Kushed Procedures

Portable Electric Circular Saws | P3

Circular Saws

- 9” Circular Saw - Makita x2
  - Hitachi x 1
- 7 1/4” Circular Saw -Ryobi x 2
- 9” Track Saw -1400 mm track length - Renegade Industrial (plunge cut circular saw which runs on a track)

The Shed provides items such as welding masks and gloves.

Members are required to provide their own footwear, eyewear, hearing protection and masks.

Safety

This is a very high priority for our Shed members. There are some aspects that are mandatory under our insurance policies and some which the The Shed requires members to adhere to for everyone's benefit.

The Shed Safety Induction

It is a requirement of attendance at The Shed that members have reviewed the Safety Induction Presentation

Personal Protective Equipment

This is required in various forms depending upon the equipment being used or the activity being undertaken.

Protective eyewear is always mandatory when using machinery.

The Shed schedules a Coordinator and a First Aid Safety Officer for each day of attendance and their safety directions are final and must be adhered to.

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Makita 5900B in action

https://www.youtube.com/watch?v=bflTi41S6Og

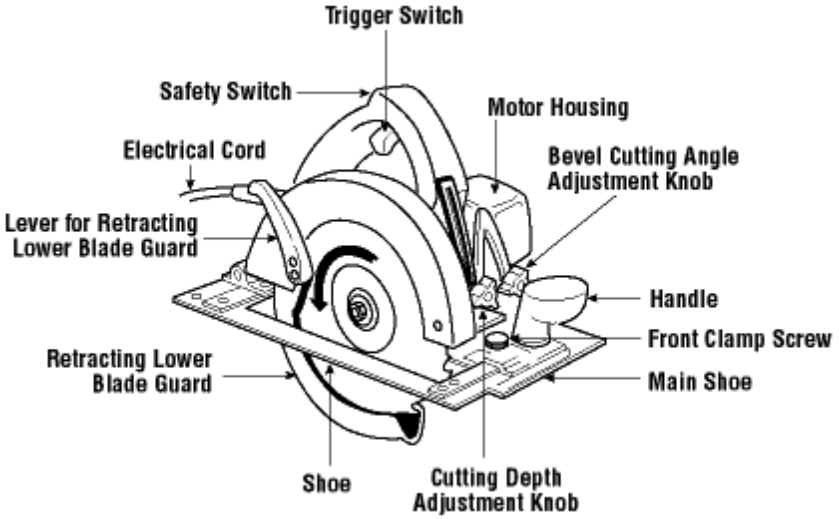
https://www.youtube.com/watch?v=OWb7ZOCnbHs

Key Features of Portable Circular Saws

A circular saw is an electric saw that turns a round flat blade to cut wood or plastic depending on the blade selected. Circular saws have a handle with on/off trigger switch, an arbour nut to hold the blade in place, and guards to protect the operator from touching the spinning blade. In addition, circular saws have height/depth and bevel adjustments.

They excel at cross cutting timber and breaking down large pieces of plywood into smaller pieces to be more easily managed on the more accurate table saw.

- Cutting is by teeth on the edge of a metal blade or by an abrasive wheel.
- The cut has narrow kerf and relatively smooth surface finish.
- Cuts are straight and relatively accurate.
- The saw usually leaves burrs on the cut edge of metal and plastic



Typical circular power saw

Safety & Procedural Issues

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Do not operate circular saw in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. It can create sparks which may ignite the dust or fumes.
- Do not use a circular saw while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- Avoid accidental starting. Ensure the switch is in the off position before plugging in. DO NOT UNDER ANY CIRCUMSTANCES CARRY THE SAW Carrying circular saws with your finger on the switch or Plugging in power tools that have the switch either locked or held on is extremely dangerous. invites accidents.

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What should you do before start cutting with a circular saw?

- Wear safety glasses or goggles, or a face shield (with safety glasses or goggles).
- Wear an approved respirator or dust mask when exposed to harmful or nuisance dusts.
- Use appropriate hearing protection equipment in noisy areas.
- Check the retracting lower blade guard to make certain it works freely.
- Ensure that the blade that you have selected is sharp enough to do the job. Sharp blades work better and are safer.
- Check the saw for proper blade rotation.
- Keep all cords clear of cutting area.
- Circular saws are designed for right-hand operation; left-handed operation will demand more care to operate safely

Safety & Procedural Issues

- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the circular saw may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the circular saw in unexpected situations.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery, or long hair can be caught in moving parts.
- If the circular saw has a bag or connection for dust extraction and collection facilities, ensure these are connected and properly used. Use of these devices can reduce dust-related hazards.
- Do not force the circular saw.
- Disconnect the circular saw plug from the power source from the before making any adjustments, changing accessories, or storing circular saw. Such preventive safety measures reduce the risk of starting the tool accidentally.

