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This tool chest project has a free video component that will walk you step-by-step through the construction process. Before you begin building, watch the video to familiarize yourself with the steps and tools involved in building it. [www.woodworkersjournal.com/toolchest](http://www.woodworkersjournal.com/toolchest)

# Triton Tool Chest

*Build a classic three-drawer tool chest that will serve you for years and look good doing it.*

## BUILDING THE CHEST

1. (Photo) Glue up panels for the front, back, sides, top and center. But, instead of following the *Material List* dimensions for these parts at this point, make the front, back and side panels 16" wide. That way they'll be large enough to include the portion you'll need for the chest's lid. Here's why: Once the chest carcass is glued up, you'll cut off the lid. That way, it will match the grain pattern of the chest and fit the carcass perfectly. Make the front and back panels 22½" long to start with, too. You'll need the extra length for cutting out the opening for the three drawers, which you'll do shortly.

2. When the glue dries, scrape off any excess, flatten the joints and sand the panels smooth. Then square up the ends, as needed.

3. Next, cut the rectangular opening for the three drawers. Now, you could do that with a jigsaw, and just cut the opening out, but the more accurate way is to make the cutout at the table saw in a series of rip and crosscuts, then glue the panel back together. Make the cuts in this order. Start by ripping a 6⅜"-wide piece from one edge of the panel. This will be the portion of the chest's front panel above the drawers. Mark it as the top. Then rip a 1¼"-wide piece from the opposite edge of the panel, and mark this thin piece as the bottom. It will be the portion below the drawers.

4. What's left from the middle of the panel is both the three drawer faces and the ends of the front panel that will be beside the drawers. So, mark the panel to take a 19"-long piece from the center, and make two crosscuts to cut these three parts free.

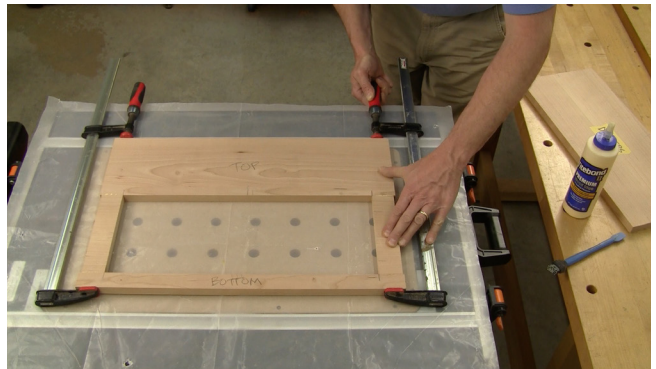
5. (Photo) Trim the two narrow pieces for the ends of the drawer opening to 7½" long. Then, assemble all the pieces you've made for the front panel, and glue and clamp them back together to create the drawer opening you need. Make this opening 19" long.

6. Crosscut the front, back and side panels to final length. The front and back are 22" long, and the sides are 13" long. Then rip the side and back panels to the same width as the front panel, which should be 15".

7. (Photo) Now that the chest panels are cut to size, rout box joints on their ends that will bring the carcass together. These pins and slots are spaced 1/2" apart and 3/4" deep. Mill them at the router table with a box joint jig using a 1/2" diameter straight or spiral router bit. Or, you can cut the box



**Step 1: Spreading glue and clamping up a panel on the Clamping Module**



**Step 5: Gluing the pieces of the front panel together**



**Step 7: Cutting box joint pins and slots on the front panel of the chest**



joints on your table saw instead with a 1/2" wide dado blade set instead.

If you're familiar with routing box joints, or even cutting them on a table saw with a pin-style jig, there's nothing unique to carrying out the same joinery technique on this tool chest.

8. In our video coverage of this project, we added a couple of strips of wood to the narrow areas beside the drawer opening before cutting the box joints. The strips reinforce these short-grain areas. You can simply hot-glue them in place, or use strips of carpet tape if you prefer.

