INFINITY
CUTTING TOOLS
"Only Our Service Exceeds Our Quality"

User Guide:
Setting Up and Using Rail & Stile Sets

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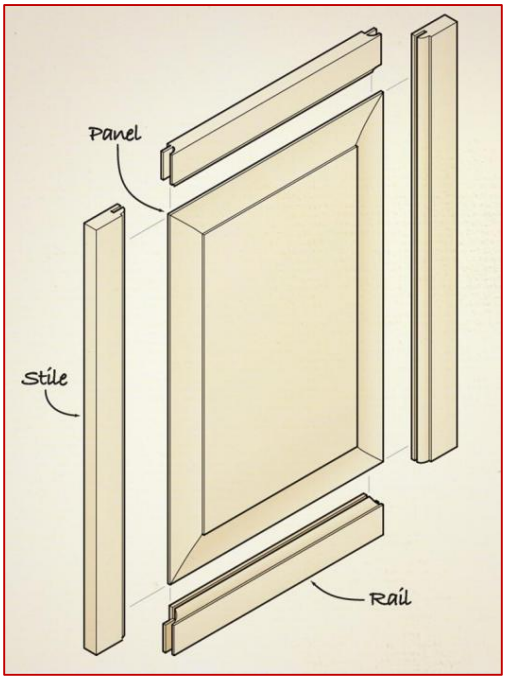
Important Safety Information

WARNING: Failure to follow these warnings could lead to serious bodily injury or death.

- Always turn off and unplug the router before removing and installing router bits or making adjustments to the router or router accessories.
- Use rail and stile bits with a table-mounted router only.
- Always use push blocks, push sticks or other applicable safety devices to maintain a safe distance between your hands and the router bit.
- Read and follow all warnings and instructions contained in the router's owner's manual and for any accessory that is used.
- Always wear eye protection or a full face shield.
- Always wear hearing protection.
- Keep body, clothing, and hair clear of spinning bit. Do not wear loose clothing or jewelry.

Prepare the Project Wood and Size Work Pieces

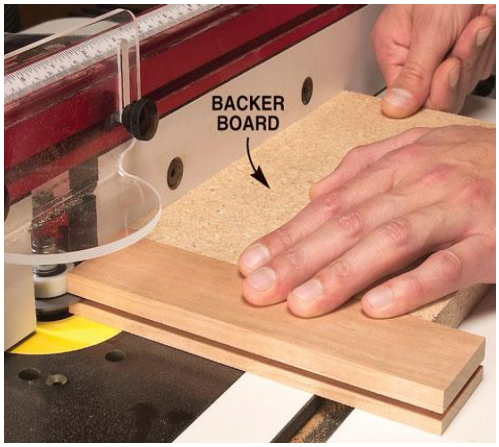
1. Determine stile length by using the full height dimension desired for the project.
2. Calculate rail length by taking the overall door width, subtracting the combined width of the two stiles, and adding 7/8" to that figure.
3. Level the thickness of all project parts using a surface planer.
4. If a surface planer is not available, choose the wood for each door assembly carefully, matching thickness, grain and colour as closely as possible for the best fit and appearance.
5. Mark inner edges, outer edges, and sides that will face outward.
6. Place pieces in the correct order and position for the door assembly.



Note: Infinity rail and stile bits are designed to work with wood thicknesses between ¾" and 7/8". When cutting the rails for the door, allowance must be made for the overlap created by the 7/16" depth of the interlocking shape on each end.

Make Test Cuts and Setup Blocks before Cutting Project Wood

1. Find scrap wood in the same thickness as the project wood.
2. Make test cuts and joints.
3. Adjust the bits as required until you achieve the desired setup.
4. Cut a rail profile down the side of a piece of scrap wood to use as a backer board for cutting rails.
5. Save examples of the rail and stile cuts to be used as "gauge blocks" to help speed setups every time you use the bits.



Note: Test joints in scrap wood should always be made before cutting the actual project wood as a final check that the setup is correct. Using the setup blocks will speed this process substantially.

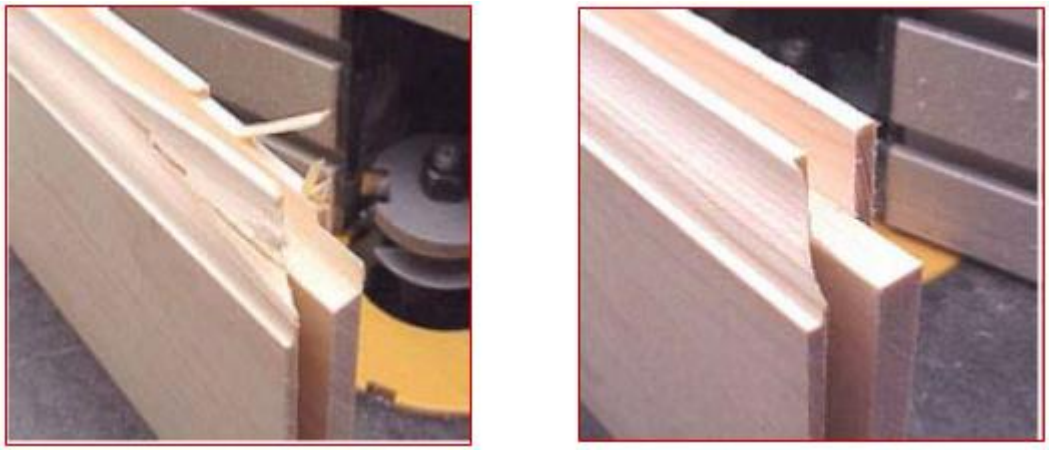
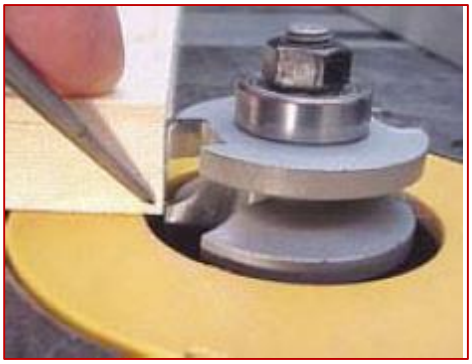


