

### Safety

Never make changes to the setup of router bits or router tables unless the machine is unplugged from the power source. Always use adequate push blocks or other safety devices that keep your hands a safe distance from the cutter at all times.

The Infinity Arched Panel Door Template set is best used with an Infinity Cabinet Bit Set. Follow the instructions for setting up and using the Infinity Rail and Stile bits for those portions of door building.

See the "Instructions" section of [www.infinitytools.com](http://www.infinitytools.com) to view or download those instructions and other useful information.

### Prepare the Material

It is important that the wood used to build a door be consistent in thickness, have square edges and 90-degree end cuts. Irregular thicknesses amongst the pieces can cause the panel grooves to be machined out of line with each other and may also produce steps at the joint lines.

All of the door pieces are machined with the presentation face down on the router table. Lay the pieces out, choose sides you want facing out and mark them to avoid accidentally machining them incorrectly.

The only door piece that differs from a standard raised panel door is the upper rail. The width (top to bottom) of the upper rail must match the width of the template being used. Some users like to increase the width of the lower rail somewhat as well.

### Choose the Template

The Infinity Arched Panel Door template set includes top rail and panel templates to make panels from 6" to 17" with each pair covering approximately a 2" range. (note: The resulting door will be roughly 4" wider than the panel depending on the width of the desired rail and style pieces that make up the door frame). Choosing the correct template is easy. Simply choose the template that has an arched (profiled) portion of the top rail template that is longer than the rail itself. You can use any template that has a longer arched (profiled) portion than the top rail.

The longer the template is than the rail the flatter the resulting arch. See Illustration at below.

Too Small



Too Big



Correct Size



## Cope and Arch Cuts

For safety and accuracy, make the cope cuts in the rails before cutting the arch shape in the top rail. Because the cope bit cuts across the grain, using a backer strip following the rail through the cutter will prevent tearout as the cutter exits the rails.

Locate and mark the center of the upper rail. Apply double-sided tape to the back of the template and then attach it to the upper rail, aligning the center mark on the template and the rail. Be sure that the upper edges of the rail and template are aligned parallel to each other. Make sure the template is pressed firmly onto the rail to be sure it does not move during the routing operations.

Using a bandsaw or jigsaw, cut the waste material away to begin forming the arch. Keep the cut 1/8" to 1/16" from the template. Be careful not to cut into the template itself! Cutting most of the waste away from the template allows the flush trim bit to work more easily and reduces the chance for splitting and chipping. Remember that this same edge will be machined with the style bit. In that process, small chips along the edge will be eliminated.

Using a flush trim bit in your router table align the bearing with the template and the ends of the carbide cutters with the top edge of the wood. Set the router to a max speed of 18,000 rpm. Carefully route along the template, cutting the rail edge to its final shape. Routing the first half of the template is usually with the grain (moving the material right to left) and presents no problem. The last half of the template often forces the bit to cut against the grain, this may cause the grain to chip or tear out

The small amount of material being removed makes using a "climb cut" for this portion a viable option. Extreme caution must be used when making climb cuts as the bit wants to pull the material to it and you can lose control of the wood. Be sure to use a good pair of push blocks to maintain control of the piece and to keep your hands far from the cutter. If you are unfamiliar with or uncomfortable making a climb cut, you can carefully finish trimming the edge to the template using a drum sander or a rasp. Take your time and be sure you do not work into the template itself.

When the cuts are complete use a thin putty knife to gently work the template free from the rail. Work the putty knife along the template to loosen it. Do not try to lift one edge and pull the template free as it could break. Set up the style bit and fence to cut the inside edge of the door frame parts.

The arch shape prevents using the fence to make this cut in the edge of the upper rail. Move the fence out of the way to cut the upper rail using the bearing on the style bit and a start pin in the router table as your guide. Use a pair of good push blocks to help control the piece and to keep your hands a safe distance from the bit at all times.

