



CONSTRUCTION NOTES

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THANK YOU for your interest in the Benchcrafted Split Top Roubo Workbench!

We are proud to offer our printed plans and these Construction Notes to make your build as smooth and enjoyable as possible. As of this writing, the Split Top Roubo design has been available from Benchcrafted for sixteen years. We have sold thousands of Benchmaker Packages, and even more plans during that time. A proven design that is used by many schools, professional furniture makers, and enthusiast woodworkers all over the world. The Benchcrafted Split Top Roubo will be the heart of your woodworking shop, and we're here to make it the best it can be.

Contact us at technical@benchcrafted.com with any questions during your build.



HISTORY OF THE DESIGN

Roubo's German Cabinetmaker's Bench from "L'Art Du Menuisier"

The Benchcrafted Split-Top Roubo Bench is largely based on the workbenches documented by French author André Roubo in his 18th-century monumental work "L'Art Du Menuisier" ("The Art of the Joiner"). Our Split-Top bench design primarily grew out of Roubo's German cabinetmaker's bench documented in volume three of Roubo's series. Author and bench historian Christopher Schwarz, whose work has re-popularized several classic bench designs (most notably Roubo's simpler workbench from Plate 11) was also an influence through his research and writings. We built a version of Roubo's German bench and it served as a platform from which the Split-Top Roubo was conceived.

We were attracted to the massive nature of Roubo's German design and were interested to see how the sliding leg vise in particular functioned in day-to-day use. From the start we opted to do away with the traditional moving-block tail vise, with its penchant for sagging and subsequent frustration. During the bench's development, the Benchcrafted Tail Vise emerged. It has proven to be an excellent work holding solution, solving the problems of traditional tail vises without sacrificing functionality, such as the ability to clamp between open-front jaws. For all the aggravation that the Benchcrafted Tail Vise eliminates, that feature isn't missed all that much. In building the prototype bench and using it daily through several projects both large and small, the better features of the bench began to emerge. Our prototype bench (with developments) is still used on nearly a daily basis in our test shop.



First version of our prototype bench, based largely on Roubo's German bench

The distinguishing feature of Roubo's German bench is the sliding leg vise. When we built our version we decided at the outset that the

bench should have a sliding leg vise, just like the Roubo. This vise has one major advantage. It excels at holding large or long workpieces very securely.

Think of the sliding leg vise, coupled with the stationary leg vise, as a widely adjustable twin-screw vise. You can slide the vise all the way to the left for narrow work, or move it to the right for working the ends of wide boards. It holds the work rock solid, and eliminates having to lift a large, heavy panel high to place it between the jaws as one would with a twin-screw. The sliding leg vise has one major drawback however: it gets in the way. The chop and protruding hardware are always front and center, knocking into a leg or hip, frequently needing to be slid away from the work area. Since the vise was built to be easily removable, its mostly kept stored away.

Later, a sliding deadman was added to the bench to compare its function with the sliding leg vise. The



deadman has many of the same functions as the sliding leg vise when coupled with a clamping accessory. It works well with the Veritas Hold Down and Surface Clamp, the Gramercy Holdfast, and of course the Crucible Holdfast which we sell. Keep in mind that our bench plans are designed to be used with the latter. Other manufacturers' products use a 3/4" diameter hole, the Crucible Holdfast uses a 1" diameter hole. The deadman serves quite well compared to the sliding leg vise. In fact, since building the deadman, the sliding leg vise has been gathering dust. The deadman never gets in the way since it's completely flush with the front of the bench. We include a sliding deadman in the Split-Top Roubo design instead of the sliding leg vise for these reasons. It's a more refined accessory, and fits in better with the principle of "effortless work holding".



On the heels of the Benchcrafted Tail Vise and its ergonomic hand wheel and quick, easy action, we devel-

oped the Benchcrafted Glide Leg Vise with the same operating principles in mind. The prototype was tested for several months. The Glide took a permanent position at the front of the bench and we couldn't be more pleased with its function.



