



Woodshop Orientation

General Orientation Guideline
Version 1.0

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WELCOME

The Shops at CCA, along with the Studio Management team within the Department of Instructional Fabrication, are here to provide a safe and friendly learning environment, as well as an opportunity to work with heavy machinery and fabricating equipment.

Always remember to ask questions if you are unsure about anything.

CCA Woodshops:

Model Shop (SF)

- open to all Students and Staff

Shaklee Woodshop (OAK)

- open to all Students and Staff

Furniture Machine Room (SF)

- open to all students in Furniture courses



ACCESS

Currently enrolled students and actively employed staff have the ability to check out hand tools from the Tool Center locations. Access to the woodshops within CCA requires prior authorization, as well as shop specific prerequisites (ie Furniture Studio). Please visit CCA Portal pages or ask a Studio Manager for further information.

AUTHORIZATION

The Woodshop Orientation includes a general shop orientation and instruction on the safe use of the Compound Miter Saw, Band Saw, Table Saw, Stationary Sanders, and Drill Press. Additional training and authorization is available upon request for many of the other stationary tools found within the CCA Shops. Please ask a Studio Manager to arrange a training-- we are happy to help.

- **Note:** Certain shops have specific policies and operating procedures that more closely reflect their use. Always follow the stated policies for the shop you are using, and please check in with Studio Management whenever you are not sure.

MATERIALS

Each shop will have its own set of specific guidelines regarding which materials are allowed on which machines. Please check with Studio Management for final approval.

Supported Materials in Woodshops

- Domestic Hardwood
- Plywoods
- MDF

Shop Specific Materials

(Please refer to specific Studio Management material guidelines)

- Domestic Softwoods
- Exotic Hardwoods & Softwoods
- Foam (Polyurethane and Polystyrene)
- Foamcore & Cardboard
- PETG & 3D Prints
- Acrylics & PVC
- Green/Fresh Wood
- Construction Grade Lumber
- Reclaimed/Recycled Materials with prior approval

Unsupported Materials in Woodshops

- Metals
- Painted Materials
- Plaster & Cement
- Pressure/Chemical Treated Wood
- Reclaimed/Mystery Materials from an unknown source
 - check with Studio Management first

SAFETY

The Shops and Studio spaces across CCA utilize a series of Safety Icons that rely upon images and colors to convey specific safety requirement:



Eye Protection



Closed-toe Shoes



Hearing Protection



Tied-back Hair and Loose Items



Respirator



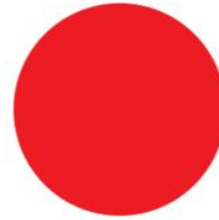
No Headphones or Ear Buds



Required



Recommended



Prohibited

EXAMPLES OF POSTED SAFETY ICONS:

