

Style at speed



Follow **Alan Holtham's** detailed guide for making this elegant side table using Trend's beadlock system — a quick and strong jointing method based on both dowels and loose tenons

This side table is a good test of your woodworking skills, as you'll have to use a whole range of different techniques to make it. There's some simple lathe work complicated by the fact that you have to make four matching legs, and you then have to join the legs to the various rails using mortice and tenons or some other similarly strong jointing method. Add to this the need to make dovetailed drawers and a wide butt-jointed top and you have a project that'll take a good few hours to complete but results in a very attractive piece of furniture.

The design was the result of a commission to make a small side table for a traditional hallway that was long but rather narrow. The dimensions were therefore kept in similar proportion to minimise the space taken up by the table in such a small space.

Resawn top

I always start work on a project like this by preparing the top. In this case I didn't have any suitable 1" material, so resawing it from thicker stock was the only answer. In this situation it's better to pick boards that are quarter



1 Resawn material should preferably be more quarter sawn than this — i.e. with the grain at right angles to the face of the work.



2 For a straight bandsaw cut in deep material use a sharp blade and feed gently. A 1/8" x 6 skip blade cuts true and leaves a fine finish.



3 After thickening, lay out the boards for the top and mark with a large 'V' for help in maintaining the orientation.



sawn (i.e. where the rings run perpendicular to the faces); this helps with the eventual stability in the finished top and also ensures that the two halves are identically 'book matched'. However, the best piece I could find had the rings at an angle of about 45°, but the result isn't too bad.

For deep cutting like this, use a sharp blade on the bandsaw; I use a 5/8" x 6 skip tooth which cuts very freely and leaves a good finish, but do remember to feed slowly, allowing the blade to cut in its own time. If you force it, the cut wanders off and 'bellies' across the width.

Once the boards have been resawn, try and allow them to stabilise for a while — the longer the better. Deep cutting always releases in-built drying stresses and these will often take several hours to settle down, causing the boards to warp and cup, often quite dramatically.

Minimise tearing

Once all this has happened it's safe to start machining them true again, but take care to plane 'with' the grain rather than against it. The gonzalo alves I'm using here is particularly bad for tearing if you work it the wrong way, and often these tears are too

deep for sanding away later. Take similar care with the thickening operation, although this usually leaves a better finish than planing. If there's some tearing from the planing, try cleaning it up in the thicknesser, as the more constant feed will usually minimise any damage.

