When I finished my previous multifunction woodworking bench, some of you asked me whether it could be scaled for smaller workshops. Well, my first idea was to make it modular, and finally, using the same building system, I've designed this modular bench.



It's an addition system, where pieces are glued together until they reach the desired thickness, so it's going to be easier to build and will require fewer tools.

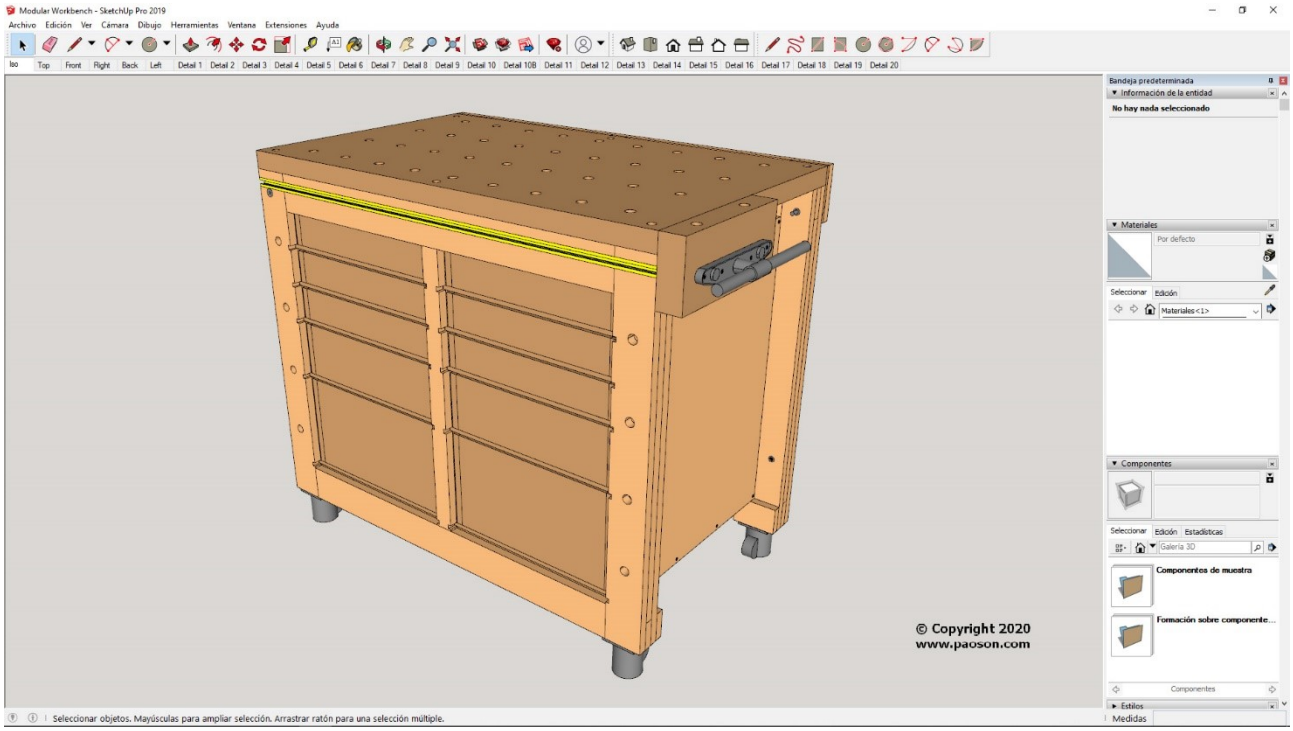








If you're interested in making this bench, I recommend watching all the videos for my previous **multifunction bench**. The design is very similar, but some steps were different and you might find ideas that are better suited for your tools or the way you work.



It's built using the same system as the Multi-Function Workbench I made, but this one is smaller, about 100cm long and 60cm deep.

Scaling the modules is very easy. You only need to print out the cutting list and the exploded 3D drawing that shows the reference of each piece. If you want to make it wider, look for all the horizontal pieces and add or subtract the difference.

