



Woodsmith **PLANS**

ROUTER BIT CABINET



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Dovetail keys at the corners reinforce the joints to make a stronger cabinet. Plus, a clear, plastic door panel lets you see what's inside.

Router bits and neckties have a number of things in common. It doesn't take long before you accumulate a sizable number of each. Quality ones are fairly expensive. And most of the time, there's really no good way to store them. Since I prefer router bits to neckties, I built a storage cabinet to help organize and protect my router bit collection, as shown in the photo at right.

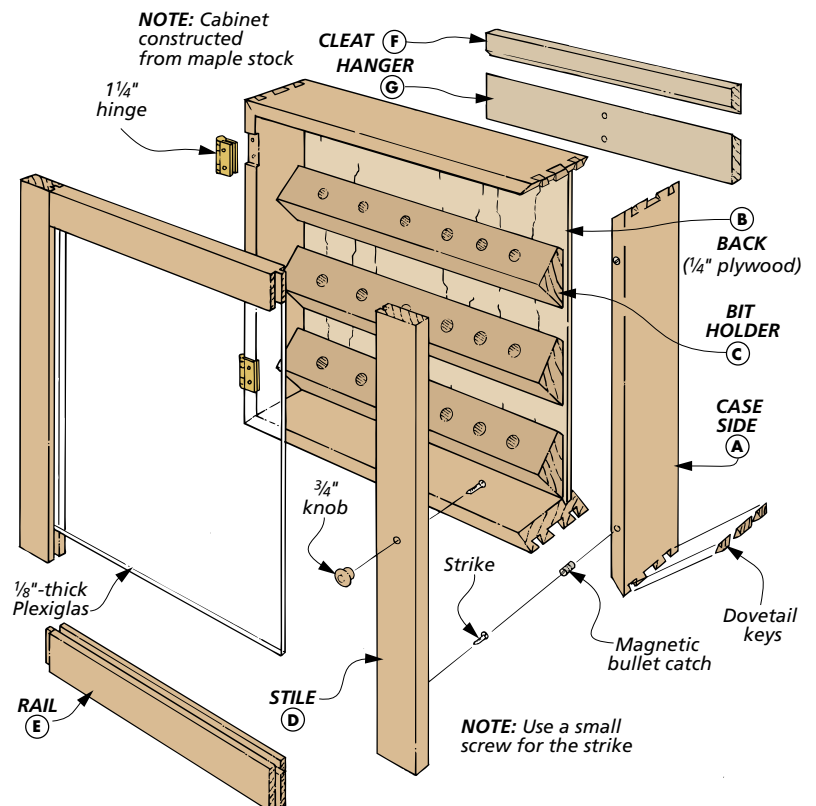
As you can see, the design for this cabinet isn't elaborate. However, the dovetail keys and a *Plexiglas* door provide enough of a challenge to make building this router bit cabinet quite interesting.

MITERS. To start on the cabinet, I made a square box. It consists of four case sides cut to the same width (4") and mitered to length (13½"), as you can see in the illustration at the top of the next page.

To end up with a tight miter joint, the pieces must be cut to the same length. After cutting a 45° angle on one end of each piece, I installed a stop block on the auxiliary fence of my miter gauge and cut the pieces to final length. A stop block ensures that all four pieces are the exact same length for tight-fitting miters.

GROOVES. After cutting the miters, the next step is to cut a ¼"-deep groove near the back edge of each piece for a ¼"-thick plywood back, as shown in detail 'a' on the next page. Notice that the groove is located ½" in from the back edge. This provides room for the mounting cleat you'll add to the back.

I couldn't use my dado blade to cut this groove since it had to be less than ¼" wide (the thickness of my plywood was less than ¼").