Second version of our prototype bench, with Benchcrafted Glide Leg Vise, Benchcrafted Tail Vise and Sliding Deadman

Having refined the three major workholding elements of the bench, we built the first version of the Split-Top Roubo: a 6' bench with knockdown joinery and a twopiece, removable top, all intended to make the bench easy to move while still providing a robust structure. A 4" thick top in any species is a bear to move around. Splitting the top into two pieces makes the task more manageable. The gap is sized to be wide enough to accommodate a parallel clamp head in order to hold work or cabinetry down to the top. This is a feature found on many modern workbenches.



We then built a larger, 87" long version of the Split-Top Roubo with a more robust base with legs at 5-3/8" x 3-1/2", modeled after Roubo's original 6" x 3" legs, a sliding deadman, shelf, and a new accessory, the "Gap Stop", to further take advantage of the gap between the tops.



Split-Top Roubo, 87" version with shelf, sliding deadman and Gap Stop



Split-Top Roubo, c. 2012 with new Crisscross and redesigned hand wheel



In 2012 we completely revamped our handwheel designs, making new foundry patterns around a design reminiscent of Studley's famous workbench, with its "piano-maker's" vises. The same year we developed the Crisscross, which replaced our roller brackets with a much more robust, simple, and effective mechanism. The Glide Crisscross was born.

Crisscross Retro, Split Top Roubo, 2012





The Gap Stop fits neatly between the tops (but still slides easily) and serves as a planing stop, or for any time you need to work across a board. It rests on the tops of the short upper rails, and ramps on the underside of the Gap Stop allow the Stop to raise up to 5/8" by simply sliding the Stop to the left.

The Gap Stop has its own gap running down the middle. This is

a handy spot for storing tools without cluttering the bench top. It also prevents tools from rolling between the gap and falling to the shelf below.

We've designed the base with knockdown joints on the long rails using our own knockdown hardware: Benchcrafted Barrel Nuts make construction and assembly quick and easy. This knockdown joint is as robust as a permanent joint, plus it makes moving the bench easier. The tops are also easily removable. The tops key onto four massive, well-fit tenons and lock to the base with four Spax lag screws. It effectively makes the tops and base one unit, and offers the option to tighten things up should they tend to loosen with seasonal changes.



A few years later we added a double lead acme screw to the Glide Leg Vise and added two knobs that we repositioned around the perimeter of the handwheel for our current "ship's wheel" style hand wheel. Our current Chop reflects a redesign implemented when we began production of our Split Top Roubo workbenches in 2018.



The Benchcrafted Split Top Roubo Workbench

BUILDING TECHNIQUES

Tackling a project of this size requires knowledge and skill in basic woodworking processes and techniques that fall beyond the scope of these notes. If you are just getting started in woodworking, get some experience under your belt first by taking some classes, or learning from a friend or local club.

Please feel free to contact us at **technical@benchcrafted.com** if you have any questions about the plans or the bench.

IMPORTANT NOTE ABOUT SAFETY

With any woodworking project using hand or power tools, your own personal safety should be your first concern, and is your own responsibility. Under no circumstances should you perform an operation or technique if you feel unsafe or unsure of yourself. Use guards and safety measures at all times. Keep in mind that the parts for the bench, once assembled, are very large and very heavy (especially the top sections) and take a bit of effort and strength to move around the shop and process through machines. Get help if you think you'll need it, and make your physical well-being your first priority. You are responsible for how you work, and what happens in your shop.

CHOOSING WOOD

The prototype for this bench was built using soft maple. This is an acceptable wood for benches. It's easy to work, heavy enough, stiff enough, inexpensive and readily available. However, we also have built benches from hard maple and ash. These are all excellent woods. Hard maple, although expensive in many areas, is the traditional choice. All of our production benches at Benchcrafted are made using hard maple. The abundance and low cost of ash have made it a popular choice lately. It's stiffer (but lighter weight) than hard maple and it makes a very beautiful and functional bench. Softwoods like yellow pine and douglas fir are also considerations. These are probably the least expensive choices, but not everyone likes the idea of a softwood bench. We don't recommend building the Split Top Roubo with any softwood, but if you have no choice, you should use southern yellow pine since its the hardest and heaviest of the pines. Beech, if you have it in your area, is also an excellent choice. No matter what wood you choose, get it in the shop and let it acclimate for as long as possible before milling, at minimum three days.

