

August 2002



# Plate Joiners



**P**late joiners (also called biscuit joiners) have been available in the United States for about 25 years now. And lately, more and more woodworkers I know are adding this tool to their list of “must-haves” for the wood shop.

One look at what these tools can do for any project, and it's clear to see why plate joiners are becoming so popular.

Using a plate joiner and a wood biscuit creates a joint that approaches the strength of a mortise and tenon joint, but without all the precise layout and cutting. And few other joinery techniques are as versatile as plate joinery. It's hard to imagine a joint where you couldn't use biscuits for a strong, easy, and invisible connection.

And let's not forget alignment. Nothing beats a biscuit for taming mitered corners that have a tendency to slip out of alignment as soon as you clamp them together. The same goes for glued-up panels. With a few biscuits glued into the edges of the boards, you won't have to worry about the pieces shifting up or down.

Simple, strong, versatile, and invisible. What's not to like?

## WHAT MAKES A GOOD JOINER?

Okay, so you're sold on the idea that plate joinery can make strong joints quickly and easily. Now you just need to know what makes one joiner better than another. In a word, the fence. Why is the fence so important?

Well, all of these plate joiners will cut a slot in the edge of a board with absolutely no problem. In fact, based solely on this type of cut, we couldn't recommend one tool over another. But, when cutting slots in bevels or miters, or joining face frames, it became clear that the fences on these joiners are not created equal.

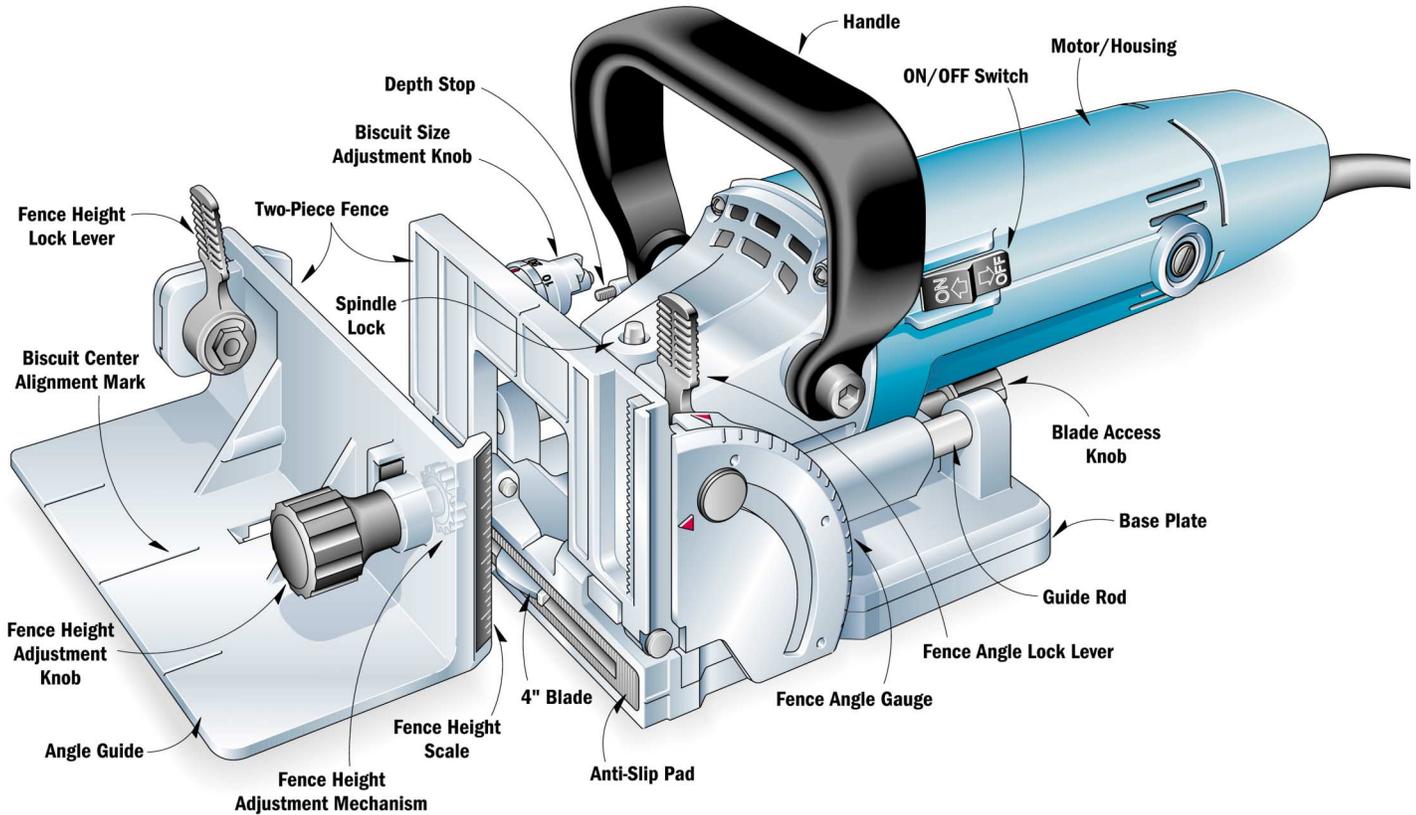
The difference lies largely in how the fences register on a workpiece. We also found major differences in the ease of adjustment and accuracy of the fences.

