

Cluster #13 - Panel Saw and Router

The primary use of the panel saw and router is to provide a platform for a saw and router that can be used to cut large sheets of wood into smaller pieces or route grooves into sheets of wood.

Important Parts

The parts you should be most familiar with to operate the machine are the:

Guides – Two shiny steel rods placed vertically at the center of the frame that the saw and/or router slide up or down on.

Carriage – The housing that attaches to the guides that hold either the saw or the router that slides up or down. The carriage has the following parts:

Saw - 2 ½ HP, 8" carbide blade with On/Off switch.

Carriage Lock Knobs – Two, one on each side of the carriage, to lock the carriage in a stationary position to rip cut.

Turntable – A piece that the saw is mounted to and swivels the saw between vertical cutting and horizontal cuts.

Index Pins – Two pins with knobs that when pulled allow the turntable to swivel.

Blade Guard - A safety device covering the saw blade and dust collection system.

Router – 1 ½ HP, ¾" shank with On/Off switch.

Router Lifting Handle – A lever device to plunge the router into or remove from the material being routed.

Depth Adjusting Dial - A knob on the router to adjust the depth of cut.

Horizontal scale – A steel tape measure affixed to one the bars of the frame. Used to measure the length of the piece to be cut. (Like a fence)

Vertical scale – A steel tape mounted vertically to measure a rip cut. (Like a fence)

Rollers – Several round bushings located at the bottom of the frame to support a sheet of material and move it laterally into a cutting position.

Stop Locks – A device that attaches to the frame or mid-rail fence to make multiple pieces.

Mid-Rail Fence – A red anodized aluminum shelf parallel to the bottom rollers. Used when cross-cutting or routing smaller pieces.

Hold Down Clamps – Used to hold material in place for cutting. An integrated dust collection system.

Basic Operating Functions

Operating Procedure: Crosscutting

A crosscut is a vertical cut that must always be done from the top to the bottom of a workpiece.

WARNING: To reduce the risk of injury, do not place your hands on or under the carriage or in the path of the saw blade.

1. Position the saw motor in the crosscutting position with the blade oriented vertically (feed directional arrow pointed down).
2. Loosen the carriage lock and move the carriage to near the top of the guides.
3. Place the workpiece on top of the rollers. Be careful not to drop the material on the rollers.
4. Slide the workpiece to the desired position, using the crosscut rulers or optional gauging systems (Stop Bar or Quick Stop) as measures. The rulers on the right side of the carriage are calibrated for the saw kerf to be located on the right side of the cut line when feeding from the left side of the saw. For example; If your finished piece is located to the left of the carriage, set the stop lock located on the right side of the carriage to the exact dimension of the waste piece. Or, if the finished piece will be located on the right side of the carriage add 1/8" to the stop lock.
5. Make certain the workpiece is adequately supported and stable in the machine. The workpiece can be held with one hand; Do not hold the workpiece so that your hand is anywhere behind the carriage or guides or in the path of the saw blade.
6. Start the motor and dust collector and allow it to reach full speed before beginning the cut.
7. When the motor has reached full speed, slowly and smoothly pull the carriage down so the blade runs through the workpiece. Keep one hand on the handle at all times. Be careful not to force the saw through the workpiece, to avoid binding. If the blade binds in the workpiece, or the workpiece shifts during the

cut, stop the motor, carefully move the carriage to the top of the guides, restart the motor, and begin the cut again.

8. Support and remove the cut-off piece as the saw completes its cut.
9. Once the cut is complete, turn off the motor and wait for the blade to come to a full stop. Move the workpieces away from the blade. Return the carriage to the top of the guides, and lock the carriage rip lock.

CAUTION: A coasting saw blade can mar the edge of a freshly cut workpiece.

Operating Procedure: Ripcutting

A ripcut is a horizontal cut that can be done only from the left. Ripcuts must always be done by moving the workpiece in the direction of the arrow on the saw carriage.

WARNING: To reduce the risk of injury and damage to the equipment, ripping must always be done in the direction of the arrow on the saw.

