

PALO ALTO ADULT SCHOOL

Woodworking Classes General Safety Instructions

Unsafe behavior is the main cause of injuries in woodshops.

Get into the habit of working safely.

March 30, 2023

Safety Equipment

You are REQUIRED to wear suitable eye protection **AT ALL TIMES** while machines are operating anywhere in the shop.

Safety Glasses (REQUIRED)

- Preferred style will have wrap around side shields.
- Prescription glasses with polycarbonate lenses are acceptable.
- Fully enclosed “goggle” types tend to fog up and lessen visibility.

Ear Protection (recommended)

- Preferred style is either “ earmuff” or the type you insert in your ear.

Dust Mask

- Helpful while sanding in an unventilated area or if you are particularly sensitive to dust

GENERAL SAFETY

- You are REQUIRED to wear eye protection **at all times** in the shop.
- Be sure your clothing is suitable for the shop work you are doing.
 - Do not wear open toe shoes.
 - Remove or fasten any loose clothing (zip up jackets and sweaters).
 - Roll up sleeves above the elbows.
 - Remove jewelry and watches.
 - Never wear gloves when operating any machine tool.
 - Confine long hair to prevent it from getting caught in machinery.
- Clean up after yourself and return tools when you are finished with them.
- Do not use bare hands to clear debris from work surfaces. Use a brush to clear shavings, chips, sawdust, and dried glue from work surfaces.
- Keep the floor clear of scraps and any spilled liquid that might cause someone to slip.
- Place the tools you are using on the bench or work area so that handles point toward you and are not near the edge of the bench.
- Place corded power tools away from the edge of the bench when not in use to reduce tripping hazards and prevent tools from falling onto the floor.
- Tools should be carried in such a way that you cannot jab someone accidentally as you pass by.
- Do not put tools in your pockets as you may jab yourself in the leg.

GENERAL SAFETY

- Obtain permission from the instructor before using a power tool for the first time.
- Check adjustments and special setups on machines before turning on the power (do not presume it is setup correctly)
- Never make an adjustment to knobs or handles marked with red tape.
- If you discover any tool or piece of equipment that is making a “bad” noise or does not seem to be working properly report it to your instructor
- Make sure all other students are safely clear before turning on the power.
- Keep all machine safety guards in their correct position. Never remove a guard without permission.
- Stay clear of machines being operated by others. Don't talk to or interrupt machine operators
- Wait for machines to come to a dead stop before oiling, cleaning, or changing the setup, i.e., changing adjustments, installing new cutters, etc.
- Make sure machines are in the “off” position and motion has stopped, before leaving them.
- Do not carry large pieces of wood vertically or rest them against a wall vertically as they may slip and hit someone.
- All reclaimed lumber must be inspected by shop staff before use on shop machines.

Using a Fire Extinguisher

Fire can spread quickly throughout a workshop. Always know where the fire extinguishers are located.

If there is a significant fire, leave the area at once and call for emergency help.

If a minor fire occurs, attempt to put it out with a fire extinguisher.

- To activate the fire extinguisher, hold it firmly and **PULL** out the safety ring.
- Pick the extinguisher up with one hand, keeping part of that hand on the trigger.
- Use the other hand to **AIM** the baton at the base of the fire where the material fueling the fire is located.
- **SQUEEZE** the trigger to spray.
- **SWEEP** side to side, continuing until the fire is completely out.

If the fire is not brought under control quickly or if it spreads, leave the area at once and call for emergency help.



The Miter Saw

Safety

- ALWAYS keep hands out of the No Hand Zone
- ALWAYS clamp wood firmly against the table and the fence
- ALWAYS clamp wood so that it bows AWAY from the fence
- NEVER try to stop the blade by holding a stick or other item against it.
- NEVER make adjustments while the blade is moving.

Operation

- Use both clamps to clamp wood firmly against the table and the fence.
- If wood is bowed, make sure it bows away from the fence.
- Make sure the blade guard is in place.
- Make sure the dust collection is on (turn on shop-vac)
- Pull the saw fully toward you before turning on.
- Squeeze the trigger to start the saw and wait for it to reach full speed.
- Slowly lower the blade into the wood.
- Push the saw through the wood until the cut is complete.
- Release the trigger AND LEAVE THE BLADE DOWN.
- AFTER the blade has come to a complete stop, raise the saw.
- Do not reach into the no hand zone to remove a piece. Remove the cut piece by pulling or pushing a part of one of the pieces that extends out of the no hand zone.

