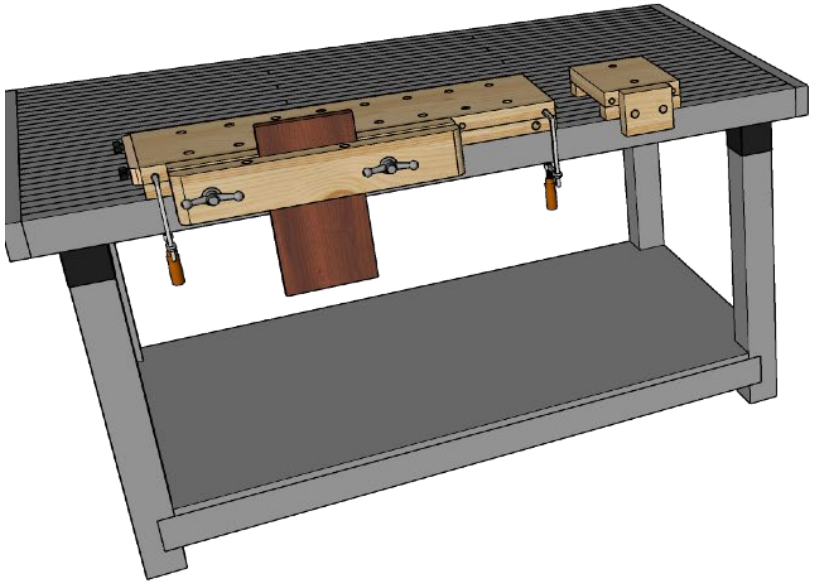
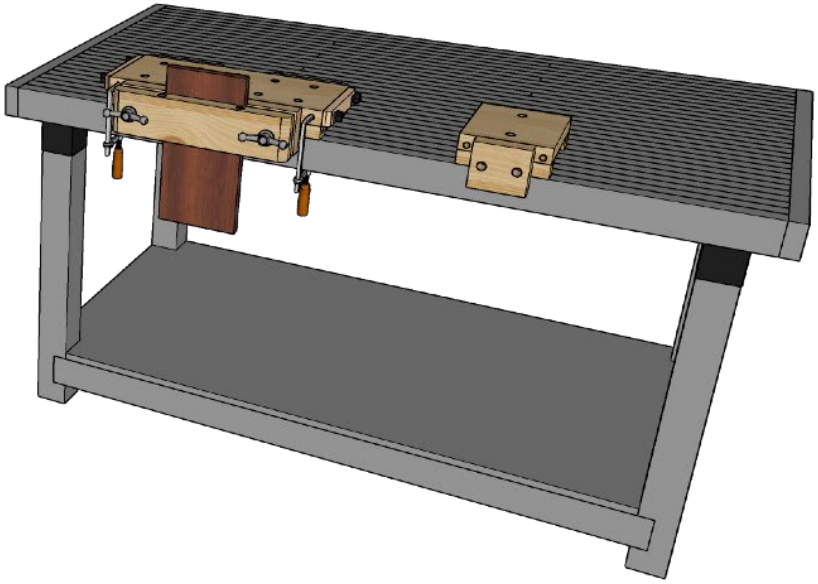
TAYLOR TOOLWORKS

Portable Affordable Workbenches





Doc. Revision 20240614

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Introduction

These portable workbenches are the result of a collaboration with furniture and box maker, and author, Doug Stowe. Doug sought a portable workbench for use in his classroom at the Clear Spring School in Eureka Springs, Arkansas, a private school he founded. He needed a workbench that could be attached to a student's desk, enabling woodworking in the classroom.

The smaller Mini Portable Affordable Workbench is a modified version of the one designed for his classroom. The Full Size Portable Affordable Workbench is an extended version of the Mini Workbench. Both benches are easy, quick, and cheap to build, portable, and offer all the work-holding capabilities of a much larger bench. These Portable Affordable workbenches are the perfect solution for those who are tight on space but still want the functionality of a full-sized workbench. They are also ideal for those who do not want to invest the time and resources in building a full-size bench. They enable many to start woodworking who do not have the shop space or resources to do so.

Both benches can be made from Home Center lumber or hardwood and an Improved Moxon Vise Hardware Kit with everything needed for the twin-screw vise. Both are simple and quick to construct and can be built in a few afternoons using basic woodworking tools. Highly portable, they can be quickly attached to numerous surfaces via a few track saw clamps and easily stowed away when not in use. The dog holes on the top, plane stops, twin-screw vise and outriggers give this bench all the work-holding capacities of any traditional bench.

This plan provides measured drawings for both benches and comprehensive step-by-step instructions for the construction process, but customization options abound. You can tailor either bench to your preferred width, height, and wood choice, offering a multitude of possibilities for individualization. The details are left for you to decide.

Cut list & Supplies

Make sure to read through this build guide **BEFORE** cutting any wood. Familiarize yourself with the tools, techniques, and your approach to building this project.

Item	Quantity	Sizes needed		Material
		Mini	Full Size	
Workbench Top	1	9 1/8" x 22"	10 1/8" x 36"	1 1/2"
Workbench Risers	2	1 9/16" x 1 3/8" x 22"	1 9/16" x 1 3/8" x 36"	1 1/2"
Workbench Jaws	2	4 3/8" x 18"	4 3/8" x 24"	1 1/2"
Plane Stops	4	8 1/2" x 1 1/2"	9 1/2" x 1 1/2"	3/4"
Outrigger Top	1	9 1/8" x 8"	10 1/8" x 8"	1 1/2"
Outrigger Risers	2	1 9/16" x 1 3/8" x 8"	1 9/16" x 1 3/8" x 8"	1 1/2"
Outrigger Fixed Jaw	1	4 3/8" x 5"	4 3/8" x 5"	1 1/2"

You will need about 6 feet of a 2x12 piece of Hardwood for either Workbench.

The wood you choose for the Hardwood is up to you. The Jaws and Plane Stops should to be smooth and perfectly flat.

All of the Workbench hardware can be purchased from Taylor Toolworks:

Improved Moxon Vise Hardware Kit (10" or 12" Long 3/4-10 Threaded Rods, 4-1/2" Cast Knobs, Square Nuts, Washer and Bushings)

Small T Knobs

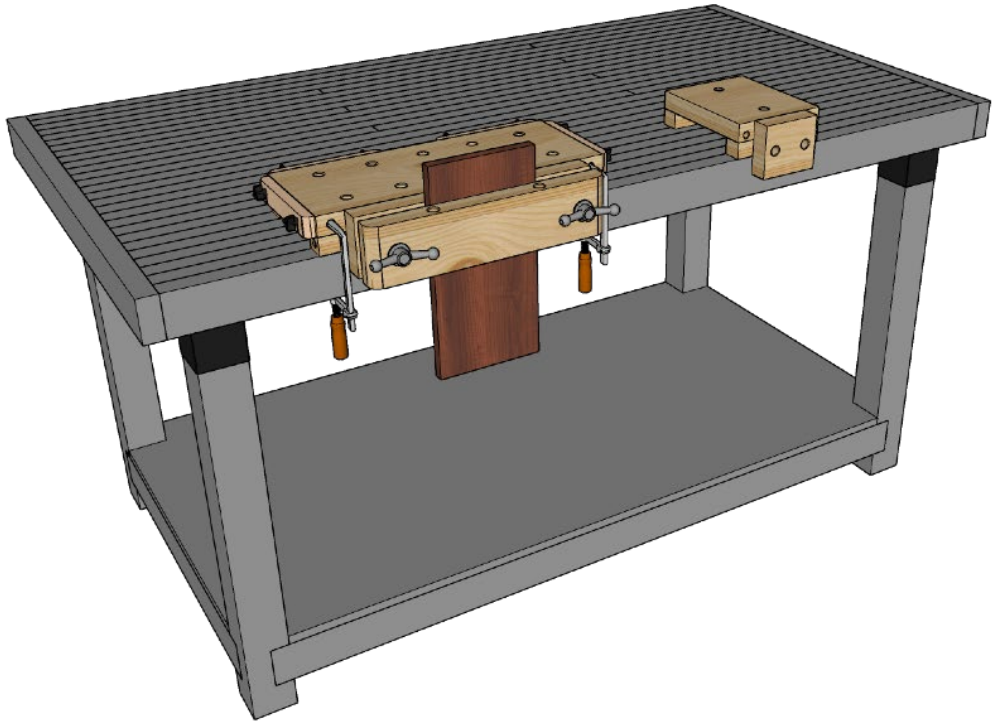
Vertical Workbench Clamps

Adjustable Bench Dogs

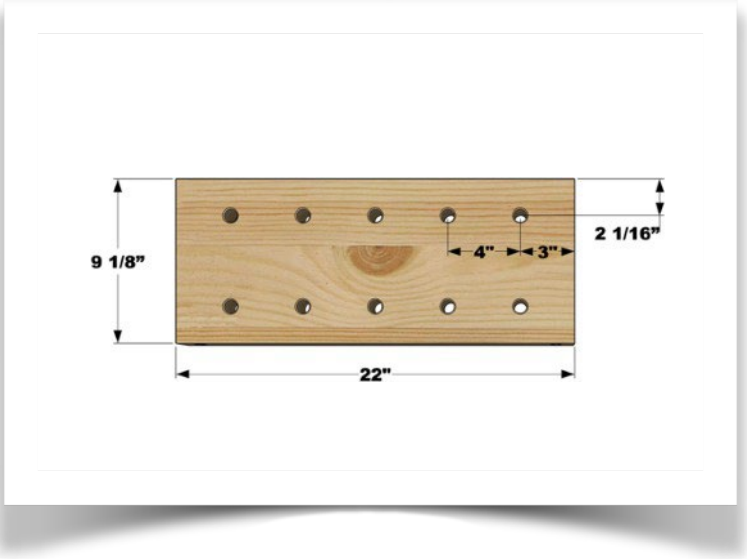
Brass Bench Dogs

Track Saw Clamps

Mini Portable Affordable Workbench

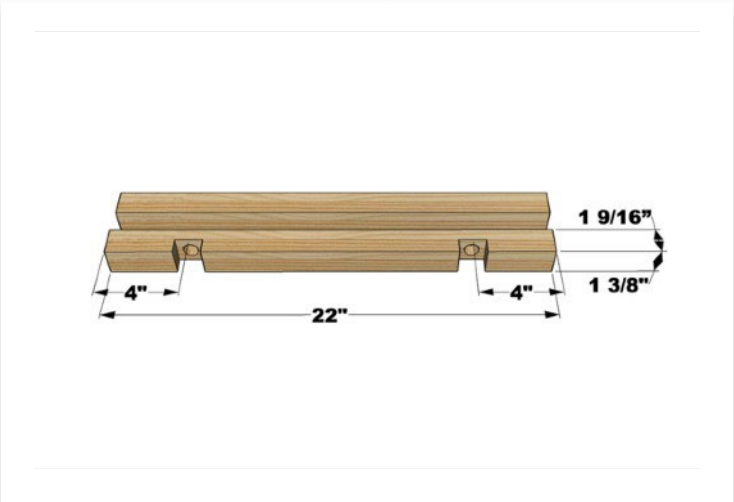


Mini Workbench Top

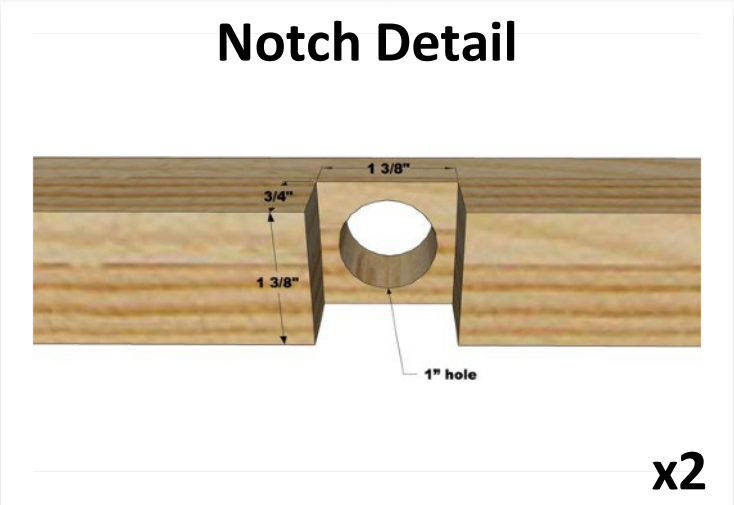


- Cut one piece 9 1/8" wide x 22" long x 1 1/2" thick for the Top.
- Mark locations of the bench dog holes 2 1/16" from both edges, starting at 3" from each end, and the rest 4" apart as shown.
- Drill the bench dog holes with a 3/4" forstner bit.
- Chamfer the holes slightly.

Mini Workbench Risers

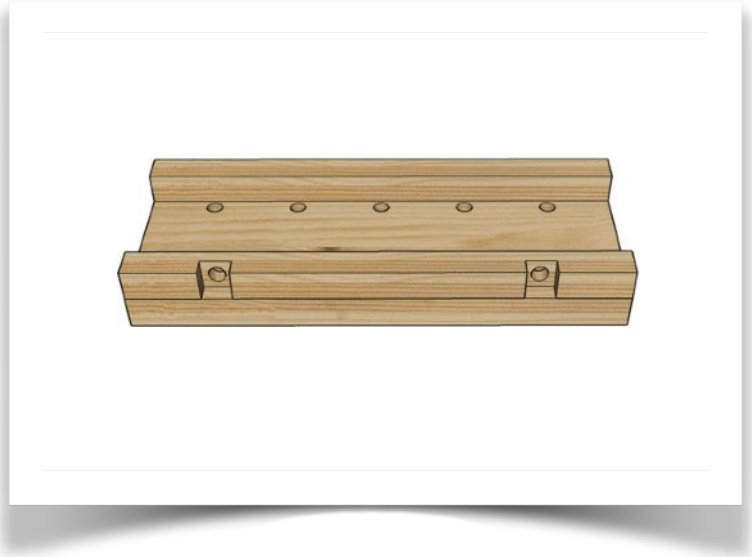


- Cut two pieces 1 9/16" x 1 3/8" x 22" for the Risers.



- On the 1 3/8" face, cut two 1 3/8" wide x 3/4" deep notches in one Riser, centered at 4" from both ends.
- Next drill a 1" hole centered in each notch.

Mini Workbench Risers (continued)



Glue tip: to keep the pieces from slipping around when glueing, apply glue to one surface and then sprinkle a very small amount of salt to the glue. This will prevent the pieces from sliding around while you are applying clamps. This will not impact the strength of the glue joint.

- Flip the Top over, so the chamfered dog holes are underneath.
- Glue the Risers onto the bottom face of the Top as shown.

Note: Make sure the long edges of the Risers are flush with the long edges of the Top.

- Allow the glue to completely dry.
- To ensure the long edges of the Top and Risers are perfectly flush, run this assembly through the table saw or jointer and trim ONLY $^{1}/_{16}$” off each long side.

