

TIPS AND TECHNIQUES: MILLING SCALE LUMBER

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BY

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[\(Model Making Forum/Topic: Cutting scale lumber; how I do it\)](#)

[\(Model Making Forum/Topic: Cutting Scale Lumber on a Table Saw, Tips and Techniques\)](#)

This article was originally published in a topic posted to MyLargescale.com back on 06-May-2007. At the time I had nearly finished with the construction of 21 narrow gauge (1:20.3) freight cars using the pullout plans in Garden Railways magazine. If I remember correctly it took about an additional 2 weeks till they were actually out on the track. At the time of this revision I've just recently wrapped up scratch building the "Nina" an oscillating cylinder live steam project. As is usual, it's once again time to get the workshop ready for the next round of projects. Some more rolling stock, a few buildings and maybe another bridge are on the list for the remainder of the winter.

These kinds of projects require a substantial amount of scale lumber. Scale lumber is available commercially, but it is costly and not always available in the needed sizes. Fortunately, there are a number of tips and techniques to cut scale limber on tools regularly found in home-based workshops of today, e.g. table saw, band saw, thickness planer, etc. So, I would like to show you some of the techniques I've learned from others and developed on my own, which I use to cut scale lumber. Before getting started, it is a good idea to review your power tool procedures. Visit the library or Barnes & Noble/Borders etc. There are a number of good books and magazines out there on power tools and how to get the most out of them.

Just about any wood will work for our hobby purposes. Basswood is probably the best, but it is hard to find. Basswood is mostly likely available from specialty lumberyards. Poplar is another good material. It is straight, clear and nice to cut. Poplar is available at Home Depot and Lowe's, but it's somewhat pricey. Ordinary pine is very satisfactory for hobby work. It's widely available and inexpensive. Ordinary framing lumber works fine too. Cedar fence boards are also very good to work. The local Home Depot carries 2 x 3 studs they call "whitewood". Whitewood is nice material and it's cheap. Stay away from hardwoods like oak and maple. They are just too difficult to work with for what we need to do. Always avoid used lumber, anything with nail holes, screws, paint, varnish etc. just throw it away.

(In one of Dick Friedman's replies to the original topic made mention of using used lumber. I'll admit maybe I over reacted a bit when I talked about just discarding any used lumber. My main concerns were nails/screws broken off inside the board and paint. Neither does a saw blade any good. However, used lumber can be a good low cost source but you need to be very careful or you'll wind up spending your savings on buying new replacement cutting blades, the choice remains in your hands. If fact, even new lumber needs to be inspected. Lowe's and

Home Depot often drive staples in their lumber to hold on plastic covering and price tags, so you need to give it a close going over before use.)

Take your time selecting lumber, pick through the pile looking for lumber with the closest possible grain. Close-grained wood tends to be the straightest, and it usually stays straight after you cut it. Avoid warped, cupped and twisted boards. Cracks appear sometimes too, but if the board is very tight grained we can usually cut through the crack. Try to avoid knots too, but since most of our work pieces are fairly short, knots are easy to work around.

Up first is the venerable table saw, I know you're rearing to go, but before jumping in and making mounds of sawdust ripping scale lumber strips, you need to pull some maintenance and make a few modifications/additions to your table saw.

Rub down the saw table with some lacquer thinner to clean it. When that is dry rub down the table with paste wax. This makes things slide better. Use paste wax on the table periodically. Next, make sure the rip fence is parallel to the blade. If the fence is not parallel, the blade will cut your stock on the backside of the blade as well as the front. You will get a face full of sawdust from the backside of the blade. Adjust as needed to get a straight parallel cut.

I know, I know, however, one final thing before getting started, a word about **TABLE SAW SAFETY**. Table saws are very dangerous machines. Review your table saw safety procedures thoroughly. Safety cannot be emphasized enough. Make sure your machine is in good repair and operational in accordance with its manual. Make sure the shop has plenty of lighting and good ventilation. Always wear safety glasses, hearing protection and a good dust mask. Cutting scale lumber brings another type of safety hazard. It is very monotonous work. The same steps repeated several times over. It is easy to loose concentration or think ahead to the next part of the job. It is also easy to get distracted. Stay concentrated and totally focused on what you are doing.

In this series, let's review some techniques and accessories for the table saw to cut scale model lumber accurately and safely. We need to make fine clean cuts so we need a good blade. The biggest blade is not necessarily needed. My saw is a 10", but for me an 8" blade works better. DeWalt makes very nice blades at a good price. They are available at Home Depot. I use a regular DeWalt construction blade, 40 teeth, carbide tipped, and cuts a very thin kerf. That blade makes a very smooth cut. They cost about \$9, so it is not expensive to replace.

Freud makes a truly superior blade. I won't use anything else. I used DeWalt successfully for a long time, but won't go back now. Forty-tooth, carbide tipped finishing blade. Both brands are available from the home improvement outfits. A good blade will cut hobby lumber for decades without going dull. Periodically wipe down the blade with lacquer thinner or spray on oven cleaner. That will clean off sap that can cause burn marks on the woods.



Regardless of whether you are using a portable bench top table saw or a full sized floor model. Secure the saw to a sturdy bench or cabinet so that it does not rock or otherwise move around while in operation. You do not want the table saw moving around in the middle of a cut.



Next is an out-feed table. An out-feed table supports long pieces of wood after they go through the blade. Fabricate an out-feed table that extends well beyond the end of the saw table. The out-feed table should be as long as the material you intend to cut. Also make sure when assembled the top of the out-feed table is flush with or slightly below (e.g. 1/16") the top of the saw table. Note the miter gage slot extension dadoes cut into the out-feed table. Don't forget to put them in or you'll encounter a sudden unexpected stop that could be very

dangerous while using the miter gauge and/or sliding table/sled doing crosscuts.

Second thing to look at is the rip fence. Many stock fences are too short and not tall enough. You need to support your work piece on both sides of the blade. If your fence is short, add an auxiliary wooden fence. If needed, fabricate an auxiliary fence to extend the length and/or height of your fence, 36" long and about 4" tall is probably enough for hobby work. My saw has a rather high end "Biesemeyer" fence that is 42" long. You don't need anything this elaborate. Just ensure that the fence is perpendicular to the table and parallel to the blade.



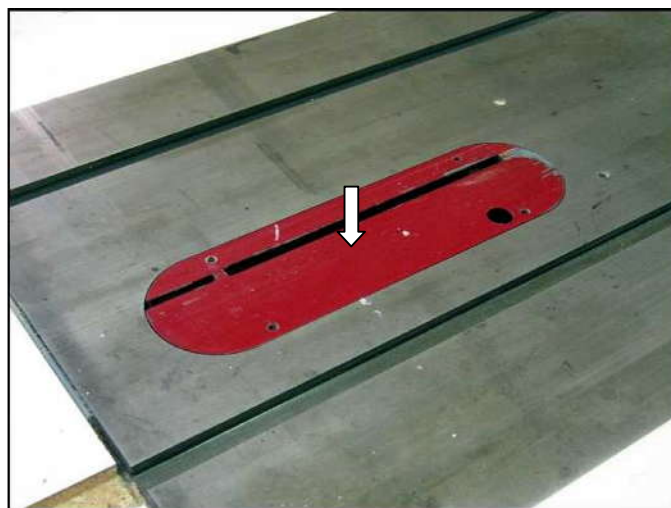
While it's true that most stock rip fences that are provided with table saws are notorious for being frustrating at best, however, I wouldn't recommend you running out and buying an aftermarket fence just yet. For one thing they are expensive and second with a bit of adjustment and care taken in its use the one you have may prove to be adequate for your needs.

The first thing to do is check for proper and accurate set-up of your table saw.

- Check that the saw blade is parallel to the miter gauge slots.
- Check that the saw blade is perpendicular to the tabletop (i.e. 90°).
- Check that the rip-fence is parallel to the miter slots when locked.
- Check that the vertical face of the rip-fence is perpendicular to the tabletop.
- Check that the miter gauge is at a right angle (i.e. 90°) when set to zero on its protractor.

Attempting to guide anyone in how to make adjustments to your particular saw, if any of the above checks indicate adjustment is needed is hard to do at best, since each manufacturer does things in their own way. Hopefully you've got the Users Manual and it advises you how to make these basic adjustments, if available.

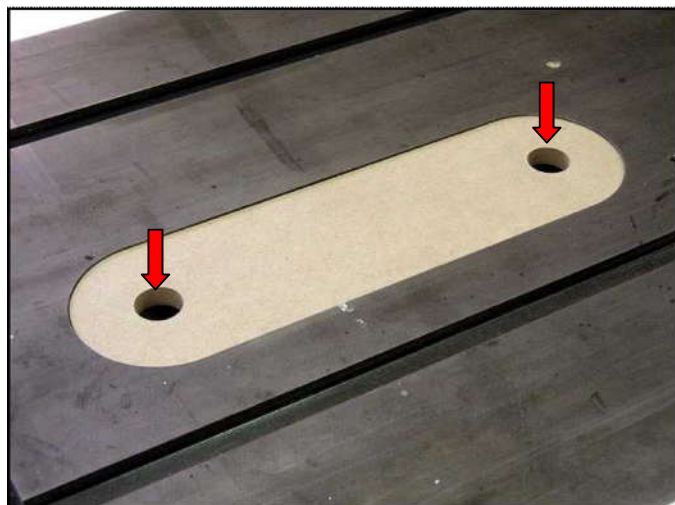
Now let's do some improvements and additions to the table saw. First is to make a new throat plate to replace the stock throat plate that came with the saw (see image to the right). The throat plate is that big red thing in the photograph, which is inserted into the saw table, it surrounds the saw blade when raised and has to be removed when changing saw blades.



This stock plate is just not satisfactory for hobby work. The slot for the blade is way too wide and the gaps on either side of the blade allow the unsupported thin pieces of scale lumber to be pulled down into the gap and wind up either being destroyed or in worst case thrown back at you. Additionally, it's not unusual that the throat plate is not closely fitted to its opening in the saw table, thus allowing it to move around too much in the table recess. The answer to these inadequacies is to replace the stock throat plate with a shop-made "zero-clearance" throat plate.

Just today I was looking through a Grizzly catalog and noticed they have Zero Clearance throat plate blanks available for most major saw brands. They are phenolic plastic with adjustment screws for height. They look neat.

Now just because we're off to make a zero clearance throat plate for the table saw, don't go misplacing the stock one put it in a safe place. If you ever need to tip the blade to make a bevel rip cut (and sooner or later you will), a zero clearance throat plate will not work without destroying it, and you'll be wishing you could lay your hands on that errant stock throat plate for this.