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Wait for the saw to stop

- Always wait for the saw to completely stop and observe that the lower guard is covering the blade before placing saw down on bench or floor.
- An unprotected, coasting blade will cause the saw to walk backwards, cutting whatever is in its path. Be aware of the time it takes for the blade to stop after the switch is released.

Safety & Procedural Issues

- With the power isolated from the machine, check the lower guard for proper opening and closing before each use. Do not operate the saw if lower guard does not move freely and close instantly. Never clamp or tie the lower guard into the open position. If the saw is accidentally dropped, the lower guard may be bent. Raise the lower guard with the retracting handle and make sure it moves freely and does not touch the blade.
- Check the operation and condition of the lower guard spring. If the guard and the spring are not operating properly, they must be serviced before use. The lower guard may operate sluggishly due to damaged parts, gummy deposits, or a build up of debris.
- The lower guard should be retracted manually only for special cuts such as Plunge Cuts. Raise lower guard by retracting handle and as soon as blade enters the material, the lower guard must be released. For all other sawing, the lower guard should operate automatically.

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WARNING!

Some dust created by power sawing contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

• lead from lead-based paint

• arsenic and chromium from chemically-treated timber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well-ventilated area, and work with approved safety equipment, such as those dust masks that are specifically designed to filter out microscopic particles.

- NEVER hold piece being cut in your hands or across your leg. Secure the work piece to a stable platform. It is important to support the work properly to minimize body exposure, blade binding, or loss of control.
- When ripping always use a rip fence or straight edge guide. This improves the accuracy of cut and reduces the chance for blade binding.
- Always use blades with correct size and shape (diamond vs. round) arbour holes. Blades that do not match the mounting hardware of the saw will run eccentrically, causing loss of control.
- Never use damaged or incorrect blade washers or bolts. The blade washers and bolts were specially designed for your saw, for optimum performance and safety of operation.

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Here is a simple definition of kickback:

- A circular saw kickback is the sudden backward strike of the circular saw when the blade of the saw gets stuck and pinched in the material and instead of moving forward, the blade bites in the workpiece at first and then strikes backward with a great force.
- This can happen in another way also. Instead of the saw striking itself, it can throw a material piece with a violent speed just like in case of the table saws.

Both of these cases can be said as kickback.

It is very dangerous!

Causes and Operator Prevention of KICKBACK

KICKBACK is a sudden reaction to a pinched, bound or misaligned saw blade, causing an uncontrolled saw to lift up and out of the work piece toward the operator.

- When the blade is pinched or bound tightly by the kerf closing down, the blade stalls and the motor reaction drives the unit rapidly back toward the operator.
- If the blade becomes twisted or misaligned in the cut, the teeth at the back edge of the blade can dig into the top surface of the wood causing the blade to climb out of the kerf and jump back toward operator.

KICKBACK is the result of saw misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below:

Maintain a firm grip with both hands on the saw and position your arms to resist KICKBACK forces. Position your body to either side of the blade, but not in line with the blade. KICKBACK could cause the saw to jump backwards, but kickback forces can be controlled by the operator, if proper precautions are taken

What not to do !

- When the blade is binding, or when interrupting a cut for any reason, release the trigger and hold the saw motionless in the material until the blade comes to a complete stop. Never attempt to remove the saw from the work or pull the saw backward while the blade is in motion or **KICKBACK** may occur. Investigate and take corrective actions to eliminate the cause of blade binding.
- When restarting a saw in the work piece, centre the saw blade in the kerf and check that saw teeth are not engaged into the material. If saw blade is binding, it may walk up or **KICKBACK** from the work piece as the saw is restarted.
- Support large panels to minimize the risk of blade pinching and **KICKBACK**. Large panels tend to sag under their own weight. Supports must be placed under the panel on both sides, near the line of cut and near the edge of the panel.
- Do not use dull or damaged blade. Unsharpened or improperly set blades produce narrow kerf causing excessive friction, blade binding and **KICKBACK**.
- Blade depth and bevel adjusting locking levers must be tight and secure before making cut. If blade adjustment shifts while cutting, it may cause binding and **KICKBACK**.

