Gifkins Router Table – 2006 version

These plans are a refinement on my earlier router table plans, and were specially designed to keep the construction as simple as possible. The table is suitable for any router that uses 3 or 4 screws to hold it's plastic base in place (i.e. that has 3 or 4 threaded holes in the alloy base). By choice, I now use Triton routers in all my tables as you can change cutters from above the table using a single spanner, and they have a quick height adjustment as well as a fine height adjustment. These two features make them quicker and easy to use than any other router I have tried.

I will describe 2 versions of the table top, one with a 32 mm central hole and the other with provision for a range of table inserts, so you can change the size of the central hole (see photo).
For the insert option, you need a router that has another 2 threaded holes in it's base (designed to hold a template follower in place). Whilst the Triton Router doesn't have this, you can either drill and tap 2 x M6 holes in the alloy base, or buy Triton's optional template follower kit which includes a base plate for mounting template followers.

The table with inserts is the more useful, and is well worth the extra effort in construction. This design also allows you to use template followers fitted to the router. I will describe this table's construction, and note any changes required for the simpler 32 mm hole table.

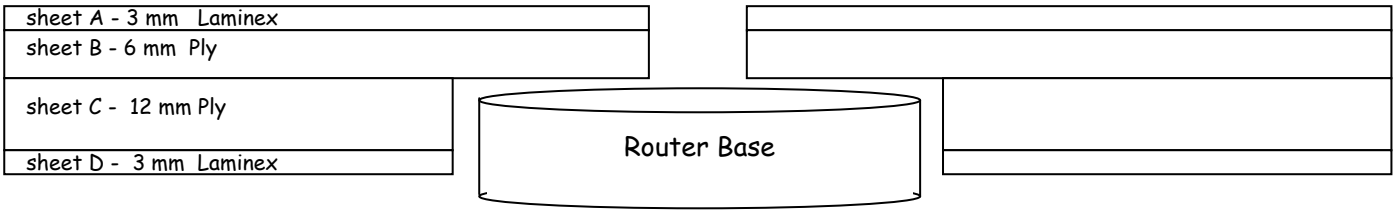


Fig 1 - section through table

For both these designs the table top is laminated up out of 4 sheets of material (see Fig 1): 3 mm Laminex Wet Area Panelling top and bottom with 2 layers of ply in between. By using 2 sheets of ply, it avoids the need to cut a rebate so as to recess the router. We can cut a hole right through the bottom 12 mm layer of ply (slightly larger than the router), so that the router bolts directly to the top 6 mm ply and Laminex. The top sheet of Laminex gives a hard, smooth, long lasting surface to the table and the bottom sheet of Laminex makes the table much more rigid, and less likely to sag over time. It also prevents uneven absorption of moisture which would cause the table to warp. It is vital that you use this second sheet of Laminex (sheet D).

Materials List:

This table can be built to any size, but if using handyman panels from Laminex then 900 x 450 or 900 x 600 are good sizes.

Table Top:	Laminex wet area panelling	2 @ 900 x 450
	6 mm ply	1 @ 900 x 450
	12 mm ply	1 @ 900 x 450
Table inserts:	Laminex wet area panelling	4 @ 100 x 100
	6 mm ply	4 @ 100 x 100
Stand:	12 mm ply	3 @ 900 x 450
Glue:	300 ml cartridge of AV 515	
Hardware:	8 @ 13 x 10 mm diameter Cross Dowels	
	4 @ 60 x M6 flat head bolts	
	4 @ 60 x M6 countersunk bolts	
	2 @ M8 Tee nuts	
	1 knob with 40 mm x M8 threaded insert	
	3 or 4 @ 16 mm screws to hold router into table (thread depends on make of router)	
	2 screws for table inserts	

