

MAKING TOOLS FOR WOODTURNING

Getting Started

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Basic Tool Modification

- ▣ What you need
 - Safety gear



Why make/modify tools?

- ▣ Get exactly what you want
- ▣ Save money
- ▣ (Use up old tools)
- ▣ Be in charge of your own turning destiny!

Basic Tool Modification

- ▣ What you need
 - Grinder



Examples

- ▣ Thin parting tool from hacksaw blade
- ▣ Small skew for round-nosed scraper
- ▣ Shear scraper
- ▣ Circle cutter/sphere shaper
- ▣ Beading tools from a shallow fluted gouge

Small skew from scraper

- ▣ Product did not exist
- ▣ Easy to grind into a skew
- ▣ Converted useless tool into a useful tool



Thin parting tool

- ▣ Industrial hack saw blade = \$6.00
- ▣ HHS will hold an edge
- ▣ Grinder modification only



Sphere truing cutter

- ▣ Reground a circle cutter
- ▣ Added a handle



Beading tool

- ▣ Cut repeatable beads
- ▣ Cut beads of uniform shape



Cove cutting spindle tool

- ▣ Used on soft woods
- ▣ Works like a spindle gouge – but stiffer
- ▣ Make from a box scraper



Beading tool

- ▣ Regrind a bowl gouge for deep beads
- ▣ Regrind a spindle gouge for shallower beads



Christmas ornament hollowing

- ▣ Small hollowing tools for spherical shapes
- ▣ Small commercial tools too expensive
- ▣ Must be able to hold an edge



Small hollowing tool

- ▣ Make from Allen wrenches
- ▣ Need different sizes
- ▣ Must be tempered to hold an edge
- ▣ Mount in an appropriate handle



What you will need

- ▣ Fire bricks to build a kiln
- ▣ MAP gas torch for enough heat



What you will need

Fire bricks to build a kiln



What you will need

- ▣ Fire bricks to build a kiln
- ▣ MAP gas torch for enough heat
- ▣ Tools for forming and holding



What you will need

- ▣ Fire bricks to build a kiln
- ▣ MAP gas torch for enough heat
- ▣ Tools for forming and holding
- ▣ Allen wrenches for tools



Shaping and finishing

- ▣ Grind away all corners
- ▣ Smooth the curve
- ▣ File and sand



Forming the tool

- ▣ Heat to cherry red
- ▣ Form into gentle curve



Annealing the tool

- ▣ Anneal to reduce hardness
- ▣ Heat to cherry red
- ▣ Slowly reduce heat to ambient



Finishing the tool

- ▣ Mount in an appropriate handle



Custom hollow turning tool

- ▣ MAP gas for shaping
- ▣ Drill to accommodate 3/16 tool steel cutter
- ▣ Drill & tap for a set screw



Hollow vessel



Chatter work



Make your own chatter tool

- ❑ Commercial tools work fine but...



Generation #2 chatter tool

- ❑ Wire brush pipe
- ❑ Replace screw with set screw
- ❑ Plug pipe for less epoxy usage



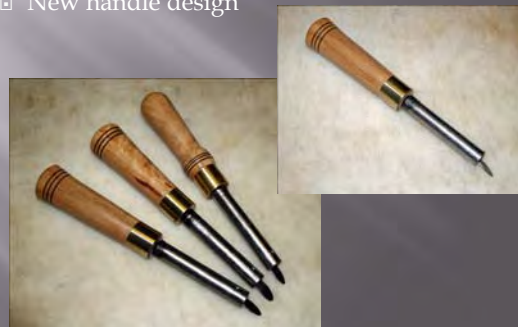
Make your own chatter tool

- ❑ Schedule 80 pipe
- ❑ Piece of band saw blade
- ❑ Thread screw to adjust blade



Generation #2 chatter tool

- ❑ New handle design



Surface beads



Diamond point tool

- ▣ Use O-1 3/8" diameter drill rod
- ▣ Cut to length
- ▣ Chamfer ends
- ▣ Make a grinding fixture