Of course, there are other important factors, such as how well a joiner grips a workpiece while making the cut. (Imagine trying to cut a slot in the end of a piece of stock only to have the joiner “slip” and cut

Seven plate jointers compete for top honors.  
Which one is best for you?



# ANATOMY OF A PLATE JOINER



## HOW WE TESTED

through the edge of the workpiece.) Other aspects that affected our opinion of these machines were things like sight lines, registration marks, and ergonomics.

On the following two pages, there are comparisons of the types of fences on these tools, including how they are adjusted. There are also descriptions of the different “anti-slip” devices that we found on these joiners. Then, in the descriptions of the individual tools, we’ll cover the other highlights and lowlights of each one.

Finally, we’ll tell you which plate joiners received our recommendations and why. And there’s also a report card so you can see exactly how we graded each tool in the categories we considered.



**▲ T-JOINTS**  
This joint let us try the joiners in a vertical position while using the mating workpiece for alignment.



**▲ BEVELED END JOINTS**  
These challenging cuts showed us which tools were easiest to set up and had the most versatile fences.



**▲ MITERED FRAME JOINTS**  
Cutting biscuit slots in mitered frame pieces made out of hard maple revealed which “anti-slip” devices provided the best grip.

# Details That Make a Difference



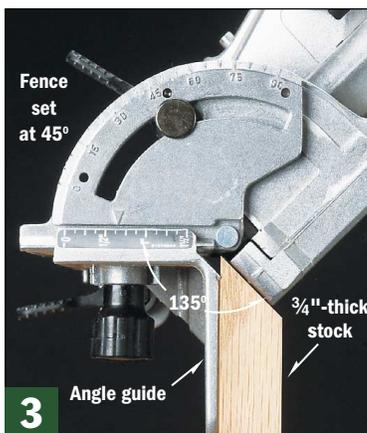
▲ When trying to register off the outside face of a board, some one-piece fences allow narrow stock to pass right through.



▲ DeWalt's one-piece fence can register off the outside face of a board as long as it's at least 2½"-wide.



▲ When working with narrow stock, DeWalt's fence must register off the inside face of the board.



▲ Makita's fence "traps" the board in the 135° position. However, this only works in stock that's ¾" thick or less.

## Fences

We discovered quickly during our testing that fences were the distinguishing factor among these tools. The fence of a plate joiner is especially important when cutting bevels and miters. When making these cuts, the fence has to provide a secure hold on the workpiece to prevent the tool from moving. We also preferred fences that easily accommodated different widths and thicknesses of boards.

The seven tools we compared in this test have three types of fences. We found strengths and weaknesses with almost all of the fences.