9. (Photo) The tool chest has three horizontal panels that need to be installed: a 1/4"-thick plywood bottom panel, a

1/2"-thick solid-wood bottom panel for the top inner compartment, and a 1/2"-thick wood panel for the chest's lid. All three of these panels need to fit into 1/4"-wide grooves cut into the front, back and sides of the chest. The router table fence sets the position of these grooves, and the panels are simply fed over a 1/4" straight bit to make the cuts. Depending on where these 1/4" grooves meet the corner joints, however, some of them will need to stop short of the ends of the panels so they won't show though when the chest is assembled. Our technical drawings for this tool chest will show you which groove cuts must be stopped and which ones pass all the way through the carcass panels. Be sure to check this carefully against your actual chest panels.

10. Once the grooves are routed, it's a good idea to clamp the carcass together again to double-check the sizes of the panels you need to cut. Plus, the top and center panels will need to be rabbeted around the edges to fit the 1/4"-wide grooves. Once you're certain, cut the top, center and bottom panels to final size and mill the 1/4" x 1/4" rabbets around their edges with a rabbeting bit in the router table.

11. Sand the panels up to 180-grit. Then apply your choice of finish to these panels. It's easier to do that now than after the chest is glued together, so you can finish them from edge to edge without interference.

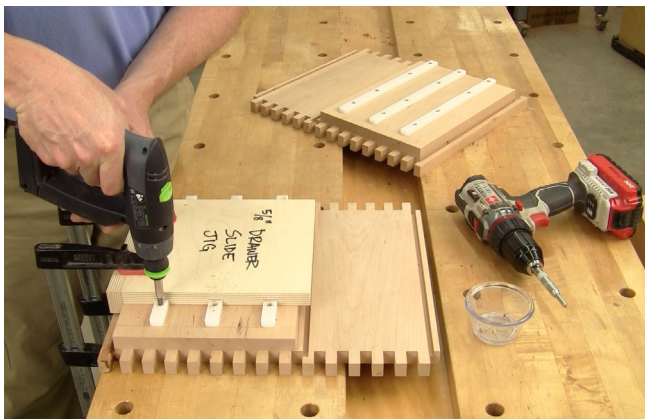
12. The tool chest drawers slide in and out on grooves in their sides that fit over plastic drawer slides (see the *Hard-to-Find Hardware* box on page 7). In order for the slides to line up correctly with the drawers, a pair of 3/4"-thick filler pieces must be added to the chest's side panels in the drawer compartment area. They act like spacers to bring the slides up flush with the inside edges of the drawer opening.

13. Cut the filler pieces from solid wood so they fit between the chest's center and bottom panel grooves. Make sure the grain direction on these filler pieces matches the side panels, so you don't create a cross-grain problem here. Glue and nail the filler pieces in place on the side panels.

