

Shop Safety Procedure



Equipment/Task Name:	HORIZONTAL BAND SAW
Equipment/Task Hazard Class:	4 & 5 http://ehs.yale.edu/forms-tools/tool-classification-matrix
Shop Name:	
Shop Hazard Class:	

Purpose

Horizontal band saws utilize a thin metal “ribbon like” loop with hardened teeth moving in a generally horizontal plane to cut metallic objects. The moving blade sweeps an arc thru a fixed cutting plane to produce repeatable fixed angle cuts. Only straight cuts at a fixed angle can be made on the horizontal band saw. An integral vice is always used to clamp the work piece in position for cross-cut of material. A hydraulic valve controls the cutting pressure and thus the effective cutting rate of the saw.

Hazards

As with all shop tools, there are many potential hazards associated with the use of a band saw. Full sized horizontal band saws are Class 5 tools while smaller versions are Class 4 tools (<http://ehs.yale.edu/forms-tools/tool-classification-matrix>). Particular hazards associated with horizontal band saws are listed below. Note that the list is not exhaustive as unusual or specialized uses may generate additional unique hazards.

Crushing / Pinch Points:

- The downward swing of the cutting head creates pinch points along the cutting plane axis.
- Only grab/ hold cutting head at the outboard end of the assembly.
- Be sure that work piece is the only object in the path of cutting plane/blade prior to lowering cutting head.

Amputation:

- The fast moving cutting blade/band will quickly remove fingers.

Cut and laceration:

- Sharp edges are created by the cutting action.
- Multiple stationary and moving blade hazard.
- Blades can break and be thrown out of the work zone.

In-running nip pinch point:

- The moving blade can catch loose hair, clothing, gloves and pull body parts into cutting edges.
- The work piece must be firmly supported by table at all times or body parts can become pinched.

Hot objects:

- The cutting process can generate significant heat in the work piece and scrap material.

Limitations
<ul style="list-style-type: none"> • These saws are designed for efficiently cutting metal stock. Cooling/cutting oil is used to assist in the cutting process to prolong blade life and allow for high quality cuts in work pieces without heat distortion or damage. • Only objects that can be clamped in the machine vice may be cut on this saw. • Only straight cuts can be made. However, the angle of the cut can be preset to angles other than 90 degrees by adjustment of the vice jaws prior to powering up the machine. Generally cuts up to 45 degrees can be made in this fashion. • With supervision approval, these saws may be used for cutting plastic stock. During these cuts the lubrication system would be turned off and cuttings must be cleaned out of the cutting tray.
Required Personal Protective Equipment
<ul style="list-style-type: none"> • Refer to the Shop Safety Postings and instructions provided by the Shop Supervisor. • Shop specific required PPE:
Required Training
<ul style="list-style-type: none"> • Applicable Shop Rules <ul style="list-style-type: none"> ○ Student Shop Rules (http://ehs.yale.edu/forms-tools/shop-rules-student-accessible-shops) ○ Professional Shop Rules (http://ehs.yale.edu/forms-tools/guidelines-professional-shops) • For Class 2 through 5 <u>Student Shops</u>, review and signing of the Yale University Shop/Tool Use Safety Agreement (http://ehs.yale.edu/forms-tools/shoptool-use-safety-agreement). • Shop Supervisors or Instructors must evaluate the tool user based on successful demonstration of the Training Competencies listed below as applicable. <p><u>Training Competencies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify and describe all controls, adjustments, and functions of the band saw. <input type="checkbox"/> Dress appropriately and wear appropriate personal protective equipment for the cutting operation. <input type="checkbox"/> Correctly setup and adjust the band saw for all types of required cuts. <input type="checkbox"/> Apply good judgment in selecting clamping/securing method for work piece and accurately position work piece for cutting operation. <input type="checkbox"/> Students must be able to reset all saw functions and clean up saw in preparation for next user. <ul style="list-style-type: none"> • Shop specific training requirements:
Authorized Tool Users
Shop Supervisor, Shop Monitors and those authorized by shop supervision to operate the tool.
Tool Safety Rules
<ul style="list-style-type: none"> • Observe and follow all Yale Professional or Student Shop Rules as posted. • Understand and follow manufacturer operating procedures. • Inspect the tool for damage prior to use. • Verify all guards are in place and adjusted properly. • Do not bypass any safety devices. • Always stay at the machine while it is running. • Clean the tool after use. • Report any malfunction or damage to the Shop Supervisor after tagging the tool “Out of Service, do not use”. <p><u>Shop specific rules:</u></p>