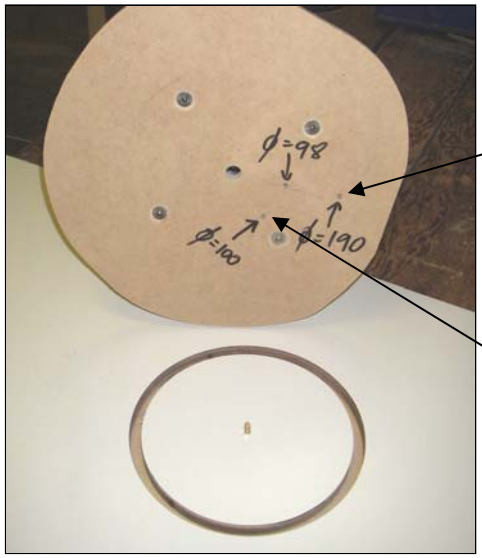
NOTE: The 6 mm ply for the table inserts must be exactly the same thickness as the 6 mm ply used in the table top. For the 900 x 450 table, buy a sheet 900 x 600 and use the off-cut for the inserts.

Laminex industries (ph 132 136) sell handyman sheets of interior ply cut to size, either 900 x 450 or 900 x 600. They also sell Laminex Wet Area Panelling in sheets 1800 x 900 x 2.7 and 300 ml cartridges of AV 515.

Making the Table Top

With the insert design, we need to cut holes through all 4 sheets before we glue up.

The hole in sheets A and B should be <u>larger</u> than the diameter of the template follower that your router takes. This means the inserts that fit into this hole can be screwed down to the template follower mounting holes. For most routers, a 100 mm diameter hole is adequate. Cut a hole this size in the centre of sheets A and B. For the simpler table with 32 mm hole, don't cut any holes in sheets A and B till the top is glued up. The holes in sheets C & D should be about 10 mm bigger than the diameter of your router's base. For the Triton router this would make the hole 190 mm.



To cut these holes we will spin the router around a pin through the middle of our table material (see photos above) For this we will need a dowel or pin about 30 mm long (I used 5 mm brass), a drill bit the same diameter as the pin, and a piece of MDF or Ply about 100 mm bigger than your router's base to use as a false base for the router (I used 12 mm MDF).

Remove the black plastic base from your router and use this to mark out the mounting holes on the false base. Fit a small straight plunge bit to the router (I used a 10 mm bit), and then screw the MDF base on and plunge a hole through the middle. We can now measure out from the <u>middle</u> of this hole, to position the pin holes to spin the router around. Measure out a distance D, where:

D = ½ x (Diameter of hole we want to cut – Diameter of cutter)

For sheets A & B - 100 mm hole with a 10 mm cutter: D^1 = ½ X (100 – 10) mm = 45 mm

For sheets C & D - 190 mm hole (Triton Router) with a 10 mm cutter: D^2 = ½ x (190 – 10) mm = 90 mm

We can use the same setup to cut the table inserts, although this time the distance D will be:

D = ½ x (Diameter of disc for insert + diameter of cutter)

NOTE: we <u>add</u> the cutter diameter in this instance.

For a 99 mm table insert using the same 10 mm cutter: D^3 = ½ x (99 + 10) = 54.5 mm

Drill holes in the false base (the same size as the pin) distances D^1, D^2 and D^3 from the <u>middle</u> of the plunge hole. These holes can be any direction out from the centre.

To use this hole jig, start by placing sheets A & B on a waste piece of MDF and clamp all 3 pieces down to your workbench. Drill a hole (the same size as the pin) through the middle of sheets A & B (i.e. middle in the length and middle in the width) and into the waste sheet by about 10 mm. Insert the pin into this hole and then locate the D^1 hole in the false base onto the pin. We can now plunge the router into the sheets and swing it around the pin in a full circle, to cut a 100 mm hole in the sheets. It is not a bad idea to do this in 2 or 3 passes, so we are not cutting too much away with each pass.