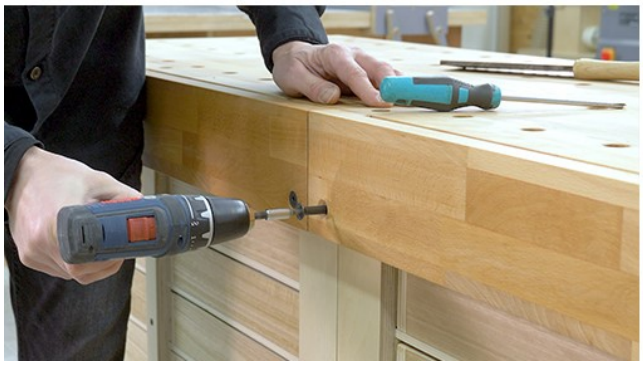
If you want to change its height, do the same with all the vertical parts, for example, if you want to use different wheels. You can also make the legs longer and not install wheels, or you could make one longer module with a leg in the middle.






I'll use it as a mobile tool stand so that I can work more freely with tools on the table, like a **lathe**. Attaching the modules to one another is pretty easy. First I have to loosen and rotate these two plywood pieces.






Now I must lock the wheels of one of the modules and bring the other closer until they touch, and lastly, fasten the connecting screw. This kind of **wheels** allows us to adjust their height so that the modules are level.

That's one of the advantages of using these wheels; though they're harder to lock than others, once they're locked they provide more stability to the bench, and their height can be adjusted. If the floor is perfectly level, you might be able to use an ordinary set of wheels.






I've installed this gear-driven vise. It's called **Twin Turbo Vise** and offers a wider range of advantages compared to a regular vise. We can choose between two speeds depending on our needs, it has wide opening jaws to hold large workpieces.

The separation between the threaded rods is also wider than usual, meaning it can hold wider workpieces, and you can hold pieces on their ends without the vise tilting to one side.

Of course, you could also install a normal front vise. With this vise I can use the bench dogs I made for my previous multifunction bench. They will allow me to hold pieces in various ways for many kinds of jobs.






The joining mechanism is sturdy enough to hold large pieces spanning both modules. I will also be able to use the **holdfast clamps** I made a few months ago. With them I can hold long pieces on the front of the bench.

I've also attached two **t-tracks** profiles on the front to allow for more versatility when holding workpieces.






I've bought two small **cast holdfast clamps** that will also come in handy. They're even faster and easier to use, and are just as good at holding. The plans for this modular bench on my website include all of these accessories, and I'll also leave links to the materials I used in the video description.

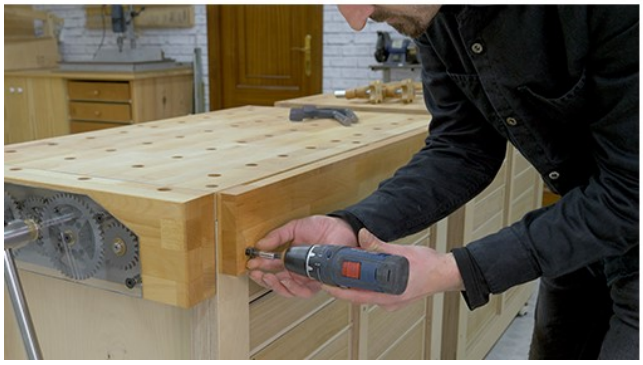
The modules have great storage capacity, with removable drawers of various sizes. I can swap drawers or take them out so I can have my tools on hand anywhere. I'm planning on make all the stands in the same way, so I can swap drawers and boxes between all the stands and benches in my workshop.

I installed organizer boxes inside that I can also move around and swap. I won't lock them so I can access their contents quickly. This time I'll use grooves rather than drawer slides; I think both approaches have their advantages and disadvantages.

Of course, slides make it easier to open the drawers, but by doing this I can have bigger drawers, at the same time reducing weight and costs, besides obtaining more mobility, like I said earlier. I can also remove them to use clamps between the top and the bench.

We should be careful when opening them completely, because they don't have stops. I applied some grease on the grooves, and they open with relative ease, considering the weight that some of them bear.






For the sake of aesthetics, I've glued veneered beech MDF to the fronts of the drawers. We could also just make trays to place the organizer boxes on, or doors instead of drawers, this is completely optional.

I didn't attach a back part to the modules, I left very little space between drawers, so they'll barely get any dust, and I didn't think it was necessary for stability and firmness reasons.