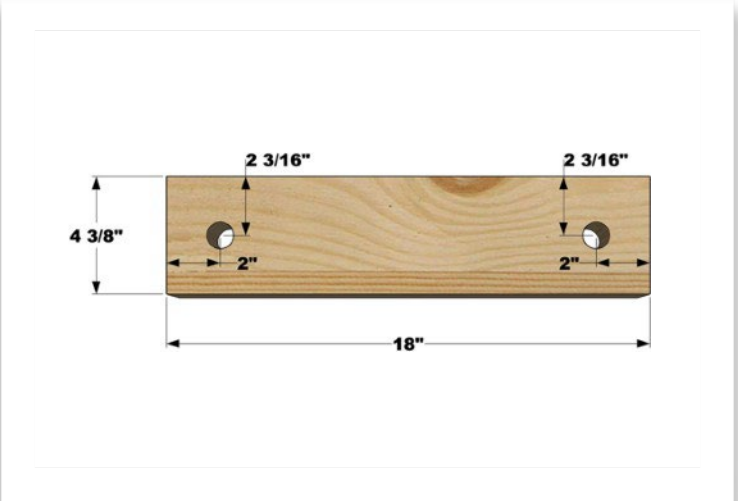
  The width of the final assembly should be 9”.

Mini Workbench Risers (continued)

- Drill and chamfer four, 1/2” holes, 3” deep, centered on the ends of both risers. These holes will allow the Workbench to be clamped down from the ends using track saw clamps.

- Drill and chamfer two additional 1/2” clamping holes, through the front face, 1” down from the top and 1” over from the left and right ends. These holes allow clamping from the front with track clamps.

Mini Workbench Fixed Jaw



- Cut two pieces 4 3/8" wide x 18" long x 1 1/2" thick for the Jaws. Set one piece aside for now.
- On one piece, drill two 1" holes, 2" from each end, and 2 3/16" from the top edge as shown.

- Drive two 1" Steel Bushings into both 1" holes. Use a rubber or dead blow mallet to prevent damage to the bushings. Make sure the end of the Steel Bushings are flush or slightly below the surface of the Fixed Jaw.

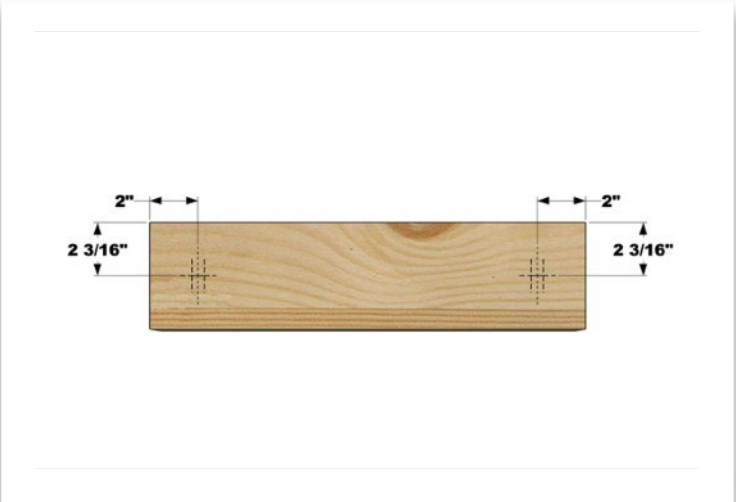
Mini Workbench Fixed Jaw (continued)

- With the Top assembly still upside down and on a flat, straight surface, glue the Fixed Jaw flush with the top surface and centered, 2" from each end.

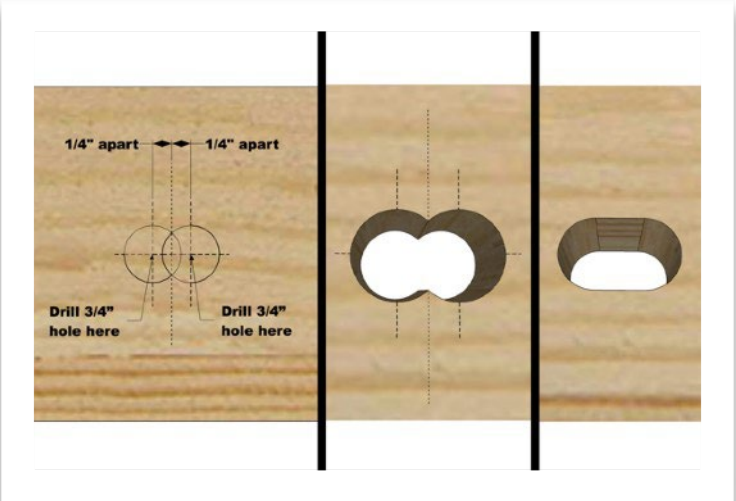
Apply glue to one surface and then sprinkle a very small amount of salt on the glue to prevent the pieces from slipping as clamps are applied.

- Allow the glue dry completely.

Mini Workbench Movable Jaw



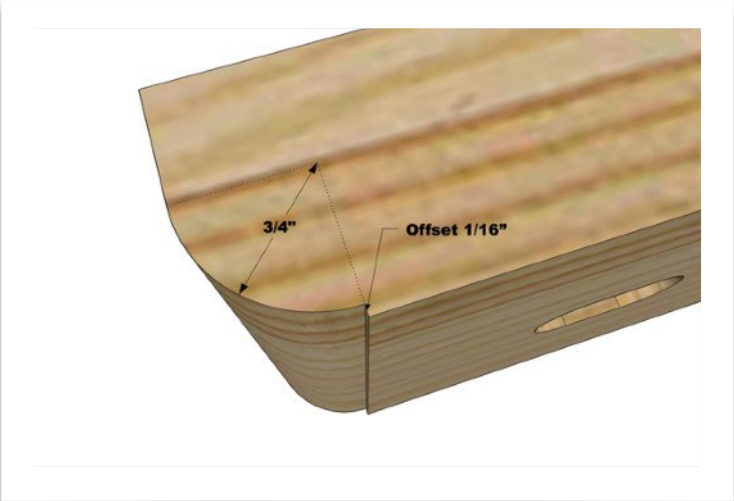
- On the second Jaw piece, mark a vertical line 2” from each end and a horizontal line at 2 $^{3}/_{16}$” from the top edge, as shown.



- Drill two $^{3}/_{4}$” holes overlapping each other, each $^{1}/_{4}$” from the center line as shown.
- Remove the “widow’s peak” with a chisel and rasp or file.

Mini Workbench Movable Jaw (continued)

- Mark two locations for dog holes on the top face of the Movable Jaw, both centered and 5” from each end.
- Drill two 3/4” bench dog holes 2” deep.



- Route a 3/4” round over on both ends, or you can chamfer the ends on the table or miter saw.

Mini Workbench Jaw Assembly

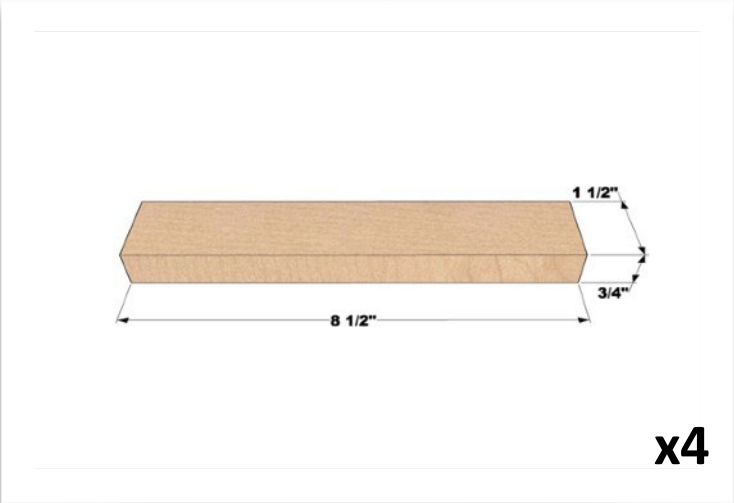
- The hardware from the Improved Moxon Vise Hardware Kit, is needed to install the Movable Jaw for the Mini Workbench.

- Place the two Square Nuts in the notches in the Front Riser.
- Thread the Threaded Rod through the bushings in the Fixed Jaw into the Square Nuts. Leave about 3 inches or so of the Threaded Rod sticking out the front.

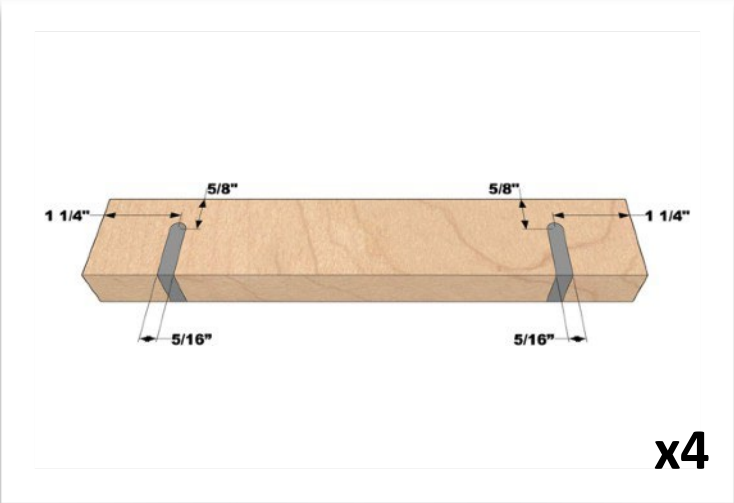
Mini Workbench Jaw Assembly (continued)

- Slide the Movable Jaw (upside down) onto the Threaded Rods.
- Slide Washers on both threaded rods.
- Thread the Knobs onto the ends of the threaded rods. Use permanent thread locker to keep the knobs from coming off.

Mini Workbench Plane Stops



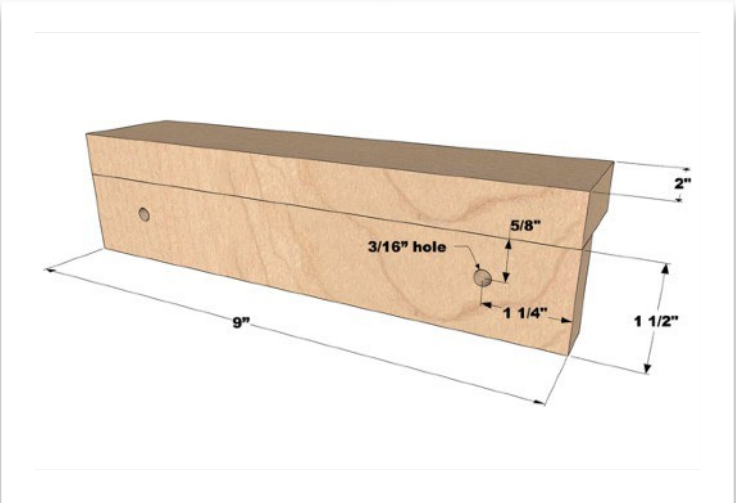
- Cut four pieces 1 1/2" wide x 8 1/2" long x 3/4" thick for the Plane Stops.



- Drill two 5/16" holes 1 1/4" from each end, and 5/8" from the top edge.
- Using a tablesaw, bandsaw or a jigsaw, cut away material to create slots that extend to the bottom edge of the Plane Stops.

  Make sure these slots are straight and parallel to the ends of the Plane Stops.

Mini Workbench Plane Stops (continued)



- Route a 3/8" round over on both ends, or you can chamfer the ends on the table or miter saw.

Hanger bolts will be what secures the plane stops to the edge of the bench.

To install the hanger bolts in the correct locations, you will need to build a small drilling jig as follows.

- Cut two pieces of scrap wood 1 1/2" or 2" wide x 9" long.
- Drill two 3/16" holes 1 1/4" from each end and 5/8" down from the top edge of one of the pieces. These holes will act as guides to drill straight and accurate holes in the bench that will accept the hanger bolts.
- Glue these two pieces together as shown.

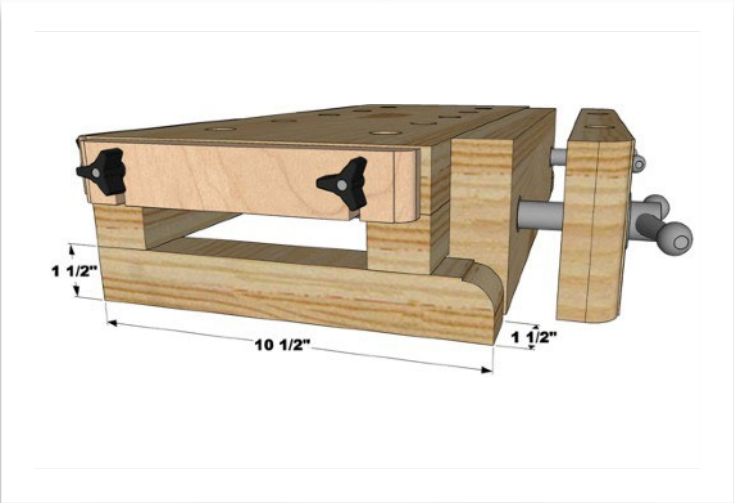
Mini Workbench Plane Stops (continued)

- Clamp the jig on the end as shown, and drill 3/16” pilot holes, 2” deep to accept the hanger bolts.
- If you want additional plane stops, drill holes on the opposite end and the back side of the workbench.
- Screw in the hanger bolts, leaving 1 1/2” exposed.

Mini Workbench Plane Stops (continued)

- Attach the Plane Stops to the hanger bolts using small knobs.

Optional Bottom Supports



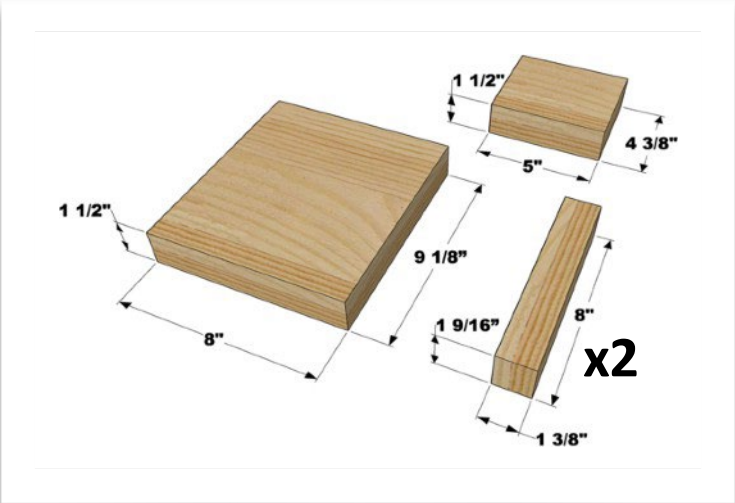
One option you can add is a bottom support to the ends of the Portable Affordable Workbench to allow the bench to sit on top of a work surface and be clamped.

