



# Pick the Perfect Hinges for Your Boxes

The right choice will help you design and build better boxes

BY DOUG STOWE

Selecting just the right hinges to fit each special box can be a daunting task. There are so many types that it's tough to make the right choice. And you don't want to make a box before choosing the hinges—that's like painting yourself into a corner. To help you wade through the options, here I'll give a brief look at the different hinge types and their applications.

There are three main criteria to consider when you're deciding which hinge will be right for your box. First is appearance. Do you want to see the whole hinge on the outside of the box, see a proud brass barrel at the back, or just glimpse a barely visible barrel tucked into the lid joint? Another key factor is the size of the box and the weight of the lid. Some hinges are more robust than others, but in certain cases you can use multiple pairs of less substantial hinges to bear the weight. One aspect of hinge choice that tends to be forgotten is the installation difficulty. Some hinges simply screw right to the surface, some require cutting a complex mortise, and some require a specialized cutter to make a slot for the hinge. Understanding each type's strengths and weaknesses will let you refine your box design and find that perfect hinge each time.

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# Surface-mount hinges

**Visibility:** Can be seen on exterior whether closed or open.

**Strength:** Available in sizes for almost all applications

**Installation:** Easy to moderate. Inexpensive hinges are simply screwed to the surface. Higher-quality hinges are recessed into the surface.

**Cost:** \$2 to \$30 per pair

Surface-mount hinges come in several forms and are generally available at hardware stores and big home-improvement stores. Depending on the type, they can be nailed or screwed in place.

Surface-mount hinges are visible when the box is closed or open. So if you want to accentuate the hinge and draw attention to the back of the box,

surface-mount hinges are a great choice. If you prefer a more subtle or hidden hinge, move along.

These hinges are available in a range of sizes capable of accommodating most boxes and lid weights. But you must check the screws' length against the thickness of the box body to make sure they won't pop through the inside. This can be overcome by using a different-size screw or filing down the screws that came with the hinge.

Many craftsmen are drawn to the use of surface-mount hinges by the simplicity of their installation. There are no mortises to cut or holes to drill other than the pilot holes for the screws. While they are one of the easier hinges to install, it's still important to make sure the hinge barrels are in line and that you leave some space between the top and body at the hinge to let the box close fully.



**Line up the barrels.** It's important to keep the hinge barrels aligned so the box works smoothly. Clamping a straightedge in place makes alignment easier.



**Leave space at the back.** When marking the lid for the hinge pilot holes, use business cards at the back corners to space out the lid. This tiny gap will allow the lid to close fully and avoid any binding at the hinge side of the box.



## HINGE SOURCES

leevalley.com

woodcraft.com

rockler.com

jewelleryboxhardware.com

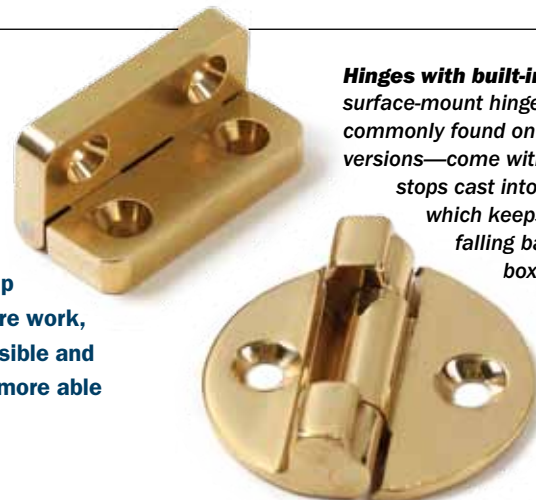
smartboxmaker.com

craft-inc.myshopify.com



## RECESSED HINGES: MORE WORK, BUT WORTH THE EFFORT

A few manufacturers make surface-mount hinges that require recessing into the box top and body. These take more work, but the hinges are still visible and this variety are typically more able to support heavy lids.



