information: NUMERTAP® 80, 700 and BILZ-style 1,2, and 3 with torque-controlled adapters.

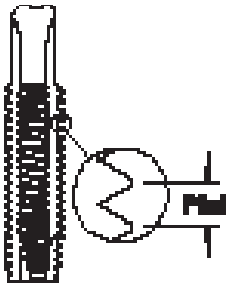
Rigid

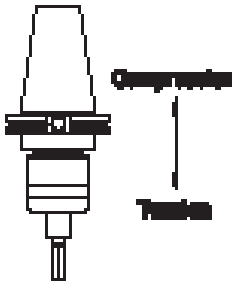
ER tap collets are available for use with NUMERTAP® adapters as well as with standard collet chucks. Loss of radial float will result with use in standard collet chucks. Poor tap life and thread quality may result. Parlec tapping units are also available as rigid or fixed shank units (TR, FS). These units provide radial float and quick-change adapters but are rigid in the axial stroke. Unlike standard collet chuck systems, they will still yield the benefits of quick change and radial float.

Selection Guide

Axial Feed

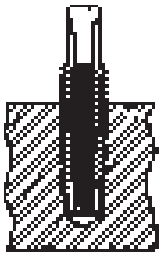
A thread is an inclined plane that is rolled into a cylinder. The distance between a point on the plane and the point directly above is the pitch of the thread. To cut a good thread the tap must be fed into the workpiece precisely on pitch. This makes a tap the only tool in metalworking in which the feed rate and the speed must be perfectly synchronized. For each revolution the tap makes it must advance the pitch. Retarding the tap's advance or pushing the tap will result in an incorrect thread form.





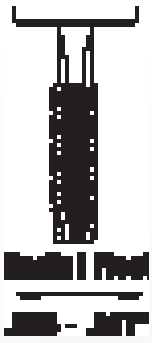
Tension Stroke

The tap is a precision ground cutting tool. To allow the tap to cut on pitch, NUMERTAP® tapping attachments feature a free floating tension stroke. When properly applied, the feed rate of the machine is slightly less than the pitch. The tension stroke in the NUMERTAP® will allow the tap to pull itself into the workpiece exactly on the pitch of the tap. This insures that the threads will gage properly.



Torque Control

A tap in one revolution must advance the pitch. If the tap is at the bottom of the hole or chip build-up blocks the hole and an effort is made to rotate the tool, catastrophic failure will result. The tool will break because there is no room to advance. To prevent this problem when tapping blind holes, select NUMERTAP® units 80 and 700, featuring torque control. Torque control tapping heads feature tension and compression strokes and perform best when programmed to underfeed.



Radial Float

Radial Float allows for misalignment between the machine spindle and the hole to be tapped. It also allows the tap to follow a drilled hole, reducing tap flank rub. This is (Incl.) with all Parlec tapping heads.

Tension Only (Synchronous & Depth Control)

The NUMERTAP®, 100, 200, 300, and 770 units can be purchased as tension only units. (TT). Tension only is the best solution for synchronous tapping. The tension stroke will not affect the cycle during its normal operation but will add a safety margin for tap elongation or spindle over-rotation. In a normal tapping cycle, tension only will improve thread depth control by creating a positive start system.

Axial Compression

The compression stroke cushions the tap as it enters the workpiece. This feature also allows holes to be retapped. This is particularly helpful when setting up a job. The compression stroke is adjustable from .000" to .250" to maximize depth control.