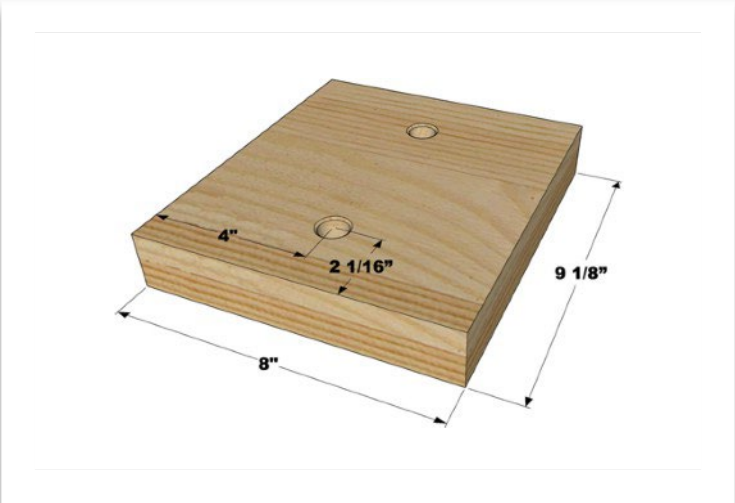
This would allow the workbench to be used on the floor or in the middle of a table. All it takes is screwing two 1 1/2" wide x 1 1/2" tall x 10 1/2" long pieces to the bottom of the Risers and flush with both ends as shown.

You can also add optional bottom supports as needed to the Outriggers and Matchfit versions of the bench.

Note: If you decide to add these Optional bottom Supports, you would not need to drill the 1/2" clamping holes, through the front face or ends of the Top piece.

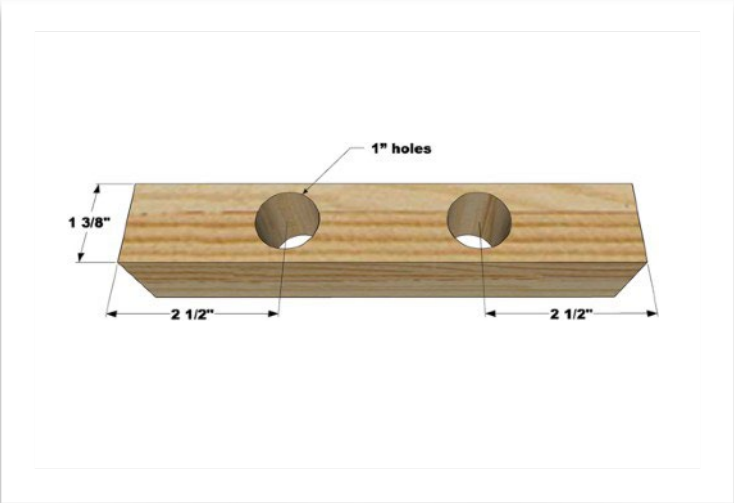
Mini Outrigger





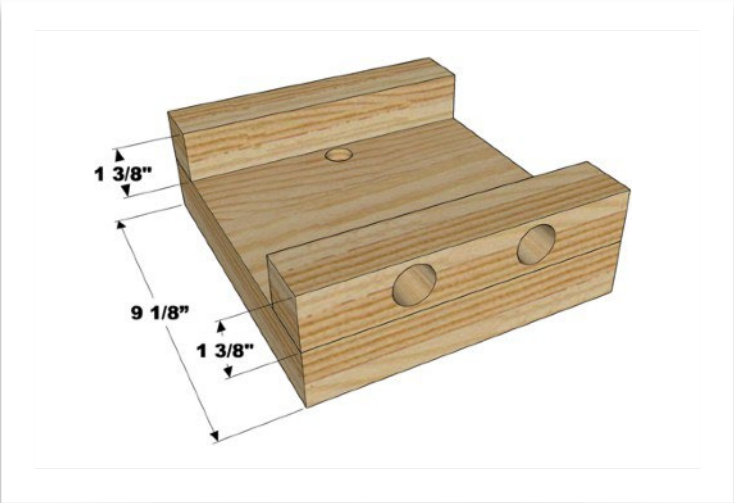
- Cut one piece 8” wide x 9 1/8” deep x 1 1/2” thick for the Outrigger Top.
- Cut one piece 5” wide x 4 3/8” deep x 1 1/2” thick for the Outrigger Fixed Jaw.
- Cut two pieces 8” long x 1 3/8” wide x 1 9/16” thick for the Outrigger Risers.
- Drill two 3/4” dog holes in the top face of the Outrigger Top at 4” from the left and right edges (centered), and 2 1/16” from the front and rear edges as shown.

Mini Outrigger (continued)



- In one of the Outrigger Risers, drill two 1” holes in the 1 3/8” face at 2 1/2” from each end, and centered on the face.

Mini Outrigger (continued)



Glue tip: to keep the pieces from slipping around when glueing, apply glue to one surface and then sprinkle a very small amount of salt to the glue. This will prevent the pieces from sliding around while you are applying clamps. This will not impact the strength of the glue joint.

- Flip the Outrigger Top over, so the chamfered dog holes are underneath.
- Glue the Outrigger Risers onto the bottom face of the Outrigger Top as shown.

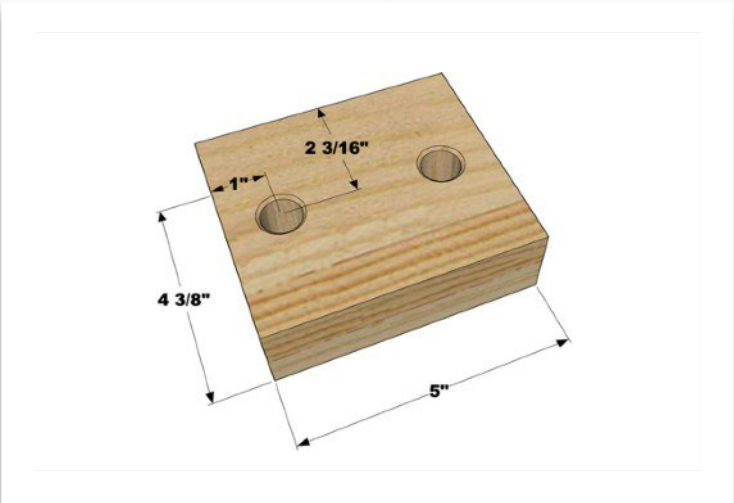
Note: Make sure the front and rear edges of the Outrigger Risers are flush with the long edges of the Top.

- Allow the glue to completely dry.
- To ensure the front and rear edges of the Outrigger Top and Outrigger Risers are perfectly flush, run this assembly through the table saw or jointer and trim ONLY $^{1}/_{16}$” off the front and rear edges.

  The depth of the final assembly should be 9”.

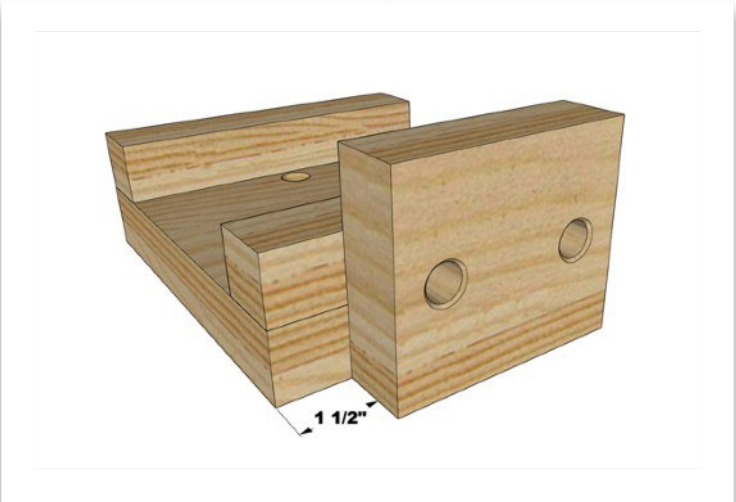
Mini Outrigger (continued)

- Drill two 1/2” clamping holes in the front face of the Outrigger Top at 3/4” from the left and right edges, and 1” from the top edge as shown.



- Drill two 3/4” dog holes in the front face of the Outrigger Fixed Jaw at 1” from the left and right edges and 2 3/16” (vertically centered) from the top edge as shown.

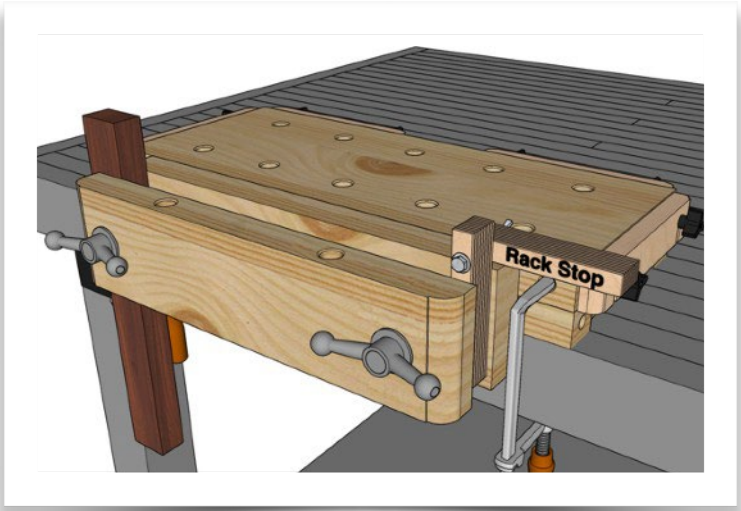
Mini Outrigger (continued)

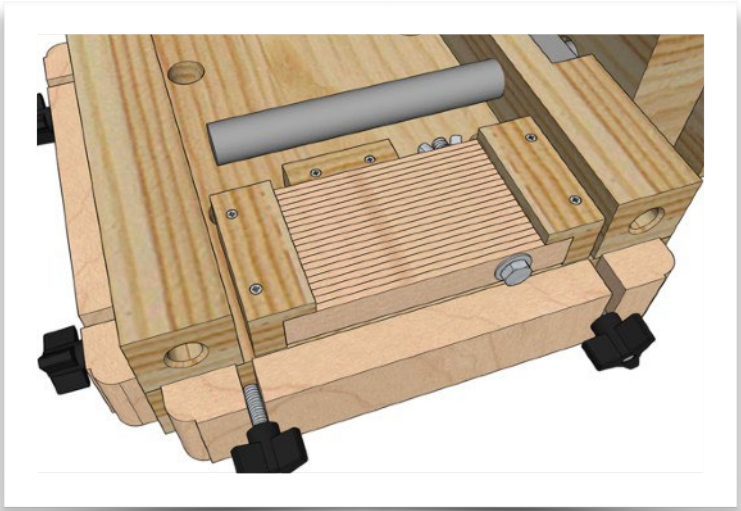


- Flip the Outrigger Top upside down and on a flat, straight surface, glue the Outrigger Fixed Jaw centered at 1 1/2" from each end.

- The Mini Outrigger is finished.

Vise Rack Stop





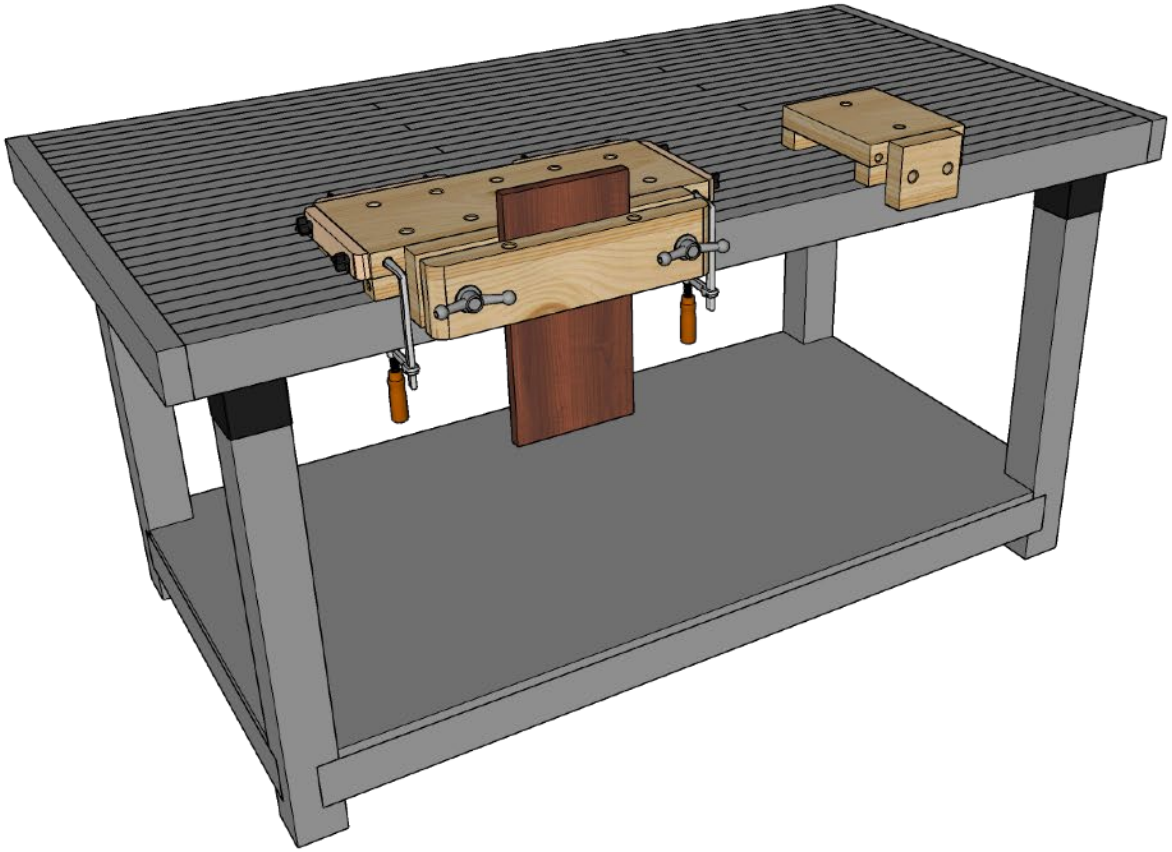
A Vise Rack Stop is a handy appliance to use with the Portable Affordable Workbench when you plan to clamp work on either end of the vise jaws and not between the threaded rods.

One is made from 12 to 16 pieces of $^{1}/_{8}$" thick stock and held together with a hex bolt and wing nut. To use the Rack Stop, set to the thickness of your workpiece and place it on the opposite end of the jaw to prevent the vise from racking under pressure.

A couple of brackets and a small stop can be mounted underneath the workbench to house the Vise Rack Stop.

