

Faster Cuts

With a batch of shutters to make Gordon Fry shows how to speed up machining

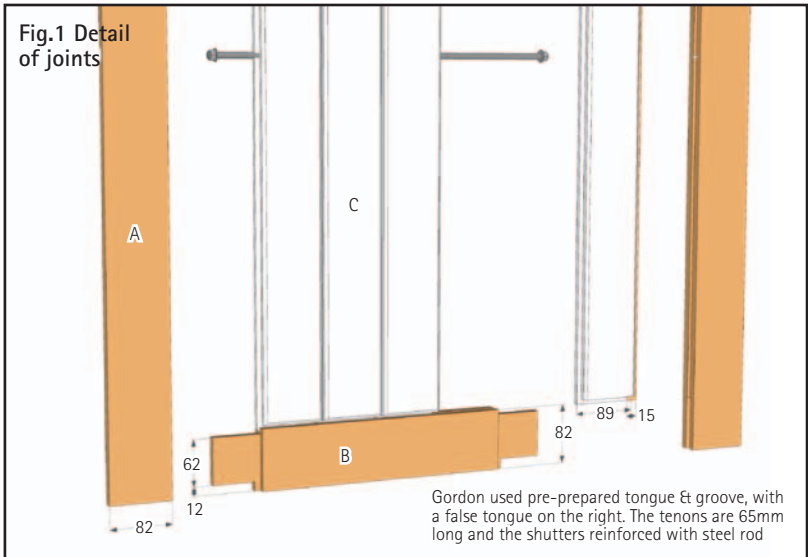
The project brief was to make 10 pairs of shutters for a French house. The most cost effective and common design is a simple Z-bar assembly (like a framed, ledged and braced door, but without the frame). This would mean buying in pre-made T&G boards, generally pine nowadays, with Z-bars to fix these boards together. Often these bars are made from oak or mahogany as they hold the fixings better for the lifespan of a shutter. However, my brief was to avoid the Z-bar and create a sleeker, cleaner look. So, instead I went for a frame and panel design.

Due to the budget constraints and to avoid hours of planing, I bought in pre-prepared T&G pine for the panels; most of my time would be spent jointing. I ripped down oak planks on my Sedgwick tablesaw with a 32-tooth 315mm diameter tungsten carbide tipped blade. This high quality blade has the advantage of a deep throat which whisks away the waste very effectively, and is the coarsest I use (gordonfry.com/links-videos). When changing this blade for a finer cut, avoid clashing it against other metal objects as it will fracture the tungsten tips which will cause loss or damage to the tooth. There is no lock on the Sedgwick, so you have to use a piece of wood between the teeth as you release the arbor. When storing the blades it is important to separate them with a card or ply disc so that the teeth don't touch.

There was still planing and preparing of the oak stiles and rails to be done with use of a three-knife block, which creates fewer ripples. I always like to pass the timber through at different points on the flat bed so the blades wear more evenly. The marking process could now begin. Although the shutters were all different dimensions, the common denominator was to be the tenon and mortise sizes so as to minimise the time spent reconfiguring the machines.



Pic.1 Using a marking gauge to mark the haunches on the stiles (above). The mortise chisel is wider than the 7mm groove, so I marked it to cut a sharp joint. The cut-depth for the mortise was 65mm, so a 7/16in (11.11mm) chisel extending to 70mm does the job (right)



Pic.3 A dry run before gluing up is the best time to check for any unforeseen errors



Pic.4 As the tenons on the rails were to be all the same length, the stop point on the Sedgwick tenoner was set for the entire project, which enabled me to pass all of the rails at the same time (above). There are four tenons to each shutter, making a total of 80 tenons in all which took less than an hour all told. It takes about 10 minutes to set up the tenoner, but 30 minutes if I am using a scribing head as well. I always machine spare spock for the setting-up process. Marking the haunch point on the tenon (right)



Counterboring



As the shutters were to have no external supports, such as Z-bars, two A2 M8 stainless steel threaded rods from Screwfix were to be inserted horizontally through the body of the shutter. Since the shutters would be used daily and exposed to all weather conditions, vibration and movement of the timbers would be an issue. The shutters range from 1200-2900mm in length, and would splay without the rods. So I applied a washer and a stainless steel nylon locknut to each end of the rod. Not too tight, neither too loose.

The Trend Snappy Forstner bit cuts a hole for the nylon lock nut and also allows for sufficient depth for shooting the edge in the shutter on site. Next, I took a hard-wearing HSS Cobalt bit (Wealden part no. DHC19) to bore the 8.5 mm hole for the metal rod. (below) These drill bits are generally intended for the metalwork industry, and are much harder wearing and can withstand the heat on repetitive boring work in wood. As there were to be some 240 holes drilled on this project, everything had to be done in sequence.

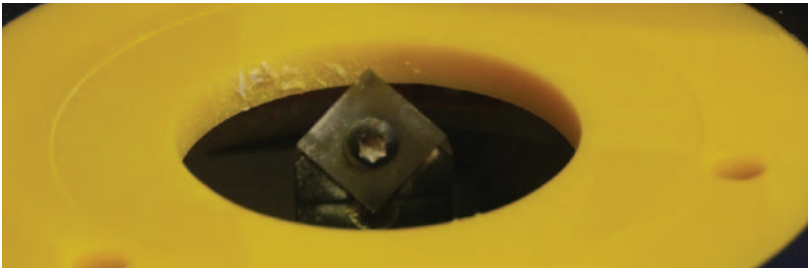


Haunches

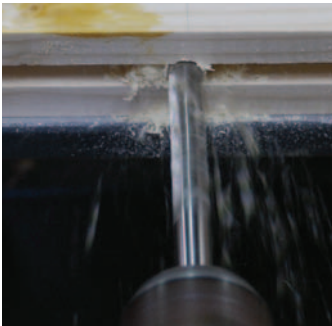


The shoulder of each haunch was trimmed with the DeWalt crosscut saw to give a clean cut. A similar cut on the bandsaw wouldn't be as accurate. To overcome the kerf of the saw blade I generally use a packer in front of the rail.

