



Enliven a Case with Mitered Dividers

Simple, versatile method yields fast, accurate results

BY MICHAEL PEKOVICH

A case with a lot of internal dividers can be difficult to assemble if everything must come together at once. In addition, on a smaller piece, the divider thickness needs to fit the overall scale or you quickly run the risk of ending up with a clunky design.

Making dividers in mitered subassemblies provides a simple solution to both challenges. It allows you to assemble the case first, and install the dividers later. The case houses the divider assemblies, keeping them square and adding support.

Because of that support, the dimensions of the divider stock can be thin and still provide the necessary strength. I often use stock as thin as $\frac{3}{16}$ in., which lends a light, delicate look to a piece. Another advantage is that mitered dividers offer a flexible way to design, allowing you to explore different combinations of drawers, shelves, and vertical compartments in a case.

Accurate miters are a must

A miter joint is simple in concept yet often difficult to execute precisely. When

making mitered dividers, the length of the parts is just as critical as the angle of the miters. I've gone about it in a few different ways over the years, and I'd like to share a method that uses a simple shooting board to dial in perfect miters.

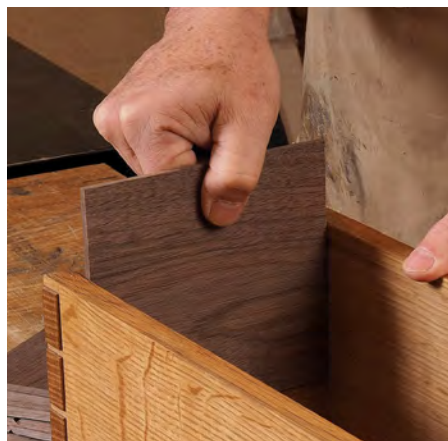
Start with the divider stock

Before you get going, mill your divider stock to thickness and width, but leave it long. I usually work with stock 30 in. to 36 in. long depending on the size of the parts I'll need. Anything longer than



For drawers and more. Mitered divider units make it easy to break up space within a case. They are commonly used to make drawer pockets, but they can also create shelves and vertical partitions within a case.

SIZE THE DIVIDER PARTS



Cut oversize and trim to fit. At the table saw, crosscut the parts a little longer than necessary, and plane them to size with a shooting board. Square one end first, and then flip the stock to plane the opposite end. Check the fit in the case; the goal is a nice slip fit that doesn't bind.

TIP

A trick for even dividers in a case with a center partition. Start by sizing the partition to fit and inserting it along one wall of the case (right). Then cut a pair of parts to the same length and trim them until they fit side-by-side in the case (far right).



Sizing internal dividers. Parts of the divider assembly that fit into V-grooves start out a divider thickness shorter than the case opening. Remove one of the side-by-side parts, install a vertical divider against the partition (above), then size the divider to fit the remaining opening (right).



that gets cumbersome to handle. It might sound contradictory, but when milling thin pieces, I start with thick stock, usually 8/4 material if I can find it. When resawing a board into thin pieces, I find that the outer blanks tend to bow, while the remaining blanks tend to stay flatter. If you have access to air-dried lumber, that's best. The air-dried lumber I've used in the past had very little tension and resulted in dead-flat divider stock.

It's impossible to joint and plane a thin piece of stock by machine once it has been cut, so I joint the outer faces of the blank flat before resawing each strip. I then run the jointed face down when planing the stock to final thickness. I install a 1/2-in.-thick MDF platen in my planer to help

ensure good results when planing such thin stock.

Shoot the parts to length

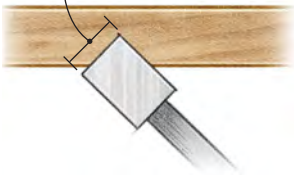
The key to success with this technique is taking an extra step that might seem odd at first. Rather than mitering the parts as I dial in their precise lengths, I start by cutting square ends on the parts when fitting them, and turn to mitering only after they are at the proper length.

The process begins with parts cut slightly overlong. It's not critical how you go about it since you'll square each end using a hand plane and shooting board. I prefer not to leave too much work to do at the bench, so at the table saw I cut the parts just slightly overlong, not more than 1/16 in.

CUT THE V-GROOVES

Use a flat-top blade for the V-grooves. For thin stock, a standard FTG rip blade will work. For wider stock, the author uses a blade from a box-joint blade set.

Blade's tooth should be wider than the V-groove wall.



Sneak up on the groove depth.