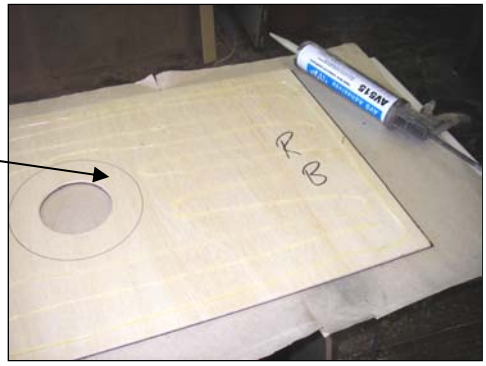
Use exactly the same idea to cut the larger hole in sheets C & D, locating the false base onto hole D^2.

At a later stage we can also use this jig to cut the 99 mm diameter discs for the table inserts, but we need to glue them up first.

Gluing Up

Before gluing, it is a good idea to align the 4 sheets together (as they will be assembled) and to drill a 1/8" hole through all 4 sheets at each end. We can then use a short length of brass rod (or a nail) to align the sheets when gluing. This pin should be about 1 mm less that the total thickness of the table top, and there is no need top remove it after gluing. Without these locating pins, the sheets tend to slip sideways when you apply pressure with clamps. Whilst they are dry assembled and located in position, mark the position of the larger cut out circle onto the 6 mm ply, as we don't want any glue here when we come to glue up (see photo below). To save panic when gluing, it is a good idea to mark the one end of all the sheets so you know which way up they go!

If using AV 515, apply glue to one side only of each sheet, then assemble and clamp. If using contact cement, apply to both sides and follow the directions on the container. Use clamping blocks of flat, straight timber (say 50 x 50) top and bottom (see photo). The flatter the table is held whilst gluing, the better it will be.



My gluing press – 35 mm MDF with timber frame

Gluing up

A sheet of waste MDF or Ply either side of the top would help spread the clamping pressure when gluing up.

Mounting holes for router

Once glued up, use the black plastic base plate from the router to accurately lay out the mounting holes in sheets A & B. Locate the base plate concentrically with the hole you have cut in these sheets, and carefully mark the position of the screw holes. Remember to position these holes so that the router's position in the table will make it easy to change bits and reach the height adjustment. On some routers, the holes are not evenly positioned, so the router will only go in the table in one position. Drill and countersink these holes, being careful not to countersink too deeply. We need to retail as much of the Laminex as possible below the screw head to give the top some strength. These mounting holes need to be as accurate as possible. To mount the router in the finished table, remove the base plate and use some 16 mm screws to secure the router to the table. If not using table inserts, mount your largest plunge cut bit in the router before fitting it to the table and, with the router spinning, raise the cutter up through the table top. You will then need to fit a larger cutter (say the Gifkins Tenon bit or Panel Raising bit) and repeat this process, to increase the hole to 32 mm. You may need to do this in 3 or 4 steps to make sure the cutting tips are removing all the material across the top of the cut.

Table inserts

When using the table for other jobs (not dovetailing), it is useful to have table inserts so that the work piece is supported right up to the cutter. Use offcuts of sheets A and B to make a series of disks that fit the central hole in the table. These disks don't have to be a tight fit, as they are held in place with countersunk screws that fit the mounting holes for the template follower. It is best to make them 1mm or 2mm smaller than the hole in sheet A as this allows for any errors in positioning the mounting holes accurately. It is useful to have 3 or 4 disks with different sized holes in the middle for use with different sized router bits. Glue some Laminex down to some 6 mm ply, and use the hole jig as before (on the D³ pin hole) to cut out 99 mm circles for the inserts. Drill and countersink two holes to line up with the template follower holes.

We can then adjust the size of the central hole to suit various router bits as needed.