1. Before you begin, ensure there is enough space on both sides of the saw to completely load the workpiece on the saw frame, move it past the saw, and completely off-load it.
2. Select the ripping direction to the ripping position as shown. See "Rotating the Turntable."
3. Select the height of the saw blade above the rollers. Raise or lower the carriage until the height index tab is aligned with the corresponding dimension on the vertically mounted ruler. Lock the carriage securely to the guides in this position. The ruler is calibrated for the finished piece to be located on the bottom side of the cut line.
4. Start the motor and allow it to reach full speed before beginning the cut.
5. Position the material on the left side of the machine indicated by the arrows on the carriage that show direction of cut. Place the workpiece on top of the rollers. Be careful not to drop the material onto the rollers.
6. When the motor has reached full speed, slowly and smoothly push the workpiece through the saw, in the direction of the feed arrow on the saw. **Avoid placing your hands, clothing, or body parts under the carriage or in the cutting path of the saw blade. Do not look directly down the line of cut because dust and debris are generated during this operation.**

7. Be careful not to force the workpiece through the saw to avoid binding. **If the saw blade binds in the workpiece, or the workpiece shifts during the cut, stop the saw motor, carefully back the workpiece out of the saw, reposition the workpiece, restart the motor, and begin the cut again.**
8. As the workpiece passes across the machine, move to the other side and complete the cut by pulling the workpiece past the saw blade. Support the upper piece to keep it from pinching the blade or the kerf protector, or falling away from the machine.
9. Once the cut is complete, turn off the motor and wait for the blade to come to a full stop. Remove the workpieces from the machine.
10. Rotate the turntable back to the vertical position (directional arrow pointed up) and return the carriage to the top of the guides. Lock the carriage in this position.

Operating Procedure: Routing

1. Position the router platform in the appropriate position for the cut to be made.
2. Adjust the material thickness control for the thickness of the material to be cut.
3. Loosen the carriage locks on the guide tubes and move the carriage to the top of the guides.
4. Place the workpiece on top of the rollers. Do not drop it onto the rollers.
5. Slide the workpiece to the desired position using the crosscut rulers on the right side of the carriage. The rulers are calibrated for the center line of the routing cut.
6. Make certain that the workpiece is adequately supported and stable in the machine. The workpiece can be held with one hand; do not hold the workpiece so that your hand is anywhere behind the carriage or guides or in the path of the bit.
7. To raise or lower the bit, adjust the graduated depth adjusting ring on the router base. It indicates the exact distance of the bit below the sub-base. Set the workpiece about 3/16" below the router sub-base. This will allow the spring tension to hold the stock securely.
8. Start the motor and allow it to reach full speed before beginning the cut.
9. When the motor has reached full speed, slowly and smoothly pull the carriage so the blade runs through the workpiece. Keep one hand on the handle at all times. Be careful not to force the bit through the workpiece, to avoid binding.
10. Once the cut is complete, turn off the motor and wait for the bit to come to a full stop. Move the workpiece away from the bit by releasing the tension lever. Return the carriage to the top of the guides, and lock the carriage lock.

Changing the Bit (Routers)

1. **Disconnect power to the unit.**

2. Lock the carriage lock.
3. Using the wrench kit provided, loosen the collet and remove the bit.
4. Install the new bit and tighten the collet securely.

Switching Between a Saw and Router

To remove the saw and install the router:

WARNING: Always disconnect the power before interchanging the saw and router.

- a. Disconnect the saw power cord. Remove the saw assembly by removing the two thumbscrews at the top of the turntable. Never set the saw assembly so the saw teeth are contacting any surface....the blade could be damaged. Set the saw assembly in the cradle located in the first cupboard to the right of the Panel Saw.
- b. Insert the router assembly into the carriage and attach it with the two thumbscrews.
- c. Attach the adjustable clamp(s) on the frame insert the L-screw down through the hole in the clamp mounting bracket and secure with the red knob.
- d. If routing on the rollers be sure to use your lower clamps to secure the material.