**ONE-PIECE FENCE.** This type of fence, found on the DeWalt, Craftsman, and Ryobi, gives you two choices for joining miters. The first is to register off the outside face of a workpiece, as shown in *Figure 1*. This generally works fine, but can be a bit "tippy."

One other limitation to this fence type has to do with board width. As you can see in the *Margin Photo*, the wide opening in two of these fences (the DeWalt and Craftsman) lets any board narrower than 2½" slip through the fence.

In that case, the second option is to register off the *inside* face of the board (*Fig. 2*). The problem here is that any misalignment will be visible on the *outside* of the joint. (The inside faces are guaranteed to line up since the tool is registered on them while cutting the biscuit slots.)

**TWO-PIECE FENCES.** The Lamello, Freud, and Makita plate joiners are equipped with two-piece fences. One part of the fence is permanently attached to the joiner. The second part, called an angle guide, can be removed for some types of cuts (*see the Anatomy drawing on page 2*).

For joining miters, these fences also offer two options. The first option is to set the fence to 45° with the angle guide attached, as shown in *Figure 3*. This "traps" the workpiece and holds the joiner securely during the cut.

This design does have one serious limitation, though. *Figure 4* shows what happens when you try to use this configuration on a board that's thicker than ¾". The "tip" of the miter holds the joiner away from the board.

For thicker stock, the solution is to remove the angle guide and use the joiner fence to register off the inside face, just like the one-piece fence, shown in *Figure 2*.

**TWO-STAGE FENCE.** Porter-Cable's fence is best described as a two-stage design (which is different than the *two-piece* fences covered earlier).

The first stage adjusts from 0° to 90°. In this stage, it functions just like a typical one-piece fence. However, unlike regular one-piece fences, this fence provides a positive hold on even the narrowest boards.

The second stage allows the fence to adjust from 90° to 135°.



▲ When working with thick stock, the tip of the miter prevents the face of the joiner from touching the board.

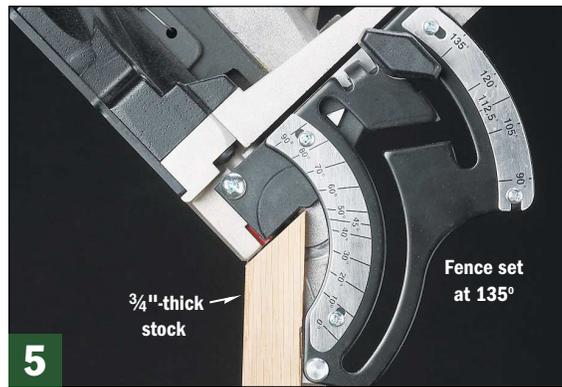
Using this setup, the two-stage fence “traps” the workpiece, much like a two-piece fence (Figure 5). But what’s better about this fence is that it’s not limited to 3/4"-thick stock (Figure 6).

**HEIGHT & ANGLE ADJUSTMENTS.** One final consideration that affected our opinions of all the fences we looked at is how easy it is to set the angle or height of the fence precisely.

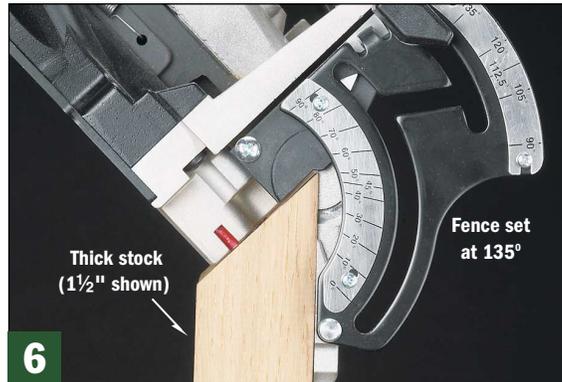
The two-stage fence of the Porter-Cable has the best adjustment qualities overall. The height and angle scales are clearly marked, which makes alignment easy. And a fine-threaded jackscrew allowed for exact height adjustments (see the photo on page 5).