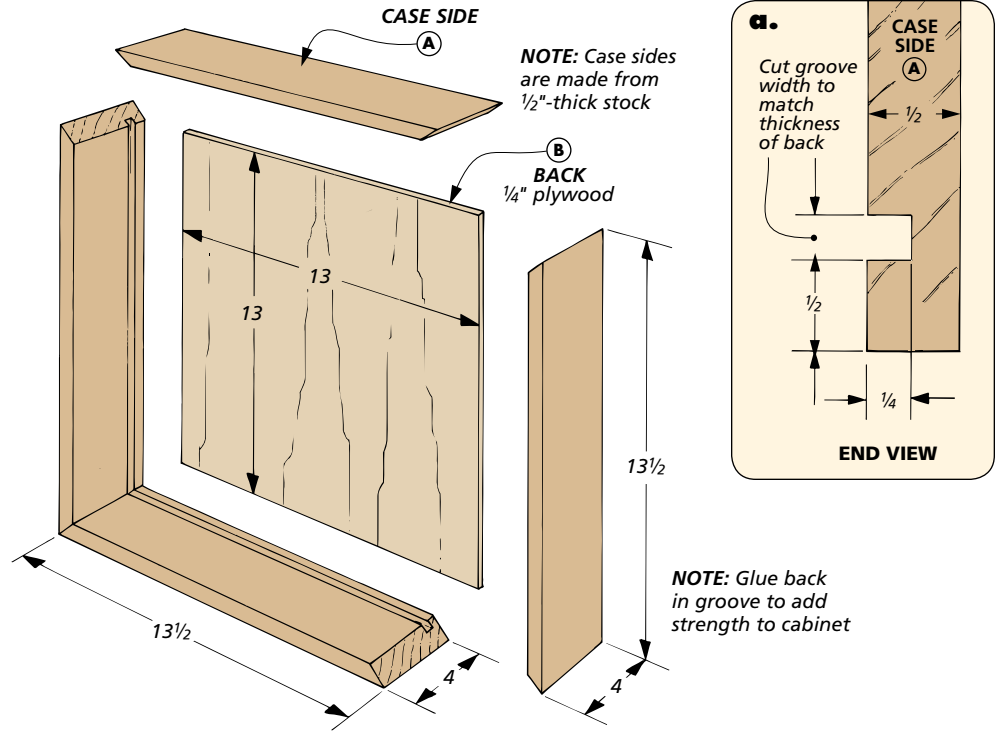


So, I cut the groove by making a couple of passes with a standard combination blade to sneak up on the width. This way, it's easy to check the fit between passes.

BACK. With the grooves complete, you can begin working on the $\frac{1}{4}$ " plywood back. The important thing is sizing the back so that the miters will fit together tightly. To check this, it's a good idea to dry assemble the side pieces and back before you do anything else. Then, if there's a gap at any of the corners, the back can be trimmed down.

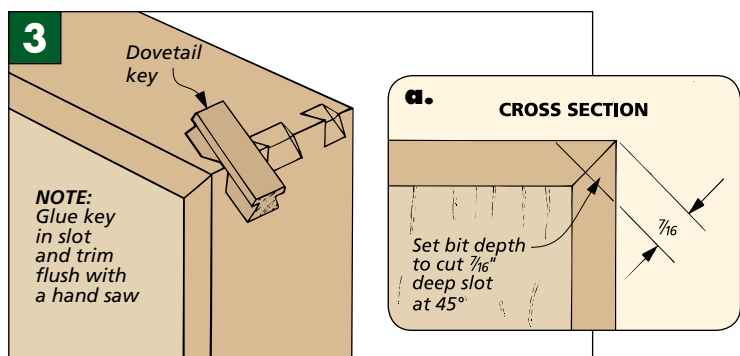
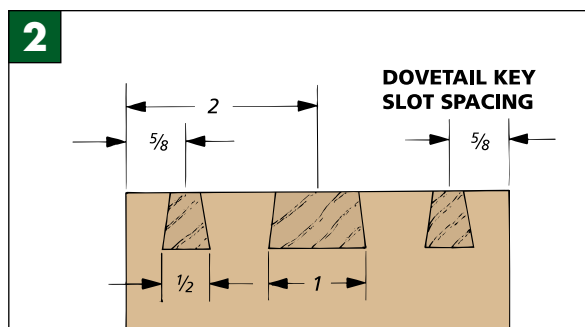
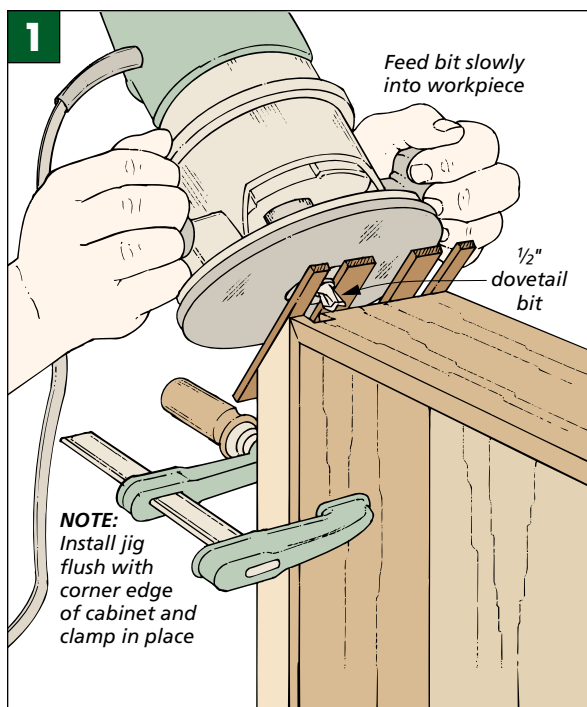
ASSEMBLY. When you're satisfied with the fit, glue and clamp the case sides and back together. (Note: Gluing in the plywood back is a good way to add strength to the case.)