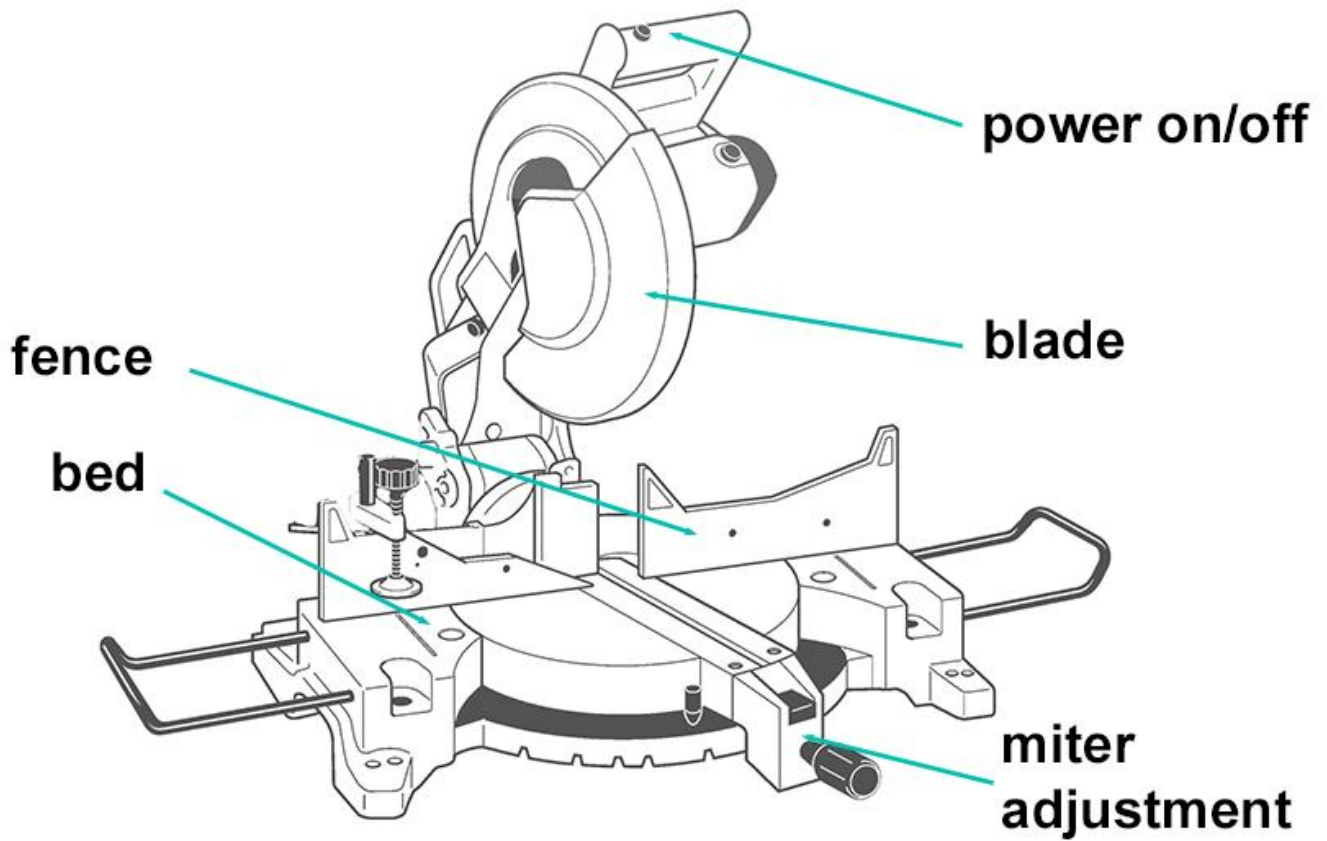


Respirator Recommended

Eye Protection Required



Compound Miter Saw



Description

The Miter Saw (or Chop Saw) uses a circular saw blade similar to the table saw. It can be used to cut through a variety of material types, shapes and sizes. This saw is particularly good at making lots of cuts quickly, and can be set up with jigs and stops for precise repeat operations.

Since the material is fixed and the operator lowers the blade, the Miter Saw can only make cuts across the material's longest dimension (traditionally called a "cross cut"). A Compound Miter Saw can be adjusted to cut both miters and bevels simultaneously.

