

# ECONOMICAL FAMILY OF GROOVING AND THREADING TOOLS OFFER HIGHEST QUALITY



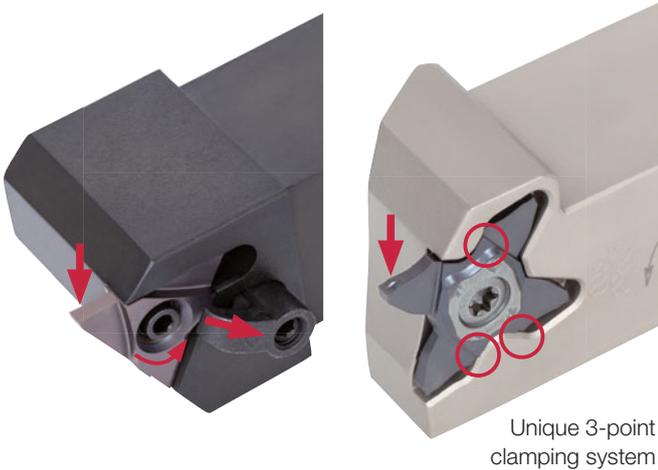
Tungaloy's TetraForce-Cut and TetraMini-Cut have transformed external grooving, part off and threading through considerable innovative advances in technology. The advantages when compared to conventional three cornered or dog-bone shaped grooving, part off and threading inserts offer overwhelmingly positive results.

**The unique insert design offers four cutting edges making this an economical option for part off, grooving and threading.**

Moreover, the benefits of this design go far beyond simple economics. The unique three-point clamping system insures high insert's stability during machining and precise repeatability of the cutting-edge position, every new corner change. This means more accurate parts, less offsets, excellent surface finish and stable tool life. The pocket in the tool is designed to protect the unused cutting edges from accidental damage caused by chips. Even in the unlikely event of catastrophic failure, the insert can still use all the other edges.



Since a conventional three-edged insert locates from only two points in a V shape pocket without a support under, the cutting forces works downwards without resistance causing to insert's displacement; this is leading to instability, reduced accuracy, poor surface finish, increased tool offsets and poor tool life. The TetraForceCut holder is completely encapsulated and locates on three points of contact, insuring accurate location stability of the insert. The insert locking screw can be accessed from either side of the tool making this an ideal choice for general turning or Swiss type machines.



Unique 3-point clamping system

**Unlike the most conventional three-edged grooving inserts the TetraForce-Cut insert has a “pressed in” chip-breaker, normally only found on two edged dog-bone type grooving tools.**

The deep-dimple chip breaker curls the chip and prevents downtime due to chip packing. The chip breaker has a negative land which provides extreme fracture resistance, while the deep dimple delivers low cutting forces, allowing higher feed rates and reduced cycle times.

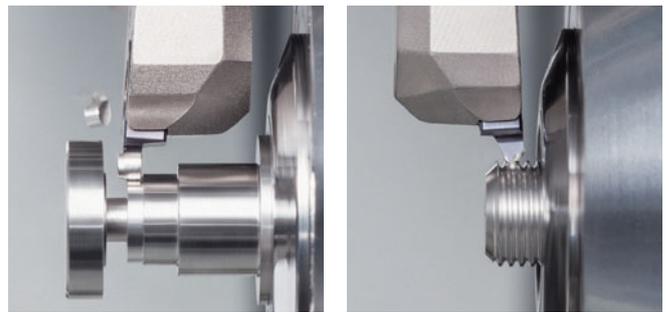
The TetraForce-Cut line is available in a width range of 0.5mm (0.02") to 3.18mm (0.125") with numerous standard widths within this range available off the shelf. This insert is capable of radial depths of up to 6.4mm (0.25"), far beyond the reach of conventional three-sided inserts. However, many grooves do not require the extreme depths attainable with TetraForce-Cut. This is the reason Tungaloy has introduced the TetraMini-Cut.



TetraMini-Cut has all of the benefits of the TetraForce-Cut but is smaller insert with same features and offers even greater economy. The insert's width varies from 0.33mm (0.013") to 3.0mm (0.12") with many widths within this range available as a standard, for grooving up to 3.5mm deep, matching or exceeding many three-edged grooving inserts.

TetraMini-Cut are suitable to Swiss type machines for small parts machining, offering a variety of tools ranging from 10mm (0.4") square shank, as well 20 (0.78") & 25mm (1") square shanks for standard lathe. TetraMini-Cut holders and inserts are also designed for machining next to shoulder, for higher efficiency.

Tetra mini inserts are available with small radii, extremely sharp cutting edges and positive free cutting geometries, making the TetraMini-Cut ideal for general threading, grooving and parting off small, thin walled parts.



To further enhance this family Tungaloy has produced these inserts in its proprietary grade AH7025. This grade begins with a carbide substrate designed exclusively for grooving and threading applications. The coating is Tungaloy's patented Nano-scale multi-layered AlTiN PVD coating. This multilayered coating offers extreme adhesion that prevents the coating from flaking off the carbide. The multi-layered coating impedes micro-cracks from spreading. The outer surface of the coating is smooth to prevent any build up on the cutting edge. All of these features combine to offer unprecedented tool life, even at accelerated speeds.

Both TetraForce-Cut and TetraMini-Cut holders are available with coolant through. This unique design delivers coolant directly to the cutting edge, extending tool life, improving chip control and improving surface finish.

TetraForce-Cut and TetraMini-Cut family of external grooving and threading offer an economical way of producing grooves and threads of the highest quality, repeatability and reliability.