**Hinges with built-in stops.** Some surface-mount hinges—most commonly found on higher-quality versions—come with mechanical stops cast into the hinge, which keeps the lid from falling back when the box is opened.



# Butt hinges

Butt hinges give boxes a clean, traditional look. They come in a range of sizes and quality, from inexpensive, stamped-steel versions to high-quality solid brass. Brass hinges are much more rigid in use, so they are more suited to heavier lidded pieces. In addition, some have built-in stops, which saves the effort and cost of having to buy or make a stop to keep the lid from falling backward.

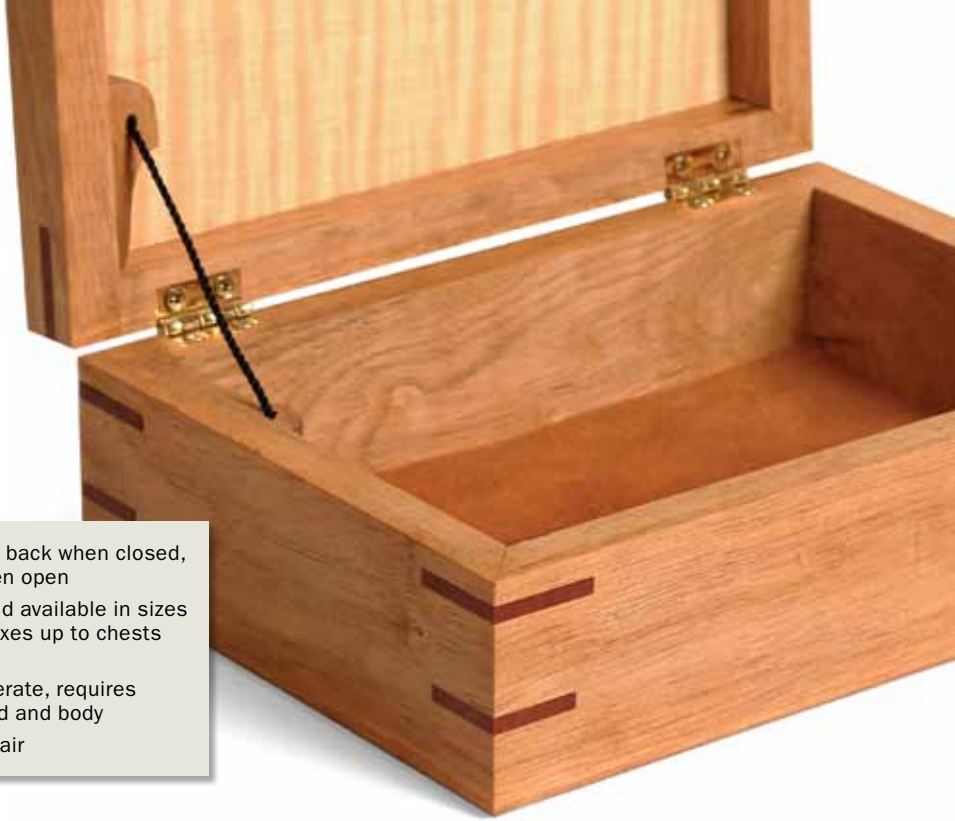
The mortises must be aligned and in plane, but when installed carefully the butt hinge is hardly visible at the back of the box and is quite good at aligning the front edge of the lid with the body of the box.

**Visibility:** Barrel visible at back when closed, hinge leaves exposed when open

**Strength:** Fairly strong, and available in sizes to accommodate small boxes up to chests and doors

**Installation:** Easy to moderate, requires aligned mortises on the lid and body

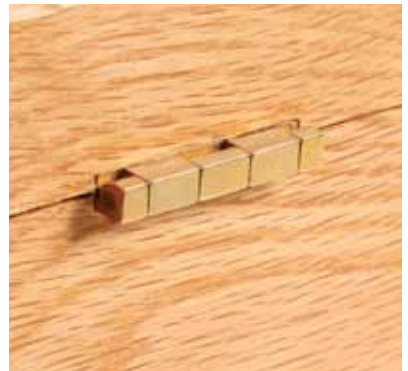
**Price:** \$1.50 to \$80 per pair



**Mortises for butt hinges.** The router table makes quick and accurate work of removing the majority of the waste. The corners can be squared up with a chisel before installing the hinge.

