

Mid-Sized Thickness Planers

Fine Woodworking *editors try 14 machines*
from Taiwan, Japan and Canada

by Anatole Burkin



You can get a great workout planing roughsawn lumber with hand tools, but the exercise is more quaint than efficient. Many of us resort to benchtop thickness planers, which keep getting bigger. But if you routinely plane large amounts of lumber or boards wider than 12½ in., the maximum capacity of benchtop machines, you're better off with a bigger planer.

We were surprised to discover how many companies sell 14-in. to 16-in. planers, what we consider mid-sized machines for the small shop. We invited 15 companies to participate in our review. Thirteen responded, and we ended up with 14 planers. Despite the many labels, the majority of the machines came from the same Taiwanese assembly plant, Chiu Ting Machinery, also known as Geetech (although the individual components of these machines

may come from different sources). Not surprisingly, all the 15-in. machines from Chiu Ting—AMT, Bridgewood, Grizzly, Jet, Powermatic, Reliant, Sears, Star Tools, Sunhill and Woodtek—are similar in many respects (see the box on pp. 54-55). The 15-in. Delta planer is also made in Taiwan, but at a different plant. It's somewhat different from the Chiu Ting machines but not drastically so. Actually, it looks a lot like its predecessor, the Rockwell 13-in. planer, which is the machine the Taiwanese used as inspiration when they designed their 15-in. planers.

Makita sent us its 15⅝-in. planer, the only Japanese entry. We also looked at a few industrial-duty machines, a 16-in. Bridgewood planer made by Chang Iron Works in Taiwan, and a 14-in. planer made by General in Canada. The American-made RBI 816 Woodplaner, made by RBIndustries in Harrisonville, Mo., wasn't included in our review because it has the capability of being converted into a molder or sander. This review is limited to dedicated planers.

Prices range from \$765 for the Grizzly (without a stand) to about \$3,200 for the General. But most of the 15-in. Chiu Ting models cost between \$800 and \$1,300. The price range among these is substantial considering there are so few significant differences in design. The General and 16-in. Bridgewood, which costs \$2,795, are in a class all their own. They are heavy, industrial-duty machines.

In our review, we looked closely at the surface quality of lumber after planing. We also considered the ease of assembly, instruction manuals, warranties, knife changing and, of course, price. We wish we could tell you how these machines will perform over time, but that's not possible in this kind of review. We do want to find out how well a machine that costs about \$1,000 holds up, so we're buying one of the Taiwanese models. After using it for a year, we'll do a follow-up report.

All the machines do a good job of planing

A planer is a dimensioning tool, not a finishing tool. Before running a rough board through a planer, you need to flatten one face on a jointer. A thickness planer flattens the other face, parallel to the first. A good planer will give you a board that is smooth and flat, nearly free of machining marks, and with virtually no snipe, a slight dishing out of the board at either end. All planers leave some tool marks from the spinning cutterhead, and to get a furniture-grade board, handplaning, scraping or sanding is required.

We were pleasantly surprised after running a pile of hickory, a



Some assembly required—Mid-sized planers are heavy tools, and all of them were delivered in wooden crates. Most required some assembly.