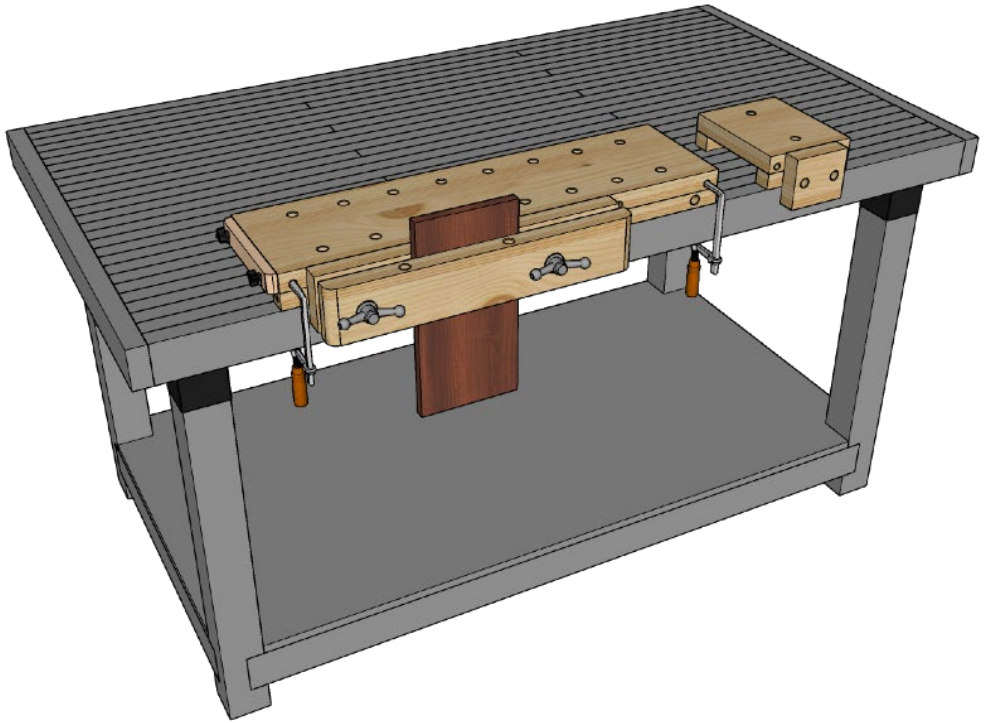
Mini Workbench Finished!

And with that, you are finished!

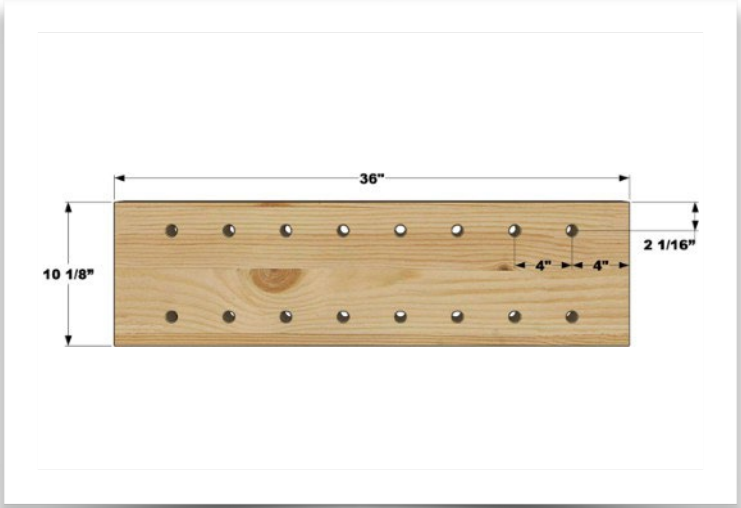


If you have any questions, please reach out via email at support@taytools.com

Full Size Portable Affordable Workbench

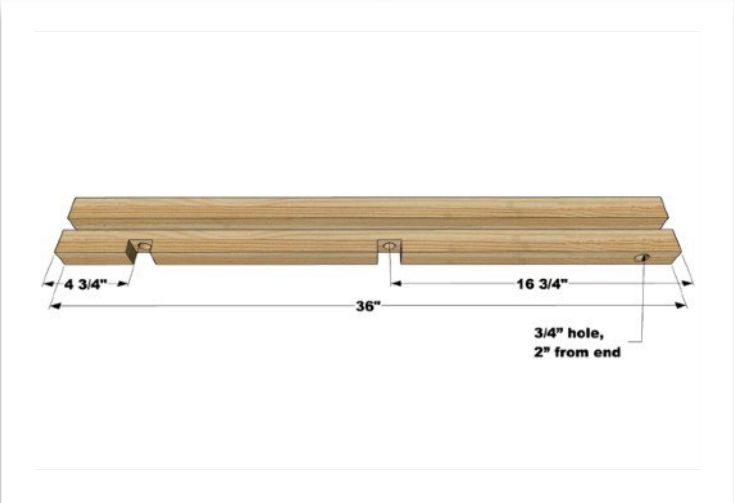


Full Size Workbench Top

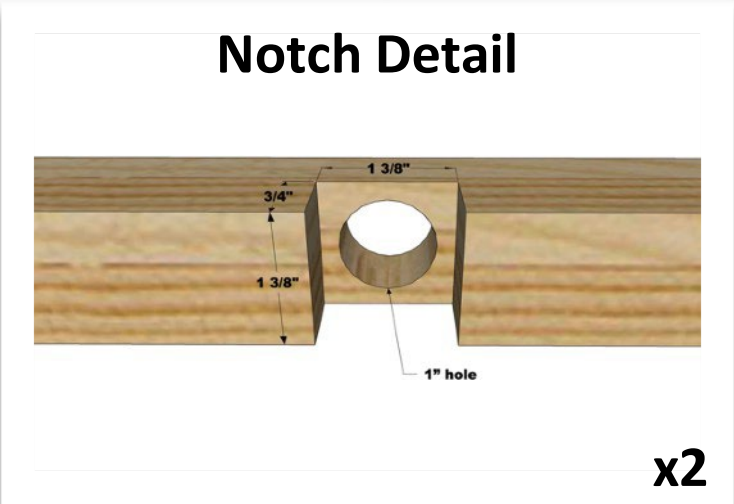


- Cut one piece 10 1/8" wide x 26" long x 1 1/2" thick for the Top.
- Mark locations of the bench dog holes 2 1/16" from both edges, starting at 4" from each end, and the rest 4" apart as shown.
- Drill the bench dog holes with a 3/4" forstner bit.
- Chamfer the holes slightly.

Full Size Workbench Risers



- Cut two pieces 1 9/16" x 1 3/8" x 36" for the Risers.
- Drill a 3/4" bench dog hole with a forstner bit, centered at 2" from the right end on the same face as the notches. Do not chamfer it yet.



- On the 1 3/8" face, cut two 1 3/8" wide x 3/4" deep notches in one Riser, centered at 4 3/4" from the left end and 16 3/4" from the right end.
- Next drill a 1" hole centered in each notch.

Full Size Workbench Risers (continued)

Glue tip: to keep the pieces from slipping around when glueing, apply glue to one surface and then sprinkle a very small amount of salt to the glue. This will prevent the pieces from sliding around while you are applying clamps. This will not impact the strength of the glue joint.

- Flip the Top over, so the chamfered dog holes are underneath.
- Before glueing the notched Riser, make sure to flip it over so that the dog hole on the front face is on the left hand side.
- Glue the Risers onto the bottom face of the Top as shown.

Note: Make sure the long edges of the Risers are flush with the long edges of the Top.

- Allow the glue to completely dry.
- To ensure the long edges of the Top and Risers are perfectly flush, run this assembly through the table saw or jointer and trim ONLY $^{1}/_{16}$” off each long side.

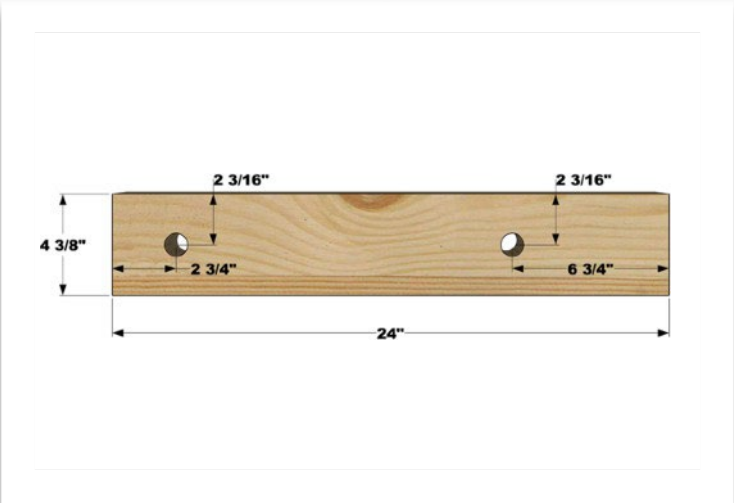
  The width of the final assembly should be 10”.
- Chamfer the single dog hole in the riser now.

Full Size Workbench Risers (continued)

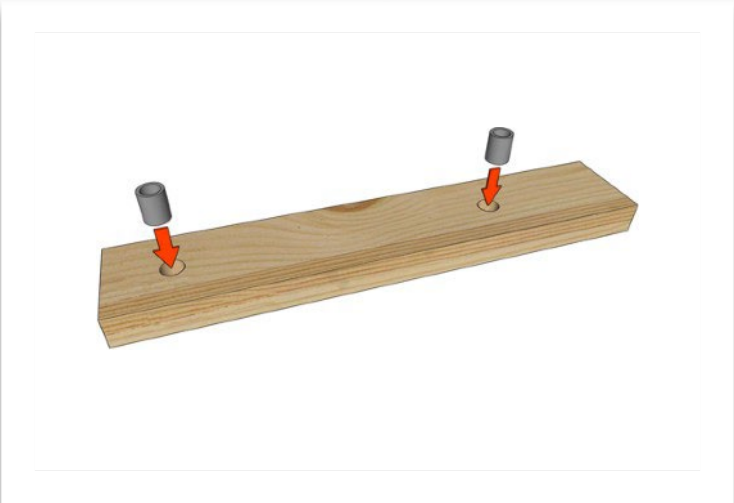
- Drill and chamfer four, 1/2” holes, 3” deep, centered on the ends of both risers. These holes will allow the Workbench to be clamped down from the end using track saw clamps.

- Drill and chamfer two additional 1/2” clamping holes, through the front face, 1” down from the top and 1” over from the left and right ends.
- Also, drill and chamfer a third 1/2” clamping hole, 2” deep on the front face of the Top, 1” down and 9” over from the right end.
- These three holes allow clamping from the front with track saw clamps.

Full Size Workbench Fixed Jaw

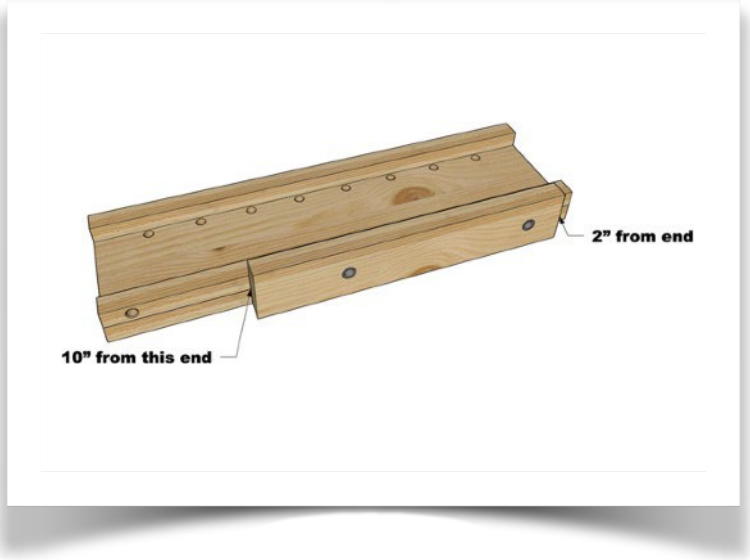


- Cut two pieces 4 3/8" wide x 24" long x 1 1/2" thick for the Jaws. Set one piece aside for now.
- On <u>one</u> piece, drill two 1" holes at 2 3/4" from the left end, and 6 3/4" from the right end, and 2 3/16" from the top edge as shown.



- Drive two 1" Steel Bushings into both 1" holes. Use a rubber or dead blow mallet to prevent damage to the bushings. Make sure the end of the Steel Bushings are flush or slightly below the surface of the Fixed Jaw.

Full Size Workbench Fixed Jaw (continued)

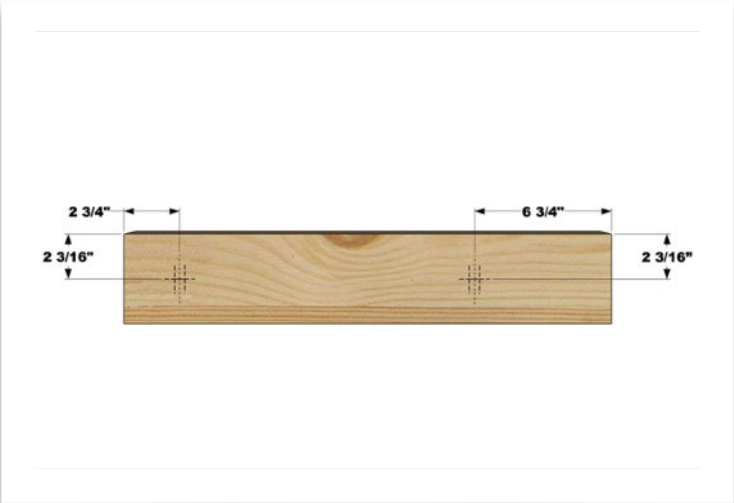


- With the Top assembly still upside down and on a flat, straight surface, glue the Fixed Jaw as shown, with the hole closest to the edge on the right side, 2" from the right end, and 10" from the left end as shown.

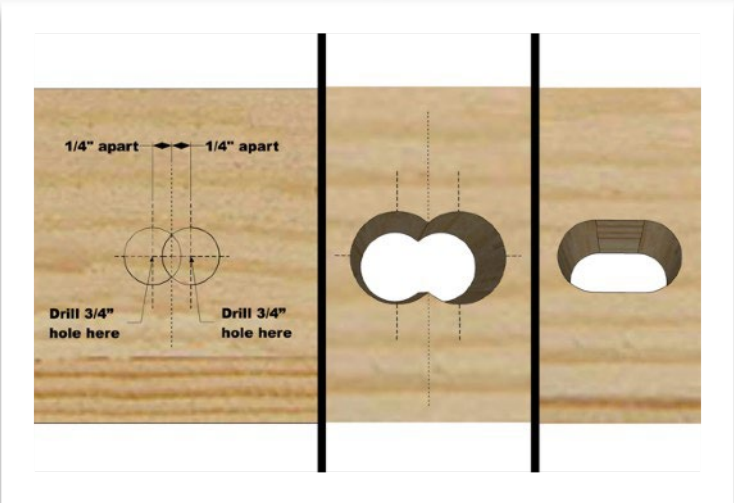
Apply glue to one surface and then sprinkle a very small amount of salt on the glue to prevent the pieces from slipping as clamps are applied.

