Newsletter
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SUMITOMO
CARBIDE - CBN - DIAMOND

Sumitomo Electric Carbide Manufacturing, Inc.
MASTER TOOL DIVISION
INNOVATORS OF SPECIAL DESIGN & BUILD TOOLING SYSTEMS
210 RIVER ST. * GRAND RIVER * OH * 44045
Ph. 440.354.0600 * FAX: 440.354.6372
WEB: MTCTOOLS.COM * EMAIL: admin@mtctools.com

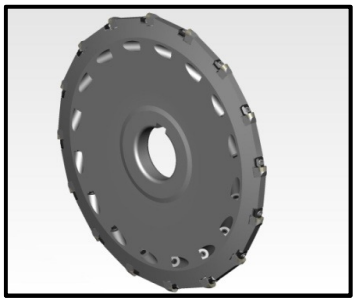

Fig. 1

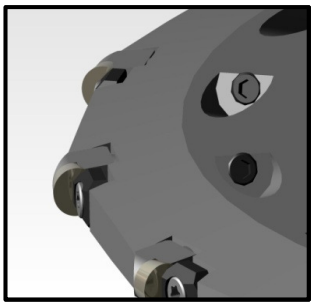

Fig. 2

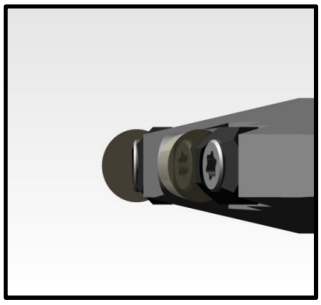

Fig. 3

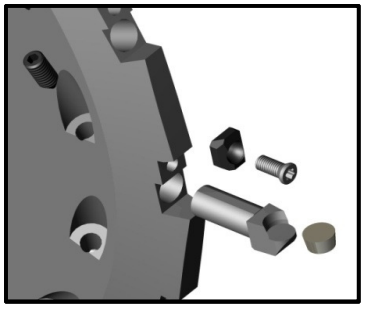

Fig. 4

Mike Rollins, the Sumitomo sales supervisor in the Michigan region has been working with a company that builds balancing machines for high production components. This company manufactures machines that make a **"balance cut"** on each of the finished parts. These finished parts rotate at high speeds (such as brake calipers and yokes) and must be perfectly balanced before they are assembled into vehicles.

One particular machine that this machine builder was working on had a very specific requirement for the final balance cut. The cut on the part had to be a 6mm radius cut using a slotting cutter **(See FIGs. 1, 2 &3)**. It needed to be a radius cut to ensure there were no sharp edges on the part. The cut on each part would vary in depth based on the calculations the machine made for the balance on the part. This, in itself, was not too difficult as there are standard 6mm round inserts using a torx screw that could have been used. What made it unique was the end users' requirement to use a 6mm round Silicon Nitride (Ceramic) insert with no hole based on his past successes cutting this material.

Slotting cutters by nature are very thin and most slotting cutters use an insert that has a two-wall pocket so that the insert can be pulled back into the cutter. Rigidly is critical since the cutter body is very narrow. The fact that the customer wanted to use a 6mm round insert without a hole presented a unique problem for the Master Tool designers. This problem was **"how do we hold the insert so it does not move"?**

Conventional steel wedges have had some success but without two walls to pull against and the very slippery surface on Silicon Nitride the chances of the insert moving in the cut was very high.

This is where the designers started to think **"out of the box"**. They knew that Master Tool has a valve seat tool design (the only patented valve seat tool in the world) that utilized a insert cartridge with a round, ground shank (narrow). This cartridge design also utilized a "carbide" wedge to hold the CBN insert used in valve seating. CBN has the same "slippery" tendencies that Silicon Nitride has and the carbide wedge was 10 times better than steel in holding the insert firmly in the pocket.

There was one additional advantage to using this cartridge design - it was adjustable radially **(See Fig. 4)**. By using this cartridge design it allowed the customer to adjust all of his inserts radially to ensure that they all tracked equally - something rarely seen in slotting cutters. This would provide the maximum tool life and ensure that there was no "high" insert in the cut. The use of a Carbide wedge also eliminated any **"chip wash"** that is a traditional problem with slotting cutters.

Lastly, the customer was extremely impressed with the set up manual that we provided with the cutter (see separate attachment). He made a point to tell us that this separated us from our competition.