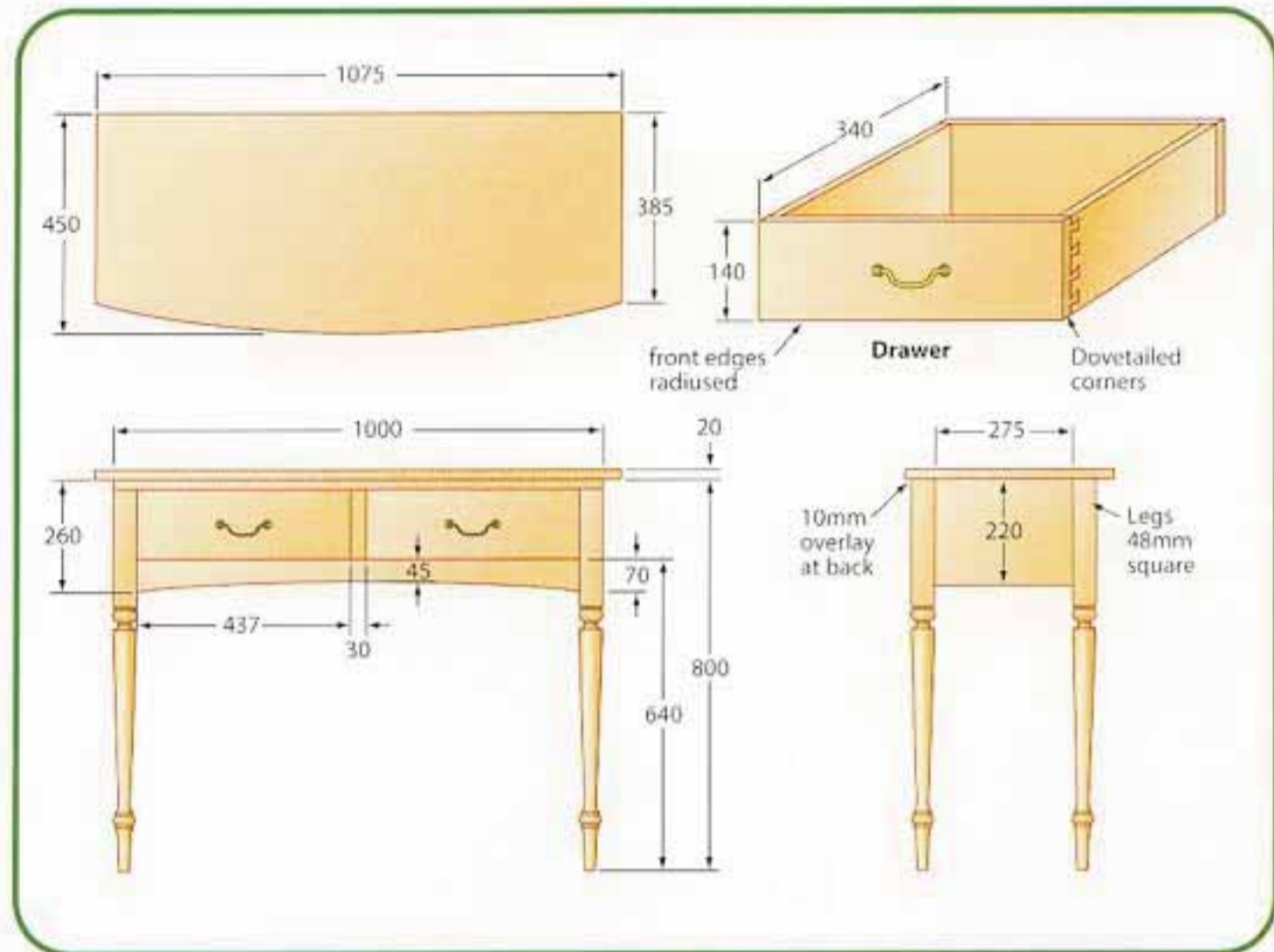
With the boards all prepared, lay them out on the bench to get the best grain

effect on the top, then mark it with a large 'V' to help maintain the orientation as you work. The edges can be machined planed to get a good butt joint, but at this point I usually skim them as well with an 07 jointer plane to remove any cutter marks.

Top jointing

Three number 10 biscuits along the length of each joint

should be enough to keep them lined up as well as adding strength, but for complete accuracy it's vital to use the biscuit jointer from the face side on each piece. If the joints are good you'll only need sash clamps to hold the top together rather than using the clamps to pull up badly-fitting joints. These will only open up when the cramps are released, so



4 Machine plane the edges then skim them with a jointer plane for a perfect fit.



5 Cut the biscuit joints from the face side on each piece for perfect accuracy.



6 Use cramps above and below to keep the top flat whilst it's under pressure.



7 It's good practice to use one leg as a template to get them all identical in length.



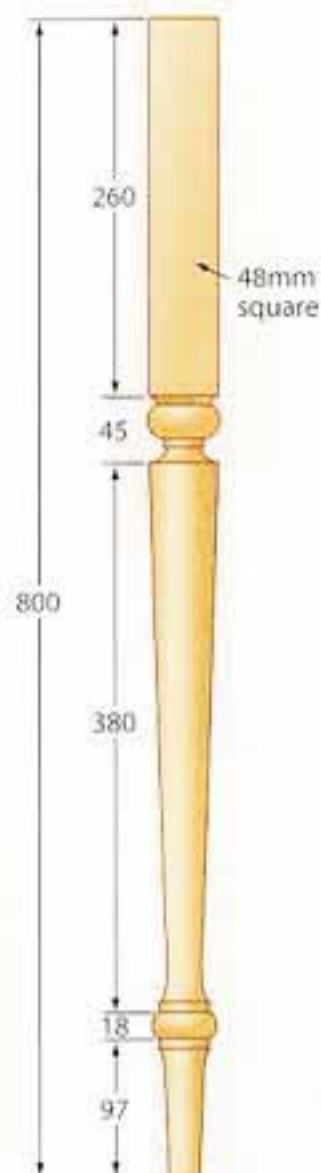
8 Square off across the four to mark out the extent of the pommel.