Now I'll show you another configuration when joining the modules. To do that, I'll remove the two back parts that allow us to insert our saws and chisels to keep them on hand at all times. They're also meant to leave a small gap between the modules and a wall. These pieces are completely optional as well.

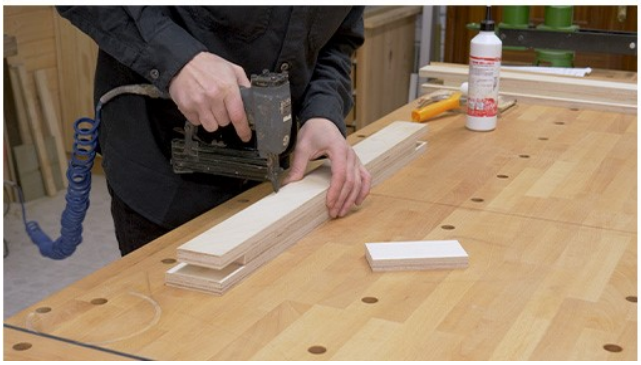
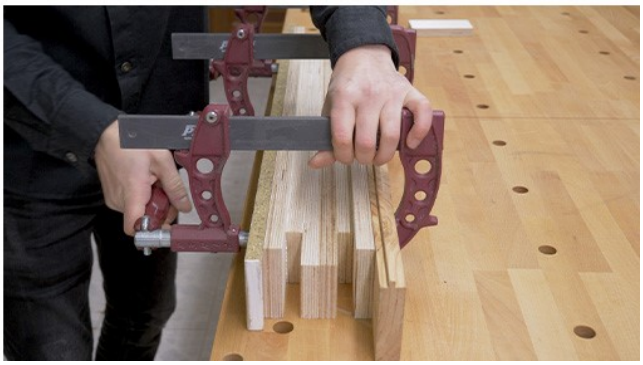





I unlock the wheels and use the same **screws** to join the modules. I made two holes in each leg, but I think that fastening the bottom screws is enough. We can lock and level the wheels again or leave it mobile.

I've made two modules for now. The advantage of this system is that little by little you can make more modules and they will always be compatible with one another.



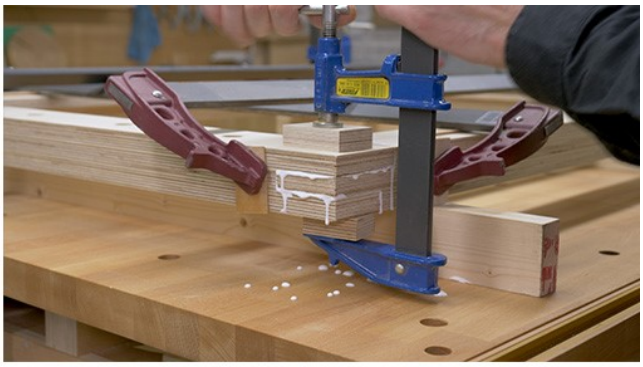
In this first article I'll show you how to make the bench frame and cabinets. First I'll cut all the parts for the frame following the cutting list with leftover pieces of hard plywood I had lying around in my workshop. I'll mark them with a reference number to make the process easier.

Now I'll glue together all the pieces that make up each part of the frame with the help of a piece of plywood acting as a jig to position the pieces and using a nail gun and clamps.






I'll sand the inner parts now that it's more convenient and drill holes for the bench dogs. I make sure the tenons and mortises are okay, and then I can put the frame together. I use some **wood glue** and put the clamps in place, without tightening them too much -- I'll do that once they're all in place.



Finally, I wipe off any excess glue and make sure the frames are square. We needn't tighten the **clamps** too much, as that could deform the frame. With a hand plane I shave down any excess wood on the tenons and sand down the frame edges.






I finished the frames, and now I drill some more holes for the **threaded inserts**, which will allow me to join the modules together. Now I'll cut out the bench cabinets. I make sure they're the proper size by introducing them in the frame.