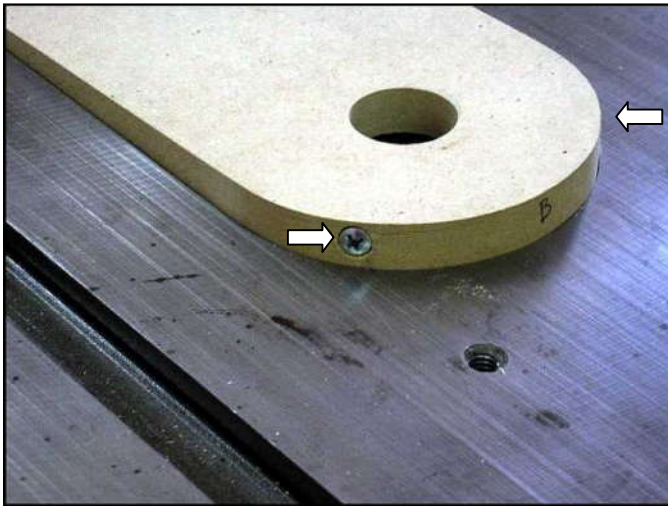
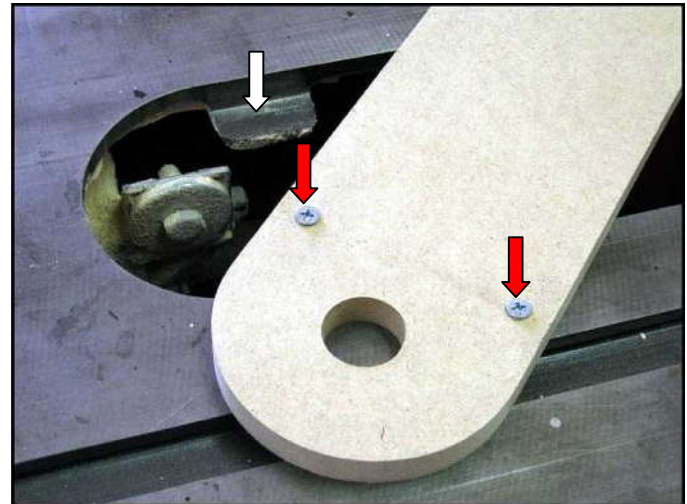


Zero clearance plates are fitted to the table saw perfectly, with a blade slot the thickness of the actual blade kerf. Start by cutting a piece of Medium Density Fiberboard (MDF) or good quality plywood to fit the opening in the saw table.

It does not have to be a perfectly close fit. Just get it in the slot. Drill two finger holes (i.e. one at either end, see above picture) to help get the plate in and out of the saw table. When it comes time to change saw blades.

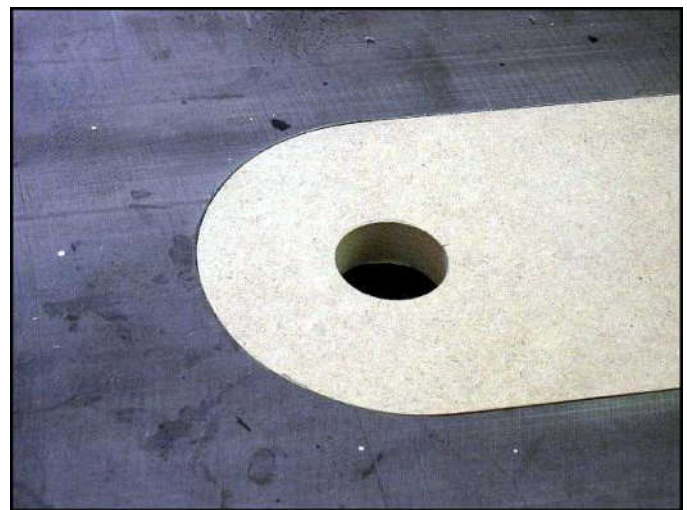
one at either end, see above picture) to help get the plate in and out of the saw table. When it comes time to change saw blades.

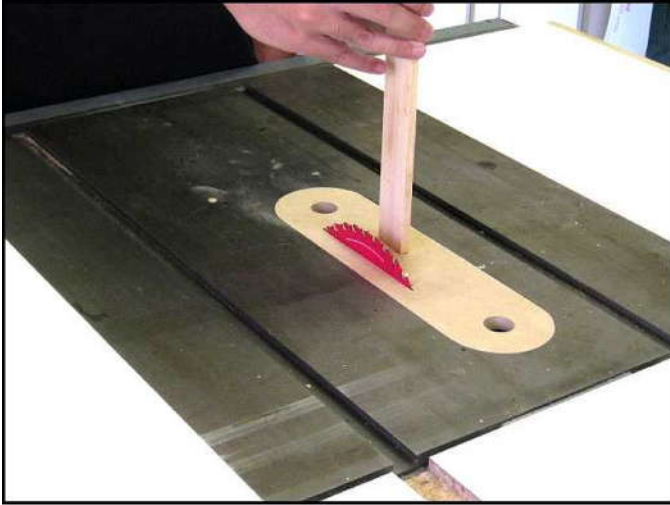
On the underside of the plate, drill and countersink for some #6 or #8, half-inch long flat head wood screws. Locate these screws so they act as little “footies” against the throat plate ledge in the saw table.



Now drill and countersink the edge of the throat plate for four oval head screws. Basically, one screw in each corner.

Adjust the foot screws in/out to ensure the throat plate is exactly flush with the table. Adjust the edge screws in/out to take up and left/right or forward/back slop. You want the blank throat plate fitting stable and flush, yet easy to get in and out.

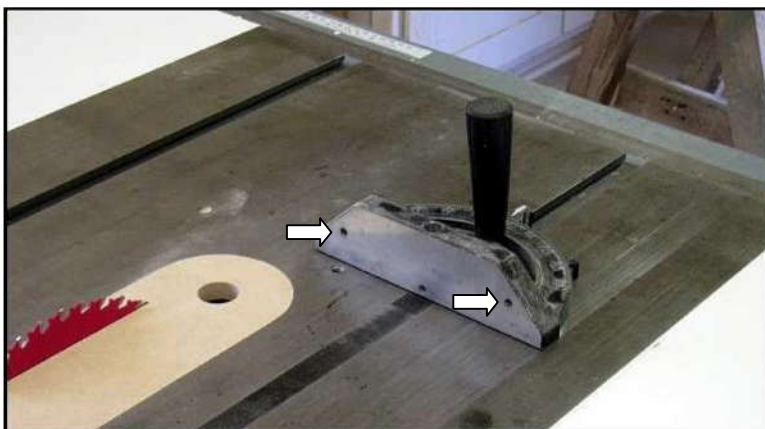
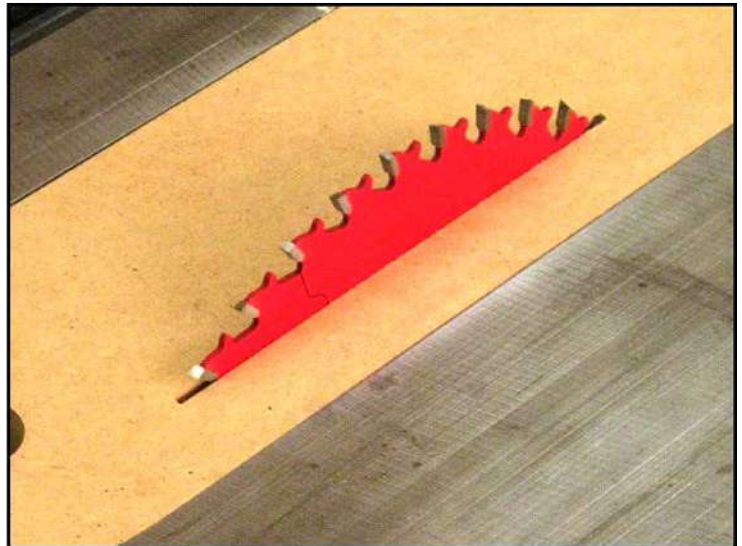




Hold the throat plate blank down tightly with a stick. Turn on the saw and slowly raise the blade to cut through the plate.

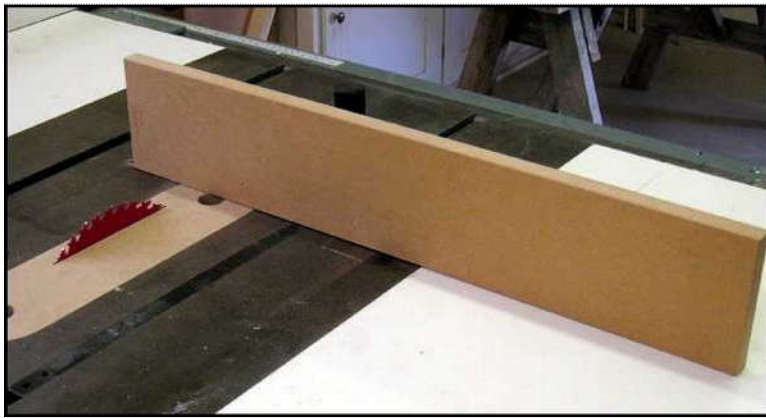
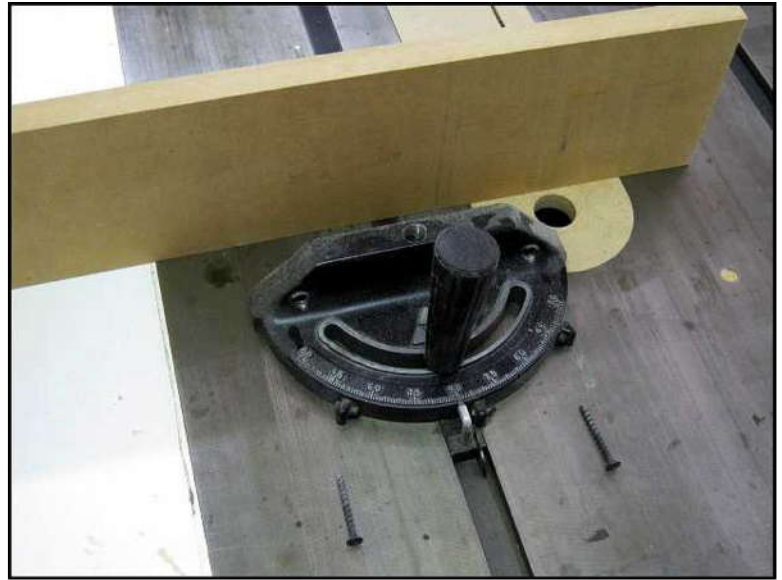
The zero clearance throat plate is done and ready to use.

The blade slot is as narrow as possible. There is good support for the lumber on both sides of the blade throughout the cut. The plate is secure, smooth, and flush with the top of the saw table, so the lumber won't hang up. Wooden throat plates like these don't last forever, they eventually wear out. Replace as needed, they are easy to do. Save the old plates. They come in handy for wider blades, dado blades, tipped over angle cuts, ripping plywood and other heavy jobs.



