COURTESY OF GMC/ANTHONY BAILEY

Man's best friend

A good workbench can last you a lifetime, so it's worth spending some time and making it really special. Marc Fish has done just that and shows us how to make a bench that will be a friend for life

It's the ambition of many a furniture maker to build their dream bench. It also becomes a bit of an obsession. It must have all the right elements, it has to be perfect for every aspect of the work. Obviously this is never going to happen as our work is so varied, all you can do is decide what you think is important; size, shape, work-holding, storage etc.

If I had rushed in and built my ideal bench when I was starting out it would have been very different. It's only with experience of our working practices that we can decide what kind of bench will help our day-to-day tasks. No two people are the same so why should benches be?

I've been toying with the idea for some years and just before Christmas I embarked on this mammoth task. A lot of research went into building this bench and I can't overstate that you should not just jump in without a lot of thought. After all you may have it for 40 years.

For me the aesthetic was equally as important as the practicalities. I do have to stand at it for quite a large part of the working day, so shouldn't it put a smile on my face? It's also the first thing visitors see when entering my studio, so I wanted something quite special. It's solid walnut and maple with turned aluminium bench dogs and drawer handles, a polished pattern maker's vice and a twin screw vice at the other end.

Frame

The frame needs to be very strong. My bench has cupboards for storage so this strengthens the frame and also adds weight below, which will help it from swaying. The legs and frame rails are 60mm square. These are jointed with a combination of Domino joints and bed bolts, pulling the whole frame up tight. All the bolts were counter-bored with a brass bezel and an aluminium plug covering the hole. These were made with our engineering lathe. It's easy to turn the plugs to suit the size of drill you're going to use, you're looking for a tight fit. I used ratchet straps to help get everything closed up. Then after the whole frame is glued and bolted, the plugs can be driven home with a mallet not a hammer, as this may bruise the soft aluminium. The top is joined with four screws to the base, two either side. The front screws are drilled through the frame and screwed into the top, being careful to ensure the screw is long enough to get a decent bite but not so long that they come through the top. The back screws go through an elongated slot in the frame again allowing for movement. By fixing the front screw and elongating the back ones any movement will show at the back and not on the front.

1 **The main frame lacks cross bracing as this will come from the cupboards that fit below the worktop**

2 **Dominoes are the perfect loose tenon and were used throughout the frame with bolts to connect all the components**

3 **The end leg sections were glued up as complete components after the bolt holes had been drilled**

4 **Aluminium bolt caps were machined in-house to fit into brass bezels to conceal the bolt heads**

Bench top

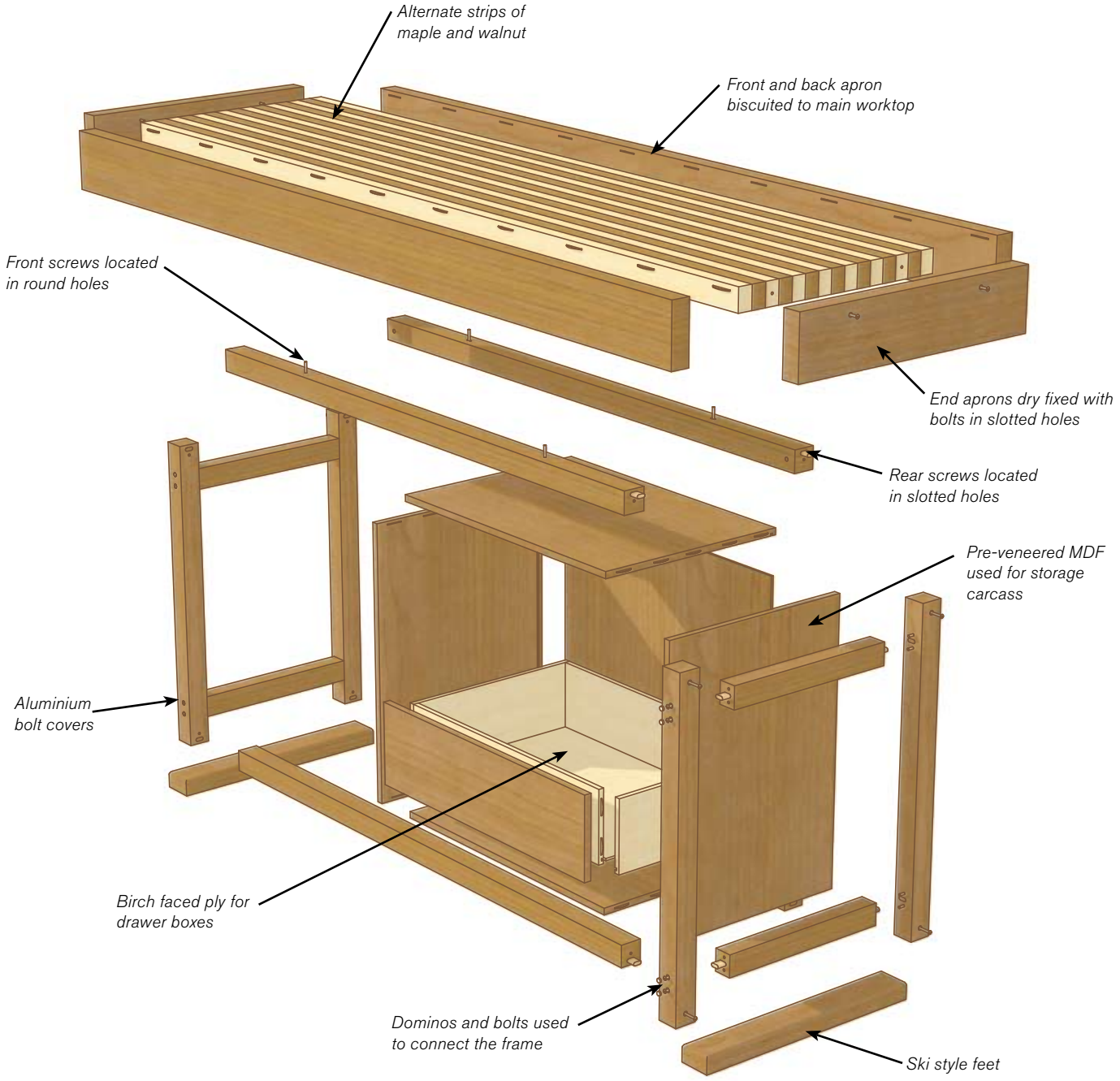
I'd decided that I wanted the warmth, and character that walnut has but that this would make the top too dark, so maple striping was chosen to lighten it up. The thickness was 60mm. It would be nice to have a thicker top but cost and timber availability was a consideration.

