

# Advanced Table Saw Techniques

# General Safety

- Face shield
- Safety Glasses
- Hearing Protection
- Proper Clothing/shoes
- Miter Gauge or Fence but not both at the same time
- No Freehand cuts
- Power disconnected when changing blades
- Check wood for Nails or foreign material- use the metal detector
- Push the stock that is between the fence and the blade all the way through the blade and free of the splitter
- The cutoff that is to the left of the blade should not be moved until the blade is fully stopped

# 10 Pointers of How not to kill yourself

- Kick-back – use the blade guard for through cuts and the riving knife for non-through cuts
- Use the table saw for the proper cuts- it is not for every type of cut
- Set the blade height appropriate for the cut but on through cuts no more than  $\frac{1}{4}$ " above the stock
- Rehearse the cut before turning on the saw – make sure the area is clear to complete the cut, provide support for the stock both in front and behind the saw
- No distractions
- Push the stock through and past the blade, when the cut is finished turn off the saw and remove the stock when the blade stops

# 10 Pointers of How not to kill yourself (Cont'd)

- Use a long push stick so your hand remains clear of the blade when the cut is finished
- Position the push stick closer to the blade than to the fence to avoid binding and kickback
- If it doesn't feel right or sound right, stop the saw, don't move the stock until the blade stops, find and fix the problem before restarting the cut
- Respect the saw but don't fear it, get help if you are not comfortable making the cut you desire

# Blades, Settings, and Changes

- Disconnect Power to change Blades, remove the guard, or riving knife
- Match the proper blade to the type of cut
  - The Saw Stop will only support a 10 inch blade or 8 inch Dado stack
  - **The 8" Dado stack requires the brake cartridge be changed on the Saw Stop**  
(See the section on Dado Cuts for instructions)
  - 24 tooth for general rough rip cuts
  - 40 tooth ATB for general purpose cuts
  - 80 tooth for fine/finish cross cuts

# Blades, Settings, and Changes Cont'd

- Disconnect the power cord from the outlet before doing anything
- Shut off the dust collector if no one else is using it otherwise shut the saw's blast gate for the dust collector
- Remove the throat plate
- Raise the blade fully up for easier access
- Use the compressor and blow out all the saw dust around the underside of the table
- Use the 2 blade wrenches to loosen the captive Arbor nut and washer
- Before installing a blade, clean the blade and both washer surfaces
- Install the blade and confirm the blade is set for the proper rotation
- Tighten the captive arbor nut securely but not with excessive force
- On the Saw Stop check for the proper clearance between the safety brake and the blade using the yellow gauge under the saw table

# Blades, Settings, and Changes Cont'd

- Replacing the Guard or Riving Knife (Saw Stop)
  - Disconnect power cord first
  - Remove the throat plate
  - Rise the blade up
  - Locate the locking handle that secures the guard and raise it up, this releases the tension
  - slide the knife or guard to the right and remove
  - Use the air compressor to blow away all the sawdust in the trundle under the table
  - Install the desired knife or guard and rotate the locking handle fully down
  - Check that the guard or knife is tightly secured and that it clears the blade
  - Replace the throat plate

# Changing the Sawstop Brake Cartridge

- Unplug the saw from the wall outlet
- Use the air compressor to remove all saw dust from the mechanical parts under the table.
- The cartridge is held in place by 2 pins and a red cartridge key
- Remove the red key by rotating it 90 degrees clockwise and pulling it fully out from the cartridge
- Pull the cartridge fully out from the 2 pins
- Reverse the process to install a new cartridge
- With the new cartridge installed and a blade in place check the gap between the blade and the aluminum brake pawl on the cartridge with the Yellow blade spacing gage
- If the spacing needs to be adjusted use the 8mm hex wrench attached to the yellow spacing gauge to turn the yellow bolt, clockwise to decrease spacing or counterclockwise to reduce spacing



# Changing the Sawstop Brake Cartridge cont.

- With a blade and riving knife (or blade guard) in place rotate the blade by hand to make sure there is adequate clearance between all the components and the cartridge brake pawl
- Replace the table insert
- Plug the saw back into the wall outlet

# Rip Cuts

- Any board being cut must sit flat on the table and have one straight edge that registers against the fence
  - A cupped board could rock during a cut and bind and cause kickback
  - Flatten it on the **jointer** first
- If the board does not have one straight edge use the Taper/straight edge jig (Next page) and secure the board to the jig
  - The crooked edge that is to be removed hangs over the edge of the jig
  - Place the Straight edge of the jig against the fence
  - Guide the jig next to the fence with the right hand or push stick
  - Use the left hand or feather board in front of the blade to keep the stock against the fence ( Never parallel or behind the blade)
- Use a push stick if needed and guide the stock fully past the blade
- Use infeed and outfeed support for cutting long stock
- Push the stock at a speed appropriate for stock thickness and blade
- If wood binds, stop the cut and saw and let the blade come to a complete stop, and determine the cause, resume only when fixed



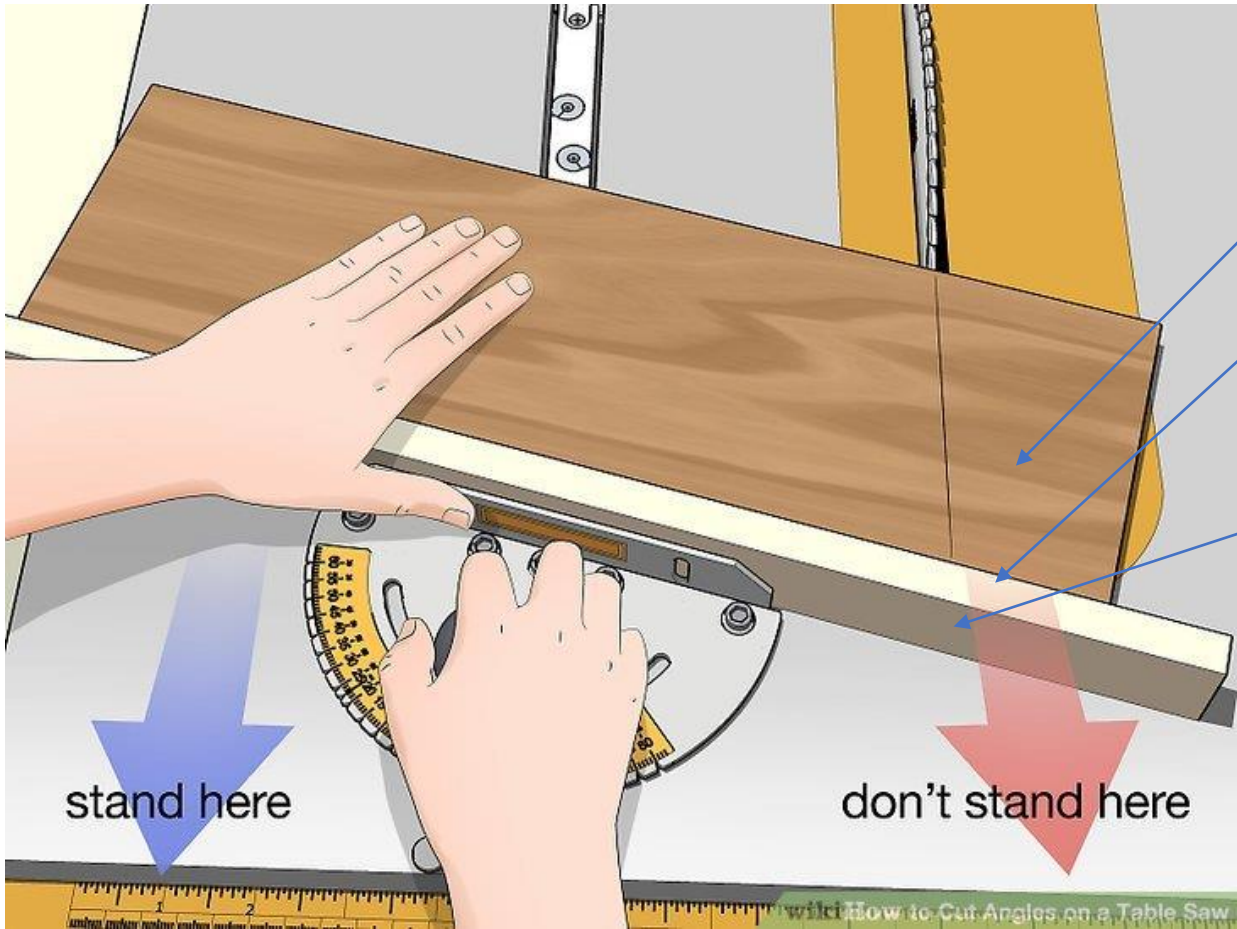
straight edge of the jig  
registered against the saw  
fence

Uneven stock edge to be  
jointed

The edge of the jig should be  
close to the blade but not  
touching it. You should not be  
cutting any part of the jig

# Miter Gauge

- Do not use the miter Gauge and the Rip fence together at the same time
- Cross grain cuts
- Attach an extension board to the miter gauge when cutting longer stock
  - Supports both ends of the cut
  - Minimizes tear out
  - Provides flexibility for cutting options
- If the stock is short, consider using the sled instead of the miter gauge
- Use a stop block when you need multiple pieces the same length



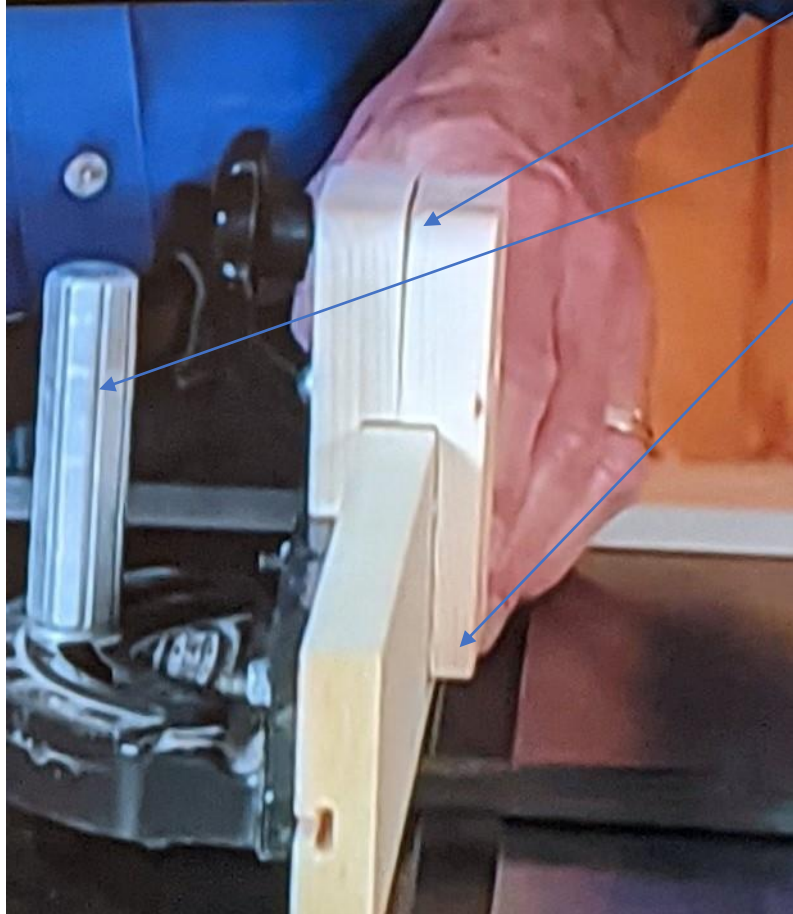
Cut on the downhill angle for more precise cuts

Attach an extended straight and flat board to the miter gauge that extends beyond the cut line

Use caution and be aware of the point where the blade exits the extension board and keep fingers from this area

Note - one hand is on the miter gauge and the second hand is away from the blade and secures the stock to the miter gauge.