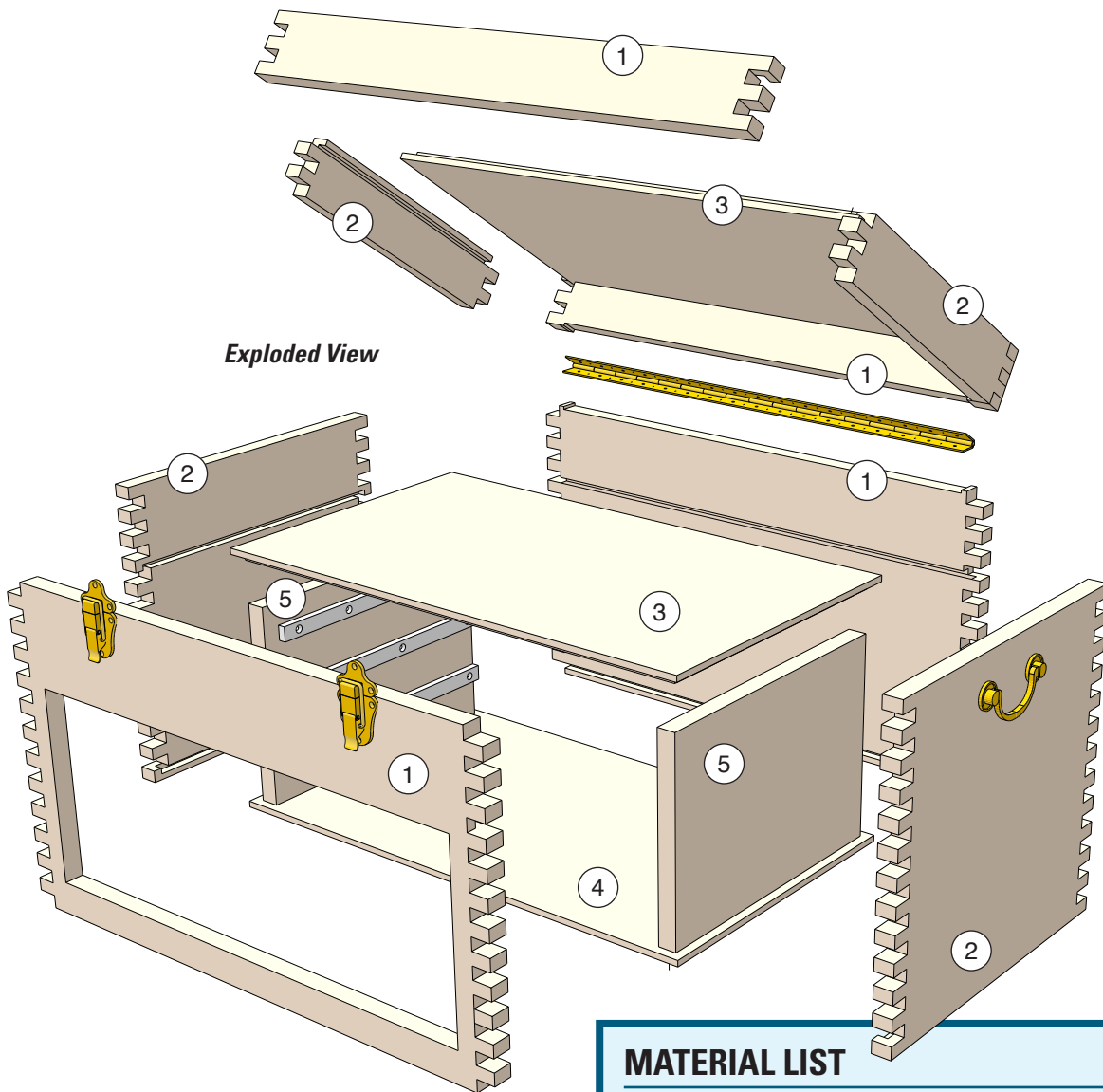
14. (Photo) The plastic drawer slides need to be installed on the filler pieces accurately. Otherwise, the drawers might not fit inside the chest opening correctly, or they could rub against one another. Our technical drawings will show you where to locate the slides on the filler pieces. In our video coverage of this project, we use a simple shop-made jig for installing the slides that you might consider making for this step. It has a fence on the edge to locate it accurately on the side panels, plus three grooves that hold each slide as you screw it to the filler pieces. That way, there's no chance the



**Step 9: Showing the three groove cuts made in the front panel**



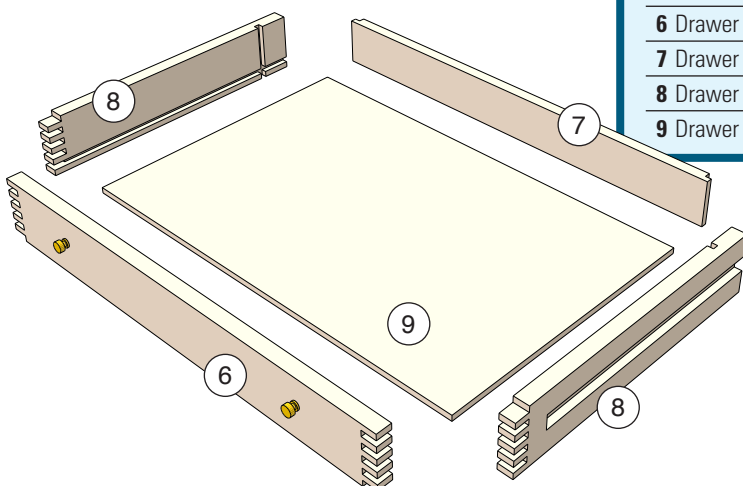
**Step 14: Screwing the slides in place on the side panel filler pieces**