Prohibited Materials on Miter Saw

Metal, Cardboard, Foamcore, Unknown Materials

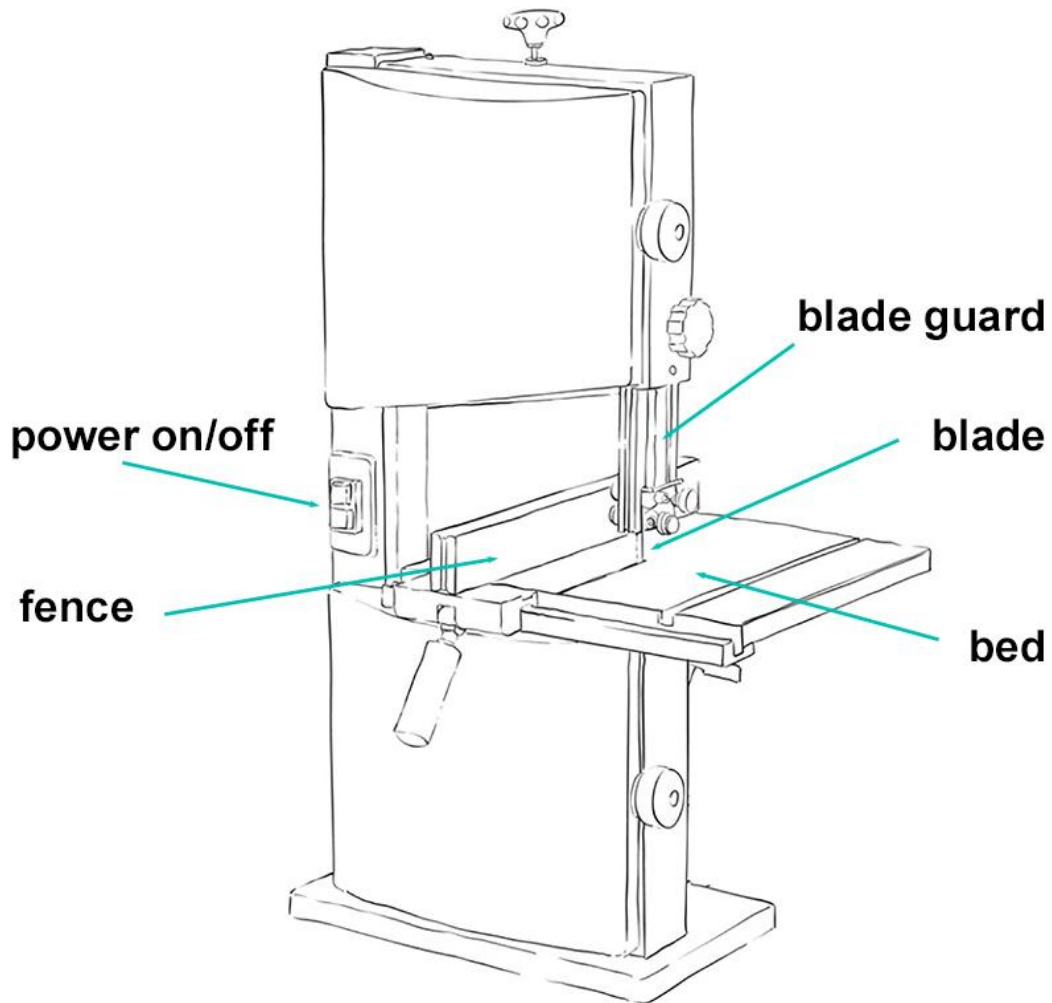
General Checklist

- Turn on the dust collection.
- Check that your material is longer than 6" (15 cm).
- Check that the miter/bevel is set and locked.
- Check that the sliding feature is locked if not being used.
- Check your material for two flat sides. Material must sit flat against 2 locations: the bed and the fence.
- Notify Studio Management if the blade is dull or if there is any damage to the tool.

Operational Steps

- Line up the blade with your desired cut.
- Use your left hand to hold the material firmly against the fence and bed. Make sure your hand is 6" (15cm) away from the path of the saw blade.
- Use your right hand to pull the trigger (saw turns ON).
- Slowly and steadily lower the blade through your material, all the way to the saw's lowest point. Do not force the blade through the material-- let the blade do the cutting as this will reduce material blow out.
- Release the trigger (saw turns OFF), and keep the saw at the lowest point until the blade completely stops spinning.
- Raise the saw back up and remove your materials.
- Reset the tool and area; vacuum and/or sweep up all debris

Band Saw



Description

The bandsaw gets its name from the nature of its blade: a long, flexible hoop stretched around two wheels like a rubber band. As the wheels spin, the blade moves constantly down through the bed. An operator pushes material of many shapes and sizes through the fixed blade to make long straight-ish or curved cuts.

Due to the nature of the blade, the bandsaw is not very good at precision work. It is best used for rough cuts and works well paired with the Stationary Sanders. There are many techniques for cutting slots, radii, angles and curves--come talk to Studio Staff about what you need to do!