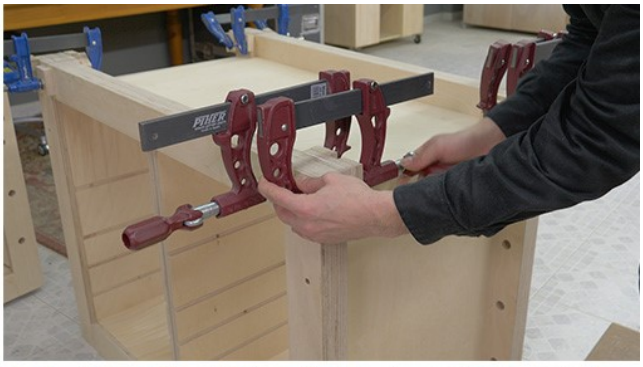
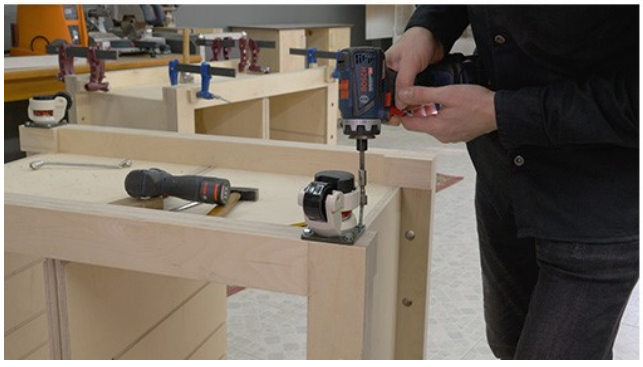

I cut grooves that will act as slides for the drawers. This will take a while with the **table saw** without a dado blade or a router, but little by little, I cut all the grooves. I use a piece of laminate flooring as a jig to cut the ends of the groove.

I cut half of the grooves and turn the pieces to cut the other half. It would be dangerous to cut them on the same side because the disc would be too far from the saw fence. Before I continue, I'll use this opportunity to sand down the inner surfaces, and now I can put the cabinets together.






I'll use biscuits, though screws could work as well. Once the glue is dry, I can join the cabinets and the frames together. I'll use wood glue this time as well, but, again, **screws** could work too.


It's important to start placing clamps between the legs and the cabinets to avoid bending the legs. When the glue is dry, I remove the clamps and wipe off any excess glue....

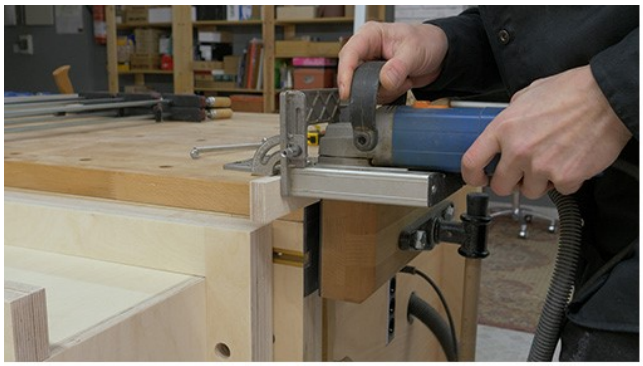
Now I'll glue together these pieces of hard plywood to make the legs thicker and to screw the **wheels** on. I'll use the same wheels as in the bench I made a while ago, sent to me by Caster HQ. They're the perfect complement for this kind of woodworking bench. I mark their position, drill the holes and place some hex lag bolts.






I'll start this second part by gluing these two pieces of plywood together to make the bench top more sturdy. I mark their position on the bench and screw them on, and I'll use wood glue as well.

I'd cut them a little too big, so now I have to trim them with a plane. Little by little I shave them until they're at the same height as the frames.






Now I'll **glue** some plywood strips to the fronts of the cabinets. First I'll drill some holes in the fronts so I can attach some small pieces on the front of the bench. I'll fasten them with biscuits and wood glue. Once the glue is dry, I'll make the holes a little deeper for the bench dogs.

I'll also cut some rebates in the parts where the drawers will slide. I'll use a hand saw and a router. I'll only do this in the front parts of the bench, the back parts will act as a stop when closing the drawers.

