

Mason Lab B-7 Student Shop Safety

Safety Glasses:

EVERYONE MUST WEAR SAFETY GLASSES IN THE SHOP. Even when you're not working on a machine, you must wear safety glasses. A chip from a machine someone else is working on could fly into your eye.

Clothes and Hair:

- **IF YOU HAVE LONG HAIR OR A LONG BEARD, TIE IT UP-** If your hair is caught in spinning machinery, it will be pulled out if you are lucky....
- **NO LOOSE CLOTHING-** Ties, scarves, loose sleeves, etc. are prohibited.
- **NO GLOVES.**
- **REMOVE JEWELRY.**
- **WEAR APPROPRIATE SHOES-** No open toe sandals or shoes. Wear shoes that give a sure footing, if you are working with heavy objects, steel toe shoes are recommended.

Safe Conduct in the Shop:

- Be aware of what's going on around you, For example, be careful not to bump into someone while they're cutting with the bandsaw (they could lose a finger).
- Concentrate on what you're doing, if you get tired, leave, don't hurry. If you catch yourself rushing, slow down.
- Don't rush speeds and feeds. You'll end up damaging your part, the tools, and maybe the machine itself. Listen to the machine, if something doesn't sound right, turn the machine off.
- Don't let someone else talk you into doing something dangerous.
- Don't attempt to measure a part that's moving.
- Don't talk to someone operating a machine. If it is about safety, **Shut the machine off** and explain the problem

Machining:

IF YOU DON'T KNOW HOW TO DO SOMETHING – **ASK!**

BEFORE YOU START THE MACHINE:

- Study the machine. Know which parts move, which are stationary, and which are sharp.
- Double check that your part is securely held.
- Remove chuck keys and wrenches.

Cleanup:

- **Your workspace should be clean and the tools and tooling put back in proper location before you leave the shop for the day.**
- Clean-up Machines after use!! A Dirty Machine is unsafe and difficult to operate properly.
- Vacuum or sweep debris from machine- **DO NOT USE COMPRESSED AIR!** It will endanger people and the precision bearings in the equipment.

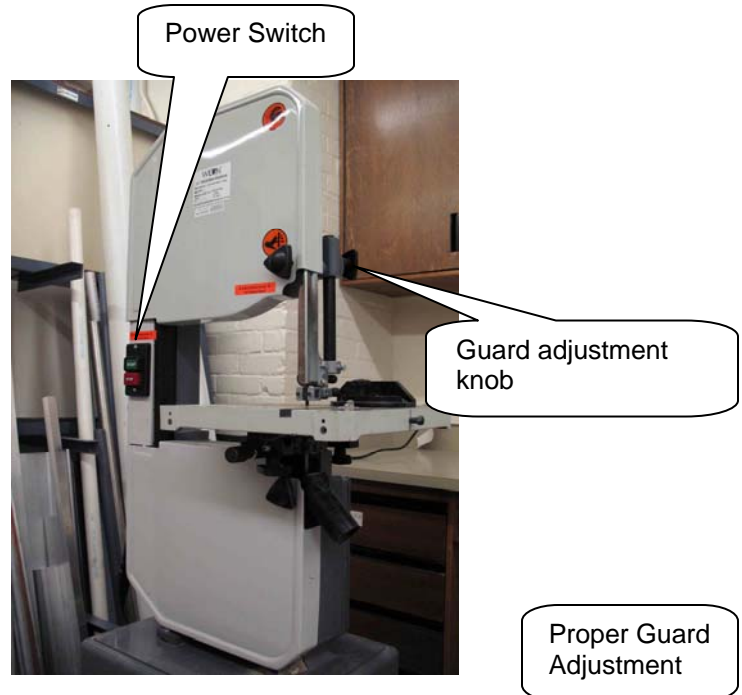
When Using Shop outside of scheduled lab times you must have a “safety buddy” and log in and out on shop clipboard

DO NOT LEAVE MACHINES RUNNING UNATTENDED

Vertical Band Saw

Before starting machine:

- Adjust Guard down to workpiece- no more than $\frac{1}{2}$ finger thickness or less above piece being cut.
- Clear table of cutoffs/ scraps
- Do not cut round objects on this equipment- it will jam and roll your fingers into the cutting blade.
- Do not cut small objects- they are not safe to feed and may jam or damage the equipment.