Prohibited Materials on Band Saw

Metal, Cardboard, Mystery Materials

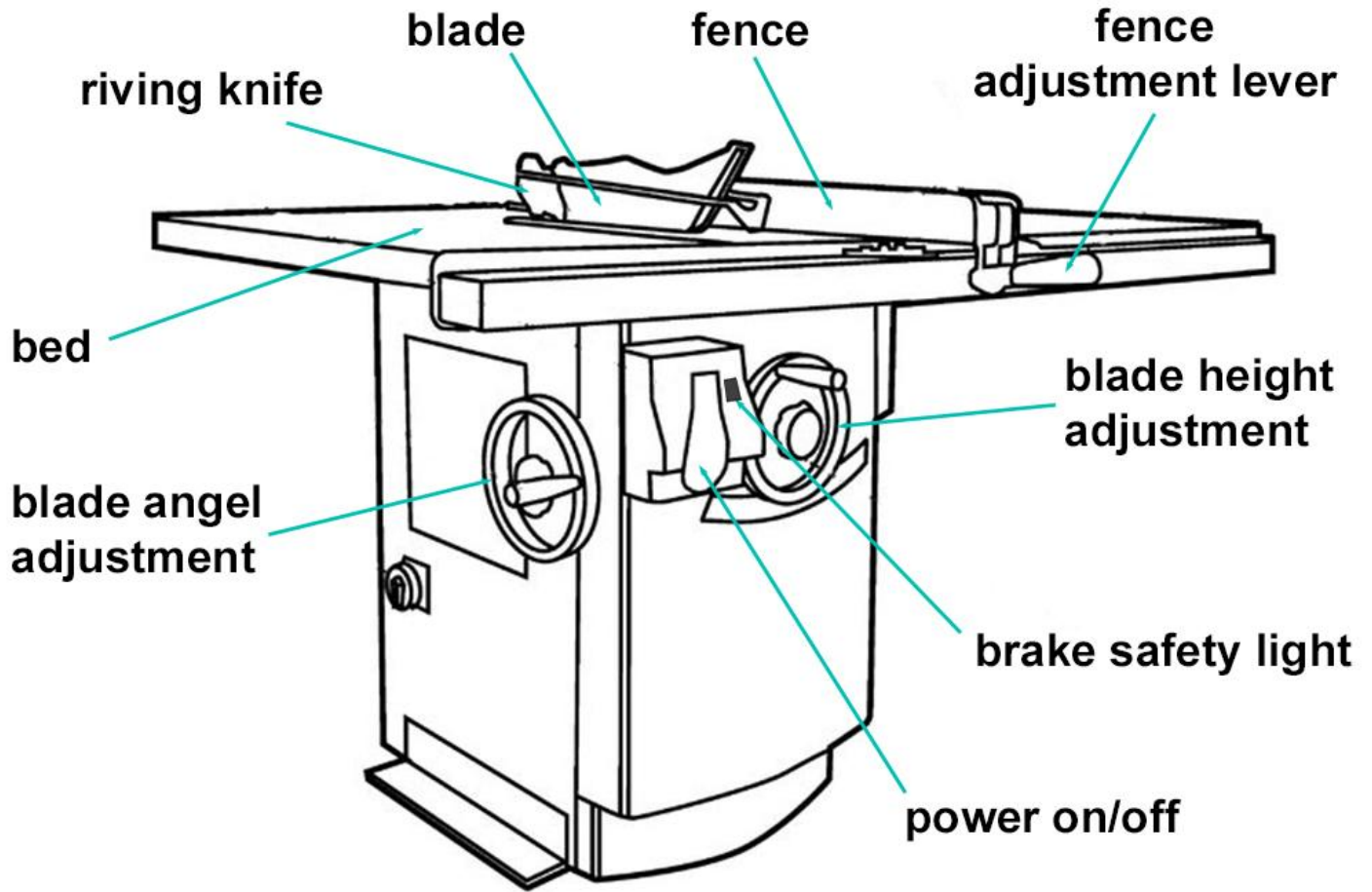
General Checklist

- Turn on the dust collection.
- Check your material for splits and warps to determine how to keep the material flat on the bed.
- Set the upper blade guard so that it is no more than ¼" (pencil thickness) above the material to be cut.
- Make all adjustments to the fence, blade guard, miter guide, and/or bed before turning the machine on.
- Notify Studio Management if the blade is dull or if it is not tracking properly.

Operational Steps

- Turn ON the saw and allow the tool to come up to full speed.
- Keeping your hands out of the 4" (10 cm) zone, push and/or pull your material through the blade. Be careful near the end of the cut and make sure your fingers are clear of the blade cutting through the material.
- Use a push stick if your hand will come within 4" (10 cm) of the blade.
- Let the blade do the cutting; do not push or twist the blade.
- When your cut is complete, turn OFF the saw.
- Press the brake pedal with your foot until the blade comes to a complete stop.
- Reset the tool and area; vacuum and/or sweep up all debris.

Table Saw



Description

The Table Saw uses a circular saw blade similar to the Miter Saw, although in this case, the Table Saw blade is fixed and the user passes the material through the blade. This is a versatile tool that can make precise repeat operations and very accurate straight line cuts with the use of a fence or sled/miter gauge. With the use of a fence, the Table Saw can make cuts lengthwise through the material (traditional “rip cut”), or widthwise across the material with the use of a sled/miter gauge (traditional “cross cut”).

Notes

All of the table saws within CCA’s shops are Sawstop Table Saws, which use a proprietary **brake system** to help protect against common injuries. This brake system works by running a small amount of electric current through the blade. If the tool detects conductive material--like your skin!--the brake will fire within 25 milliseconds, or the width of a single tooth on the blade, stopping and dropping the blade out of harm’s way. While this is great for all of our fingers, it does present some limitations on which materials we can use on these saws (see Material Info below).

The **ripping knife**, found behind the blade, is an additional safety feature CCA uses with our table saws. This important tool part keeps an offcut from catching on the teeth of the spinning blade and getting kicked back toward the user. Please check with a Studio Manager if you do not see the ripping knife installed.