**Exploded View**

## MATERIAL LIST

	<b>T x W x L</b>
<b>1</b> Front and Back Panels (2)	3/4" x 16" x 22½"
<b>2</b> Sides (2)	3/4" x 16" x 13½"
<b>3</b> Top and Middle Shelf (2)	1/2" x 12¼" x 22¼"
<b>4</b> Bottom (1)	1/4" x 12¼" x 22¼"
<b>5</b> Filler Pieces (2)	3/4" x 11½" x 8¼"
<b>6</b> Drawer Fronts (3)	3/4" x 2½" x 19"
<b>7</b> Drawer Backs (3)	1/2" x 2" x 18½"
<b>8</b> Drawer Sides (6)	5/8" x 2½" x 12¼"
<b>9</b> Drawer Bottoms (3)	1/4" x 11⅞" x 18¼"

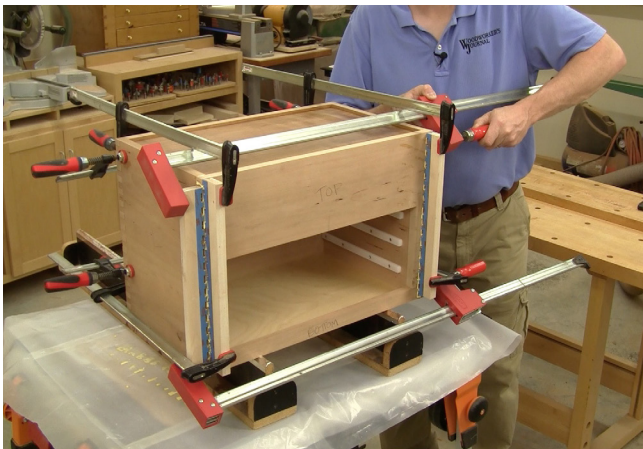


slides will shift out of alignment as you attach them.

15. When you've got the drawer slides in place, finish the inside surfaces of the top compartment. Cover the box joints first with painter's tape to keep them free of finish.

16. At this point, you're ready to glue and clamp the chest together, and here are a few pointers:

- Make sure you've done a full dry-assembly to be sure the panels and carcass pieces actually fit together!
  - Have plenty of clamps ready to go. You need to pull the joints together both lengthwise and widthwise. Once the glue is on, it's beginning to cure, and you don't want to be scrambling to find more clamps!
  - Make a pair of clamping cauls for each corner (see the project video for a close-up of these cauls). They'll help spread out that clamping pressure more evenly along the joints.
  - Finally, consider gluing the front corner joints first, with the back panel installed dry to serve as a clamping and squaring surface. It's a lot easier to manage two wet glue joints than four. When the front joints are dry, repeat the process to install the back panel. It will make a big glue-up like this a lot less stressful!
17. (Photo) Once you've got glue brushed onto the pins and slots, bring the whole chest assembly together with your cauls and clamps. The cauls should only put pressure on the pins of the panel that are being pressed against the adjacent panel. Tighten the clamps evenly. Then measure across the diagonals on the top and bottom of the chest: these measurements should be the same. If they are, you know the box is square.
18. When the joints dry, sand the corners flat and smooth.



**Step 17: Gluing up the chest carcass, with clamping cauls in place**



**Step 19: Making the final long kerf cut to separate the lid from the chest carcass with a track saw**

## **CUTTING THE LID FREE FROM THE CARCASS**

19. (Photo) You're ready to separate the lid from the chest. The way to do that accurately and safely is in stages. (Our project video will show you one method for separating the lid from the chest, using a track saw and clamps. You could also use your table saw and rip fence for this operation.)

20. Once the lid is cut free, clean up the sawn edges on the lid and chest with a block plane and sandpaper.

21. The last machining step on the chest before you build the drawers is to cut 1/16"-deep mortises for the piano hinge that will attach the lid. (In our project video, we use a short mortising bit with a pilot bearing on top in a trim router for this step. The router bit bearing is guided along a straight-edge and stopped by eye to make the lid and chest hinge mortise cuts.)