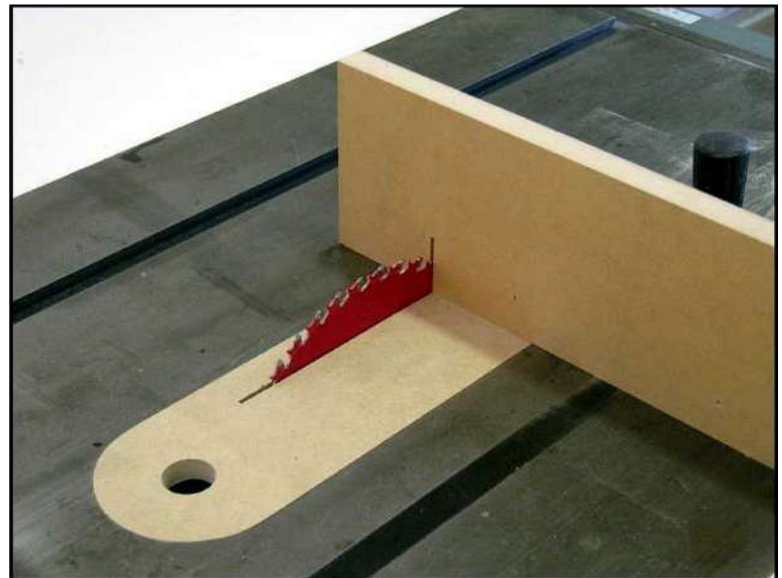
The next modification is to the miter gauge. The miter gauge is heavily used for cross cuts to length after the stock is cut to thickness and width. Here is a picture of the stock miter gauge; while it will work just the way it is, its usefulness is limited. Notice the two holes in the face (see image to the left) these may be used to attach the auxiliary fence.

The addition is nothing more than an auxiliary fence from a piece of 3/4" thick MDF or good quality plywood attached with screws thru the reverse side of the gauge. Cut a piece of MDF about 4" tall and 18 to 24" long. Drill pilot holes for on the backside for the wood screws.

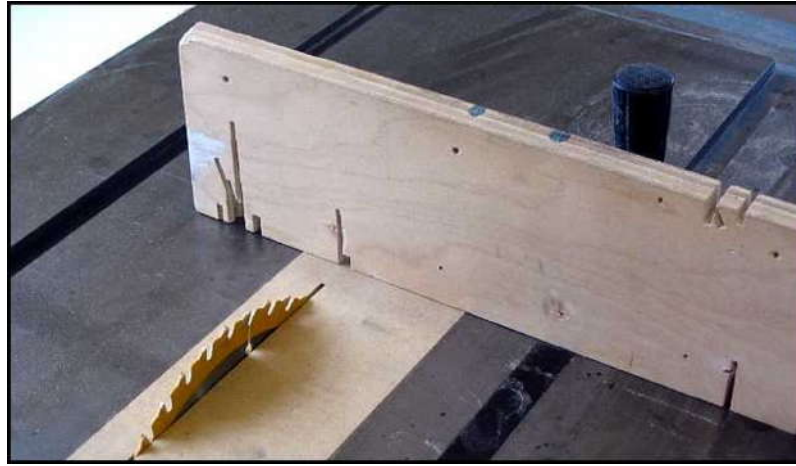


Attach the auxiliary fence to the miter gauge.

Turn on the saw and advance the auxiliary fence through the blade.



The auxiliary fence acts as a zero clearance throat plate by straddling the blade and giving good support to the work piece on both side of the cut. You can reposition the auxiliary fence left or right to suit your needs. As can be seen in the following picture my fence has been chewed up pretty good from use. When it's too far-gone, toss it and put on a new piece.

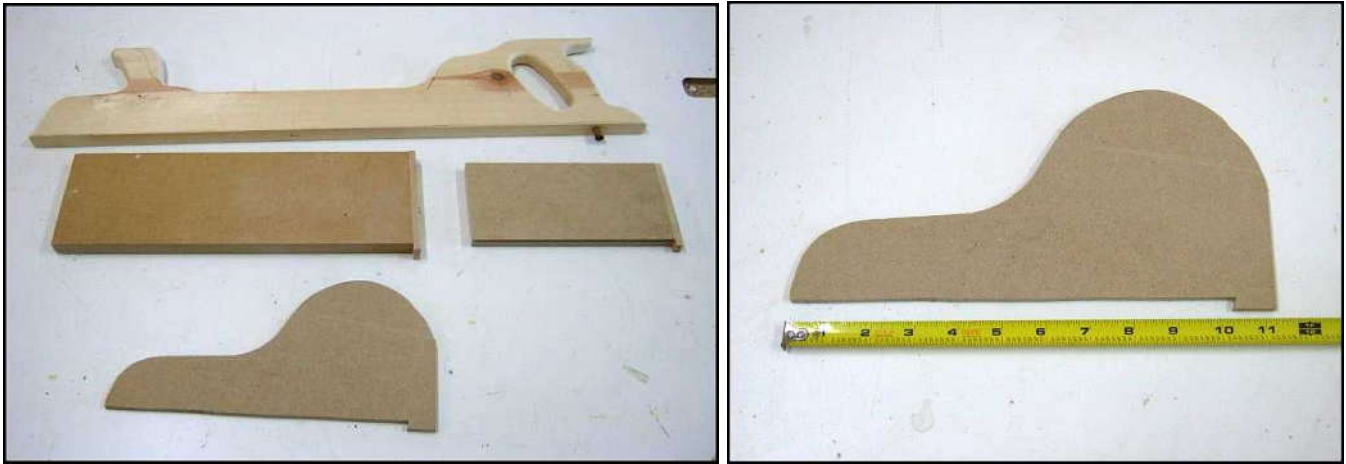


Next up is push sticks. Push sticks are probably the #1 safety item for a table saw. Woodworking books and magazines have dozens of ideas for push sticks. They all do the same thing. They keep your fingers away from the saw blade. Make up several and have them handy. Following are a few examples of ones that I've made and use.



The short stick is for pushing stock through the blade. The longer stick has a notch to help keep stock up against the fence. Here is how they work: Note how chewed up the shorter push stick is. If you don't use a push stick, that's what happens to your fingers. As the sticks wear out replace them. Push sticks are fine to rip bigger lumber, but they are not safe enough to rip thin strips, while cutting scale lumber you'll probably never use a push stick. I don't.

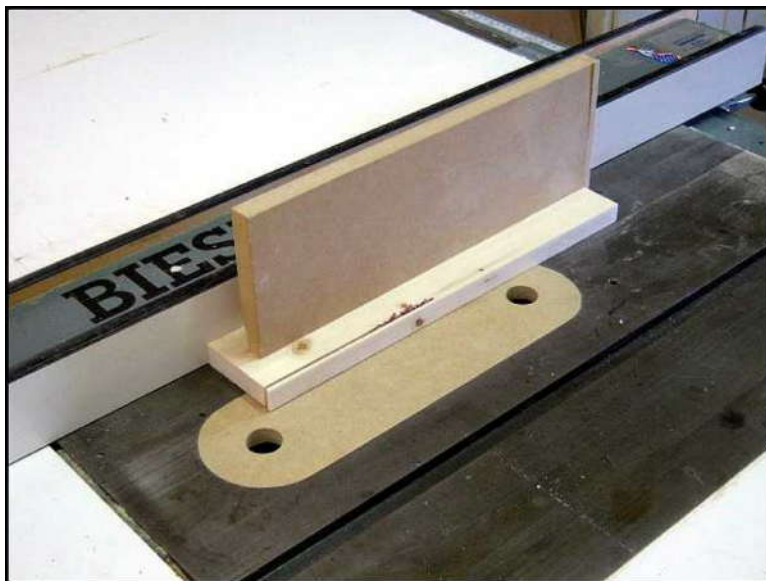
A better device is a push shoe, sometimes called a push block. Here are some examples.



Push shoes are about 12" long and 6" tall. They are made from 1/4" thick hardboard or tempered Masonite. Home Depot sells quarter sheets for a couple dollars, it's always handy to have a sheet in the shop.

Push shoes have the added feature of pushing downward on the material, keeping it on the table. Push sticks only help push forward and not downward. Safety procedures tell us that the saw blade height is kept at a minimum. Doing that can also cause the material to "ride up" over the top of the blade. Don't ask me how I know that. Push shoes help eliminate that problem.

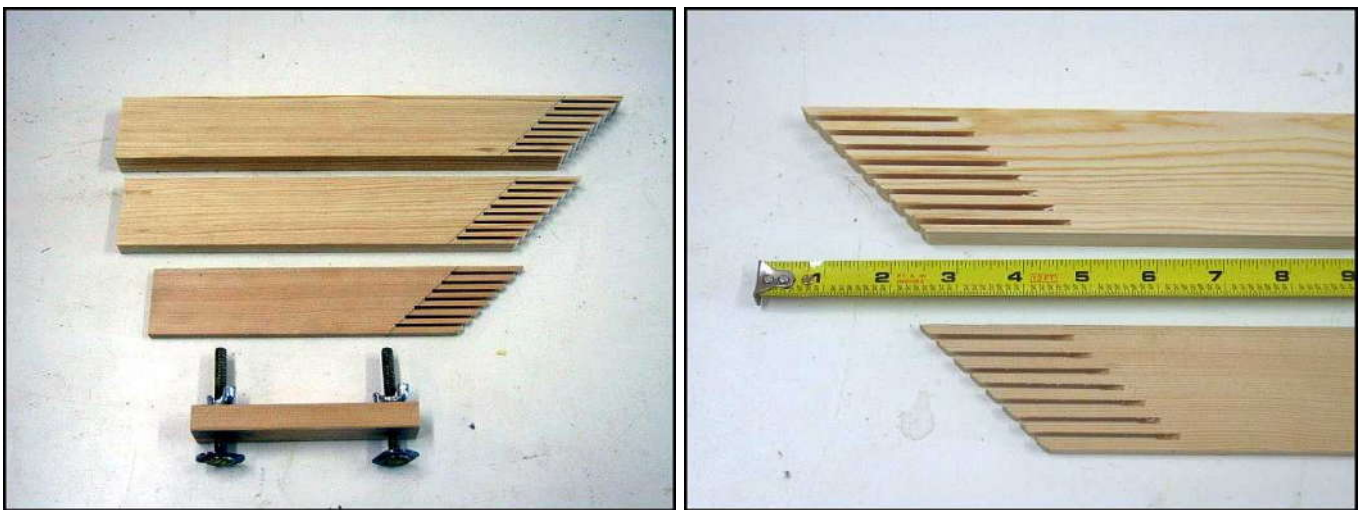
Here's how a push shoe works.



