

## CIRCULAR SAW SAFETY AND PROCEDURE

I am Bob Johnston, Cloudcroft, New Mexico, USA. I have been a carpenter for over 50 years. I have a free website:

<http://carpenterbooks.com>. I help instructors, students, contractors, carpenters, do-it-yourself women and men homeowners, volunteer church and home builders by posting projects and procedures, free for them to print out and use. The foremost reason for the website is power tool safety and procedure.

**The circular saw is the most dangerous, misused, abused tool in the construction business.**

In this article I am going to tell you the procedures I have learned from using a saw for over 50 years.

When they made the first portable, electric circular saw they put the motor on the right, the blade on the left and the handle was above the blade. When you made a cut and got to the end, the weight of the then big and heavy motor would naturally make the saw fall off to the right and butcher the end of the cut. So, an individual came up with the bright idea of putting the motor on the left and the blade on the right. This left the main weight of the saw

and the majority of the base on the stable member of the cut.

They didn't realize that with the blade on the right, a right handed person had to lean over the top of the saw to see the line of the cut.

A few years ago Porter-Cable came out with the 345 saw boss and the 423 Mag, blade on the left, and moved the handle whereas it has equal gravity pull when you hold the saw and make a cut. Craftsman also has a 5½" saw like this. Now some other manufacturers are seeing the light. Before this, all right-handed people had were worm drives with the blade on the left.

If you use your right hand to run a saw, buy one with blade on the left; if you use your left hand, buy one with the blade on the right. It is very dangerous to be leaning or out of position when making a cut and you need to see the line to make an accurate cut. The position of making a cut with an electric saw is the same as making a cut with a handsaw or hacksaw. The cut line, the blade, your forearm, elbow and shoulder should all be in one straight line.

The first and foremost thing you do when you go to cut a board is to make a mark for the cut. You need to check your tape and make sure the hook is not bent. Buying a

good tape is an investment in your job, not a cost.

Measuring and cutting lumber to length is the most important thing you will do when building a structure, if you want the building, structure or cabinet to be plumb and square.



The mark on the left is the way about 90% of the carpenters I know, mark a board. Then they make a mark with a speed square on some part of it and then cut on the left of the line sometimes and sometimes on the right of the line. Who knows?

The small straight mark on the right is the exact place you want the blade to cut and is the correct way to mark a board, the wing mark on the left of the small mark is the waste side, and (wing is waste).

Now we come to one of the most overlooked, but one of the most important procedures in using any power tool, plugging in the tool cord to the GFCI power cord.

Always let this procedure remind you of loading a gun. Keep your finger off of the trigger (switch) until you are ready to make a cut.

Same as keeping your finger off of the trigger of a gun. Don't touch it until you are ready to make a shot.

When you plug a saw into a power cord you have created a power supply for a tool that could easily kill you or maim you for life.

If you plug a tool cord in backwards (and it can be done) you have created reverse polarity, and it can kill you. Ask any electrician.



Do as the picture shows; get you some white-out and paint the wide prong side white (wide-white). This is the white (neutral) wire in the cord. Then you won't have to look each time and try to figure out which way the prongs go in.



**This is the one that will get you. If the ground is broken off you will be able to plug it in backwards.**

Usually over half of the ground prongs on nearly all jobs are broke off; some people actually do this intentionally. A grounded cord cap has two ¼" flat prongs. When you break the ground off it will easily go into the recep of a cord either way. The best thing to do is replace it; next best is to paint the left prong side white. For \$3 I would replace it. Most carpenters don't believe this, but the dead ones would tell you it's true, if they could.

This little suggested procedure could one day save you or someone else's life.

Always have a good crowned table to cut on. Never cut a board in the middle that is just lying on two saw horses, it will sag or collapse about 2/3's of the way through the cut and bind the saw and cause the saw to kickback at you. The only time you can safely cut a board using only two sawhorses and no frame table is when you are only cutting an end off.