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There are many types of blades for different purposes

Before the making the cut

To reduce the risk of injury, always unplug tool before attaching or removing accessories or making adjustments.

Selecting Blade

Always use sharp blades. Dull blades tend to overload the tool and increase the chance of **KICKBACK**. Blades with more teeth produce smoother cuts. Some blades have noise reduction slots. The shape of the teeth used depends on the material being cut. Some blades suit manufactured sheet materials whereas others are more suited to timber. Crosscutting teeth shape differs from ripping teeth shape.

A compromise general purpose blade is usually used at the Shed.

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Types of blades

- Ripping blades. Ripping blades are designed to cut along the grain of the wood.
- Crosscutting blade. Crosscutting blades are used to cut across the grain of the wood.
- Plywood blade.
- Combination/general purpose blades.
- Finishing blade.
- Dado blade.
- Thin kerf blade.
- Treated wood.

See https://www.thedailygardener.com/circular-saw-blade-types

Installing and Removing Blades (This operation should be carried out by an Accredited Coordinator)

- Unplug the saw before installing or removing blades.
- To remove the bolt from the spindle, use the wrench provided with the tool to turn the bolt counterclockwise. Hold the blade steady by depressing the spindle lock or if this not found on the circular saw, inserting a screwdriver deep in the gullet between the teeth of the blade and the bottom of the shoe or by jamming the blade into a piece of wood. Avoid localised force on the cutting edge of teeth when stopping blade rotation. Remove the bolt and spindle flange.
- Slide the lower guard lever up to raise the lower guard. Remove the blade from the spindle. Always clean the spindle, upper guard and lower guard to remove any dirt and sawdust.
- To install a blade, place the blade on the spindle with the teeth pointing in the same direction as the arrow on the lower guard. Release the lower guard lever.
- Place the spindle flange on the spindle and hand-tighten the bolt.
- Hold the blade steady as before and use the wrench to turn the bolt clockwise and tighten.

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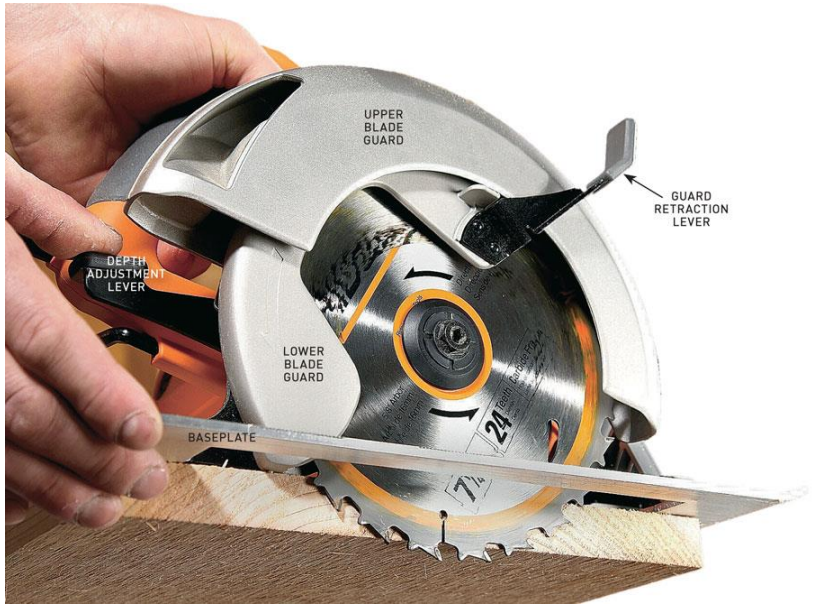

Set the depth of cut to 3-8 mm cut through

Adjusting Depth

Unplug the saw

To adjust the depth of the cut, place the saw on the edge of the work piece. While holding the saw by the handle, loosen the depth adjusting lever by lifting it up and moving toward the blade

Keeping the shoe flat against the work piece, raise or lower the saw to the desired position. For the proper depth setting, the blade should extend no more than 1 cm below (conflicts with earlier advice) the material being cut.

Move the depth-adjusting lever away from the blade and push down to secure the position.

(Some saws do have this)

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Adjusting the Bevel Angle

Unplug the saw

To adjust the angle of the cut, place the saw on the edge of the work piece.

- While holding the saw by the handle, loosen the bevel-adjusting lever by lifting it up and moving toward the blade.
- Hold the shoe down and rotate the saw by the handle to the desired angle as indicated by the markings on the bevel scale.
- Turn the saw over and check the angle.
- Move the bevel-adjusting lever away from the blade and push down to secure the position.