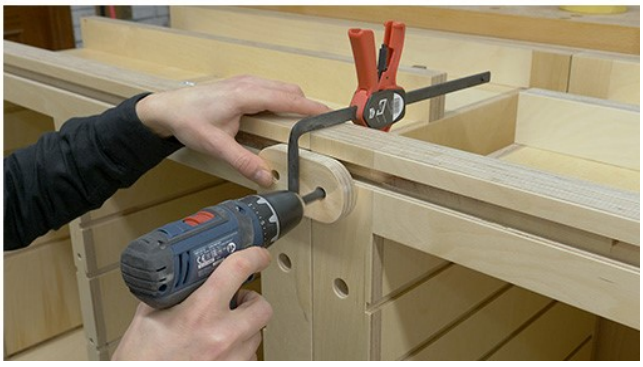






With the plunge saw and its guide rail, I'll cut a groove to insert the **T-track**. I'll use some pieces of wood as a jig so that the milling will be the same in both benches. Of course, we could also use a router here.

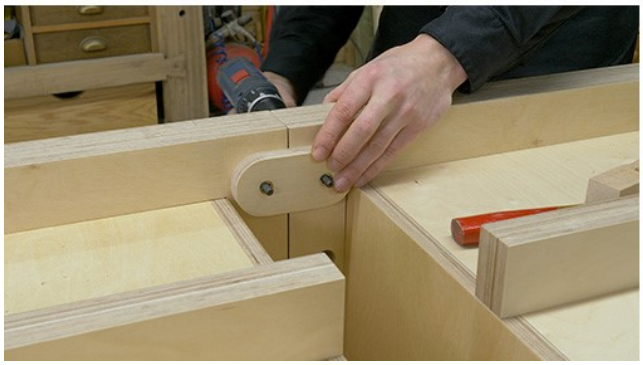


Now I'll make a chamfer to the holes in the front of the benches using a hand router. Now would be a good time to apply two coats of water-based **varnish** to all the front parts of the bench. Then, I machine all the pieces that will join the modules together.

I drill some holes for the **threaded inserts** and shape them with the band saw. I place them on the frame to mark where the holes will be.






I'll move the second hole one millimeter to the left, so that when I drive the screw, it will push the benches together. After placing the threaded inserts, I check whether the joining mechanism works correctly. It seems that it does!

The next step will be to install the bench tops. I'll use the same beech finger joint board as in my previous multifunction workbench, and which, again, has been sent to me by the company **Basic Madera**. It's precut, but I'll use a plunge saw to adjust it to the bench's measurements. I'll cut it 2mm shorter on both sides to account for expansion.






Now, with the column drill, I'll make holes for the **hex lag bolts** that will secure the top to the frame. I'll use a bit with the same diameter as the washers I will use up to around half of the board's thickness.

I'll finish the hole with a bit of the same diameter as the screw, and on the frame, a bit that's 1mm smaller. I'll make the back holes of the top bigger with a bit 2mm bigger than the screw I will use, and also to account for the board's expansion. Now I'll sand it down and apply two coats of varnish to the underside of the top

And now I can finally install the vise. Like I said in the previous video, I'll install a new kind of gear-driven vise invented by **Andrew Klein**. I won't go into too much detail on the installation process; Andrew has a few, very detailed videos on his Youtube channel. First I'll clean and varnish the vise metal plate.

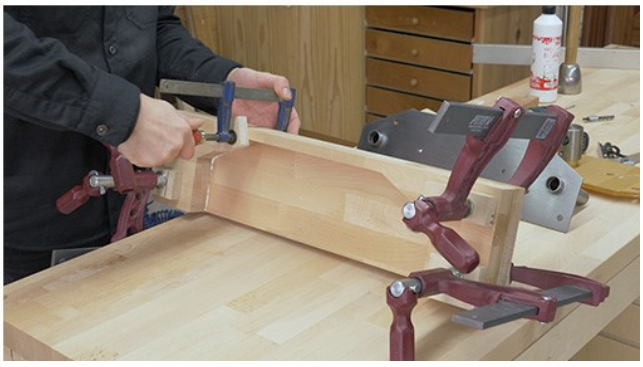





While I wait for the varnish to dry, I'll mark the positions of two nuts and bushings on the underside of the top. I'll join two pieces of plywood with screws to make the top thicker. The measurements of this bench are a little cramped for this kind of vise, but I think I'll be able to adapt it.