BUYING & ORDERING LUMBER

You're going to need about 150 board feet of rough 8/4 lumber for the bench. If you're able to pick through the lumber at your local yard, try to find boards for the top that are either around 5" wide or at least 10" wide. This is usually enough to straight-line rip and joint the boards for the top. If you end up with a bunch of boards around 6" or 7", you'll end up with a lot of waste when you rip the boards for the top, and you might find yourself short on stock as the project moves along. You can edge glue narrower offcuts to make a nominal 4" laminate, but we like to have full thickness laminates in our production benches. When we build this bench we order 200 board feet of 8/4 stock, straight-line ripped and skip planed.

We do have some leftover, but this comes in handy for building accessories and other projects. The best approach is to make up a rough list of what you need from the measured drawings and pick through the stack at the yard for the best boards. We offer an S4S Kit of surfaced boards if you'd rather have all that work done for you. See our website for more details.

GET ALL YOUR STUFF IN ONE PLACE

Don't start to cut wood unless you have everything you need to finish the bench. We're serious about this. It's very easy to make mistakes if you begin the build without the vises in hand. This includes the knockdown hardware, the vises, and any accessories you intend on adding to the bench after it's built, like holdfasts for example. Also, read completely through the Glide Leg Vise / Classic Leg Vise and Tail Vise instructions before starting the project. This bench, if built correctly, will last the rest of your life and those of future generations. Don't take any shortcuts, and don't rush it.

WORKING FROM THE MEASURED DRAWINGS

The measured drawings are comprehensive and include some dimensions that you won't necessarily need, but are included for reference. For example, the locations and dimensions of the leg mortises on the underside of the top are given. These mortise locations are scribed from the tenons at the tops of the legs during the assembly process, the tops being positioned relative to the actual base, not by measuring. The same applies to some aspects of how the vises are installed. Follow the sequence outlined in these notes, along with the vise installation instructions, and the reference dimensions will become apparent.

VERTICAL POSITION OF THE LEG VISE & BUILDING A SHORTER HEIGHT BENCH

You'll find some notes on page 2 regarding the position of the leg vise screw (see Front Left Leg) and on page 4 (see Vise Chop). In 2025 we released a new version of the Crisscross which allows more flexibility in the position of the leg vise, and for building a shorter height bench. You'll see that the vise screw is shown in the lowest possible position, close to the Crisscross mortise, but that it can be raised up to 5" from the illustrated position without interfering with other bench components. If you choose to raise the screw position you won't need to bend over as much to operate the vise. Also, if you leave the screw in the lowest possible position as drawn, this provides the opportunity to lower the height of the bench up to 5" (so, a 30" high bench) without major deviation from the plans. You'll just need to lower the mortises for the upper rails, and adjust the spacing of the holdfast holes in the front right leg. You can also raise the Crisscross along with the screw if you'd like to maintain the space between the Crisscross and the screw. The distance between the Crisscross mortise and the screw (1-3/4" on the plans) can vary without affecting the function of the vise. 1-3/4" is simply a minimum.

BUILD THE BASE FIRST

If you have a shop without a lot of extra room, you should build the base first. The top is much larger and heavier, and if you build it first chances are you'll have to move it around the shop while you build the base. Ideally, you'll want to glue up the tops as the last step before installing the Benchcrafted Tail Vise so you can marry the top to the completed base when it's done. Moving around the finished base components while you build the top will be much easier. Of course, if you have a shop large enough it doesn't much matter what you build first.