# Stop Block



Stop block attached to miter gauge extension board or to the sled

Note that the stop block is built and positioned so that there is space between the bottom of the block and the table saw top. This prevents sawdust from accumulating near the stock being cut

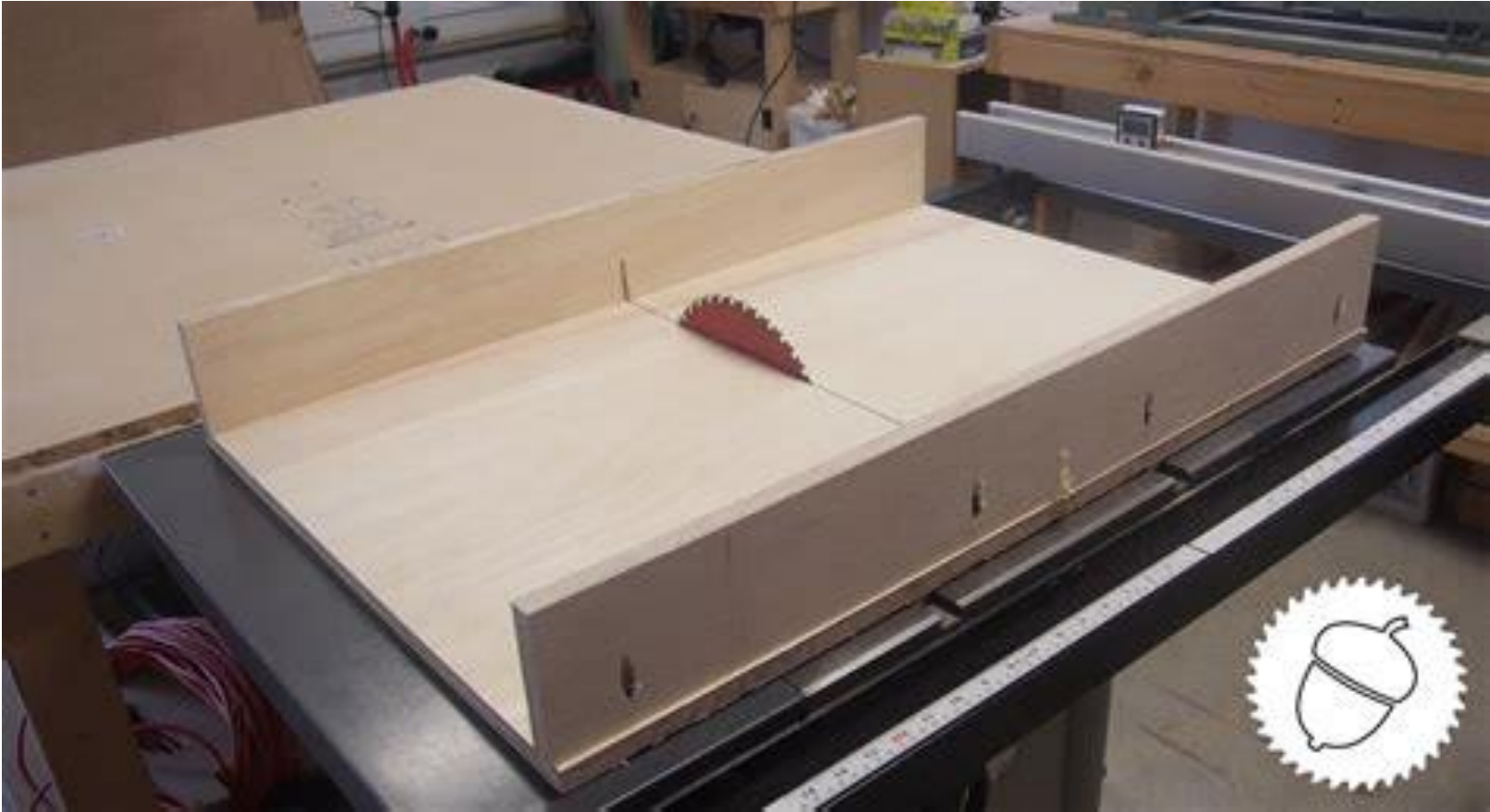
Do not pull the board back while the saw is running, danger of kickback



# Cross cut sled-Shop made



# Shop Made Table Saw Sled





# Using the Sled

- Woodworking projects frequently require a zillion identical-length boards. Measuring each one is time-consuming and inaccurate. The solution is a sled, fitted with stop blocks. Push each board against the block, make a pass through the wood, then set it aside and grab the next piece of stock. Little cuts shorter than the sled fence are easy. Just clamp a stop block directly to the sled fence. For longer lengths, you need to extend the fence with a 1×4 that is longer than the board you want to cut, attach a stop block to the extended 1x4 and make repetitive cuts
- With the saw off, set the blade height to cut no higher than 1/8 in. above the wood. Pull the sled back, lay your workpiece against the fence and line up the blade with your cutting mark. Turn the saw on, hold the wood against the fence and slowly push the workpiece through the saw. After the cut is completed, slightly separate the two halves from the blade and shut off the saw. *Let the blade coast to a complete stop before you remove the wood.*

Clamp a 1×4 block (or a block of suitable size to the stock you are cutting) to the fence for repetitive, identical cuts.

**Tip:** Keep the stop blocks 1/8 in. above the sled table so sawdust won't pile up against the block and make your length cuts inaccurate.

Standard, 90-degree crosscuts are the bread and-butter cuts this sled is designed to make. But remember, no system is fail-safe. You need to **avoid dangerous practices such as:**

- Crosscutting long boards that are hard to support.
- Cutting angles freehand when the back of the board isn't *firmly* against the fence or an anchored jig
- Clamping the board so that your hands are less than 4 in. from the saw blade.
- Attempting to cut severely warped or curved wood that won't rest flatly on the sled table.
- Raising the blade higher than 1/8 in. above the wood to be cut.
- Pulling the sled backward out of the workpiece before letting the blade come to a *complete* stop. After you complete a cut, always shut off the saw before you remove the workpiece.

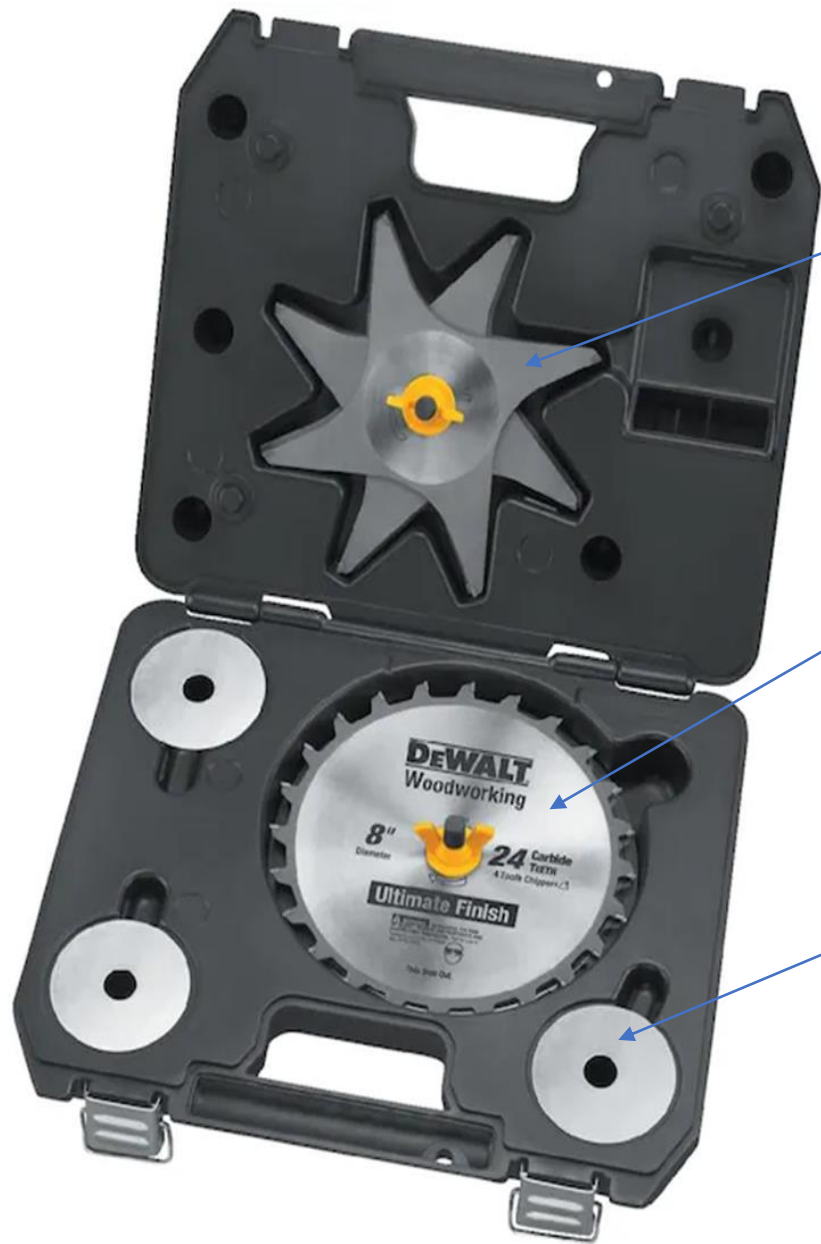
# Raised Panels

Tilt blade (12 degrees is common) Clamp the panel to a vertical jig.



Make a jig that is tilted to 12 degrees, and you don't have to tilt the blade.





Chippers – different thickness

Blades – Both blades must be used

Shims- several different thickness

# Dado Set

- Dado set has 2- 8" outside blades ( 24 teeth), multiple "Chippers, 4 teeth" of different thickness, and multiple "shims" of different thickness
- 2 8" Outside blades must always be installed – make sure the blades are installed with the correct rotation of the saw (writing on the blades faces out)
- Chippers are installed between the outer blades
- If multiple chippers are used make sure the chipper teeth are alternated and do not touch any other teeth
- If shims are needed to get the correct thickness install them between chippers



## Stacking the Blades and Chippers

Carbide teeth must be alternated so that none touch

Do not place the Blades or chippers on a metal surface, place on a wood surface to avoid damage to the carbide teeth

Blade

Chipper

# Getting the correct stack of blades and chippers

- Start with one 24 tooth blade and lay it flat on a wooden surface ( Never lay the blade on a steel surface, it may chip the carbide teeth)
- Set the blade next to a piece of wood stock that is the width of the groove you desire
- Stack chippers on top of the bottom blade until you are 1/8" below the thickness of the wood stock ( make sure teeth on blades and chippers do not touch each other)
- Place the final 24 tooth blade on the top of the stack
- Check to make sure the top blade is exactly even with the top of the stock, if not use shims to get the proper thickness
- When the correct thickness is achieved you can now insert the blades on the saw arbor. Make a test cut to confirm the thickness is what is desired. If you do not have a good fitting joint, you can use shims and continue making test cuts until the fit is exact.

