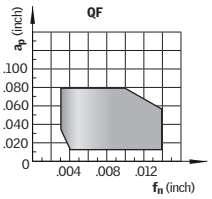
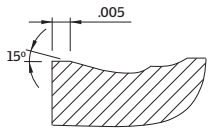
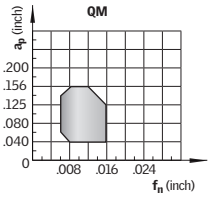
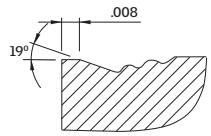
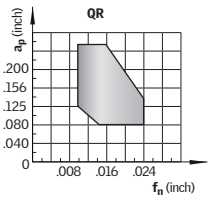
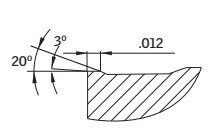
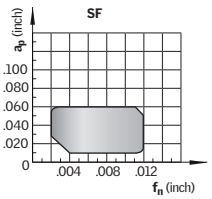
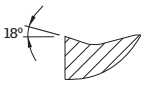
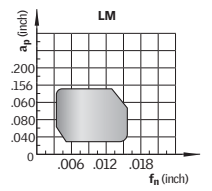
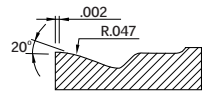
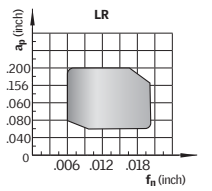
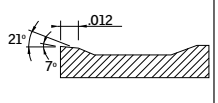
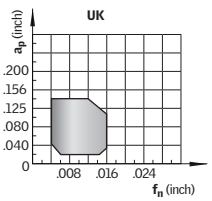
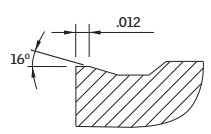
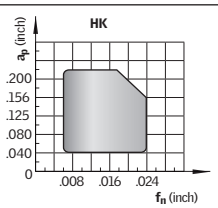
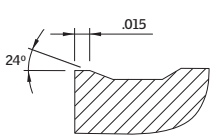
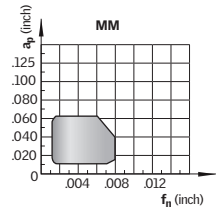
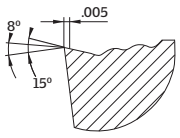
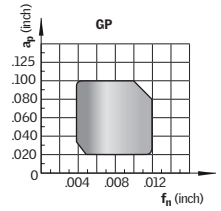
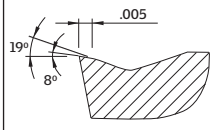
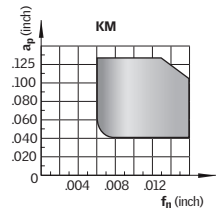
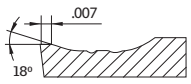
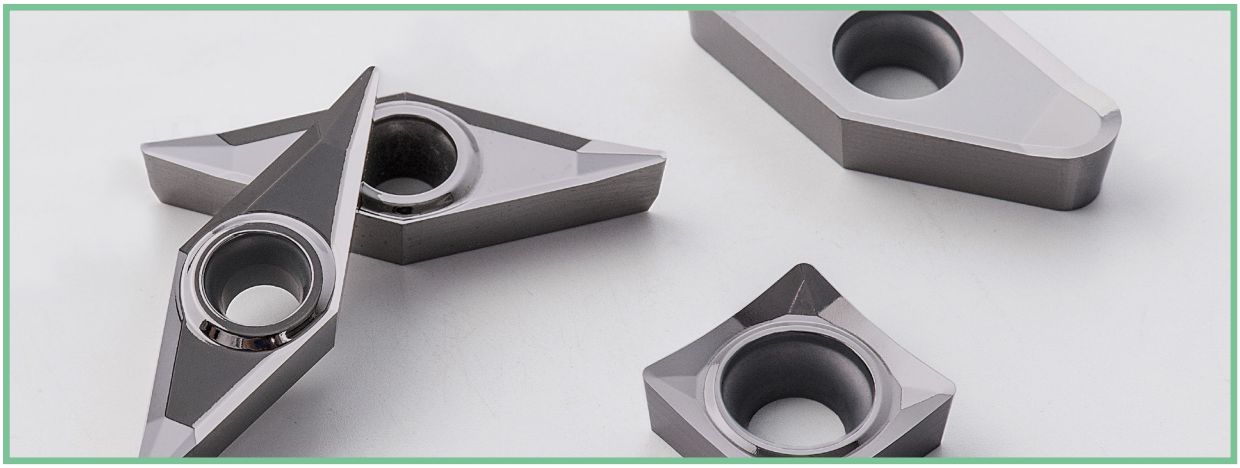
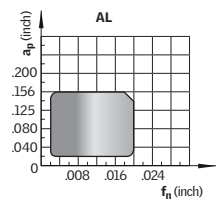
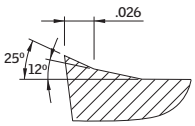
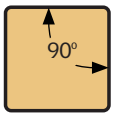
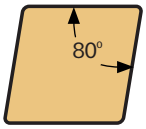
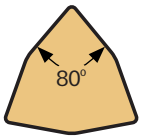
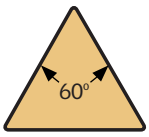
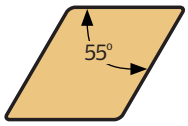
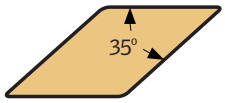
Chipbreaker	Description	Chipbreaker Range	Design
QF P STEEL	• Butterfly geometry directs chip flow • Variable Rake Angle • Curved Edgeline • Excellent chip control at small depths of cut • High quality surface finish		
QM P STEEL	• Smooth chip formation • Variable Land balances sharpness & strength • Strengthening ribs extend tool life • Wide application range • Low cutting forces with high edge strength • Excellent all-around performance		
QR P STEEL	• High performance steel roughing chipbreaker • Strong cutting edge • Well suited for unstable application conditions • First choice for medium to heavy interruptions • Excellent chip evacuation and chip control • Smooth chip removal throughout feed range		
SF M STAINLESS STEEL	• Ultra-sharp cutting edge • Low cutting forces • Excellent chip control at small depths of cut • Top land design protects against edge hammering • Smooth cutting action without burrs • Excellent workpiece surface finish		
LM M STAINLESS STEEL	• First Choice for all-round Stainless medium turning • Sophisticated edgeline reduces work hardening • Lower cutting forces via high edge sharpness • Precision micro-edge geometry optimized for Stainless Steel • Very wide application range		
LR M STAINLESS STEEL	• Highest performance for roughing in Stainless Steel • Unique "double-positive" chipbreaker • Optimized chip control at larger depths of cut • Reinforced edgeline for roughing		
UK K CAST IRON	• Lower cutting force geometry for Cast Iron • Strengthened edgeline with open chipformer • Designed for light to moderate applications • Good choice in unstable set-ups • Problem solver for boring Cast Iron		
HK K CAST IRON	• Outstanding performance in Cast Iron • Strong edge with free cutting action • Extremely broad application range • Replaces traditional – NMA flat-top inserts • Precision lapped support surface		