Proper Setup and Use

Prior to use:

- Evaluate the work piece material type and appropriateness of the saw, saw blade, and cutting speed.
- Determine the location and angle(s) of cuts required. Mark lines clearly on the work piece.
- Determine the required fixturing/tooling/clamping/cutting stops/supports needed.
- Determine if cutting oil is 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 band saw:

- With the tool off inspect the tool. Look for damage, missing guards, and blade condition. Look for missing teeth.
- Inspect the work area and remove any obstructions and trip hazards.
- Adjust guides, guards, and cutting head if required for proper clearances and support.
- Adjust and set cutting angle(s) for work piece.
- Set up fixturing/supports and stops to make required cuts.

Cutting process:

- Locate work piece on saw and secure it with the vice and any necessary fixturing/supports.
- Turn on the band saw and listen for unusual and unsteady sounds. If clicking or ticking is heard, shut down the saw and seek supervision.
- Turn on and adjust the cutting oil flow if required.
- Adjust the cutting head lowering speed.
- Let the blade reach full speed before attempting the cut.
- Allow blade to come to a complete stop before releasing the vice and prior to adjusting/advancing work piece.

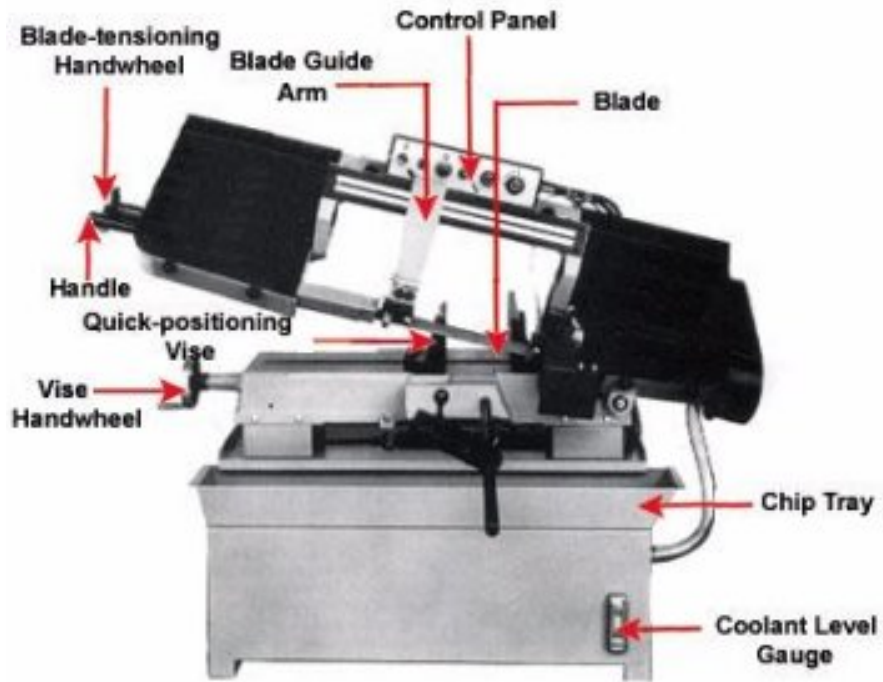
Completion:

- Allow blade to come to a complete stop before releasing the vice and carrying out completion tasks.
- Clean up saw and work area for the next user.
- Report any issues to the shop supervisor.

Shop specific procedures:

Diagrams/Illustrations

Typical Horizontal Band Saw Components



Creation/Revision Dates:

March 25, 2014

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