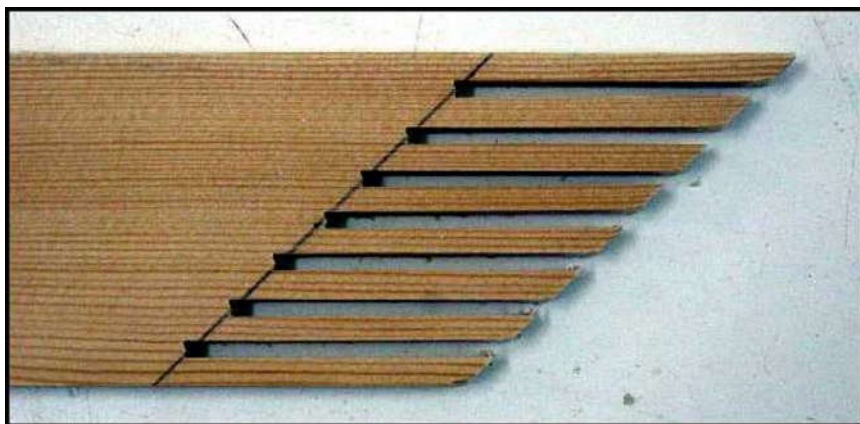
Push shoes are designed to be expendable, but if being used correctly they should not get chewed up that fast. If you have to replace them frequently, that's an indication you are attempting to cut pieces that are too thin, which requires setting the blade a little too close to the rip fence. Basically your finished piece is on the wrong side of the saw blade, and you should be using an alternate method of cutting them instead. See the section on using the "rip fence stop" which is covered a bit further along in this article.

The next table saw accessory we need to make are the so called "feather boards", which come in very handy when ripping very thin stock. Feather boards are essentially a spring loaded "third hand", that applies a light spring action to hold lumber securely against the saw table and/or the rip fence.

Here are a few examples of feather boards I've made from pine and use:



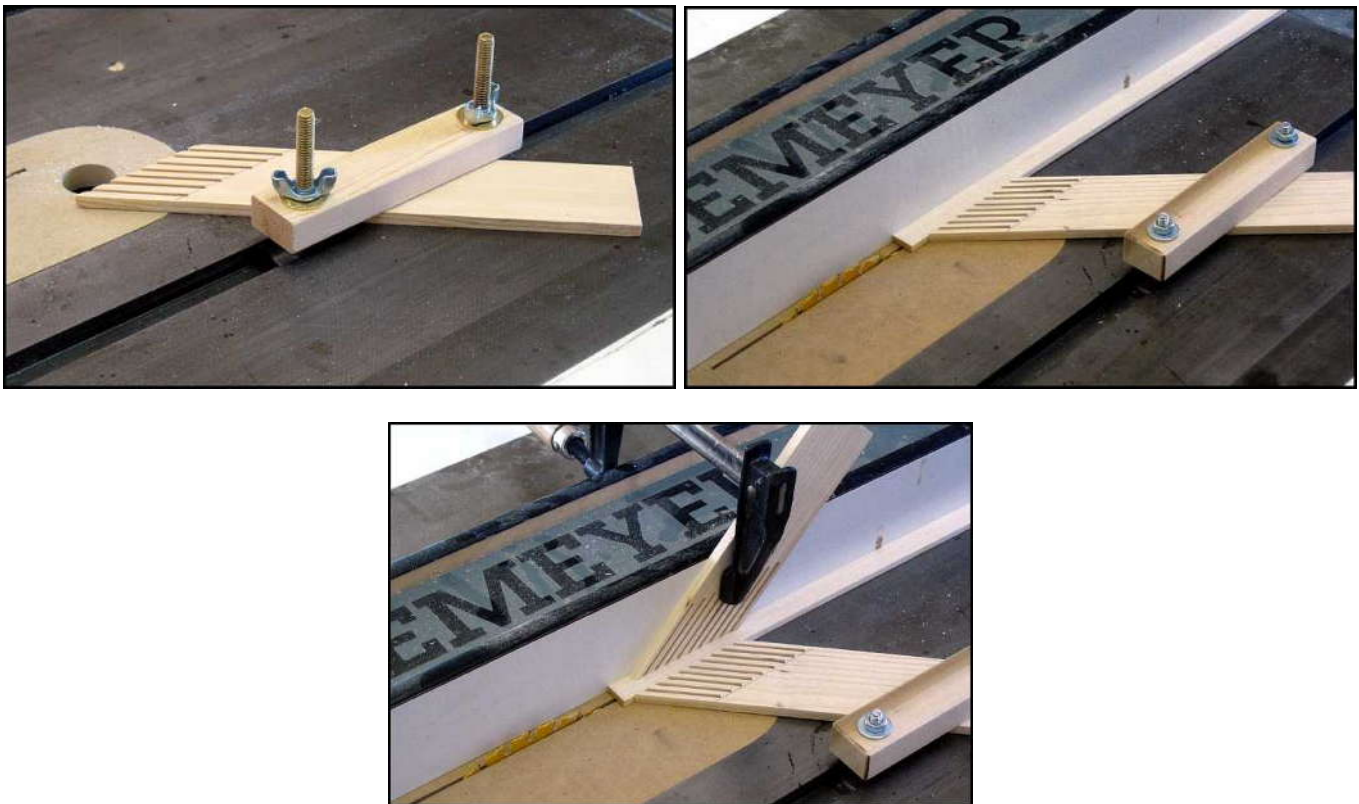
I find it handy to have pairs of feather boards in three levels of thickness 1/4", 1/2", & 3/4". In the photograph on the left, the one at the top is 3/4" thick pine, 2" wide, and 12" long, the middle one is 1/2" thick, and the bottom one is 1/4" thick. The angle of the end is 45 degrees. The fingers are 1/8" wide, while the slots are a saw kerf in width. Use the feather boards that most closely match the thickness of the stock being cut.



I always make the feather boards in pairs; one long and one short (see image on the left). The short one is clamped to the rip fence (see image on the right), that's so it doesn't stick up too much and get in your way when cutting and cause an unsafe condition. Its job is to hold the stock down against the saw table surface.

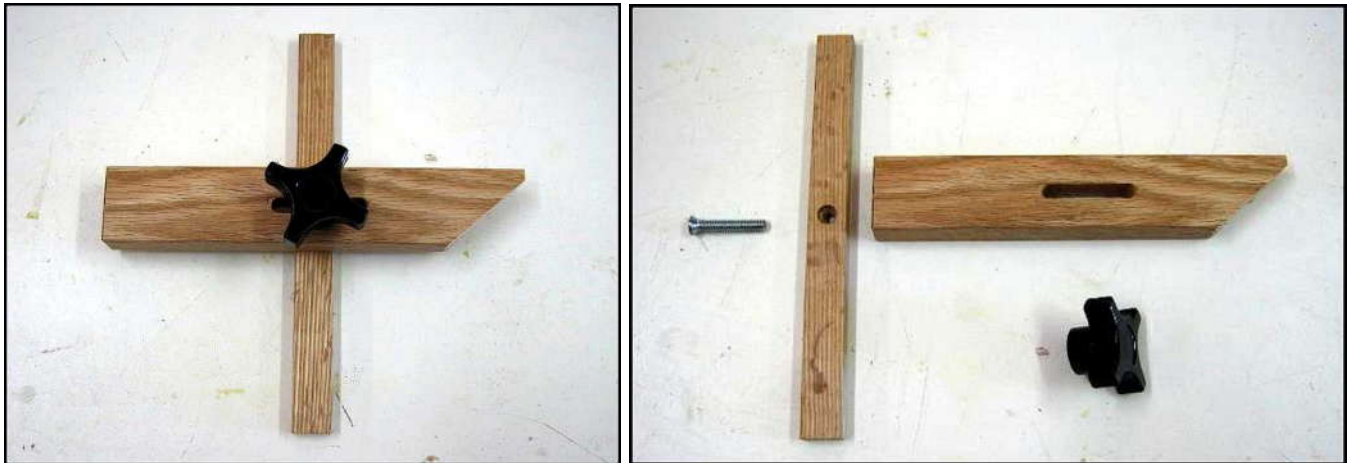


That leaves the longer feather board, which gets clamped to the surface of the saw table; its job is to hold the stock against the surface of the rip fence. The hold down clamp is made from a block of wood, two standard toilet bolts, two washers, and either two wing or hex nuts. The bolt heads are cut to fit the "T" slot on the saw table. Here's how the feather board clamps to the table. Just a heads-up tip, not all table saws have T-slot miter gauge slots.

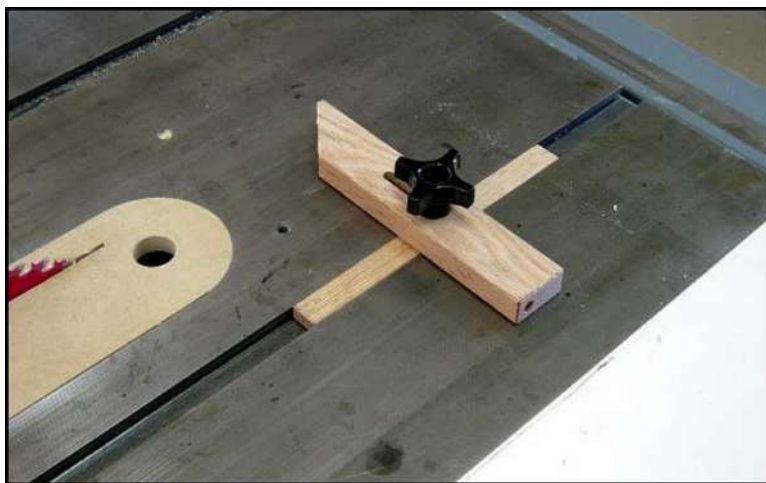


As you can see from the above a feather board can be used alone, or you can use them together which is the best solution. We will talk more about feather boards later and show how they are used.

The next accessory we need is a rip fence stop like this:



The fence stop assists in accurately setting the saw fence to cut thin strips. There are a number of plans available for these, from simple too complex. Simple is better. Here are the parts.



The fence stop drops into the miter slot on the table saw, we will get into using the fence stop a bit later.

The following was such a good idea submitted as a reply in the topic, I figured I'd just include it here in its entirety, thank you Brian and WoodworkingTips.com.