- Allow the glue dry completely.

Full Size Workbench Movable Jaw

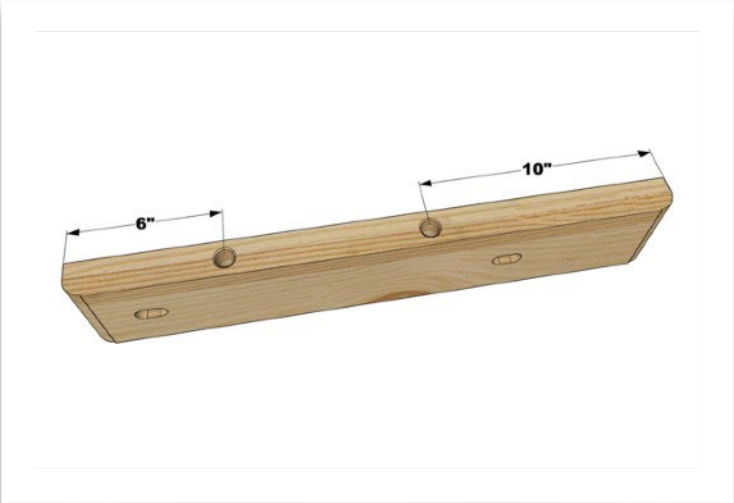


- On the second Jaw piece, mark a vertical line 2 3/4" from the left end and 6 3/4" from the right end, and a horizontal line at 2 3/16" from the top edge, as shown.

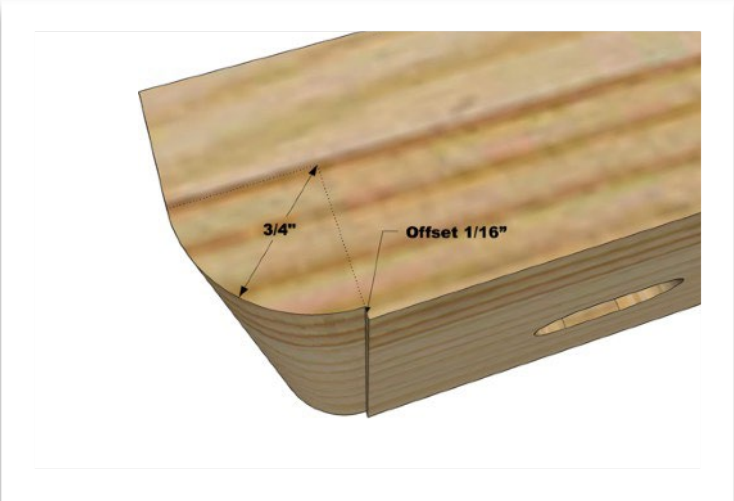


- Drill two 3/4" holes overlapping each other, each 1/4" from the center line as shown.
- Remove the "widow's peak" with a chisel and rasp or file.

Full Size Workbench Movable Jaw (cont'd)



- Mark two locations for dog holes on the top face of the Movable Jaw, both centered, with the first at 6" from the left end and the second at 10" from the right end.
- Drill two 3/4" bench dog holes 2" deep.



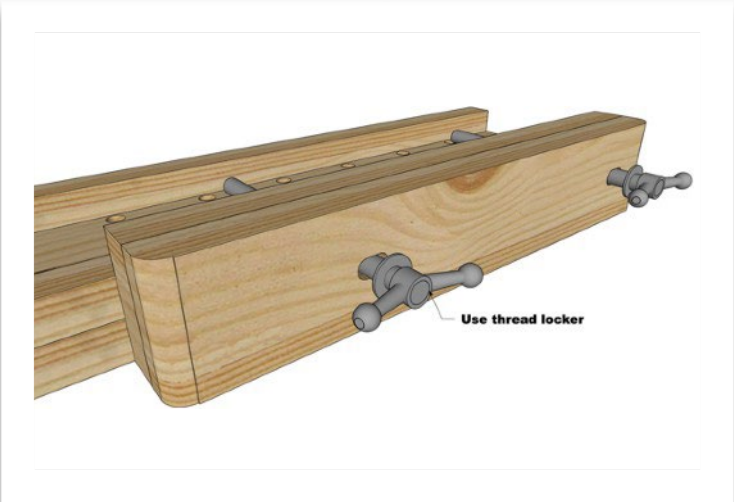
- Route a 3/4" round over on both ends, or you can chamfer the ends on the table or miter saw.

Full Size Workbench Jaw Assembly

- The hardware from the Improved Moxon Vise Hardware Kit, is needed to install the Movable Jaw for the Mini Workbench.

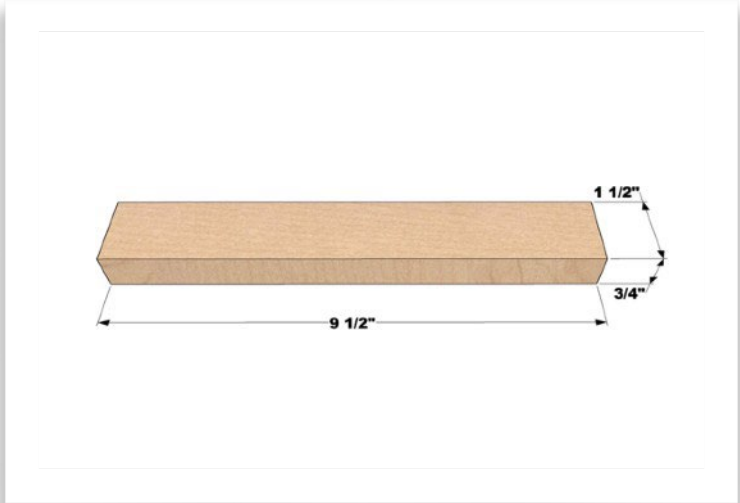
- Place the two Square Nuts in the notches in the Front Riser.
- Thread the Threaded Rod through the bushings in the Fixed Jaw into the Square Nuts. Leave about 3 inches or so of the Threaded Rod sticking out the front.

Full Size Workbench Jaw Assembly (con’t)

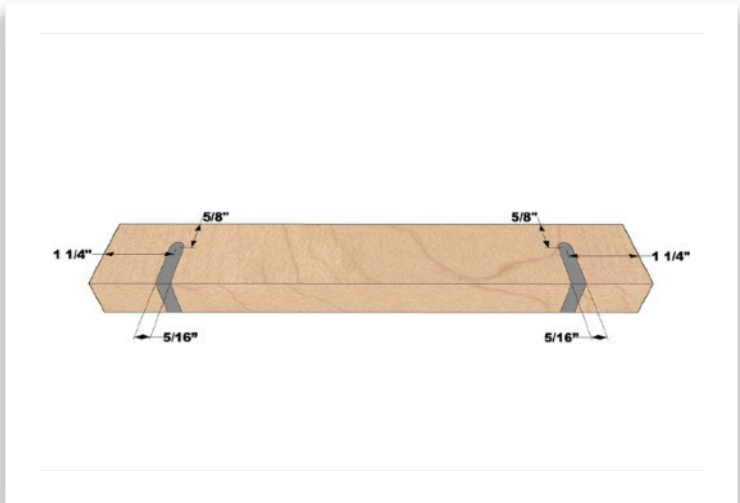


- Slide the Movable Jaw (upside down) onto the Threaded Rods.
- Slide Washers on both threaded rods.
- Thread the Knobs onto the ends of the threaded rods. Use permanent thread locker to keep the knobs from coming off.

Full Size Workbench Plane Stops

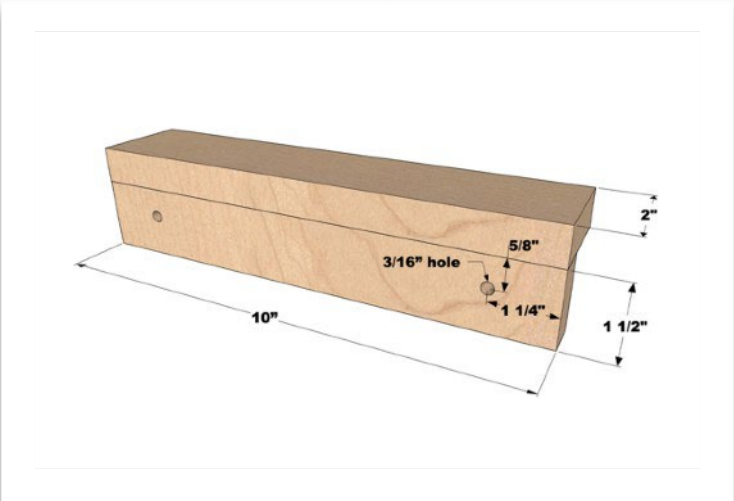


- Cut one piece 1 1/2" wide x 9 1/2" long x 3/4" thick for a Plane Stop.



- Drill two 5/16" holes 1 1/4" from each end, and 5/8" from the top edge.
- Using a tablesaw, bandsaw or a jigsaw, extend these holes into slots down to the bottom edge of the Plane Stops.
- Make sure these slots are straight and parallel to the ends of the Plane Stops.

Full Size Workbench Plane Stops (continued)



- Route a 3/8" round over on both ends, or you can chamfer the ends on the table or miter saw.

Hanger bolts will be what secures the plane stops to the edge of the bench.

To install the hanger bolts in the correct locations, you will need to build a small drilling jig as follows.

- Cut two pieces of scrap wood 1 1/2" or 2" wide x 10" long.
- Drill two 3/16" holes 1 1/4" from each end and 5/8" down from the top edge of one of the pieces. These holes will act as guides to drill straight and accurate holes in the bench that will accept the hanger bolts.
- Glue these two pieces together as shown.

Full Size Workbench Plane Stops (continued)

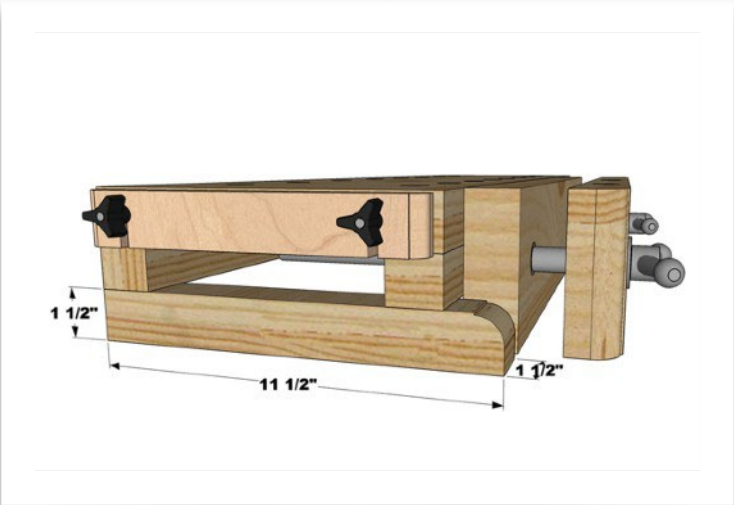
- Clamp the jig on the end as shown, and drill 3/16” pilot holes, 2” deep to accept the hanger bolts.

- Screw in the hanger bolts, leaving 1 1/2” exposed.

Full Size Workbench Plane Stops (continued)

- Attach the Plane Stop to the hanger bolts using small knobs.

Option Bottom Supports



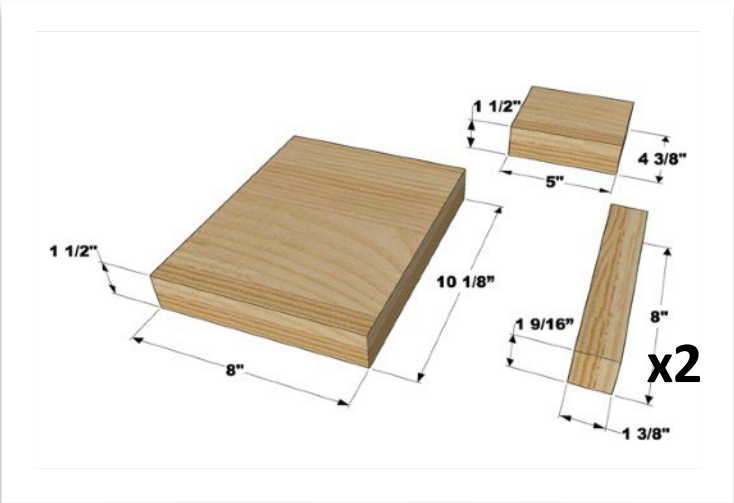
One option you can add is a bottom support to the ends of the Portable Affordable Workbench to allow the bench to sit on top of a work surface and be clamped.

This would allow the workbench to be used on the floor or in the middle of a table. All it takes is screwing two 1 1/2" wide x 1 1/2" tall x 11 1/2" long pieces to the bottom of the Risers and flush with both ends as shown.

You can also add optional bottom supports as needed to the Outriggers and Matchfit versions of the bench.

Note: If you decide to add these Optional bottom Supports, you would not need to drill the 1/2" clamping holes, through the front face or ends of the Top piece.

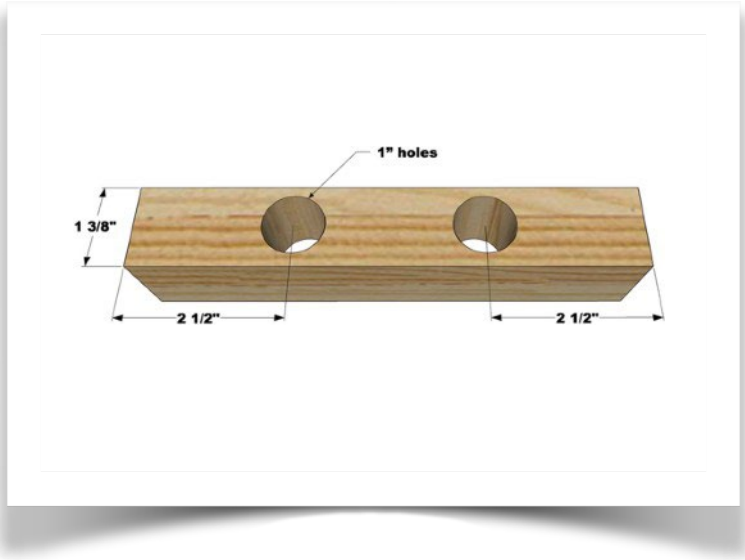
Full Size Outrigger



- Cut one piece 8” wide x 10 1/8” deep x 1 1/2” thick for the Outrigger Top.
- Cut one piece 5” wide x 4 3/8” deep x 1 1/2” thick for the Outrigger Fixed Jaw.
- Cut two pieces 8” long x 1 3/8” wide x 1 9/16” thick for the Outrigger Risers.