The Radial-Arm Saw

Safety

- ALWAYS keep hands out of the No Hand Zone
- ALWAYS hold wood firmly against the table and the fence
- ALWAYS orient wood so that it bows AWAY from the fence
- NEVER try to stop the blade by holding a stick or other item against it.
- NEVER make adjustments while the blade is moving.

Operation

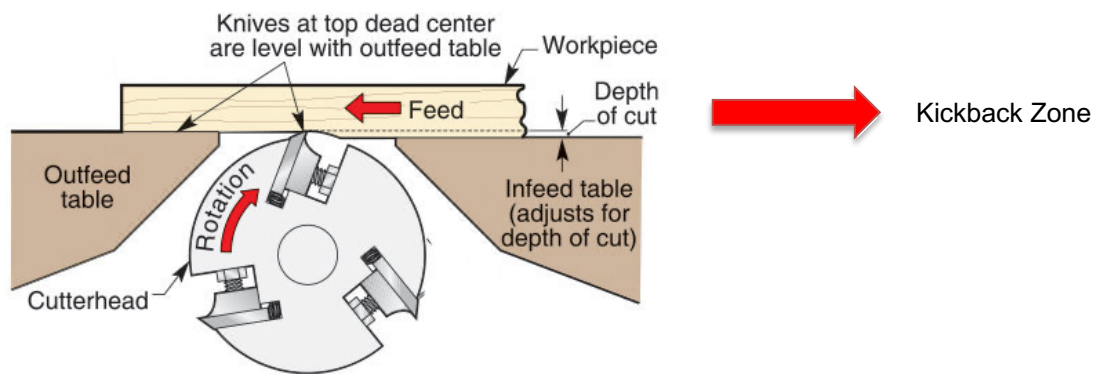
- Before starting the motor, make sure the blade guard is in place.
- Depress the red button on the left or right side of the handle to start the saw motor.
- Make sure the saw is at full speed before starting the cut.
- Hold the wood firmly against the table and the fence.
- If the wood is bowed, set the wood with crook ends away from the fence (with the board frowning at you).
- Move the saw slowly and control the rate of feed until it cuts through the wood. The saw will want to pull itself through the cut.
- After cutting, remove the cut piece by pulling or pushing a part of one of the pieces that extends out of the no hand zone. Do not reach into the no hand zone to remove a piece.
- Make all adjustments with the motor and blade at a dead stop. After turning off the machine, do not try to stop the blade by holding a stick or similar item against it.
- Return the saw to the rear of the table after completing the cut. Never remove wood from the table until the saw is returned.

The Jointer

Machine	Min Length	Min Thickness	Min Width	Depth of Cut
Oliver 12" (green)	12"	1/2"	2"	1/16" or less
Hammer 10" (red/gray)				
Powermatic 8" (yellow)				

After cutting stock to rough dimensions, the jointer is used to create reference surfaces required by other tools used in the stock preparation process.

- Create one flat face (the opposite face is created using the planer)
- Create one straight edge (the opposite edge is created using the table saw)
- Ensure that the reference face and edge are perpendicular



Safety

- ALWAYS have the guard in place over the cutters while jointing.
- ALWAYS use push paddles or push blocks when face jointing.
- ALWAYS feed wood parallel to the direction of the grain.
- NEVER allow your hand to pass directly over the cutter head.
- NEVER allow your fingers to come less than 5 inches to the cutters.
- NEVER attempt to joint end-grain
- NEVER stand in kickback zone
- NEVER adjust the outfeed table (red tape)

The Jointer

Before You Begin

- It is safer to make several light passes. A heavier cut may cause kickback.
- Jointing boards 24"-36" in length is preferred. Combine smaller parts and rough cut longer stock into reasonable lengths.
- Select the most stable face for jointing to minimize rocking
- Check for flatness after each pass (if more than 3 passes, ask for help)
- The goal is FLAT, not pretty. (The planer will make it pretty)

Operation

- Check and adjust infeed table for depth of cut
- Check and adjust bridge guard (Hammer 10")
- Check fence for square when edge jointing.
- Make sure the dust collection is on and the gate is open.
- Make sure no one is standing in the kickback zone.
- Turn on the jointer.

