Miter Gauges

Replace yours with a more accurate model

BY ASA CHRISTIANA

Compared to a crosscut sled, a miter gauge has a tough job. With just one runner riding in the saw table and a pivoting fence that drags workpieces across the table, accuracy is tougher to achieve.

Compared to a big, heavy sled, however, a miter gauge is much easier to handle, it can crosscut wood at a variety of angles, and because there is no base it can cut thicker stock. Most also make it easy to add a sacrificial wood fence, so you won't have to blow out the base and fence of your crosscut sled with a dado cut, for example.

For a miter gauge to deliver accurate results, every component needs to function well. Unfortunately, the gauge that came with your table saw probably isn't up to the job. Manufacturers tend to focus their efforts on the machine itself, skimping on the accessories—blade, push stick, miter gauge—to keep prices as low as possible. This is why the market is flooded with replacement miter gauges, all promising to beat the one you already own. In fact, I ordered and examined two dozen of them for this test, with models ranging from well-established North American brands to inexpensive knockoffs on Amazon. In the end, there were 10 tools left standing, each capable of doing precise work. That said, some make that precision easier to achieve.

WOODHAVEN DELUXE (4911) WITH 36-IN. FENCE KIT

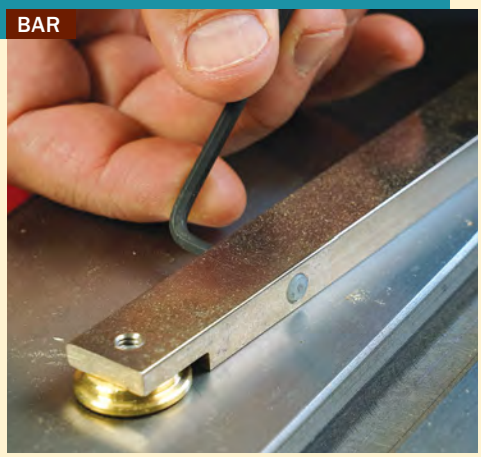
This gauge is available in a variety of configurations. We went with the longest miter bar (23¾ in.), and added Woodhaven's 36-in. fence and flip stop (Model 4903)—a combination that performed amazingly on workpieces of all sizes. The fence comes with a sliding MDF face attached, which is easy to replace with a shopmade version.

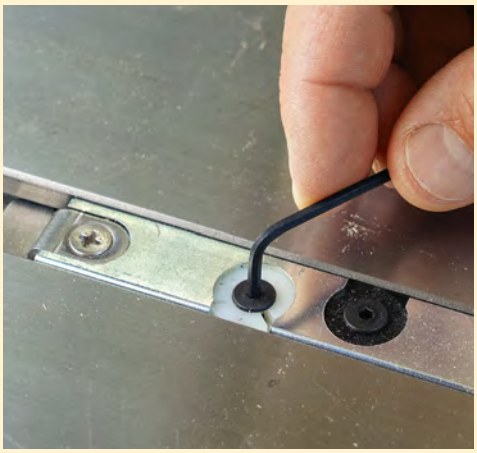
Photos: Asa Christiana

Key components

With just one runner to guide it, and a pivoting fence that drags workpieces across the saw table, a miter gauge has a tough job—so every component matters.

BAR





Solid bar adjusters are best. *The best are positive, like the threaded set screws on the Woodhaven bar (left), and the split plastic washers on the Incra (center) and others. While Woodpeckers' springy adjusters (right) require no adjustment, they allow the bar to twist sideways slightly in some situations.*

ANGLES

Indexing systems must be solid too. *No matter their design, the best angle-setting systems allow zero wobble. Great examples are Woodhaven's threaded pin (above) and Incra's toothed rack (right).*

FENCE

Sacrificial-fence capability. *Woodpeckers Exact-90, Woodhaven Deluxe, and Rockler Precision (shown) include a sliding sacrificial MDF fence face for zero-clearance cut support. Most of the others make it easy to add one.*