(Comment: Brian (MLS User ID: Allegheny) - Bob, While cutting narrow strips from a wider board so that they fall free on the outside of the blade as opposed to being trapped between blade and fence is much safer, the constant need to readjust the fence for each cut becomes tedious. Especially since you want all of your pieces of strip wood to be identical in thickness/width. Years ago, I ran across the following jig to make the measuring aspect of this repetitive process much less painful:

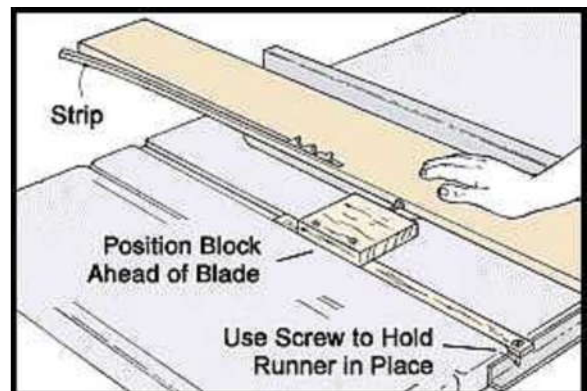
In practice, you set the bolt head once and you end up with virtually identical strips.
Brian

A Quick Jig for Ripping Thin Strips

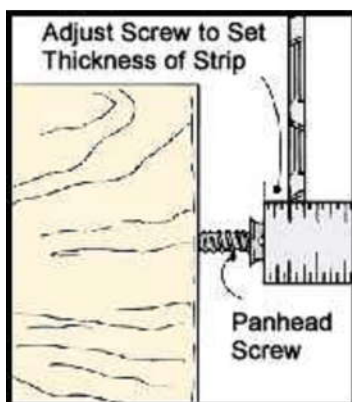
“Plywood projects always look better with the edges covered by thin strips of solid wood banding. But what's the best way to cut thin strips consistent on the table saw?”

One method is to set the fence the desired distance from the blade. Then make multiple passes to cut enough strips. This works, but the strip can get caught between the blade and fence and kick back.

The other option is to cut the strip on the waste side of the blade. It gives better control of the work piece, and the strip falls away clear after passing the blade. But moving the fence between passes can yield strips of different thicknesses.



One solution to this problem is the jig shown above right. It's just a block screwed to a runner that sits in the saw's miter gauge slot.



Setting the jig is easy. Position it alongside the blade and fine tune the jig by turning a pan head screw driven into one edge, see the drawing at right. Then pull the jig back so it sits ahead of the blade. Now butt your work piece against the screw and lock the rip fence against the work piece. Make a cutting pass, then repeat the process on each additional pass. All the strips will be the exact same thickness.”

*Have a nice weekend,
Joel Hess
(Online Editor, Workbench)*

Another handy attachment for the table saw is a sliding table, or sometimes called a sled. A sliding table is just a sheet of 1/4" "Masonite" with a strip underneath to track in the miter gauge slot. There is a stop strip across the top of the table, which is a perfect 90 degrees to the saw blade. Use a sliding table to cut cumbersome panels that would be difficult to guide with the fence or miter gauge.



Here's what it looks like underneath. Rub it down with some paste wax so it slides smoothly.



To use the sliding table, hold the panel tight up against the front and push the table through the blade.

Last thing to talk about today is a table saw helper (i.e. another person that is). On a table saw, the helper is called the “tail man”. The tail man needs to be equally knowledgeable about table saw operations as the saw operator. The tail man’s position is at the end of the out feed table facing the saw operator. The tail man recovers lumber after the saw operator finishes the cut. **THE TAIL MAN DOES NOT, IN ANY WAY, PULL LUMBER THROUGH THE SAW BLADE. IT IS THE SAW OPERATOR’S JOB TO FEED THE LUMBER THROUGH THE SAW UNTIL THE CUT IS COMPLETE.** The tail man only manhandles lumber well after it clears the blade.

That’s it for the set-up and saw accessories. Time to start cutting some lumber.

Start all lumber cutting operations with some careful pre-planning and board prep. We want the rough stock to be the right length and width to suit the final product and for ease and safety in cutting. Keep the rough stock length somewhat short, 2' to 4' or so.

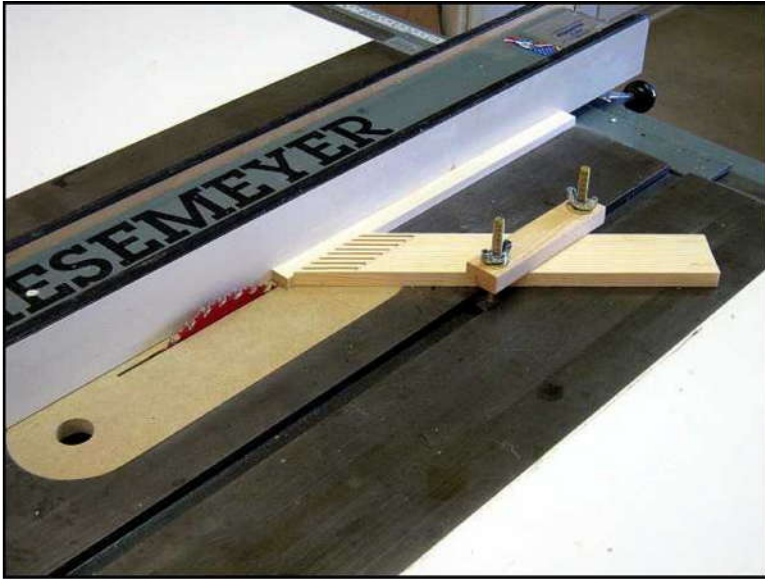
Long boards get too unwieldy. On the other hand, too short is unsafe. Anything under 12" long is really too short to rip safely. Cross cutting a board can be either done on the table saw or with a handsaw. Next rip boards to manageable widths based on your planning. When ripping, it is a good rule of thumb to keep the wide part of the board up against the fence. It is always a good idea to use a push shoe when space between the fence and blade gets too narrow. Use a push shoe if the distance is less than 3" or so.

As part of planning, be sure to always cut extra material for the project. It can be very difficult to get the fence and miter gauge settings the same for another go around if you come up short.

For the first lumber cutting example, let’s cut some 3/8" x 1/4" rectangle stock. The blank stock is ordinary 3/4" thick pine board. 3/4" thick stock is probably the most common. Either pine, poplar, basswood, or cedar. Occasionally some nice 2 x 4’s are available and they work fine as well.

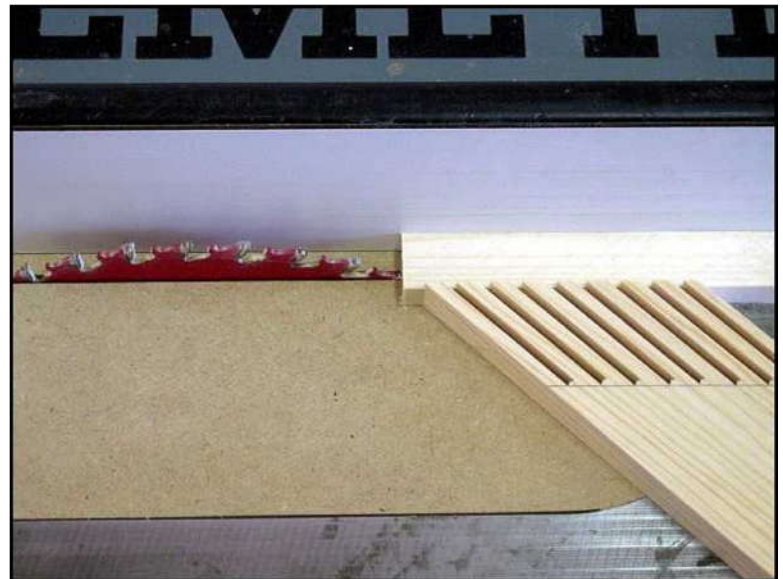
Set the table saw fence to 3/8". That will be the first cut. Use a push shoe to guide the stock through the blade.



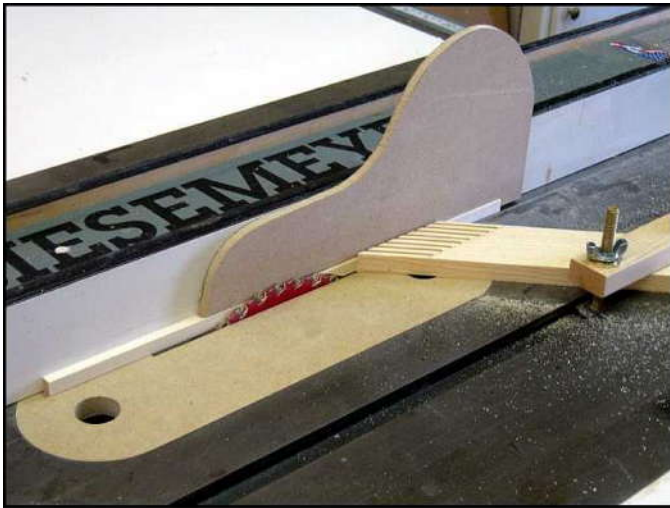


The next step is to cut the 3/8" x 3/4" strip into 1/4" widths. Set the fence to 1/4" and clamp a feather board to the saw table.

The feather board pushes the stock against the fence. Apply just enough pressure to hold the stock against the fence. Don't clamp the feather board too tightly against the stock. Ensure the forward tip of the feather board is just slightly behind the blade. We don't want any pressure from the feather board pushing sideways against the blade.

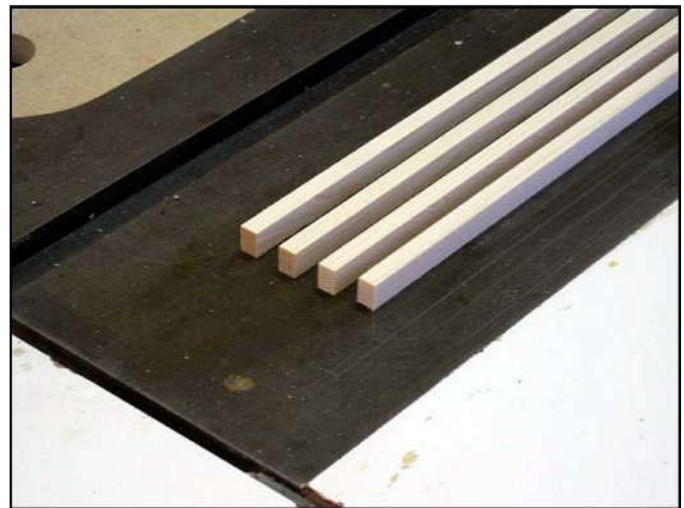


Use the push shoe to guide the stock through the blade.



The first cut on the 3/4" wide strips leave about a 3/8" wide leftover. The leftovers can get a second cut at 1/4" width. Leave the saw fence set at 1/4". Adjust the feather board for the leftover piece and saw again.

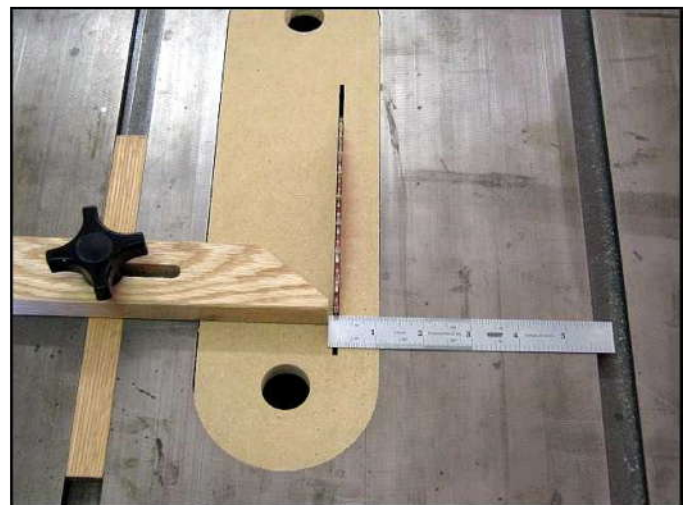
This job is done.