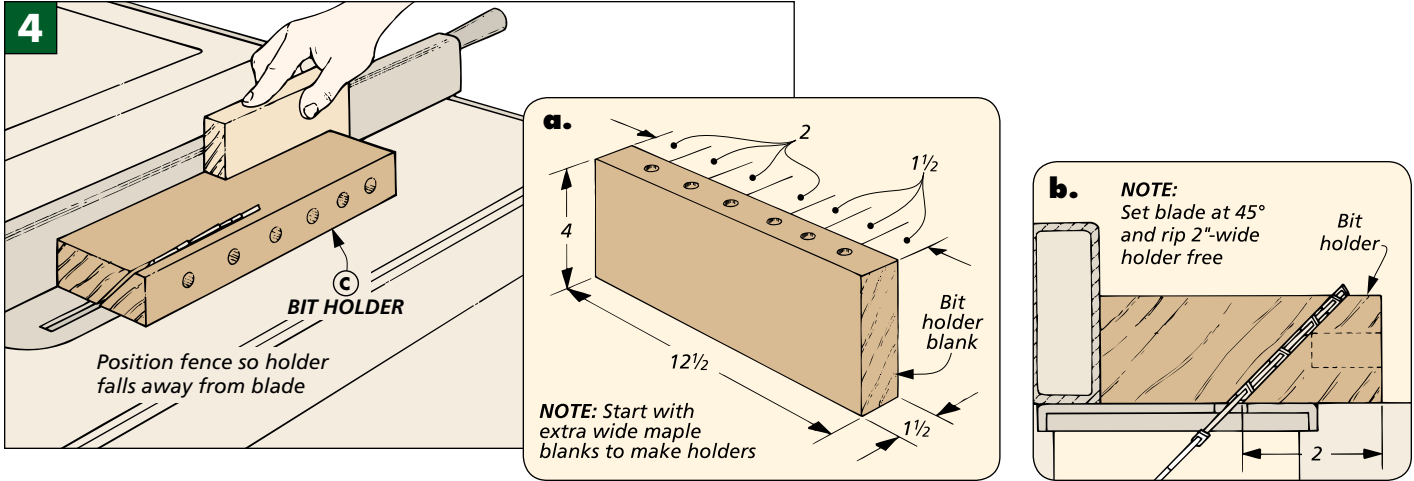
DOVETAIL KEYS. When I glue a box together with mitered corners, I usually add splines for strength — and this time is no different. But instead of putting them on the inside of the joint, I added them across the outside corners, as you can see in the drawing on previous page. These splines have a dovetail shape, but they aren't just decorative. The splines create more gluing surface, so you'll end up with a stronger joint.



Cutting slots for these splines requires the jig you see in Figure 1. It automatically tips the router at an angle so the slots can be cut perpendicular to the corner. A guide bushing attached to the router base follows a template on the jig, and a $\frac{1}{2}$ " dovetail bit cuts the slots. For details on building and using the jig, refer to the Dovetail Key Joinery article.