We also liked the rack-and-pinion height adjustment on the Makita (see the Anatomy drawing on page 2). This fence adjusts quickly, stays square, and locks down solidly.

The fences on the Freud, Lamello, and Ryobi plate joiners are moved up and down by hand, which is a less refined adjustment system.



◀ Porter-Cable’s two-stage fence adjusts from 0° to 135° and works on boards of any width or thickness.



◀ Thick stock is no problem for the two-stage fence, even when set at 135°.

## Anti-Slip Devices

It’s important that a plate joiner doesn’t “slip” as you plunge the blade into a workpiece. The reason this “slippage” happens is simple. As the joiner plunges forward, the spinning blade makes contact with the wood and drives the tool in the direction opposite of the blade rotation causing the tool to slip.

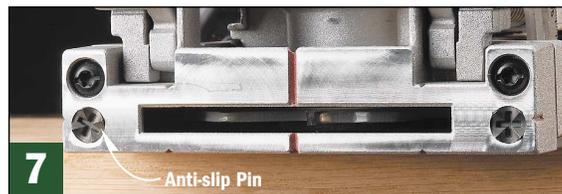
Each of these plate joiners has some device to help control slipping. Some are better than others.

One such device is a pair of anti-slip pins. These are designed to “bite” into the workpiece (Fig. 7). The pins can be retracted so they don’t scratch a workpiece on a visible surface. These generally work well. One weakness of these pins, though, is their placement. Notice how far apart they are? They offer no hold when working with narrow stock.

A second type of anti-slip device is the abrasive strip used by Porter-Cable (Fig. 8). This doesn’t have the same gripping power as pins, but it does cover the entire face of the joiner, so it engages even the narrowest stock.

Lamello’s silicone pads (Fig. 9) had one of the best grips in the group. Unfortunately, this design has the same limitation as the pins — they’re spaced too far apart to do any good on narrow workpieces.

Ryobi covered the face of their joiner with a material similar to a router mat (Fig. 10). This held the joiner quite well. However, one of our testers said the material made it difficult for him to know when the tool was set firmly against the workpiece.



◀ Anti-slip pins, such as on the DeWalt, are effective only on wide boards.



◀ Porter-Cable’s abrasive strip provides a passable grip on any size workpiece.



◀ Lamello’s silicone pads grip boards well, provided the board is wide enough.



◀ Similar to a router mat, Ryobi’s anti-slip material is effective, though a bit “squishy.”

## ★★★★★ PORTER CABLE 557

The Porter-Cable 557 plate joiner seems to have been designed to avoid every weakness found on many of the other tools in this test.

The two-stage fence on this plate joiner is clearly the best fence in the group. The angle of the fence adjusts across a 135° range, making it easily adaptable to any joint.

Adjusting the fence height by using a fine-threaded jackscrew is also an excellent design. Because of the fine threads, the fence moves slowly, but allows for accurate adjustments.

The Porter-Cable also has the best ergonomics of the test group. While it is a bit larger than the other tools in the test, the tapered design of the barrel is extremely comfortable. A trigger located underneath the handgrip area of the barrel allows you to turn the machine on and off without changing your grip on the tool. And speaking of grips, the top handle is tilted back into a much more

natural position than the upright position on the other tools.



It was the only tool in the group to overcome our tendency to ignore those handles altogether and hold the joiner by the fence.

Adding even more versatility to this excellent tool is a 2"-dia. blade that, when installed in place of the standard 4" blade, makes this tool perfect for cutting the small slots for "FF" (face frame) biscuits.

If there's one knock against this joiner, it's the short alignment mark on the base of the tool. It's impossible to see the mark when the joiner is vertical and aligned on a scrap fence no thicker than 3/4" (such as when cutting a t-joint in a plywood face). In this case, you're left to guess at the proper alignment.

Other than that, the Porter-Cable 557 plate joiner is virtually flawless, and an easy pick for the *Workbench Editor's Choice* award.