To remove the router and install the saw:

1. Disconnect the router power cord. Remove the router assembly by removing the two thumbscrews at the top of the turntable.
2. Insert the saw assembly into the carriage in the same manner and attach it with the two thumbscrews.
3. Remove the adjustable clamp(s) from the frame.

Starting and Stopping the Motor

Press ON or OFF switch as required on the front of the router motor.

Rotating the Turntable on the Carriage

Pull out both of the indexing pins, and pivot the turntable until they snap into the appropriate holes.

Moving the Carriage Up or Down

Use the handle on the upper right hand corner of the carriage.

Locking the Carriage

Lock the carriage by tightening the red lock knob(s):

On routers, one lock knob located on each guide tube.

Adjusting the Material Thickness Control (Routers)

Adjust the control knob and spindle (on the back of the lifting platform) so the beveled router sub-base stops 3/16" below the surface of the material being dadoed. **Failure to make this adjustment will ultimately result in unnecessary damage to the router platform and/or an inconsistent depth of cutting.**

General Operating Tips

- For smooth, clean, chip-free cuts, you must use industrial carbide saw blades or router bits that are sharp. Dull or improperly sharpened blades or bits will cause chipping, unclean cuts, chatter, and motor overloading. If you are not sure that a blade or bit is sharp, replace it with a new one.
- When you feed the material through the tool horizontally, or move the carriage over the material vertically, do it slowly, smoothly, and (whenever possible) without stopping. Overfeeding results in poor-quality cuts, shortened blade or bit life, and motor overloading.
- Be careful when setting material onto the rollers. Do not drop heavy material onto the rollers or damage to the rollers may result.
- For best results when sawing, place the workpiece onto the tool with its back side facing you. This provides the smoothest possible cut on the face side of the panel.
- Panels being cut horizontally or vertically must always be fed against the rotation of the saw blade.
- Panel saws are intended for cutting large panels down to size. As the overall panel size becomes smaller and smaller, other types of sawing tools become more convenient and safer to use.

- When routing, whenever possible feed the material horizontally from left to right or vertically from top to bottom.

Safety

- * Wear safety goggles.
- * Hearing protection and a dust mask is recommended.
- * Do not wear loose-fitting clothing or jewelry. Loose sleeves must be rolled to the elbow.
- * Do not leave the tool until it comes to a complete stop.
- * Never leave the machine running and unattended.
- * Use a clamp, vise or other practical means to hold your work securely, freeing both hands to control the tool.
- * Inspect guards and other parts before use. Check for misalignment, binding of moving parts, improper mounting, broken parts, and any other conditions that may affect operation. If abnormal noise or vibration occurs, turn the tool off immediately and notify the Foreman. The Foreman should correct the problem or tag damaged tools "DO NOT USE" until repaired. Do not use a damaged tool. REMOVE ALL ADJUSTING WRENCHES AND TOOLS from the tool before turning it on.
- * CROSSCUTTING (VERTICAL CUTTING) MUST ALWAYS BE DONE FROM THE TOP DOWN. Raise the saw carriage to the uppermost position on the guides and lock it into position with the carriage lock whenever the tool is not in use.
- * RIPPING (HORIZONTAL CUTTING) MUST ALWAYS BE DONE FROM LEFT TO RIGHT IN THE DIRECTION OF THE ARROW. Raise the saw carriage to the top of the guides and lock it into position with the carriage lock whenever the tool is not in use. * DO NOT PLACE YOUR HANDS ON OR UNDER THE SAW CARRIAGE OR IN THE PATH OF THE BLADE. Do not try to retrieve a piece of cut material while the blade is rotating.
- * DO NOT DEFEAT THE GUARDS OR OPERATE THE TOOL WITHOUT THE GUARDS IN PLACE. Do not remove the saw motor from the carriage.
- * NEVER STAND ON THE TOOL. Serious injury could occur if the tool is tipped or if you unintentionally contact the cutting tool.

Give hands on experience

If the router assembly is installed, ask one member to change to the saw assembly, then have each member practice a vertical and horizontal cut. Then ask one member to change to the router, install a bit and have each member route a section of a board. If the saw was originally installed, ask a member to install the saw assembly after router practice is complete.