I routed three slots $\frac{7}{16}$ " deep at each corner of the box, as you can see in Figures 2 and 3a. The spacing of the slots is simply decorative, so you can space them any way you want. Then, make your keys to fit snugly in these slots (Figure 3). Finally, you can trim them with a hand saw and sand them flush with the sides of the box, as illustrated in Figure 3.





After sanding the keys flush on the outside of the case, I turned my attention to the inside and began working on the three bit holders.

BIT HOLDERS. These bit holders are cut from three 1 1/2"-thick blanks with 1/2"-dia. holes drilled in one edge. To keep things simple, I drilled all the holes the same size. For my router bits with a 1/4"-dia. shank, I used nylon sleeves to adapt the holes. How far apart you drill the holes depends on the size of the router bits in your collection, as in detail 'a.'

Once the holes are drilled, I ripped the holder from the blank by cutting

a 45° bevel on one edge. This angle tips the holder so you can access the bits easily in the case. To cut this bevel safely, I started with an extra-wide blank (4"). This keeps your hands a safe distance from the blade (Figures 4 and 4a).

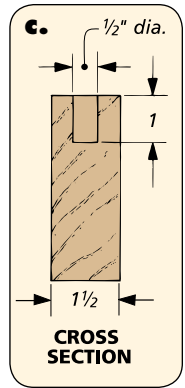
After the three bit holders are cut free, they can be screwed to the cabinet back. You can find more details on this in the box below.

DOOR. With the bit holders installed in the case, the next thing to do is build a door to fit on the front. I decided to use a full overlay door — this means it must be sized to

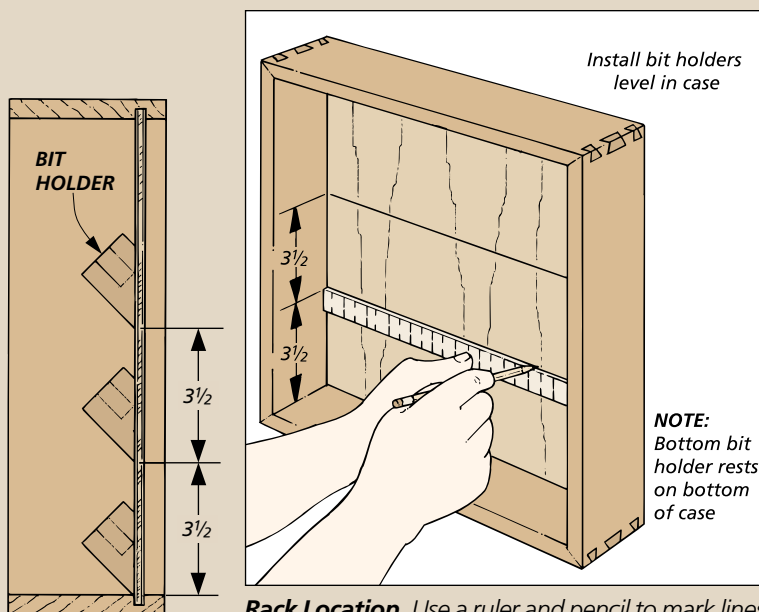
match the overall case dimensions. The door is constructed with a pair of stiles and rails with a 1/8"-thick *Plexiglas* panel sandwiched in the middle (Figure 5 on the next page).

To hold the *Plexiglas* panel in the door, a 1/8"-wide by 1/4"-deep groove is centered on the edge of each door piece (Figure 5a). Besides the panel, the groove holds a stub tenon cut on the ends of the rails.

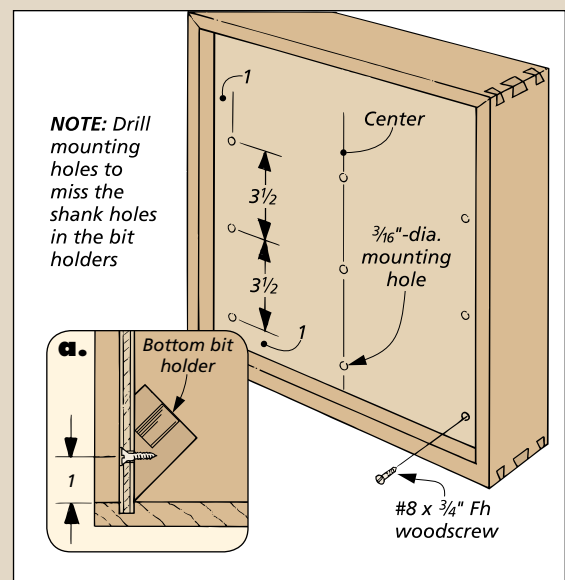
Before cutting the stub tenons, I switched to a dado blade. Then, I removed stock from both sides of the rail until the tenon ended up centered on the thickness, as in Figure 5b.