**Never use a circular saw to notch or cut out a stud that is in a framed wall.** The saw will buck and you could end up with a 4000 r.p.m. saw blade in your chest. Use a reciprocating saw for this procedure.

I show how to build a crowned frame table to mount on saw horses to cut lumber on and use as a work table on my

website, but if you don't have one, use a couple of 2x12's on the sawhorses to cut on. A frame table will pay for itself over and over, in time and labor.

Just make sure they don't bow down. When you cut a board and it is bowed down your saw will bind and kick back, very dangerous.

Always have a place to put your saw. Never set it down on the blade guard, never drop it on the ground, and always lay a saw on its blade side, the side the blade is on.

Two other good procedures I have on the website are to install a hanger and frame hook on your saw. These two small additions should be on every saw that is sold.

I don't know how many, but a lot of saw injuries are caused by the person using the saw standing on the cord. When you are cutting and then you run out of cord the saw could kick back and cut you.

Keep all of the area around where you are using a saw clean, leave nothing that could cause you to trip and fall while carrying or using a circular saw.

Furthermore, keep the whole jobsite clean.

I have been to jobsites where there would be piles of cut off lumber, and the carpenters would have to walk over these piles (tripping and falling) to make a cut or

to get material. This makes no sense, none at all. Besides that, if you keep your scrap stocked, you can use it, instead of cutting a new stud for a 24" block.

**There were over 250,000 saw injuries last year that required emergency room care.**



Now we are ready to make a cut, but first you need to always remember to **wear safety glasses** when operating any saw or power tool.

Another thing, we were in my door shop one day working on a planer when suddenly the main table saw started running, no one had turned the switch on. We took the cover off the switch and it was full of wood powder, it had shorted and started itself.

**Always unplug tools when changing blades/bits or working on them.**

**Another important thing to remember is to focus on the procedure you are doing, totally, don't be thinking of anything except controlling this saw safely.**

And remember what I said in the carpenter book, **there is no such thing as an accident;** like the carpenter on the roof stepping on a piece of osb with saw dust under it and fell off the roof, he created this environment and did not have control over it. There is always something wrong, either the operator is using the wrong procedure, **not thinking about what they are doing** or there is something wrong with the tool of which you are responsible for keeping in safe working order. **A tangled cord on the floor could cause you to fall on a running tool and cost you your life or limb. No accident, you should have laid or place the cord in a safe position.**

First set the blade depth of the saw blade the thickness of the board to be cut plus 1/8". Fill your saw cuts on your frame table with drywall mud when you get a lot of them in your table. This will keep a smooth clean surface to saw.



I marked on the back of my saws the depth of cut the plus

1/8". 1 1/2" is actually 1 5/8" depth of cut. This saw is set for a 1/4" cut but the actual blade depth is 3/8".

Make sure the blade is set at 90° to the base for a square cut.

Place the nose (front) of saw base on the board to be cut, with the blade about a 1/4" from the board to be cut, align the blade with the mark as straight as you can, slide your speed square up to the side of the base and grasp it with your hand and secure it to the board.

The side of the saw base and the speed square should be exactly parallel.

Start the motor and slowly push the saw forward until it just touches the board, if you are a little off the mark, back the saw up 1/8" (while it is still running) and the vibration of the saw will let you go to the left or right and get the blade lined up with the mark.

Now you can go ahead and push the saw slowly through the board and let the saw do its job. Do not crowd the saw (push it too fast).

You will feel when the saw has cut through the board, because they will both move, only slightly, but you will see and feel them separate.

**Now, do not move the saw, let the motor and blade come to a complete stop.**

**Never lift or move a saw from a cut or take it off the**

**member while it is still running. This is the most important part of this article, letting a blade stop before removing from the completed cutting position. Same goes for a router/grinder or any tool.**

If you will do this on every cut you make, the rest of your life, your chances of getting cut with a circular saw are almost zero.

If you are on my job I will let you by a couple of times, but if you persist in bringing a running saw out of a cut it tells me your not listening or you don't care. I will relieve you of your job. That is how important I know this procedure is.