The base parts are made from 8/4 stock milled to 1-3/4" thick. The legs are glued up from two 1-3/4" boards to make a 3-1/2" thick leg. The base joinery is basic mortise and tenon work. We've used a number of techniques to cut this joint. Use whatever method you are most comfortable with. To join the four short rails to the legs we use drawbore pegs. This is an excellent technique which locks the base parts together using pegs driven through slightly offset holes drilled through the tenons. You can learn more about drawbored joints in various books and websites. Try a web search on "drawboring".

KNOCKDOWN JOINT TECHNIQUE

The long rails join with the drawbored end assemblies with knockdown joinery. You'll need a long, 9/16" bit to drill the hole for the bolt in the rails. It's important to drill as straight as possible so the hardware engages easily. Here's the process (you can also find this on the instructions for our Barrel Nuts, available on the website.) Cut the mortise and tenon joints first, then drill the hole in the leg for the bolt on the drill press. Drill as deep as you can on your press (newer drill presses probably won't have enough quill travel). Finish up with a cordless or plug-in drill. Assemble the two legs onto the rail on a workbench or surface and clamp the long rail at the center to hold the three-piece assembly firmly in place. You can also clamp the legs to the rails if you have some really long clamps. Now use the hole in the leg to guide your long bit into the end grain of the long rail. Drill as deeply as possible, then disassemble the parts and finish drilling just the rail until you meet the hole for the barrel nut. The bolts are 1/2" and the holes you're drilling are 9/16" which allows a loose fit. Thread each bolt fully into its nut apart from the bench to make sure the bolt is going to thread in smoothly. Sometimes bolts get dropped on concrete during the build and a burr is raised, making it difficult or impossible to thread into the nut. Do this check first to save potential frustration.

When you assemble the joint using the bolts and barrel nuts, go slowly and turn the bolt by hand (don't use a wrench) until it fully threads into the nut. A drop of oil in the nut helps the process. If it tightens up right away, you have drilled your holes offset and the threads are binding. DO NOT proceed, otherwise you can seize the bolt in the nut. Find what's wrong before you make this mistake. The strength in the joint comes from the threads, not the fit of the barrel nut and bolt in their holes, so the fit should be loose to allow the bolt to thread easily into the nut.

LEG DETAILS

You'll want to accomplish all the necessary operations on the base parts before final assembly. Cut all the joinery, including the tenons at the tops of the legs, and proceed to dry fit the base together. Mark for the drawbore pegs and drill the offset holes in the tenons. Do not drill the drawbore holes in the tenons based on the measurements in the plans, these holes are located by direct transfer through the holes in the legs. Plow the grooves for the shelf ledgers. Drill the holes for the holdfasts in the right leg, as well as the access hole under the first dog. DO NOT cut the dog hole extension in the top of the right leg yet (see Top View, Front Right Leg) this is done later after the top is built and fit to the base.

THE GLIDE

Follow the installation instructions for the Glide Leg Vise (available on the Instructions page at benchcrafted.com) Read completely through the instructions before beginning. The entire vise should be installed with the leg free of the bench. Completely finish the milling and joint cutting operations on the base parts before installing the vise. You can completely install and tune the vise before base assembly because the Glide doesn't involve any other parts of the bench other than the leg. Make sure you leave the chop long at the top though, by at least 1/2" beyond the final top surface. You'll trim it to length and chamfer the outside corner after the bench is complete and the top is flattened. The Chop is illustrated as being 1/2" shorter than the bench height at the bottom. If you want more clearance here feel free to shorten the chop. If you deviate from the plans too much though, you'll need to raise the Crisscross mortise and screw location to accommodate the change so there is enough material at the bottom of the chop. A note on the chop chamfers and the chop thickness: when we build production chops we mill the two laminations that make up the 3" thick chop so the glue line lands where the chamfers meet the square side and top. This hides the glue line so the chop looks like it was made from one full thickness piece. This is a good way to end up with a great looking chop, but using 12/4 lumber (or more) is certainly an option as well.