FLIP STOP

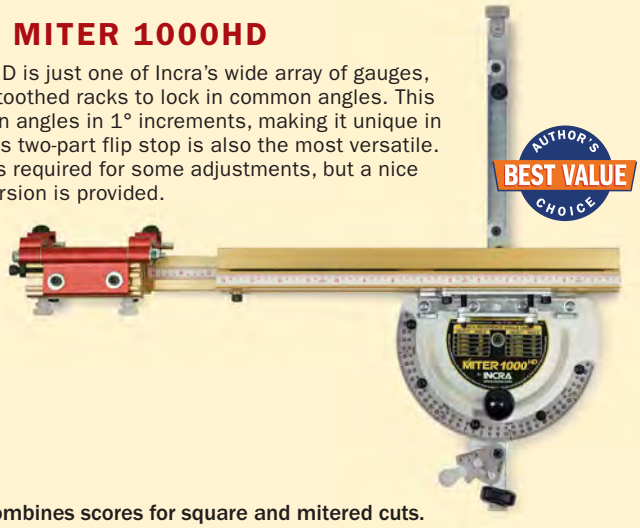
Flip stops should be versatile. *Like JessEm's excellent, micro-adjustable model (left), the flip stops on most models adjust to fit over a sacrificial fence. But only a few, such as the StealthStop (center) and Incra stop (right), fit into the fence to catch the pointy end of mitered pieces.*

HARVEY MG-36 PRO

A recent update of Harvey's Compass MG-36 miter gauge, the MG-36 Pro is a thing of beauty, with robust, refined construction and a host of user-friendly features, like a micro-adjustable flip stop that works for miters too. While it has a bit more play in its angle-indexing system than the three top gauges in this review, it is capable of precise work.

INCRA MITER 1000HD

The 1000HD is just one of Incra's wide array of gauges, which use toothed racks to lock in common angles. This one locks in angles in 1° increments, making it unique in this test. Its two-part flip stop is also the most versatile. A hex key is required for some adjustments, but a nice handled version is provided.



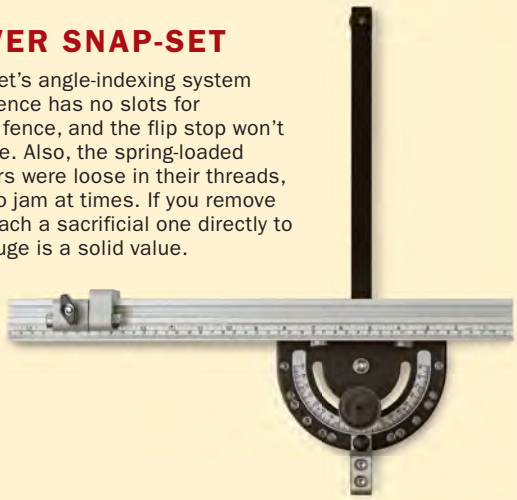
Top miter gauges, head to head

The rating for overall accuracy combines scores for square and mitered cuts. Each miter gauge's ability to maintain accuracy with larger workpieces is also noted. Prices listed are the lowest we could find.

MODEL	Price	Bar adjusters	Overall accuracy	Large workpieces	Angle range (degrees)	Angle stops (degrees)
HARVEY MG-36 PRO	$350	Eccentric plastic disks	Very good	Very good	+/-60	0, +/-15, 22.5, 30, 45, 60
AUTHOR'S BEST VALUE CHOICE INCRA MITER 1000HD	$220	Split plastic washers	Excellent	Excellent	+/-90	Every degree
JESSEM MITE-R-EXCEL II	$300	Eccentric metal disks	Very good	Excellent	+/-45	0, +/-15, 22.5, 30, 45
KREG PRECISION SYSTEM	$160	Plastic set screws	Good	Excellent	+/-50	0, +/-22.5, 30, 45
POWERTEC 71766	$300	Split plastic washers	Excellent	Very good	+/-60	0, +/-15, 22.5, 30, 45, 60
AUTHOR'S BEST VALUE CHOICE ROCKLER PRECISION	$190	Nylon set screws	Excellent	Excellent	+/-70	0, +/-15, 22.5, 30, 45, 60
AUTHOR'S BEST OVERALL CHOICE WOOD HAVEN DELUXE	$320	Nylon set screws	Excellent	Excellent	+/-90	0, +/-10, 15, 22.5, 30, 45, 60, 90
WOODPECKERS EXACT-90	$330	Spring clips	Very good	Very good	N/A (0 only)	0
WOODPECKERS STEALTH-STOP	$120	Spring clips	Excellent	Good	+/-70	0, +/-15, 22.5, 30, 36, 45, 60
WOOD RIVER SNAP-SET	$100	Spring-loaded balls	Very good	Very good	+/-90	0, +/-22.5, 30, 45, 60, 67.5, 90

