

Mitered CD/DVD Rack

Two tricks for taming miter joints.

Learning a new skill is often a matter of getting past the scary part. If you can reduce the number of things that can go wrong, you become comfortable enough to push past what once seemed an insurmountable obstacle. Miter joints are never a walk in the park, but they don't have to be a middle-of-the-night trip through the cemetery.

A four-sided frame or box is the usual starting point for mitered joinery. In this scenario, the beginner will likely be frustrated by tiny errors in the degree of angle or the length of the parts. Any errors made will show up in the last joint to be closed.

At this point errors aren't tiny any more. On a square frame with 12" sides, even with only $1/10^\circ$ of error, the gap at the last corner will still be $1/8"$. The degree of perfection required is obtainable, but there are two other hurdles to overcome for successful mitering.

This I Can Do That project addresses the two problems that can cause even perfectly cut miters to fail: Getting a strong glue joint and clamping the corners together. There is a simple solution for each, and knowing these will make getting perfect corners easier.

Two Sticks, Glue and Packing Tape

One 6' length of 1x2 (actual size $3/4" \times 1\frac{1}{2}"$), and one 2' length of 1x4 (actual size $3/4" \times 3\frac{1}{2}"$) provide all the material. These were available in red oak at our local home center. Look for the straightest pieces in the pile. If you don't have yellow wood glue at home, pick up a small bottle before you leave the store. And while you're there, purchase a roll of clear packing tape.

Begin by cutting two pieces of 1x2 to $22\frac{5}{8}"$ long. This length isn't critical, but both pieces should be the same length, and both should have two square ends. Sometimes the material you buy has a ragged end, so I usually cut



No other joint looks like a miter. Miter joints allow the wood grain to flow around a corner, without exposing any end grain. Good miters aren't always easy, but a few tricks make them manageable.

$1/4"$ or so off the end of a new piece to make sure it's square and clean.

Make a mark on the edge of one of these pieces that's $4\frac{1}{2}"$ from the end, and with your combination square draw a line at a 45° angle back toward the end. Only mark one piece – you will use that to set up the miter saw to cut identical lengths.

Swing the miter saw to the right and lock it in at 45° . Without turning on the saw, put your marked piece below the blade and bring the blade down until a tooth of the blade is on the pencil line, with the blade to the left of the line. Let the saw swing back up out of the way and without moving the workpiece, draw a pencil line on the back fence of your

miter saw at the end of the workpiece.

When you cut each piece, line up a square end of the $22\frac{5}{8}"$ pieces with the pencil line, hold the work with your left hand well away from the blade and make the cut. You don't want to clamp a stop-block to the fence because the short piece will be trapped, and the blade could send it flying. Make the cut in one smooth motion and leave the blade all the way down until it stops spinning.

Flip the piece over, and make certain that the angle you just cut is pointing in the opposite direction of the next cut. Line up the square end with the pencil line and make the cut. This procedure will yield all six pieces of the upper part of the rack, with only four saw cuts, and your hands will stay safely away from the blade at all times.

Swing the saw to the $22\frac{1}{2}^\circ$ setting to make the cuts for the feet and middle rail. Cut one end of the middle rail, then turn the rail around, measure, mark and cut the

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other end. The feet can be cut the same way as the short uprights, but it will be better to return the saw to the 90° stop, and tilt the head 22½° to the left.

Bevel cutting the flat face will keep the work on the saw table. There is a chance if you cut it on edge that the short piece could fall into the blade. The two ends of the rail are angled in opposite directions, but the ends of the feet are parallel. Make a pencil line on the fence, and slide the stock up to the line, holding on to the long end of the board as you make the cuts.