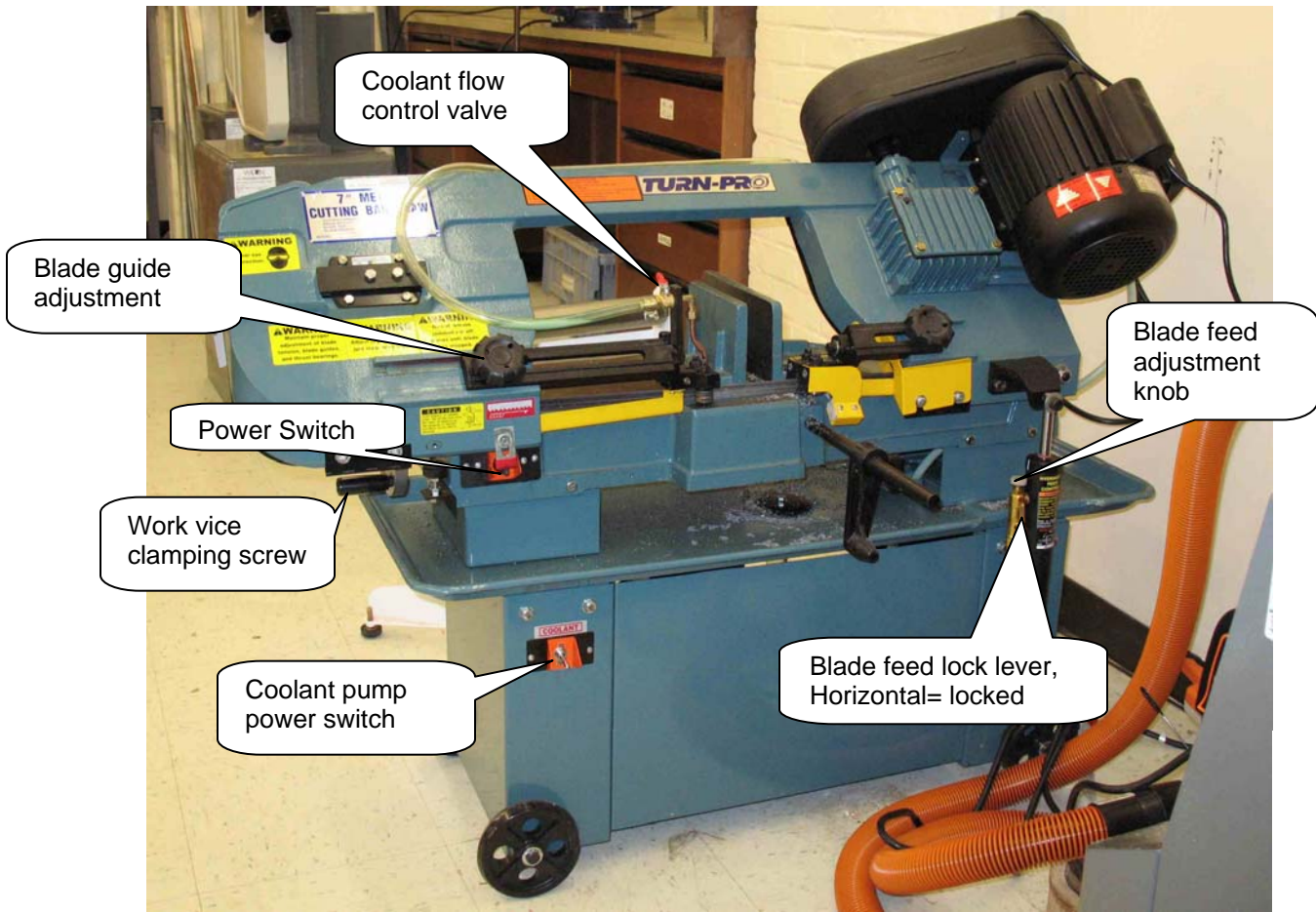


Cutting:

- Materials should feed smoothly into the cutting blade.
- Excessive pressure or “jumping” of the blade or workpiece is an indication of a problem. Stop the machine and contact instructor.
- Plan your cuts- obtain pusher blocks for through cuts to avoid pushing in line with cutting blade.
- If cutting unusual shapes and curves make relief cuts to prevent blade binding.



Horizontal Band Saw



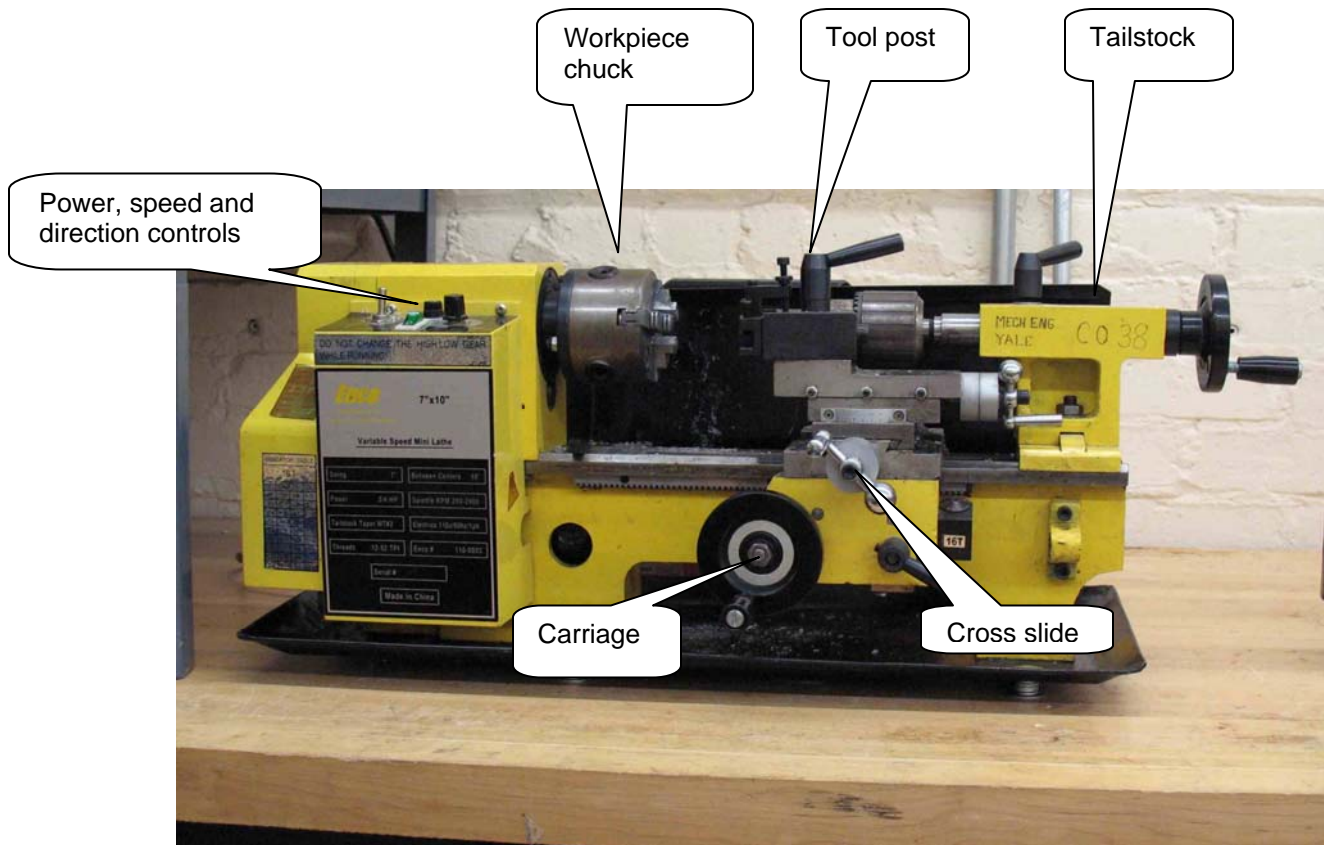
Before starting machine:

- Flip Blade feed lock lever down to locked position, and lift saw head up to height just above workpiece to allow for setup.
- Place long workpiece on roller support stand
- Align cutting mark with blade
- Clamp securely
- Adjust Blade guide if needed to allow for clearance for workpiece.
- Check position of coolant pump switch. On for Metals, OFF for plastics.

Cutting:

- Turn on power switch, adjust coolant flow if needed
- Unlock saw pivot and regulate feed to slowly engage workpiece.
- Listen to machine and observe cutting if binding or Blade jumping occurs turn off power and contact instructor.
- Be sure power is off and all blade motion is stopped before removing workpiece from Saw.

Benchtop Lathe



Safety Instructions:

Before Starting Machine:

- Obtain individual instruction on Lathe Machining operations
 - Be sure that workpiece is secure in chuck and that Chuck key has been removed and part is free to rotate by hand without interference.
 - Proper Tooling has been installed, adjusted and secured for desired machining operations.
 - Hair & Clothing has been secured so that it cannot become entangled with machine or tooling

Turning Operations:

- Never Measure moving parts.
- Never try to slow or stop rotation
- Stop Machine to clear cutting chip buildup
- Do not use dull or chipped tooling
- Listen to cutting progress- if sounds change or cutting is labored stop machine and inspect tooling.

Beltsander / Disk-sander

Before starting machine:

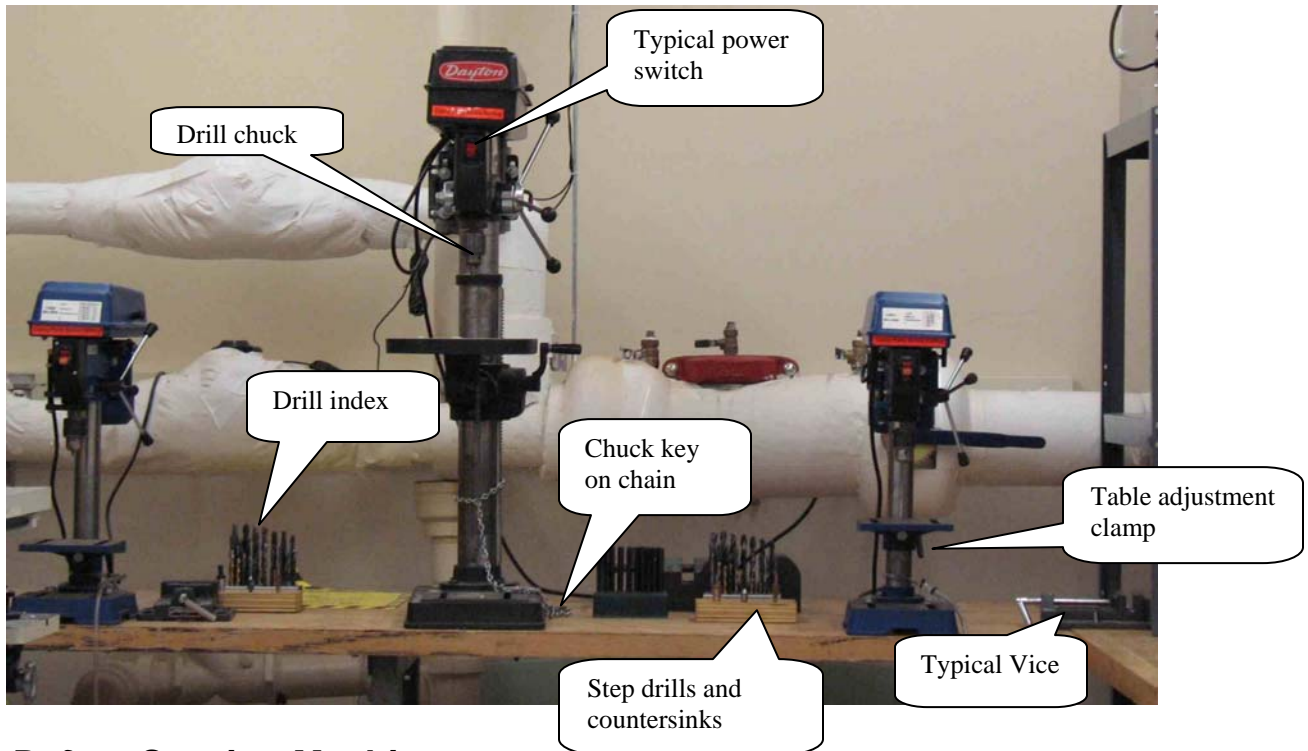
- Inspect belt and disk for heavy wear and rips- if observed contact instructor for replacement
- Never sand small objects – small objects can jam or become projectiles- use a hand file
- Always position workpiece on against table surface while sanding as parts can jam and pull you into the sander
- Place parts on the left side of the sanding disk so that they are drawn down onto the table.
- Do not adjust sanding table angle with machine running.
- Use table guide when possible
- Do not use pliers to hold parts – **they are too small and should be hand filed**
- Stop machine if belt is not tracking in the center – call instructor, as the belt probably needs replacement