CABINET ASSEMBLY



Rack Location. Use a ruler and pencil to mark lines 3 1/2" up from the bottom and then 3 1/2" up from the first line to keep the racks level and evenly spaced.



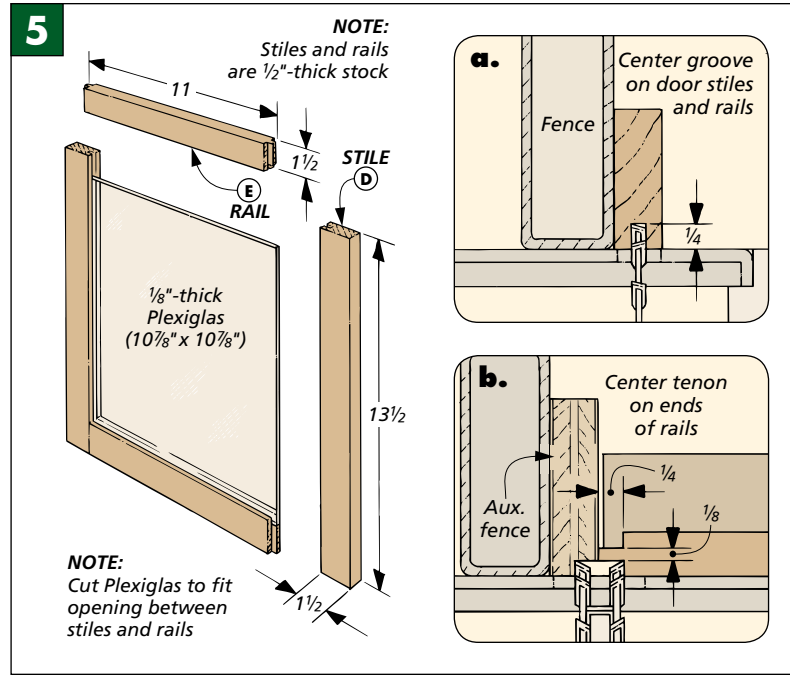
Mounting Holes. Be careful where you drill the mounting holes. They must be positioned so they don't go through the holes for the router bit shanks.

All that's left is to cut the *Plexiglas* panel to size. A quick way to find the correct size is to dry assemble the stiles and rails and measure the opening. Add in the lengths of the tenons ($\frac{1}{2}$ "), subtract $\frac{1}{8}$ " for clearance, and cut the panel to size. In my case, the panel ended up $10\frac{7}{8}$ " x $10\frac{7}{8}$ ". Then, glue the stiles and rails together with the *Plexiglas* panel in place.

HINGES. With the door built, it's ready to hang on the case. To do this, I mortised the hinges into the case and screwed them to the door (Figures 6 and 6a).

KNOB & CATCHES. To keep the door closed, I installed a pair of magnetic catches (Figure 6b). The instructions that came with the catches recommended using a $\frac{5}{16}$ "-dia. drill bit, but the fit was a little too tight. Instead, I drilled the holes a bit oversize ($\frac{1}{32}$ "). To make sure the catches would stay put, I coated the inside of the holes with epoxy before installing them.

The door strikes came next, but I couldn't use the ones that came with my catches. The small metal washers were too thick for my door size. (It made the door look like it was hanging open.) To solve this, I used a short steel screw (#6 x $\frac{1}{2}$ ") for the strike instead.