Figure 1: Using a Backer Board to Prevent Tear-Out

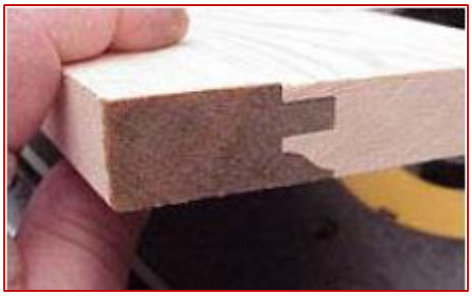
Cut the Stile Profiles

1. Install the stile bit in the router.
2. Adjust the height so that the squared edge of the cutter is 1/16" above the table surface.
3. Place a backer block tightly against the end of each piece of prevent tear out.
4. Run the inside edges of both stiles and both rails, all face down, across the stile bit.



Cut the Rails

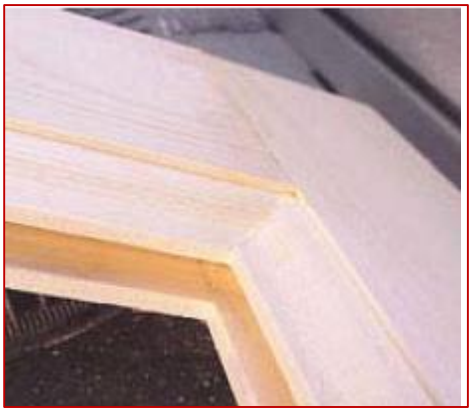
1. Install the rail bit in the router.
2. Adjust the height by holding the edge of a stile, face down, on the table next to it and matching the rail bit's cutter edges with the edges cut by the stile bit.
3. Form the tenons on the end of the rails by using a backer board held tightly against the trailing edge of the rail piece to prevent tear out.



4. Cut a square edge in the trailing position on one end of the rail by hold a square-edged piece of scrap wood tightly between the trailing edge of the rail piece and the miter guide to prevent tear out.
5. Cut a profile edge in the trailing position on the other end of the rail by inserting a piece of scrap wood prepared with the rail profile into the stile profile of the work piece. Hold it tightly in place during the cut to prevent tear out.

Assemble the Cut Pieces

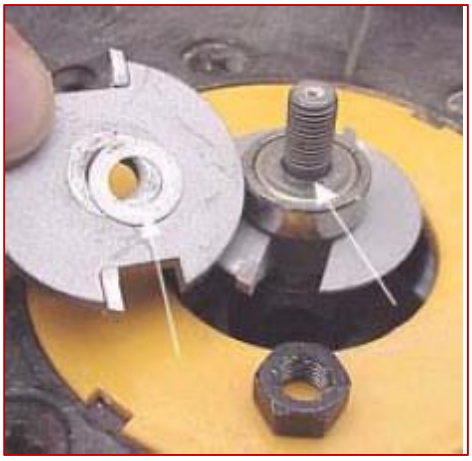
1. Fit together the rails and stiles.
2. Sand the pieces as required to bring the rails and stiles flush with each other.



Note: Any variation in thickness between the work pieces is shifted to the rear because both the rails and stiles are machined face down. Corrective sanding does not affect the profiles.

Troubleshooting: Adjust the Bits

In most cases, Infinity rail and stile bits produce clean fitting joints as they come from the factory. If necessary, joint fit can be adjusted by adding or removing shims, preloaded during manufacturing.



- The stile bit has shims between the groove and profile cutter.
- The rail bit has shims between the back cutter and bearing.
- Both bits have extra shims located beneath the retaining nut.

Make adjustments in small steps, testing the fit between each adjustment. Once adjusted, the bits should not need further adjustment.

- If the tongue on the fails fits the groove in the stiles too tightly, remove one or two shims from between the back cutter and bearing on the rail bit.
- If the tongue is too loose in the stile groove, add one or two shims between the back cutting and bearing of the rail bit.
- If the profile sections (decorative cut along the inside edges of all pieces) do not match properly, the stile bit must be adjusted.
- If the profile area is too loose, add one or two shims between the groove and profile cutter on the stile bit.
- If the profiles are too tight, remove one or two shims from between the groove and profile cutter on the stile bit.

The ideal joint fit is not so loose that it has play in it, nor so tight that anything more than a light clamp pressure is needed to fully seat the joint.

Note: The adjustments to the rail and stile bits are to correct the fit between the rails and stiles only. The groove for the center panel remains constant. The center panel is formed to fit the groove produced by the stile bit.

Troubleshooting: Fence Alignment

The Infinity Tools rail and stile bits are equipped with depth limiting ball bearings that must be aligned with the edge of the fence to insure proper cut depth.

A straightedge held against the fence should touch both sides of the fence and the bearing simultaneously when aligned correctly.

Fences with moveable sides should be adjusted as close to the bit as is safe to provide the maximum support of the work pieces during machining.