WRAPPING UP THE BASE

Once the Glide is installed and running smoothly, complete the final assembly of the base. The shelf ledgers are glued into their grooves. We drive a few screws through the ledger into the rail so we don't have to use clamps. Cut the ledgers a bit short (1/8") in length, so they don't protrude past the shoulders of the rail tenons and interfere with the base assembly. If you're going with the knockdown joinery, you'll have to cut two arcs in the bottom edge of the long ledgers where they meet the barrel nuts so you can access the holes in the long rails. You can also just cut the ledger into three sections if you don't want to fuss with cutting the arcs. If you'd like to cut stopped chamfers on the edges of the legs and rails, mark for them with the base assembled and shelf in place. If you don't, there's a chance you could chamfer an area where the leg meets a rail or other areas where the chamfer would be unsightly. We usually assemble the base leaving the square corners intact, then route the chamfers afterwards or simply break the sharp corners with files or sandpaper. Don't chamfer the top edge of the front long rail where the deadman runner attaches.

THE TOPS

Select the best wood for the top. The top is built up from 8/4 lumber (thinner boards work too, its just a bit more labor to build) ripped to a nominal 4-1/2" wide and glued face to face. If some of your boards are wide enough to get two laminations from, you will likely encounter some crook as you rip the boards. Rip these boards to 5" wide (get at least 10" clear boards or 5" clear boards for the top) and let them rest for a day or two before further processing. You can rip the other boards to 4-1/2", that's usually enough to joint off any irregularities and then plane to an even width. Joint one face and one edge, then plane to thickness and width. Milling with this process makes for the most consistent and predictable top. You are building flatness into the top, rather than relying on further milling after the tops are glued up. Keep your boards as long as possible at this stage, a full 8" over length should be good. Starting with 8' boards should be adequate to account for snipe and end checks. The final thickness of the individual laminates is not important, but you do want to end up with a final top width that leaves rather thick boards at both edges. In other words, you don't want to end up with a top section that's so over width that the last lamination ends up being overly thin (narrow). To achieve this, plane each laminate a little so the overall width narrows, leaving the edge laminates as thick as possible. If you are very careful with your stock prep and gluing technique you can easily achieve the final width and the outer laminates will be parallel and square to the faces, the top requiring only facing through the planer to bring to final thickness. You don't want to have to rip a top section to final width. It will be very long, very heavy, and unwieldy to run over a table saw. A 10" saw also won't have enough blade depth to make the cut. Again, build the top so it comes out of the clamps with clean, square and parallel edges. Make two extra laminates, the exact same size as your top laminates, to use as cauls at each long edge. This will spread the clamp pressure and keep your outer laminates from being damaged by the clamps. You'll reuse these cauls when gluing on the dog strip and front laminate. Orient each laminate so the grain direction at the top surface is consistent across all laminates. This will help prevent tearout when planing.

Once you get all your stock prepped and ready to glue, you might want to place about four biscuits, dowels, or Festool Dominoes along each glue joint. This will help keep the laminates in place during glue-up, and thus greatly reduce flattening time later on. Make sure you keep the biscuits in from each end, you don't want to expose them after you cut the tops to length. Since the laminates were planed to width (4-1/2"or less) they should be very consistent and the glue-up should be quite flat afterwards. The more precise you are at each step before glue-up, the easier each subsequent step will be. We like to use a 1/16" notched putty knife to spread the glue. It guarantees the proper amount of glue and keeps cleanup to a minimum. Squeeze-out occurs in small beads all along the glue joint, and is easy to scrape off after curing. If you've never tried this before, do a test on a short section of scrap the same width as the laminates to get a feel for how it works. We recommend gluing no more than three laminates at a time. This means two glue applications per session. We also fit each joint by hand, using a #7 jointer plane to prep the surfaces and correct any errors from the power jointer and planer. If you have sharp knives in your machines and are satisfied with how your joints are coming together off the machines, you can dispense with this step.