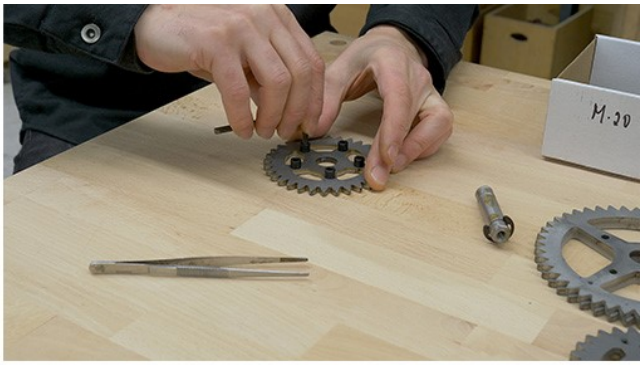
I've cut a piece of plywood to acts as a spacer to screw on the bushings in their proper place. I mark the holes and place the screws. After the bushings, I'll place the nuts in the same way.

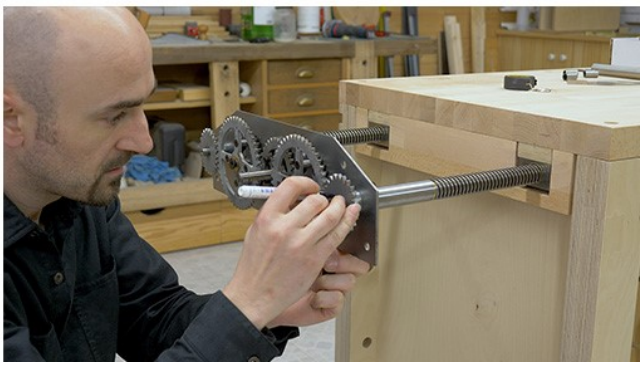


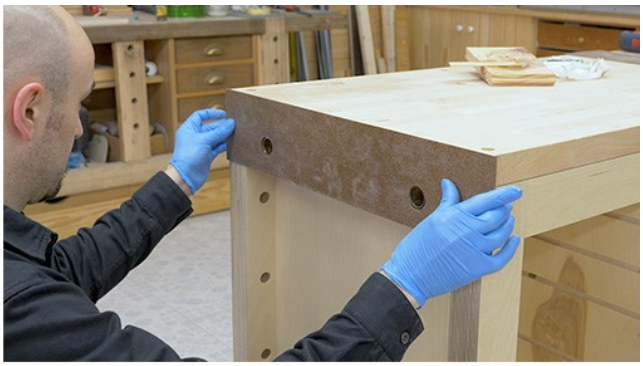
I've cut a piece of the same board I used for the top to achieve more support surface. I shape it and screw it to the bottom of the top. Now I can attach the top to the frame, and cut the wood for the vise's wooden jaws.

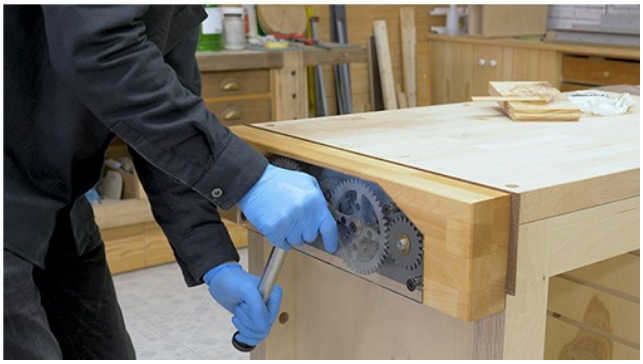
I'll shave it down to its required thickness with the planer. I mark the perimeter of the plate in the outer jaw and cut it with the **band saw**. Now I can join the two pieces.

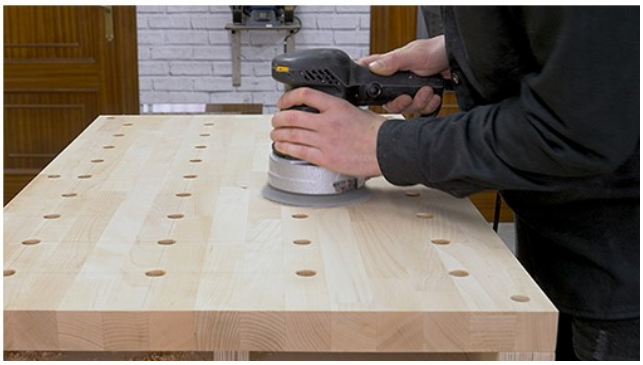
Once the glue is dry, I mark and drill on the wood all the holes to install the vise. The next step is to mount all of the vise gears. The process is quite easy if you follow the tutorial videos.