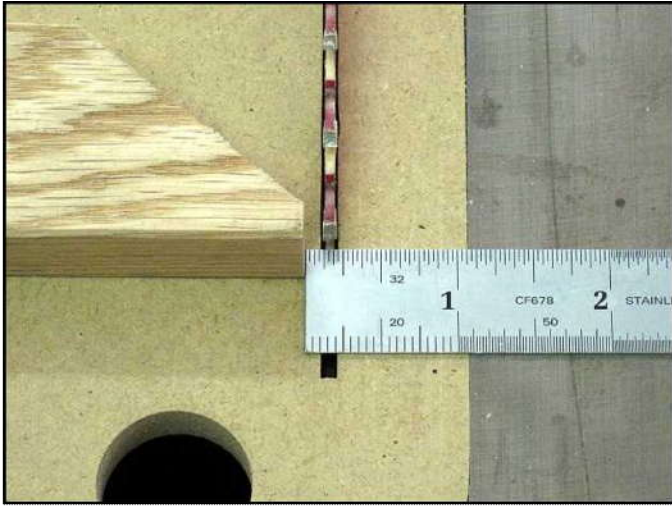
The Freud blade is really superior. These strips came out as smooth as they would have from a planing machine.

For the next example, let's rip some thin planking material, 3/32" x 11/16". First off, if you have a lot of thin stock to rip, it's a good idea to prepare several raw stock blanks in advance. Run each board though with the same fence setting so that all the blanks are same width, 3 or 4 inches wide, what ever they end up at; they just need to be the same width. This is where we get the first opportunity to make use of the rip fence stop accessory that we made.

Do the 3/32" thickness cut first. That's a close cut, too close to try to set the saw fence. Instead use the rip fence stop attachment we made earlier. Drop the fence stop into the table saw miter slot and loosen the lock nut. Adjust

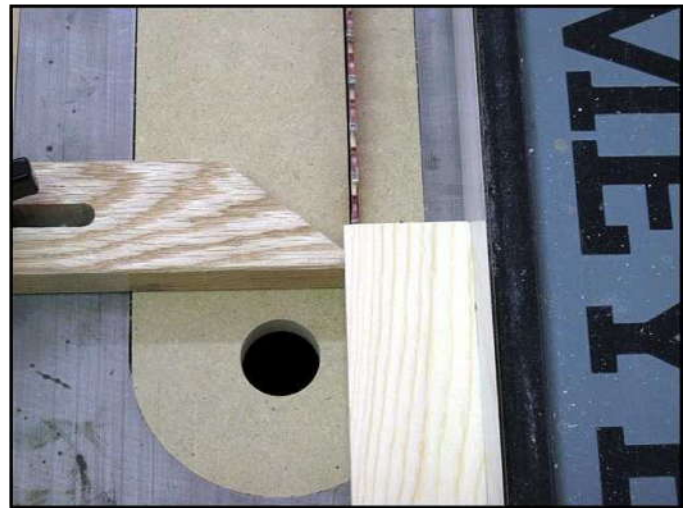


the fence stop so the tip is $\frac{3}{32}$ " outside the blade. Note, the saw teeth have a set to the right and left, so measure the $\frac{3}{32}$ " from the tip of the saw tooth that has its set toward the side that the fence stop is on, and not just to side of the saw blade.



Let's get in for a close look. Make sure the tip of the fence stop is $\frac{3}{32}$ " from the blade. When it's set tighten the lock nut.

Put a piece of blank stock on the saw table and lightly "bump" the saw fence to the left until the stock just touches the fence stop.



Install, adjust, and clamp down the feather board, making sure that there is enough room left between the tip of the feather board and the saw blade for the nose of the rip fence stop to fit when setting up the next cut. Pull the fence stop out of the miter slot. Then run one of the blank stock pieces through the blade with a push shoe. Check that the resultant strip is exactly $\frac{3}{32}$ " thick.

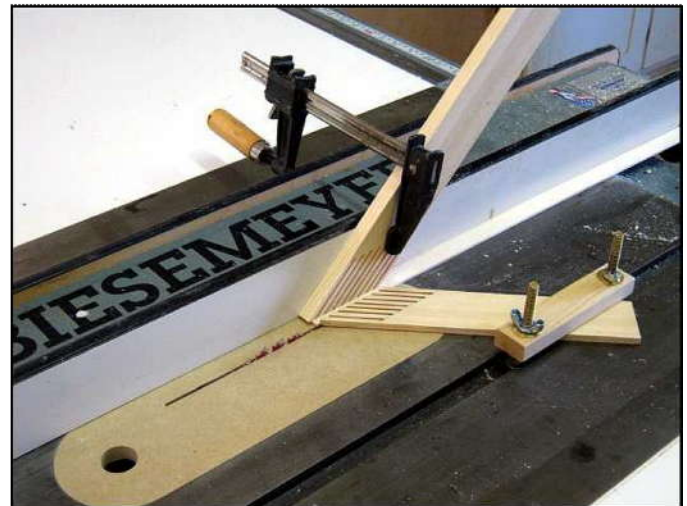
Next run each of the remaining blank stock boards through at this setting. Now repeat the process, reinstall the rip fence stop in the miter slot, unlock and “Bump” the rip fence over until the stock just touches the nose of the rip fence stop and lock the fence in place. Don’t disturb the feather board.



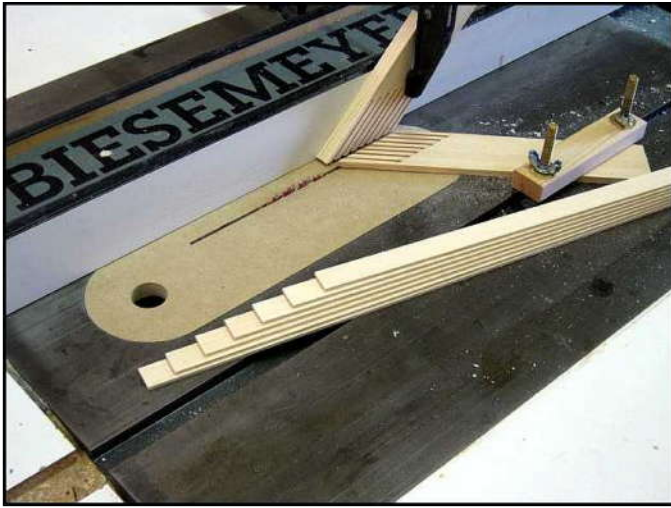
Just keep repeating this process until the stock is used up.

Now rip the $\frac{3}{32}$ ” thick boards to $\frac{11}{16}$ ” width. This material is thin and “flexie”. A push shoe to hold it down will not be enough. This time use 2 feather boards, one clamped to the saw table as before and the other clamped to the rip fence to hold the material down.

Take note that in the photograph that the feather boards are positioned so that the tips end just slightly before the point where the saw blade starts to cut. This assures the feather boards are pushing the stock against the saw table and/or the fence. We don’t want the feather boards pushing stock against the saw blade and creating a bind. Also note that the saw blade is not set too high, just enough to cut the material.



Again, the feather boards don't need to be tight, just enough pressure to hold the stock against the fence and table. These came out just perfect.

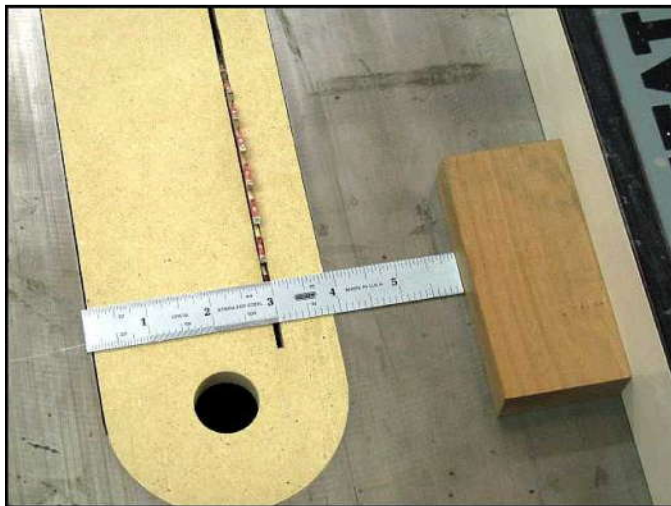


A final word about using feather boards, they take almost no time to set up, so there is no reason not to use them. They give you extra support to secure the stock as it goes through the cut. Most importantly they keep your fingers away from the blade. Feather boards also serve as an anti-kickback device, if for some reason you let go of the stock; it won't go flying rearward into your testicles. Use them, period.

Right about now you're most likely asking yourself the question, just how thin can you rip lumber? Well, in the photograph below that's 1/16" square on the left, 1/16" x 1/8" in the middle and 1/16" x 1/4" on the right:

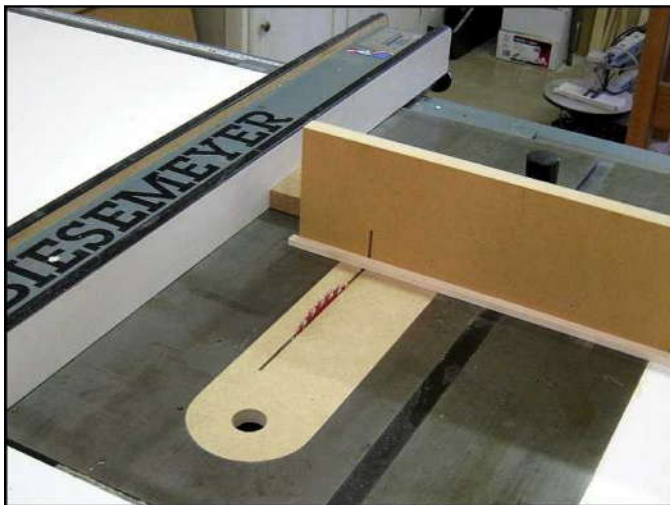
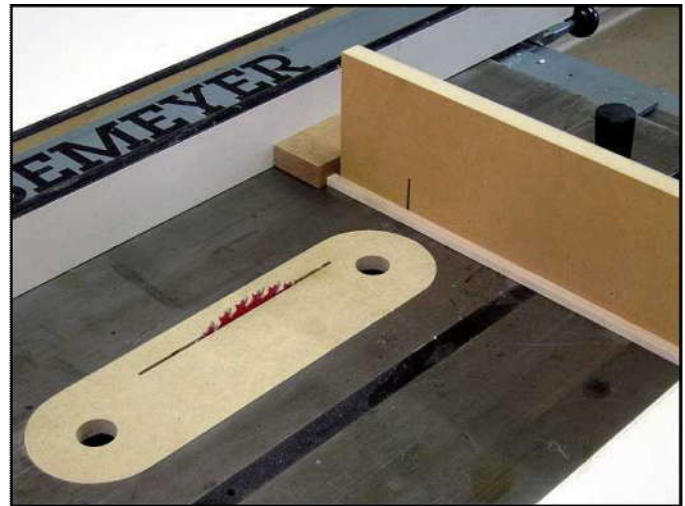


Next we will do some cross cut work. Ripping scale lumber to thickness and width is not the only cutting operation in your model-building project. You will have to make dozens, if not hundreds of precise cross cuts to exact lengths as well. With our material cut to width and thickness, it's time to cross cut to length. There are two ways of doing crosscuts.