Prohibited Materials on Table Saw

Metal, Cardboard, Mystery Materials

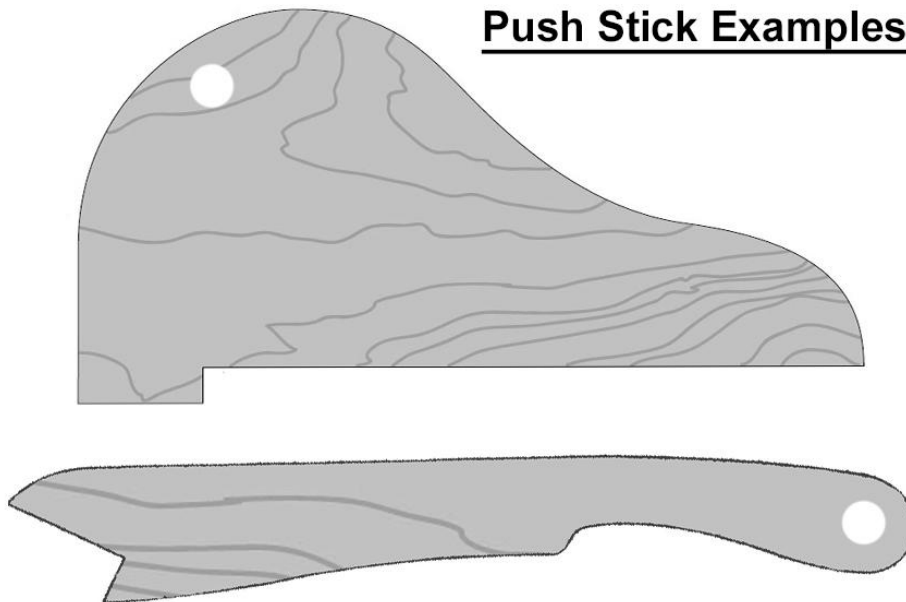
Any Conductive Material containing the following which may set off the brake system:

- Metal
- Wet Materials (water, glue, green wood, pressure treated chemicals)
- Reflective/mylar plastics
- Laser cut edges (residual carbon) - Check with Studio Management if unsure.

General Checklist

- Turn on the dust collection.
- Determine if you need to use the fence or the sled in order to support the longest side of your material. *Never use both.*
 - The Fence is used to make cuts parallel to the longest side of the material, also called 'rip cuts.'
 - A Sled or Miter Gauge is used to make cuts across the longest side of the material, also called 'cross cuts.'
- Check that the green brake safety light is on and activated.
- Check that the riving knife is installed (except when using dado blade).
- Check with Studio Management to ensure the blade is the correct one for your material. Shops have different blades for parallel grain (rip) cuts and perpendicular grain (cross) cuts, as well as blades for acrylics.
- Material must sit securely at 2 locations for the duration of the cut-- on the **bed**, and against the **fence** or **sled**.
- Check that the blade, guards and fence (if using) are properly tightened and secured.
- Set the height of the blade to 1/2" above the material.
- Make sure all push sticks are within reach for easy access.
- Notify Studio Management if the blade is dull or if there is any damage to the tool.

Push Stick Examples:



Operational Steps with the Fence

- ❑ If your material is less than 12” (30.5 cm) in length, please check with Studio Management on the safest way to control your material in making rip cuts.
- ❑ Set fence to the dimension needed while keeping the majority of the material between the blade and the fence.
- ❑ Holding your material outside the 4” (10 cm) zone around the blade, turn ON the saw.
- ❑ Use the thumb and forefinger of your left hand (guide hand) to hold the material flat against the bed and tight against the fence at all times.
- ❑ With your left hand stationary, use your right hand to push the material forward and completely through the blade.
- ❑ Use a push stick if your hand will come within 4” (10 cm) of the blade.
- ❑ Your guide hand (left hand) should not move.
- ❑ Continue to push the material until it is completely past the riving knife.
- ❑ Turn OFF the saw.
- ❑ Wait for the saw blade to come to a complete stop before removing any materials.
- ❑ Reset the tool and area; vacuum and/or sweep up all debris.

Tip: When cutting parallel to the longest dimension of the material (“rip cut”), the fence keeps the material parallel to the blade. The white face of the fence will show a **shadow** if the material begins to drift away from the fence face. The seam between the workpiece and the fence is where the user should watch while cutting with the fence.