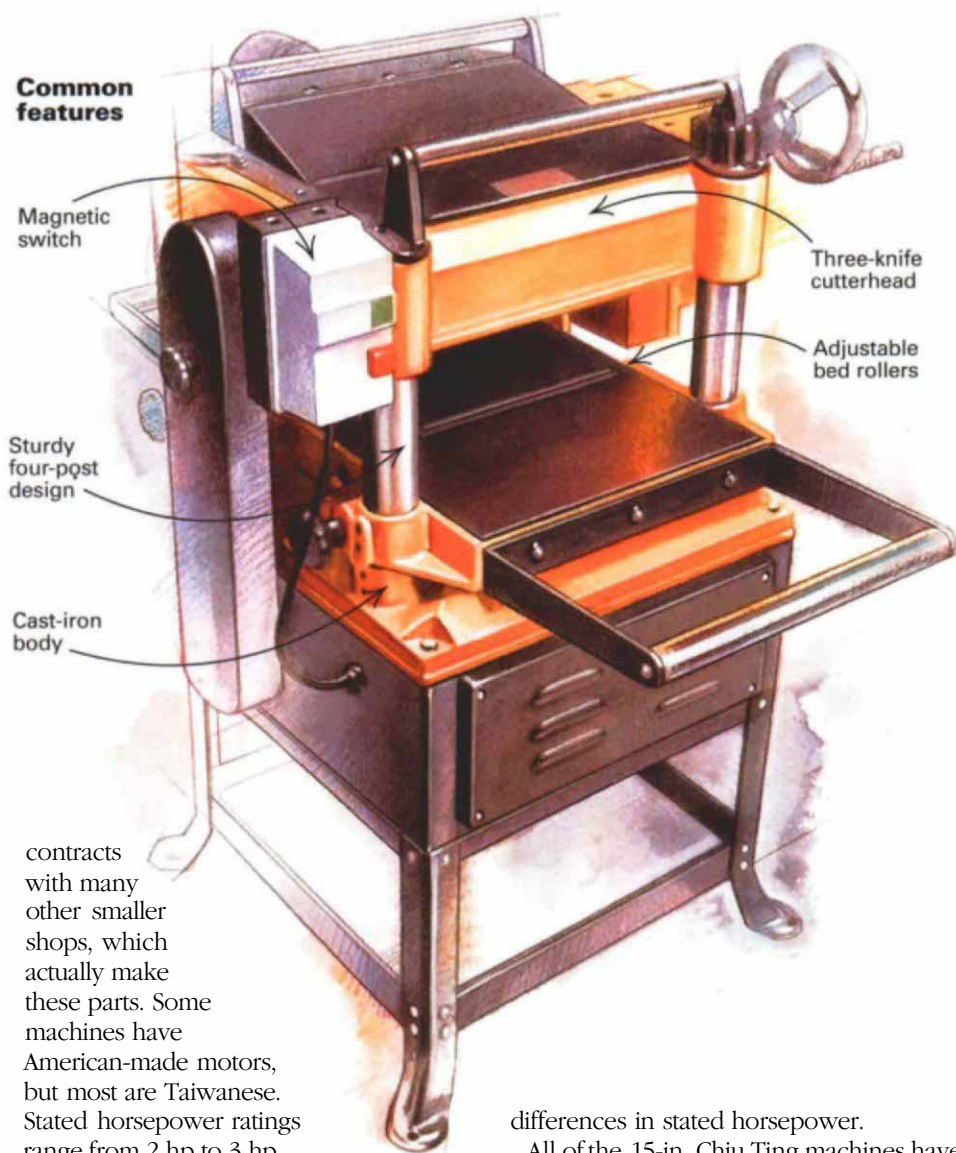
Ten planers, a single Taiwanese factory: Can there really be much of a difference?



AMT

The Taiwanese company Chiu Ting, located in Taichung, cranks out thousands of 15-in. planers every year. The machines are sold under a dozen different names, and they come in more colors than a bag of M&M's candy. The basic 15-in. Chiu Ting planer is a medium-duty, two-speed machine with a four-post, three-knife cutterhead design. It owes some of its heritage to the original four-post Brazilian-made Rockwell 13-in. planer. Chiu Ting made several changes, such as increasing the cutting width by 2 in., putting the motor below the machine (except on the planer made for Grizzly, which has the motor on top) and designing it so the table, not the cutterhead portion, moves when adjusting the height. The Taiwanese know how to modify a good existing design and produce a machine economically.

AMT, Bridgewood, Grizzly, Jet, Powermatic, Reliant, Sears, Star Tools, Sunhill and Woodtek all import their machines from Chiu Ting. It's hard to get a straight answer about whether some or most of the parts are identical, but many components look the same, and many parts are interchangeable. Chiu Ting



contracts with many other smaller shops, which actually make these parts. Some machines have American-made motors, but most are Taiwanese. Stated horsepower ratings range from 2 hp to 3 hp.

The iron castings are substantial and effectively dampen vibration. Most of the machines weigh about 475 lbs. Once the drive belts were broken in, all machines ran smoothly. We hogged off maximum cuts (a hair shy of $\frac{1}{8}$ in.), and none of the machines bogged down, despite the

differences in stated horsepower.

All of the 15-in. Chiu Ting machines have infeed and outfeed extension rollers, and some of them, when bolted tight, ended up too high, no matter how we fiddled with the adjusting setscrews. Keeping the bolts slightly loose corrected the problem. A better solution would be to enlarge the already oversized extension-arm mounting holes or slots with a file, which would

very hard wood, through the machines: All produced good-quality boards. We examined and measured boards for snipe, taper and quality of finish. There was about $\frac{1}{64}$ in. or less of snipe on every board, which we considered acceptable. All the machines planed lumber to a uniform thickness of better than $\frac{1}{64}$ in. The knife marks, at slow feed rates, were minor. We also tried bogging the machines down by taking the maximum recommended cuts, a hair shy of $\frac{1}{8}$ in. Again, no problem with any of them.