For the first cross cut method, let's cut that 1/4" x 3/8" stock we ripped last time into 3" lengths. Set a nice, clean, squared block of wood against the fence. Set the fence for 3" from the blade to the block.

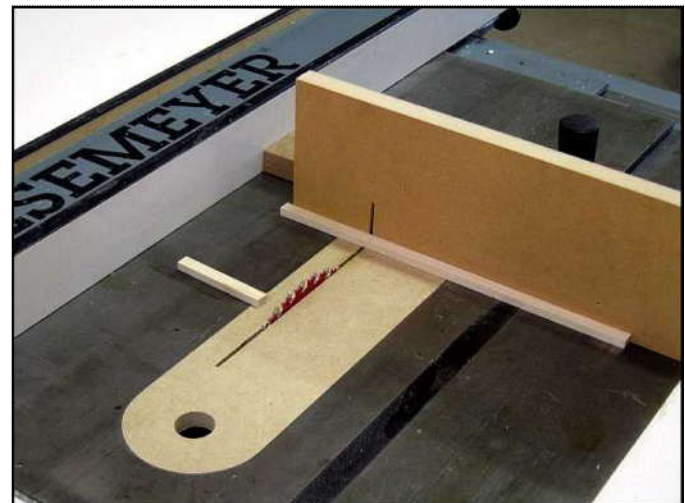
Drop the miter gauge into the slot. Slide a piece of stock to the right until it butts up against the stop block, making sure the block itself is against the rip fence.

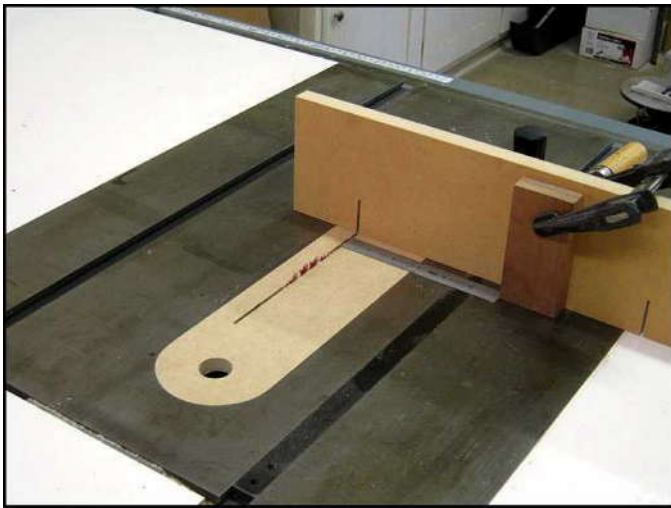


Slide the miter gauge with the stock forward, leaving the block behind.

Make the cut and repeat the process. After making several cuts if the cut pieces start to pile up and you want to move the cut pieces away from the saw blade, either use a push stick or turn the saw off and wait till the blade comes to a complete stop.

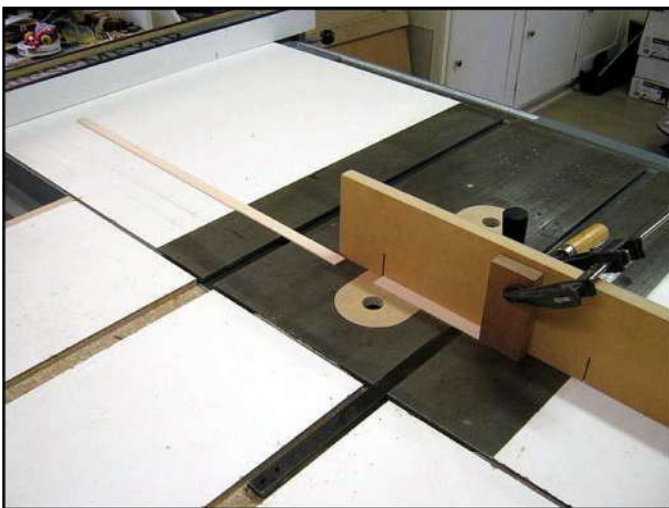
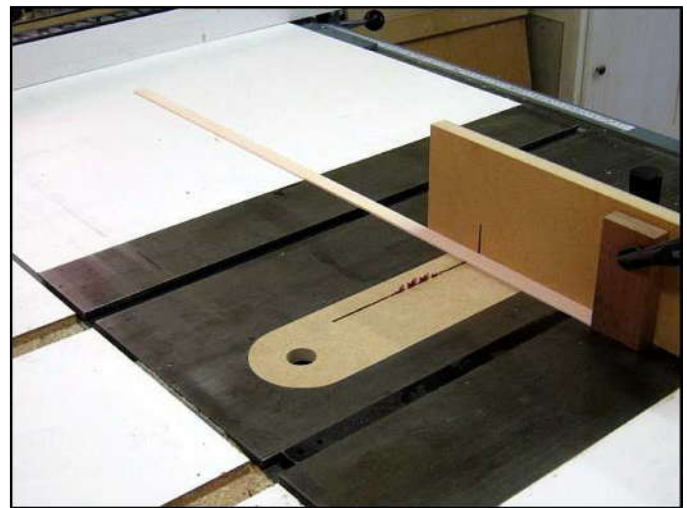
That little block of wood is critically important. Do not ever try to cross cut a piece of wood with its free end up against the fence. The blade will bind it and kick it out with great velocity. Always use the block so the free end does not bind.





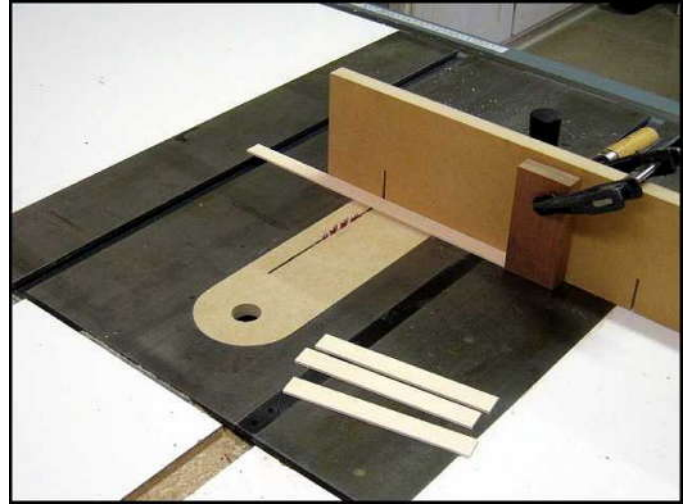
For the second cross cut method, let's cut the $3/32''$ x $11/16''$ to 6'' lengths using a different method, measure 6'' from the saw blade along the fence on the miter gauge and clamp a stop block at that point.

Butt a piece of stock tight up against the block. Make sure the rip fence is well out of the way so it won't interfere with the movement of the free end of the stock.



Slide the miter gauge forward all the way through the blade. Keeping yourself clear of the saw blade move the off-cut piece out of the way. Remove the keeper piece with the miter gauge still forward. Don't try to slide the miter gauge back with the keeper piece still in place against the stop block.

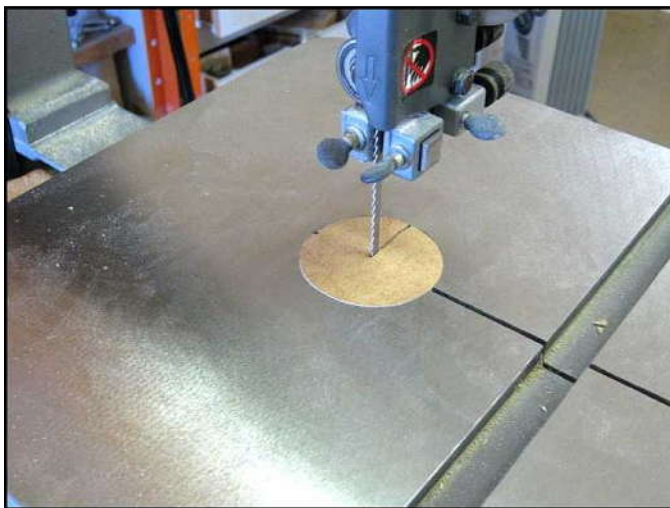
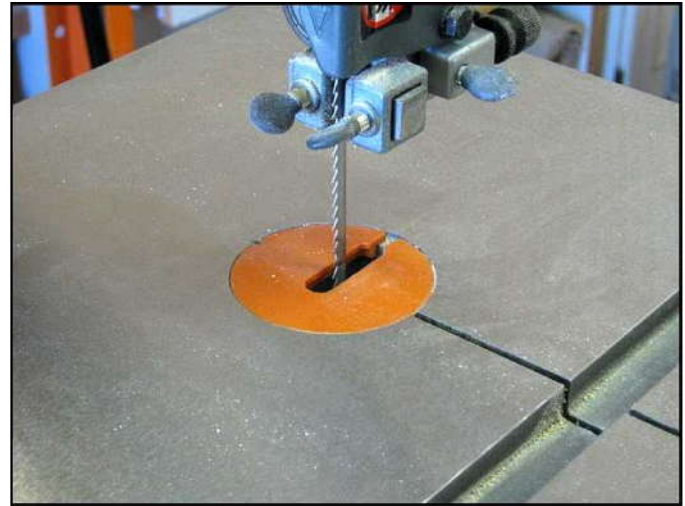
After returning the empty miter gauge to the in-feed side of the saw blade, butt the end of the off-cut piece up against the stop block and repeat the process, continue until the stock is gone.



That's it for cutting scale lumber on the table saw.