Tilt the blade to 45°, and set the height just below half the thickness of the stock. Take test cuts, raising the groove until the groove width equals the thickness of the stock.

The next step is to plane one end square. A shooting board with a square fence is essential. The one I use has an adjustable fence that I can square up before every job (see “6 Essential Bench Jigs,” *FWW* #258). Try not to remove too much stock on the first end; the part must still be overlong when you start on the second end. Once both ends are square, check the fit against the case opening. Aim for a snug fit that doesn't require too much force to slide into place. If the case will have a center partition, insert the partition along one side of the case and trim a pair of parts until they fit side by side. Any internal dividers that fit into V-grooves need to be one divider thickness shorter than the case opening.

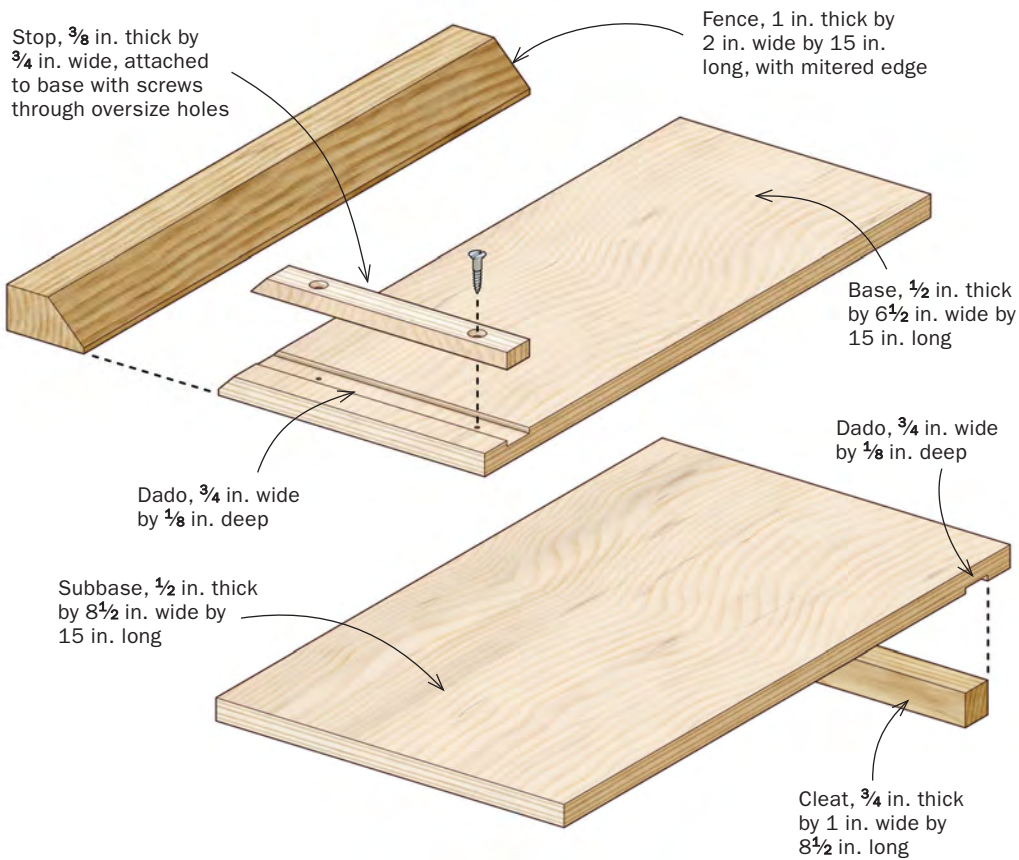
Next up are the V-grooves

I prefer to cut the grooves for the dividers before I miter the ends of the parts. A

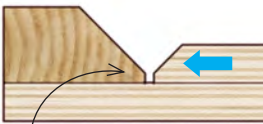


Adjust the fence and cut the grooves. Once the blade is at final height, adjust the rip fence to the desired groove location and make the cut. Use a push pad to ensure a groove of consistent depth.

A SHOOTING BOARD FOR MITERS



Miter the fence and base. Leave a small flat at the tip of the miter to aid with assembly.



Small flats on fence and base mitered ends allow for easy alignment when assembling the shooting board.

Attach the base and fence. After dadoing for the stop and the cleat, glue and nail the fence along one edge of the subbase. Then position the base against the fence and glue and nail it in place.