9 Cut the rail joints. Here I'm using Trend's Beadlock jig cramped to the wood in the vice.



Leg profile side table



Leg prep

Whilst this is put aside to set, start work preparing the other components. The legs are machined from wider stock, but check the planer fence to make sure it's dead square; you won't get the table to assemble properly if the fence is even slightly out of true.

Cut one to accurate length, ideally using a chop saw, then use this as a template to get the others identical. Now you can mark out where the pummel is to be on each leg (i.e. the square bit that's left when the rest is turned). The pummel will accommodate all the sides and rails so any discrepancies in their length will soon show up, so use a square across all four to get them even.

Beadlock jig

All the jointing on this project was carried out using Trend's Beadlock system which is similar in shape to a mortice and tenon joint but is much quicker and easier to cut. The joint is cut in each component in the form of a series of overlapping holes, which are drilled using a very simple jig clamped to the timber. A preformed dowel with the same beaded shape as the holes is then inserted to complete the joint.

It's so quick to use and far less demanding on accuracy than a conventional dowel joint. All you have to mark is the centre line of the joint on each component — the rest happens automatically. Two sizes are available, 9.5mm, which will cover most work, and 12mm for heavier construction work.

For the majority of the drilling work the jig can be clamped to the work in the vice; just make sure everything is really tight, particularly on hard end grain or the jig tries to move when you start overlapping the holes. In some situations you may have to use a G or sash clamp to hold it, as in the case of the top rail and leg joint.

Setting up

It's important that the Beadlock material is cut just short of the overall depth of the joint to allow the components to pull up together; I used a piece of tape around the drill bit to get the holes a constant depth. Where the rails are offset relative to the face of the leg you can use shims on the jig to move the line of holes slightly off centre. The amount of offset will depend on the width of the shim, but

you can easily make your own from ply or MDF if you want a particular distance.

Efficient planning

The wider back and side rails will need two joints for maximum strength. Just mark the centre of the joint carefully on each piece and cut them in the same way. If you plan ahead a little you can do all the work with the jig at the basic setting before adding the shims for the offset work in the legs. Unlike a biscuit joint, the Beadlock joint has no allowance for adjustment once it has been formed, so accurate marking out is vital if it's to fit together properly.

It's also important that the ends of the rails are cut dead square and true, so where possible cut matching pieces as one on the chop saw to get this perfect. A trial assembly of everything at this stage should highlight any discrepancies; the Beadlock gives a lovely smooth but firm sliding fit to the joints.

Drawer divider

Mark out and cut the central drawer divider from a solid piece. I couldn't work out a way of fixing this using the Beadlock joint so had to use

10 Cut the top front rail to leg joint by cramping the jig in place.



11 Cut the Beadlock material just short of the overall joint depth.



12 The leg and rail joint showing the finished offset.



13 The wider rails will need two joints, so mark the centres of each carefully, then drill all the rails first before inserting the shims to produce the offset for the legs.