Face Jointing

- Stand close to and facing the jointer on infeed side of cutter
- Use 2 push paddles OR 1 push paddle and 1 push block
- Guide the wood over the cutter.
- Move body and hands to outfeed side of cutter.
- Pull wood across cutter with consistent pressure on outfeed table.

Edge Jointing

- Press jointed face of wood against fence
- Fingertips at middle of board or fence and thumbs pointed up
- Walk board from infeed to outfeed
- Do not allow hands to pass over cutter
- Do not press downward (press against fence only)

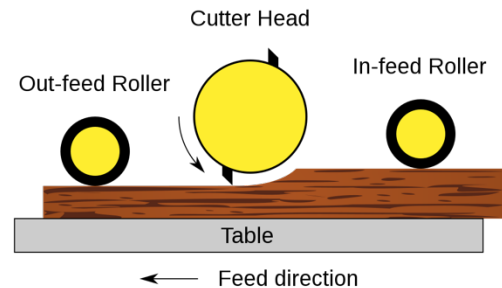
The Planer

Machine	MINIMUM		MAX ADJUSTMENT About 1/32"
	Length	Thickness	
Powermatic 24" (green)	24"	3/4	1/3 turn (1/16" per turn)
Hammer 16" (red/gray)	16"	3/8	1/3 turn (2mm per turn)

The planer removes material from stock to give it a consistent thickness. A planer does not flatten stock. Only the jointer can flatten stock.

Safety

- ALWAYS wear hearing protection when using this machine
- ALWAYS feed wood parallel to the direction of the grain
- ALWAYS set the thickness of the FIRST pass to THICKEST board
- ALWAYS determine THICKEST board by measuring multiple places
- NEVER look directly into the front opening of planer while it is operating
- NEVER stand directly behind boards being fed into the planer.
- NEVER remove more than 1/32" per pass (see MAX ADJUSTMENT)
- NEVER use a stick to push a board through the machine. Use another piece of stock at the infeed or gently pull the board at the outfeed.
- TURN OFF the machine if it seems to be straining (very noisy)
- TURN OFF the machine if a board becomes trapped or stuck



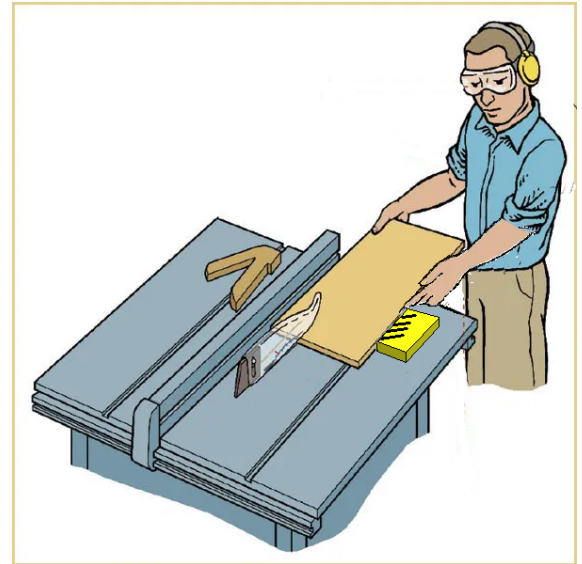
Operation

- Determine THICKEST board by measuring all boards in multiple places
- Set machine to THICKEST board using the depth gauge
- Make sure the dust collection is on and the gate is open.
- Pass ALL boards through machine (one after another) at current setting
- Adjust thickness up to MAX ADJUSTMENT (clockwise)
- Perform additional passes until desired thickness is achieved

The Table Saw (ripping)

Ripping is used for cutting wood that is longer than it is wide. Preventing kickback is the key to safely performing rip cuts.

NOTE: Wood 1 students MUST perform ALL rip cuts under the supervision of an instructor or assistant.



