

Smoothing Rough Sawn Lumber Using a Router

by

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In bygone days rough sawn lumber was smoothed down using planes and scrapers. Many woodworkers today still follow these old traditions yet many will opt to plane their lumber. But what happens when the lumber is too large for their planer?

One alternative is to take the slab of wood to a shop with a larger planer. Another is to bite the dust and return to techniques of yester'der. Others still will use hand-held power planers and some will use routers. Of course, the easiest way to smooth the wood down is to give the job to someone else such as another family member or employee.

Recently I purchased a slab of apple wood that was 18 inches at its widest, almost 8 feet long and varied from a 2 inch thickness down to 1 1/8 inch thick. The board also had a slight twist to it. My planer could handle the thickness and length without any problem but the widest it will accept is thirteen inches, five inches too small for my slab. Besides the twist in it would also have me place the board on a carrier board and shim it so that I could get a flat surface.

Oh well, what to do? Taking a “Le Penseur” pose of Rodin’s bronze sculpture, I sat and contemplated the various alternatives mentioned above. Since I was going to use the lower half of the board for a bench top my first step was to cut in half and lay the part I was going to use for the bench on my workbench. With this done, next I needed to evaluate the board – determine its thickness changes, how much it was twisted, and then how to smooth it out.



Lower half of board will be used for bench top

Three things were almost immediately noticed. First running along its length down the middle the board was humped on one side (figure 2) and cupped on the other (figure 3). There was also an area on the humped side that was cupped. The third thing was that there was a slight twist to the



board and that overall thickness changes were inconsistent throughout the board. Various spots on the board were about 1 ½ inches thick. At its thickest the board was 2 inches thick.

My approach to smoothing the board was two-fold. First I would remove some of the hump to reduce the tilting back and forth of the board, and second to flatten out the cupped side some. Initially I used a hand-held power planer. Once this was done, I developed a routing jig to route the cupped side first.

The cupped side was chosen for two reasons. First it would be easier to level and shim the board. Second I would have to use a higher router template.

The router template for planing with a router is inexpensive and comes in three parts. Part 1 is the base, part 2 the router guide, and part 3 is routing the board.

Please note that once you are ready to router plane your wood you need to observe all safety precautions. Do not skimp on safety as this process could easily become a deadly.

Part 1–The base

1. Cut two boards, that will be used as base rails, that are at least 1 ½ inches thick and at least 12 inches longer than the board you are going to plane. The width of these rails needs to be the same and preferably ¼ inch wider than the board is “tall” when laying on top of your workbench. If the board rails are not that tall, they can be shimmed.



Figure 1 Board thickness varied from 1 ½" to 2"

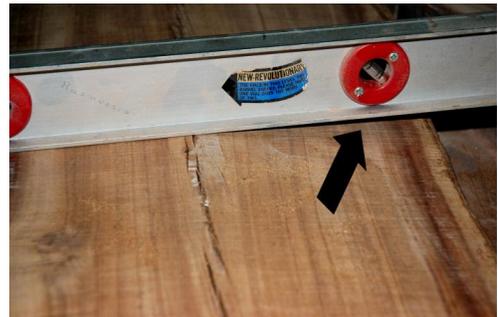


Figure 2 Board is humped indicated by space between board and level on right

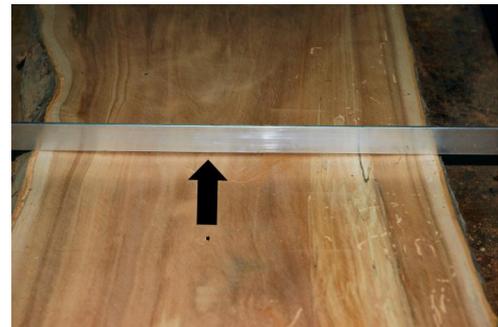


Figure3 Board is cupped on both sides.



Figure 4 Cut base rails and place parallel near board

2. Place the rails one on either side of the board to be planed. Each rail should be at least 3 inches from the widest part of the board and parallel to each other.
3. Cut two $\frac{3}{4}$ " thick boards that will span the rails and that are 3 inches wide.
4. Place the cross boards to span the rails. Square them up with the ends of one of the rails and screw them to the rail using 2 screws in each board.
5. Once you have squared and screwed the boards to one of the rails, do the same with the other rail. It is important that the rails are parallel to each other and the same holds for the cross boards.
6. Place two straight edges (I use levels) across the board, at the highest points on the board. Let the levels rest on the rails as shown in figure 5.
7. The object at this point is to level the board as much as possible. If the board is not touching any of the straight edges, use shims to raise the board until it is just touching the straight edges. You want as much surface of the board touching the straight edges without raising or moving the straight edges.