14 The finished joint has no allowance for adjustment so accurate marking is essential.



15 A trial assembly is vital to check all the alignments.



TURNING THE LEGS

1 Drill a tiny pilot hole dead on centre for the tailstock.



2 Grip the other end of the leg blank in a chuck to get it centred properly.



3 Use a skew chisel to mark out the position of the pommel.



4 Start putting in the detail from the headstock end but keep it simple.



5 A gently tapering profile looks elegant, but is simple to copy.



6 Use callipers and dividers to reproduce exact dimensions.



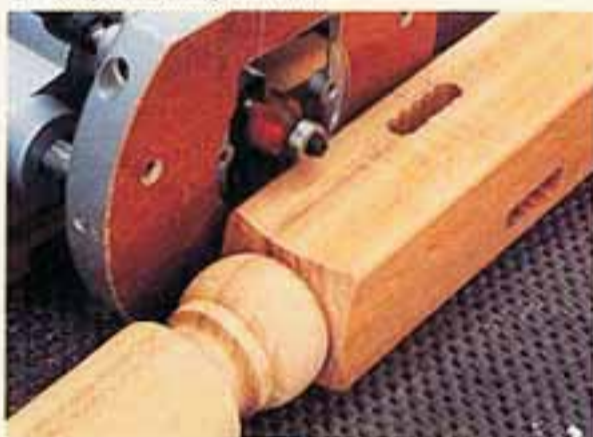
7 Hold each turning against the original to check the detail.



8 Use abrasive wrapped around a straight block of wood to smooth the flat section.



9 Radius the edges of the pummels with a tiny rounding over bit.



conventional dowels, though a simpler option would be to screw it through from the back.

Turning the legs

With any piece of turning where a square pommel is left on it's vital that the timber is accurately centred in the lathe. For the tailstock end I mark the centre with diagonal lines then drill a tiny hole on the intersection to make sure the centre point of the lathe doesn't wander off as it is tightened up.

For the headstock end you can use a drive centre in a similar fashion, but I find it more accurate to grip the

timber lightly in a chuck. This provides perfect centring and a really positive drive, but don't overtighten or you'll mark the timber. However, if the lathe has a swinging head, first make sure this is centred back exactly or there'll be a lot of vibration when you start up.

Use a skew chisel to mark off the limit of the pommel, gradually working back to the line you scribed earlier. Then put in the detail of the leg but keep this simple, as you have to copy it three more times! I found that a gentle tapering profile was quick to produce yet looked really quite elegant.

Four of a kind

Having turned the first one, you now have to copy it accurately, so use callipers and dividers to mark out and check the measurements of each piece of detail as you go. Put the original up against each new one you turn to make sure they look right. Small discrepancies won't be noticeable as long as the main dimensions are the same.

Sand the legs thoroughly whilst they're still on the lathe; a piece of abrasive wrapped around a block of wood soon gets the straight section dead true. The rest

of the detail can be sanded carefully by hand, but be careful not to overdo it and spoil the crispness of the sharp edges. It's very satisfying seeing the matching legs pile up on the bench ready for assembly. The trick is to keep the design simple enough to reproduce easily.

When the leg turning is complete, run a tiny radius along the corners of the pommel to soften them a little — it makes the job look more finished.

Assembly

You can now start to assemble it all, but give the

rails a thorough sanding first, as they're far more accessible at this stage. I now tend to use a random orbital disc sander working down the grades of abrasive to 180 grit. This rarely seems to leave scratches, but if you're worried about them, finish off with a cabinet scraper along the grain for a blemish-free surface.

I made up the two ends first, gluing the Beadlock strip into one mortice first. If you put glue into the slot rather than on the strip there's always less squeeze out as the joint comes together. A couple of sash cramps will hold it together and providing the ends of the rails have been cut properly you shouldn't have to worry about squareness.

Curved cuts

Whilst these are setting, use a flexible rule to set out the shallow curve on the front rail and then cut it out carefully on the bandsaw. These internal curves are harder to clean up, so the better you are with the bandsaw the easier the finishing job will be.

Set out and cut the bow front on the top in a similar way, but this time the convex shape can be cleaned up using an orbital sander to get a perfectly smooth curve; do keep the sander moving all the time and dead square to the edge. Give the top surface itself a good sanding as well, though the biscuits should have kept it all in line, and it's only a question of cleaning up the machining marks.

