

GUNSMITHING TOOLS – ACTION WRENCHES/BARREL VICES

\$400 or 2 credit hours

Class is limited to 8 students

This class discusses the construction of tools and fixtures in general, as well as the manufacture of either an external action wrench, or a barrel vice (depending on your experience, you may not have time for both). Consult with the instructor to determine if other, or additional, projects will fit within the scope of the class. **PREREQUISITE: Basic Machine Shop, Machine Shop 1 (from TSC), or the consent of the instructor.**

Instructor: Logan Schmit

Tool list:

- #3 or #4 Center drill
- 1/2" Diameter, 4 flute double ended, endmill, (carbide preferred), (two single ended endmills are also acceptable)
- 1/4" Diameter, carbide endmill, with a 1" length of cut
- 3/8" or 1/2" size, High speed steel lathe tool bit blanks (qty: 2), (only required for the action wrench project)
- 1/2" Diameter shank boring bar (with a max bore depth over 2") MSC #78058062 (Carbide shank insertable bars are acceptable as well, and can be found at reasonable prices online. If you are selecting this option, a total length of around 3" is preferred and be sure to have a proper insert, or two, for the bar)
- 6" Dial caliper
- Mighty Mag, indicator holder
- 0-1" Dial indicator
- Dial test indicator with either 0.0005", or 0.0001", resolution
- Magnetic base indicator holder (Noga Model: NF10433 preferred).
- Edge finder
- 6" Steel rule
- Tap Guide
- Large tap wrench (1/4" to 1/2" tap capacity), (it should have a center hole in the back of it for alignment purposes)
- Assorted files (with handles)
- Carbide tip scribe
- 115 Piece drill bit set
- 320, 400, 600 Grit wet/dry polishing paper (2 sheets each)
- Layout dye
- Safety glasses
- 6" or 8" Adjustable wrench
- Allen wrench set up to 3/8"
- 18oz to 24oz Deadblow hammer
- Pliers
- Tool box

- Metric Allen wrench set
- 3/16" diameter, carbide endmill, with a 1" length of cut
- 3/8" diameter, carbide endmill, with a 1" length of cut
- 1/4" 90° Chamfer mill (is not required, but can add a decorative touch) MSC #09550724
- Precision Machining Technology, Third Edition (ISBN: 978-1-3377-9530-2) is not required, but can be a beneficial reference.

Please note that this list is bare minimum. If you have other tools or supplies that may be useful, bring them. You can never have too many tools.

Barrel vise material list:

- 1/8" x 2" x 3" Low carbon, Cold Rolled steel
- 2-3/4" x 2" x 10" Low carbon steel bar
- 2" x 2" x 6" Low carbon steel bar
- 2" Diameter, 18" long, round aluminum bar
- 3/4-10 x 6" Hex head bolt (either "grade L9", or "grade 8"), qty: 2.
- 3/4-10 Nuts (either "grade L9", or "grade 8"), qty: 2.
- 1/2-20 Bolts that are long enough to go through the surface that you plan to mount the vise to, plus 3", qty: 2.
- 1/2-20 nuts, qty: 2.
- Spherical washer set (sized for a 3/4" bolt), qty: 2, MSC #74213323.
- Thrust bearings (sized for a 3/4" I.D., D-5, or equivalent), qty: 2, MSC #03379906.
- Compression spring (0.970 O.D., 0.105" Wire, 2.5" Long), qty: 1, MSC #00613984.

Action wrench material list:

- 1/8" x 1-1/4" x 3" Low carbon, Cold rolled steel
- 1-1/4" x 1-1/4" x 27-1/2" Low carbon steel bar
- 1/2-20 x 3" socket head cap screw, qty: 3

Please reach out to learn about student discounts available from certain vendors.