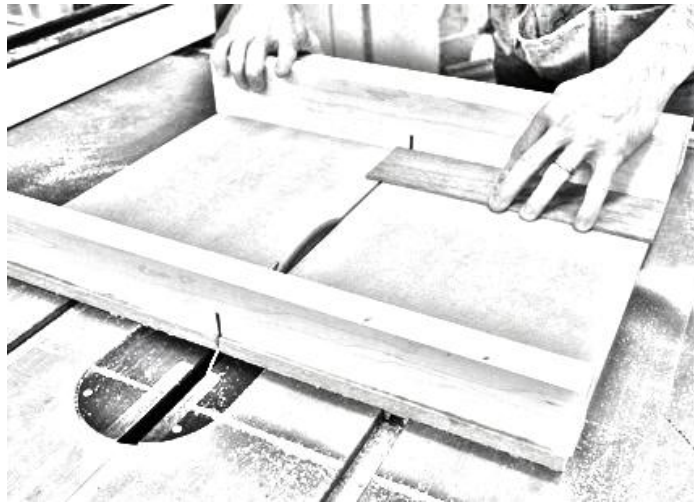
Notes on Kickback

Kickback occurs when the unsupported material comes in contact with the moving saw blade, resulting in it being thrown back into the user’s body with great force. This can severely injure not only the user, but also bystanders, the equipment, and the material.

- ❑ The user should always maintain contact with the material while it is anywhere near the moving blade, including when using a push stick. The guide hand must remain in contact with the material when reaching for the push stick.
- ❑ Be sure to not allow the material to come away from the fence when cutting-- the user should apply constant pressure into the fence. If the material does come off the fence while cutting, it could come in contact with the backside of the blade where it can be lifted up and thrown towards the user.

- ❑ The material should be pushed past the riving knife in order to safely complete the cut, ensuring that no part of the material is in contact with the moving blade once the user removes their hands and/or push stick.