CUTTING LIST

Item	Qty	Dims (mm) LxWxT
Top	1	1075 x 450 x 20
Legs	4	800 x 48 x 48
Top rail	1	904 x 45 x 20
Front rail	1	904 x 70 x 20
Side rails	2	275 x 220 x 20
Back rail	1	904 x 200 x 20
Drawer fronts	2	437 x 140 x 15
Drawer backs	2	437 x 140 x 13
Drawer sides	4	332 x 140 x 13
Drawer bottoms	2	420 x 330 x 6 MDF
Centre divider	1	340 x 180 x 30
Drawer guides	2	275 x 50 x 20
Runners	4	320 x 30 x 20
Rubbing strips	4	320 x 15 x 10
Buttons	6	25 x 25 x 15

16 Cut and fit the central drawer divider. I used conventional dowels to fix it.



17 Put glue into the mortices rather than on the Beadlock strip.



18 A couple of sash cramps will hold the joint closed while the glue sets.



19 Use a flexible steel rule to set out the front rail curve.



20 When you've got the shape right, cut the curve carefully on the bandsaw.



21 Use the orbital sander to clean up the convex edge of the top.



22 Sand the top to remove the machining marks and give a smooth, fine finish.



23 Use router cutters in combination to form the top edge profile.

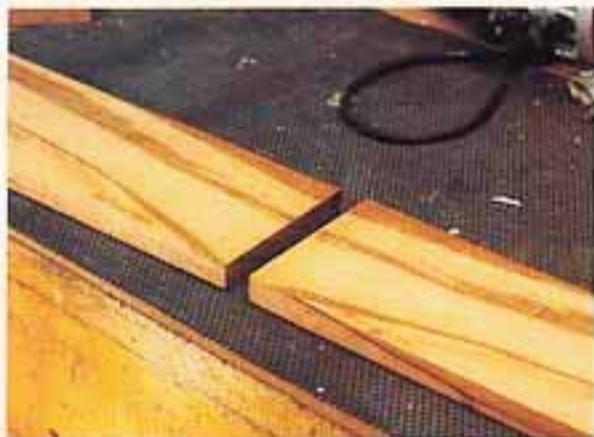


24 Cut slots in the top of all the rails to take the fixing buttons.

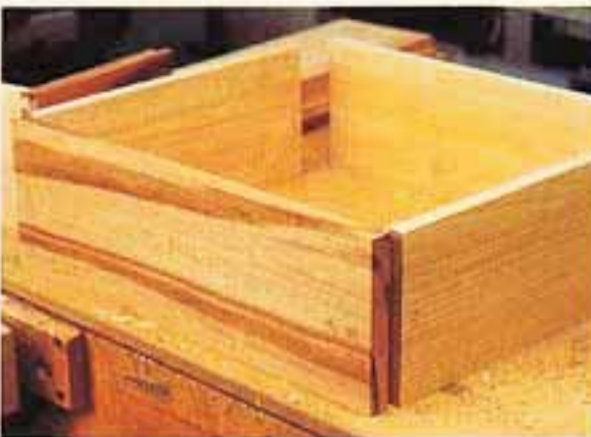


DRAWER CONSTRUCTION

1 The fronts were initially book-matched but the effect was lost later after machining.



2 Lay out and number the drawer components carefully.



3 Make a few trial cuts with the dovetail jig to get a perfect fit.



4 The finished lap dovetail joint looks particularly good with contrasting timbers.



5 Use a 6mm cutter to form the groove for the drawer bottom.



6 Slide in the MDF bottom and glue up the joints.



7 Glue an extra rubbing strip under each side of the drawer.



8 Add guides and runners to the outer sides to keep the drawers in place.



9 Glue runners onto both sides of the central divider.



10 Trim each drawer to fit smoothly then wax the runners.



11 Run a rounding over cutter round the face of each drawer front.



12 The completed drawers ready for polishing and the fitting of the handles.



Top edge

The edge profile of the top is achieved with a combination of cutters in the router. Start with a small rounding over one cut from the underside, then use a classic cutter working from the top. Whenever you use cutters in combination like this, always remember to work in such a

way that you leave enough bearing surface for each subsequent cut; just think about the order of working and what's going to be left after each cut.