Safety

- ALWAYS place a flat (jointed or planed) face against the table surface
- ALWAYS place a straight and square edge against the fence
- ALWAYS set blade height to minimize exposure (1 tooth exposed)
- ALWAYS use a splitter or riving knife
- ALWAYS use a push stick to push wood past the blade (6" rule)
- ALWAYS use a feather board to press wood against the fence
- ALWAYS turn OFF the MAIN POWER switch before coming closer than 6" to the blade (the main power switch is different than the start/stop switch).
- NEVER allow hands to get closer than 6" to the blade
- NEVER adjust the saw or the fence while the saw is running
- NEVER reach OVER the blade. Walk to the outfeed side of the blade to remove the cut piece or have someone helping you remove the cut piece
- NEVER pull on a board being cut when you are helping someone to "tail off" boards after being cut

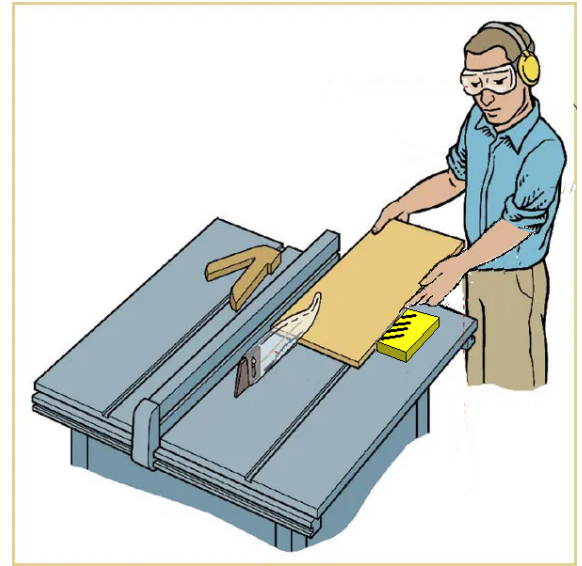
Before you begin

- Check wood for metal staples and shavings (use a metal detector)
- Do not attempt to cut wet or green wood
- Have a push stick ready
- Have a featherboard ready

The Table Saw (ripping)

Operation

- Use a push stick once the back of the wood is up to the front of the table. Use your free hand to hold the wood while you get the push stick.
- Do not push the wood forward with your “off hand”; use the push stick.
- Keep pushing the wood until it is fully past the blade.
- Avoid standing directly in-line with wood while cutting. Check to make sure no one behind you is standing in line with the wood. Make sure the plastic blade guard is in place unless cuts are less than 1-1/2 wide or are not a through cut. If not using the blade guard then use the riving knife if possible
- Set a featherboard close to but not overlapping the front edge of the blade to keep the wood tight against fence before cutting.
- Make sure the wood is not touching the blade before starting the saw.
- Do not force wood into the saw blade faster than it will cut.
- If the wood is too difficult to cut then hold it in place with the push block and use your free hand to stop the saw. Then ask an instructor for help.
- Wait for the blade to stop before reaching for the wood. Do not reach over the blade. After cutting, remove the cut piece by walking to the outfeed side of the blade or by having someone do it for you.
- If you are helping to “tail off” do not pull on a board while it is being cut.



The Table Saw (crosscutting)

Use the crosscut sled when the board is wider than the length of the cut.

Safety

- ALWAYS place a flat (jointed or planed) face against the sled's surface
- ALWAYS place a straight and square edge against sled's fence
- ALWAYS set blade height to minimize exposure (1 tooth exposed)
- ALWAYS use a riving knife
- ALWAYS turn OFF the MAIN POWER switch before coming closer than 6" to the blade (the main power switch is different than the start/stop switch)
- NEVER use the table saw ripping fence when crosscutting
- NEVER allow parts to become trapped between the blade and a stationary object that could rotate the part and cause kickback
- NEVER allow hands to get closer than 6" to the blade
- NEVER adjust the saw or stop block while the saw is running
- NEVER reach OVER the blade

Before you begin

- Check wood for metal staples and shavings (use a metal detector)
- Do not attempt to cut wet or green wood
- Use a stop block for repeatable cuts.
- Do not use the table saw ripping fence as a stop block!

Operation

- Set blade height
- Align pencil mark to blade or adjust stop block to desired length
- Using two hands push sled until wood passes completely through blade
- Return sled to original position OR turn off saw and wait for blade to stop
- After cutting, remove piece / waste using a longer part, hold-down stick, or pencil. Do not reach into the No Hand Zone.