Operational Steps with the Sled

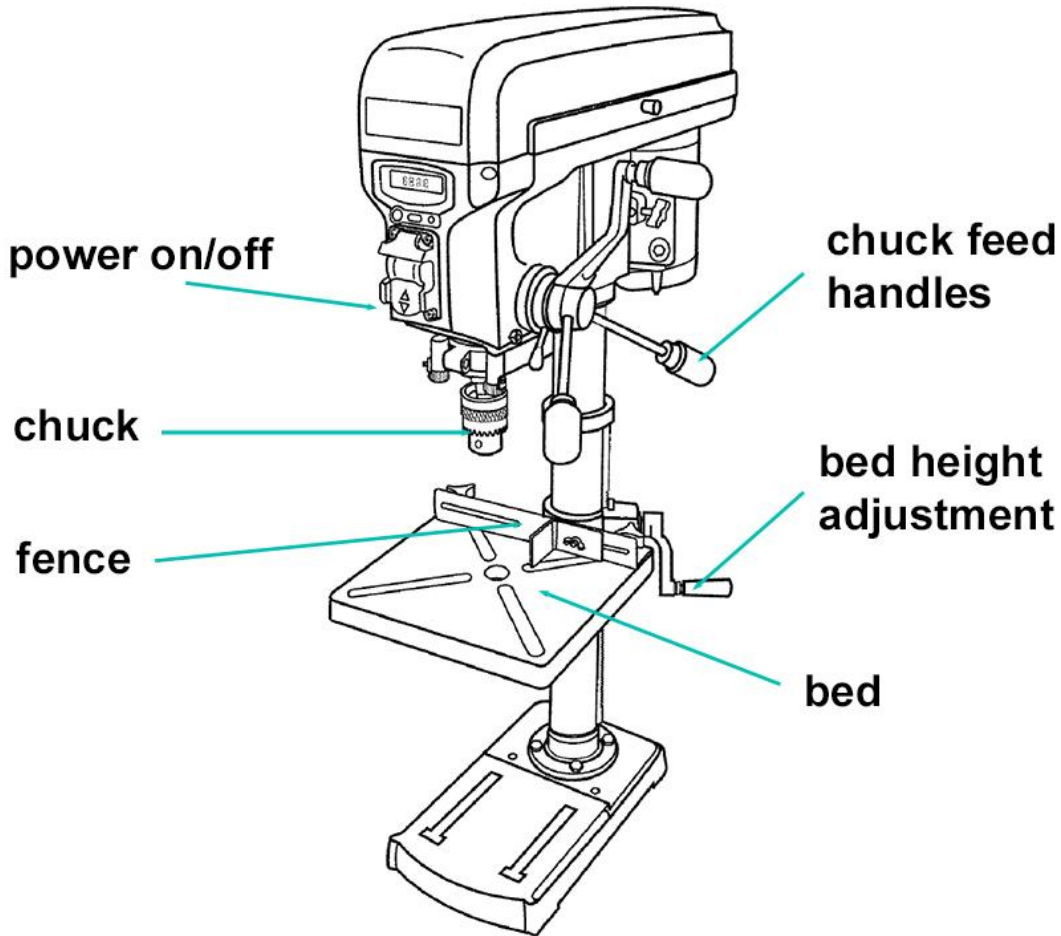


- ❑ Remove and/or slide the fence out of the way.
- ❑ Place the sled in the tracks on the bed of the table saw.
- ❑ Material must sit flat on the bed and flat against the rear fence of the sled.
- ❑ Hold the material with both hands on either side of the blade.
- ❑ With the material out of the 4" (10 cm) zone, turn ON the saw.
- ❑ Slide the sled forward to cut the material, turn OFF the saw, then slide the sled back.
- ❑ Wait for the saw blade to come to a complete stop before removing the sled and any materials.
- ❑ Reset the tool and area; vacuum and/or sweep up all debris.

Tip: When making many identical cuts, slide the sled forward, remove the offcut, then slide the sled back to cut again. Be sure not to reach over the moving blade to retrieve the material.

Shops generally have many different types of sleds that can be used in different applications. Please ask Studio Management and/or consult CCA Shops Sled Guide for additional information.

Drill Press



Description

A drill press is essentially a drill with its chuck mounted above an adjustable table. The operator lowers the rotating drill chuck and bit through the fixed material to make accurate holes through a variety of materials. By changing the bit, height and angle of the bed, as well as the speed of the chuck, the drill press can be a versatile tool. With the use of a vise, clamp stops, and/or chuck depth gauge, the user can quickly and precisely execute repeat operations.

Notes:

- The material should be securely clamped to the bed and/or fence to avoid any danger of it becoming caught on the drill bit and spinning around.
- Special precautions should be taken to account for the exposed spinning chuck and bit. The chuck key should **never** be left in the chuck. Long hair, long sleeves and dangling jewelry **must** be secured or removed before operating this tool. Gloves should never be worn when operating this tool as they can be easily snagged and pulled into the machine.
- If the material does come loose and is seized by the drill bit, turn the power OFF and step away from the machine until it comes to a complete stop.