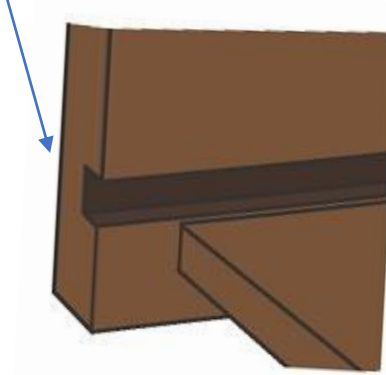
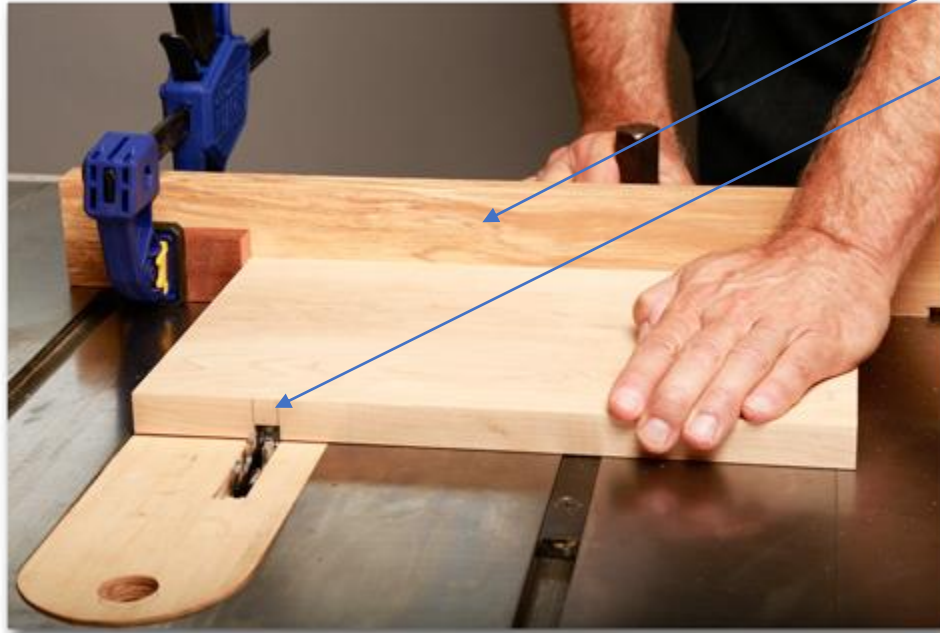
# Joints using a Dado

- **Dado Joint** – This is basically a slot/trench cut into a piece of wood that appears to have three sides if you view it in cross-section. Dado joints can be cut either perpendicular or across the grain.
- **Finger Joint** – This woodworking joint is achieved by cutting a bunch of interrelated cuts in two pieces of wood in a rectangular fashion. The end result looks like the shape of the human hand when the fingers are interlocked perpendicularly.
- **Rabbet Joint** – This is a groove or trench that's cut into wood stock.
- **Tenon Joint** – This joint is often formed on the end of rails and can be inserted into holes that are rectangular- or square-shaped (called a mortise) found in the corresponding member. Basically, a tenon joint should fit perfectly into a mortise hole.



A backer board helps minimize tear out on the back side

Dado blade channel cut in stock



Check your work. You should be able to push the shelf material into the dado. You shouldn't have to pound on it. Lift up on the shelf, and the piece with the dado in it should come along for the ride. Even without glue there should be enough friction between the parts to keep them together.

# Dado Use

- Check all wood stock for foreign material that would damage the dado blades or activate the Saw Stop brake
- You are responsible for the cost to replace the Dado set and the Saw Stop brake if you activate the brake (Cost is \$110 for the brake and about \$200 for the dado set)



## Rabbet Cuts

Add a sacrificial fence to the saw. This one is made out of melamine. With a sacrificial fence in place you don't have to worry about scarring your fence when cutting rabbets.

The scoop that's cut out of the bottom of the sacrificial fence allows you to bury part of the blade. You can toggle between 3/4" wide and 1/4" wide rabbets without disassembling the stack.

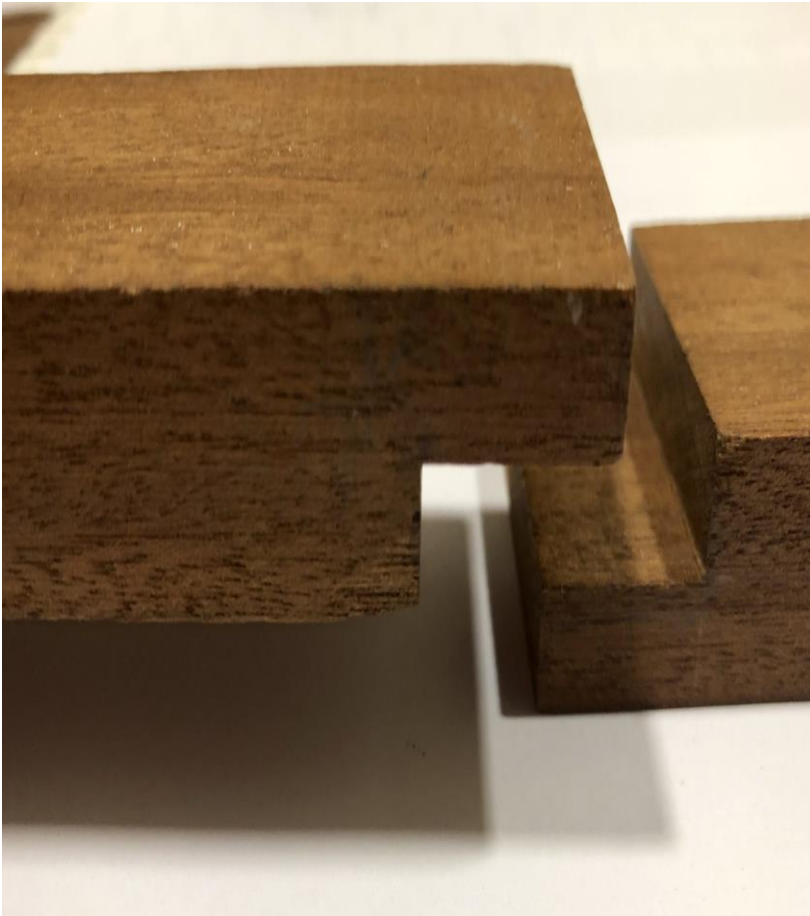




### **Use the right technique for DADO Cuts.**

Use a push pad to hold your material down tight to the table saw. Use your left hand to keep the material against the fence. Slide the push pad back as you feed the material forward to maintain down pressure near (not over) the dado head. Never push down directly over any cutting tool.

# Lap, Tenon, and Rabbet Joints



## Lap Joints 101

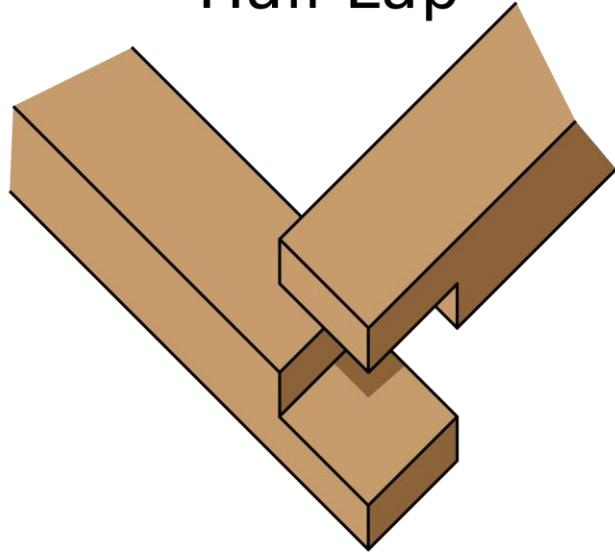
A lap joint falls into the category of halving joints – where two halves make a whole. It is a relatively easy joint to cut and a great learning joint if you are just getting going in woodworking.

Lap joints are simple joints you can use to make picture frames and mirrors. As with most joints, there are variations, but all of them rely on the long grain glue surface area (the cheek of the rabbet) for their strength.

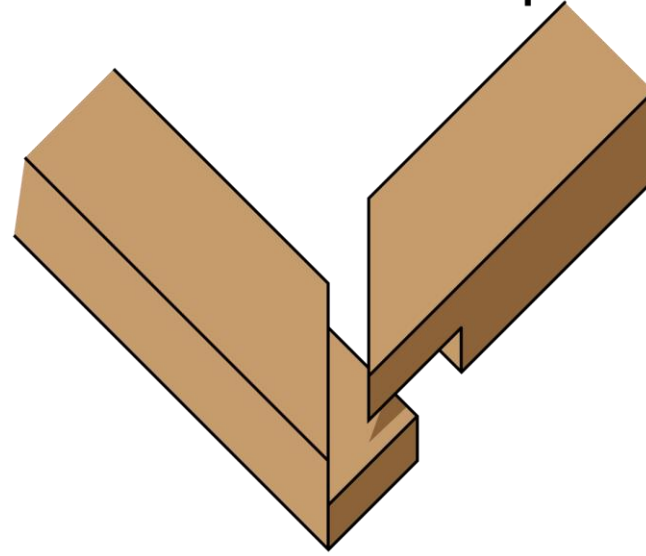
The blade depth for a lap joint is  $\frac{1}{2}$  the thickness of the stock

Set the blade so the first test cut is less than  $\frac{1}{2}$  the thickness and continue making test cuts to get the exact thickness and then lock the blade depth