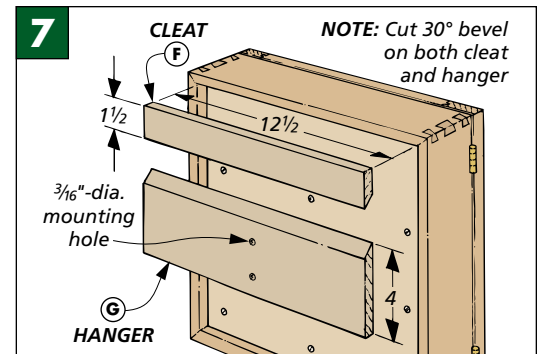
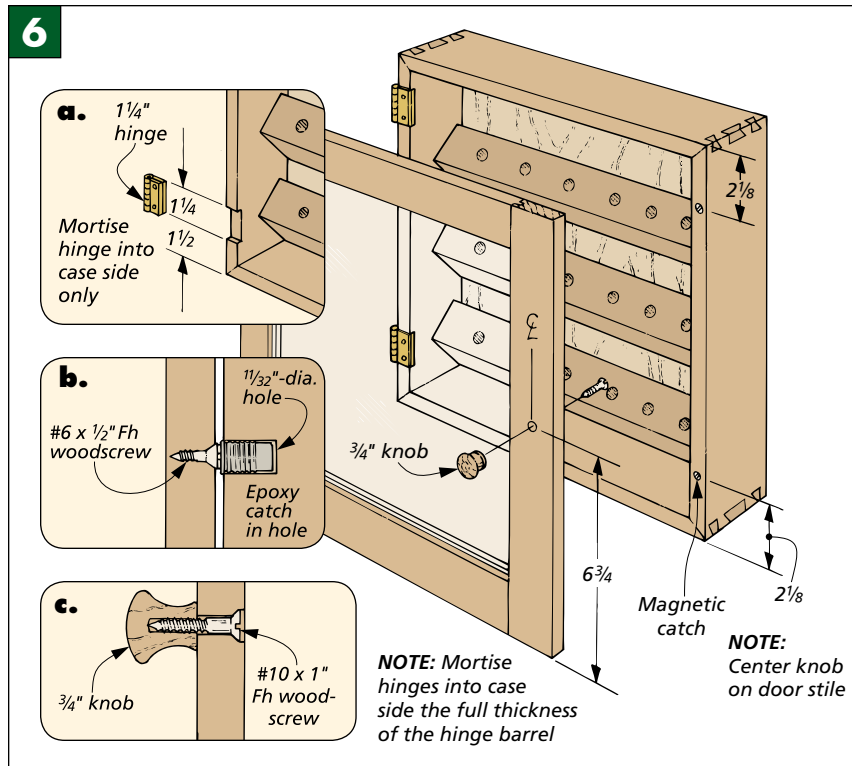


Finally, screw a birch knob to the stile, so it's centered on the height of the door (Figures 6 and 6c).

CLEAT. To finish up the cabinet, I added a beveled cleat and hanger to the back of the case. This makes it easy to hang the cabinet on the wall and easy to remove if you want to take it to a job site.

The cleat and hanger are both made from $\frac{1}{2}$ "-thick stock with a 30°

bevel cut on one edge, as illustrated in Figure 7. I cut the cleat to size and glued it to the case back. Then I leveled the hanger and mounted it with long woodscrews. To hold the case securely, be sure the screws hit a wall stud.



MATERIALS & SUPPLIES

A	Case Sides (4)	$\frac{1}{2}$ x 4 - $13\frac{1}{2}$
B	Back (1)	$\frac{1}{4}$ ply. - 13 x 13
C	Bit Holders (3)	$1\frac{1}{2}$ x 2 - $12\frac{1}{2}$
D	Door Stiles (2)	$\frac{1}{2}$ x $1\frac{1}{2}$ - $13\frac{1}{2}$
E	Door Rails (2)	$\frac{1}{2}$ x $1\frac{1}{2}$ - 11
F	Cleat (1)	$\frac{1}{2}$ x $1\frac{1}{2}$ - $12\frac{1}{2}$
G	Hanger (1)	$\frac{1}{2}$ x 4 - $12\frac{1}{2}$

- (9) #8 x $\frac{3}{4}$ " Fh Woodscrews
- (2) #6 x $\frac{1}{2}$ " Fh Woodscrews
- (1) $\frac{1}{8}$ " *Plexiglas* Panel $10\frac{7}{8}$ " x $10\frac{7}{8}$ "
- (1 pr.) $1\frac{1}{4}$ " Brass Butt Hinges w/Screws
- (2) Magnetic Catches
- (1) $\frac{3}{4}$ "-dia. Wood Knob