If in doubt about the preparing the saw for the cut you are about to do, seek a Coordinator's assistance.

Proper support is vital

During the cut

- Always clamp the work piece securely onto a sawhorse or bench.
- Draw a cutting line. Place the front of the shoe on the edge of the work piece without making blade contact. Hold the switch handle with one hand and the front knob with the other.
- Line up the line sight with your cutting line. Position your arms and body to resist **KICKBACK**. Pull the trigger, allowing the motor to reach full speed before beginning to cut. While cutting, keep the shoe flat against the work piece and maintain a firm grip. Do not force the saw through the work. Forcing a saw can cause **KICKBACK**.
- If making a partial cut or restarting in mid-cut or correcting direction of cut, allow the blade to come to a complete stop. To resume cutting, centre the blade in the kerf, back the saw away from cutting edge a few inches, pull the trigger and re-enter the cut slowly. If the saw binds and stalls, maintain a firm grip and release the trigger immediately.
- After finishing a cut, be sure the lower guard closes and the blade comes to a complete stop before setting the saw down.

Cutting Large Panels

Large panels and long boards sag or bend if they are not correctly supported. If you attempt to cut without levelling and properly supporting the work piece, the blade will tend to bind, causing KICKBACK.

Support large panels. Be sure to set the depth of the cut so that you only cut through the work piece, not through the supports.

Troubleshooting

If the blade does not follow a straight line:

- Teeth are dull. This is caused by hitting a hard object such as a nail or stone, dulling teeth on one side. The blade tends to cut to the side with the sharpest teeth.(Perhaps some mention of precaution before using saw?)
- Shoe is out of line or bent
- Blade is bent
- Rip fence or guide are not being used

If the blade binds, smokes or turns blue from friction:

- Blade is dull
- Blade is on backwards
- Blade is bent
- Blade is dirty
- Work piece is not properly supported
- Incorrect blade is being used

Dust, chips and grit can cause the guard to hang up at any time.

Ripping Wood

Ripping is cutting lengthwise with along the grain. Select the proper blade for your job. Use a rip fence for rips 10cm wide or less. To install the rip fence, slide the bar through the rip fence slot in either side of the shoe. The width of the cut is the distance from the inside fence side of the blade to the inside edge of the rip fence. Adjust the rip fence for the desired width, and lock the setting by tightening the rip fence screws.

When ripping widths greater than 10 cm, clamp or tack 2 cm lumber to work piece and use the inside edge of the shoe as a guide. There is a special clamping fence in the Shed's tool store for this purpose.

Cross-Cutting Wood

Cross-cutting is cutting across the grain. Advance the saw slowly to avoid splintering the wood.

Be sure the wood being cut does not sag when cut and bind the blade causing KICKBACK.

Plunge Cuts and Pocket Holes

Technique is everything. This is not recommended.

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After machine use

Clean dust and debris from vents. Keep the tool handles clean, dry and free of oil or grease. Use only mild soap and a damp cloth to clean your tool since certain cleaning agents and solvents are harmful to plastics and other insulated parts.

Some of these include: gasoline, turpentine, lacquer thinner, paint thinner, chlorinated cleaning solvents, ammonia and household detergents containing ammonia. Never use flammable or combustible solvents around tools.

To reduce the risk of injury, electric shock and damage to the tool, never immerse your tool in liquid or allow a liquid to flow inside the tool.

Cutting pocket holes using plunge cuts

Pocket cuts are made in the middle of the work piece when it cannot be cut from an edge. Even though a circular saw can be used for this operation it is not condoned at the Shed. We recommend using a jig saw or track saw for this type of cut. However, if you must use a circular saw to make a pocket cut, USE EXTREME CAUTION.

- Beginning at a corner, line up the line sight with your cutting line. Tilt the saw forward, firmly fixing the front of the shoe on the work piece. The blade should be just above cutting line, but not touching it.
- Raise the lower guard using the lower guard lever.
- Pull the trigger, allowing the blade to come up to full speed. Using the front of the shoe as a hinge point, gradually lower the back end of the saw into the work piece.
- When the shoe rests flat against work piece, advance the saw to the far corner. Release the trigger and allow the blade to come to a complete stop before removing it from work piece. Repeat the above steps for each side of the opening.
- Use a jig saw or small hand saw to finish the corners if they are not completely cut through.