


Installing Frameless Cabinets



Full overlay doors and tight reveals means everything has to be perfect, even if the space is not

BY AARON BUTT

LAYOUT IS EVERYTHING

I put in my first set of kitchen cabinets more than 15 years ago, and I've done dozens of installations since.

All of these cabinets have fallen into one of two categories: face frame, which is what most American cabinet manufacturers produce, and frameless, which was first popularized in Europe. Face-frame cabinets are just what they sound like: They have a frame that attaches to the front of the cabinet boxes to keep them square and to mount doors. The frames typically extend beyond the sides of the actual cabinet box, so it's easy to trim or plane them to correct for extra-tight or out-of-plumb conditions. You can also extend the frame or use fillers to close gaps between cabinets, walls, and appliances. These are luxuries you do not have with frameless cabinets.

Frameless boxes fit together tightly, and the reveals between their full-overlay doors and drawers are small and uniform, so any problems are especially obvious. A 1/4-in. difference between the design and field conditions can mean time-consuming and complicated workarounds. The upsides of these cabinets are that they're easier to reach into and they're more spacious than face-frame cabinets.

To prevent problems, I like to field-verify all the measurements and compare them to the shop drawings before the cabinets are built. When we field-verify, we also check for out-of-plumb and out-of-level conditions.

This article follows one of our typical custom frameless cabinet installations. The kitchen isn't especially big, but it has all of the elements common to this room: upper and lower cabinets, an island, and special enclosures for some large appliances. Installing custom frameless cabinets takes longer than off-the-shelf framed cabinets—this kitchen took two skilled carpenters and a helper a full work week to install 16 cabinets and build the island. But I enjoy the challenge of installing kitchen cabinets because it uses such a wide set of skills. The work requires thought and meticulousness, and you can enjoy a real sense of accomplishment when the job is done. □

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We do a comprehensive layout of the cabinets before putting anything in place. It's the first step to ensuring the uppers and lowers are in the right spot and that they're plumb, level, and square, even if the walls are not. We snap level control lines and write individual box dimensions on the walls. This step also verifies that the design and field conditions are in sync.



FIND THE HIGH SPOT

We start by projecting a level laser line onto the wall. The laser line's height doesn't matter; its only purpose is to act as a reference, allowing us to measure down to the floor in several places on every wall to find the highest spot. Then, we measure up from the high spot and mark the wall at 34³/₄ in.—the standard 36-in. cabinet height minus the thickness of a typical 1¹/₄-in. countertop—and use a long level or chalklines to continue this level line on every wall that will receive cabinets.



LOCATE THE BOXES

With the control line established, we refer to the plans and mark the width and edges of each individual cabinet—uppers, lowers, and all appliance locations—to verify that the cabinet plans and the actual room are in agreement.



LABEL EVERYTHING

Next, we mark each cabinet along with its corresponding position on the wall. Then, we remove all drawers, doors, and shelving from the cabinets, labeling each part. We set aside everything but the boxes, ideally in another room so it won't be damaged.

INSTALLING UPPERS

I prefer to install upper cabinets first, because it's easier to lift them into position and fasten them without the lowers in the way. We usually start installing cabinets in the middle of a wall, so two of us can work at the same time on opposite sides of a center cabinet. In this case, the sink wall had a bank of windows and the uppers flanked the opening, so we each took a side of the window opening to work on. Some carpenters screw a bunch of boxes together and install them as a unit. We do that sometimes, but when we split sides, it's easier to go one at a time so we don't have to struggle lifting the boxes, which might lead to accidental damage.



LEDGER MAKES THEM LEVEL Fastening a 2x board along the layout line with 3-in. screws into the framing ensures wall cabinets are installed level and at the right elevation. It also helps hold the cabinets while they are fastened to the wall. The screw holes will be hidden by a tile backsplash or filled and sanded by the painter.



SCREW INTO SOLID BACKING When we can, we install blocking between studs for every cabinet, ensuring every box is secure and that screws can be arranged in a consistent manner. Without blocking, we locate every stud and arrange screws as consistently as possible.

SPACERS IN CORNERS A spacer at blind corners allows doors to open without hitting each other. We find that it's easier to attach it at the correct reveal before lifting the box.



ROOM FOR ADJUSTMENT Spacing blind-corner cabinets slightly away from neighboring walls compensates for out-of-plumb and out-of-square conditions. Frameless cabinets can be forced out of square if they're pushed tight to an out-of-plumb wall. We make sure the box is tight to the ledger and the sides are plumb before fastening.

PIPES, DUCTS, WIRES

DUCTS AND WIRES IN RANGE HOODS



CUT TO FIT After finding the center of roughed-in ducts, pipes, and wires, we transfer the measurements to the box. We mark large holes with a compass, and cut them with a jigsaw when a hole saw is too small.



HOLES FOR WIRES A $\frac{3}{4}$ -in. spade bit is ideal for boring small holes for wires, but we always drill from both sides to avoid chipping the veneer. For large holes, we use a jigsaw and veneer blade, such as Starrett's Dual Cut.



FISH AND LIFT After test-fitting the range hood in its cabinet and making the holes for the duct and wires, we fish the cables and ducts through the cabinet as we lift it into place, then fasten it to the wall.

WATER AND WASTE IN SINK BASE



BRING IN PIPES We strike level and plumb lines around plumbing rough-ins to establish their center points. Then we measure between the lines for the box layout and plumbing rough-ins, and transfer those measurements to the cabinets. Making cutouts with a hole saw from both sides avoids tearout. When finished, we set the cabinet in place to check the fit.



INSTALLING LOWERS

In old houses, we install frameless cabinets one at a time—without a face frame, you can easily distort the box if you're handling or shimming more than one simultaneously. Before fastening, we confirm the cabinet's back is tight to the layout line, the front is plumb, and the tops and sides are coplanar.



JOIN BOXES After the first cabinet is in place, each individual cabinet is then set, shimmed level and plumb, and clamped and screwed to the adjoining cabinets.



MAKE EACH BOX TRUE Before attaching any of the lower cabinets to the wall, we secure them to each other, then shim behind and under them as necessary to make the fronts plumb.



STRING ENSURES STRAIGHT

A stringline along the top front edge of the cabinet run allows us to double-check for straightness before final fastening. Here, the string revealed a slightly bowed wall, which we easily compensated for by readjusting some of the shims.



ADJUST FOR OUT-OF-SQUARE When dealing with out-of-square corners, the corner cabinets must be ordered a bit undersize, leaving room to bring the box into square in spite of the wall conditions.



SPACERS KEEP SQUARE

These cabinets came with finished spacers for the fronts of corners; we install a second spacer, cut from framing stock, at the back to help ensure the corners are square.



'ROUND THE BEND As long as the last cabinet box in the previous run was installed plumb, level, and square, the adjacent cabinet has a good starting point. The key is to keep the show side of the corner square, and let the out-of-square conditions remain hidden behind, at the wall.

MAKE ROOM FOR APPLIANCES



BEAT THE SPREAD

Leaving gaps for appliances is more than just measuring the width and creating a void. It's crucial that the cabinets on both sides of the gap are aligned at the top—not just at the front edge, but all the way back to the wall—and coplanar in the front. If we get this part wrong, we'll regret it when it comes time to install the countertops and appliances. We use clamps and multiple levels, and pocket-screw temporary spacers to keep things consistent.



BUILDING ISLANDS

The locations of kitchen islands are determined during the design phase and shown on the plans. They are usually positioned parallel to a bank of cabinets and are typically the same height as the base cabinets. Islands are often centered on some feature—in this case on the sink, but it could be a window, light fixture, or appliance that provides the reference point. Once we've located and marked the center and one side of the island's location on the floor, we measure from those spots to establish its whole footprint, which we mark with yellow tape. Using the plans as a guide, we write individual cabinet and appliance locations on the tape.



FIND YOUR ISLAND We measure from the parallel bank of cabinets in two spots to mark one side of the island, and extend the center reference point with long levels and a square.



LASER CHECK We set up a laser level and measure up to it in multiple places on the island's perimeter to determine if there are high spots that require trimming the cabinet bottoms to keep them in plane with the lower cabinets.



MARK FOR BLOCKING With the island cabinets screwed together and on their backs, we mark the locations of the cabinet sides for floor-mounted blocking.



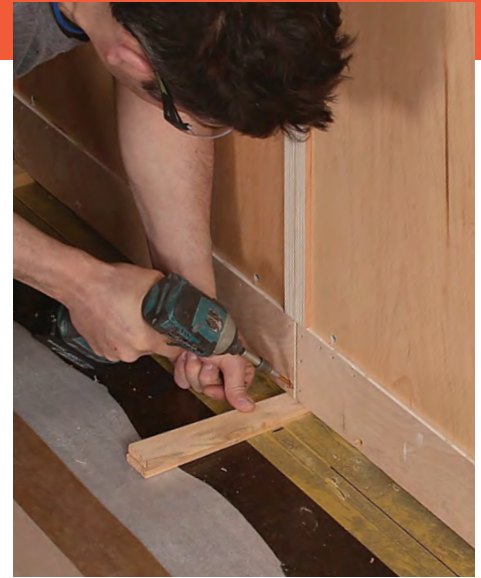
LOWER THE ISLAND We drill holes for any cables and pipes and pull them through while lowering the island into place as a unit.