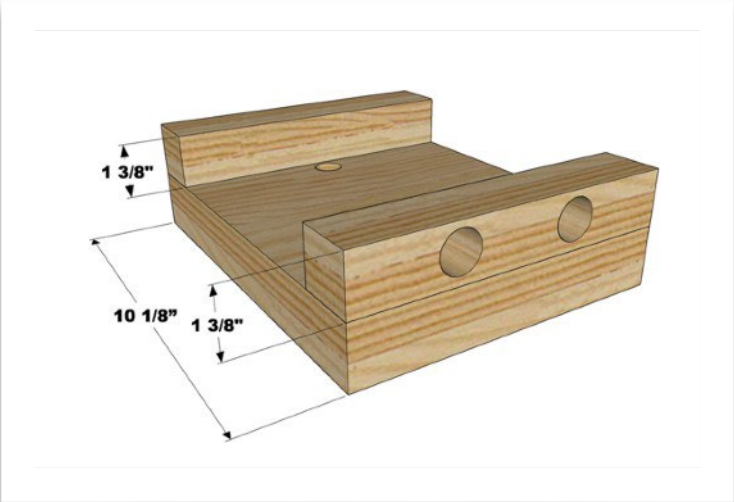
- Drill two 3/4” dog holes in the top face of the Outrigger Top at 4” from the left and right edges (centered), and 2 1/16” from the front and rear edges as shown.

Full Size Outrigger (continued)



- In one of the Outrigger Risers, drill two 1” holes in the 1 $^{3}/_{8}$” face at 2 $^{1}/_{2}$” from each end, and centered on the face.

Full Size Outrigger (continued)



Glue tip: to keep the pieces from slipping around when glueing, apply glue to one surface and then sprinkle a very small amount of salt to the glue. This will prevent the pieces from sliding around while you are applying clamps. This will not impact the strength of the glue joint.

- Flip the Outrigger Top over, so the chamfered dog holes are underneath.
- Glue the Outrigger Risers onto the bottom face of the Outrigger Top as shown.

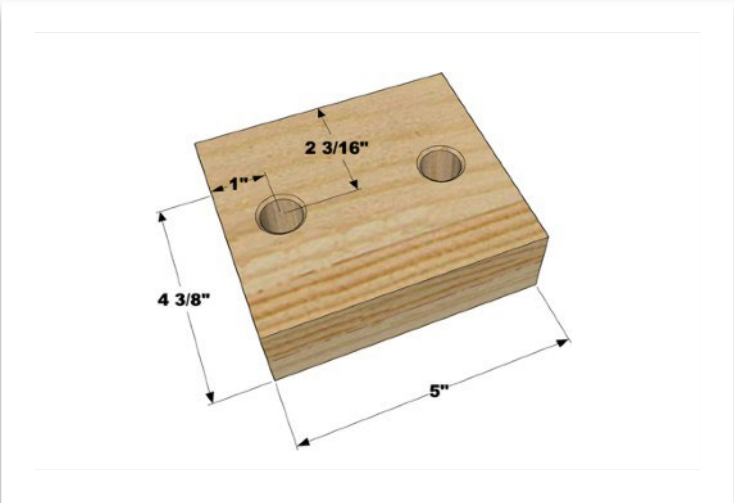
Note: Make sure the front and rear edges of the Outrigger Risers are flush with the long edges of the Top.

- Allow the glue to completely dry.
- To ensure the front and rear edges of the Outrigger Top and Outrigger Risers are perfectly flush, run this assembly through the table saw or jointer and trim ONLY $^{1}/_{16}$” off the front and rear edges.

  The depth of the final assembly should be 10”.

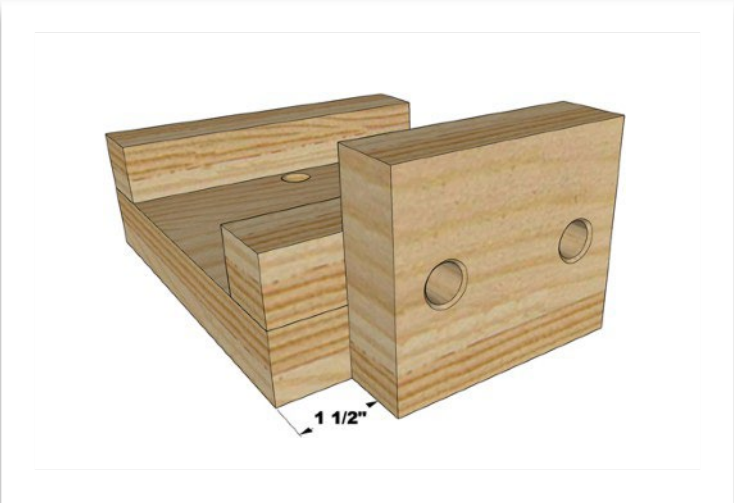
Full Size Outrigger (continued)

- Drill two 1/2" clamping holes in the front face of the Outrigger Top at 3/4" from the left and right edges, and 1" from the top edge as shown.



- Drill two 3/4" dog holes in the front face of the Outrigger Fixed Jaw at 1" from the left and right edges and 2 3/16" (vertically centered) from the top edge as shown.

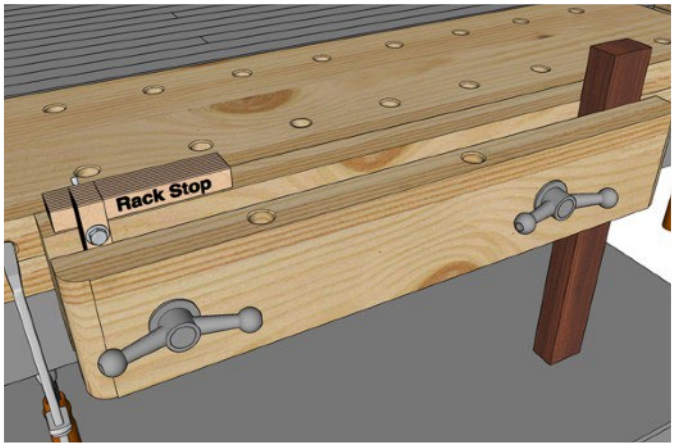
Full Size Outrigger (continued)

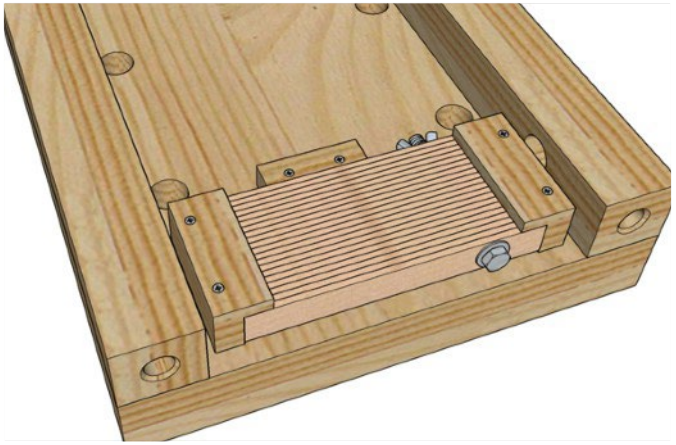


- Flip the Outrigger Top upside down and on a flat, straight surface, glue the Outrigger Fixed Jaw centered at 1 1/2" from each end.

- The Full Size Outrigger is finished.

Vise Rack Stop





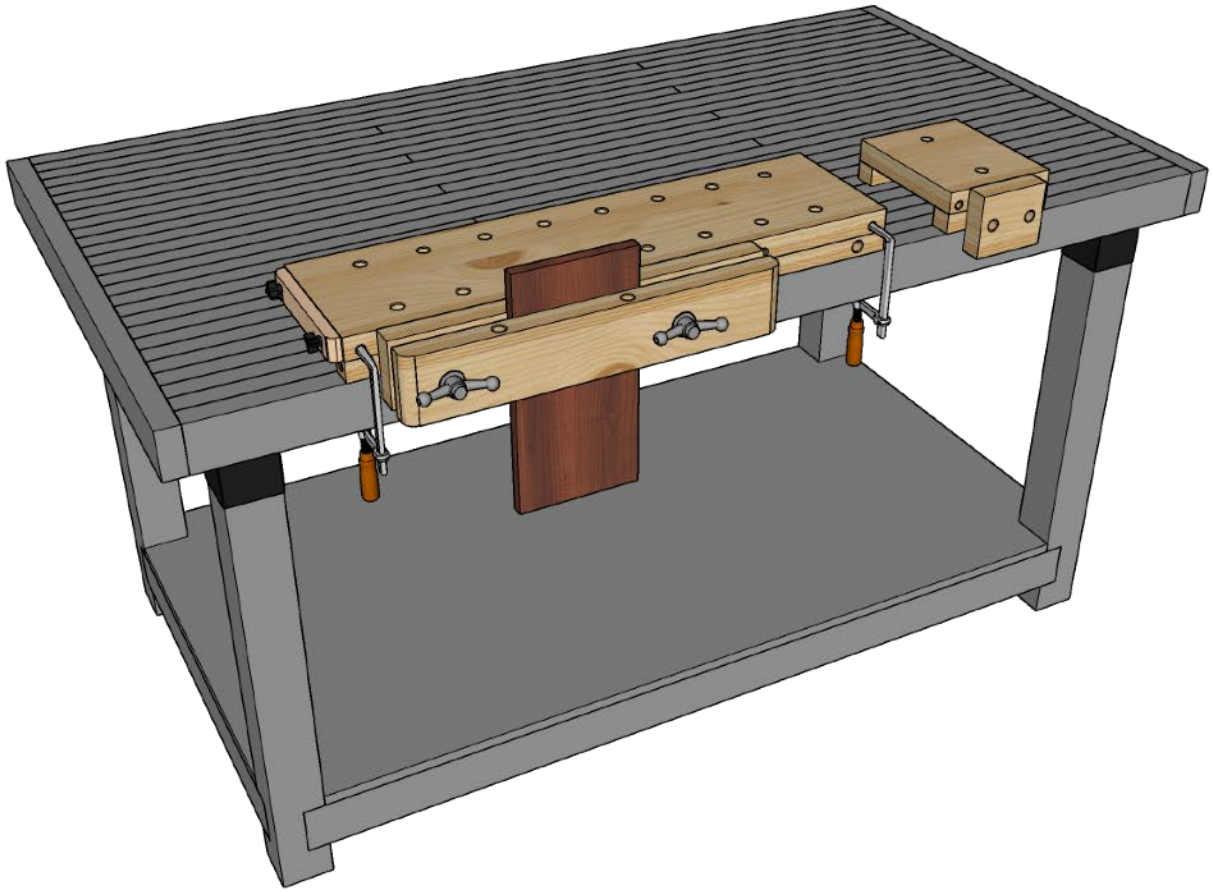
A Vise Rack Stop is a handy appliance to use with the Portable Affordable Workbench when you plan to clamp work on either end of the vise jaws and not between the threaded rods.

One is made from 12 to 16 pieces of 1/8" thick stock and held together with a hex bolt and wing nut. To use the Rack Stop, set to the thickness of your workpiece and place it on the opposite end of the jaw to prevent the vise from racking under pressure.

A couple of brackets and a small stop can be mounted underneath the workbench to house the Vise Rack Stop.

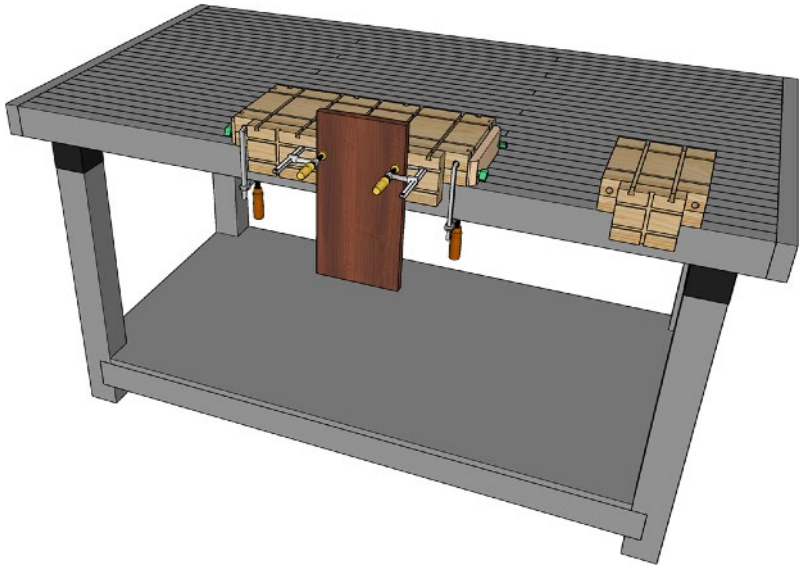
Full Size Workbench Finished!

And with that, you are finished!