Diamond point tool

- ▣ Make small beads on surfaces
- ▣ Does not require "clearance"
- ▣ Cuts on the "pull"
- ▣ Used for surface decorations



Setting the length



Grinding the tool



Completed tools



Completed point



Complex tools – what is needed

- ▣ Angle grinder with thin cut off blade
- ▣ Disk sander w/ 80 grit disk



Complex tools - what is desired

- ▣ Metal cutting band saw w/ bi-metal blade
- ▣ Dedicated 1" belt sander w/ 120 grit belt
- ▣ 46 grit ceramic grinder wheel



Parting tools



Parting tools



3/16" Parting tool - roughing out

- Use commercial steel blanks
- Make cutting template
- Cut steel to length
- Cut tenon for handle
- Rough shape blade
- Grind final shape
- Polish surface
- Chamfer edges
- Mount in handle

Make brass ferrules



Using a layout template



Purchase steel

- ❑ Purchase 3/16 x 1.25 x 36 inch O-1 chrome vanadium steel from Starrett



Cutting the tang



Cutting the blade angle



Grinding the top



Rough cut completed



Grinding the bevel



Smoothing the faces



Making the handle



Finishing the blade



Assembling the tool



Finished tools



Platter scraper

- ▣ Purchase 3/16 x 1.25 x 36 O-1 Starrett steel
- ▣ Transfer rough layout from template
- ▣ Process as with parting tool



Platters with flat centers



Bowl scraper

- ▣ Purchase 3/8 x 1.25 x 36 Starrett O-1 steel
- ▣ Transfer pattern from template
- ▣ Process as with other tools



Handles

- ▣ 1.75 x 1.75 x 16 hardwoods
- ▣ Brass tubing for ferrules
- ▣ Two-part System Three 5 minute epoxy
- ▣ Sand, polish, wax – no finish



Blind hollowing tool set

- ▣ Purchase 5/8 inch, O-1 rod
- ▣ Cut to length
- ▣ 45 degree chamfer on tip end
- ▣ Drill cutter hole for 3/16 cutting tips
 - One straight
 - One at 45 degrees
- ▣ Drill and tap for set screw
- ▣ Grind flat on handle end

Hollow vessels



Cut to length



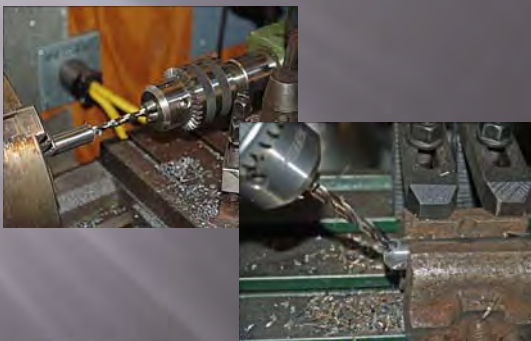
Machine 45 degree chamfer



Drill for set screw



Drill tool mounting holes



Hand tap for set screw



Cutters for blind hollowing tools

- ▣ 3/16 cobalt steel machine lathe cutters cut in half



Make the handles



Sharpening the cutters



Kit ready for assembly



Ready to hollow



Some helpful ideas

- ▣ Get a catalog from a machine tool supplier
 - KBC Tools.com
 - Use-Enco.com
 - Thelittlemachineshop.com
 - MSCdirect.com
 - Grainger.com
 - McMaster.com
- ▣ Visit Harbor Freight

Hollowing in class



Some helpful ideas

- ▣ Dedicate a garage sale sander to metal work
 - 80 grit disc for grinding
 - 120 grit belt for polishing
- ▣ Make ferrules from plumbing pipe/nipples
- ▣ Collect broken tools for later re-use
- ▣ 4 " angle grinder with thin cut off blades is your friend

Conclusion

- ▣ We are not tied to what is commercially sold
- ▣ Make the unique tool that you really want!
- ▣ Old tools can be reused for new applications
- ▣ It doesn't take much to get started

- ▣ If you develop a great tool – share the idea