## Size the Raised Panel

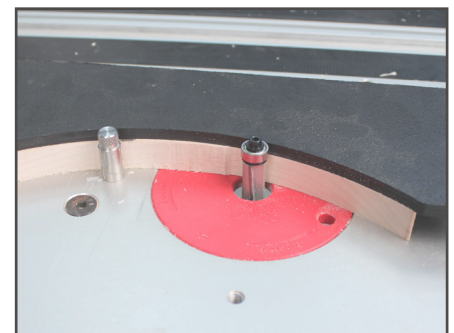
Dry fit the frame assembly and clamp it with just enough pressure to draw the joints together. Measure the opening between the styles and from the lower to the upper rail at the top of the arch (largest portion of the vertical opening) to determine the size of the raised panel blank. Make sure to include the depth of the grooves into which the panel will fit. If you plan to use space balls or other panel spacers be sure to allow for them at this stage as well.

If no panel spacers are being used, subtract 3/16" from the overall height and width measurements of the panel to insure there will be a minimum 1/16" free space on all four sides of the finished panel to allow for expansion and contraction.

## Panel Door Templates Instructions



**Sawing the waste away very close to the template makes it easier for the flush-trim bit to clean up the edge.**



**The flush-trim bit transfers the template shape to wood very accurately.**



**Use plenty of double-sided tape to insure the template does not move during routing!**

## Shaping the raised Panel

Locate and mark the center (width) at the top of the raised panel blank. Attach the panel template using double-sided tape as described earlier, align the center mark with the one on the blank. Use a long square to be sure the template is level on the blank.

Cut away the waste material with a bandsaw or jigsaw staying 1/8" to 1/16" from the template. As with the top rail finish cut the panel to final shape with a flush trim bit in the router table. Remember to watch the grain as a climb cut may be necessary on the first half of the template where the arch sweeps upward, very often against the grain.

Install the panel-raising bit and set the height for a very light cut. Throughout the raising process cut the end grain edges first then the long grain sides. Raise the bit 1/16" to 1/8" between passes until the full profile is cut, or the tongue portion of the panel fits the groove in the frame nicely.

If using a full thickness panel (the panel and frame are the same thickness) use a back cutter to relieve the back of the panel until the panel tongue fits into the groove in the frame. Follow the same process of lite cuts with the back cutter as with the panel-raising bit. Because the panel floats, the panel should fit the groove easily but not so loose that it rattles.

## Final dry fit and door assembly

Assemble all of the door parts and clamp with just enough pressure to close the joints to be sure they fit properly. If no correction is necessary, disassemble and finish sand all surfaces. When permanently assembling the door it is important to apply glue only to the cope profile at the ends of the rails and the corresponding area of the stile profiles. The raised panel is not glued and remains free-floating in the grooves.

Assemble the door and place in clamps, tighten just enough to draw joints closed. Check to be sure that the door is flat in clamps and square before allowing to dry thoroughly.

## Edge Treatment

When the glue is dry, final sand the door to remove any glue squeeze-out and prepare the door for finish. (because the panel is free floating it is possible to per-finish the panel before assembly). If an edge profile is desired, choose the appropriate bit, install in the router table and run the profile along the edge of the door using multiple light passes. Running the top and bottom portions of the door first and the sides second will reduce the chance of tear-out when cutting the end grain portions of the frame.

## Design Options

The Infinity Arched Panel Door Template sets allow you to design a wide range of doors in addition to the popular top arch. An inverted arch can be cut in the bottom rail to mirror the one in the upper rail. You can also split the arch across two adjoining doors. To define matched sets you can also increase rail width to create whatever look is appealing to you.

## Instructions for Alternate Panel Designs

The preceding instruction will yield excellent results for most panel door making templates, including traditional, colonial, and classical designs. Be sure when choosing the correct size template that the top rail template produces the desired design on the rail. Choosing a template that is much longer than the rail may result in a loss of a portion of the desired profile. Choosing a template that is shorter than the rail can result in ill fitting rail and panel pieces and possible gaps between top rail and panel.

*Panel Door Templates  
Instructions*

Too Small

Too Big

Correct Size

Classical Style  
Item: PDT-100



Crown Style  
Item: PDT-200



Traditional Style  
Item: PDT-300



Colonial Style  
Item: PDT-400