If you have any questions, please reach out via email at support@taytools.com

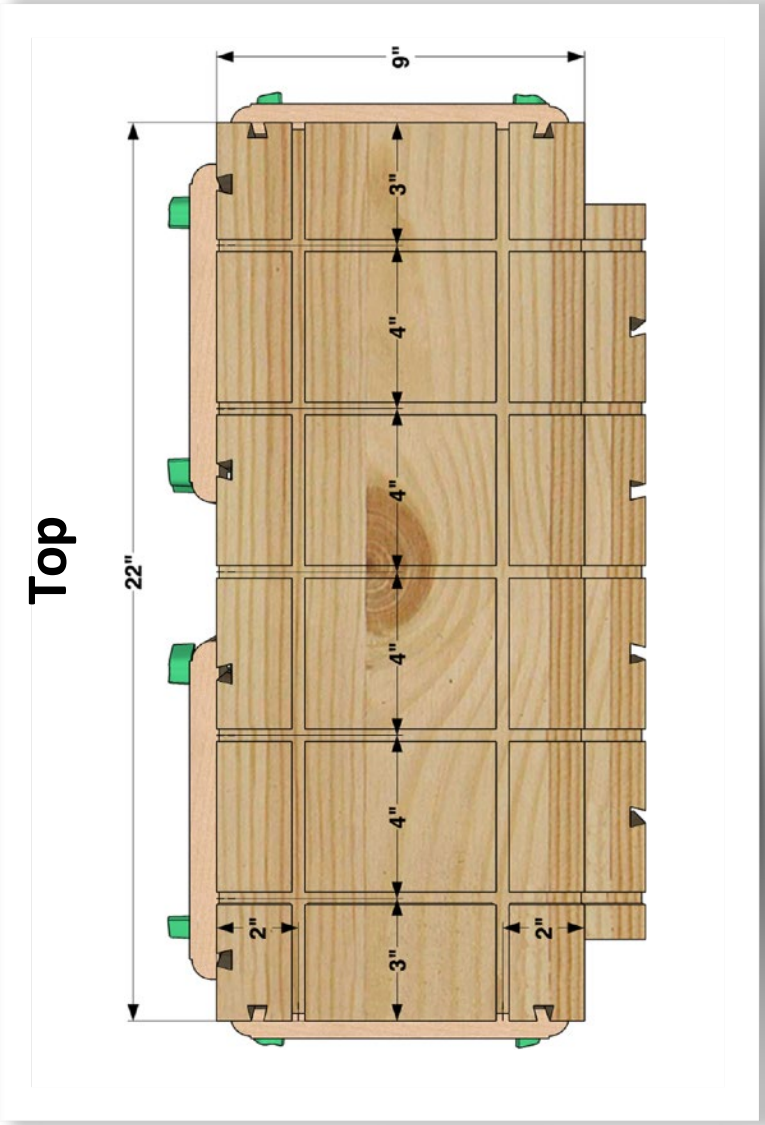
Mini Workbench - Matchfit Version

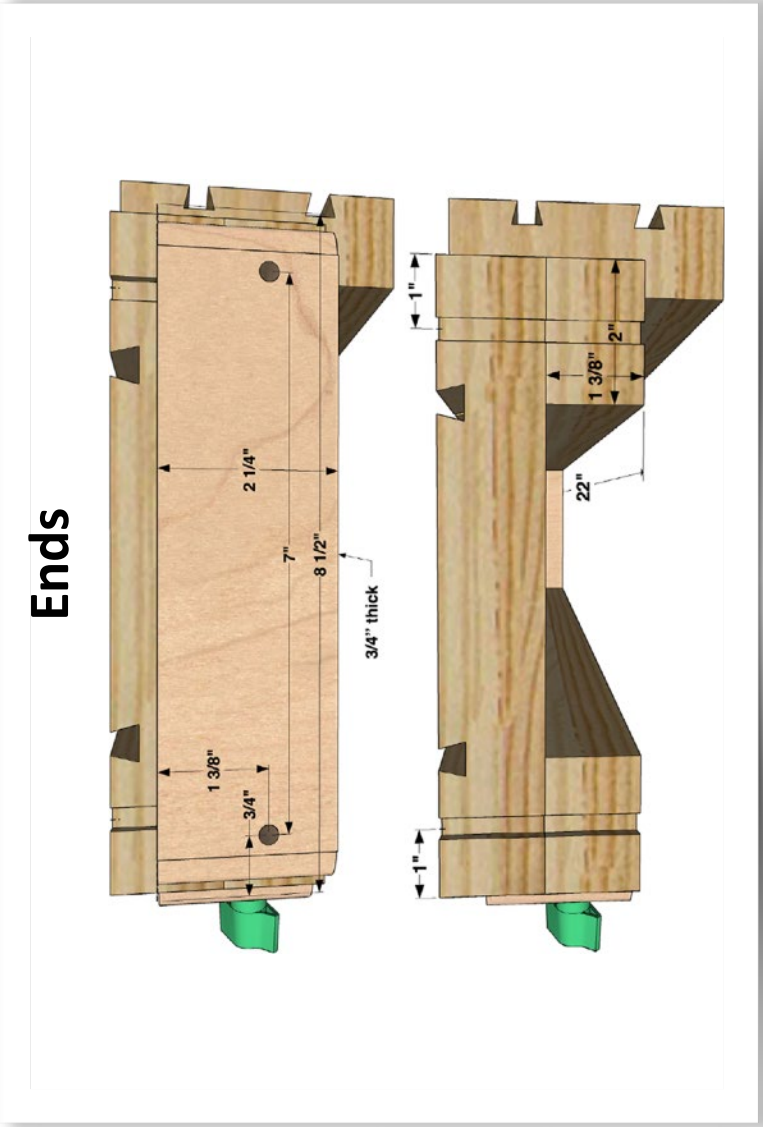


You can create a version of this bench that utilizes Matchfit clamps and hardware. This version does not require a movable jaw or the Improved Moxon Vise Hardware kit. Instead, it involves routing grooves in the top, front, and ends to accept dovetail clamps and hardware. You will need to route the dovetail grooves on the ends and the front vise pieces before gluing these parts together. The grooves in the top can be routed after all the pieces are glued together. To prevent blowout, route the cross-grain grooves before routing those with the grain.

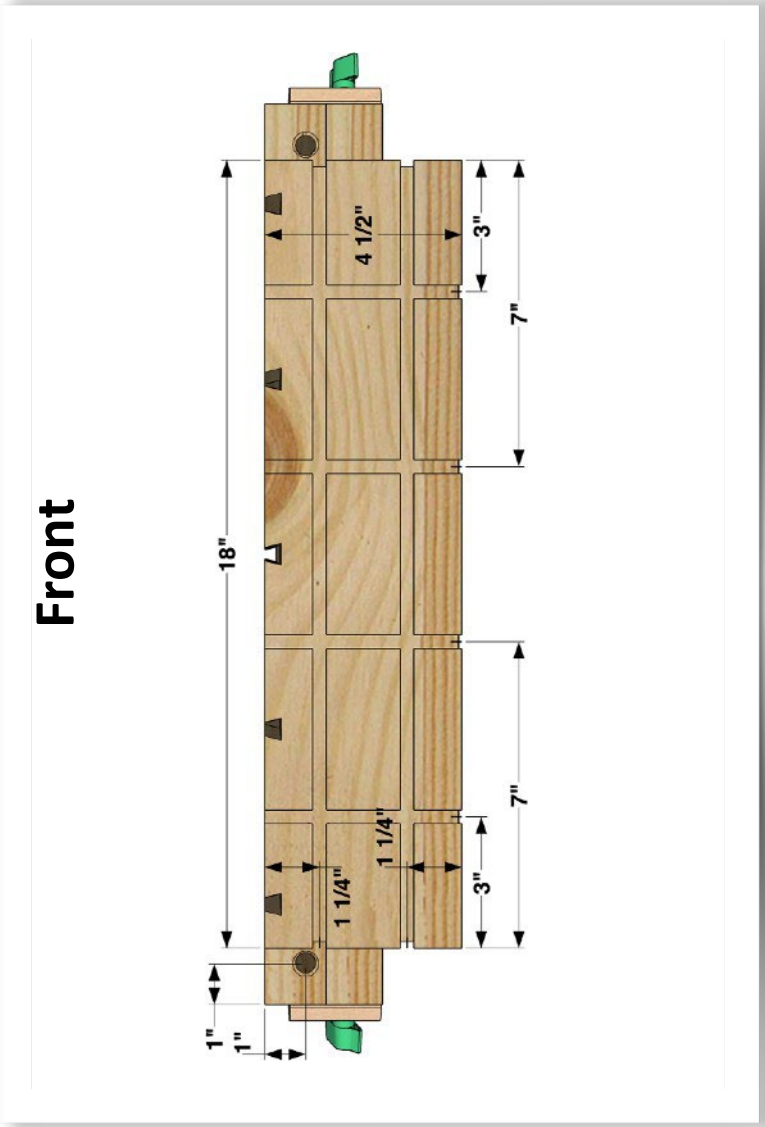
Note: All measurements for the Matchfit grooves are to the center of the groove.