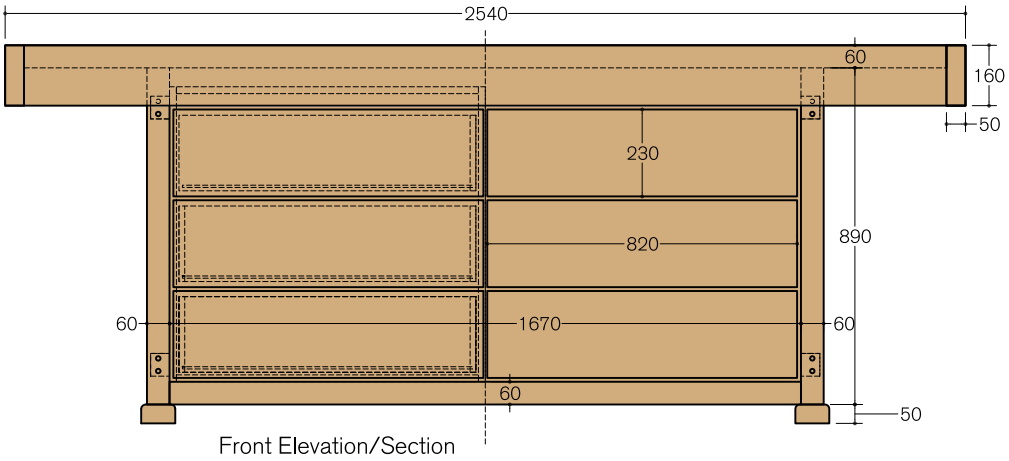
The strips were ripped from larger planks on the table saw allowing extra on the dimensions. This was due to the extra long lengths and the importance of them being straight. The timber moved quite considerably after cutting, one piece moved by 50mm so ended up being discarded. After the timber had been machined square, flat and to dimension they were all biscuited for alignment and glued up on our Plano clamp.

This is the kind of job the clamp is designed for and where it comes into its own. When it came out of the press I checked it had remained flat, then took it to our nearest speed sander. 30 quid later and hey presto! Flat and sanded. Time saved: one day. Your local joinery workshop may well have one of these machines, but you do need a helpful operator as getting things flat does require a little adjusting and patience.