Prohibited Materials on Drill Press

Metal, Mystery Materials

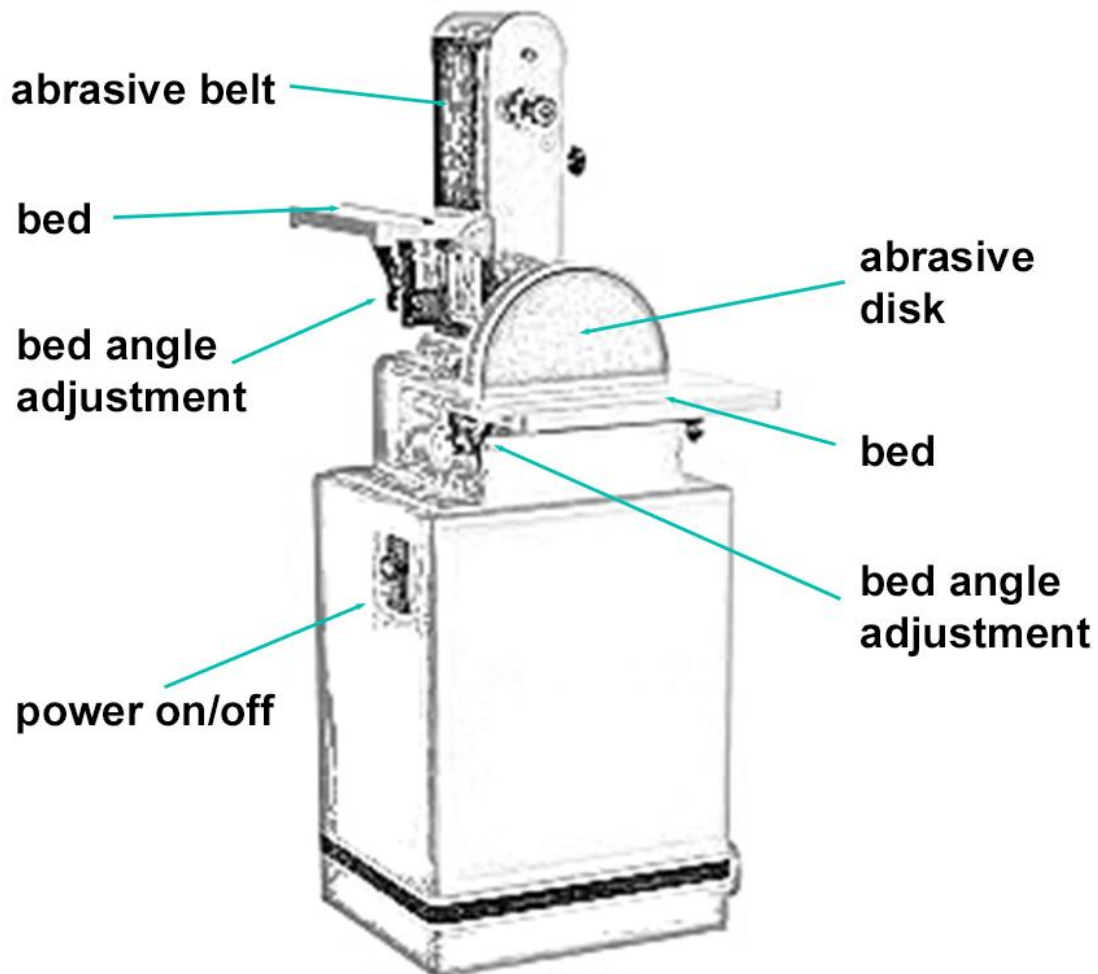
General Checklist

- Check the height of the bed-- adjust and lock into position.
- Check the speed of the chuck. If the speed needs to be adjusted, notify Studio Management.
- Install your drill bit into the chuck. Tighten all three jaws with the chuck key.
- Place a sacrificial piece of scrap wood under your material to protect the bed and/or vise.
- Line up the bit with your desired hole. Setup any stops and a fence as needed.
- Secure your material in a vise or clamp your material to the bed to prevent spinning.
- Use a v-block or jig to hold any round, small, or odd shaped parts.

Operational Steps

- Turn ON the tool.
- Use the handles to slowly and steadily lower the cutting bit through your material.
- Applying constant pressure-- do not force the bit through the material faster than it can cut.
- Deep holes should be cleared of debris by running the bit in and out of the stock during the operation.
- Once the desired depth is reached, steadily raise the tool out of the material. Do not let go of the handles.
- Turn OFF the tool. Wait for the chuck and bit to come to a complete stop before removing the debris and material.
- Reset the tool and area; vacuum and/or sweep up all debris.

Belt & Disc Sander



Description

Stationary Sanders use a spinning, abrasive material to remove small amounts of material and refine the shape of cuts made from other tools. Use the sanders to refine cuts made on the bandsaw, or make minor adjustments to the fit of parts. The Belt & Disk Sanders have two sanding surfaces that move in tandem, but should only be used by **one** operator at a time.

Notes

The full width of the sanding Belt can be used, however when using the Disk portion of the machine, the user must only use **half** of the abrasive disc sander. Always use the area of the sanding medium that is spinning **down** toward the bed of the tool. Look for an arrow indicating the direction the disc spins in order to determine which side of the disc to use.

Prohibited Materials on Belt & Disk Sander

Metal, Painted or finished materials, Mystery Materials

- Acrylic plastic (cast or extruded) is the only type of plastic approved for use on the Belt & Disk Sander.

General Checklist

- Turn ON the dust collection.
- Check that your material is large enough to not get trapped between the machine bed and the sanding medium.
- Check that your material can sit flat on the bed.
- Check the angle of the bed and tighten locking knobs.
- If using the disc sander, check the spinning direction of the disc to determine which portion of the sanding medium to use.

Operational Steps

- Hold your material outside the 4" (10 cm) zone and turn ON the sander.
- Allow the sander to come up to full speed.
- Use a clamp or hold-down if your hand will come within 4" (10 cm) of the abrasive material.
- Gently press your material into the sanding medium. If the machine struggles to maintain speed, it is an indication that the pressure against the belt/disk is too much.
 - Using the Belt:** Move your material across the entire sanding medium. Never push your material hard into just one spot on the sanding belt as this will damage not only the belt but the material as well.
 - Using the Disk:** The speed of the disc increases as you move away from the center. Instead of moving your material across the sanding medium, gently press and release.
- Turn OFF the sander. When applicable, wait for the machine to come to a complete stop before removing the debris.
- Reset the tool and area; vacuum and/or sweep up all debris.