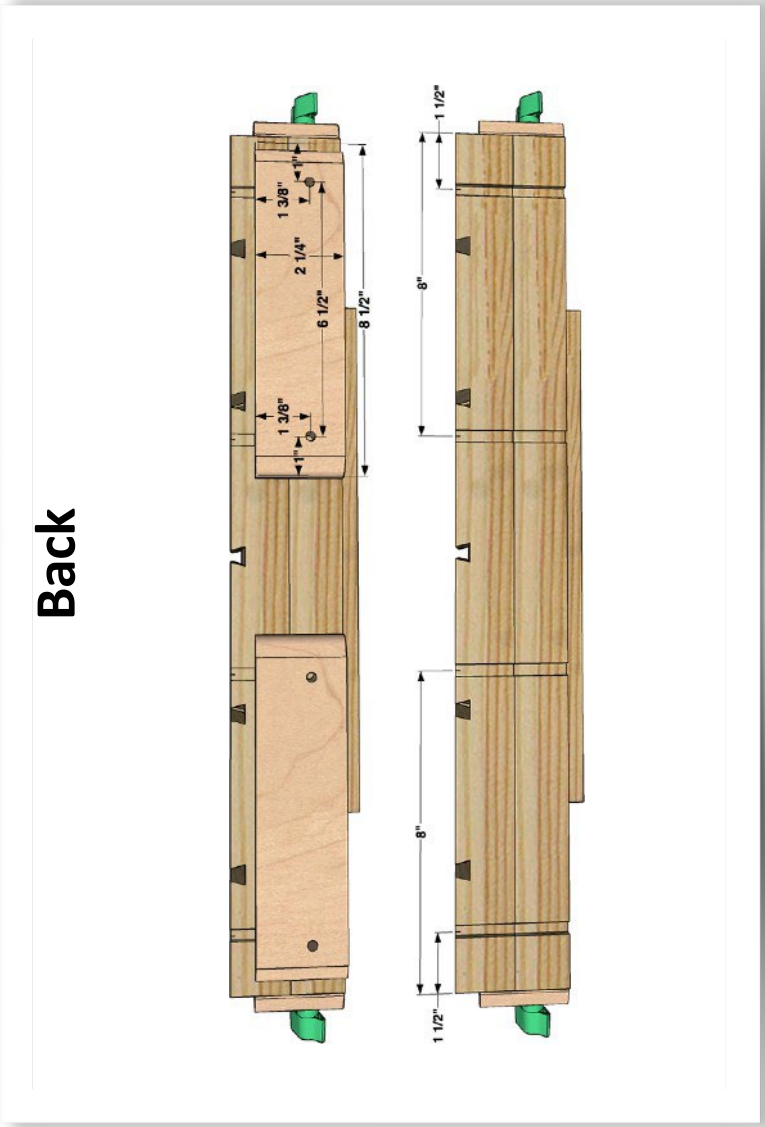
Mini Workbench - Matchfit Version



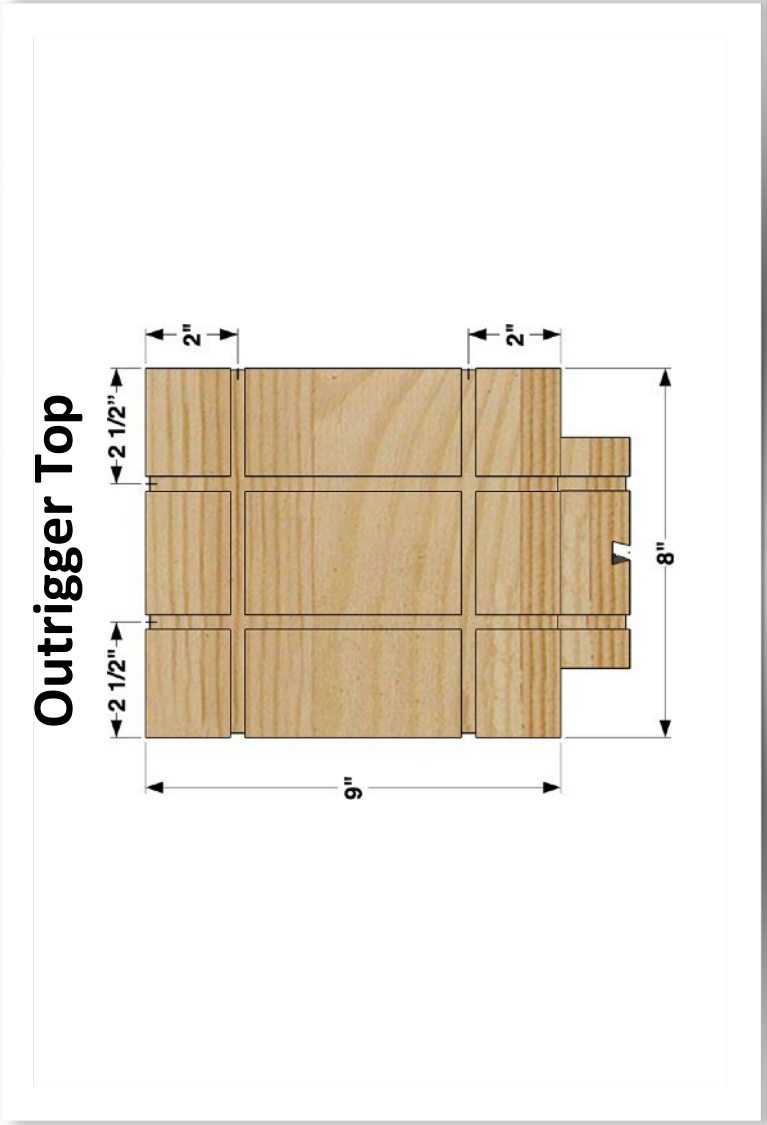


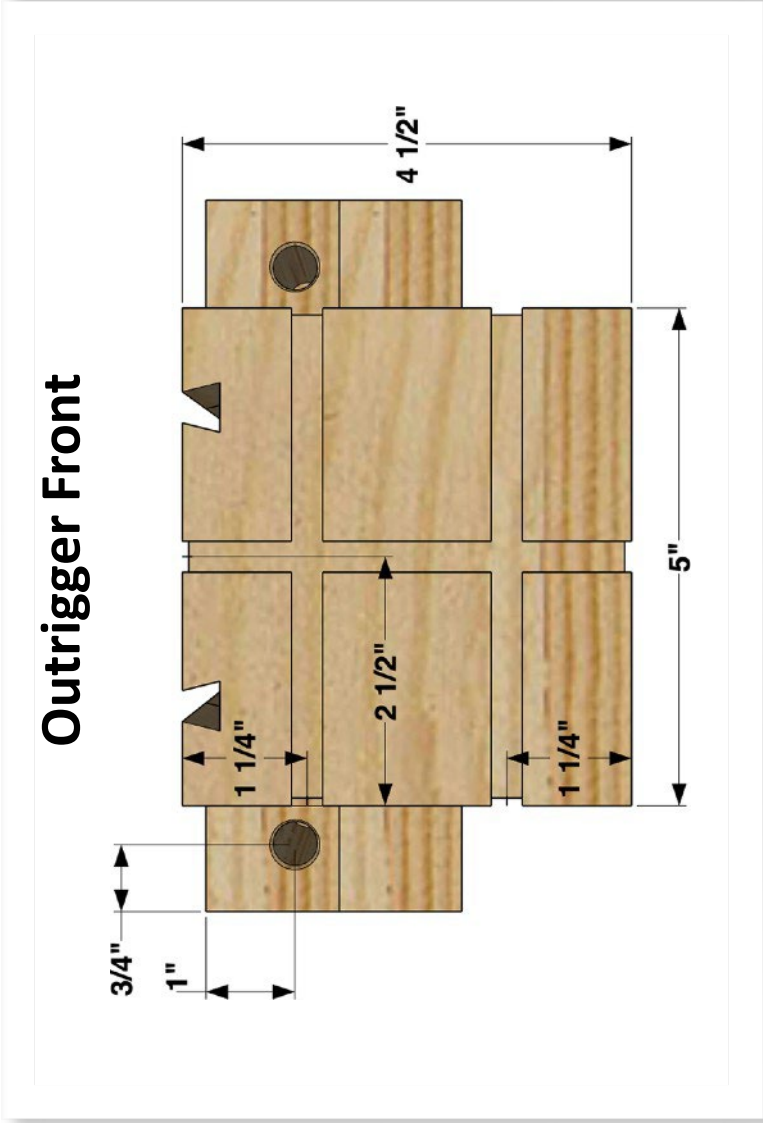
Mini Workbench - Matchfit Version



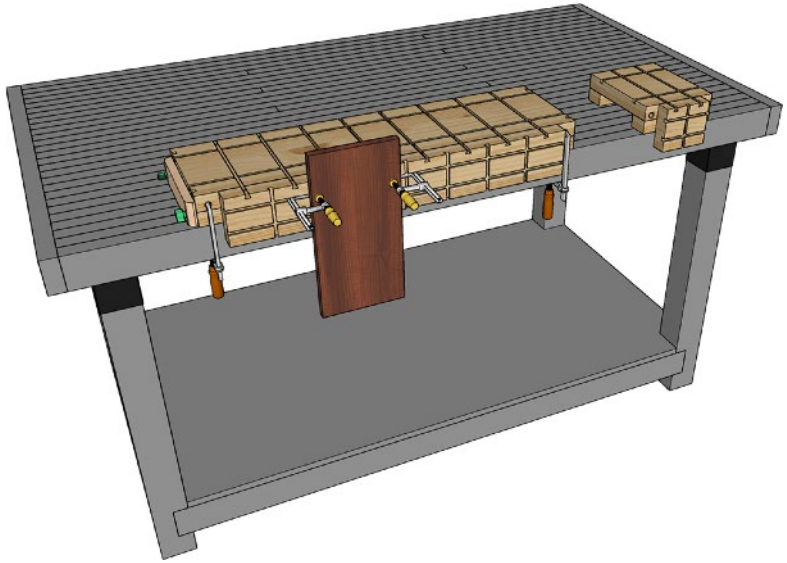


Mini Workbench - Matchfit Version





Full Size Workbench - Matchfit Version



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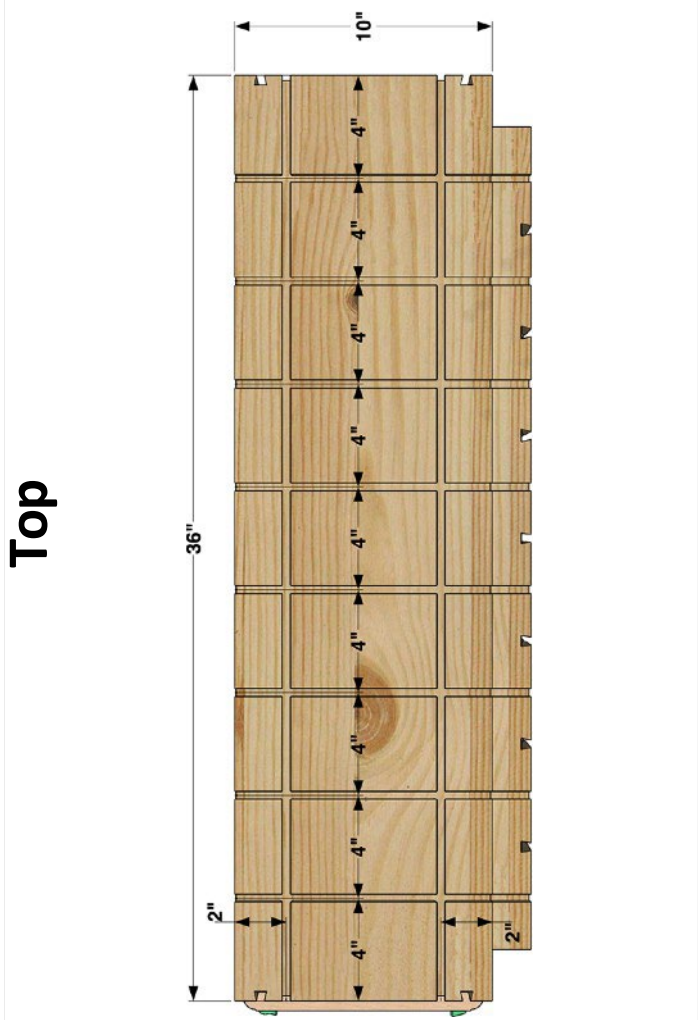
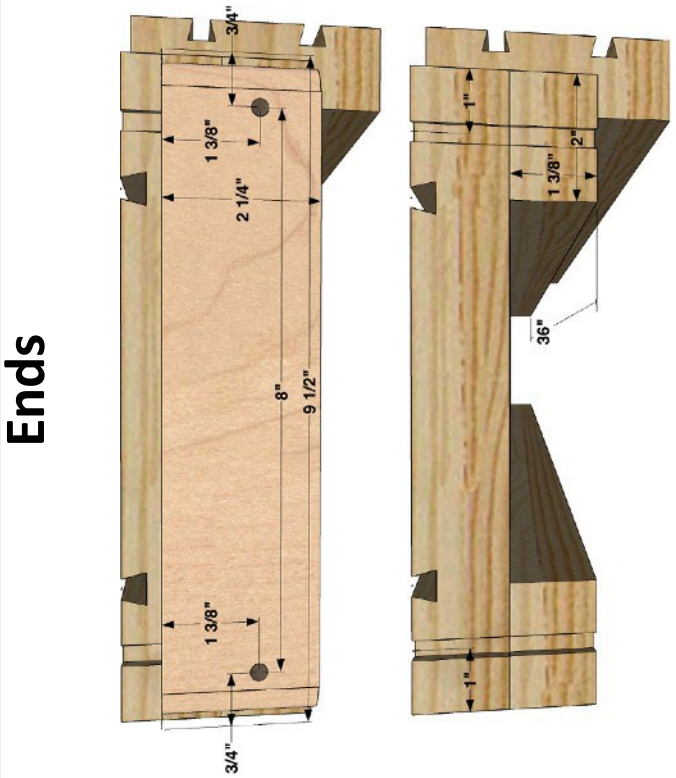
Note: All measurements for the Matchfit grooves are to the center of the groove.

Full Size Workbench - Matchfit Version

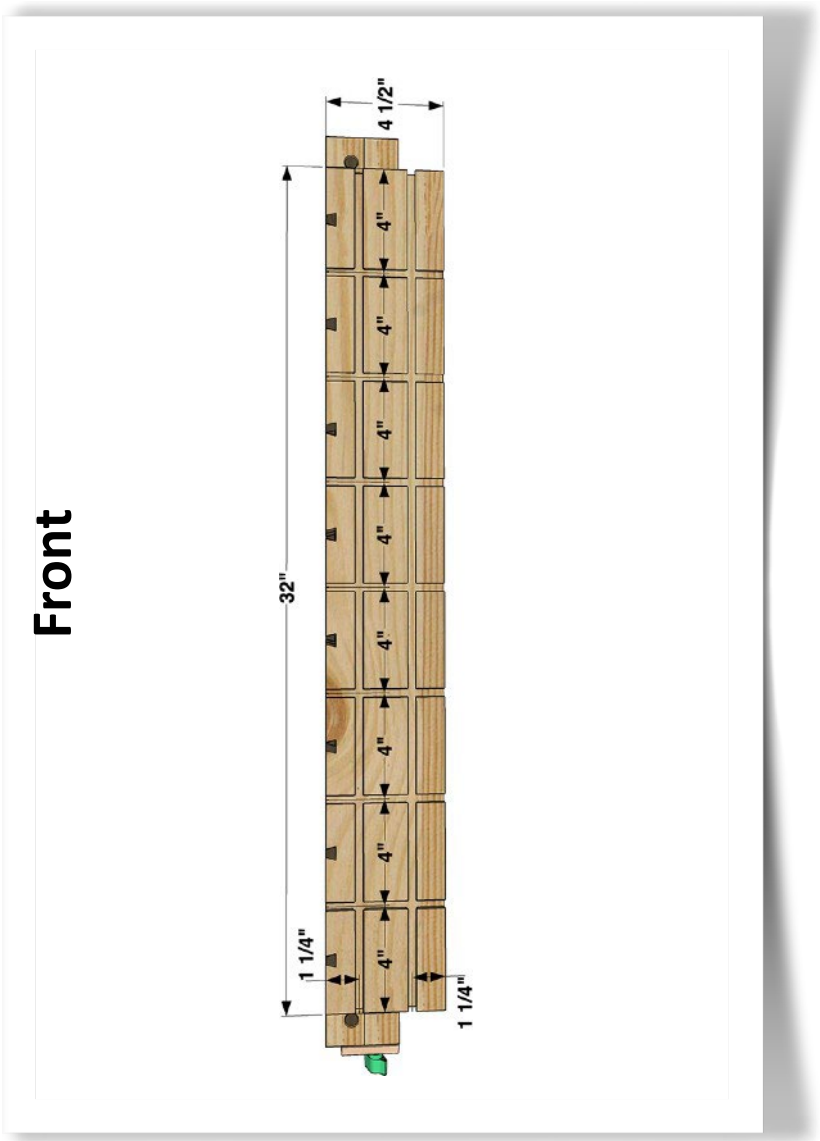
Top



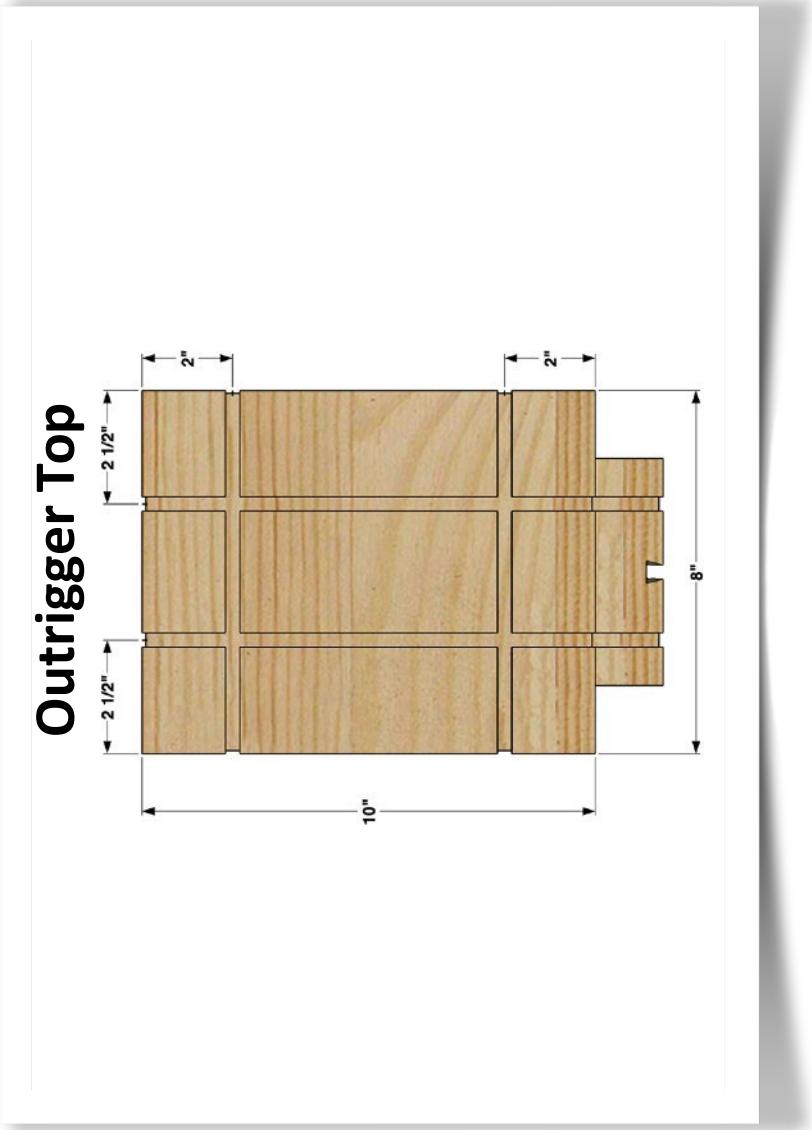
Ends

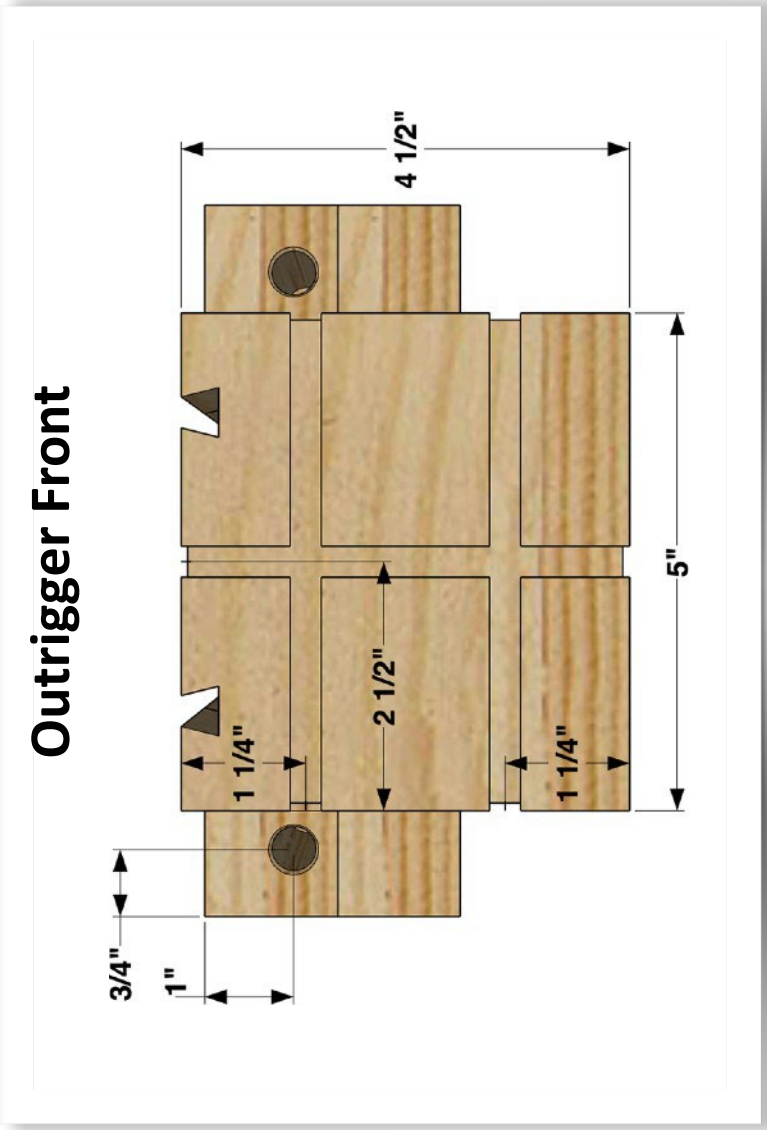


Full Size Workbench - Matchfit Version



Full Size Workbench - Matchfit Version





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