## BUTT HINGES WITH BUILT-IN STOPS

To keep the lid from falling all the way back, hinges need a stop that holds the lid at roughly 95°. Some hinges have stops that are designed into the hinge mechanism (below), while others require an additional stop, such as a shopmade string stop (top photo) to keep the lid from falling back.



**Blocky in the back.** Most stopped butt hinges have a squared-off knuckle, as compared to the rounded knuckles of the non-stopped varieties.



# Side-rail hinges

These finely crafted, premium hinges are available with or without stops, and they have a minimal profile at the back of the box for a clean look. Side-rail hinges are mortised into the box sides and lid. These hinges can support heavier or larger lids because they place the stress at the corner of the box where the body is strongest. One thing to consider when mounting side-rail hinges is the type of joinery used on the box. If you're using miter joints, the placement of the screw closest to the barrel has a tendency to fall directly along the joint line between the side and back, which can weaken the joint when the hinge is stressed. For that reason, I prefer to use side-rail hinges on boxes made with dovetails or finger joints.

Except for the location, installing side-rail hinges is similar to butt hinges. Routing out the mortise usually works exceptionally well, as many side-rail hinges have a round end to their leaves that matches a standard straight bit.

**Visibility:** Small knuckles at the back can be seen when closed, leaves are visible when box is open.

**Strength:** Strong, suited for heavy-lidded boxes

**Installation:** Moderate, requires aligned mortises along the narrow box sides and lid

**Price:** \$10 to \$60 per pair

**A few ways to stop.** Side-rail hinges come with or without stops, which can use either a captured arm or an internal stop engineered into the knuckle.



# Quadrant hinges

Quadrant hinges feature a built-in stop and are placed at the corner of the box back and side with legs that get mortised into each side. When the box is open, the complexity and unique mechanism of the hinge is fully visible. These hinges offer excellent support for heavy-lidded boxes, but are one of the most challenging hinges to install, as they require routing shallow mortises into the sides and back of the box, and an additional deeper mortise in the sides for the stop arms. I've made templates for installing this hinge that ease the mortising operations, and a few companies sell routing templates specifically designed for their hinges which are invaluable at setting them up successfully. Because of the complexity of the install, I usually reserve quadrant hinges for special projects that require their strength and aesthetic.

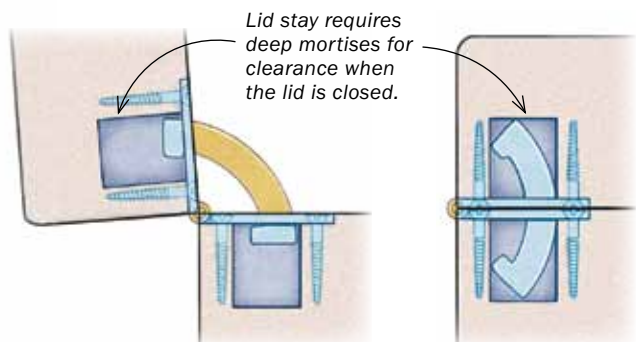


**Visibility:** Knuckles visible at back when closed, leaves and stop visible when open

**Strength:** Very strong, suitable for large boxes with heavy lids

**Installation:** Challenging, requires three separate mortises in both the lid and body

**Price:** \$10 to \$70 per pair





## Barbed hinges

Barbed hinges are one type that my students always want to use in class, but may avoid in their own shops due to the special equipment required. The leaves of a barbed hinge have hooks and are pressed into a thin slot made in the box top and body.



Once pressed in, they stay put without screws or glue.