If you would like to glue either of the top sections (front or back) at once, here's the process. To spread glue, we butt all but the last laminate short edge to short edge (gluing

surface facing up), pour some glue on from a big jug, then spread using the notched trowel over all the laminates. Flip up each laminate, insert your biscuit (or whatever you're using) and repeat until all the laminates are in place. The last laminate will have no glue on it, but the face of the adjacent laminate will be wet with glue ready to receive it. Have your clamps open and ready. We place the top on edge on a pair of sawbenches so we can apply the clamps vertically, and stagger them front to back for even pressure. Make sure you put a caul down before setting the top on the sawbenches, and then place the other caul on top. Start clamping in the middle and work your way towards the ends. Using a slower drying wood glue is a real help here. And having a second person on hand is a wise move if this is your first big lamination. There is nothing wrong with playing it safe and only gluing 2-3 laminates per session.

The rear top section should finish out at 11-3/16". If it's a tad (1/16") under or over this, it's not an issue, you can just build the Gap Stop a little wider to fit. The front section however should be accurate since you will be installing the Tail Vise into it. Glue up the main body of the front top section so it ends up right at 7-15/16". Once the two top sections are glued up, they are narrow enough to pass through any planer. Check the underside of the tops for flat using winding sticks, and correct with a jointer or trying plane, then run the whole top through the planer to make the top surface parallel. The tops are heavy. Make sure you have sufficient infeed and outfeed set up. If you prepped your stock carefully you should end up with two top sections that are nearly completely flat and just over thickness. Plane them to within 1/16" of final thickness if you are satisfied with their flatness. If you have access to a wide 12" jointer, you can flatten the tops with it, then plane to thickness. At this point you can cut the tops to final length. We use a sliding miter saw, flipping the tops over to complete this thick cut, or a track saw, likewise flipping the tops. Careful alignment of the track is necessary to reduce planing of the end grain for a clean surface. Use whatever method you feel comfortable with. The front top section will be shorter than the rear section due to the addition of the End Cap. Make sure you plan accordingly when cutting the front top section to length. Don't forget to account for the breadboard tenon if you use this joinery method when installing the Tail Vise.

INSTALL THE TAIL VISE

The front section is assembled to final width while installing the Tail Vise. The front two laminates, comprised of the dog hole strip and the front laminate need to be milled very accurately to width. The dog strip is 1-3/4" wide and the front laminate is 1-1/2" wide. Follow the installation instructions for the Tail Vise to complete the front top section. The 3/8" backing strip on the dog hole strip covers the square dog holes, which are milled into one face of the 1-3/8" thick portion of the dog hole strip. If you are using round dogs, you don't need the backing strip. Just make the dog hole strip 1-3/4" and drill your holes. We recommend square dogs though.

TOPPING IT OFF

Once the tops are finished and the Tail Vise installed you can mount the tops to the base. Place both tops upside down on a pair of horses or a low bench and arrange them exactly how they will rest on the base. Then put the assembled base upside down on the tops and shift around the tops and base until the front and back edges of the tops are flush with the

outside faces of the legs. Make sure the base is in the correct position along the length of the tops--the right face of the right front leg should be flush with the end of the Tail Vise slot.

When you are satisfied with the position of the tops mark all around the leg tenons, transferring their exact positions to the tops. You can use a marking knife or a sharp pencil. Either way, you want to end up with a nice sweet fit so the tops can't shift around. But you also don't want to have to drive the tops onto the base, because it will be very difficult to remove them. Aim for a slip fit, but not a sloppy one. The tops should drop onto the tenons after you set the base upright with only the weight of the tops. Remove the base and excavate the mortises using your preferred method. We use a plunge router and fence, cleaning up the end grain with a chisel. Cut a small chamfer all around the mouth of the mortise to help the tops ease onto the tenons. Likewise, chamfer the top of each leg tenon.

With the tops upside down and at a convenient height now is a good time to cut the slot for the deadman. Make sure you don't cut all the way to the leg mortises. The slot stops about 1" from the mortise.