Go to any job, anywhere, and see how many people let their saw stop running before they lift it out of the cut. I can already tell you what you will see. Hardly any....

After a few hundred cuts you will learn to let go of the switch before the cut is complete, and the saw will be dead when the saw makes the completed cut.

Now for those of you that have used a circular saw very little and that I have instilled a fear of even picking a circular saw up let me tell you that a saw is a safe tool if used properly.

Proper, safe procedures of using a circular saw are easier to learn than improper procedures. You could not

pay most of the carpenters I know enough money to read and use the information in this article. They know it all. They are the ones you want to stay away from when they make a cut.

For your first few hundred cuts, I suggest not using a speed square as a guide.

Make you mark, then draw a line on the board and make the cut. It takes a little longer, but it will build your confidence, using a saw. Never depend on a blade guard to protect you from getting cut. Blade guards are a piece of machinery and they are notorious for hanging up and not going back down, especially when you drop the saw on the guard a few times.

Blade guards can hang up.

**The question is not, if a blade guard is going to hang up, it is when....**

Keep the guard lubricated and keep the housing clean of pitch and sawdust.

On a new saw or old saw, check all of the screws and bolts and make sure they are tight. About 75% of carpenters keep their guards tied up. Some carpenters know how to use a saw, some don't.

Never cut a board backwards, as the picture shows.

Never do anything with a circular saw in a way that you do not have control. Always

have total control of the saw.



When you cut about  $\frac{3}{4}$ 's of the way through the board the saw will bind and kick back. This is very dangerous.

You are not in control in this position, all you have to do is get on the other side and make the cut and let the small piece fall to the ground.

One more thing, if you are cutting a board and the motor slows down, you are either crowding the saw (pushing too hard), cutting on a bowed down table, have a dull blade or you are into pitch tension. Pitch tension, when cut into, will close or open the saw cut you have made. I have cut into some 2x12's and the saw would bind in the first 6" of the cut. I would get the saw out and the saw kerf that I cut would be closed. I was ripping a 1x12x8' one day and ripped it about 4' and looked at it and it opened up nearly 2" at the end where I started, pitch tension.

This is usually in heart sawn wood (center of the tree). Pitch tension is created by kiln drying the wood to fast. If

you are cutting a crowned board, start your cut on the crowned side. The pitch has activated on the crowned side, and the kerf will open as you cut. The pitch will close your kerf on the sagged side.

If you are cutting sheetstock and you stop the cut in the middle of the sheet, **always** back the saw up a half inch, have both hands on the saw before restarting the cut or it could kick back at you.

If your saw slows down and goes to binding, stop the motor and pry the blade out of the cut. Try to cut it from the other side or throw the board away.

OSHA.gov reports hundreds of thousands of saw injuries every year. Look up "circular saw injuries" on the internet and look at the pictures, they are horrifying.

**If all people using saws would follow these circular saw procedures, to the letter, injuries using a circular saw would come to a halt.**

Now you have a choice, you are either going to listen to me about these procedures or you are not. Common sense, your choice. It is not my job to keep you safe, it is your job. I have given you the tools to operate a saw safely, it is your job to apply these procedures and use them. Ask your wife, mother, father or your kids which you should do.

The only way you are going to learn to cut lumber, correctly and safely, is to cut some lumber, a lot of lumber.

Take it slow and easy when you start using a circular saw; follow this article down to the last letter.

But remember the one most important thing;

**Never pull a running saw out of a cut.**

**Be careful, making one small mistake with a circular saw could be the last thing you ever do in your life.**

If some of you are wondering about my qualifications as to writing this article, I have been using saws for over 50 years and have not ever been cut or even scratched by one. I learned to cut lumber with a Mayes circular saw in 1956 and it did not have a blade guard.

I strongly advise you to go to my website and study the procedures for using a miter saw, a table saw and while you are there, learn the ladder procedures.

I wish you could, but you won't find these procedures in your saw's safety manual.

If you have any questions about using a saw/ladder feel free to email me from the website. Bob

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