Barbed hinges are almost completely invisible whether the box is open or closed because the leaves are housed in the box sides. These hinges affect the look of a box because they require a chamfer that lets the lid open and acts as a stop.

These lighter-duty hinges are perfectly suited to small boxes up to 5 in. by 8 in., where the stress of a heavy lid isn't an issue. For larger boxes, you can use two pairs of barbed hinges in sequence to provide the necessary support. Manufacturers also offer barbed hinges that come with leaf springs built into them to help keep heavier lids closed tightly.

Barbed hinges require a special blade for cutting the thin slot in which they are installed. The cutter is mounted in a drill press and the piece is fed into the cutter using a fence and stops.

After that, a simple chamfer along the back allows the hinge to function. While the cutter is sold separately and requires special setup, the advantage of these hinges—which has caused me to use them for thousands of my boxes over the last 40 years—is that they simply press in place with no glue and no screws.



Slot cutter

**Visibility:** Only the thin hinge barrel is visible whether open or closed.

**Strength:** Weak, ideal for smaller boxes but multiple hinges can be used to add strength

**Installation:** Easy, but requires a special cutter to make the slot for the hinges

**Price:** 30 cents to \$1 per pair



**Spring aids in closure.** Some hinges are equipped with a leaf spring that helps keep the box closed, but extra clearance holes are required.



**Slots cut at the drill press.** The thin-kerf slotting tool is mounted into a standard drill press, and a fence with stops is positioned to set the depth and spacing of the slots.



**Push into place.** After chamfering the lid and the body, press one leaf into the slot until it reaches the barrel (left). The barbs grab securely and hold the hinge in place. Seat the opposite leaf into the slot in the box's other side, and squeeze the hinges into place (above).



# Barrel hinges

Barrel hinges are very common on small boxes. They come in two varieties—5 mm mini and standard—both easily obtained through a handful of online woodworking supply companies. Once installed, the only visible parts of the mini barrel hinges are the small round knuckles, whether open or closed. Like barbed hinges, mini barrels require a chamfer at the back to allow them to open and to act as a stop. Standard barrel hinges, also called expanding link barrel hinges, use a complex armature to allow the hinge to open without the chamfer, and when the box is closed they are invisible. When open, the brass armature and the barrel are exposed.



**Visibility:** Only the small round knuckle is visible on the mini-barrel when open or closed. The standard is invisible when closed and the linkage and barrels are visible from inside when open.

**Strength:** Mini barrel is weak, ideal for smaller boxes, but multiple hinges can be used to add strength. Standard hinges are fairly strong, and sizes are available to handle boxes all the way to cabinetry.

**Installation:** Easy, both only require an aligned, drilled hole. Mini barrel requires a chamfer at the back like the barbed hinges.

**Price:** \$2 to \$12 a pair.

Mini barrel hinges are perfect for boxes of small to modest size, no larger than about 3 in. by 5 in. Bigger sizes are doable, although I would consider using three or more hinges to carry additional weight. Full-size barrel hinges are intended for larger boxes or small cabinet doors, and come in a variety of sizes that can handle lids of almost any weight or size.

Both types are installed by drilling perfectly aligned holes in both the body and lid, and then pressing the knurled hinge bodies into the holes. The mini barrel version gets a drop or two of PVA glue before being inserted and aligned. The regular barrel hinges have an expanding collar that is engaged with a small flathead screw. Once they're inserted and aligned, it's just a matter of tightening the screws and locking in the hinges.



**Mini barrels get glued in place.** To keep them from pulling out, a small amount of glue is placed in each hinge hole. After that, place the hinges in one side, align them to open in the right direction, and squeeze them into place.



**Alignment is critical on barrel hinges.** Both barrel hinge types need to be aligned with extra care to make sure they don't bind. Use a small square on the fully expanded hinge. A small screw expands the barrel in the hole to lock it in place. This also means that the hinges are easy to remove, unlike the mini barrel type.