


## Shop Safety Procedure

	Equipment/Task Name:	METAL CHOP SAW
	Equipment/Task Hazard Class:	3 <a href="http://ehs.yale.edu/forms-tools/tool-classification-matrix">http://ehs.yale.edu/forms-tools/tool-classification-matrix</a>
	Shop Name:	
	Shop Hazard Class:	

### Purpose

Metal chop saws are typically used to make cross-cuts on metal materials. A typical chop saw is shown in the Diagrams/Illustrations section of this procedure. This procedure does not apply to wood miter saws.

### Hazards

As with all shop tools there are many potential hazards associated with their use and exposure. Metal chop saws are Class 3 tools (<http://ehs.yale.edu/forms-tools/tool-classification-matrix>). There are a number of particular hazards associated with the operation and use of chops saws.

#### High speed rotating cutting wheels and shafts

- Large amounts of energy embodied in rotating wheels
- Wheel shatter hazard
- Potential for loose items can become entangled in rotating parts

#### Flying objects

- Cutting action generates flying sparks
- Work pieces can become disengaged and rotate or be flung across the room

#### Pinch point hazards

- Clothing, jewelry or body parts can be drawn into spinning wheels

#### Hot components

- Grinding generates significant heat, burn and/or fire hazards
- Grinding generates flying sparks

#### Dust Exposure

- Dust generation produced from the abrasive cutting surface and cutting of the work piece may present physical and health hazards. Minimization practices may include dust collection equipment and general housekeeping practices. Proper operation and maintenance of dust collection equipment is essential to effective dust minimization. Consult the Safety Data Sheet for the work piece material and cutting wheel material if you have any questions.

#### Noise Exposure

- Under some conditions and duration of use, noise generated by the use of this tool may contribute to hearing loss. Wear appropriate personal hearing protection during use.

<b>Limitations</b>
<ul style="list-style-type: none"> <li>• Chop saws can only be used for cross cutting of work pieces.</li> <li>• The width of the work piece is generally limited to 4 - 6 inches.</li> <li>• Material choices are generally limited to metal products. Consult the tool manufacturer's manual and cutting wheel specifications if you have any questions. This procedure does not apply to wood miter saws.</li> </ul>
<b>Required Personal Protective Equipment</b>
<ul style="list-style-type: none"> <li>• Refer to the Shop Safety Postings and instructions provided by the Shop Supervisor.</li> <li>• Always wear safety glasses under a full face shield when operating a metal chop saw.</li> <li>• As appropriate, wear suitable hearing protection.</li> <li>• Shop specific required PPE:</li> </ul>
<b>Required Training</b>
<ul style="list-style-type: none"> <li>• Applicable Shop Rules <ul style="list-style-type: none"> <li>○ <b>Student Shop Rules</b> (<a href="http://ehs.yale.edu/forms-tools/shop-rules-student-accessible-shops">http://ehs.yale.edu/forms-tools/shop-rules-student-accessible-shops</a>)</li> <li>○ <b>Professional Shop Rules</b> (<a href="http://ehs.yale.edu/forms-tools/guidelines-professional-shops">http://ehs.yale.edu/forms-tools/guidelines-professional-shops</a>)</li> </ul> </li> <li>• For Class 2 through 5 <u>Student Shops</u>, review and signing of the <b>Yale University Shop/Tool Use Safety Agreement</b> (<a href="http://ehs.yale.edu/forms-tools/shoptool-use-safety-agreement">http://ehs.yale.edu/forms-tools/shoptool-use-safety-agreement</a>).</li> <li>• Shop Supervisors or Instructors must evaluate the tool user based on successful demonstration of the Training Competencies listed below as applicable.</li> </ul> <p><u>Training Competencies:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify and describe all controls, adjustments, and functions of the chop saw.</li> <li><input type="checkbox"/> Dress appropriately and wear appropriate personal protective equipment for the cutting operation.</li> <li><input type="checkbox"/> Correctly setup and adjust the saw for all types of required cuts.</li> <li><input type="checkbox"/> Apply good judgment in selecting clamping/securing method for work piece and accurately position work piece for cutting operation.</li> <li><input type="checkbox"/> Students must be able to reset all saw functions to square, perpendicular cuts and clean up saw in preparation for next user.</li> </ul> <p><u>Shop specific training requirements:</u></p>
<b>Authorized Tool Users</b>
Shop Supervisor, Shop Monitors and those authorized by shop supervision to operate the tool.
<b>Tool Safety Rules</b>
<ul style="list-style-type: none"> <li>• Observe and follow all Yale Professional or Student Shop Rules as posted.</li> <li>• Understand and follow manufacturer operating procedures.</li> <li>• Inspect the tool for damage prior to use.</li> <li>• Verify all guards are in place and adjusted properly.</li> <li>• Do not bypass any safety devices.</li> <li>• Only use the tool when it is secured to the floor via a pedestal or work bench.</li> <li>• Always stay at the machine while it is running.</li> <li>• Clean the tool after use.</li> <li>• Report any malfunction or damage to the Shop Supervisor after tagging the tool "Out of Service, do not use".</li> <li>• Always disconnect the plug from the power source before making any adjustments, changing, or physically inspecting the cutting wheel.</li> </ul>