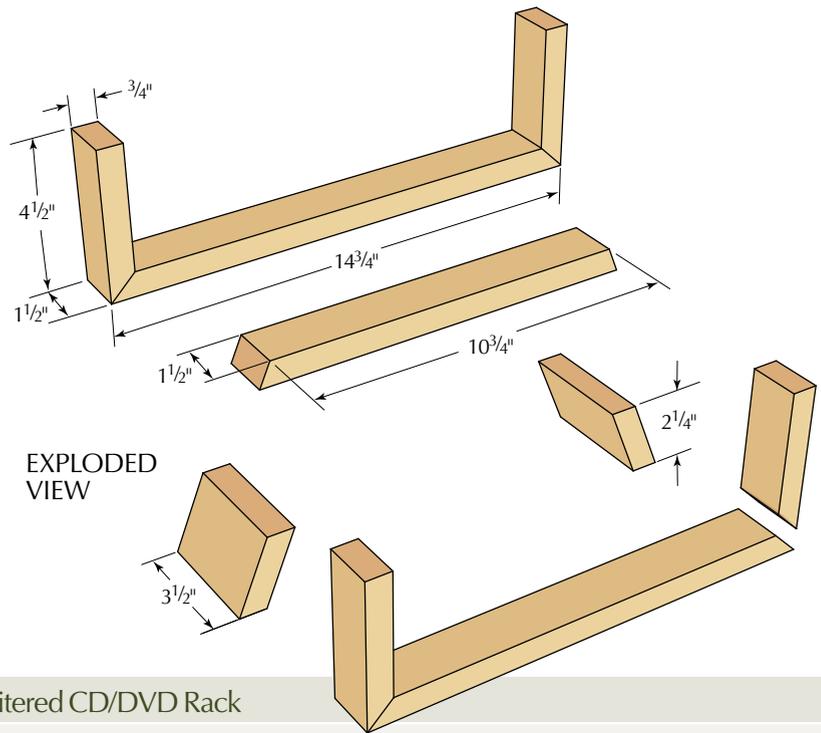
Two Ways Tape Makes it Easy

Sand all the pieces, except the mitered ends with #120 grit sandpaper before assembling. To put the top parts together, lay the three pieces of each section end to end. Hold the ends together with a piece of tape, as seen in the photo below left, then flip the taped pieces over.

Smear some glue on each side of the joints and walk away for about five minutes. The glue will wick up into the short grain, and if you try to put it together now, most of the glue will disappear from the joint, leaving it weak. When you come back, apply more glue and fold the joints together. The tape will act as a hinge, keeping the pieces from sliding apart and holding the ends tightly together.

Flip the pieces over, and use another piece of tape to hold them in position while the glue dries. The tape will stretch, so be careful not to pull it too tight. You should see some glue squeezing out of the joints. Wipe off the excess with a wet rag.

Mark the top of each foot 1½" in from each end and put some glue in between the pencil marks. Again this is a short-grain surface, so let the glue soak in for five minutes before



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NO.	ITEM	DIMENSIONS (INCHES)			MATERIAL	COMMENTS
		T	W	L		
2	Rails	3/4	1 1/2	14 3/4	Oak	45° miter both ends
4	Uprights	3/4	1 1/2	4 1/2	Oak	45° miter one ends
1	Bottom	3/4	1 1/2	10 3/4	Oak	22 1/2° bevel both ends
2	Feet	3/4	3 1/2	2 1/4	Oak	22 1/2° bevel both ends

assembling. Use tape to hold the ends of the center rail to the tops of the feet and allow the glue to dry overnight.

The last step before finishing is to glue the two outer assemblies to the middle rail and feet. Apply some glue to the exposed top of each foot, let it soak in, then apply more glue to those spots, and along the length of the middle rail. Put the edges of the three rails together, centering the middle rail end-to-end. Use a couple small clamps to hold them in place, or you can wrap some tape around all three instead.

Let the glue dry overnight, remove the tape or clamps and lightly sand the entire project with #150-grit sandpaper. Round the sharp edges slightly and you're ready for a finish. We used an oil-based stain followed by Danish oil to obtain a dark brown satin finish. **PW**

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About This Column

Our "I Can Do That" column features projects that can be completed by any woodworker with a modest (but decent) kit of tools in less than two days of shop time, and using raw materials that are available at any home center. We offer a free online manual in PDF format that explains all the tools and shows you how to perform the basic operations in a step-by-step format. You'll learn to rip with a jigsaw, crosscut with a miter saw and drill straight with the help of our manual.



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Tape as a hinge. Clear packing tape holds the ends of the joints together, and it lets you see what is happening as you assemble the joints.



And as a clamp. Fold the ends up and use the tape to hold the parts in place while the glue dries.