PRELIMINARY FLATTENING

Set up the base in a level area of your shop (the base should have solid footing on all four legs) and set the tops in place. Check the tops to make sure they are in the same plane. Get down low and sight across the tops from the front and ends, using winding sticks to amplify the errors. You want to get the tops as completely coplanar at this time as possible. You can make small corrections by planing the underside of the top where it rests on the base. This saves from having to make subtle corrections to the entire top surface, since you can make adjustments by just planing the areas where the tops rest on the base. Use traversing strokes (across the grain) and frequently check your progress by replacing the tops onto the base. The tops should seat firmly onto the tops of the legs and the upper rails. If there are gaps, correct them. The tops should bottom out solidly, without rocking, under only their own weight. This is where building flatness into the tops during initial milling and laminating is of the utmost importance. Build the tops flat and you won't have hardly any flattening to do at this point.

When you are satisfied, use a transfer punch up through the holes in the short upper rails to mark for the lag screws. Flip the tops over and predrill for the screws. Chamfer the edges of those holes so the screws don't pull fibers out and cause a gap between the underside of the tops and the rails. Replace the tops and drive the screws. The tops should be nearly coplanar, and the entire bench should feel like one solid mass without any play or movement.

FLATTEN THE TOP

To flatten the tops and get them completely coplanar, use the longest bench plane you have. We use a #7 or #8 plane with a lightly cambered iron. Check again with winding sticks for flatness and if the tops are coplanar. You'll also want to use a 24" straightedge to verify that both top sections are even across the width. Your plane will tell you as you traverse the top because you'll get continuous shavings all the way across, but the straightedge will give you a quick read on where the work needs to start.

Before you begin planing, you'll need to chamfer the front edge of the Tail Vise slot, the back edge of the front top section and the back edge of the rear top section before you plane across (traverse) the top of the bench. This will help prevent the grain from splintering (spelching) as you work. Even with the chamfer, spelching can occur, especially if you take a heavy cut. Pay attention to the grain direction and take light cuts to start. If you blow out some of the grain in the Tail Vise slot, stop and try to glue the loose splinters back in place before continuing. The top should already be quite flat, so ideally you shouldn't have to spend much time at this stage.

After you plane across the grain, plane along the grain to get the top flat along its length. Once you get it flat, you might want to take light, regularly-spaced traverse strokes to impart a more textured surface to the top. This textured surface holds onto parts quite nicely, and helps to prevent workpieces from the skating around that a smoother surface allows. Don't be tempted to smooth plane or polish the top of the bench. You just want it flat, not slick. Toothy is good!

EXTEND THE FIRST DOG HOLE

Once the tops are flat it's time to extend the first dog hole through the top of the leg until it meets the 1-1/4" access hole bored through the leg. Use a pencil and mark around the inside of the dog hole where it meets the top of the tenon on the leg. Remove the front top section remove most of the waste from the leg. The section in the leg tenon you can drill and chisel out from the back side, which will make the task a bit easier, but once you get down into the leg itself you'll need to drill into end grain until you encounter the access hole. Once you've got rid of most of the waste with the drill, now comes the easy part. Chisel the hole square. It's (relatively) easy because all the cuts are (nearly) along the grain. You may want to start the work by replacing the top and using the dog hole to guide your chisel into the top of the leg. This works well, but since the dog hole is canted, you'll be cutting one side of the hole against the grain. Don't get too finicky here, just chisel out the waste enough for the dog to pass freely. If you have to chisel the area that's against the grain plumb instead of canted, it's no big deal. You're not going to compromise the leg. You can also use a float or coarse rasp in this area instead of the chisel. It's more work, but you'll mostly solve the grain-direction issue.