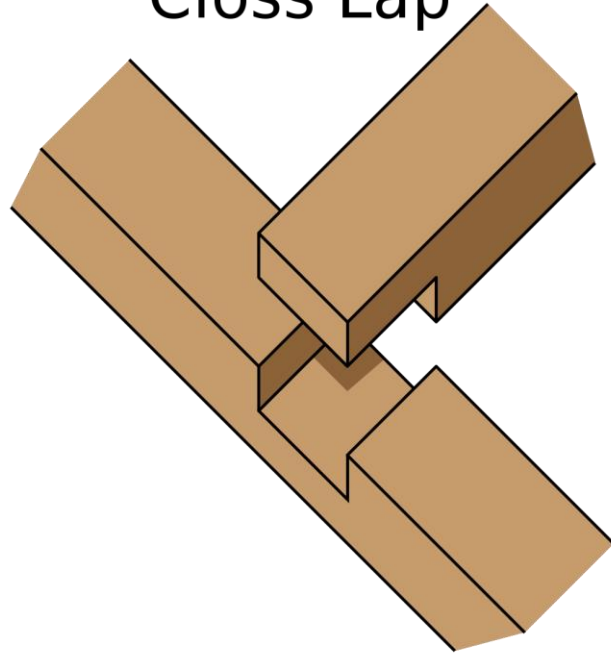
Half Lap



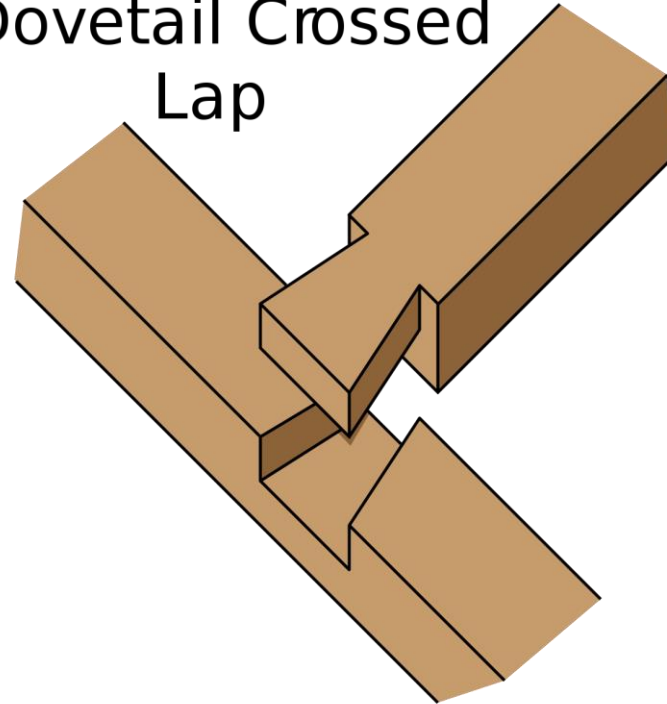
Mitred Half Lap

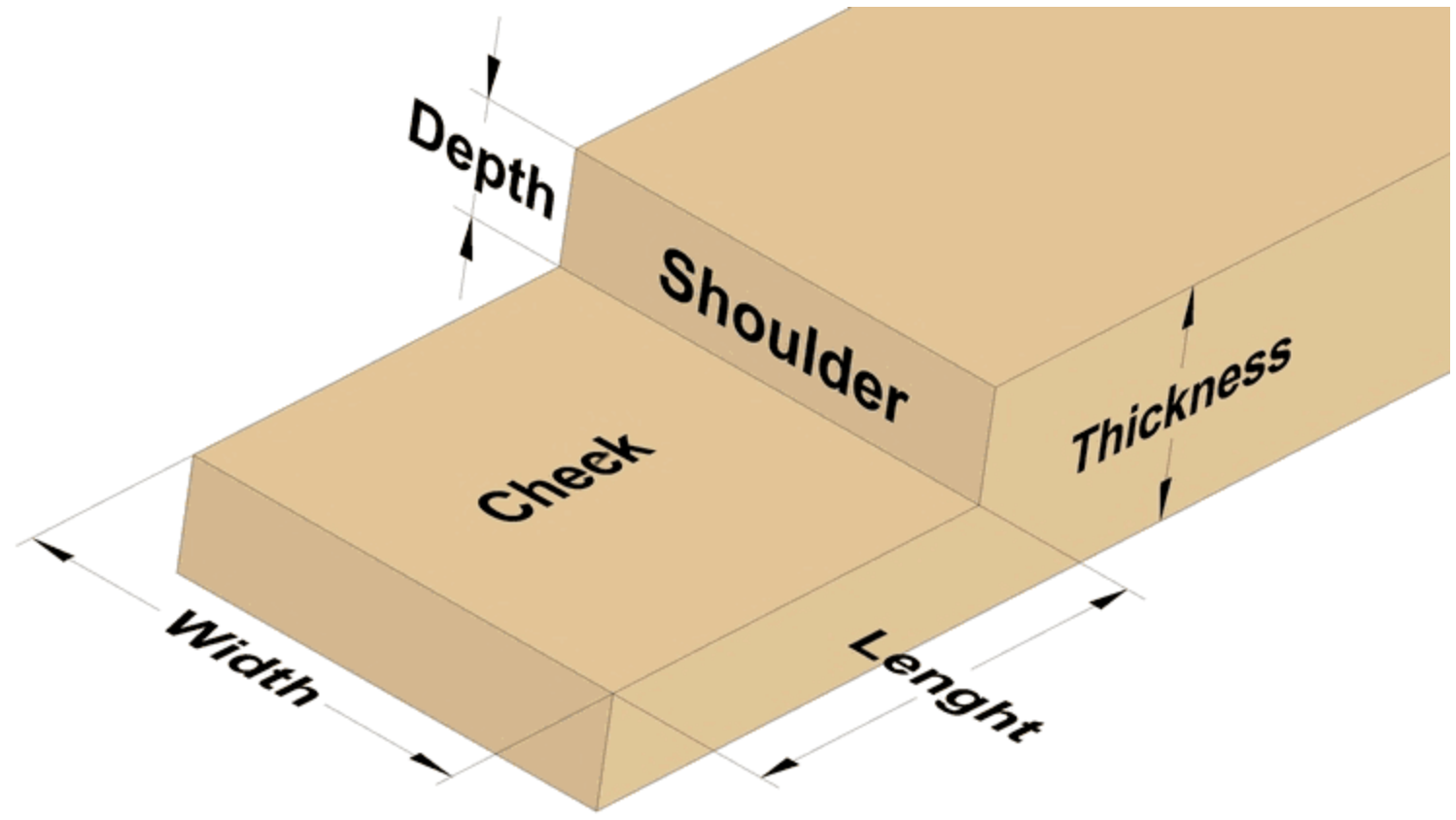


Cross Lap

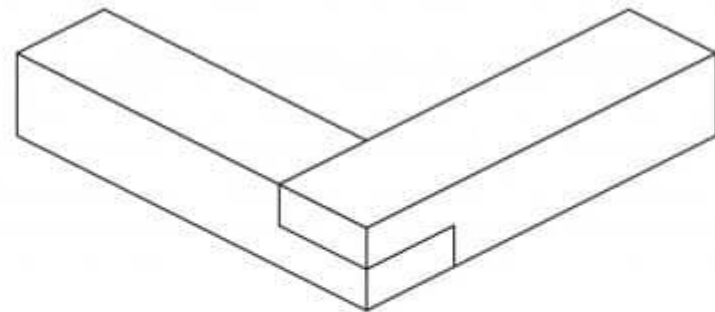
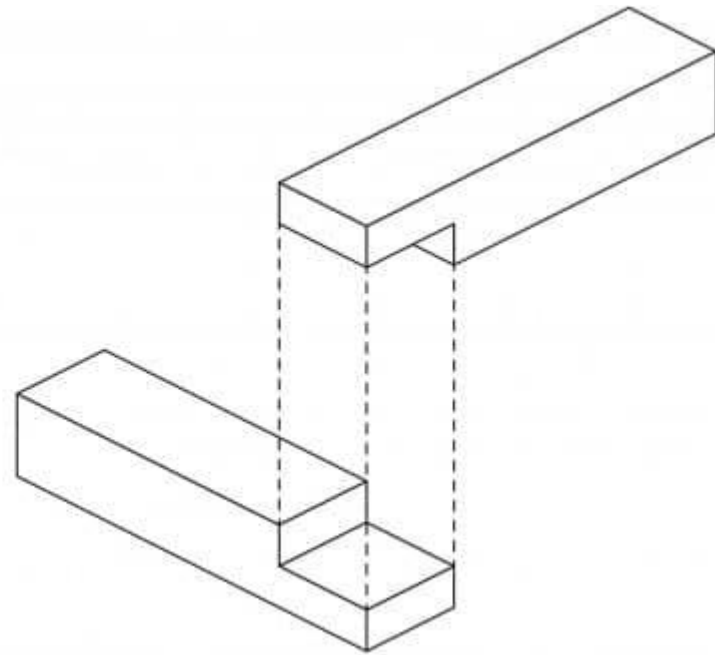
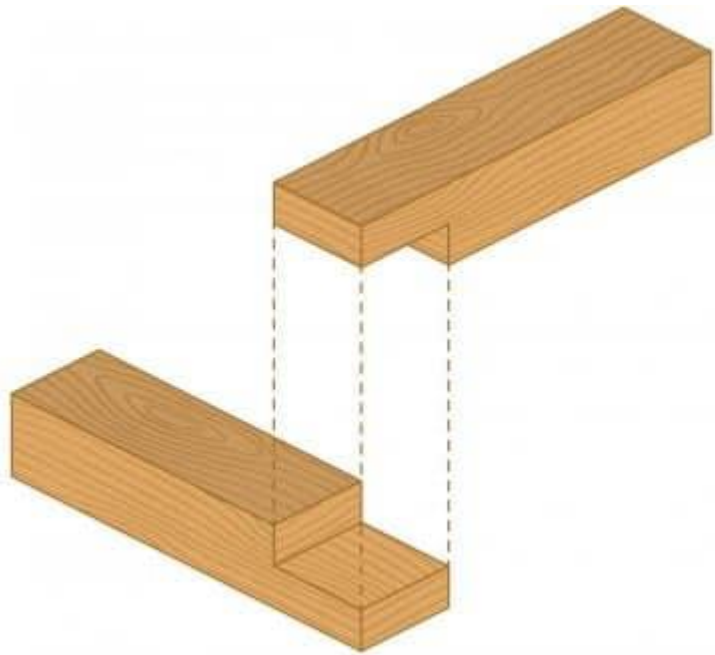


Dovetail Crossed Lap



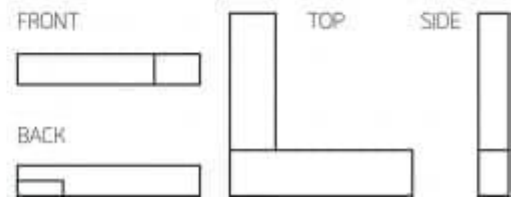






# WOOD JOINTS

## END LAP



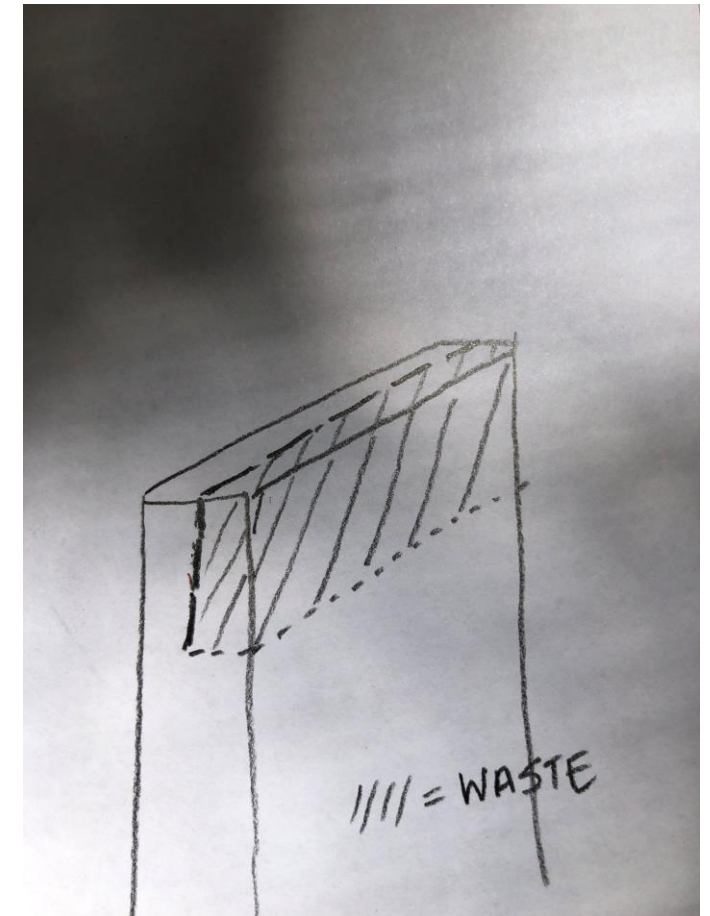
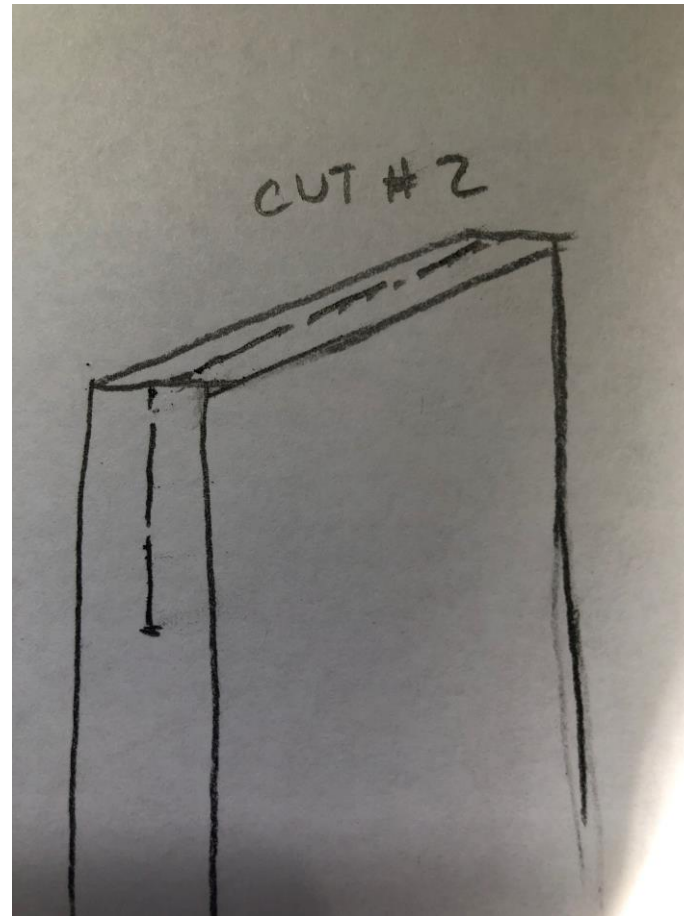
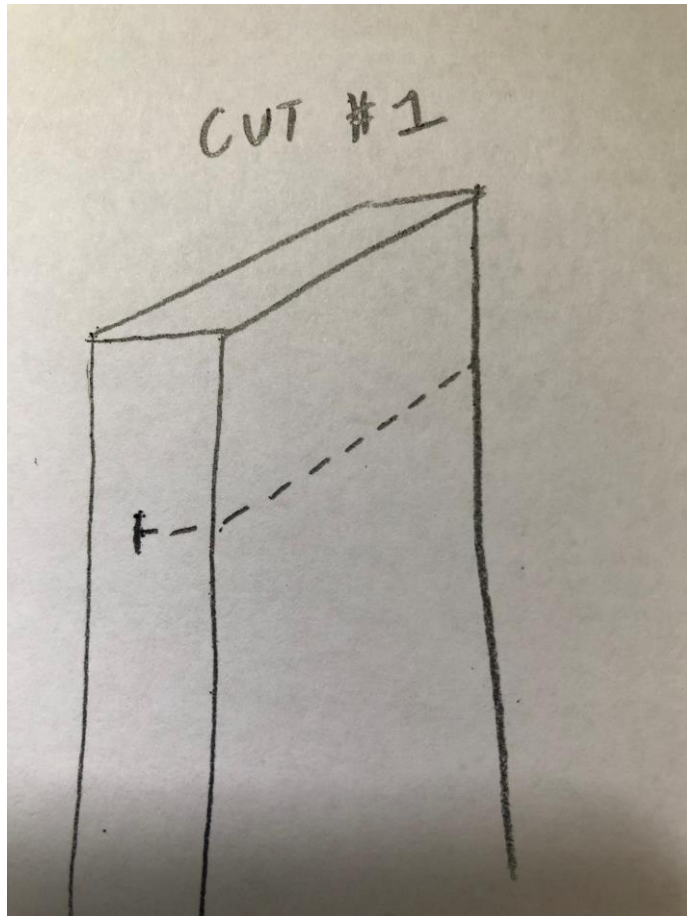


