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Improved Aluminum Knife Plans

Even though the Olfa scoring knife gets the job done when cutting aluminum sheet, I kept thinking there must be a much better way to cleanly cut out aluminum sheet. Knife blades are designed to cut soft and flexible materials. When we use an Olfa or utility knife blade to cut T6 tempered aluminum, the aluminum resists spreading at the cut line and requires many repeated scores. Even though the aluminum is thin, the blade must cold flow the material before it is scored enough to snap. Also, the hardened aluminum dulls the steel blade quickly.

In industry, if hardened aluminum cannot be sheared, a cutter or saw tooth removes aluminum chips to cut through. I have designed an improved aluminum knife that uses a long lasting carbide “thin bit” lathe insert to cut sheet aluminum much faster.

A carbide cutter is mounted in the handle of an 8” crescent wrench with a little modification. This uses a carbide “Thin bit” cutter insert in a handle to make a better aluminum knife. The carbide lathe bit cutting edge is only .019” thick and this makes a clean cut chip of .005 - .010” thick per stroke – much faster than the Olfa knife. The carbide cuts aluminum like butter and the insert should stay sharp for an entire aluminum airplane!

If the first cutting edge gets dull or chipped, remove the screw and rotate the other cutter into position. Because carbide is brittle, be careful not to twist or side load the cutter. To make a cushioned grip, cut a 4 ½ “ long piece of ¾” ID rubber hose and slip on to the handle. The tool costs $ 28 – 37 to make and it saves a lot of time building your plane.
1. Purchase an inexpensive 8" crescent wrench. Cut off at the narrowest point close to the head at a 110 degree angle, referencing the bottom of the wrench.

2. Order the carbide grooving insert from MSC Industrial Supply (www.mscdirect.com). For right handers, order (1) PN 78677408 - .019" wide carbide grooving insert, RH. For left handers, order (1) PN 78677507 - .019" wide carbide grooving insert, LH. This costs about $17.88 each. If you have access to a 4-40 US tap, you can make your own hold down screw using a 4-40 socket head cap screw (SHCS) x ¼" or 3/8" long. If not, order the metric hold down screw (1) PN 78685997 ($ 3.27 ea) and a M3 x 0.5 metric tap (1) PN 04991204 ($5.50 ea).

3. Follow the drawing shown below for a right hand aluminum knife with the carbide cutter insert mounted on the right side of the handle. For the left hand version, make the groove holding the insert on the other side and use the LH insert.

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**IMPROVED ALUMINUM KNIFE HANDLE**

**BY Larry Zepp**

MILL, SAW, FILE GROOVE FOR CARBIDE THIN BIT
APPROX. 0.07" DEEP

DRILL & TAP FOR SCREW
CHAMF. 0.06/.07" DEEP

SEE NOTES

HANDLE OF AN 8" CRESSENT WRENCH - CUT OFF CLOSE TO HEAD
4. Locate the hole position and center punch. If you are using a 4-40 SHCS, use a 3/32 or # 43 tap drill. You can use a #40 tap drill for the M3 metric screw. Drill and tap, then chamfer the thread .06/.07” deep for clearance and deburr. Locate the insert at 110 deg. from the bottom of the handle with the screw hand tight. Mark the clearance groove for the .278” wide carbide insert with a fine point sharpie or measure .145” on either side of the hole center and scribe.

5. Mill, grind or file the groove in the handle to support the width of the insert approx. .070 deep or depth needed to slot the handle ribs and clean up the center surface of the wrench handle. Test fit the insert with the screw. If the carbide insert does not have a flat shoulder to support it, file, grind or re-machine the groove to fit.
6. If you are making your hold down screw using a 4-40 SHCS, use a short piece of 3/16 rod to make a holder for filing or grinding the chamfer. Tap the rod center with a 4-40 thread. Thread the 4-40 SHCS into the rod and chuck the rod in a drill press or cordless drill. Use a file or grinding stone to make a 90 deg. chamfer in the head of the screw to match the insert chamfer.

7. If you are using the metric hold down screw, it is tightened with a T-8 Torx bit.

8. Mount the insert in the handle and tighten the screw. If the insert is not clamped tight, the thread chamfer is not deep enough or the groove surface is not flat. With the insert held tight, this improved aluminum knife will make a clean cut chip of .005 - .010" thick per stroke. If the first cutting edge gets dull or chipped, loosen the screw and rotate the other cutter into position. Because carbide is brittle, be careful not to twist or side load the cutter. To make a cushioned grip, cut a 4 ½ “ long piece of ¾” ID rubber hose and slip on to the handle. The tool costs $ 28 – 37 to make and it saves a lot of time building your plane.

Best Regards and Happy Building,

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