

Technical Tip #107 – Threading with Solid Carbide Taps

The use of carbide tooling has increased dramatically. The benefits include reducing costs by running tools longer and faster, while producing parts with greater precision. Carbide taps can provide the same benefits, which is advantageous for long production runs.

One of the most significant improvements made to carbide has been increased toughness. This has made carbide taps more practical than in the past.

Carbide taps should be run in rigid or synchronous CNC or lead screw machines with precise feed capability. Taps should be held rigidly or in synchronous holders with TG or TGHP collets, or hydraulic or shrink fit adapters.

If the tap has a driving square, use ER collets specifically designed for taps with a square-drive feature. Excessive movement may cause chipping or breakage. Therefore, tension-compression float holders and conventional quick-change tap adapters should be avoided.

Taps have a unique problem when exiting a hole, unlike drills. Because taps must reverse direction and back out of the hole, they encounter stringy or continuous cut chips. Through-coolant for blind-hole tapping is highly recommended to flush the chips from the hole. This prevents the chips from becoming entangled with the tap teeth and causing chipping and breakage. If the workpiece material produces very short, broken chips or powdery chips (such as with gray cast iron), through coolant is not required.

Because carbide taps are designed to run faster, machine tools should have at least 250 SFM or higher tapping speed capability.

NOTE: The machine tool's rated maximum RPM is usually for drilling and milling, not tapping. When tapping, the machine may be capable of only one-third of stated RPM value.