▲ Porter-Cable's 557 plate joiner includes a 2"-dia. blade for cutting "FF" (face frame) biscuits.



▲ A fine-threaded jackscrew for making fence height adjustments allows for extremely accurate settings.

### At a Glance:

|                       |  |
|-----------------------|--|
| <b>Price:</b>         | <b>\$200</b>                               |
| <b>Motor:</b>         | <b>7.5 amps</b>                            |
| <b>Fence type:</b>    | <b>Two-stage</b>                           |
| <b>Biscuit Sizes:</b> | <b>FF, 0, 10, 20, Simplex, Duplex, Max</b> |
| <b>Warranty:</b>      | <b>1 year</b>                              |

**Virtues:** Great fence; Good ergonomics; Unmatched versatility.

**Vices:** Short alignment mark on base isn't always visible.

**Verdict:** Miles ahead of competition on nearly all counts.

## ★★★★★ LAMELLO CLASSIC C2

The exceptional quality of Lamello's C2 plate joiner is evident in everything from its super-smooth plunge, a depth-setting knob that operates silky smooth, and an overall fit and finish that is unrivaled in this group.



The fence on this joiner is the two-piece variety. The angle gauge is locked with a tensioning lever and height adjustments are made by sliding the angle gauge up and down the fence. While this fence worked well in all our tests, it does require the extra step of ensuring the gauge is parallel to the blade before locking it into position.

Surprisingly, the fence on this joiner has no marks for setting the angle, though it does have detents at 22½°, 45°, and 67½°.

In the end, the outstanding quality of construction overcame the few missing refinements to put the Lamello solidly in second place in our test.

### At a Glance:

|                       |  |
|-----------------------|--|
| <b>Price:</b>         | <b>\$349</b>                           |
| <b>Motor:</b>         | <b>6.4 amps</b>                        |
| <b>Fence type:</b>    | <b>Two-piece</b>                       |
| <b>Biscuit Sizes:</b> | <b>0, 10, 20, Simplex, Duplex, Max</b> |
| <b>Warranty:</b>      | <b>1 year</b>                          |

**Virtues:** Superior fit & finish; Smooth operation.

**Vices:** No markings on angle gauge; Less refined fence adjustment system; High price.

**Verdict:** If money is no object, this plate joiner is worth the price.

## ★★★★★ MAKITA 3901

### At a Glance:

|                       |  |
|-----------------------|--|
| <b>Price:</b>         | <b>\$170</b>                           |
| <b>Motor:</b>         | <b>5.6 amps</b>                        |
| <b>Fence type:</b>    | <b>Two-piece</b>                       |
| <b>Biscuit Sizes:</b> | <b>0, 10, 20, Simplex, Duplex, Max</b> |
| <b>Warranty:</b>      | <b>1 year</b>                          |

**Virtues:** Rack-and-pinion height adjustment; Easy-to-use controls; Compact size; Mid-range price.

**Vices:** Unpainted alignment marks; Below average anti-slip.

**Verdict:** The best tool in this price range.

The Makita 3901 takes third place and Top Value honors in this test, thanks largely to some thoughtful features built into this tool.

First are the large tensioning levers and knobs on the fence. These are handy when making frequent setup changes. Also, the two-piece fence on the Makita uses a rack-and-pinion height adjustment, which holds the fence parallel to the blade and makes fine-tuning the fence a snap.

On the downside, the alignment marks on this joiner are

difficult to see. We also noticed that the anti-slip pad on this tool did allow the joiner to move just a bit if we didn't hold the tool firmly against the board.

Nonetheless, the Makita 3901 plate joiner is our choice for *Workbench Top Value* for its overall balance of quality and price.