### Tool Safety Rules (cont'd)

- Use only cutting wheels meeting the saw manufacturer specifications and limitations to RPM and size.
- After installing a new cutting wheel, never start the tool with a person in line with the wheel. Always run the tool for approximately one minute before cutting. If the wheel has an undetected crack or flaw, it could burst in less than one minute.
- When mounting a cutting wheel, care should be taken to tighten the arbor screw only enough to hold the wheel firmly and to prevent slippage. Excessive tightening may result in damaging the wheel and springing the wheel flanges.
- Never operate the saw in an area with flammable liquids or gases.
- Never use another person as a substitute for a table extension or as additional support. Long work pieces must be supported by a block or material support stand so it will be level with top of base. The cutting end should be free (not supported).
- Always clamp/secure the work piece to avoid movement and pinching.
- Never make free-hand cuts by raising the work piece into the cutting wheel.
- Never feed the saw into the work piece at a rate faster than it can accept.

#### Shop specific rules:

### Proper Setup and Use

#### Prior to use:

- Evaluate the work piece material type and appropriateness of the saw and cutting wheel.
- Determine the location and angle(s) of cuts required.
- Determine the required fixturing/tooling/clamping/supports needed.
- Obtain personal protective equipment (safety glasses /shields); hearing protection and remove all loose clothing, jewelry and securely tie back all long hair/beards.

#### At the chop saw:

- Turn on the dust collection system if available.
- With the tool off inspect the tool. Look for damage, missing guards, and cutting wheel condition. Inspect the cutting wheel for cracks or flaws before use. If a crack or flaw is evident, the wheel must be discarded. Verify the inside surfaces of the wheel flange and wheel are free from any foreign matter.
- Inspect the work area and remove any obstructions and trip hazards.
- Adjust and set cutting angle(s) for work piece.
- Set up fixturing/supports and stops to make required cuts.
- With cutting wheel stationary move saw through entire range of motion to ensure that there is no interference with wheel, machine parts or guards/fences.
- Ensure that if stops and clamps are used together that they are both on the same side of the cutting wheel cut so that the potential for jamming and kickback are minimized.

#### Cutting process:

- Locate work piece on saw. Ensure that it is placed firmly against the back fence of the saw.
- Be sure that any clamping of the work piece is on the same side of the cut as the stop so that potential for jamming /kickback against stop is minimized.
- Let the cutting wheel reach full speed before attempting the cut.
- It is usually good practice on the first setup to make a sacrificial cut in the work piece material to ensure that fixturing and angle setup is performing as expected and that the saw is capable of cutting thru the entire work piece.
- If trial cut is satisfactory – setup and make required cuts to work piece(s).
- Allow wheel to come to a complete stop before releasing the handle and prior to

adjusting/advancing work piece.

### Proper Setup and Use (cont'd)

#### Completion:

- Allow wheel to come to a complete stop before releasing the handle and carrying out completion tasks.
- Disengage dust collection system (if available and as directed by the shop supervisor).
- Clean up saw and work area for the next user.
- Report any issues to the shop supervisor.

Shop specific procedures:

### Diagrams/Illustrations

#### Typical Metal Chop Saw and Components



Creation/Revision Dates:

March 21, 2014

*Suggestions, questions, or comments? Please contact your shop supervisor or EHS.*