CaYPT
Canadian Young Physicists' Tournament

SAWS

Author: Dennis Lu

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Abstract

In this SOP, the methodology on how to properly use the various saws around the lab are listed.

Contents

1 Circular Saw

1.1 Purpose/Basics

Circular saws usually used to make straight line cuts in wood. Operate using a toothed disk using a spinning motion. Circular saws can cut into various materials like wood or plastic. [1]

1.2 Operating Procedure

- Clamp the material firmly to a workstation.
- Measure and mark the cut line.
- Rest the saw shoe on the edge of the material and near the cutting line.
- Lift the blade guard.
- With the blade next to but not touching the workpiece, press the lock switch and pull the trigger to get the saw to full speed.
- Keep the shoe firmly on the surface and ease the saw forward to the cutting line while keeping the trigger engaged.
- Guide the saw along the scrap side of the cutting line, keeping the shoe flat
- Let the saw do its work. Pushing with too much force can strain the motor.
- Release the trigger to stop the blade when the cut is complete, then lift the saw and place it on the workbench.

2 Jig saw

2.1 Purpose/Basics

The jigsaw is a very versatile tool, they can cut straight or curved lines. When pressing the trigger, the up and down motion of the blade is activated which cuts the intended material. Most of the models available are variable speed, which means that the speed at which the saw moves depend on how hard the trigger is pressed. [2]

2.2 Operating Procedure

- Clamp the material firmly to a workstation.
- Plug the saw's cord into a power source or attach its battery. Batteries can be found around the lab either in charging stations or on other equipment

(i.e. drills).

- Rest the saw shoe on the edge of the material and near the cutting line.
- With the blade next to but not touching the workpiece, pull the trigger and get the saw to full speed.
- Keep the shoe firmly on the surface and ease the saw forward to the cutting line while keeping the trigger engaged.
- Guide the saw along the outside of the cutting line, keeping the shoe flat.
- Let the saw do its work. Pushing with too much force can strain the motor or cause the blade to break.
- Avoid any side-to-side pressure on the blade to keep it from bending and creating an unintentional bevel in the cut.
- Release the trigger to stop the blade when the cut is complete. Then lift the saw and place it on the workbench.

3 Miter Saw

3.1 Purpose/Basics

There are two different cuts able to be made with a miter saw: bevel cuts and miter cuts. The miter saw in the lab has an adjustment mechanism which means that it could cut boards that are wider than the miter saw blade. [3]

3.2 Operating Procedure

- Connect saw to a power supply and turn on the power switch.
- Measure and mark a line across the stock to be cut.
- Place the board onto the saw and flush against the saw fence at the back of the base.
- Loosen the handle on the miter gauge at the front of the saw, depress the lock handle and pivot the blade to the desired angle.
- Tighten the handle on the miter gauge.
- Lower the handle to check the point where the blade meets the wood.
- Adjust the wood placement as necessary and clamp the board or brace firmly into position with your hands at least six inches away from the blade.

Note: The board that extends beyond the miter saw base must be supported. Adjust the extension supports on the miter saw stand, if using, or stack scrap pieces of wood on the work surface in order for the entire length of stock to remain level.

4 Hacksaw

4.1 Purpose/Basics

Hacksaws are usually used to cut metal (not to be confused with bow saws which are used to cut wood). However, they can also be used to cut various materials such as wood or plastic. To recognize a hacksaw, they are usually C-shaped that hold a blade under tension. Shown in the image above, there is a wingnut which can be tightened to adjust the tension in the blade. Usually the teeth on the blades are set forward (depending on direction of applied force).

4.2 Operating Procedure

- Tightly clamp the object that is to be cut.
- Make sure the markings on the object are distinguishable.
- Hold the handle of the saw in a tight grip and place one foot in front of the other to maintain stability.
- Engage in a smooth downward/lateral motion until the object desired to be cut is completed.

5 Wood Saw

5.1 Purpose/Basics

Wood saws like hacksaws are used to cut wood.

5.2 Operating Procedure

Follow the same procedures 1.)-4.) as for hacksaws.

REFERENCES

[1] How to use a circular saw. https://www.homedepot.com/c/ah/how-to-use-a-circular-saw/9ba683603be9fa5395fab90675ca109. Accessed: 2022-05-25.

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[3] How to use a miter saw. https://www.homedepot.com/c/ah/how-to-use-a-miter-saw/9ba683603be9fa5395fab902fc94472. Accessed: 2022-05-25.