Add the stop. The stop acts as a zero-clearance support and prevents chipout when planing. It gets worn out over time, but oversize holes allow for adjustment for a fresh cut on occasion.

square end will ride along the rip fence or router table fence more easily than the knife edge of a mitered end. Cutting the grooves for the dividers can be handled a couple of different ways. I've used a V-groove bit at the router table with good success, but I'll demonstrate a table saw technique here. I think the table saw cuts

more efficiently than a router bit, but the downside is that with the blade set at 45° the distance from the fence to the tip of the blade changes as the blade is raised or lowered. On a router table, the position of the point of the bit is consistent.

When cutting a groove at the table saw, the tops of the teeth define one wall of the

V and the sides define the other. Because of this, you need a blade with a flat-top grind that is wider than a typical blade. I like to use a box-joint blade set. The wide, flat teeth do a great job of cutting a V-groove. Box-joint blades range in price from \$50 on up, and while it may represent a bigger investment than a V-groove bit,



Planing a miter. Rest the plane in the V-groove of the shooting board. Hold the side of the plane tight to the fence while planing, and resist the temptation to tilt the plane toward the stock. Instead, feed the stock into the plane as you go.

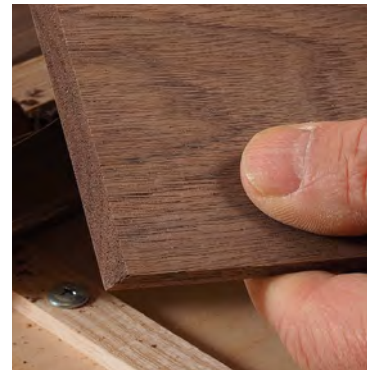
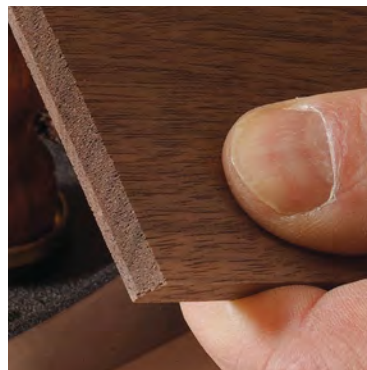
you'll use this set for a lot of joinery tasks once you have it.

The height of the blade will determine the width of the V-groove. Too shallow and the grooves will be too narrow. Too deep, and they'll be too wide. The aim is to set the blade height equal to half the thickness of the stock. This will yield a groove of the correct width and, just as important, will help ensure that the dividers you've already cut will fit correctly.

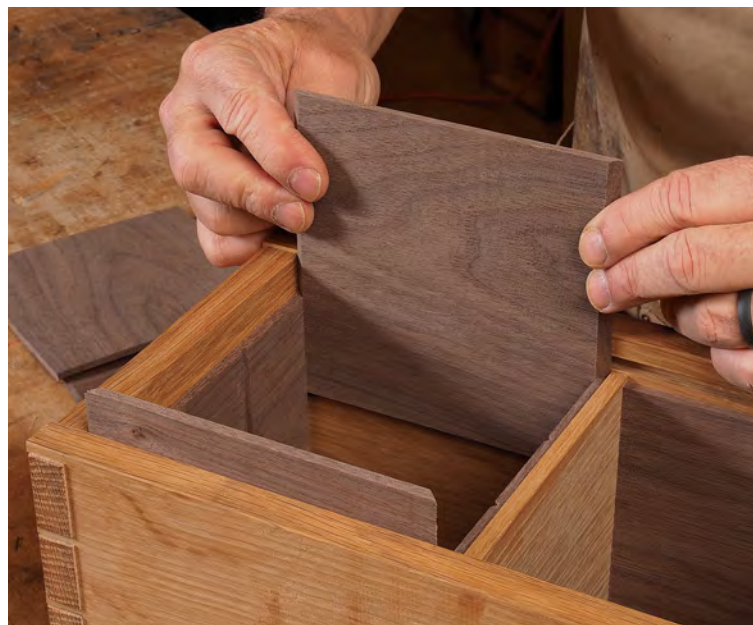
Starting with the blade too low, take successive cuts in a piece of scrap until the width of the groove equals the thickness of the stock. Since adjusting the height of the blade will change its lateral alignment as well, wait until the height is correct before positioning the rip fence. Use a push pad to ensure a consistent groove depth.

Miter the ends

Planing miters by hand may sound like a big chore, but on thin stock it goes quickly. The key is having a well-suited shooting board. Rather than angling the workpiece to cut the miter, my shooting board angles the hand plane at 45° and the stock lies flat on the base. This makes it easy to hold the stock flat while planing in the event that there is a slight cup (which is not uncommon in thin stock).