22. Square up the ends of the hinge leaf mortises with a chisel. Then cut the hinge to length and check its fit on the lid and chest by installing it with a few screws.



## MAKING THE DRAWERS

It's time to build the drawers, so let's start with the drawer faces. Remember the oversized piece that was left over from making the chest's front panel? You'll want the drawers to fit the chest opening with minimal clearance on the ends. So, measure and cut your drawer face blank to final length so there's just a 1/16" of clearance on each end.

23. (Photo) Now rip the blank into three equally sized drawer faces. Again, you want them to fill the drawer opening with only about 1/16" of clearance above and below each drawer.

24. Mark the drawer faces so you can keep track of their order in the chest. For best appearance, try to align the grain pattern of the drawer faces so it matches the surrounding grain pattern on the chest's front panel.

25. Next, joint and plane enough stock to make six drawer sides and three drawer backs. Rip and crosscut the drawer sides to final size. Then head back to the router table or table saw to prepare it for cutting box joints again. This time, install a 1/4"-diameter bit or switch to a 1/4"-wide dado blade. You'll also need to switch your box joint jig to a 1/4"-wide pin setup.

26. Notice in the chest *Drawings* that on these drawers, the pin and slot pattern is consistent from top to bottom, and there's a pin on the top corner of each drawer. So, when you're setting up the router cuts, make sure to orient the top edge of each drawer face against the jig pin for the first cut of each joint. That way, you'll set up the pattern correctly. Go ahead and cut the front corner joints on all three drawers.

27. (Photo) With the front corner joints cut, you can now mill grooves for the 1/4"-thick drawer bottoms. Locate them on the drawer sides at the bottom slot cut so those grooves can run all the way across the drawer sides without stopping. But, for the drawer faces, these grooves intersect a pin. If you run the grooves all the way across the drawer faces, they'll show through when the joints are assembled. These cuts need to stop 1/4" from the ends of the drawer faces, to hide the ends of the grooves. To help you determine where to start and stop the drawer bottom grooves on the drawer faces, mark the location of your router bit on the router table fence. Mark the drawer faces for the groove lengths, too. Then make the 1/4"-deep cuts by lowering the workpiece onto the bit to begin the cut and stopping the cut at your reference marks.

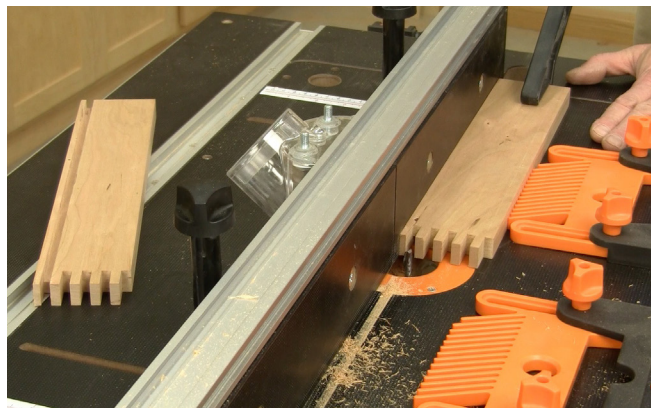
28. The back corners of the drawers are held together with rabbet-and-dado joints. They're strong and easy to make. Just cut a 1/4"-wide, 1/4"-deep dado across the inside faces of the drawer sides. Position these 1/4" in from the back ends of the drawer sides.

29. (Photo) Rip and crosscut the drawer backs to size, and rout a rabbet across both ends of each drawer back. These need to fit the dados you cut in the drawer sides snugly, so be sure to set up these cuts carefully.