In my case, I'll also make a groove in the outer jaw to insert the acrylic of the vise. I'll use a router, and some pieces of wood as a jig, although this would be much easier if I had the right router bit. Finally, I apply some **oil-based varnish** and glue the cork protectors to the wooden jaws.

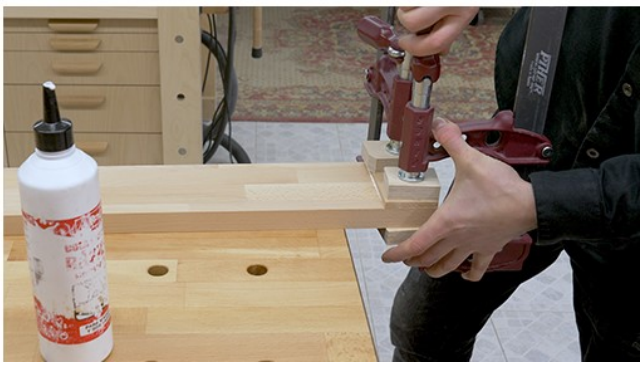


I'm going to continue building the modular bench where I left off in the previous video. First I'll leave the beech finger joint top completely flat with a hand plane. After that, I'll mark all the holes on the top for the **holdfast clamps** and the bench dogs.

I'll drill the holes with my **drill press stand** to ensure they're straight and square. I'll also use a hand router to chamfer the holes. Now I can sand the bench tops and apply two coats of my oil varnish blend.

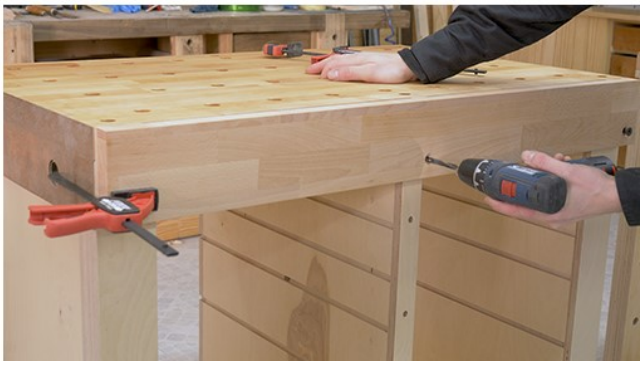


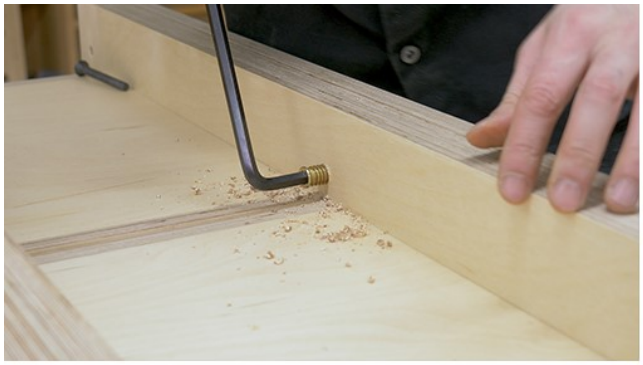
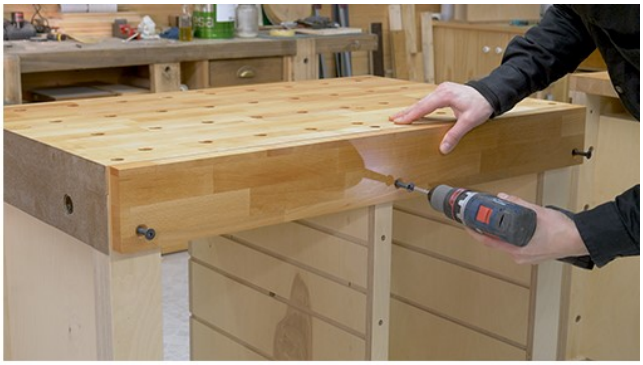
I'll cut the back parts of the benches from the same board I used for the top. After cutting them to size, I'll use the planer to shave them down to the required thickness.

From the same board I'll also cut the small pieces that will acts as spacers. Once they've been cut down to size, I can glue them together. I'll mark each of the pieces with numbers so that I will know which module they belong to.