Check the flat to gauge your progress. A flat of even width across the tip is a good indication that you are planing level. Continue until the flat disappears, leaving a knife edge; but be sure not to plane too far.



Insert the dividers for a final check. It's common to have the dividers fit individually yet create too tight a fit once they are all in place. Often, an extra pass on the end of one divider is all that is needed to get them to seat.

CENTERED MITERS



Plane a centered miter. Flip the stock as you plane to ensure bevels of equal width and a centered point. Watch the remaining flat to gauge your progress, and check the fit often as you go.



PREP AND FINISH THE PARTS

Dress the edges. Planing the mitered ends often results in tearout at the corners. It's easier to remove it with a couple of passes with a hand plane rather than wait to address it after glue-up.



Pre-finish the inside faces. Pekovich uses a 50/50 mix of Zinsser SealCoat dewaxed blond shellac and denatured alcohol. Pad on a light coat, wait for it to dry, and scuff-sand the surface with fine sandpaper. Apply one more coat and you're done.



Check the miter as you plane; it should be even along the width of the stock. Make any adjustments as you go. Watch the remaining flat to determine how much you need to plane. I shoot for a knife edge but guard against removing too much stock. After mitering all of the parts, double check the fit by sliding all four sides into the case. It's common for all of the individual parts to fit, only to have a fit that's too snug once everything is in place. Resist the urge to force the last piece in. Instead, trim as needed for a slip fit that doesn't require a lot of pressure to insert.

Bevel the dividers

The internal dividers receive a centered miter on each end that fits into the V-grooves of the outer pieces. Take equal passes on each face as you go to ensure the miter's point is centered. Look at the remaining flat to judge your progress. Plane a complete miter on one end and then plane the opposite end leaving a small flat. This should result in a too-snug fit and guards against a divider that is too short for the opening. Continue planing the end with the flat as needed to dial in the final fit.

Glue up the divider assemblies

It's tempting to slide the divider parts in dry and leave them. However, I find they can shift over time and the case doesn't always do a good job of keeping the joinery tight, so gluing everything into a single

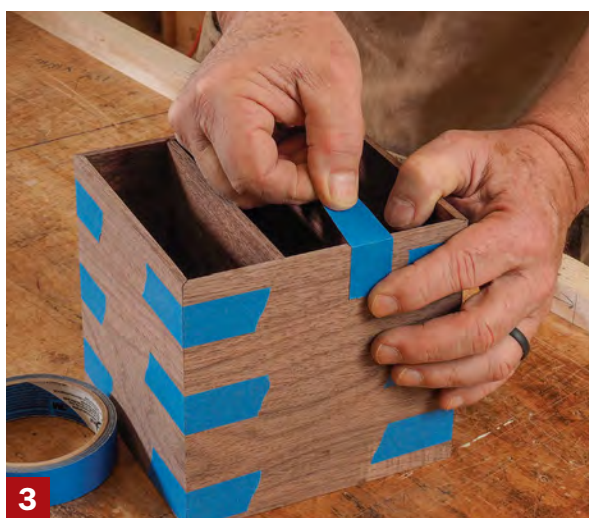
GLUE THE ASSEMBLIES



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Use tape as a clamp. Arrange the dividers along a straightedge clamped to your benchtop and stretch a few pieces of tape across each joint (1). Apply glue to the mitered ends and V-grooves and roll everything up together, stretching the tape across the final corner (2). Add tape at the V-groove intersections to ensure that those joints are tight (3). Stretch-wrap is a good way to apply a little extra pressure (4). After the glue dries, check the final fit of the divider assembly (5). Sand as needed, taking care not to stress the joints.

unit is a good idea. Start by surfacing the inside faces of the parts and planing the front edges to remove any tearout at the corners from mitering. Then finish the inside surfaces with shellac before glue-up. It's much easier than finishing the parts once they're assembled, and any squeeze-out will pop off the shellacked surface.

When gluing, I treat the divider assemblies like a mitered box, using blue tape to hinge the parts together and provide the necessary clamping pressure. I usually apply additional tape and stretch-wrap at the divider locations.

The glued assemblies may be a bit tighter in the case than when the pieces were dry-fit. But they typically only require minimal sanding to get them to slide in place. □

In addition to being editor and creative director of Fine Woodworking, Michael Pekovich teaches woodworking online and across the country.



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