# Built-ins that Fit Like a Glove

## Tricks to fit a cabinet perfectly into any space

**BY GREG ZALL**

Installing a built-in cabinet is where woodworking meets carpentry, and where square meets not-quite-square. Walls that are out of plumb and corners that are not 90° are tricky to work around, especially when you're installing in a three-sided space. I face this challenge regularly when I build a wall-to-wall desk or design a cabinet to fit into the alcoves that are a common architectural detail in the San Francisco area, where my shop is. To make my built-ins fit like a glove, which I think fine furniture should, I pair a few old carpentry techniques with some cabinetmakers' tricks of my own.

I start with a cabinet narrower than the space, and a separate base shallower than the cabinet. That design lets me position the whole assembly away from the imperfect wall surfaces. I compensate for any undersizing with overwide face-frame stiles that I scribe and cut during installation. Then I cap it with an oversize, thick-edged wood top. These techniques ensure that any built-in will fit perfectly.

### The case and the base are quick and simple

I assemble the cabinet and most of its parts before installation. The case and the base are equal width, but the base is ½-in. shorter, front to back. That keeps it away from the back wall, where a bumpy surface could prevent it from sitting flush with the face frame in the front.

I use ¾-in.-thick, veneer-core plywood for everything except the back, which is ½ in. thick. I use pre-finished plywood to save time. Join the case parts with biscuits, glue, and screws, and the base with glue and nails.

### Big face frames fit better

The face frames are the heart of my technique for a perfect fit. The trick is to attach the rails before installation,
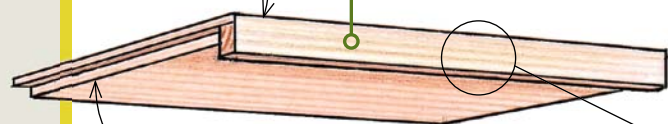
# SMART CONSTRUCTION IS THE KEY

Build the top oversize, the stiles over-width, and rabbet any edges that will touch a wall. And leave those pieces unattached, so they can be cut to fit during installation. The rest of the case and base is assembled ahead of time.



*Attach the cap.* Glue a solid-wood cleat in the rabbet along the front (shown) and then rip the overhang to make it flush with the plywood edge.
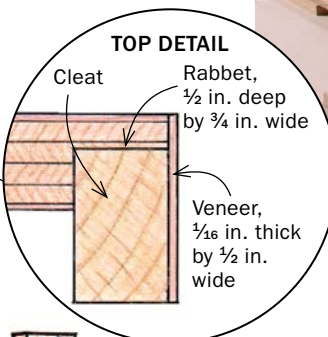
## SEAMLESS TOP...

Cut a rabbet along all four edges of the top, glue a solid cleat into the rabbet along the front, and then veneer the front edge.

Top is ⅜ in. deeper and ¾ in. wider than alcove.

Rabbets, ½ in. deep by ¾ in. wide

### TOP DETAIL

Cleat

Rabbet, ½ in. deep by ¾ in. wide

Veneer, 1/16 in. thick by ½ in. wide

Stiles are ⅜ in. over width.

Case and base are 2½ in. narrower than alcove.



*Now veneer it.* Use yellow glue with a long caul to spread the pressure evenly along the veneer. When it dries, break the edge with sandpaper.

Upper rail, maple, ¾ in. thick by 2⅜ in. wide

Stiles, maple, ¾ in. thick by 2½ in. wide

Rabbets, ½ in. deep by ¾ in. wide

## ... AND STILES, TOO

To make the stiles just as easy to trim, start with pieces that are ⅜ in. too wide and then cut a rabbet along the edge that touches the wall.



*Thin the sides.* Rabbet the edges of the stiles to leave about ¼ in. of material, which makes it quick and easy to trim them to fit a wavy wall.
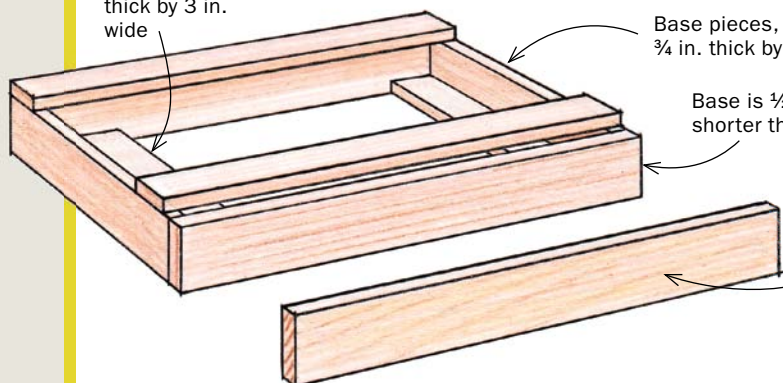
**NOTE:**
Attach stiles after installing the cabinet.

#20 biscuits

Bottom and subtop are identical, and joined with biscuits, screws, and glue.

Lower rail, maple, ¾ in. thick by 1½ in. wide

Nailing cleats, plywood, ¾ in. thick by 3 in. wide

Base pieces, plywood, ¾ in. thick by 2¾ in. wide

Base is ½ in. shorter than case.

Trim piece, maple, ¾ in. thick by 3 in. wide (cut to fit)



*Glue the rails beforehand.* Dry-fit the stiles to align and glue the rails in position during assembly. Then remove the stiles so they can be trimmed later.

## ANCHOR THE BASE

**Level everything before securing the cabinet, so it too goes in level and plumb. Zall's scribing method depends on it.**

*Level it.* Check the base for level. Zall adjusts the fit with wedged shims if needed, but doesn't nail it down yet.



*Locate it, and nail it.* Test-fit the cabinet so it is against the back wall, and position the base flush at the front, using tape to mark its position on the floor. Then remove the case, re-level the base, and nail it to the floor.



**BASE ANATOMY**
This is how Zall aligns and trims the base of his cabinets, but it is not critical to his overall approach.

Face frame

*These surfaces must be flush.*

Base

*Trim piece covers joint.*



*Lock it in place.* Install the cabinet equidistant from both side walls. Push it against the back wall again, shim any gaps at the back edge, and screw through the top of the back panel into a wall stud.

## SCRIBE THE STILES

**Use over-width stiles to fill the gaps between the wall and the sides of the case, trimming them to fit after the cabinet is screwed to the wall.**

*Measure from the top.* Measure the distance from the end of the rail to the wall to determine the final width of the stiles. It should be the same on both sides of the cabinet.



*Transfer the distance.* Run a strip of masking tape along the edge of the stile to help mark and trim the edge without marring the piece. For now, just transfer that top distance.



but leave the stiles overwide, unattached, and with the biscuit slots already cut. That way I can scribe the stiles to the wall and cut them while they're loose, which is easier. Then I use the friction from the wall, rails, and biscuits to help hold the stiles in place while the glue sets.

Leaving the stiles ⅜ in. too wide gives me more than enough scribing room, but it's a good idea to check the walls beforehand to see how flat they are. To make it easier to scribe and trim the stiles, I cut a ¾-in.-wide by ½-in.-deep rabbet along their back edge, where they touch the wall. The rabbet leaves ¼ in. of solid wood along the edges, which is strong enough to resist breakage but thin enough to trim easily with a jigsaw and block plane during installation.

### Cap the top

Just like with the stiles, I build wood tops that are too big to fit in the space, and cut sizable rabbets along the wall-side edges to make them easier to trim in place. Rather than cutting stopped rabbets along the sides, I cut through-rabbets on all four edges and fill the front rabbet with a piece of solid wood.

Most cabinetmakers just glue ¾-in.-thick edging along the front edge of a plywood top, but I don't like that technique because it leaves an obvious grain change and a thin glueline visible on the top. Instead, I glue a hardwood cleat into a rabbet along the front, and then veneer over it. Then, when I break the edge with sandpaper, it hides the glueline.
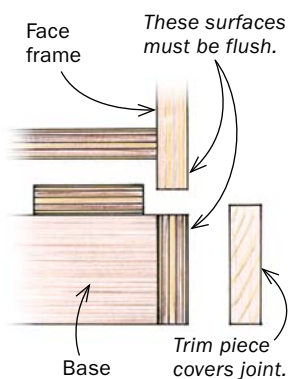
**Keep stiles plumb.** Lay the stile on top of the rail and butt the rabbeted edge tightly against the wall. Check it with a level and shim if needed.

**Scribe the edge.** *Use the pencil mark at the top to set the scribe, and keep the tool butted against the wall as you run it along the stile.*

Once the cleat is glued and veneered, the top should be about ⅜ in. longer than the alcove and ¾ in. too wide. That should be more than enough space to scribe and trim for a tight fit.

### Install from the bottom up

When scribing the stiles, I need to reference my marks off a solid, level cabinet that's firmly rooted in place, so setting the base properly is a key first step in the installation.

I start by positioning the base ½ in. from the back of the alcove, and roughly equidistant from both sides. Then I test-fit the case to make sure everything lines up properly and the bottom rail of the face frame sits flush with the front of the base. I mark the position of the base with tape, remove the case, and check the base with a level, shimming where needed. I nail the base to the floor through the cleats with 1½-in.-long nails. The nails keep the base tightly cinched against the floor when I'm positioning the case, but still have enough play that I can adjust the fit front to back with a hammer tap. Install the case, check that it's level and plumb, and then screw the case to the back wall studs. Screw near the top of the case to prevent the case from moving, adding shims between the wall and the top of the case as needed to stabilize the cabinet.

To trim and attach the stiles, measure from the end of the rail to the drywall and mark that distance on the stile. Push the stile against the wall, shim it plumb, and place the pencil of the scribe on the mark. Keep the stile tightly in place as you run a line along it.

Cut along that scribed line to match the stile to the wall. I do this by first cutting close to the line with a jigsaw. Then I use a block plane to smooth the saw marks and sneak up on a good fit. I secure the stiles with glue and biscuits when I get them snug.

### Cut the top with a template

Three-sided spaces are almost never perfectly square, which makes fitting cabinet tops tricky. The easy, imperfect way to do so is to cut an undersize top and cover the gaps with clunky



**Plane to the line.** *Cut away the excess using a jigsaw and clean up the edge with a block plane.*



**Friction does the clamping.** *Pivot the stile onto its biscuits. The rails and the wall will keep it wedged in place while the glue sets, but give it a couple of taps first to get it flush.*

## A TEMPLATE FOR THE TOP

**Use narrow strips of MDF to make a template the exact shape of the opening, and use it to mark the top before cutting.**

Template pieces, MDF, ⅛ in. thick by 3 in. wide

Top
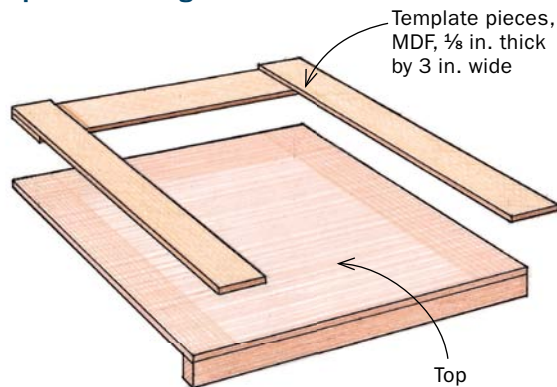
*Scribe each piece. Butt the edges of the MDF pieces against the wall and use a pencil as a scribe. Then trim the edges down to the line using a block plane.*

*Glue them together. Zall uses hot-melt glue to attach the template sides to the back piece. Before removing the template, mark where it meets the cabinet's front edge.*

*Drop it in. With the edges trimmed, the top should fit perfectly into place. Attach it to the sub-top from below with four screws.*

*Line it up. Use the marks at the front to align the template, adding an extra 1¼ in. to account for the overhanging top, and trace the template. Use a fine-tooth handsaw to cut through the maple cleat in the front but remove the rest of the waste with a jigsaw and trim the top to fit with a block plane.*

moldings. Instead, I build a quick template from MDF and use it to mark the oversize top so it can be cut to shape perfectly.

I make three template pieces by butting a piece of MDF against each wall and then scribing the wall shape onto the MDF with a pencil. Then I use a block plane to trim the template to the scribe lines. Once the pieces are scribed and cut, butt the rear template into position and attach the sides to the back with hot-melt glue. Before removing the template, mark where it meets the front rail, then measure out another 1¼ in. to account for the overhanging top. Use that mark to line up the template on the wood top.

Align and trace the template with a pencil and use a square to transfer the template line down the front edge. Now you're ready to cut. Start at the front edge using a fine-toothed handsaw on the cleat and cut right to the pencil line. A spot-on cut is best, because

you won't need to go back and handplane it later. I finish cutting the rest of the top with a jigsaw, staying as close to the line as possible, and then carefully clean up the saw marks with a block plane.

If the back of the alcove is the same size or smaller than the front, slide it straight in. If the back of the alcove is wider than the front, you'll need to angle the top on one side and drop it into place. Go slowly and don't force it or you could scratch the wall or damage the top. Attach the top with screws from inside the cabinet. Then attach the trim with a pin nailer.

Use these tricks and you will get cabinets in place fast with an exact fit. Your reward is a perfect line where the wood meets the wall. Or, as a client once said, "It looks like it grew there." □

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*Greg Zall builds cabinets and solid-wood furniture in Petaluma, Calif.*