30. Now dry-fit the drawer boxes together and measure for the drawer bottoms. Cut these panels to size. They need to fit



**Step 23: Ripping the remaining blank from the project's front panel into three drawer faces**



**Step 27: Plowing a full-length groove in a drawer side at the router table**



**Step 29: Close-up of making two rabbeting passes on one of the drawer backs**



**Step 33: Installing drawer bottoms on the drawers with brad nails**



**Step 35: Cutting stopped grooves on the sides of the drawers to fit over the chest's plastic drawer slides**

## Tool Chest Hard-to-Find Hardware

<b>1<sup>1</sup>/<sub>16</sub>"-wide Brass Piano Hinge (1) #19241 .....</b>	<b>\$15.99 ea.</b>
<b>Solid Brass Sash Pulls (2) #70458 .....</b>	<b>\$14.99 ea.</b>
<b>Brass Classic Oblong Catches (2) #26443 .....</b>	<b>\$5.49 pr.</b>
<b>Solid Brass Lid Support (1) #32110 .....</b>	<b>\$34.99 ea.</b>
<b>White Plastic Guide Rails (6) #26729 .....</b>	<b>\$3.49 pk.</b>
<b>Solid Brass 5/8" Classic Knobs (6) #35451 .....</b>	<b>\$5.99 ea.</b>

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all the way into their grooves, with the back edge extending all the way out so it's flush with the back of the drawer.

31. Sand the drawer bottoms and the inside faces of the drawer parts up to 180 grit. Then mask off the corner joints, and apply finish to these pieces.

32. When the finish cures, go ahead and assemble the drawers with glue and clamps. For these joints, it's a good idea to make pairs of 1/4" clamping cauls, just as you did for the chest's box joints, to be sure the pins and slots will push together tightly when you assemble the drawers.

33. (Photo) Rip and crosscut three drawer bottoms from 1/4" plywood. Sand them smooth and apply finish to them. Once it cures, slide the drawer bottoms into their grooves, and nail them to the bottom edge of the drawer backs with 18-gauge brads to secure them.

34. When the glue dries, sand the corner joints and edges of the drawers flat.

35. (Photo) There's just one more important cut to make on these drawers, and that's the stopped grooves that fit over the plastic drawer slides. Make them with a 5/8"-diameter straight bit so they'll fit nicely over the slides. Start these grooves 1 1/2" back from the front ends of the drawer sides, and make them about 1/4" deep. (Our project video shows the procedure for making these stopped cuts at the router table.)

36. Before you're done at the router table, make sure the drawers slide in and out smoothly and their faces stop flush with the chest face. You may need to adjust the groove cuts wider, deeper or longer to improve the drawer action. But be careful: little changes here make big differences in terms of how the drawers fit their openings!

## FINISHING UP WITH BRASS HARDWARE

37. Your tool chest's construction phase is done! It's time to give the chest carcass, lid and drawers a last sanding, then go ahead and apply finish to all of the remaining bare wood.

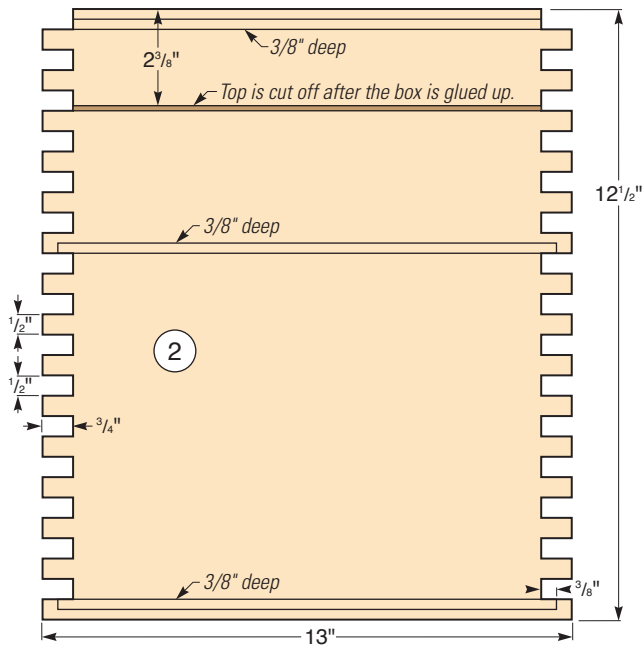
38. When the finish cures, it's time to add some brass hardware. Install the piano hinge to attach the lid, then mount a lid support inside the chest to hold the lid open during use. Brass drawer knobs, carry handles and lid clasps will give your tool chest the classic look it deserves! (The *Hardware Box* supplies order codes for all of the hardware used on this chest.)