With the exception of the General, all the machines came out of

their crates with sharp knives and the critical internal parts (chip-breakers, infeed and outfeed rollers) accurately adjusted. After removing a set of poorly sharpened knives from the General planer and honing them, that machine also performed well. All the planers have three-knife cutterheads except the Makita, which has two.

The 15-in. machines have two feed-rate speeds, 16 feet per minute (fpm) or 20 fpm, except the Delta, which operates at 16 fpm or 30 fpm. Speed is changed by moving a lever connected to the gearbox. Faster feed rates are fine for initial planing; for a final cut,

allow them to be positioned lower on the machine. Or you could gently bend the soft-iron bar the rollers are mounted on. Extension arms help support long stock, so alignment isn't critical as long as the rollers are even.

So why would you pick, say, Powermatic's \$1,250 planer over the \$1,080 Jet? Both have stands with wheels; Powermatic's stand is enclosed. Both have 3-hp, 230v motors. Both planed boards flat with minimal snipe. The Jet's knives are easier to set because of the cutterhead design. Powermatic's warranty runs one year, Jet's two years. Between the two, we'd pick the Jet. But we'd be comfortable recommending the others too, if planing performance was the only criterion. If instruction-manual clarity is a consideration, we'd point you toward the Bridgewood, Grizzly and Powermatic.

Delta's machine is assembled at Delta's Taiwanese partner factory, Shin Hou, but it appeared to share some parts (or parts of similar design) with the Chiu Ting machines. For example, the chipbreakers, chipbreaker springs and chip deflectors looked the same. The height-adjusting handle looked like Grizzly's. Delta's infeed roller seemed better machined, with sharper edges for grabbing stock. Delta's castings differ from the others in design too. When you turn the height-adjusting crank on the Delta, the cutterhead and motor move, and the table remains stationary. Raising the cutterhead takes some effort because of all the mass. Internally, many parts, such as infeed/outfeed rollers, are attached to the castings in the same way that Chiu Ting assembles them.

Who copied whom? Does it really matter anymore? —A.B.



Bridgewood



Grizzly



Jet



Powermatic



Reliant



Sears/Craftsman



Star Tools



Sunhill



Woodtek

you'll get a better finish by slowing down the feed rate. The General runs at one speed, 15 fpm, the slowest of the bunch, but it produces the best finish—less snipe and finer knife marks. The Makita has only one speed, 29.5 fpm. (The cutterhead moves faster too, and the surface quality of boards are comparable to the other 15-in. planers. But with one less knife, we assume that the blades will need sharpening more frequently.) The 16-in. Bridgewood is a variable-speed rate machine, 20 to 30 fpm. With the exception of the Makita, which has a 110v universal motor, the planers have

230v induction motors. Stated power ranged from 2 hp to 3 hp.

The General has the look and feel of a top-notch tool. When you turn the wheel to adjust the table height, the action is smooth and precise. The bolts for adjusting the infeed and outfeed rollers are large and easy to reach. Each knife is held in place with nine gib bolts—more than on any of the other machines. It takes longer to perform a knife change, but you feel confident that the cutters will stay put under the most severe load.

The Bridgewood is a solid machine too, but with a few rough

Delta 15 in.

Delta's planer can be operated at a faster feed rate than the other 15-in. planers and is available with retractable, laminate-coated extension wings.



Bridgewood 16 in.

Of the Taiwanese planers reviewed, this was by far the heaviest duty model. It comes with infinitely variable-speed control and several safety features.



General 14 in.

The Canadians make a solid one-speed planer with excellent fit and finish. And it has a price to match.



Makita 15^{5/8} in.

Because of its lighter weight, the Makita is a good choice if you need a portable planer.



edges. The table casting is very solid, the stand itself is cast iron, the belt-drive system is beefy and the variable speed gives you a lot of options. Some of the castings and welds aren't as neat as those on the General, and the dust chute, though it works just fine, looks like it was shaped by hand on an anvil.

Problems surfaced during assembly

For many years, instruction manuals that came with Taiwanese tools were difficult to understand. The good news is that many importers have corrected that oversight. The bad news is that not all have done so. The manuals that come with the AMT, Reliant, Star Tools, Sunhill and Woodtek machines are identical. They share an unappreciation for clarity, and they contain errors. For example, in the section that tells you how to set the chipbreaker, the manuals equate 1mm with 0.40 in. when the conversion should be 0.04 in. The section on adjusting table rollers is incomplete, although we were able to figure out how to do it after some fiddling.

Among the companies that import Taiwanese machines, Bridgewood, Grizzly, Jet, Powermatic and Sears corrected the errors in the generic manuals. The Sears manual doesn't provide clear instructions on wiring the motor, a U.S.-made Marathon. When we first hooked it up, it ran backward. We got it right on the second try. The Grizzly and Bridgewood manuals include good troubleshooting sections. Delta's manual has exceptionally clear photos, which is a help when trying to figure out an unfamiliar tool. General's is sparse and lacks any photos but does include good line drawings with all the parts labeled. Makita's manual is concise and easy to follow.