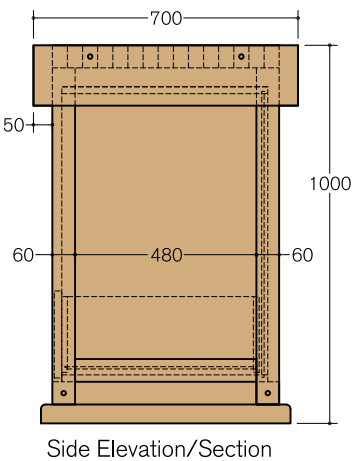
5 **The Shepach Plano is designed for jobs such as these but requires the same amount of free space at one end to slide the work top into the clamping frame**

In detail





Front Elevation/Section



Side Elevation/Section

Rails

6 **The front and back rails were machined well over length and positioned on the frame for marking out of vices and bench dogs along the back edge**

7 **The front rail required some elaborate shaping which was started on the bandsaw…**

8 **… a series of cuts into the end were later shaped into the taper required for the pattern maker's vice**

The front and rear rails, which are very deep at 160mm, come flush with the striped top at each end. This allows the bench top the opportunity for expansion and contraction with seasonal movement. The end rails are floating with elongated boltholes in the top. A shadow chamfer where they join the front and rear rails will help distract the eye when they're not lining up. Before the front rail was glued to the top, work was required to fit the vices. A couple of accurately placed holes for the twin screw vice and quite a lot of shaping for the pattern maker's vice. This is the daunting part as a mistake at this stage would waste a lot of timber. Firstly I read and re-read the instructions for both vices. I wanted the inside jaw of my pattern maker's vice flush with the front rail and the instructions don't offer this as an option. The front rail was marked and then the waste was bandsawn away. When the holes were drilled for the twin screw vice, the front and rear rails were biscuited and glued up. This, incidentally, required all of our clamps and an extra pair of hands.

9 **The back rail in place on the worktop…**

10 **… before using every clamp in the building to finish the job**

Vices

I went for a pattern maker's vice instead of an end vice as a lot of my work is curved and irregular in shape. The standard version comes with wooden handles and the vice body is finished in a matt grey. I have polished the ribs and detailed with edges using an orbital sander going right through to 2000 grit and then polished it with Autosol polish.

The engineering machine wheels replace the wooden bar handle and were purchased separately. They've been sprayed to match the body of the vice and then polished in the lathe. Fitting these wheels is not for the faint hearted as the bore size is different and some quite complicated milling and turning work was required to fit them. The jaws are lined with off-cuts of leather from a previous job, which will protect any pieces clamped in them. Fitting either of these vices takes quite a lot of precision and instruction reading. The pattern maker's vice has a poorly cast bracket which causes alignment problems when using the template supplied. I hand filed the bracket square and made a new paper template. A lot of material has to be removed to allow the vice the clearance required to operate correctly.

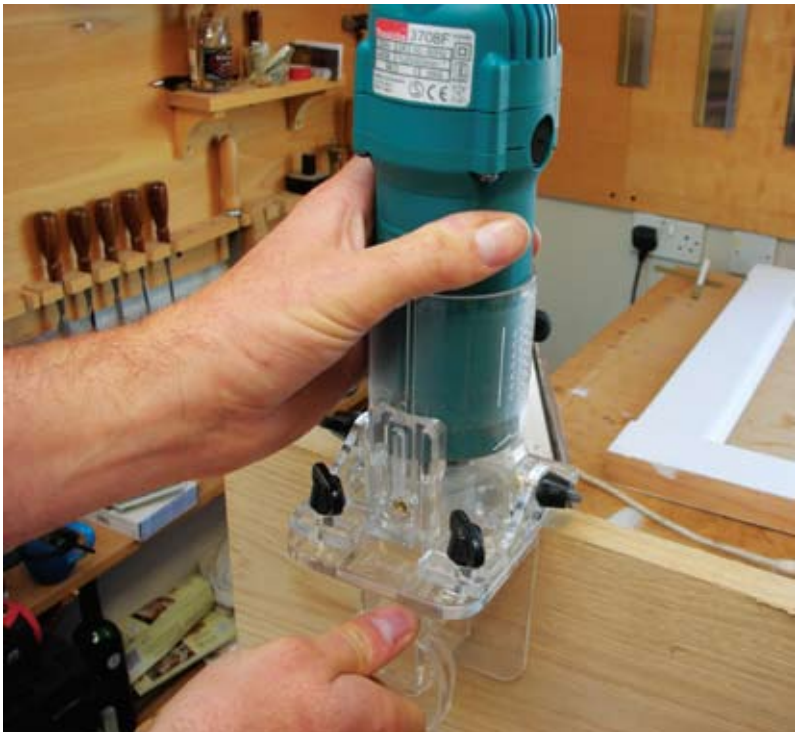
It's very difficult to get the twin screw vice to run smoothly. The weight of the front vice jaw tends to make the screws drop and bind. The vice comes with a chain cover, but I prefer it without. It has a Victorian engineering feel and a steam-punk style.