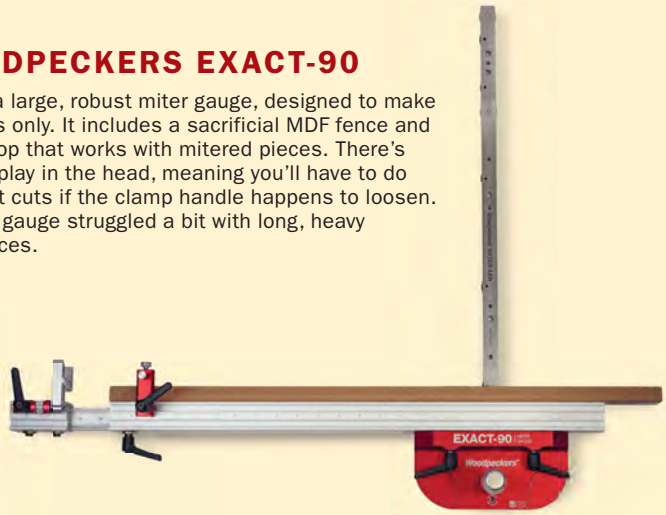
WOOD RIVER SNAP-SET

While the Snap-Set's angle-indexing system is accurate, the fence has no slots for attaching a wood fence, and the flip stop won't accommodate one. Also, the spring-loaded miter-bar adjusters were loose in their threads, causing the bar to jam at times. If you remove the fence and attach a sacrificial one directly to the head, this gauge is a solid value.



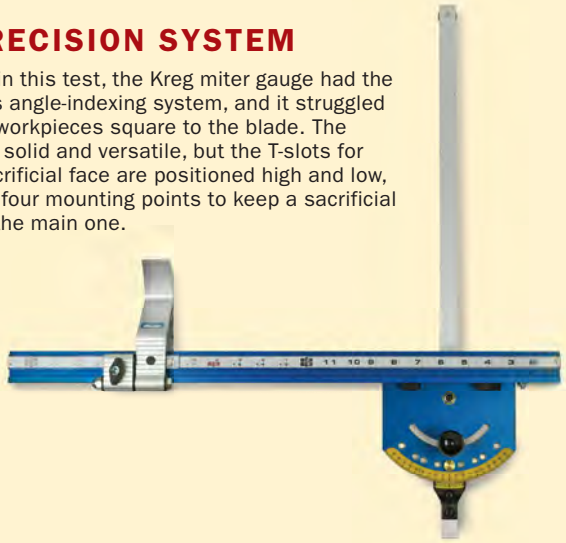
WOODPECKERS EXACT-90

This is a large, robust miter gauge, designed to make 90° cuts only. It includes a sacrificial MDF fence and a flip stop that works with mitered pieces. There's a bit of play in the head, meaning you'll have to do new test cuts if the clamp handle happens to loosen. And the gauge struggled a bit with long, heavy workpieces.



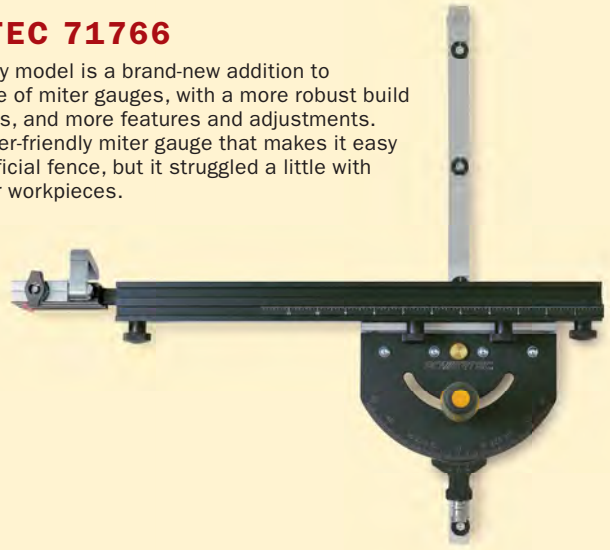
KREG PRECISION SYSTEM

Of the gauges in this test, the Kreg miter gauge had the most play in its angle-indexing system, and it struggled to keep larger workpieces square to the blade. The stop system is solid and versatile, but the T-slots for attaching a sacrificial face are positioned high and low, likely requiring four mounting points to keep a sacrificial fence snug to the main one.



