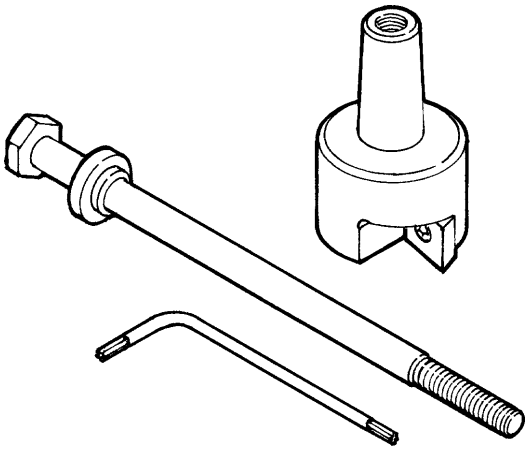

SHERLINE PRODUCTS
INCORPORATED 1974

CARBIDE INSERTED TIP FLY CUTTER
P/N 7620

Use of the inserted tip fly cutter

The single-flute inserted carbide tip fly cutter is a good compromise between a fly cutter and an end mill. Fly cutters are good for cutting an entire surface, and end mills are slow when used for milling a large, flat surface but allow you to cut to a shoulder. The inserted tip fly cutter allows you to cut a path 1-1/8" (28.58mm) wide and still cut up to a 90° shoulder.

The insert has two cutting edges which makes it a good buy despite the slightly higher price compared to a single-edged cutting tool. In addition, it is carbide, making it possible to cut tough materials such as stainless steel at high RPM.

The importance of eye protection when using a fly cutter

Before I go any further, I must stress the importance of wearing face and eye protection when using cutting tools of this type. They are designed to "throw" the chip and also need higher RPM to cut properly. They are usually making interrupted cuts (cuts off the edge of a piece), and the extra RPM makes for lower shock on the carbide insert. Operators of miniature machines have more of a tendency to get their faces close to the work and often have far less respect for the cutting process than perhaps they should. Getting hit in the eye or face by a chip thrown from a Sherline mill is exactly the same as getting hit by one thrown from a 2-ton machine! The chips are also very hot and always seem to end up where they can inflict the most pain. For your own good, please take my advice:

ALWAYS WEAR EYE PROTECTION!
Rig up a shield or wear face protection or both.
Use common sense and extra caution.

INSTRUCTIONS FOR USE

Before taking any cut, make sure the work is held properly. If the work moves while it is being cut, the cut will usually get progressively heavier until something unpleasant happens. Unlike working with wood, metal machining requires much attention to the "setup". Insert tools and their holders are relatively expensive, so why put them at risk with a shaky setup?

If you are cutting non-ferrous materials, run the spindle at maximum RPM and start with a .020" (.5mm) depth of cut. Feed the tool fast enough so that it is always cutting. The most common error beginners make is not feeding the cutter fast enough. Each revolution of the spindle should produce one "curly" chip, and remember, it will be a hot one!

For cutting steels, the RPM will end up some place between half and full speed on a Sherline mill. Start with .015" (.38mm) depth of cut and find the RPM and feed rate that works best for your particular material. There shouldn't be any excessive vibration, but you should keep track of the Z-axis. Even with it locked down, keep one hand on the Z-axis handwheel while you are cutting if you think it may tend to move.

You should be able to obtain a good finish on the part with this type of cutter. If you can't, try increasing the RPM a little if you are not already running at maximum speed. A small amount of cutting oil should help, but it isn't necessary to flood the part and make a mess. Oil helps keep the material you are cutting from sticking to the cutting tool. RPM has somewhat the same effect, which is the reason for using higher RPM with carbide tools.

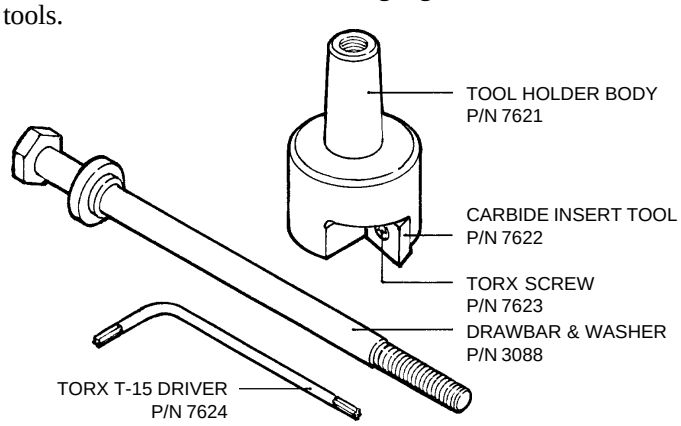

FIGURE 1—Replacement carbide insert tools are available from Sherline and from other sources. The Valenite part number for the tool is CPMW 32.51.

You must be extra careful when cutting to a shoulder with this tool. Use the dials with care so that you don't end up with the entire cutting edge of the tool against the shoulder.

If this is your first experimentation with insert tools, you will soon understand why 80% or more of the metal removed in modern machine shops is removed with carbide insert tools. Properly used, they can provide good finishes and speed up many previously time-consuming jobs by eliminating much of the time spent sharpening conventional tools when working with hard to machine materials.

Joe Martin, President and Owner
Sherline Products Inc.

SHERLINE PRODUCTS INC. 2350 Oak Ridge Way Vista California 92083-8345 FAX: (760) 727-7857
Toll Free Order Line: (800) 541-0735 International/Local/Tech. Assistance: (760) 727-5857 Internet: www.sherline.com