Figure 5 Place 2 straight edges across the rails



Figure 6 While leveling the board, do not raise the level.

Part 2 – The Router Guide

To create the guide, you will need two guide rails. The rails serve three purposes.

- Support the router
- Guide your router cuts
- Maintain a specified height above the board relative to the bench top

While you can make them out of wood, aluminum or steel rails are preferred because:

- They will not raise the router as high as wood will, thus giving more adjustment to router height.
- They are narrower than wood rails
- They weigh less than wooden rails and can be moved more easily.

1. The rails should be 2 inch right angle aluminum or steel stock. Do not use flat stock as it will bend. Two inch stock will be about $\frac{1}{8}$ inch thick. The length of

the rails should be the outside distance between the base rails plus the diameter of your router base, plus 6-9 inches. For example if the outside measurement between the rails 24 inches, and the router base is 6 inches, the total length of each rail will be between 36 and 39 inches. Three to four foot length stock can usually be found at home centers.

2. Using 1/2" to 3/4" lumber cut two boards 3 inches wide by the router base diameter plus 1/8 inch. For a 6" router base the length of the board will be 6 1/8 inches.
3. Place the boards at each end of the rails and clamp them together first clamping across the rails and then the boards to each rail. Remove the first clamp that is clamping the rails. It is best to use screw down clamps as speed clamps can work themselves loose with vibration from the router.
4. Using a straight edge, find the lowest spot on the board you are going to plane. Move the router guide over this spot and place your router into the guide. Adjust the router bit height so that it is just barely touching the board but not raising the router off its guide.
5. Move the router and router guide over to one side of the base and place the router so that it is not over any of the board that you will plane.



Figure 7 Measure the diameter of the router base. This measurement will be used a couple of times



Figure 8 Place cut boards at each end of the rails



Figure 9 Clamp the boards to the rails as shown.



Figure 10 Find the lowest spot on the board

Part 3 – Routing the Board

Caution: This is the most dangerous part of the process. Be sure to employ all safety measures when routing. Be especially aware of routing in the proper direction. DO NOT up rout the board. Also do not remove the router until it has full stopped.

1. While it is usually easy to see where you have routed a board, my preference is to “chalk” the board as shown. This gives me a better visual reference of what has and has not been routed.



Figure 11 Chalk the board to make it easier to see what you have routed

2. While it is not necessary, it is helpful to break your board up into segments. To do this first rout at least one line down the length of board. Then route several lines across the board. By breaking the board into segment in this manner you can easily note your progress. You can also note those areas which might require either different router speeds or slower routing. Most importantly though, the routed lines give you a reference on whether or not your router bit has slipped. This way you will not cut too deep without realizing it.



Figure 12 Cut segment lines to make sure that the router bit has not slipped

3. After cutting the segment lines, route around the edges of your board. This will help prevent tear out. Use care when cutting the end grain.



Figure 13 Star router planing your board

4. Move the router and guide to one corner of the board and start router planing it. Guide the router through the area that it will cut. Be sure that you do not press down on the router handles as this may cause deeper cuts.

5. Note that if you had set the bit height properly the lowest spot of the board was not touched. Lower the bit height slightly and rout the entire board again. You should be able to just slide the router along its guide without any effort.

6. With all the routing done, use 80 grit sandpaper and sand your board. When the board is fairly smooth and the lines left from the router bit are gone, fill in any cracks, knotholes, and other defects with your favorite wood filler. If there are any “soft” spots such as spalted areas, you might want to reinforce those areas with a wood hardening compound.

7. When the filler is dried, sand the board again. Start with 80 grit and then move to 120 grit sandpaper.



Figure 14 Fill in any cracks, splits, holes and then sand again

8. If you are going to plane the other side of the board. Turn the board over and lay it on the bench top.

9. Place a level across the rail base and find the highest spot on the board

10. Measure the distance between the level and the highest spot

11. Find two boards not to exceed the thickness of the above measurement. The boards must be as long as the board is wide.

12. Place the two boards, one at each end and under the routed side of the board.

13. Go back to step 1 of Part 3 – Routing the Board, and repeat steps 1-7.

14. When you have completed step 7, sand and finish the planed board as you would for any fine furniture.

NOTES

1. This is my process for router planing. As always when using processes you have not used before, you are doing so at your own risk. I am not liable for any injury you may incur.

2. When routing, periodically stop and let your router bit and router cool off.

3. If the router is not riding smoothly on the guide, remove the guide and spray some “Topcoat” on the rails. You can also use silicon base tape on the rails or some other tape that has a “gliding” surface.

4. I cannot say it enough – Safety, Safety, Safety