With the hole finished and the top back in place, lightly chamfer the corners and ease the edges of all the dog holes. Then, fit the dog block into the Tail Vise. Make sure you leave it a little tall (1/16"), then once it's screwed in place and running smoothly, plane it flush with the top of the bench. You may need to adjust the length of the dog in the vise, taking a bit off the top end if it sticks up above the top of the bench. Make the bench dogs according to the plans. When you face them with Crubber, make the head a little shorter to leave room for the Crubber, which just gets glued on. Glue the springs on two opposing dogs at a time so you can clamp them together and cancel out the angle of the other one, otherwise if you try to clamp the spring on one dog at a time, the angle will give you fits with sliding parts and clamps. You only need two dogs, but we like to make one for each hole. It saves from having to move a single dog around so much, and it also helps prevent small items from falling through the dog holes.

MAKE THE SHELF

If you haven't build the shelf yet, now is a good time. It makes the bench look great, in addition to having a higher purpose in its low position--it's a great place to store bench accessories and keeps things up off the floor. The shiplapped shelf boards rest on the led-gers without any fasteners. They are made from random-width boards (if you are finicky, you can of course divide the space into equal portions). Make sure you allow for wood movement here, 1/16" - 1/8" depending on the time of year you build (make the gap smaller if building in summer). The shelf boards can buckle and rise up in humid months if there isn't enough clearance in the joint.

COMPLETE THE GLIDE

Reinstall the Glide and Crisscross into the leg, close the vise completely and mark the length of the chop flush with the top, or better yet, just a little below, like 1/16". Cut it to length, then cut or plane the chamfer on the top outside corner. If your chop is a lamination, position the chamfers so they meet the square sides right on the glue line. This helps disguise the lamination, especially at the top where the end grain shows more prominently. Glue the Crubber to the chop and front of the bench. See Glide Instructions.

MAKE THE GAP STOP AND THE DEADMAN

See the plans for the Gap Stop dimensions. It's just glued together. Get the fit of the parts right between the tops before you glue it up, since it's hard to plane the Stop to thickness after assembly. The hollow areas tend to bow away from the cutting edge of your plane iron. You want it to slide in easily. Make sure you account for wood movement here. If you're building the bench in a dry time of year, make the fit loose. A trick we use for keeping the short piece from shifting around during assembly is to drive four brads into each side of the small pieces and clip them off with some nippers close to the surface. When you clamp them up the tiny points keep the pieces from sliding around. The notches and ramps for the rails are cut into the bottom edge of the Gap Stop after assembly. Wax the ramps for free movement.

Make the deadman and runner according to the plans, then glue the runner to the rail. 3/4" holes in the deadman will handle accessories from Veritas and Gramercy. 1" holes illustrated in the plans are for the Crucible Holdfast, available directly from us. We recommend both the Gramercy Holdfast (available from Tools For Working Wood in Brooklyn, New York), and the Crucible Holdfast which is also used in the top of the bench and the right leg. In the deadman it serves as a board support as well as a clamp to hold boards against the front of the bench. A shop-made wooden peg will also work as a support for long boards.

FINISHING UP

Feel free to take the bench to a nice level for finishing. But, with emphasis, leave the top toothy from your last pass when flattening. Don't sand or smooth it. For the top, one coat of boiled linseed oil, or a Danish oil type finish is plenty, followed by a light coat of paste wax. We like Minwax Antique Oil, commonly available. If you don't plan on ever gluing or finishing on your bench, no finish is probably the best. The grippy texture left by traversing the

top with a sharp hand plane is a great surface to work on. The base and ends of the top you can add additional coats if you want a more refined look. Keep finish away from the dog slot and sides of the dog block and of course the vise mechanisms.

MAKE A MARK

You've just finished a lifetime project, something that you'll use to build fine furniture for yourself, family and friends, and perhaps customers. With time, you may become quite attached to it, not necessarily because of what it is, or how you built it, but maybe because of what it represents--a means to connect with other people through your craftsmanship. In this day of mass-produced, poor-quality, soulless objects, a traditional hand-crafted workbench is akin to a family heirloom. Carve or stamp the date you finished the bench along with your name onto your new bench. Some builders like to inlay a coin minted the same year the project was finished. Whatever you decide, future generations will appreciate finding the maker's mark on your magnificent creation.

Congratulations and thank you from everyone at Benchcrafted!