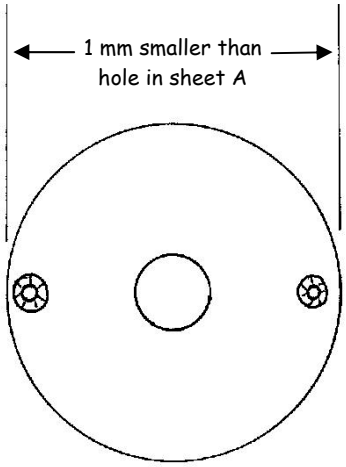
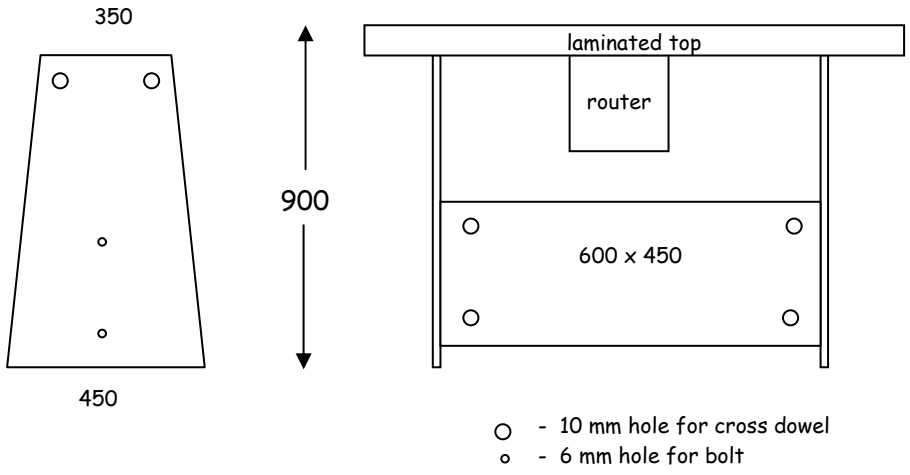


Table insert

Stand

The stand can be built out of ply (or Craftwood) using knock-down fittings. 12 mm material is OK but 16 or 18 mm material makes the table much more rigid. It is important that the top of the stand is narrower that the table top, so that you can clamp a fence in any position, without the stand fouling the clamps. I build my tables around 800 or 900 mm high, but this could be adjusted to give a height you feel comfortable with. Keep in mind that the higher the table, the less sturdy it will be.



For 60 mm bolts, the cross dowel should be 35 mm in from the edge. I use 60 mm countersunk bolts to hold the top to the stand, and 60 mm flat head bolts to hold the stand together. Marking out for these holes needs to be accurate so that everything lines up, and you need to drill holes (about 7 mm diameter) into the edges of the sheets to line up with the 10 mm cross dowel holes.

Do not enclose the router under the table as the router will overheat without a free flow of air. A switched power board mounted on the side of the stand makes controlling the router much easier than reaching underneath to the switch on the router.