Although I hadn't intended mentioning other than table saws in the original topic, in a couple of replies posted by Chris Cracklow and Dick Friedman. They brought up a great point about band saws way back then. It is a fact that band saws are more versatile than table saws. They rip, cross cut and do curves. "Fine Woodworking" magazine once polled several professional woodworkers and asked if they were limited to just one power tool, which would they choose. They all chose a band saw. Band saws take up less space than a table saw, usually cost less, produce less sawdust mess and, I believe, are safer to operate. If you own neither machine, consider a band saw.

So the next topic is the use of a band saw to rip scale lumber. Band saws rip lumber just as good as a table saw. Before cutting some lumber, there are 2 little modifications to do. First there is that stock throat plate again. This is the stock throat plate.



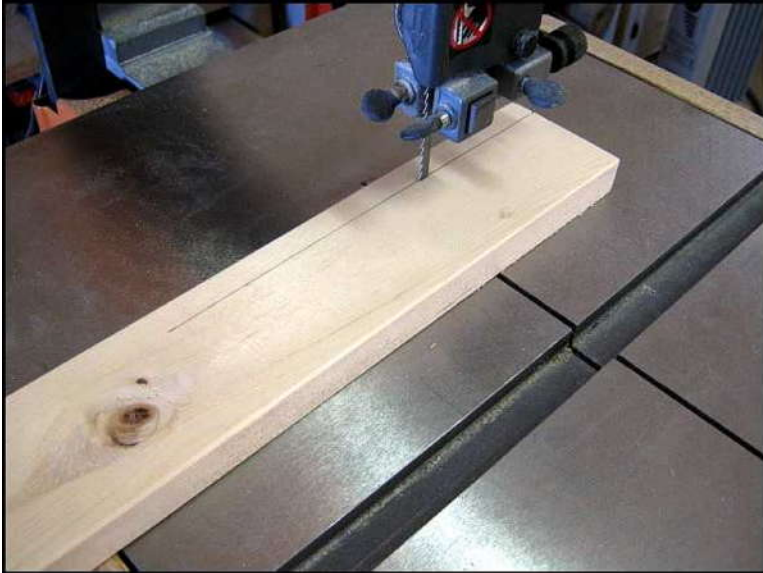
This will not work. It's not flush with the saw table and the gap around the saw blade is a little too wide. Change it out with a zero clearance throat plate made from 1/8" hardboard or Masonite. Cut a little slot and drop it in. Much better.

Next, attach some 1" x 2" wooden rails to the front and back of the saw table. The saw table should have nicely machined pads with tapped holes to attach the rails.



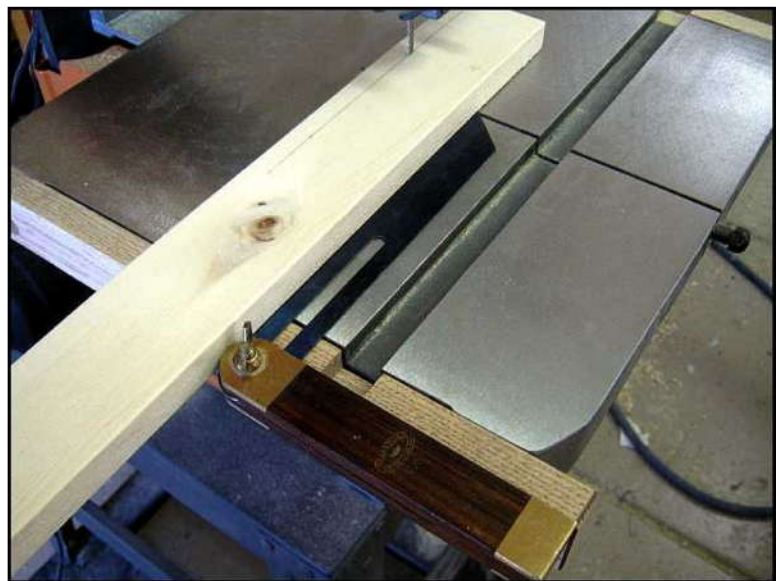
The rails come in handy for any jig or fence you want to clamp to the saw table. The ones I installed here are 18" long.

Now to cut some lumber. Band saws have a very annoying habit of not cutting straight. If you ever tried using a fixed, perpendicular fence you'll know that. The board either wants to bind tightly against the fence, or pull away from it. There are many possible reasons for that: dull blade, incorrect blade tension, worn wheel tires or something else. Who knows, who cares? You can try to troubleshoot all that or simply compensate for it. Compensating for the error is the thing to do.



Draw a pencil line on a test piece of lumber exactly parallel to the edge. Start the band saw and freehand cut along the line. When you are cutting straight on the line, stop feeding the work piece into the blade and hold the board down on the saw table firmly by hand and shut the saw off. Let it wind down to a stop.

Use an adjustable bevel to measure the angle between the test board and the table edge.

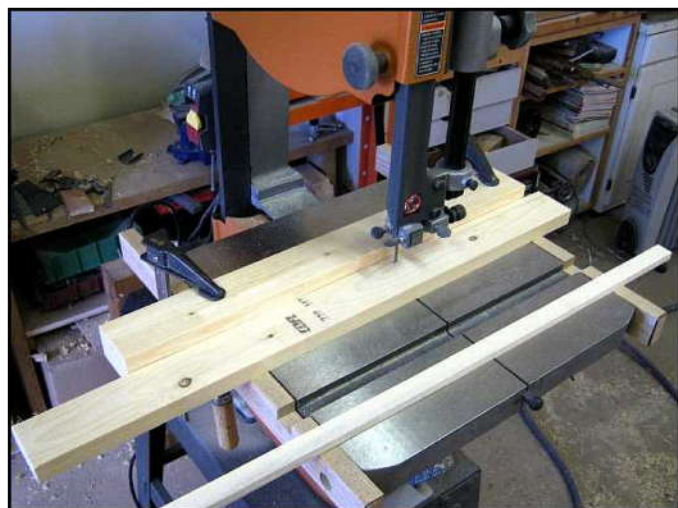


It is difficult to see in the photo, but I had to maintain about 3 degrees counter-clock wise on the test board to cut straight on the line. The adjustable bevel is set at 93 degrees.



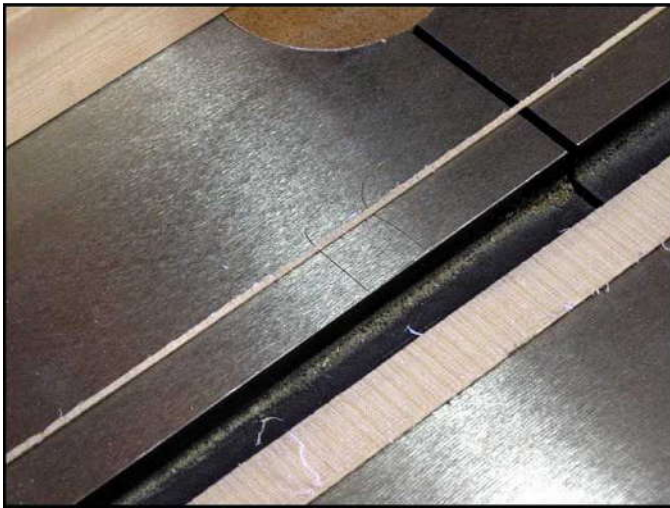
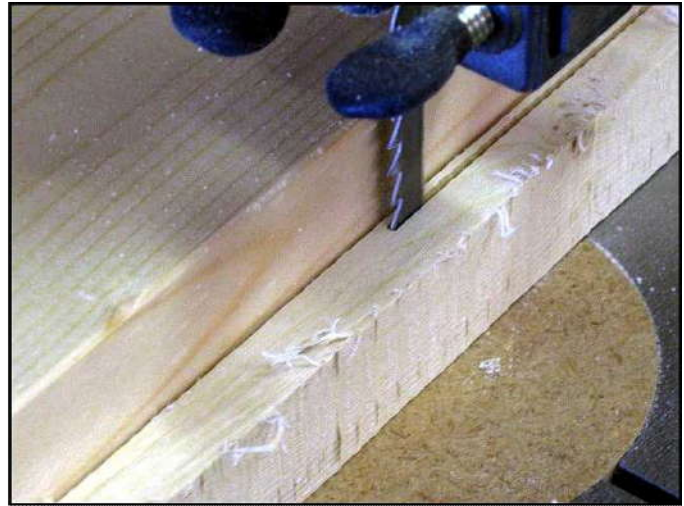
For a rip fence, use any nice straight length of board. Use the setting on the adjustable bevel to set the fence while measuring the thickness of the cut you want from the blade.

With the fence set, clamp it down to the end rails. You are in business.



Run the stock through the blade at a slow, steady feed rate. Let the blade do the cutting. It will cut straight and true each and every time.

How thin can you cut on a band saw? How about 1/16”



And for a little “showing off”, how about 1/16” square.

And that cut was made with a standard 1/4" stock blade from Home Depot. The key is cutting a test piece freehand and capturing the angle with the adjustable bevel.

As an additional note, the same feather boards used on the table saw work on the band saw too. Don't hesitate to use them.

Another handy shop tool that can be a big help in milling scale lumber is a thickness planer, however, they are totally optional and as you've seen from the above you can obtain fantastic results without one. Planers have wide, sharp knives attached to a drum turning at very high speeds. Rollers hold the stock down onto a table and feed it into the planer. The turning knives shave off very thin amounts of wood to leave a glass smooth surface. Planers are extremely precise. The wood comes out so accurately cut you can use a micrometer to measure. Below is a picture of my 12" Delta portable thickness planer.



To use a planer, make your “first cut” on the table saw to thickness that’s slightly oversized by about 1/16" and finish in the planer. The 1/16" oversize insures you get all of the saw marks out. Make the “second cut” to width on the table saw as shown before. A helper working the out-feed side of the planer is very handy and saves you from a lot of running around both sides of the machine.

The minimum my planer will cut to is about 3/16" thickness. For thinner cuts you can securely clamp an auxiliary feed table to the existing in-feed and out-feed tables or if for some reason you need maximum width (i.e. the full 12") the auxiliary table can be screwed to the in-feed & out-feed tables from below. The reason for the aux table is because the planer head drops down to only a 3/16" minimum thickness. The planer is capable of thinner cuts, so the aux table raises the material closer to the cutting head. A sheet of smooth good quality plywood rubbed down with paste wax will do. This table allows me to trim wood down to 1/16". Be aware though when planning wood to very thin thickness each type of wood has its own particular characteristics and when taken too thin may shatter and tear apart.



As I said above thickness planers are optional since they are somewhat expensive. The other day the local Lowe's had a nice 12" Delta on sale for \$250. DeWalt makes a nice planer too, but theirs tend to be bigger and more costly. Planers are extremely messy, have a lot of big trash bags handy. They are rather loud as well. Definitely use hearing protection with a planer. But if you want smooth lumber, a planer is the way to go.

That is about it for cutting scale lumber for hobby projects. Time to get to work. Thanks for all the kind words and much appreciation to all those who have "read" the topic.

Take care, Bob