I prefer to mark a scribe line on the face of the tenon so that I can cut the waste away (below). I generally do this free-hand on the bandsaw, as I find the blade tends to wander if I use a fence. This can be caused by incorrect tension on the blade or even how the blade has been welded together. Other problems here can be caused by alignment of the fence to the blade. Angling the fence can give you a straight cut, but this often depends upon the blade itself, it could tend to veer to the left or right. In the long run, I've found it easier to work free-hand and just follow the line.



Pic.4 I used the Trend RT/80 on a 1/2in shank (£58.76+ VAT from Wealden) in order to cut the 45° on the end-grain of the panels (above). This cutter has four edges to work and due to the disposable blade system, the same profile can be achieved each time. I bought mine in 2008, and, although I have changed the blade in that time, this cutter has held up incredibly well. I also purchased the bearing and collar at the same time and have used that on templating jobs. Some of the pre-made T&G boards had to be cut down to give continuity to the design across the width, so after cutting a 45° chamfer on the end-grain, they were then passed through the Sedgwick spindle moulder to re-cut the 45° chamfer on the long-grain and to re-cut the groove (right)



Pic.5 The Colbalt 8.5 in action to drill holes for the metal rods. I found placing timber on its face and drilling horizontally is far more accurate than drilling vertically as the T&G board had its tongue still in place on one edge (right). My horizontal borer was a universal Shopsmith, which I now use only as a pillar drill, borer and lathe



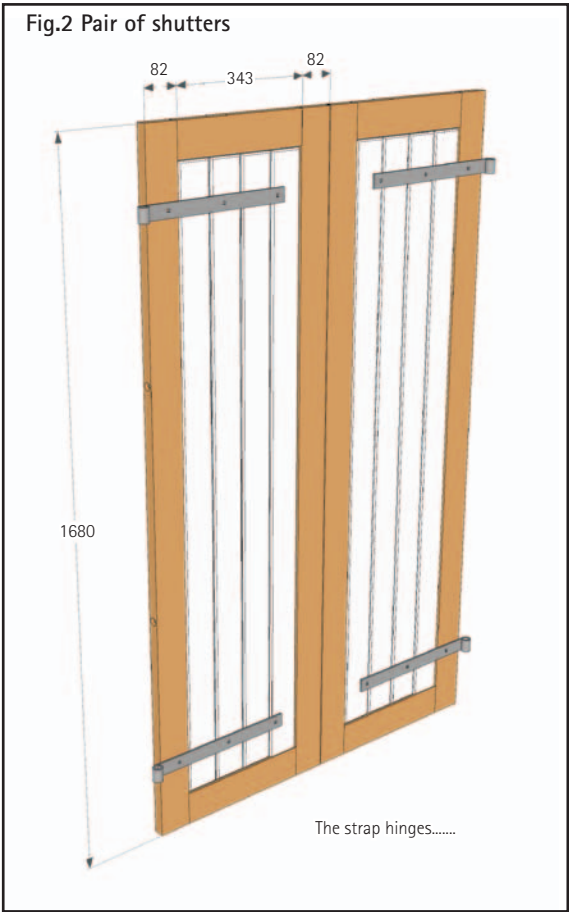
Pic.6 Testing the fit of of the T&G board. I use Rustins Knotting (rustins.eu). I always use it on softwood, where sap is the main enemy. All the shutters are to be painted, so I made sure to prime the tongues and grooves before assembly. I did not paint the tenons on the oak frames as these were to be glued



Pic.7 You don't have to hit very hard with a hammer like this (above)! It is a flooring mallet, which I bought several years ago with a power floor nailer. Adjusting the spacing to 3mm between boards to allow for swelling and shrinkage (left)



Pic.8 A single pin is applied in the centre end of each T&G board to keep the panels equally spaced but allow for movement (above). Remove excess glue with a use of a wooden wedge (left) immediately. It wipes off with a solvent, but I try to avoid solvents so I use a sharpened wedge. If it was set I'd use a chisel, but would always wear protective glasses as the glue becomes like glass with small fragments that can shatter



Glue-up



There are many types of glue on the market, but I tend to favour West Epoxy Resin for exterior woodwork. This is a two-part epoxy with filler. It has a sensible opening time as long as it is spread out onto a board as the combination of the two parts creates a thermal reaction which makes the whole potion incredibly hot if left in a pot. It is very strong and moisture resistant, and mostly commonly used in the boat-building industry. (wessex-resins.com.)

Obviously the T&G boards should never be glued, as these will always need to expand and contract with the elements. I usually apply wax on the corners where the glue joint would meet the panels so as to avoid stickiness!



Order of Work

- Plane up rails and stiles
- Mortise stiles
- Machine tenon cheeks
- Groove stiles
- Mark up haunches on stiles
- Cut haunch shoulder on tenon
- Bandsaw haunch on tenon
- Drill stiles for rods
- Prepare loose tongue
- Adjust T&G chamfer
- Drill T&G for rods
- Dry assemble, then assemble