

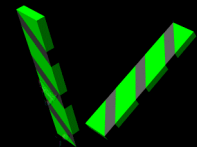
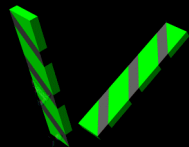


A MOE University Course

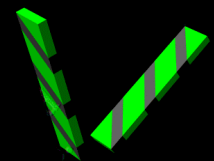
MOE U courses are made available for the
benefit the FIRST robotics universe by:

The Miracle Workerz, FIRST Team 365

First State Robotics, Inc.
Wilmington, Delaware
www.moe365.org

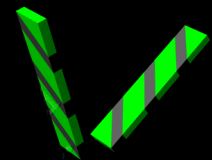


Miracle Workerz Machine Tools



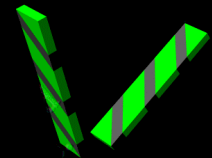
Drill Press

- Layout and center punch work
- Clamp work in vise or to table
- **NEVER HOLD WORK BY HAND!!!**
- Tighten drill bit in the chuck - put wrench away
- Check depth of stroke you require
- Locate the hole center under the drill bit
- Use increasing diameter drill bits for larger holes
- select proper drill speed (RPM)
- Momentarily turn on rotation to assure proper chucking
- Use appropriate cutting/coolant
- Back off bit advance to break the chip



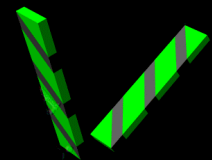
Band Saw

- **WARNINGS**
- Do not cut too hard, too thin , or too small a piece
- clamp round rods from rotating
- Assure two to three teeth in piece or change blade
- Set exposed blade height is be slightly higher than piece
- check speed to be correct for material
- keep hands away from blade area
- use pusher piece to keep hands way from blade
- **DO NOT FORCE** work into blade



Belt Sander

- Be aware of piece thickness and belt-table clearance
- use the table to support the piece while sanding
- small pieces may require vise grips or other clamping
- If belt is not tracking > shut unit off and correct
- Beware the piece may heat up quickly



Cut-off Wheel

- Full face shield and hearing protection is required
- Check to see if blade diameter is sufficient to cut piece
- Clamp piece in work holder
- Set outboard supports as needed
- Slowly bring the wheel into the work
- Do not force blade into work
- The cut pieces will be HOT!!! - Do not pick up pieces with bare hands