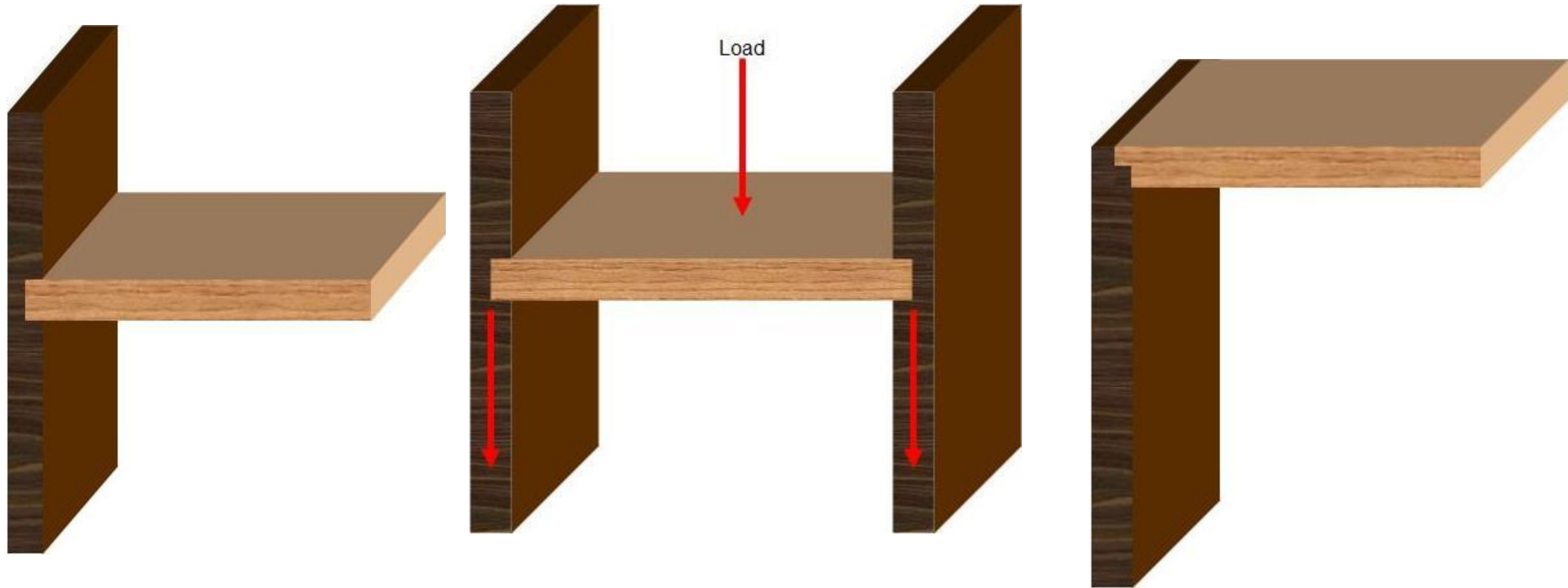
## General Guidelines when laying out the Rabbets for a Lap Joint

There are two general guidelines when cutting rabbets. Not following them could interfere with the structural soundness of the joint.

Length of cheek should not be more than the width of the wood

Depth of the shoulder should not be more than half the thickness of the wood.