Sanding operations:

- Power on will also turn on dust collector vacuum
- Take your time – if you smell your part you are pressing too hard or the belt/ disk is worn out and needs replacement –contact instructor
- Move part slowly side to side to obtain best sanding results
- Be sure that you keep your part on the left half of the sanding disk at all times so that the rotation presses the part down against the table.

Drill Press



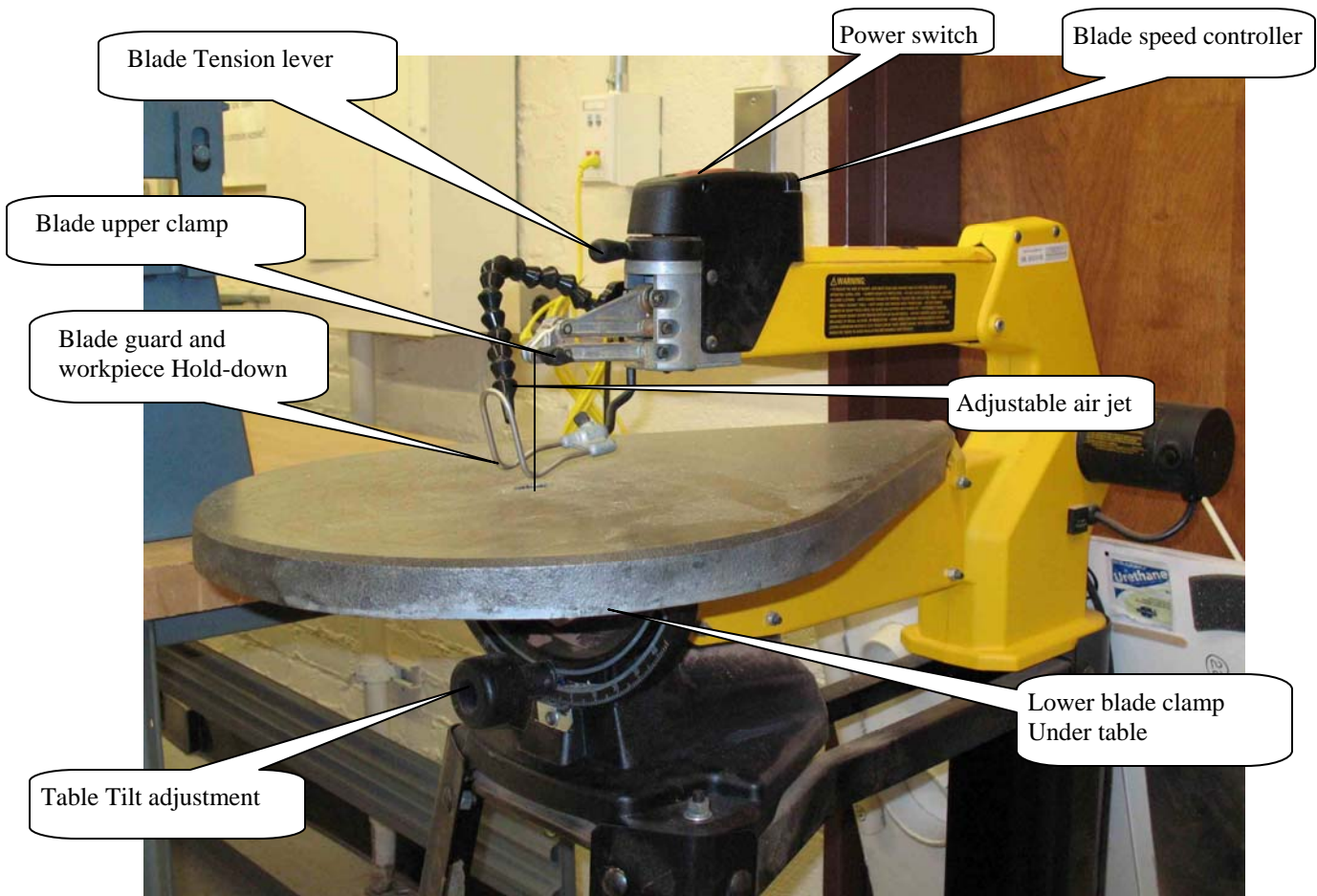
Before Starting Machine:

- Clear drill press table of any chips and debris
- Select appropriate drill
 - Note in thin materials the step drills do a better job of making holes and are much less likely to jam or grab
 - Center table on drilling position
 - Secure Drill bit in chuck, tighten with chuck key
 - **Remove Drill bit and Replace into index after use**
 - **REMOVE CHUCK KEY FROM CHUCK!!**
- Select appropriate means to clamp workpiece to prevent rotation
 - If Drill will interfere with drill table then secure wood backing below part before clamping.
 - "C" clamps work well for flat objects
 - Several style of vices are available to clamp small objects.
 - A "V" Block is available for clamping and drilling round objects
 - When in doubt ASK instructor for clamping advice
 - Always secure part before drilling- A spinning piece of metal acts like a sawblade!

Drilling:

- Feed drill slowly into secured workpiece
- For most materials drill rpm is appropriate – if you have are drilling steel ask instructor to reduce drill press RPM and instruct on the use of cutting oil.
- When finished drilling remove workpiece clean up area and remove and replace drill bit into drill bit index.

Jig saw



Before Starting Machine:

- Clear Table of chips and debris
- Check Blade condition and Tension
 - If blade is broken or bent contact instructor
- Adjust Blade guard to just skim top of workpiece-adjusting thumbscrew at upper machine head- acts to hold part down during cutting operations
- Be sure blade has been installed correctly with teeth oriented for cutting on the down stroke.
- Adjust airjet to blow sawdust away from you and workpiece cutting line

Sawing:

- Gently feed material into Blade, observe sideways deflection and increase tension slightly if deflection makes it difficult to follow cutting line.
- Unlike other saws we have standardized on using a spiral blade which allows for cutting in any direction without turning workpiece. This facilitates "jigsaw puzzle cuts".
- Slower Blade speeds should be favored for reduced blade breakage and improved cutting.