39. Finally, you can divide up the chest's top compartment and drawers however you like for the specific tools you own. (In the project video, we use strips of scrap wood from the project, joined with half laps and pin-nailed in place, to serve as tool dividers.)



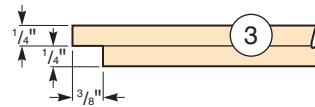
### Side Panel

(Inside View)



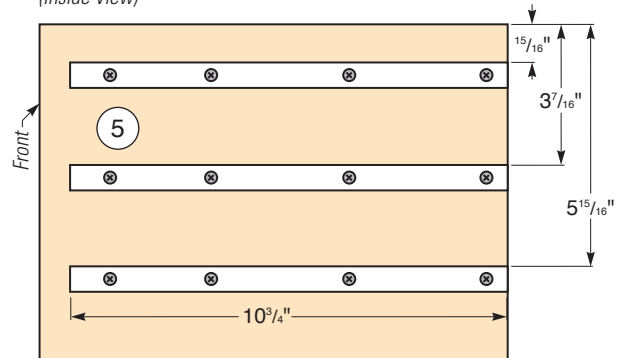
### Top and Middle Shelf

(Side View)



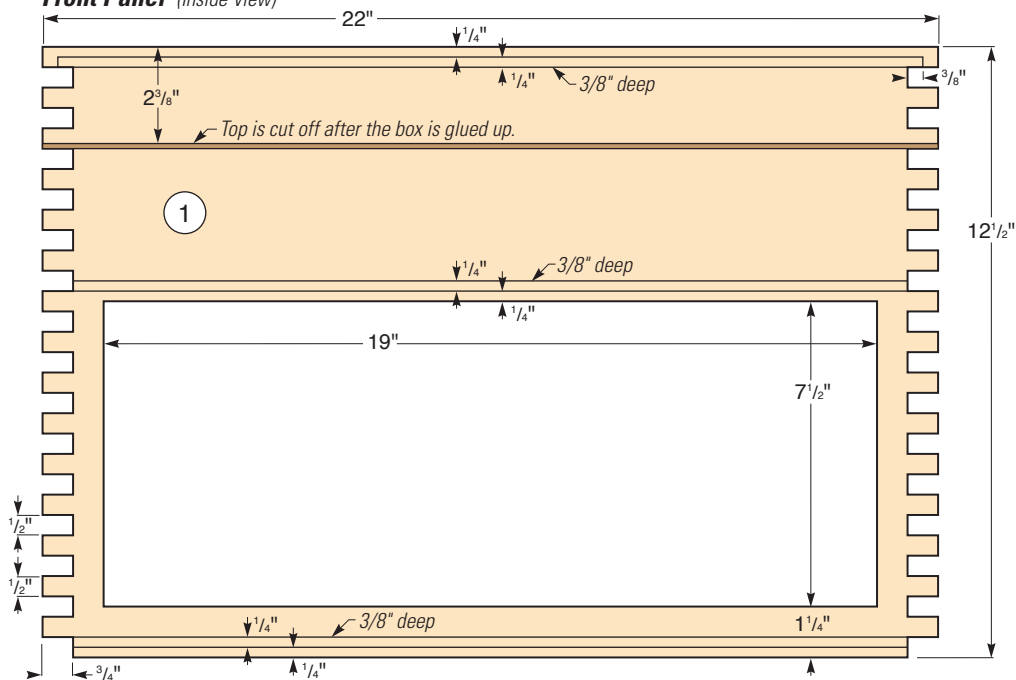
### Filler Piece Slide Locations

(Inside View)



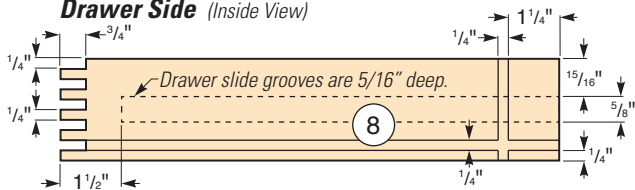
### Front Panel

(Inside View)



### Drawer Side

(Inside View)



### Drawer Front

(Inside View)