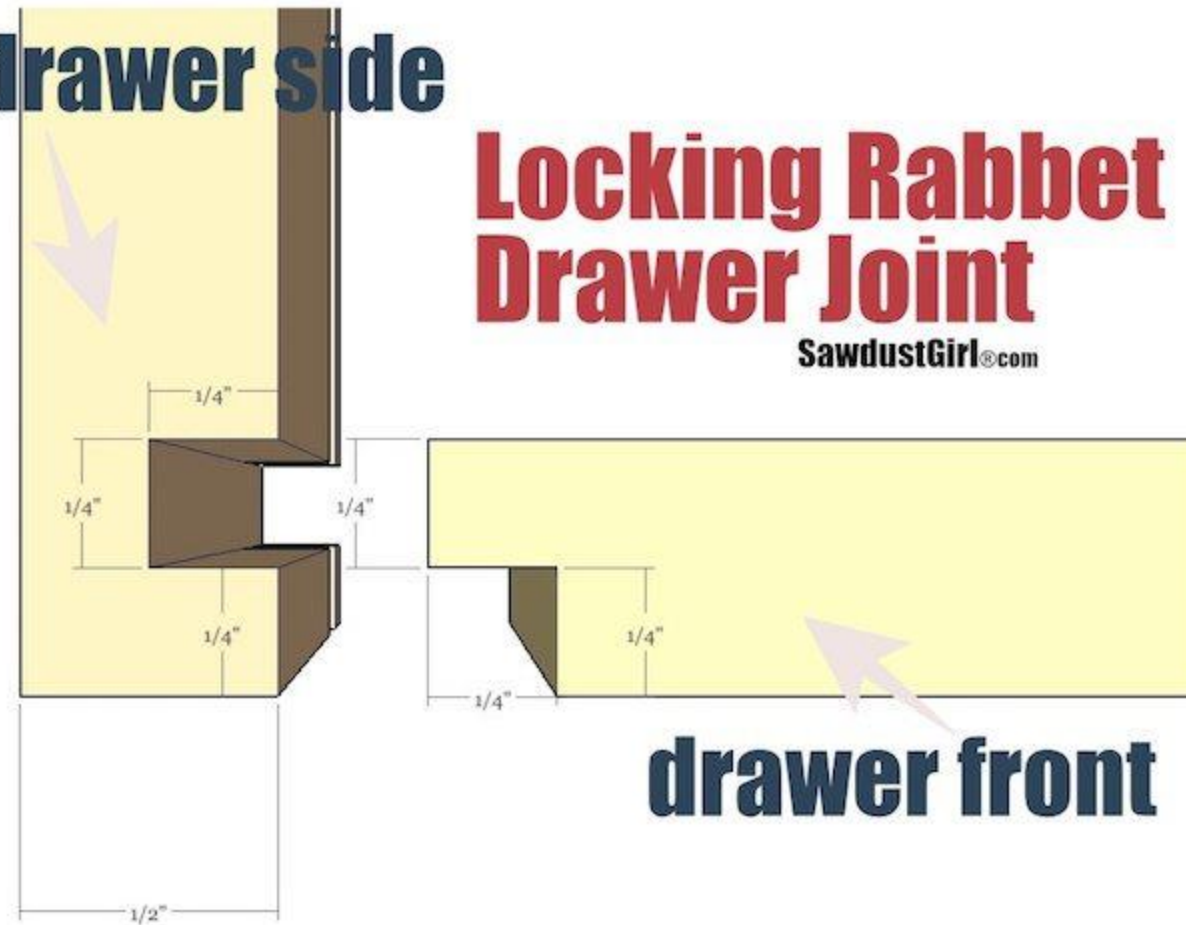


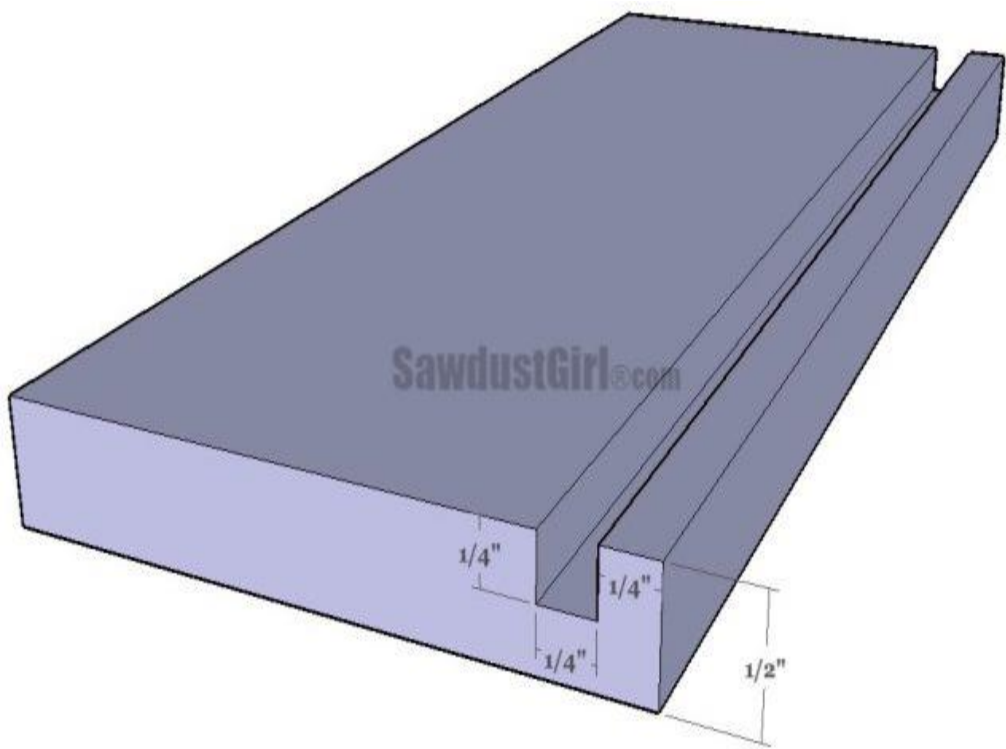
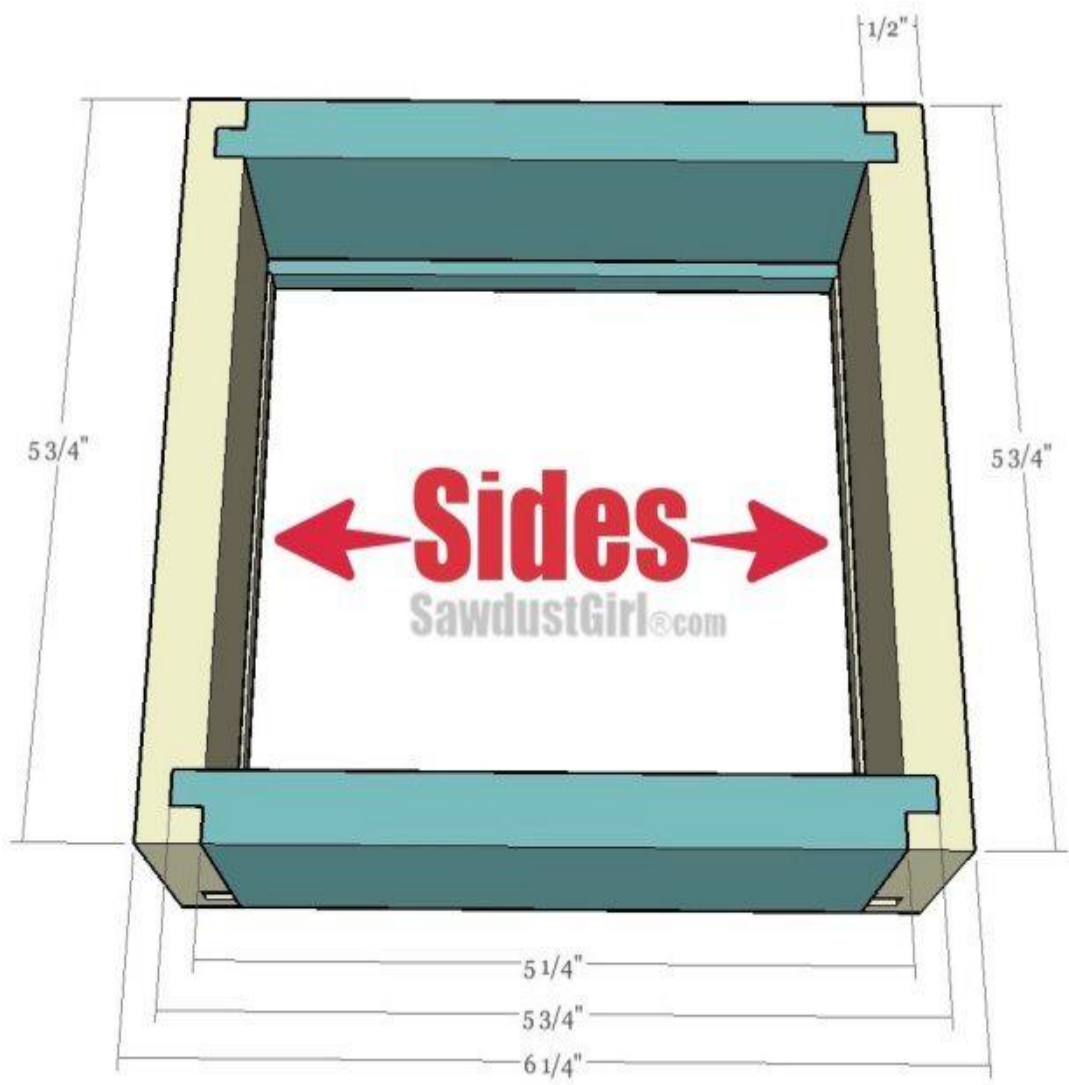


**drawer side**

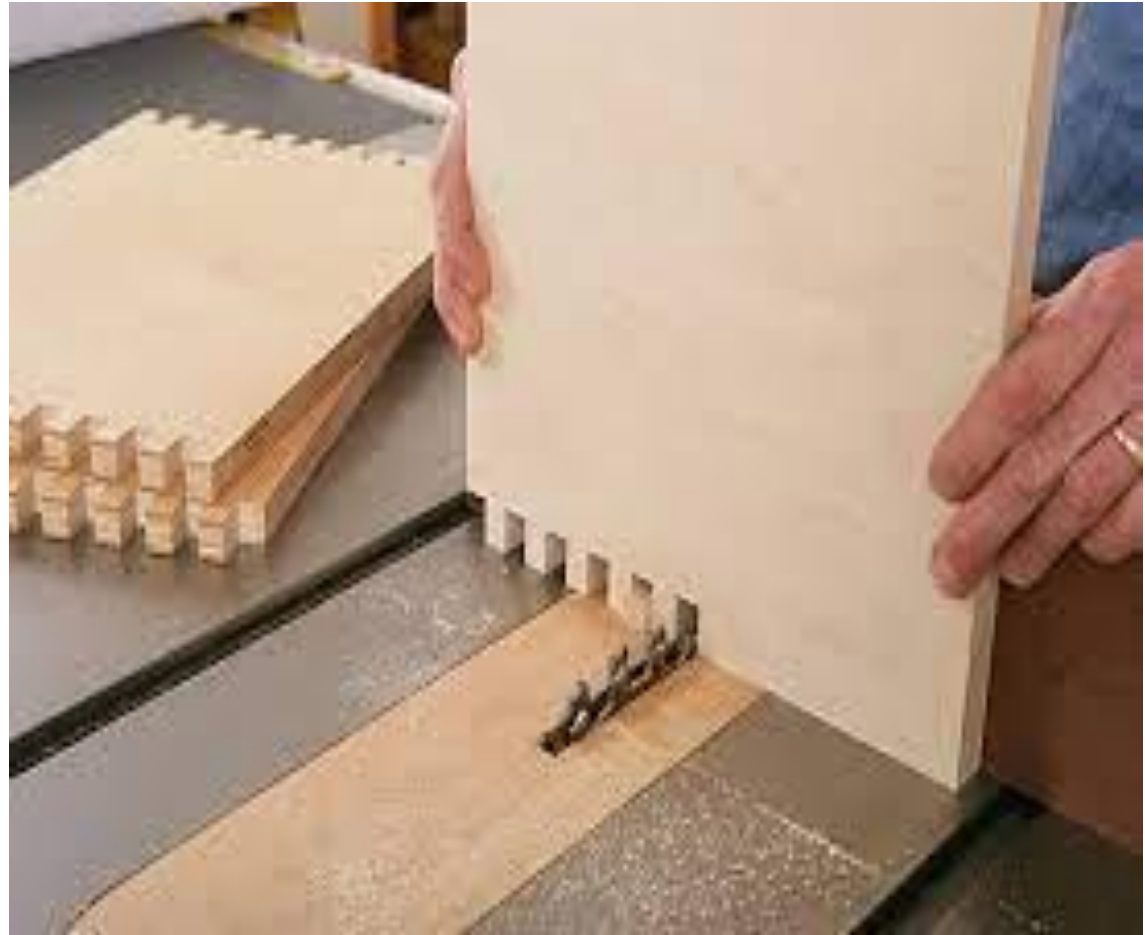
# Locking Rabbet Drawer Joint

SawdustGirl.com





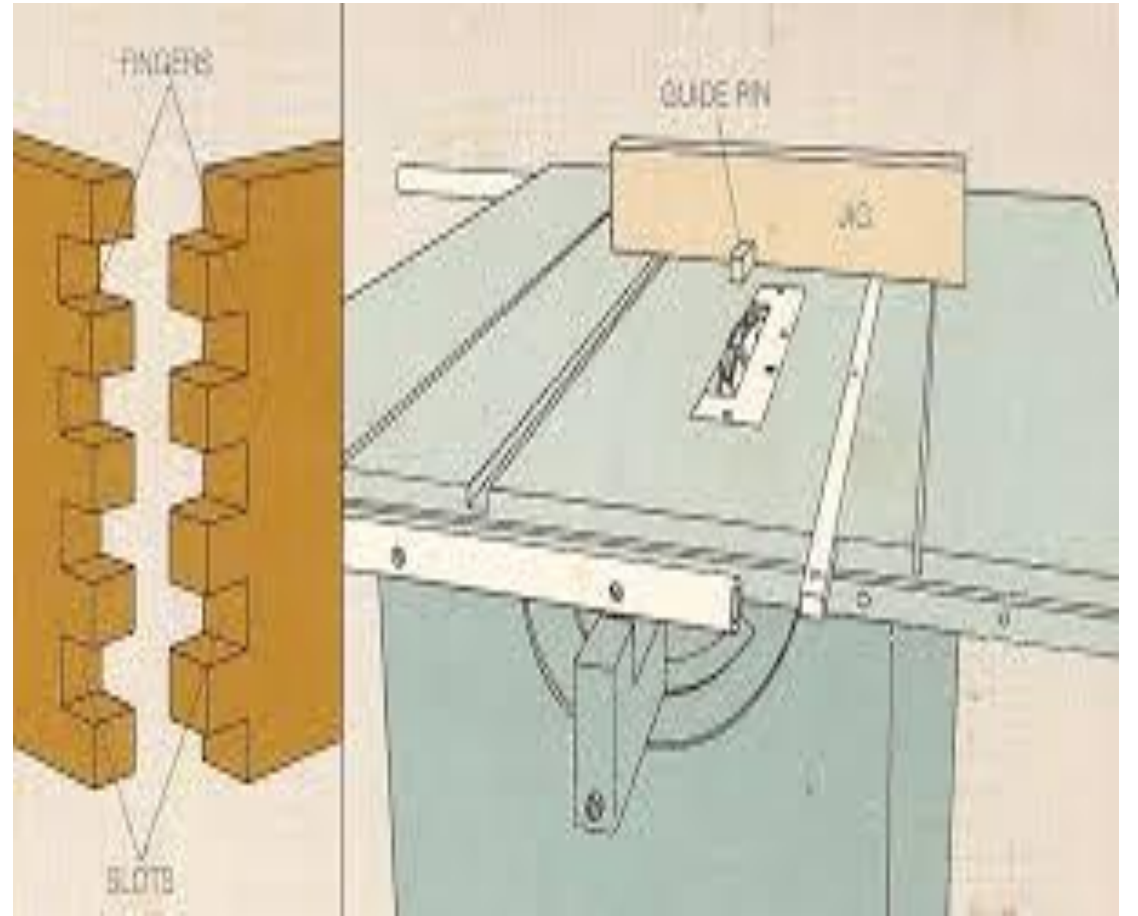
# Box Joints







Set the dado blade height a hair taller than the thickness of your material. The dado blade should be stacked to 1/2-in. thick to match the width of the peg stock.