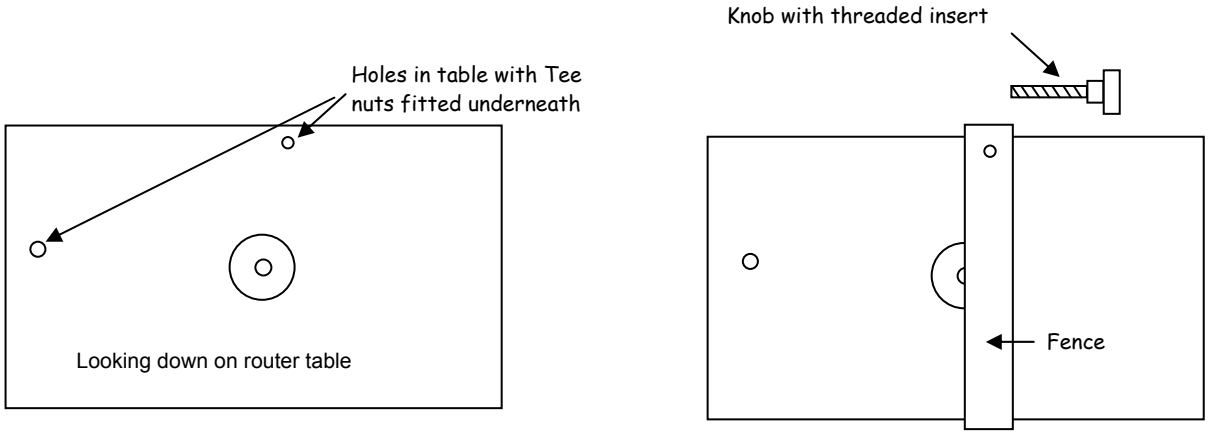
Finished table with stand

Fences for the router table

Over the years I have made all sorts of fences for the router table, some with dust extraction built in, and these ideas have slowly evolved to give some very simple and effective fences. I will describe two of them here in detail, and it is possible to apply these ideas for all sorts of other situations. The important principle is that I make a new fence for each cutter I want to use, so that the fence matches the cutter exactly. This way the fence gives maximum support to the workpiece as it goes past the cutter. With boxmaking we are often handling small workpieces, and it is vital that there is no possibility of the workpiece catching on a gap in the fence as it goes past the cutter. If we make the fence to suit the cutter, then any gaps can be kept to an absolute minimum.

For fence material I use old (recycled) hardwood which is dry and stable, or High Density fibreboard (HD3 made by Laminex Industries is good). Ideally we want a material that will remain flat and straight, and will not wear, so they can be used time and again. These fences are ideally suited to router tables built along the lines of the Gifkins Table above.

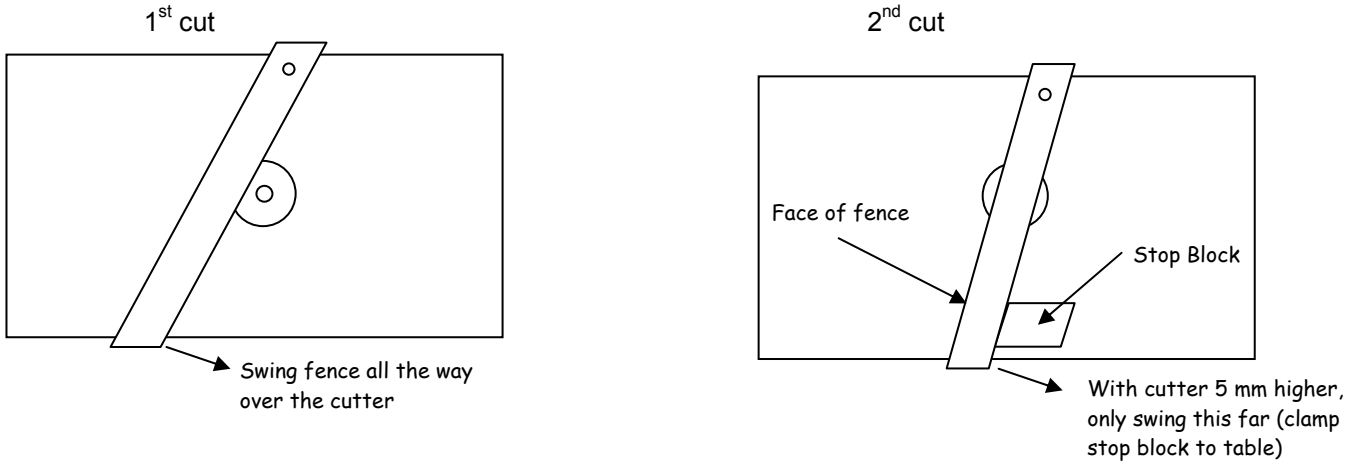
I start by drilling two holes in the table top, as shown below, and fitting captured “Tee” nuts on the underside of the table. one hole is for short fences across the table, and the other is for longer fences running the length of the table. These threaded hole are important as it means we can pivot the fence around these points, and also the fence will always go back on the table in exactly the same position. I then drill a 8.0 mm hole in the fence, and use a knob with threaded insert to hold the fence down to the table at this end. Don’t make the hole too big, as we don’t want any free play.



