

TOOL HOLDER/COLLET MAINTENANCE

Collets

There is a limited life to any colleting system and all collets should be replaced on a regular basis. Collets should be inspected and cleaned during each tool change and checked for any metal damage such as bellmouthing or inside burrs. If damage is visible, the collet should be discarded and replaced. Clean collets using collet brushes and a cleaning solution like NU-TOOL™. Keep in mind that for every .0001 over TIR (total indicator runout meaning how much out of balance) you lose 10% of your tool life. Not to mention suffered cut quality, and shorter spindle life.

Collets can also be damaged without visible signs. The most common problem is metal fatigue. An easy way to see if metal fatigue has occurred is to insert the tool shank into the back of the collet and then try it in the front side. If the tightness is not the same both ways then the collet is fatigued and should be discarded. One major cause of collet metal fatigue is from overtightening. A tool holder tightening stand and torque wrench should always be used.

The loss of gripping pressure is a natural occurrence over time simply from use, but it also happens from heat generated by the cutting tool and also the spindle. The constant heating and cooling of the collet causes the fatigue which in turn causes the collet to lose its gripping power.

Collets should be replaced every 2 to 3 months based on an 8 hour work day. Replacing collets at the recommended time line will result in longer lasting tools, better cuts, and longer spindle service intervals.

Correct installation of the tool in the collet is of absolute importance. The tool must only be gripped on the shank part of the tool. Never should any part of the flute be inside the collet. The collet should be snapped into the nut before tightening or damage to the collet will occur.

Tool Holders

Tool Holders such as ISO 30, HSK 63F, HSK32E, and HSK25 have additional mating tolerances higher than those of the older style tapers. Because of this, these style tool holders can be more prone to runout caused by resin buildup. "Fretting" or "Bronzing" will cause inconsistent gripping in the taper and/or the flat mating surface and reduce consistency of tool life. If ignored, this will eventually cause premature spindle failure. The mating surfaces should be cleaned with NU-Tool Part 1™ and hand dried immediately afterwards. Apply NU-Tool part 2 to protect tool holders and collets from rusting. Tool holders should be replaced every 1-2 years depending on amount of use.

A contamination-free toolholder and machine tool spindle interface ensures toolholders properly seat at full taper contact and are pulled into the spindle taper at maximum force. With holders held and positioned accurately,

a machine's full power and tolerance capabilities can then effectively and safely transfer to cutting tools, while runout and vibration are reduced for superior part surface finish quality. Shops should clean and inspect toolholders and spindles after every job. Tool holders should be completely disassembled and cleaned.