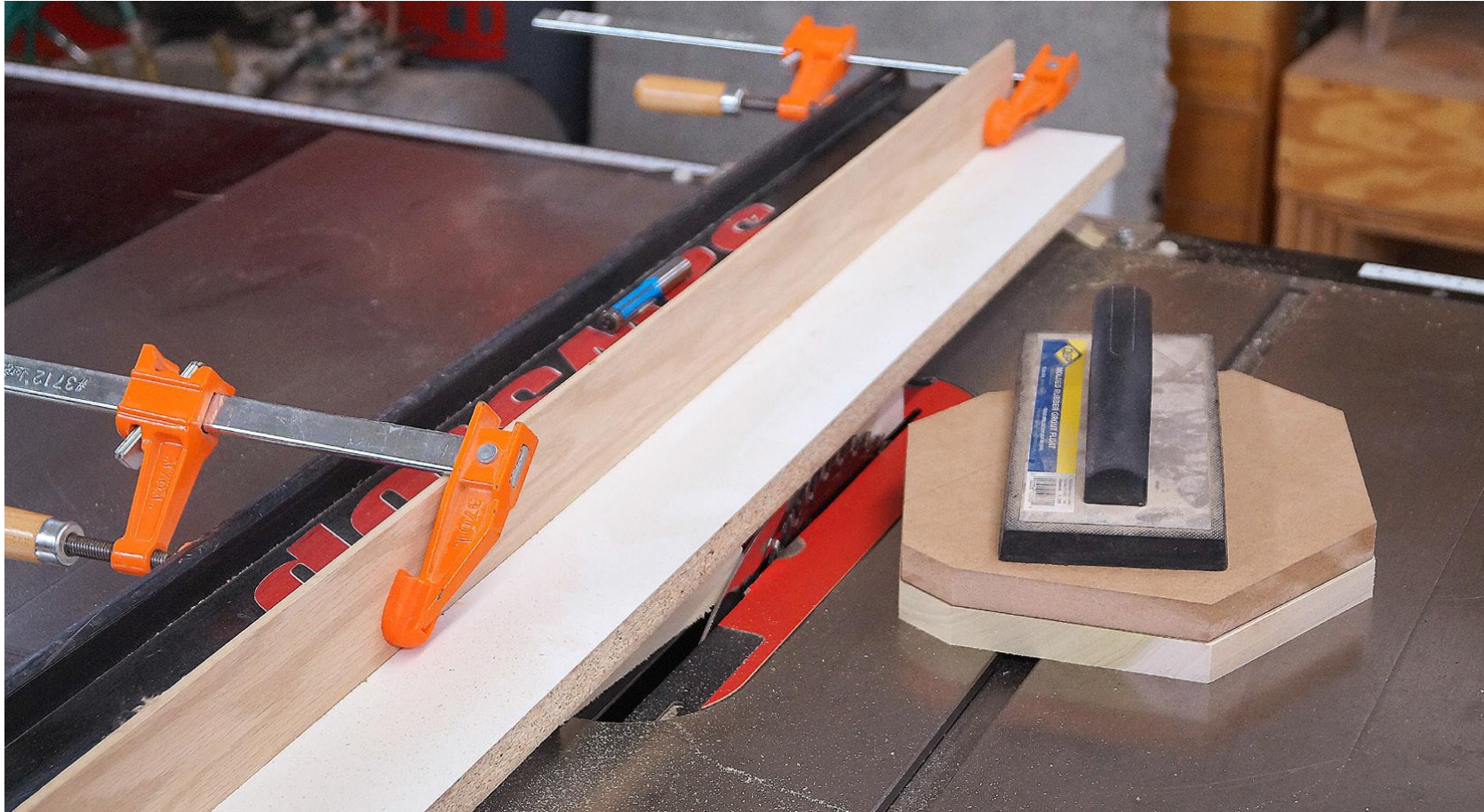


With the jig adjusted, make a test joint to check the fit. The initial adjustment may need to be dialed in to get the fit nice and snug. If the joint is loose, the pins are too small (slide the peg away from the blade). If they don't fit, they are too big (slide the toward the edge of a top/bottom part flat to the table and against the peg and make a pass. Make a reference mark on the front and back of this pin to help set up the cuts, fit the socket over the peg, hold it in place and make each pass slowly

Flip the first board to the other side of the peg so the reference pin is between the peg and the blade. Push the edges together and make the rest of the cuts.



# Pattern Cutting Jig



## Pattern Jig

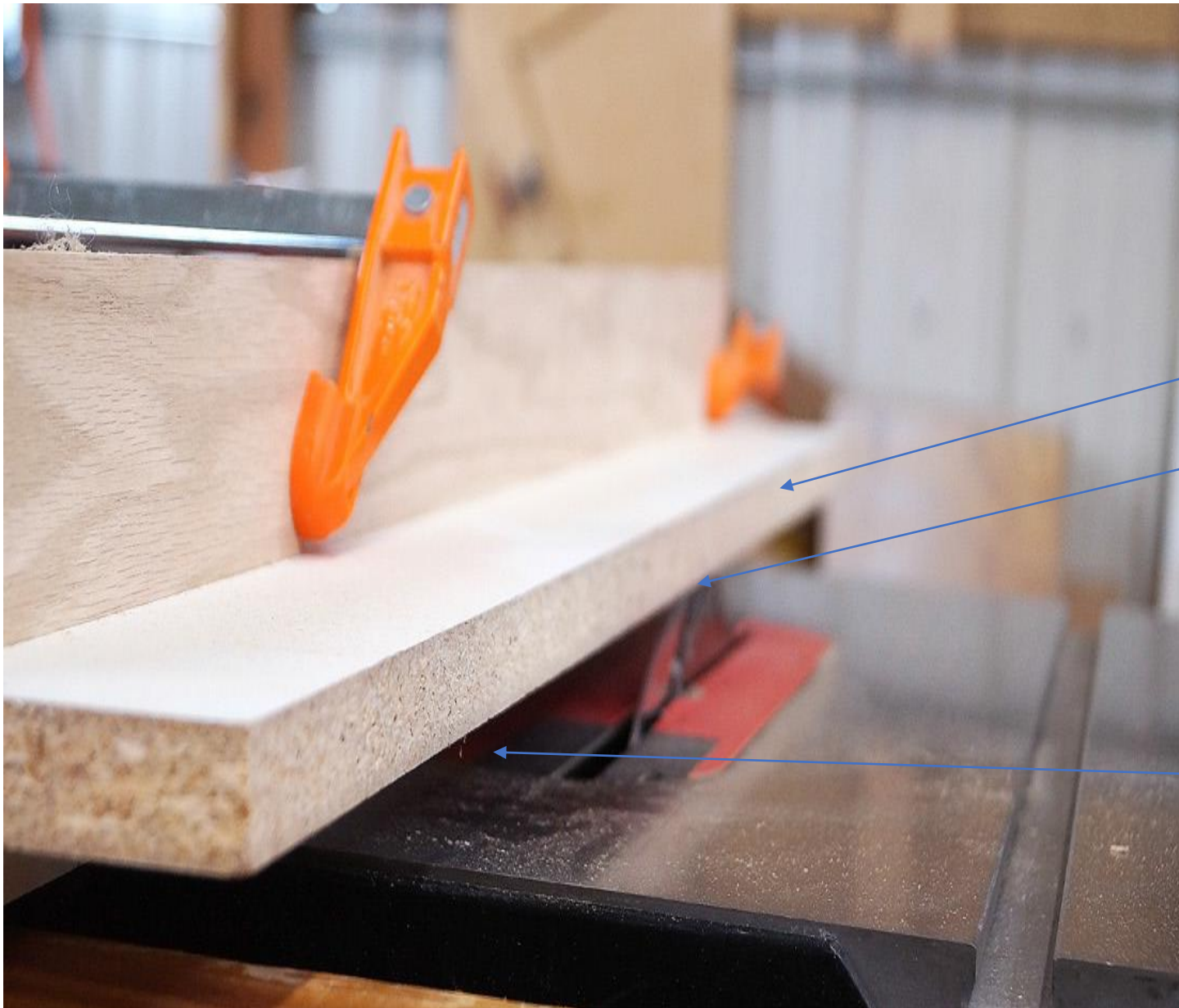
Use double sided tape to attach the pattern to the stock-the Pattern is on top

Pattern registers against this face

The blade is set with the outside blade tooth to the edge of the jig

The stock for the cut is below the pattern and is cut under the jig.

Clear the cutoffs after each pattern is finished or more frequently if they obstruct the cut