CHECK THE HEIGHT A laser shows the island height in relation to the other base cabinets, so the island can be shimmed to match.



SECURELY FASTEN After shimming the island for height and level, we fasten through the cabinet bottoms into the blocking with 2-in. flathead construction screws.



LOCK DOWN THE SHIMS Angled screws hold the shims in position permanently, so the load of the island and its top is transferred to the floor.



PUT ON THE PANELS

Large panels that hide cabinet backs and sides are held with screws driven from the inside. We miter their corners on-site with a track saw before assembling them with wood glue and a line of miter clamps.

CAP THE ENDS

Runs of frameless cabinets almost always have some way to finish off exposed cabinet ends. This kitchen's large panels are more like wall sections, but smaller end panels are handled similarly. The first thing we do is shim the panels plumb and to the correct height so any elements—rails, base trim, and panels—align with the same elements in the rest of the kitchen. Then we scribe and cut the panels to the contour of the wall.



TRIM TO FIT The refrigerator cabinet was too tall to stand up in the kitchen space, so we had to trim the back corners.

INDIVIDUAL TREATMENT
Oversize cabinets are made plumb and level individually because their fronts don't line up with surrounding cabinets.



MATCH THE HEIGHT The end panels, like the cabinets, get a crown molding. The amount of exposed rail below the crown must match the same detail found on the cabinets. A level laser line shows if the panels need to be raised or lowered before scribing.



SCRIBE TO FIT Once the end panel is shimmed to the right elevation and plumbed, we use a site-made scribing block to help achieve a tight fit against the wall. We tape a flat marking knife to the block and run the block the length of the scribe. Separating the two pieces of tape reveals a perfect scribe line.



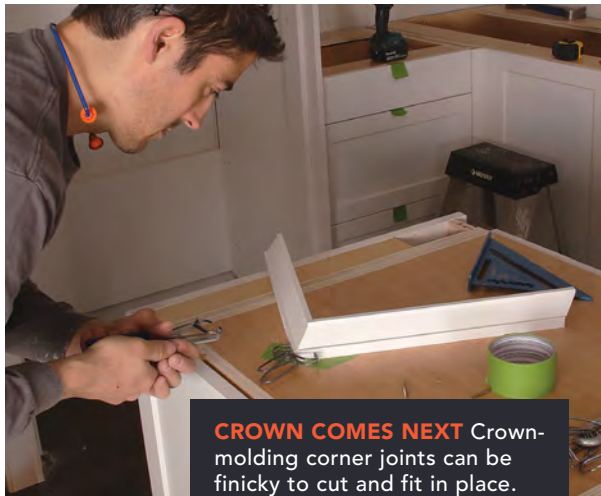
ATTACH FROM THE BACK
We attach end panels with screws driven from inside the cabinet so they're not seen. Screwing through spacers ensures the cabinet box won't get distorted when the screws are tightened.



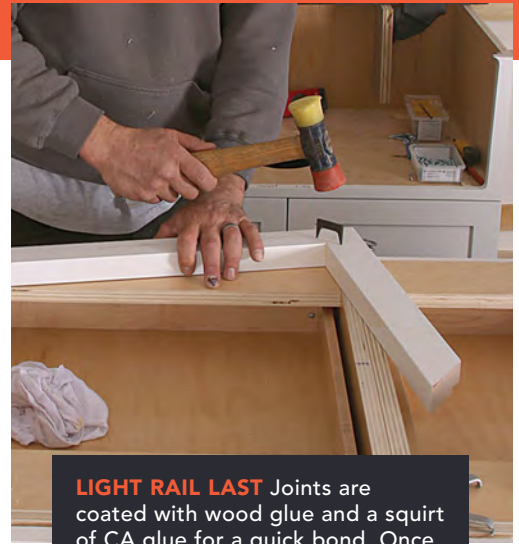
FASCIA FIRST A 5/4-in.-thick fascia fills the space above the cabinet doors. The parts are cut, glued, and fastened with 18-ga. brads before they're fastened to the uppers.

FINISHING TOUCHES

After we vacuum the cabinet interiors and reinstall all of the doors and drawers, we tackle any remaining decorative elements. This kitchen has crown molding with a fascia behind it that matches the plane of the door fronts. There's also a light rail under the uppers to conceal undercabinet lighting. Once the countertops are in place, we install the appliances and the toekick to hide the joints between cabinets in the toe space.



CROWN COMES NEXT Crown-molding corner joints can be finicky to cut and fit in place. Instead, we cut, glue, and pin these parts on a flat surface, then install them in sections.



LIGHT RAIL LAST Joints are coated with wood glue and a squirt of CA glue for a quick bond. Once assembled, we attach the light rail to the cabinet with trim screws.