POWERTEC 71766

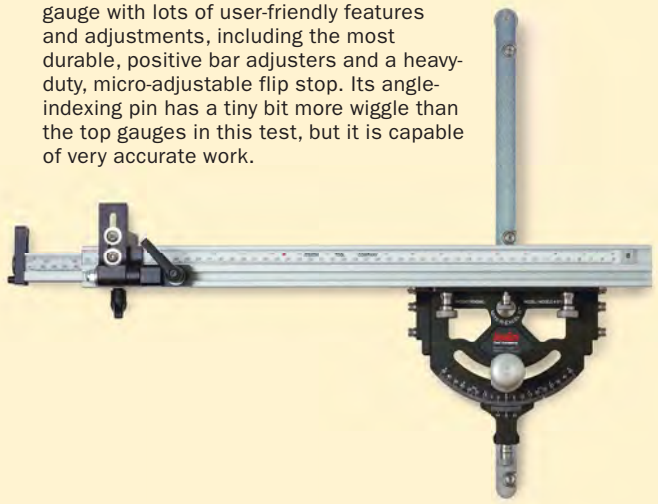
This heavy-duty model is a brand-new addition to Powertec's line of miter gauges, with a more robust build than the others, and more features and adjustments. It's a solid, user-friendly miter gauge that makes it easy to add a sacrificial fence, but it struggled a little with longer, heavier workpieces.



Angle scale	Max crosscut with stop	Stop works w/ sacrif. fence?	Stop works w/ miters?	Fence in same position at 90° and 45°?
1/10°	39 in.	Yes	Yes	Yes
1/10°	34 in.	Yes	Yes	No
1/10°	40 in.	Yes	No	Yes
1/10°	24 in.	Yes	No	Close
1/10°	36 in.	Yes	No	Yes
1°	26 in.	Yes	No	Close
1/10°	39 in.	Yes	No	Yes
N/A	48 in.	Yes	Yes	N/A
1°	28 in.	No	Yes	No
1°	18 in.	No	No	Yes

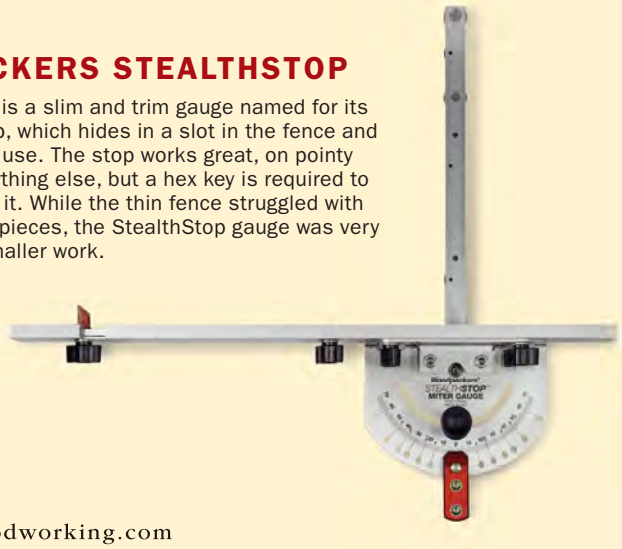
JESSEM MITE-R-EXCEL II

This is a heavy-duty, finely machined miter gauge with lots of user-friendly features and adjustments, including the most durable, positive bar adjusters and a heavy-duty, micro-adjustable flip stop. Its angle-indexing pin has a tiny bit more wiggle than the top gauges in this test, but it is capable of very accurate work.



WOODPECKERS STEALTHSTOP

The StealthStop is a slim and trim gauge named for its unique work stop, which hides in a slot in the fence and flips outward for use. The stop works great, on pointy miters and everything else, but a hex key is required to move it and lock it. While the thin fence struggled with long, heavy workpieces, the StealthStop gauge was very accurate with smaller work.



ROCKLER PRECISION MITER GAUGE WITH TELESCOPING FENCE

Reviewed favorably in *FWW* #299, this compact system performed wonderfully in my tests as well, delivering precise cuts on workpieces large and small. The metal fence comes with a sliding MDF sacrificial fence attached, and premade replacements are just $12 each. The fence extension sits a hair proud when it's clamped close to the fence, but this is easy to work around.

Tough tests and tasks

Tests varied from measuring stresses to real-world cuts on a variety of workpieces.