# Spline Cuts

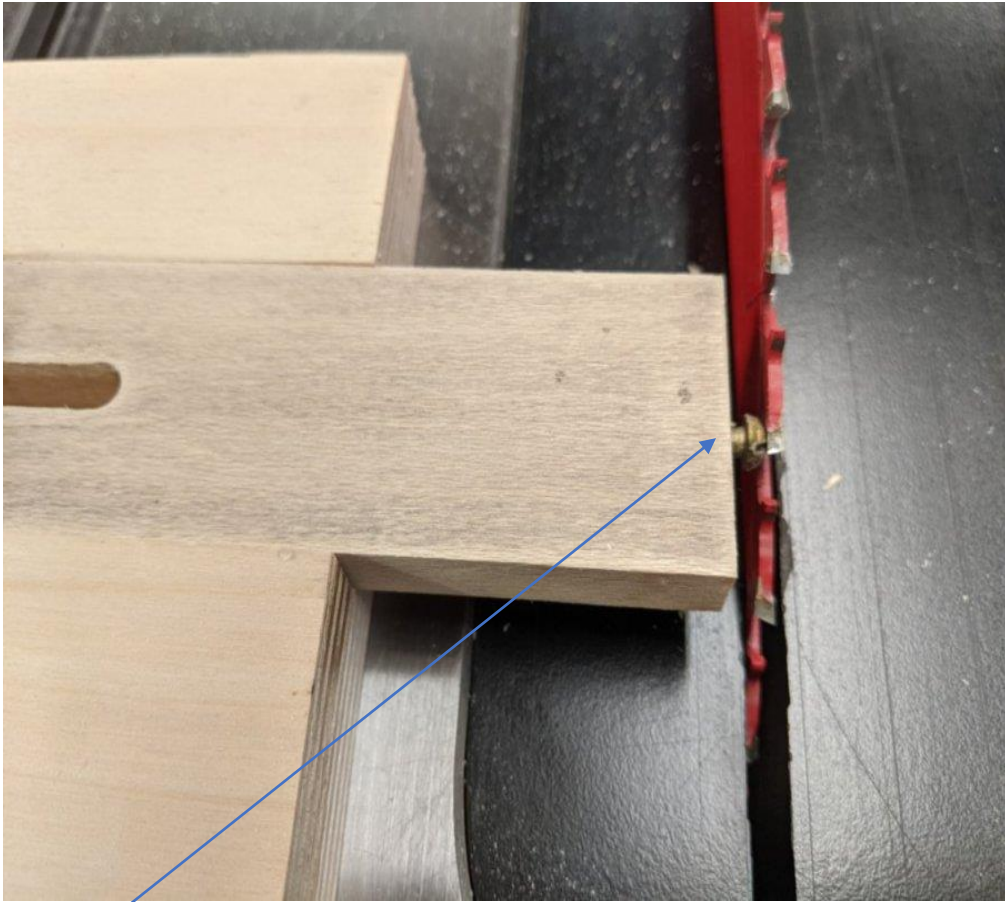




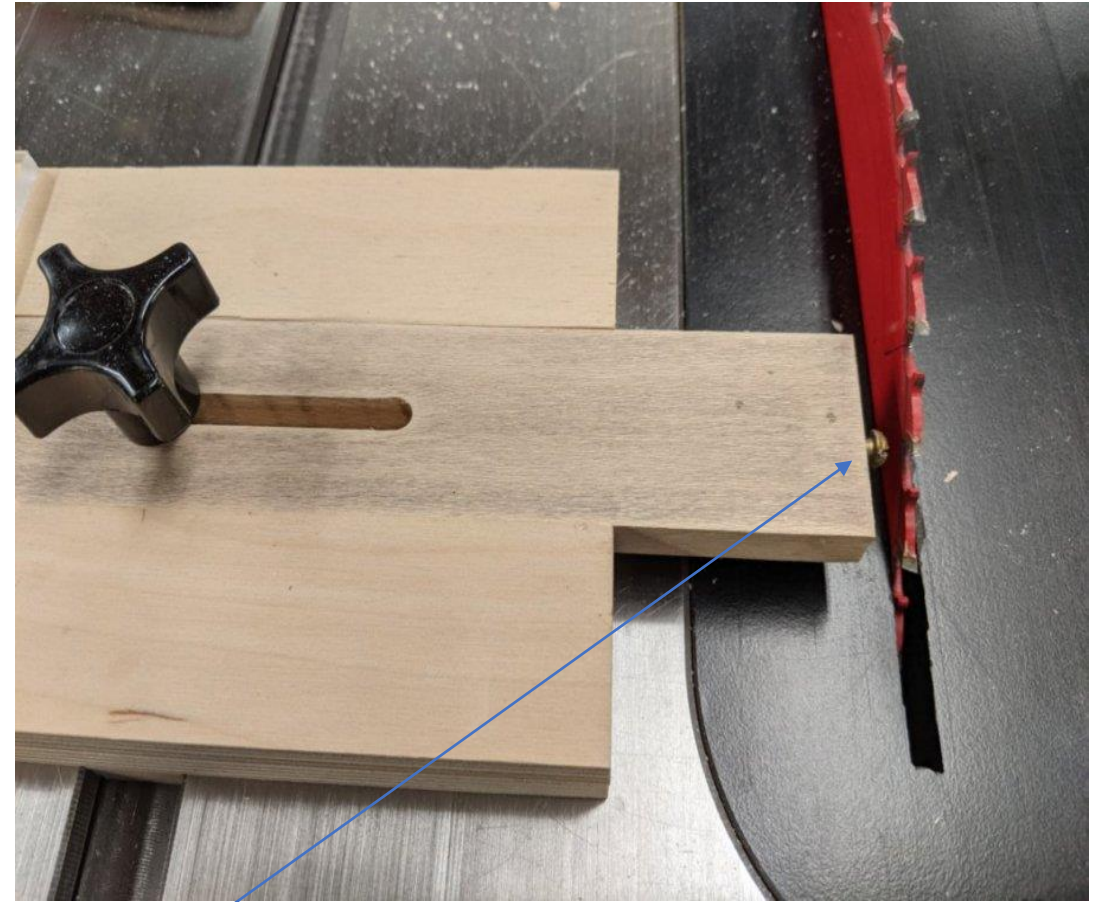
- Jig for cutting a spline slot in a rectangular frame. Cut the spline from wood identical to the frame or use a contrasting wood for design interest. To cut the spline see the “thin slice – edge banding” slide. The spline should be a piece cut cross the grain or a plywood piece for greatest strength.



# Thin slice, edge banding, splines

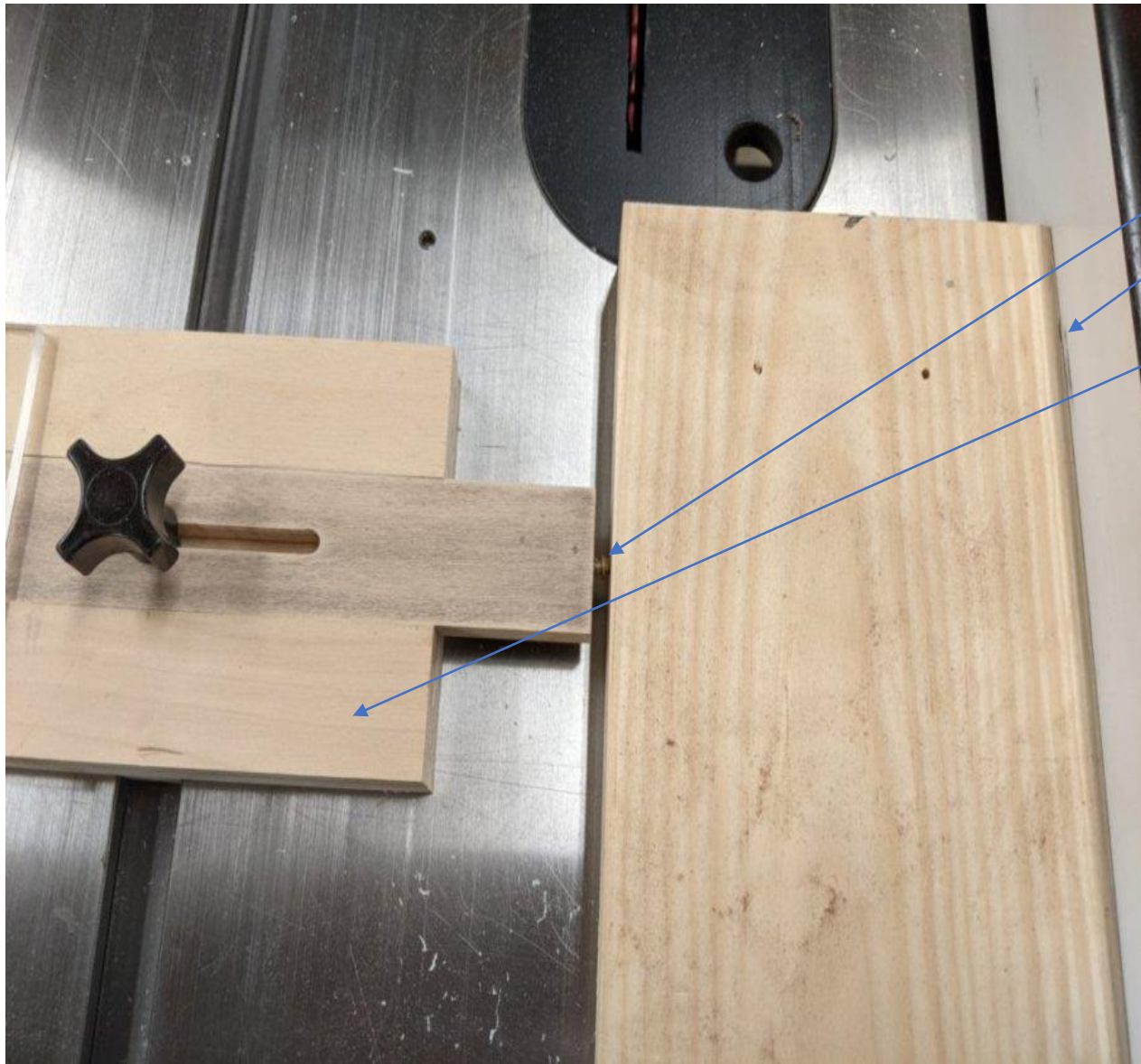


ZERO THE SCREW ON AN OUTSET TOOTH



SET THE MOVABLE SLIDE TO THE THICKNESS DESIRED AND LOCK THE JIG SLIDE IN PLACE





Set the stock against the screw  
Move the fence tight against the stock and lock down the fence  
Remove the jig from the saw track-but if you are going to need several strips the same thickness don't move the slide on the jig. For all following strips just place the jig back in the saw track and reposition the fence

Cut the thin strip, move the stock fully past the blade



# Taper Jig

- Use for cutting tapered table legs
- Same jig that was used to cut a straight edge on a crooked edge board can be used to cut tapered edges
- Set the board to be tapered at an angle on the jig.
- If you are cutting the taper on all 4 sides make sure you have a stop block to insure the same taper on all 4 sides
- Save the cut off pieces to place under the cut taper for support when you make cuts 3 and 4







## Taper Jig- Custom Size

When using for table legs cut the taper on the 2 **inside** leg surfaces

The foot of the taper should be  $\frac{1}{2}$  the width of the leg thickness but can be different depending on your personal style

This jig is simple but is built for the specific leg on your project.

All legs must be the same length and thickness

After the first taper is cut rotate the leg so that the first tapered edge is facing up

If using mortise and tenon joints for attaching leg to table frames(Rail) cut the mortises in the leg first then set the taper on the leg to be at least  $\frac{1}{2}$ " from the bottom of the rail.

# Rabbet with Standard Blade

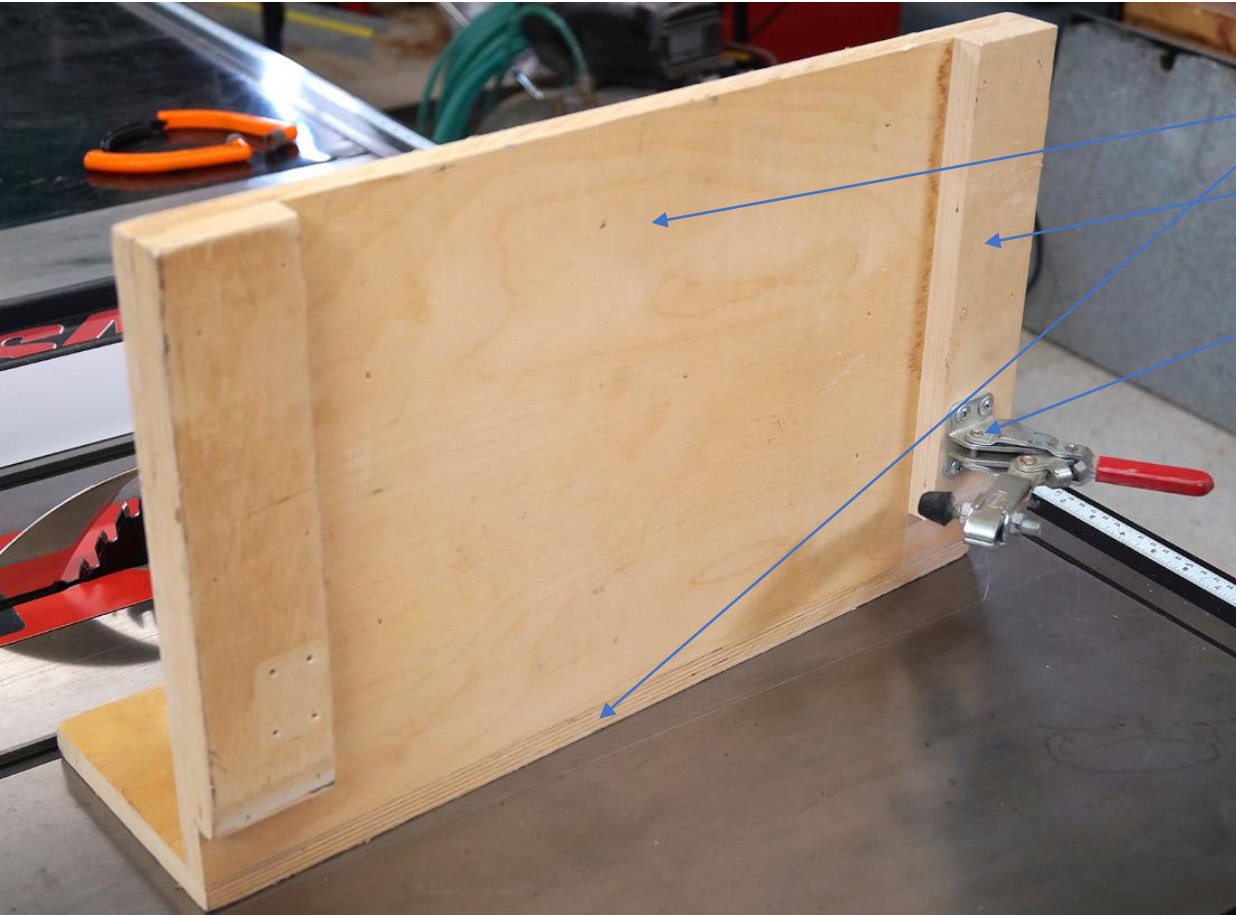
- You can easily cut a rabbet using a standard rip blade, saving yourself the trouble of setting up a dado head.
- With the saw unplugged, use a gauge bar to set height of the blade and the distance to the fence.
- For example, if you want a  $3/8''$  x  $3/8''$  rabbet, make the top of the blade even with the top of the gauge
- Position the fence to the face of the gauge bar so that it is even with the left edge of the saw blade







## Vertical Cut Jig



Base and vertical support must be perfectly square

The cleat must be square to the table

Hold down clamp is mounted so that it is above the blade height