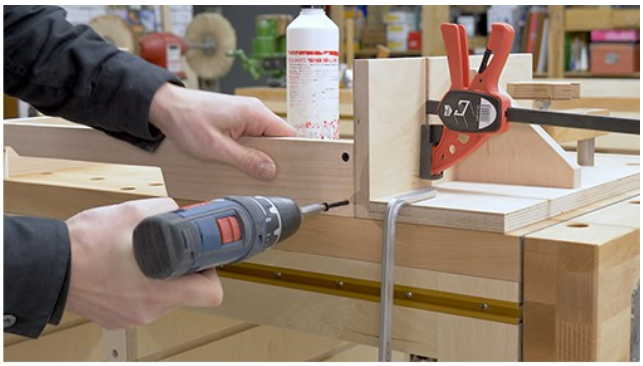
I place the pieces in each module so that I can mark the holes I already drilled in the modules in order to join them all together. First I make sure they're at the same height as the top. I drill the holes with the column drill.

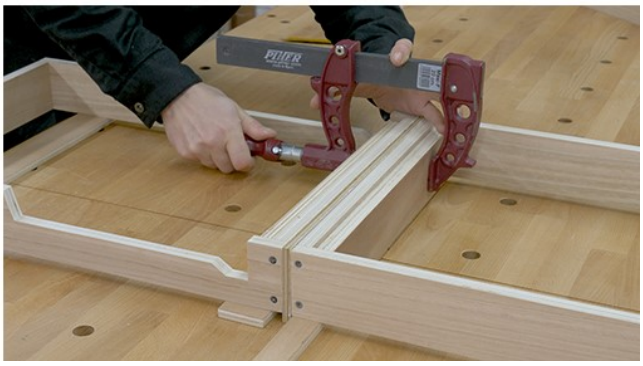





I have to remove the tops momentarily so that I can place the threaded inserts that hadn't been placed yet. After cutting the **t-tracks** to size, I fasten them to each of the modules. Now I can cut all the drawer parts.

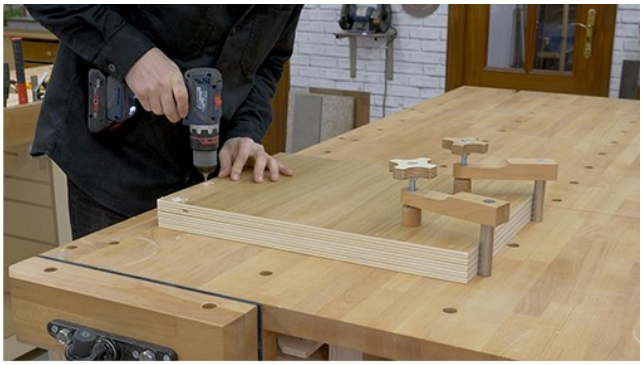
There's a lot of drawers, so this will take a while. I'll also sand all the visible edges in groups of 20 pieces so I can finish sooner. I'll use my **3D Router** and a countersink bit to drill all the holes that will allow me to join the drawers together...



...and with the **band saw** I'll machine the sides of the necessary drawers so that I can place the organizer boxes. To make this joining process faster, I'll use my old jig. As always, I predrill the position of the screws first with a bit, apply a little wood glue and place the screws. This way, the bond will be stronger.

Now I'll cut the drawer fronts. I'll use 4 mm thick beech veneered MDF. This step is completely optional, and I'm only doing it for the sake of aesthetics. I'll cut and mark them ensuring there's continuity on the veins. I apply glue and stick them to the fronts of the drawers in twos.



I'll use my old multifunction workbench to cut the drawer bottoms. This way I can show you how it works. I think the idea would be easy to adapt to these modular benches, but naturally we wouldn't have such a big support surface for the board. I've **varnished** the bottoms with matte water-based varnish, and drilled one to use as a reference to drill the rest.

I've also varnished the rest of the drawer parts, so all that's left is to fasten the bottoms. I'll use a jig so that they'll jut out the same length on both ends. Now I can insert them in the modules and attach their handles. In order to do that, I made a very simple jig to speed up the process. That's all for today. See you soon!

Modular Workbench Readers Projects:

Modular Workbench thread in Forum: