



Illustrated Guide to Drawers

The ideal drawer? That depends.
Here's how to choose

BY MATTHEW TEAGUE

Whether it's a tiny drawer in a jewelry box or the wide, deep drawer of a dresser, all drawers are little more than a box that slides into an opening. But there are nearly endless combinations of construction methods that can be used to build that box. By understanding the various ways in which drawers are made, you'll be able to choose the best construction method for your project, with the ideal blend of beauty, strength, and efficiency.

Drawers can be made of solid wood, plywood, or both. Drawer fronts often become the focal points of a piece, showing off spectacular figure, molded edges, or a handsome pull. The actual drawer front can be integral to the drawer (see pp. 46-47), meaning that it is joined directly to the drawer sides, or it can be attached to a fully constructed drawer box (called a false front; see pp. 48-49). Joinery options at both the back and front can range from simple butt joints to classic hand-cut dovetails. Drawer bottoms can be made from solid wood or plywood.

To size a drawer correctly, you need to know not only the size of the opening, but also the depth of the inset. Drawers can be designed flush to, recessed into, or overlapping the front of the case.

Different styles of furniture call for different types of drawers. While a plywood drawer with a false front makes sense in a shop cabinet, it would be quite out of place in a high-style 18th-century reproduction. The joinery and materials you choose should fit the type of furniture you want to build. So should the way the drawer will slide in and out of its pocket. So let's start there.

Drawer slides influence design and construction

Like all drawer decisions, drawer-slide options range from simple and efficient to finely handcrafted. Traditionally,

OPTIONS ABOUND—FROM SIMPLE TO REFINED

There are a number of great ways to build a drawer. A utility or light-duty drawer might be a simple plywood box with a false front (top) and a plywood bottom. A pinned rabbet offers a simple yet stylish way to build a drawer with an integral front (second from top). Another step up is a drawer made with sliding dovetails and a solid-wood bottom (third from top). The holy grail of drawers (bottom) has hand-cut half-blind dovetails at the front, through-dovetails at the back, and an elegant raised-panel, solid-wood bottom.

Integral-front drawers

A traditional drawer is built with the front joined directly to the sides. This is the most lightweight and attractive design overall. Aim for drawer sides that are half to one-third the thickness of the front. Once the drawer has been assembled, the sides often must be planed or sanded carefully so the drawer fits in the opening. In most of these examples, the joinery is hidden from the front for a clean look.



the sides of a wooden drawer slide directly on a wooden frame within the case. Most drawers with integral fronts work well with this design because the drawer is sized and constructed to fit the opening.

Manufactured drawer slides have long been common on kitchen cabinets, but they're being used more and more on high-end furniture today. Although frowned upon by some purists, contemporary slide designs install quickly and painlessly, and it's difficult to find fault with their smooth action, soft-close mechanisms, and full-extension capability. These slides can be side- or bottom-mounted, and are perfect for use with false-front drawers or drawers with sliding dovetails.

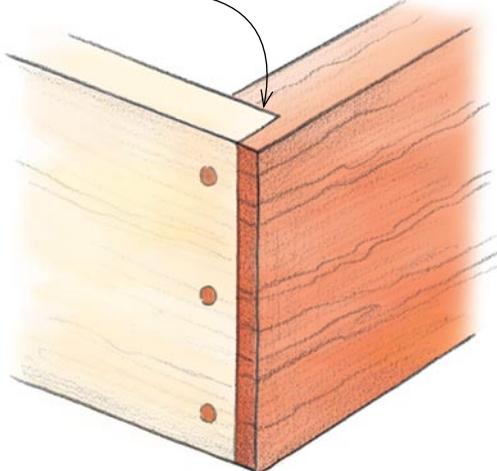
Each type of commercial slide has its own drawer requirements, so you'll have to build the drawer to accommodate the slides. For instance, side-mounted slides typically require 1/2 in. of space on both sides of the drawer box. If you're using commercial slides, it's a good idea to have them on hand before you build either the case or the drawers.

Front joints are the critical ones

Regardless of whether a drawer has an integral front or a false front, most pulling and racking stresses on a drawer box occur at the front corners; after all, a drawer is opened and closed by pulling and pushing on the front. Any action that isn't straight in or out of the drawer pocket also causes racking stress, which hits the front-corner joints hardest.

For these reasons, front-corner joints should be as strong as possible and have some mechanical reinforcement. This mechanical connection can be as simple as pegs or pins in a rabbet joint, or it can

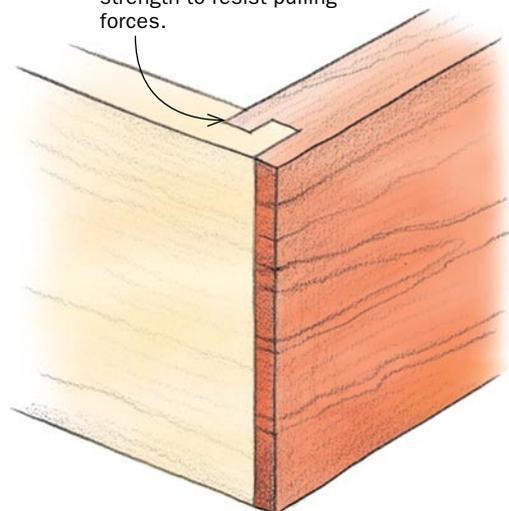
Rabbet should be half to two-thirds as thick as the drawer front.



PINNED RABBET

The rabbet is easy to make, but it's not very strong. It should be reinforced with some kind of fastener, such as recessed screws, cut copper nails, or wooden dowels or pegs, which offer a clean, handmade look. With this style of construction, the back of the drawer usually is set into simple dadoses in the drawer sides.

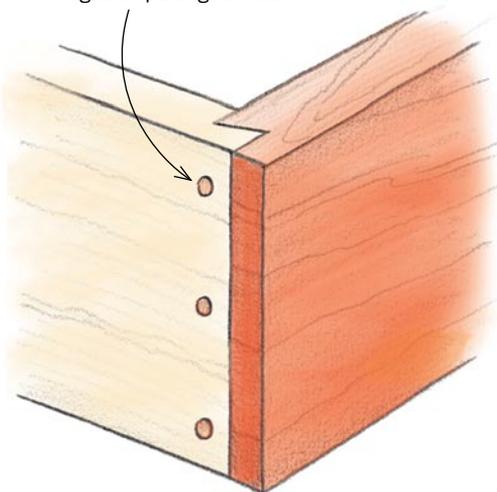
Tongue adds mechanical strength to resist pulling forces.



TONGUE AND RABBET

Although it takes a few more tool setups, a half-blind tongue and rabbet adds built-in mechanical strength (beyond glue alone) to the joint. Dado or dadoed rabbet joints are suitable options for the back of the drawer.

Pins hold joint secure against pulling forces.



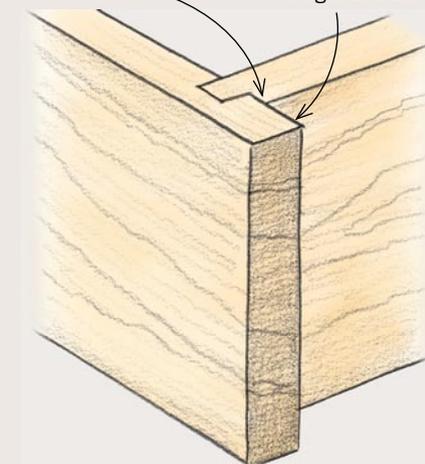
DOVETAILED RABBET

A dovetailed rabbet is stronger and more attractive than a simple rabbet joint. This type of corner joint also should be reinforced with pegs, brads, or some kind of mechanical fastener. The rear joints can be rabbeted dadoses (right) or sliding dovetail joints.

AT THE BACK

Shoulder helps keep the drawer square.

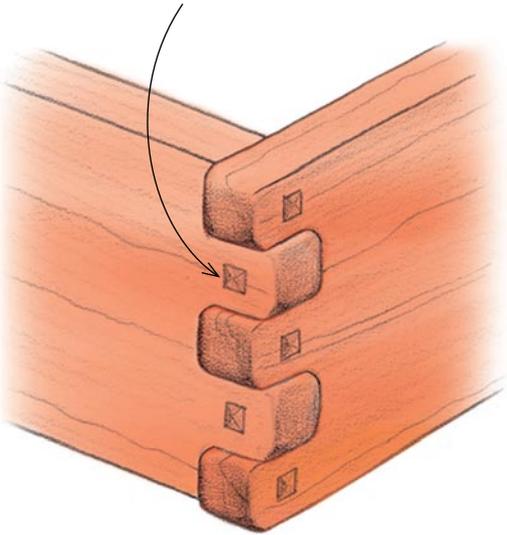
1/2 in. of extra length at back



REAR JOINT FOR RABBETED DRAWERS

A rabbeted dado is an easy and effective means of attaching the back to the sides, plus it helps keep the drawer square. Leaving the sides long at the back allows the drawer to be pulled out farther, providing better access.

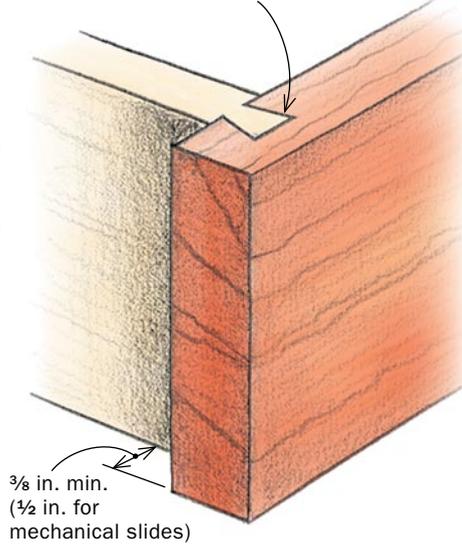
Joint can be reinforced with pegs at the top and bottom, or through the front or sides (shown).



BOX JOINT

The box joint is the beefier, more handsome cousin of the finger joint (see p. 48), and it's quite comfortable at the front of a piece of furniture. The design seen here, reminiscent of Greene-and-Greene construction, features wide fingers with rounded corners. Square, pillowed pegs reinforce the joint and add visual interest. If you're using box joints at the front of a drawer, it's efficient to use them at the back, too, though the fingers should not protrude.

Tail portion, or key, should extend at least halfway into the drawer front.

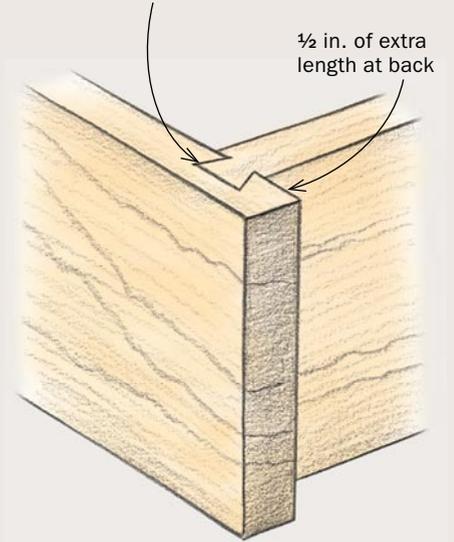


SLIDING DOVETAIL

The sliding dovetail has built-in mechanical strength to keep it together. It offers a quick, strong joinery option, but requires the drawer front to overhang the sides a bit. So it usually is used either on drawers designed with overlay fronts or on flush drawers that ride on mechanical slides or are fitted between wood guides in the case.

AT THE BACK

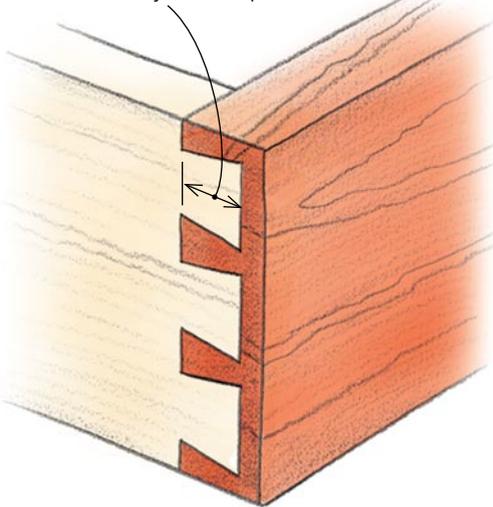
Key should extend at least halfway into the drawer side.



REAR JOINT FOR SLIDING-DOVETAIL DRAWERS

If you're using sliding dovetails to join the front of the drawer, it's efficient to use the same joints to attach the back. Leaving the sides long at the back will give you access to the full depth of the drawer when it's open.

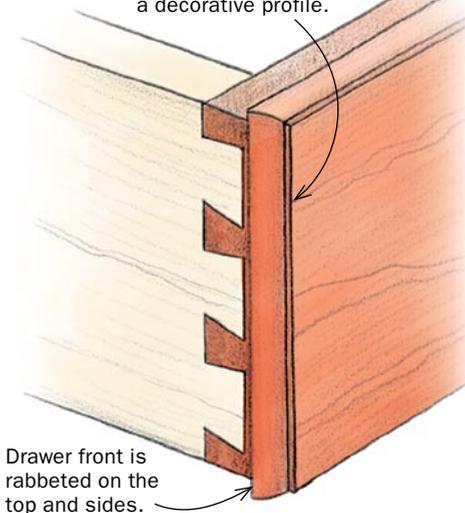
Tails reach about two-thirds of the way into the pin board.



HALF-BLIND DOVETAIL

Many regard the half-blind version as the king of dovetail joints because of its attractiveness and superior strength. To highlight the craftsmanship, many furniture makers use contrasting woods on the front and sides. Through-dovetails are easier to cut than half-blinds, so the former are the usual choice for the rear corners.

Drawer-front edges can be shaped with a decorative profile.

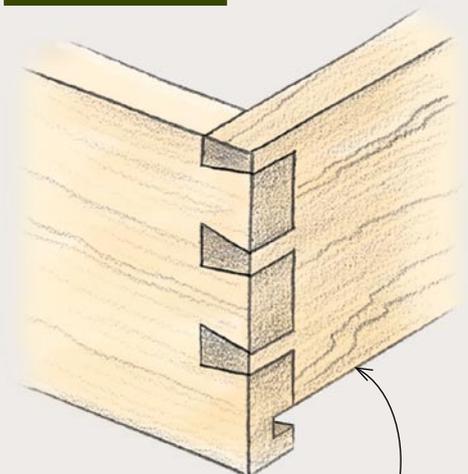


Drawer front is rabbeted on the top and sides.

LIPPED HALF-BLIND DOVETAIL

For overlay drawers with excellent strength, use lipped half-blind dovetails. With this joint, the front is rabbeted and joined to the sides with dovetails. Again, through-dovetails are a good option for the rear-corner joints.

AT THE BACK



The back is cut shorter than the sides.

REAR JOINT FOR DOVETAILED DRAWERS

In traditional dovetailed drawer designs (left), you'll often see through-dovetails at the back. The combination of dovetails at front and back creates a sturdy drawer that will last a lifetime. The pin board typically is cut shorter than the sides to allow the drawer bottom to be slid in after the rest of the box is assembled.

Drawers with false fronts

Using false fronts allows you to separate drawer construction from drawer fitting, which ultimately makes both processes easier. With this method, the drawer box is glued up and installed in its opening. Then the false front is cut to size, applied to the box temporarily, adjusted for a perfect reveal (the gap between the drawer and the case), and then permanently attached to the box. These drawers are ideal for use with manufactured slides, which typically require ½ in. of space on each side of the drawer box.



be the interlocking strength of the classic half-blind dovetail.

While it's also important to have a sound mechanical joint at the back of the drawer, aesthetics are less of a concern because these corners are rarely seen. For these reasons, rear-corner joints often are different from the front-corner joints. If you are using a machine setup to cut the front joinery, however, it makes sense to use those same setups to cut the back joinery.

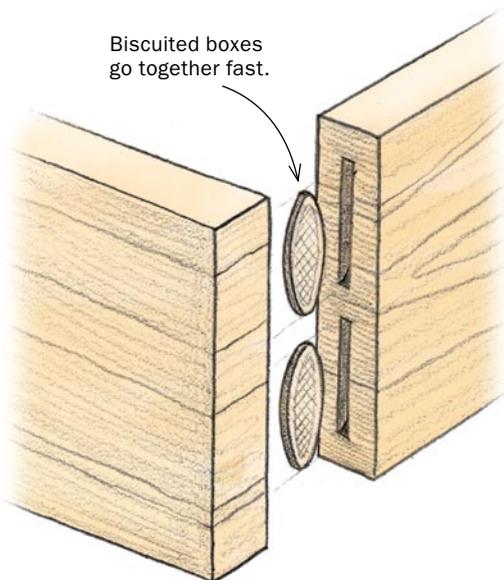
Drawer bottoms: fancy or functional

The choice of material and the design of the drawer bottom depend on the style of drawer you are building, whether it's a quick-and-dirty shop drawer or a drawer for an 18th-century secretary.

Both solid wood and plywood are commonly used for drawer bottoms. Solid wood is the traditional choice, and aesthetically, it's hard to beat. But you must allow solid wood to expand and contract with changes in humidity so that it doesn't cause the drawer to bind in its opening.

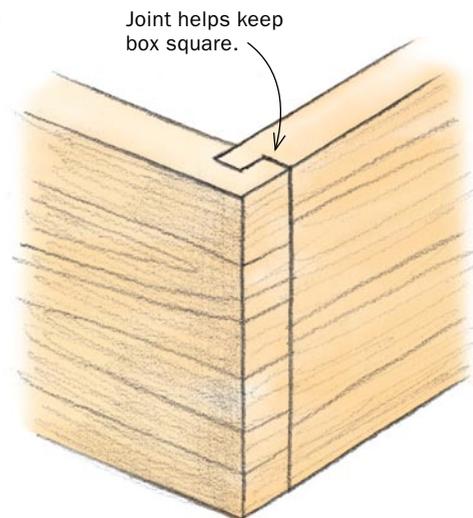
Plywood is a much more stable choice for a drawer bottom because it does not expand and contract with humidity changes as much as solid wood. Although reproduction builders and a few purists resist plywood bottoms, it's easy to argue their superiority. A plywood bottom can be housed completely in grooves in the sides, back, and front, and glued in place to strengthen the drawer box. Or it can be slid in from the rear and screwed to the drawer back, or even glued and nailed to the bottom of a drawer box with a false front. □

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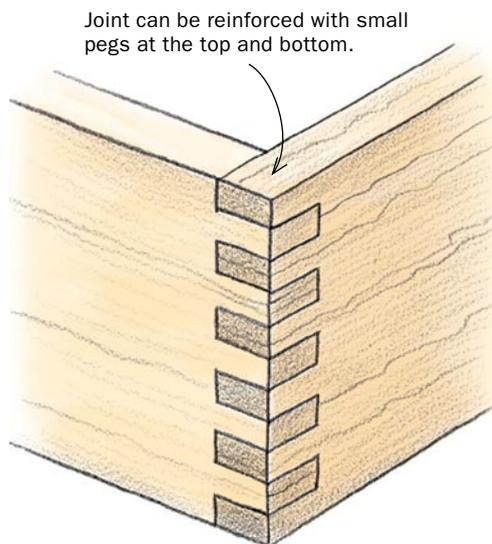
BISCUITS

Biscuits offer a quick, strong option to join the sides to the front of a drawer. Once a false front is applied, the end-grain (or plywood) ends of the drawer sides are completely concealed. This joinery system is a good option for kitchen cabinets, built-in units, and utility drawers. Biscuits also can be used to join the back of the drawer to the sides.



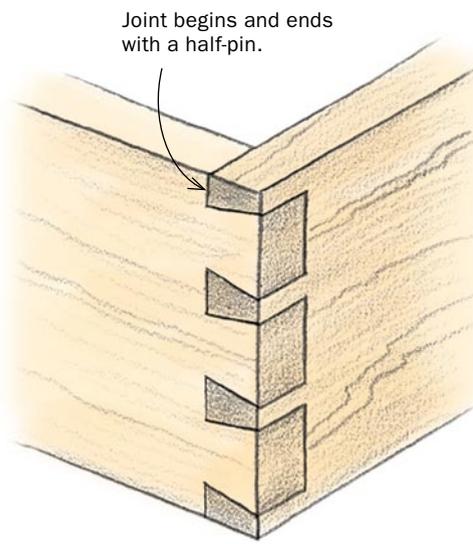
DADOED RABBIT

The dadoed rabbit offers a strong mechanical connection at the front of the drawer box, but it's not very attractive. Attaching a false front to the drawer in this case gives the option more appeal. Simple dados or tongue-and-rabbit joints are suitable options for the rear joints in this style of drawer construction.



FINGER JOINT

The finger joint is usually hidden behind a false front. It has a series of narrow knuckles that lace together and offer plenty of long-grain glue surfaces. Because the tool setups are the same, if you use finger joints at the front of a drawer, use them at the back, too.



THROUGH-DOVETAIL

The angled tails and pins of a through-dovetail create a secure joint that resists pulling and racking forces. If you're cutting through-dovetails by machine (with or without a router jig), it's usually efficient to employ the same joint at the back of the drawer.

Drawer bottom options

Solid wood and plywood are the most common materials used for drawer bottoms. A solid-wood panel will expand and contract with humidity changes, so it must be sized and installed to allow for that movement. A plywood bottom offers a more stable (and simple) option, but traditionalists see it as thin and bland. Plywood's stability, however, gives a furniture maker more options when it comes to drawer design.