Wiggle test. *With the angle-setting system engaged but the clamp handle unlocked, Christiana extended each fence 12 in. and flexed it gently to check for play in the system. Too much and you won't be sure the head will lock at the exact same angle each time you set it.*

Great expectations

A good aftermarket miter gauge should beat a stock model in every way. First, the miter bar needs reliable adjusters for perfecting its fit in the miter slot. Second, you should be able to rely on the head returning to a perfect 90° and other common angles every time you reset it, without the need for test cuts.

Metal fences are an asset—The best miter gauges have a long, straight, solid fence attached to the head, with a reliable stop system built in. Before I did this test, I used to think that a miter gauge didn't really need one of these fences, because a sacrificial wood fence can be screwed directly to the head, providing the same workpiece support while adding zero-clearance cut support and a place to clamp on stop blocks. I was wrong. Turns out those long, extruded-aluminum fences keep your sacrificial fence straighter and more accurate (see "Testing revealed helpful tips," p. 42). And they include a flip stop, which is handier than a clamped-on block.

SawStop owners beware—While the extruded aluminum fences are an asset, they can cost you some money if you happen to run one into the blade of a SawStop table saw and trigger the brake (other saws will cut into the aluminum without a problem).

But all of the fences adjust side to side on their brackets, so this SawStop issue should be easy to avoid—if you are paying attention. On some fences, the end stays in the same position relative to the blade at both 45° and 90°, which is a nice bonus.

Adding a sacrificial fence—To create a zero-clearance blade slot and avoid chipout at the back edge of your crosscuts, you'll need to attach a sacrificial wood fence to the metal one, extending it an inch or so past the blade. A few of the miter gauges in the test came with sacrificial fences, others offer them as options, and some require you to make your own. These are attached by means of T-slots in the metal fences, which accept common nuts and fasteners. The T-slots let you slide the sacrificial fence right and left, allowing you to cut a new zero-clearance blade slot when you need one.

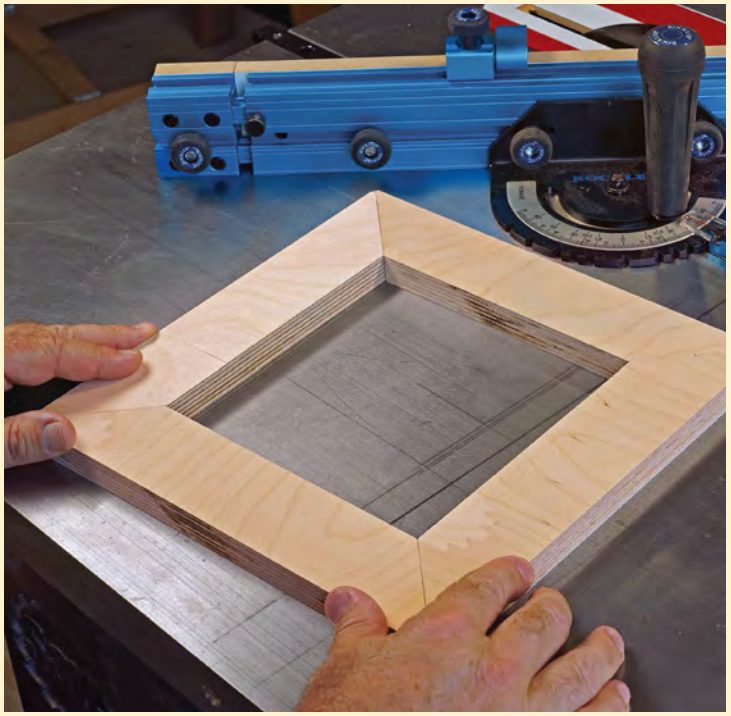
Inside the testing

My tests evaluated all of the above and more. First, I checked the adjusters for fitting the bar to the slot, and dialed them in (when possible) for a perfect sliding fit with no wiggle room. The adjusters vary from springy clips and ball-bearings that need little to no adjustment, to adjustable washers, disks, and set screws. My favorites offer positive adjustment with no springiness, and hold their settings. Their advantage was borne out in the cutting tests.

Next, I checked for play in the angle-indexing system. All of the gauges are solid once you lock down the clamp handle, but a few have a little more wiggle in the angle-setting system than I would like, which showed up in the cutting tests. I checked for wiggle in the flip stops too, and all were solid.

Before moving on to the cutting tests, I checked the initial squareness of each gauge by placing an accurate square between the miter bar and fence. If they were off a little, I adjusted them. All of the gauges have a way to fine-tune the fence angle, making the whole indexing system accurate.

Most importantly, I did a variety of cutting tests, including cuts at 90° and 45°, and cuts on large, heavy boards, making sure that all of the components teamed up to deliver the accuracy that furniture makers need. I repeated these many times, to make sure my results were solid, and to see if the gauges could be moved to different angles and returned reliably to a perfect 90°.



Real-world cuts. *Christiana made multiple square cuts, resetting the angle each time, to check for consistency (above), and made a mitered frame with each gauge (right) as well, which compounds any error in the 45° setting.*

Large workpieces. *This long, thick piece of hardwood represents some of the heavier stock a miter gauge might be asked to handle. Not all gauges were able to produce a perfectly square cut on this board, due to flex or play somewhere in the system.*

A few words about my favorites

Each of my favorites has something unique going for it. The compact Rockler offers the best combination of size, price, and performance, with replacement MDF fence faces just a click away at Rockler's website. My only quibble is how the fence extension ends up a little proud of the main fence when it's locked close to it. To compensate, I would suggest unlocking its clamp when the extension isn't needed, or removing its sacrificial block when you need to lock the loupe stop close to the main fence.

For a bit more money, you can buy the Incra Miter 1000HD, which has positive stops at every degree and a very versatile flip stop, and includes handy hardware for adding a sacrificial fence. Incra has a lot of miter-gauge models, which share the same solid rack system for setting angles. And Incra fences are interchangeable, so you can add a longer one later if you like.

If cash is less of a concern, I would go for the big Woodhaven gauge I put together from their variety of possible configurations. With its long miter bar, extremely solid head, and long, rigid fence, it did the best job with workpieces large and small. And its MDF fence is very easy to replace.

Asa Christiana is Fine Woodworking's *editor-at-large.*

Testing revealed helpful tips

Tighten up the gauge. *After tightening the miter-bar adjusters, tighten the rest of the connections, like pivot points on the head of the gauge (above) and the flip stop (right).*

While reviewing these gauges, I discovered a few helpful tips and techniques as I worked my way through the battery of tests. These will benefit anyone who owns a miter gauge, whether they are shopping for a new one or not.

First, adjust the bar for a good fit in the left-hand miter slot on your table saw. The goal is to have each little adjuster rubbing slightly against the inside of the slot, without causing too much drag.

Then tighten up all of the connections on your miter gauge. There tend to be lots of these, depending on the design, and some had been left a bit looser than I would like. The same goal applies here: to eliminate as much wobble as you can without making it too hard to operate the tool. Most importantly, make sure the fence is attached solidly to the head, and tighten the pivot points in the flip stop and the head of the gauge, if possible.

Next, move on to the angle of the head/fence. All miter gauges have an indexing system for common angles, and almost all can be adjusted. First, engage the indexing pin or tooth in the 90° position, tighten the clamp handle, and place an accurate square between the bar and fence. If there's any light showing, adjust the indexing system as shown in the manual. If your tablesaw is dialed in, with the miter

Check it for squareness. *Clamp the fence in the 90° position, and put a good square between the fence and bar to look for light. Read the manual to find out how to correct misalignment.*

Follow up with test cuts. *Rip two edges straight and parallel on a thin piece of material, scribble across the cut line, and make a cut (right). Then flip the cutoff and set both pieces against a straight edge (below). Any gap is double the amount of error, so adjust the gauge accordingly.*

slots perfectly parallel to the blade, this simple step should deliver perfect cuts right away. But just to be sure, make test cuts as shown.

Along the way I discovered that the flip stop is as helpful for single cuts as it is for multiples. That's because workpieces—especially large ones or parts cut at an angle—can slide along the fence as the cut is made, no matter how firmly you hold them. But if you engage the stop, you can push the workpiece against it slightly as you cut, eliminating drift.

A number of gauges employ a tapered pin or tooth in their angle-indexing systems to ensure an accurate setting. It can be helpful to apply pressure to that tapered pin or tooth as you are tightening the clamp handle to make sure you are removing as much play as possible.

And last, if you have a long metal fence on your gauge, attach the sacrificial fence to that, instead of directly to the head of the miter gauge. If you're like me, it's tough to find a flat piece of MDF or plywood in your scrap pile, but the metal extrusion will tend to pull a scrap piece flat and keep it that way.

—A.C.

Use the flip stop to prevent drift. *Most of us use these for repeat cuts only, but they prevent a workpiece from sliding along the fence as you push it past the blade; such drift can result in a slightly curved cut.*