Homemade Boring Bars

I have been increasingly curious about some of the hollow turning tools our members have made for themselves. Max Wohlgemuth has just about duplicated the DSE system; Jim Keller has a vast collection of specialty boring bars and scrapers; and I don't think Gary Rogers has ever bought anything "off the rack." He's modified everything from something, and usually for nothing. Amazing. Don Philpot will show his turning tools at the April meeting.

I recently invited myself over to Luna Ford's to get a lesson in tool making. Though I've been working wood for many years, I've done very little with metal. I still feel grateful if my plane iron gets sharp and is only 1/4" shorter than when I started sharpening. Under Luna's tutelage (he likes that word) I now have a pair of tools that I made and can be proud of, and at an extremely reasonable price.

In this article I'll deal with the matched pair of boring bars, capable of hogging wood from a simple 8" high hollow form. I used 1/2" mild steel bar stock and fitted them with 3/16" High Speed Steel (HSS) cutters. With this basic system, the shafts on future tools will be bent and modified to reach into tighter spaces. I will also use 3/8" bar stock for smaller vessels.

Safety First

With the Newsletter's renewed focus on safety, here are three warnings: First, safety glasses are a must. Just do it. Second, certain operations get very hot from grinding the metal. Third, *do not* take a credit card into the machine shop supply store: there are far too many temptations.

Shopping and Tool List*

**(Please verify that the sources listed below are still in business and confirm their location prior to your visit)*

I went to J & L Industrial Supply, in northwest Houston, but Rex Supply is in the southeast part of town. Again, this was the dangerous part: try to find a rude clerk.

You'll need: two 1/2" keyway bars, which come in 12" lengths (#MAK-14375-M, $2.65 each); one 3/16" square x 2 1/2" cutter (#TBG-50003-H is HSS with 5% cobalt, $1.40 each); a 10-32 NF plug tap (#TAP-12116-C, $1.83); 5/32" drill (#DAA-20059-D $.78); and 10-32 x 3/16" set screws (#SSS-01407M, $3.93 for 100!). Total cost: a whopping $13.24.

As for tools, you'll need a drill press, Dremel Tool with cut-off wheels, a 6-8" grinder, maybe a belt or disk sander, and an assortment of files and sandpaper. Later, to attach the handle, it helps to heat the end of the tool shaft with a torch to burn it in.

Not So Machine Shop

Back safely in your shop, the first step is to drill the shafts for the cutters. On the first bar, I mistakenly drilled straight and square into one end of a 1/2" bar. Luna now tells me to give it a slight angle, so the tip of the cutter will be in line with the left edge of the bar. Drill your hole about 1 1/4" deep. On a leading corner of the second bar, drill at a 45 degree angle and go all the way through the bar stock.

Following Luna's advice, I used a 1/4" bit for these holes. Now you take the HSS cutter and gently tap it through, chopping a channel for the cutter to ride. Keep the top faces of the cutter and bar stock parallel.

Tap Tap Tap

For the set screws, Luna drills and taps holes on the *side* of the bar stock, 90 degrees to the hole for the cutter. These "pocket holes" are a little tricky to drill, so I drilled mine on top of the bar. Since the cutter is already held in it's self-cut slot, either set-screw position will hold it firmly. Keep the set screws flush with the surface, grinding them down if necessary.

Luna's secret to tapping the holes for the set screws is to hold the tap in the drill press and gently turn it *by hand* with slight pressure to start the process. *Do not turn the power on!* After the tap is started straight, remove it from the drill chuck and use a tap handle or wrench to finish the job. Go gently, back and forth, allowing the small chips to clear. Keep it flooded with oil.

Now that the shaft is drilled and tapped, use a file to ease all the edges, then a sander to polish the surfaces. This helps to prevent catches, and also looks nice. Work at rounding over the first 2" of the end that will go in the handle, perhaps using a grinder with a course wheel, or a belt or disk sander.

Cutters

At 2 1/2" in length, the 3/16" HSS stock is cut in half to give you two tips. Luna's advice is to put it in a vice and use a cut-off wheel on a Dremel Tool to score a line all around the middle. He urges that you then wrap a cloth around the cutter before using a hammer to snap it apart. Instead of bending, HSS breaks, and can shatter – *be very cautious of flying debris*. Now you can hold each cutter with pliers (vice grips) and grind a suitable bevel on a 60–100 grit wheel.

The last step is to put a handle on your tool. Luna says that "bigger and longer are better," giving you the control you'll need on long reaches. Use 14–18" long for 3/8" tools, and 18–24" for 1/2" tools. Heating the tool end with a propane torch will speed up mating the tool into the handle hole.

Ta Dah!

Nothing about this is especially difficult, and it's easier to do than describe. And even if you mess it up completely, none of the components are priceless. In the next Newsletter there will be more Luna-isms, with a follow-up on using these tools. Meanwhile, don't hesitate to call Luna (281-476-4159) or me (713-682-2810) for hands-on help. We even give an Oklahoma Guarantee: If it breaks, you get to keep the pieces.

-Murray Powell, with Luna Ford