# HORIZONTAL BAND SAW PROCEDURE

**Dept:** Multi-department  
**Laboratory:** Student Machine Shop  
**Rm:** HML 112

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**Date:**

**Filename:** Metal Lathe 30-Sep-11  
**Revision:** 1

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**Brief Overview & Scope**

This procedure provides general instructions on how to use the horizontal bandsaw. The bandsaw head articulates about the base on a pivot. This system is partially counterbalanced using compensating springs but can still apply a substantial downward force against the workpiece when cutting. The velocity at which the head drops is controlled through the hydraulic feed control valve; this velocity can range from zero (locked head position) when valve is closed to dropping rapidly when the valve is fully open. Note: The head is locked for downward travel only. When valve is closed, head cannot be lowered but can be raised freely. Also, the saw can rotate about the vertical axis +/- 45 degrees from perpendicular to allow angled cuts.

This document describes typical operations only; consult a shop supervisor if you need to perform an operation not described here. Changing blades, blade speed and maintenance of the tool are beyond the scope of this document due to the skill required and diversity of tools and processes associated with these operations.

**Potential Hazards**

- Amputation or serious cuts due to contact with saw blade
- Injury due to entanglement with blade
- Pinch/cut/amputation hazard if head is allowed to drop when hand is between head assembly and base.
- Minor burns due to workpiece becoming hot.
- Minor cuts due to contact with blade when stopped

**Engr. Controls**

- Blade and puller guards

**PPE**

- Safety glasses, non-slip, close-toed shoes

**Add'l Equipment, Tools:**

- Hand broom, dust pan

**Mat'l, Supplies:**

- Towels (as needed)

**Add'l Training Requirements**

- All mandatory shop training modules
- Hands-on training for horizontal bandsaw
- Video training for horizontal bandsaw

**Special Requirements:**

**Handling & Facilities**

- n/a

**Spill & Incident**

- n/a
Decontamination/Waste Disposal

Any paper towels, rags or other waste generated is to be disposed of according to Shop Waste Materials Disposal SOP.

Sources/References

Some content for this procedure have been taken from the Ellis website.

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HORIZONTAL BANDSAW

TOOL COMPONENTS

- Head Assembly
- Blade Guard
- Auto Shutoff Bar
- Lift Handle
- On/Off Switch
- Blade Tension Handle- Do Not Adjust
- Moveable Arm
- Hydraulic Feed Valve
- Motor
- Blade
- Head Pivot
- Head Weight Adj. Knob- Do Not Adjust
- Compensating Springs
- Vise- actual vise different than shown
- Do Not Adjust
## GENERAL TOOL SAFETY RULES

a. Safety glasses are required to use this tool.

b. To prevent entanglement with the blade:
   - Tie back long hair and tuck under shirt, roll up long sleeves, remove gloves or loose clothing.
   - Remove any gloves, rings, or other jewelry. Note: Tight fitting latex or nitrile gloves are permissable.
   - Keep hands away from blade.
   - Do not slow or stop the blade with your hand after powering off. Let the machine stop by itself.

c. Know the location of ON/OFF switch and the electrical plug for the tool.

d. Do not use any machine in which a guard or cover has been removed. Contact the shop supervisor immediately.

e. Avoid accidental starting. Make sure switch is in “OFF” position before connecting to power source.

f. Stop the machine immediately if odd noise or excessive vibration occurs.

g. Take care to not allow the workpiece to become so hot it burns your fingers if it is handheld.

h. Do not use this tool in a dusty environment that could be ignited by sparks.

i. **If you have any questions about this tool or its use, stop what you are doing and ask a shop supervisor.**
## COMMON TASKS

### 1. Stopping the Tool

a. In the course of normal operation, the saw is automatically turned off by the automatic shut-off switch system at the end of the cut. This is accomplished when the sliding bar is pushed up and shuts off the switch.

**NOTE:** In an emergency, shut off the saw by lifting the On/Off switch to the OFF (upper) position.

### 2. Setting Up Tool

a. Discuss with shop supervisor the material you need to cut so that they can change saw speed and blade, if needed.

b. Saw portion of tool is lowered by gravity when valve on hydraulic feed control is opened. When setting up tool, make sure saw head position is locked by closing valve.

**WARNING:** Failure to lock head could result in pinch or cut injury due if fingers or hands are between lower blade system and stationary table area of saw.

c. After head is locked, lift up head assembly using handle and open vise.

d. The vise can slide fore and aft to accommodate workpieces of different sizes. If workpiece is too large or too small to be clamped by vise, remove vise key and slide vise fore/aft so that workpiece will fit. Place key back in hole to lock vise to vise mount.

e. When the vise has been slid back to accommodate larger workpieces, it may interfere with the head assembly as it comes down during the cut. If there is a chance of interference, the vise can be moved from sideways away from the saw blade. This can be done by loosening the vise lock knob below the vise mount and moving the vise laterally. Then retighten the lock knob.
**WARNING:** Move vise carefully, as it could result in pinch injury.

f. Place workpiece in vise, and clamp firmly.

g. The moveable arm must be set so that blade guide is within 2" of workpiece. Do this by loosening knob, moving arm, then retightening knob.

### 3. Setting Stops for Multiple Same Length Pieces

a) Often times, several pieces of the same length will be cut. A stop can be made from scrap material and clamped on the fixed jaw of the vise. Workpieces can be slide up to the stop, then clamped. This will allow cuts of a particular length to be readily repeated.
### 4. Considerations for Cutting Thin Material

a) The rule of thumb is to have three teeth of the saw blade engaged with the material while cutting. If the material is thinner than three times the blade pitch then it must be laid flat in the vise. **CAUTION:** Not following this rule may result in unnecessary blade damage or wear.

### 5. Setting Table Miter Gauge

a) Normally, the miter gauge will be set at 0 degrees for straight cuts.

b) If you require an angled cut, the miter gauge can be set to an angle between -45 and 45 degrees. To set the miter gauge, loosen the table clamp located behind the saw support post and swing the saw to the desired angle. Then lock the table clamp. **WARNING:** The miter clamp is located tightly amidst other saw components and care must be taken to prevent pinch injury when unclamping and clamping.

### 6. Cutting Workpiece

a) Flip the On/Off switch to ON to turn the saw on.

b) To lower the head assembly, open the feed control valve slightly by turning it in the counterclockwise direction. The more the valve is opened, the faster the head will drop, so go slowly! **WARNING:** Opening the valve too far will drop the saw head onto the workpiece. This may result in a broken blade or damage to the saw.
c) Stand aside while the machine is cutting and allow the saw to cut completely through the workpiece.

d) After the cut is completed, the head will continue to drop such that the automatic shut-off bar contacts the base and slides upward, moving the On/Off switch to the OFF position.

e) Set the hydraulic control valve to the closed position and raise the head.

f) Remove your workpiece from the vise.

7. Clean Up

a) Pick up the cutoff piece(s) from the cutting operation and recycle appropriately if it is waste.

b) Wipe the vise clean of debris generated from the cutting operation.

c) Return any clamps, etc. used for fixturing to their proper place.

d) Make sure the saw is set to zero degrees if miter feature was used.

e) so it is ready for the next user. Restore any other settings to their nominal positions as needed.

f) Shop towels to be disposed of in accordance with the Shop Waste Disposal SOP.