SOLID WOOD IS ELEGANT, BUT IT MOVES

Traditionally, solid-wood panels slide into place after the sides, front, and back of the drawer have been assembled. The back is cut shorter, allowing you to slide the bottom in place, and the bottom is screwed to the back through an elongated hole to allow for wood movement. Building a drawer in this way allows you to take it apart for repairs.

Back cut short so panel can slide in.

Grain direction

Slotted hole for screw

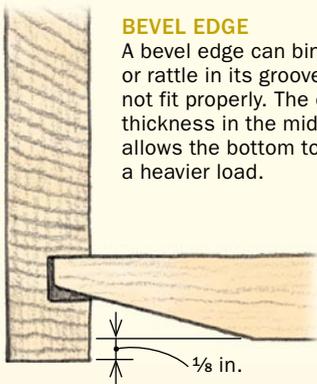
Bottom sits in grooves in front and sides.

Movement occurs front to back.

THREE EDGE PROFILES FOR A WOOD BOTTOM

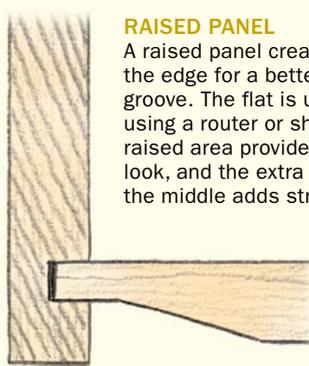
BEVEL EDGE

A bevel edge can bind or rattle in its groove if not fit properly. The extra thickness in the middle allows the bottom to carry a heavier load.



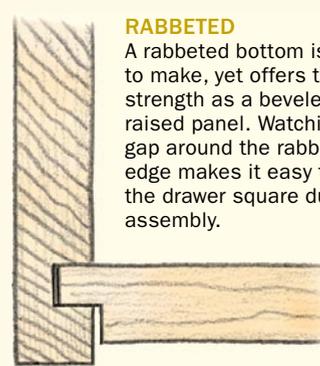
RAISED PANEL

A raised panel creates a flat on the edge for a better fit in the groove. The flat is usually cut using a router or shaper. The raised area provides a traditional look, and the extra thickness in the middle adds strength.



RABBETED

A rabbeted bottom is easier to make, yet offers the same strength as a beveled or raised panel. Watching the gap around the rabbeted edge makes it easy to keep the drawer square during assembly.



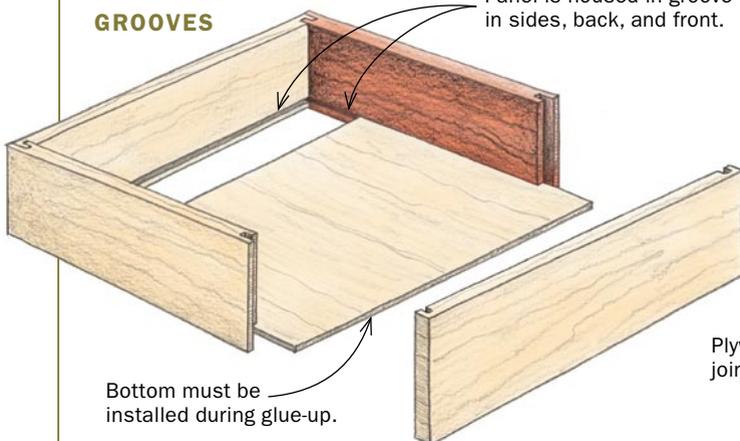
PLYWOOD IS VERSATILE AND STABLE

Plywood drawer bottoms are more stable than solid wood and have great strength. A 1/4-in.-thick plywood bottom can carry all but the heaviest loads. Plywood bottoms can be slipped in after assembly, just like solid-wood bottoms, or fully housed in grooves, as shown at left. Because of its stability, plywood also can be glued and nailed to the bottom of a plywood drawer box with a false front, a quick, strong option for utility drawers.

CAPTURED IN GROOVES

Panel is housed in groove in sides, back, and front.

Bottom must be installed during glue-up.



GLUED AND NAILED

False front covers nailed-on bottom.

Plywood sides are joined with biscuits.

Bottom is glued and nailed to the sides.

For aesthetics, choose slides that hide plywood edges.