11 **Final shaping of the front rail to accept the pattern maker's vice. Similar shaping was required on the end rail which was bolted through slots onto the worktop. The twin screw vice on the other hand was relatively straightforward to fit**

Cupboards

12 **The first things to be made on the bench were the cupboards for the base. The bench dogs along the back edge proved very useful**

Walnut veneered MDF is used for the cupboard carcasses and birch ply for the drawers. The MDF is edged with veneer which is available pre-glued in rolls and is very easy to apply with an iron and wallpaper roller to help press it down. I trimmed off the edging with a Makita laminate trimmer and an end trimmer, although this process can be done with chisels or a block plane. Light sanding helps blend in the edging. All the panels were sanded through 180, 240 and 320 grit with an orbital sander but before the components were glued together the finish was applied. All the panels were biscuited and glued and when set each carcass was screwed into the frame.



13 **This little edge trimmer from Makita is sufficiently stable to work on the edge of a panel**

14 **End trimmers are a useful investment if you have multiple components to prepare**

15 **The cupboards are fixed in place and, with the back boards fitted, give the necessary bracing to the base frame**

Drawers

The drawers are constructed from 15mm birch ply with 6mm birch ply bottoms held in a routed groove. The drawer units are again biscuited for speed and a neat outside finish, although they could have been screwed. A light sanding, but no finish, was applied. To add a touch of luxury, soft close Blum runners were used. Now it's a pleasure to take out or put away tools. On occasion I've been known to open and close them for no particular reason.

I've added sliding trays to fit in the drawers. The drawers ended up quite deep so it would have been a waste of space and a potential dumping ground.

The drawer fronts are false and can be positioned and fixed after all the drawers are fitted and aligned. This technique is the best method to get all the drawers to have the same panel gap. Dividers were made up to hold tools in place like Dominos, sanding disks etc.

16 **A place for everything and everything in its place**

Extra features

I wanted to have a few custom modifications, firstly I have routed a groove in the top, perpendicular to the front, about 150mm long. This takes a custom-made brass strip, it gives me a stop when planing thin stock. When teaching we nail strips of MDF into the bench's sacrificial tops. This is exactly the same concept only no nails. The brass strip was milled on our milling machine, we can get a great level of accuracy ensuring the strip fits perfectly in the groove.

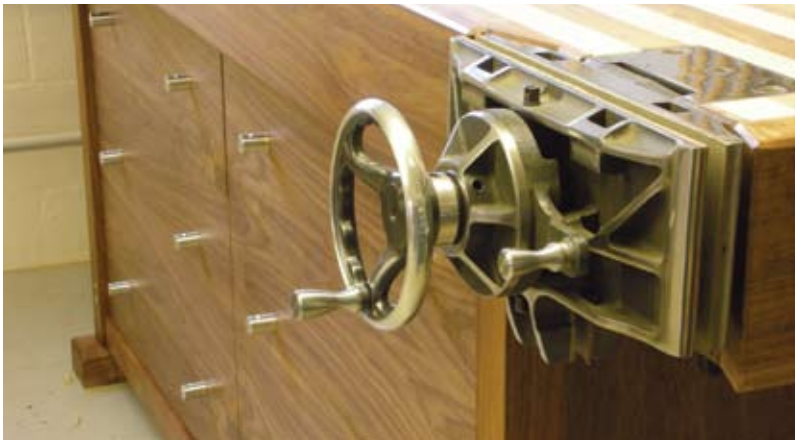
At the back of the bench I've added a lip. This stops items falling down never to be seen again and it also gives me something to push against when using the Domino or biscuit jointer.

The bench dogs match the handles on the drawers and the plugs used on the legs. The handles on the drawers have also been milled with a slight thumb grip on top.

17 **Aluminium bench dogs were machined at the same time as the bolt head caps used on the base frame**

18 **Along with the rear bench dogs, a brass bar is used to secure a sacrificial MDF top for work likely to damage the surface**

19 **The pattern maker's vice allows me to work on some pretty unusual shapes…**



20 **… and when polished up is quite something to look at in its own right**

Finishing

I've sanded the bench to 320 grit then a heavy coat of Osmo Polyx Oil. This is left to sit for up to one hour. It should be sticky with a film forming on the surface. Then put more Osmo on a cloth and rub into the previous coat. This should dissolve the sticky layer, when the cloth is moving freely, change to a clean one and buff vigorously, changing the cloth frequently. This process can be carried out daily until the required finish is obtained. I've used Osmo for six years and found it to be a great, durable finish. This process of application has consistently given me the best results. F&C

Suppliers

Pattern Maker's vice
Veritas
www.veritastools.com

Twin screw vice
Axminster Power Tools
www.axminster.co.uk

Aluminum and brass for machining
Metals 4 U
www.metals4u.co.uk

Timber
W L West & sons
www.wlwest.co.uk

Osmo
www.osmouk.com

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