The Band saw

- Be sure the wheel guards are closed before turning on the machine
- Adjust the upper guide assembly so it is 1/4 inch above the wood
- Hold the wood flat on the table
- Allow the saw to reach full speed before starting the cut
- Keep your fingers at least 2 inches from the side of the blade. Never put your fingers in front of the blade. Use a scrap piece to push if needed.
- Feed work into the saw blade firmly and at a rate that will not overload the saw
- Do not make turns too tight. Use relief cuts and plan them in advance.
- If a “clicking” noise is heard, SHUT OFF POWER – THE BLADE MAY BE DAMAGED.
- If you need to back the saw blade out of a long cut, first turn off the power and allow the machine to come to a full stop
- Clear away any scraps close to the saw blade with a stick, not with your fingers
- Stop the band saw before making any adjustments
- Cut cylindrical (round) wood by holding it in a special 'V' fixture
- Use the correct blade. Choose the largest one with the coarsest teeth that will cut the wood cleanly. Make sure it is sharp and in good condition
- Before operating the saw, check the blade for proper tension and proper mounting. The teeth should point down on the downward stroke.
- Be sure the wheels turn clockwise as viewed from the front of the saw.

The Router

- Select the appropriate bit or cutter for the specific job and adjust it to the proper depth
- Use the proper wrenches to tighten the nuts that hold the bit or cutter in the shaft
- Fasten the workpiece securely in a vise or with clamps when not using the router mounted inverted in a table setup
- Make sure the router is unplugged before making any adjustments
- Check to see that the bit rotates freely and that all adjusting nuts and knobs have been tightened
- Always wear ear and eye protection when using a router
- Make a trial cut on a scrap piece of the same thickness before attempting the final cut
- Keep your hands clear of the rotating cutters
- Hold the router firmly in both hands. Take special care when turning the machine on and off
- Feed the router into the wood at an appropriate speed. Never force it faster than it will cut. Feeding too slowly will cause the bit to heat up
- Move the router in the proper cutting direction (when using a hand router, outer edges - go counterclockwise. Inner cuts, go clockwise.)
- After turning off the power, wait until the machine comes to a complete stop before setting it on its side.

The Drill Press

- Clamp work securely, especially when operating the drill press at high speeds
- Keep your hair and loose clothing away from all moving parts. Always wear eye protection
- Place the drill bit in the chuck straight and tighten it securely
- Always remove the chuck key before starting the machine
- When preparing the setup, make sure the drill bit will not mar the vise or table. Place a piece of scrap wood under the work to be drilled
- Clamp cylindrical (round) wood in a V-block before drilling
- Keep your fingers at least 4 inches away from the rotating tool
- Remove chips and shavings with a brush or stick, never your fingers
- Use a slow speed for large holes and a faster speed for smaller holes
- Feed the drill or bit smoothly into the workpiece. When the hole is deep, withdraw the bit often to clear the shavings
- Check the setup carefully before doing special operations (consult instructor for help)
- On a variable speed machine, change the speed while the machine is operating.

The Power Sanders

- Sand only clean, new wood. Do not sand wood that has excess glue or finish on the surface. These materials will ruin the abrasive
- Keep the wood/machine in motion when sanding to prevent burning due to friction
- Be sure to wear a dust mask
- For Hand Sanders, turn on/off power with sander resting on workpiece.

Stationary Belt and Disc Sanders

- Use the worktable, fence and other guides to control the position of the work, whenever possible
- Be certain the sanding belt or disc is correctly mounted. The belt must track in the center of the rollers and platen
- Make sure the guards and worktable adjustments are securely locked
- Position the table 1/16" from the sanding belt or disc, and turn power on before starting to sand.
- Hold small or irregularly shaped pieces in a hand clamp or make a special jig or fixture to hold them
- When sanding the end grain of narrow pieces on the belt sander, always support the work against the table
- Feed the wood directly against the sanding belt. Never feed it in from the left or right as it may catch and rip or pull the belt off
- Do not operate the disc sander if the sanding paper is loose. Make sure the adhesive is holding the sanding disc tightly to the platen
- Sand only on the side of the disc sander that is moving downward, toward the table. Check the rotation of the disc...some rotate clockwise others counterclockwise.
- Do not use power sanders to shape parts when the operation could be performed better using other machines.