## ★★★★★ DEWALT DW682

### At a Glance:

|                       |                       |
|-----------------------|-----------------------|
| <b>Price:</b>         | <b>\$165</b>          |
| <b>Motor:</b>         | <b>6.5 amps</b>       |
| <b>Fence type:</b>    | <b>One-piece</b>      |
| <b>Biscuit Sizes:</b> | <b>0, 10, 20, Max</b> |
| <b>Warranty:</b>      | <b>1 year</b>         |

**Virtues:** Good fit & finish; Rack-and-pinion height adjustment; Very reasonably priced.

**Vices:** No detents on angle gauge; One-piece fence lacks versatility.

**Verdict:** A solid tool at a competitive price. You can't go wrong with this one.

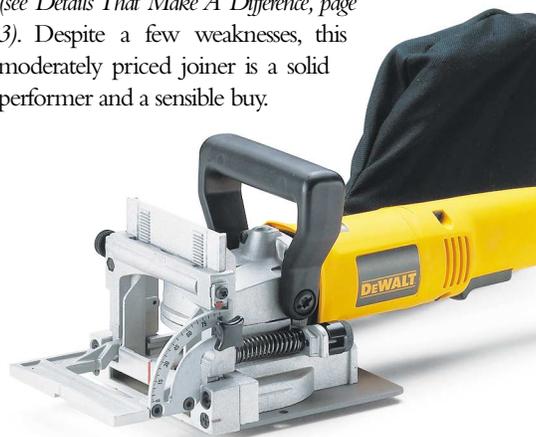
Although the DeWalt DW 682 didn't win one of the top three spots, we still consider it an excellent tool.

The one-piece fence of this tool is well marked with graduations of  $1/16$ " on height scale and  $1^\circ$  increments on the angle scale. Adjusting the height of the fence is accurate and quick thanks to the rack-and-pinion mechanism.

The contoured barrel and well-placed trigger switch make the joiner comfortable to operate.

Where this joiner lost a few points was in its angle gauge, which could be improved with detents. It also has an "open" fence that

limits its ability to handle narrow stock (see *Details That Make A Difference*, page 3). Despite a few weaknesses, this moderately priced joiner is a solid performer and a sensible buy.



## ★★★★★ CRAFTSMAN PROFESSIONAL

### At a Glance:

|                       |                       |
|-----------------------|-----------------------|
| <b>Price:</b>         | <b>\$170</b>          |
| <b>Motor:</b>         | <b>6.5 amps</b>       |
| <b>Fence type:</b>    | <b>One-piece</b>      |
| <b>Biscuit Sizes:</b> | <b>0, 10, 20, Max</b> |
| <b>Warranty:</b>      | <b>1 year</b>         |

**Virtues:** Rack-and-pinion height adjustment; Easy-to-read scales and alignment marks.

**Vices:** Poor trigger design; No detents on angle gauge; Top knob doesn't feel as natural as a handle.

**Verdict:** Costs more than the DeWalt with more shortcomings.

This tool is essentially a clone of the DeWalt with a few key differences, related mostly to ergonomics and comfort.

First, Craftsman opted for a knob rather than a handle on top of the joiner. The knob doesn't offer the control that the handle does.

Secondly, we noticed it was easy to inadvertently turn this joiner on when we picked it up because of the large trigger on the underside of the barrel.

Finally is the barrel itself. The lack of contouring and the thick barrel make it hard to get a comfortable grip on the tool.

The Craftsman's fence uses rack-and-pinion height adjustment, which is accurate

and allows quick adjustments. However, the fence lacks detents for angle setting. And like most one-piece fences, it won't support stock narrower than about  $2\frac{1}{2}$ ".



## ★★★★★ FREUD JS102

The Freud JS102 is a solidly-built, affordable plate joiner that performs well once you get used to a few of its idiosyncrasies.

First off, the two-piece fence displayed a tendency to rack when the tensioning lever was released.



Correcting the rack was easy enough by comparing the two scales on the front of the fence, but we'd prefer a fence that doesn't rack in the first place. We also noticed that the fence came loose and moved slightly during a couple cuts.

It also bothered us that there is no alignment mark on the side of the base to center the blade in the thickness of a board.

In spite of that, this joiner is quite capable of cutting accurate biscuit slots, as long as you're diligent about checking and rechecking the setup as you work. At this price, it may be worth the effort.

