

Making hollowing tools (Dennis Ford)

These are my small hollowing tools:

Top down;

* first three are “swan neck” with 3/8” shank and 1/8” cutters

* next is a scraper on 1/2” shank

* next is 3/16” square cutter on 1/2” shank (not home-made)

* last is a straight tool with 1/4” square cutter on 5/8” shank.



Larger hollowing tools: (All of these have 3/4” shanks)

* Sorby arm brace

* hook tool

* straight scraper

* swan neck scraper

* 2 swan neck tools with 3/16” square cutters

* straight tool with 1/4” square cutter.



Most people will not need that many but making tools can be addictive.

Square vs Round cutters:

I have and use both and find little difference in actual use. Differences do show up during construction and sharpening. Round cutters fit easily into drilled holes but are slightly more difficult to sharpen. Making a hole that snugly fits a square cutter is quite a bit more trouble.

The 3/8" shanks are good for hollow forms with small openings. It is very difficult to make the opening less than twice the size of tool shank. Early efforts should have much larger openings. The shank is hardware store steel rod, ("Cold Rolled Steel" is slightly easier to drill if you can find that). The small shank requires a small cutter (I use 1/8" round cutters available here: <http://www.mcmaster.com/#drill-rods/=qc8tvr>). The cutter is simply glued in with CA glue. The cutter should be shaped before gluing. See picture for shape. Square cutters can be used but I don't bother with them for small tools. To remove a glued in cutter; heat the tip and pull cutter with vice-grips.



For straight tools, drill a hole down the center 1/2" - 3/4" deep, cut the cutter so that it will protrude about 3/4" and glue it in. Use a good drill bit with factory grind to avoid sloppy holes.

For swan neck tools (3/8" shank):

- * Drill the hole at a slight angle (5 - 10 deg) BEFORE bending the shank.
- * Clamp the shank in a vise such that about 5 inches protrude and the shank and drilled hole are horizontal and the tip would angle to the left if it were installed.
- * Set an adjustable wrench to fit the shank.
- * Heat an 1-1/2" long area starting just below the bottom of drilled hole to a dull red.
- * Use the adjustable wrench to bend the shank to the left (20 deg?), Do not worry too much about the angle but do try to keep the bend in a horizontal plane. Do NOT bend the hole!
- * Allow to cool until no longer red (a couple of minutes or so)
- * Heat a 1-1/2" long area starting below the previous bend
- * Use the adjustable wrench to bend the shank to the RIGHT until the end of shank is just to the right of being in line with the straight section. Try to keep the bend in a horizontal plane.
- * Allow to cool and then test fit the cutter; the tip of cutter should be in line with the shank of tool. (Slight adjustments can be made without heat)

Tools with larger shanks are made the same way but the heated area will need to be longer to make a smooth bend and it may be helpful to cut away some width of the shank to make the tool more user-friendly. With larger shanks, there is room to drill and tap for a set-screw instead of gluing the cutter in. If you prefer square cutters; you have some options:

- * square cutter with rounded section to fit in hole (easy to use but a pain to make cutters).
- * drill hole large enough to fit square cutter in and use set-screw to secure.
- * drill hole slightly less than diagonal width of cutter and use a piece of cutter material to broach corners into the hole, then secure with set-screw (I prefer this method when using square cutters). I drive a piece of cutter stock into the hole a little ways and then pull it out with vice grips, remove swarf with drill and repeat until desired depth is reached.