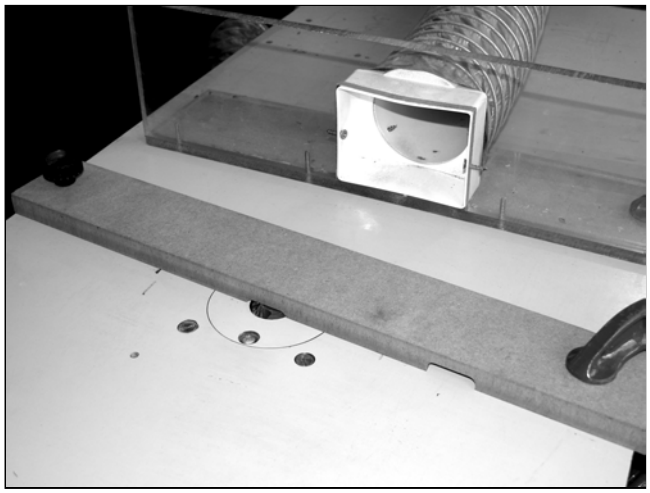
The beauty of this set up is that we can fit a cutter to the router and then machine a rebate through the fence by swinging the fence over the cutter:

Fence for Panel Raising Cutter or Tenon Cutter

Fit the Panel Raising cutter to the router and set the cutter about 1 mm higher than you need for your current project. Turn the router on and swing the fence over the cutter, to produce a dish shaped rebate right across the underside of the fence. Now raise the cutter about 5 mm and again swing the fence over the cutter, but this time not going all the way across. We want to stop 5 mm or 10 mm short of the face of the fence:



This way, there will be a deeper rebate on the back of the fence to aid dust extraction. In use, the fence is held with the knob at one end and a clamp at the other, and a dust extraction hood can be placed on the table behind the fence. The cutter should throw the dust well clear of the fence, so the hood can sit back from the fence:



Fence for slot cutter

This is an improvement on the fence described in the earlier “Boxmaking Plans - introduction to small joinery”.

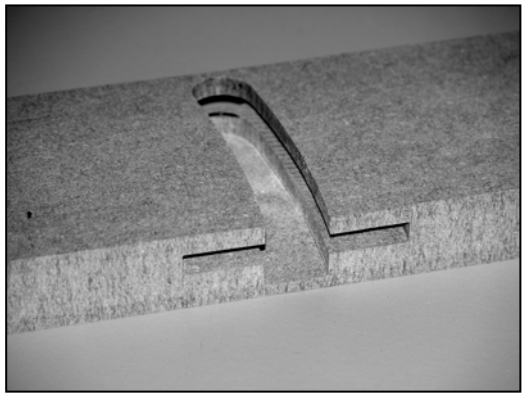
Start with a straight cutter in the router that is a bit bigger diameter than the ½” shank on the slot cutter (I used 14 mm). Use this to cut a slot in the fence, but not right through, this slot should stop 5 mm short of the face. It is best to do this in a few passes, only cutting away about 5 mm height of material each time. Clamp a stop block to the table so that each pass stops at the same place. This slot should be high enough to allow room for the set screw and washer which are above the blade of the slot cutter.

Now fit the slot cutter to the router and set the height 1 mm higher than you want for your project. With the router running, swing the fence over the cutter as far as it will go. The stopped slot from the previous cut won’t allow the

slot cutter to come right through the fence. Swing back off the cutter and re-set the cutter height to 1 mm lower than your project. Once again, swing the fence over the cutter as far as it will go. This then allows room for a bit of height adjustment when working on your project.

The idea of this fence is that the work is fully supported both above and below the cutter, as well as right up to the cutting tips before and behind the cutter. You would need to make a new fence along these lines if using timber that is a very different thickness to your current project.

Fence for slot cutter
Photo shows fence up side down, with face away from camera.



"T" nut inserted into underside of table, along with the range of hardware used. To insert the "T" nut, drill a 1" hole through the laminex (sheet D) and a 10 mm hole through the rest of the top. The "T" nut can then be pulled into position with a M8 bolt from above the table.

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