### At a Glance:

|                       |  |
|-----------------------|--|
| <b>Price:</b>         | <b>\$125</b>                           |
| <b>Motor:</b>         | <b>5 amps</b>                          |
| <b>Fence type:</b>    | <b>Two-piece</b>                       |
| <b>Biscuit Sizes:</b> | <b>0, 10, 20, Simplex, Duplex, Max</b> |
| <b>Warranty:</b>      | <b>1 year</b>                          |

**Virtues:** Good fit & finish; Easy to read scales; Affordable price.

**Vices:** Fence racked easily during adjustment; Awkward power switch.

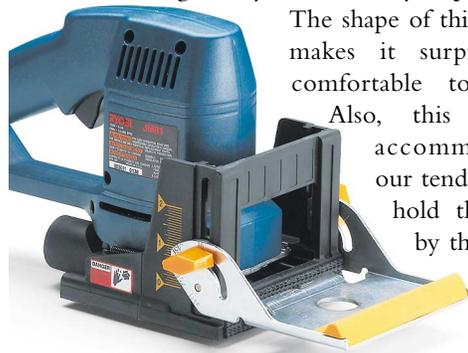
**Verdict:** A few oddities, but still a capable, affordable joiner.

## ★★★★★ RYOBI JM81

Despite finishing last, we do have a few positive things to say about the Ryobi JM81.

The shape of this joiner makes it surprisingly comfortable to grip.

Also, this joiner accommodates our tendency to hold the tool by the fence



with a plastic grip rail on the front of the fence. Other features we liked were the closed fence design that supports narrow stock, and marks that show how wide and deep a slot will be cut for each biscuit size.

Still, this fence has a few weaknesses. For instance, a single knob locks the height and the angle adjustments. So they can't be adjusted independently. Secondly, the alignment marks on the angle scale are difficult to read.

Priced at under \$100, this would be a good tool for a budget-conscious, occasional user.

### At a Glance:

|                       |                  |
|-----------------------|------------------|
| <b>Price:</b>         | <b>\$98</b>      |
| <b>Motor:</b>         | <b>6 amps</b>    |
| <b>Fence type:</b>    | <b>One-piece</b> |
| <b>Biscuit Sizes:</b> | <b>0, 10, 20</b> |
| <b>Warranty:</b>      | <b>2 years</b>   |

**Virtues:** Affordable; User friendly.

**Vices:** Crude fit and finish; Fence adjustments are cumbersome.

**Verdict:** An inexpensive tool for the occasional woodworker.



## Final Recommendations

### EDITOR'S CHOICE

For sheer versatility and top-notch performance, the Porter-Cable has no equal in this group of tools. The elaborate fence, comfortable barrel design, and fine height adjustment mean this plate joiner has almost no weaknesses. The Porter-Cable 557 is a bit higher priced than most of its competitors, but it's worth every penny.

### TOP VALUE

Makita's 3901 offers the perfect combination of performance and price to take Top Value honors in our plate joiner test.

While basic in design, this is a capable tool with excellent setup and performance characteristics.

| Model        | Height Adj. | Angle Adj. | Ergonomics | Fit & Finish | Anti-Slip | Visibility | Blade Change | Score |
|--------------|-------------|------------|------------|--------------|-----------|------------|--------------|-------|
| PORTER-CABLE | A           | A          | A          | A            | B         | A          | A            | A     |
| LAMELLO      | C+          | C+         | A          | A            | A         | B+         | B            | B+    |
| MAKITA       | B+          | A          | B+         | B+           | B-        | B          | A            | B+    |
| DEWALT       | B           | B          | B+         | B+           | B         | A          | D+           | B-    |
| CRAFTSMAN    | B           | B          | B          | B+           | B         | A          | D+           | B-    |
| FREUD        | D+          | B+         | B          | B            | B         | B          | D            | B-    |
| RYOBI        | C           | C          | B+         | C            | A         | B+         | C+           | C+    |