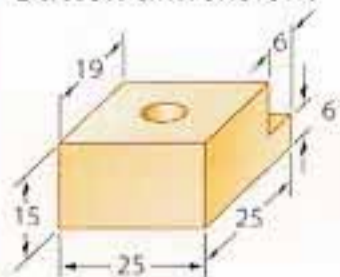
Button slots

Before you assemble any further you need to cut short slots in the top of each side

and cross rails to take the buttons used for fixing the top. This is a simple job for the router and $\frac{1}{4}$ " cutter; two slots in each long rail and one in the side ones will be enough to hold the top securely.

Now you can assemble the rest of the framework, but this time make squareness

Button dimensions



The Beadlock kit is Available from Trend (tel: 0800 4 TREND or 01923 224657, trendmachinery.co.uk). Prices (+ VAT): jig for cutting 3/8" joints, £24.95; jig for cutting 1/2" & 5/8" joints, £34.95

several trial cuts in some spare material to get the fit spot-on. The cedar I was using was very soft so the pins and tails soon break if the fit is too tight. With very fine adjustments to the cutter depth you can get a perfect sliding fit that looks particularly good with the contrasting timbers.

Bottom groove

Dry assemble the complete drawer and mark out on each piece where the drawer bottom groove is to be put. It's easy to put it on the wrong side when all the pieces are flat on the bench, so keep marking everything as you go. Use a 6mm cutter with the side fence on the router to form the groove, but take a couple of light cuts rather than one deep one or the cutter will chatter too much.

Drawer assembly

Glue up three sides of the drawer, slide the MDF bottom in and fit the last side, clamping it all square. As with all the other components, you should have done all the sanding work before the final gluing stage. When the drawer is set, I added a couple of hardwood strips underneath, which, as well as

strengthening the drawer, also increase the rubbing surface and minimise wear if the drawer is used a lot.

You'll need to add four drawer runners and two guides into the main framework, I just glued and clamped these in place making sure they were perfectly parallel or the drawer will jam.

Perfect fit

There's inevitably a bit of fitting work to be done with each drawer; you may have to take a shaving off here and there or sand it slightly to get it to run properly, but the more accurate you are in the original carcass construction the less there will be to do. A touch of wax polish on each runner works wonders once they fit properly. Finally run a rounding-over cutter around the face of each drawer, so the radius finishes flush with the rail and divider.

The book-matched effect was rather lost on these drawers as the rings were too diagonal to stand the amount of machining I carried out to get them thin enough, but the effect is still quite pleasing.

Finishing

Give everything a final clean up and sanding, then apply a

spirit stain with a brush to get plenty of coverage. I tend to slap it on and then wipe off the excess after a few minutes with a cloth to prevent smearing. This will take several hours to dry properly, preferably overnight, and then apply a polish of some sort. I used two coats of cellulose pre-cat lacquer rubbed down with 400 grit paper between coats, then applied a soft wax polish with steel wool for the final sheen.

It's important that you finish both sides of the top in the same way or it'll warp if only one side is sealed. So leave it off at this stage and lacquer both sides.

Final fitting

Make up a strip of wood with a rebate from which you can cut the fixing buttons, and then use these to fix the top as the final operation. With the slots slightly oversize there's plenty of room for movement if the top does start moving.

The last job is to fit the drawer handles, screwing them in from the back of the drawer front. Fit them slightly high of the centreline for best effect. A final rub over with polish, and the side table is ready for delivery!

checks to get it all lined up properly or you'll have a lot of trouble getting the drawers to fit properly.

Drawer joints

These I made from cedar with gonzalo alves fronts to match the rest. I tried to be clever by cutting the fronts from a single piece, but once again the ring orientation was too steep and by the time I'd machined them, a lot of the book-matched effect had been lost.

I used a router dovetail jig to make the joints, but it's essential that the pieces are laid out and numbered in the right order. I've been caught out by this before, so just keep an eye on the orientation of each piece relative to the others.

Lap dovetails are dead easy to cut once the jig is set up, but you'll need to make

25 Glue and cramp the long rails into the end frames.



26 Brush on a coat of spirit stain then wipe off the excess with a cloth.



27 Cut a strip with a rebate to form the fixing buttons.



28 To fix the top down, screw the buttons into place in the slots cut previously.



29 Fit the drop handles from inside the drawer.



30 A final polish and the table is ready for delivery.