Chipbreaker	Description	Chipbreaker Range	Design
MM P M	• High performance finishing chipbreaker • Double-positive chipformer design • Exceptionally sharp cutting edge • Low cutting forces • Superior workpiece surface finish		
GP P M K	• Good All-Round geometry for Positive Inserts • Works in a broad range of materials • Double-positive chipformer design • Reduced top land for feedrates < .004" • 11º Style inserts primarily used for boring		
KM P K	• Roughing chipbreaker - tough and strong • High fracture resistance • Variable land cutting edge design • Smooth cutting action and chip flow • Exceptional performance in steel and cast iron		



AL chipbreaker inserts, for aluminum and other non-ferrous materials

AL N NON-FERROUS	• Ultra-sharp edge with polished rake face • Super Positive (25º) top rake • Free cutting and smooth chip flow • Ultra-low cutting forces • Resistant to Built-up-Edge		

Insert Shape	Application Conditions (+)	Considerations (-)
 **S** - Square	• Very strong 90° corner with excellent economy (8 edges on double-sided inserts). • Most often used for rough facing operations – especially on castings, forgings and rough-sawed blanks.	• Unable to turn or face up to a shoulder (must be used in a toolholder with minimum 5° lead angle). • High radial forces push against the workpiece when used for turning. • Should always be used in a stable set-up.
 **C** - 80° Diamond	• The most popular insert shape due to high versatility. • Strong cutting edge with secure seating in the insert pocket. • 80° corner can be used for both turning and facing operations. • Opposite 100° corners can be used for general roughing applications (especially facing), providing maximum economy of 8 total cutting edges.	• With only 5° of clearance between the trailing side of the insert and the workpiece, chip jamming can occur when boring.
 **W** - 80° Corner Trigon	• Six-corner 80° diamond shape that can increase economy compared to CNMG-style inserts. • Generally used on more moderate depths of cut and feedrates than CNMG-style inserts.	• Seating of insert in pocket is not as stable as CNMG-style inserts. • Cannot take as deep a depth of cut as similar sized CNMG-type inserts.
 **T** - Triangle	• Very versatile insert shape – can be used for turning, facing, boring, copy turning and basic profiling. • Good economy with up to 6 cutting edges. • Excellent choice for general boring due to very stable seating of the insert in the boring bar pocket, and extra side clearance between the insert and the workpiece bore (greatly reducing the risk of chip jamming).	• Edge is measurably weaker than 80° diamond shaped inserts. • Be sure not to use a triangle insert that is "too large" for the application, as the cost per edge can increase. For example, a 3/8" iC (Inscribed Circle) triangle insert (TNMG-33x) can manage up to .375" depth of cut in most situations with nearly the same insert strength – but a much lower cost - than a 1/2" iC triangle insert (TNMG-43x).
 **D** - 55° Diamond	• Generally the first choice for profile / copy turning applications. • Able to "In-Copy" (plunge turn into a smaller diameter) at an angle of 30°. • Commonly used when machining close to the tailstock / live center.	• Somewhat weaker edge strength than a triangle insert. • Cost per edge is higher than most other turning inserts (except 35° diamond shape).
 **V** - 35° Diamond	• First choice for intricate shape copy turning. • Can "In-Copy" (plunge turn into a smaller diameter) at an angle up to 49°. • Can work extremely close to the tailstock / live center.	• The weakest turning insert shape / corner – depths of cut and feedrates must be lighter. • Highest cost per edge. • Negative style (VNMG) should mainly be used for external applications. • Positive style (VCMT) can be used for external and internal applications, and in many cases improved performance outweighs the increased cost per edge (2 edges vs. the 4 edges of a negative 35° diamond VNMG).