Although assembly is a one-time headache, it can tell you a lot about a machine, the genius or lack of it in the engineering behind it, and the attention to detail, such as paint, fit of components and the clarity of the instruction manual. The assembly required varied depending on the model and took between a few minutes to a few hours. Most of the planers required assembly of stands, motor mountings, wiring and miscellaneous rollers and hand cranks. The bodies of most of these machines weigh about 400 lbs. To lift the planer's main body onto a stand requires the aid of at least two strong people or an engine hoist. All the 15-in. machines made in Taiwan had one nice feature: four retractable iron bars that can be used for lifting the machine.

Delta's sturdy sheet-metal stand was by far the most pleasant to assemble because there were no sharp edges. That's because Delta's U.S.-made stands are cut by a laser, which leaves a softer edge. The stands on the other 15-in. Taiwanese machines are cut by a punch press, which leaves a burr, and those aren't always removed at the factory. This is a minor point, but sometimes little things like this make you appreciate a machine over the long haul, especially if you have to move it. Having a heavy tool on wheels is also a nice touch, and Powermatic and Jet thought to include wheels as standard equipment on their well-made stands.

Sooner or later, you'll have to sharpen the blades

Changing blades on a thickness planer is about as much fun as rotating the tires on your car, but it has to be done regularly. The worst part of the job is setting the blade height accurately. Some manufacturers have made this task easier.

On all the machines we evaluated, planer blades are held fast to the cylindrical cutterheads by a row of gib screws or bolts. Details vary (see the drawings on p. 58), but to remove a blade, you loosen the gib screws and lift out the blade. Putting sharp blades

Thickness planers

Model	Cost	Warranty	Accessories
AMT 15 in.	\$890	1 year on motor; 10 years on machine	Stand included
Bridgewood 15 in	\$949	1 year	Stand included; Esta disposable knife system: \$335
Bridgewood 16 in	\$2,795	1 year	Esta disposable knife system: \$350
Delta 15 in.	\$1,199	2 years	Stand included; dust hood: \$65; mobile base: \$95
Grizzly 15 in.	\$765	1 year	Stand: \$60
Jet 15 in.	\$1,090	2 years	Stand with wheels included
Powermatic 15 in.	\$1,250	1 year	Stand with wheels included
Reliant 15 in.	\$845	1 year	Stand included
Sears/Craftsman 15 in.	\$1,299	1 year	Stand included
Star Tools 15 in.	\$875	1 year	Stand included
Sunhill 15 in.	\$879	2 years	Stand included
Woodtek 15 in.	\$1,085	1 year	Stand and extra set of knives included
General 14 in.	\$3,200	2 years	Dust hood: \$85
Makita 15 $\frac{5}{8}$ in.	\$1,680	1 year	Stand and dust hood: about \$70 each

All from Chiu Ting assembly plant in Taiwan

back in place is trickier because you have to realign the blades parallel to the table and make sure they're all at the same height. With the exception of the General, the machines come with a simple knife-setting jig (see the photo below). Makita's jig consists of two small blocks of wood. It's worth noting that aftermarket knife-setting jigs are available, and they are an improvement over the ones supplied with these tools.

Setting the blades on most of the 15-in. Chiu Ting machines is a trial-and-error exercise. First you insert a knife into a spring-loaded slot in the cutterhead. Then you place the jig on top of the knife and press down until the arms of the jig contact the cutterhead. While holding the jig in place, the gib screws are tightened (see the top photo on p. 58). Sometimes the knife will move a bit, either due to the torque on a gib screw or because you wiggled the jig. Then you have to loosen the screws and try again. This has to be done for each knife.

Four machines—Delta, General, Jet and Sears—have cutterheads with a helpful feature, a pair of jack screws for each knife. Knives on these machines rest on the jack screws, whose height is adjusted with a hex wrench (see the center photo on p. 58). You still feel like you need three hands to set the knives, but the chance of a knife moving out of position while tightening the gib screws is reduced, at least in one direction.

Bridgewood offers an optional Esta disposable knife system for its planers. This system, imported from West Germany, simplifies blade changes. The knives fit into holders, which rest upon a pair of height-adjusting screws installed in the cutterhead slots (see the bottom photo on p. 58). Once set, these screws ensure an accurate height setting when installing replacement knives. The knife/holder assembly is held fast to the cutterhead by the stock gib screws. An Esta system costs \$335 for the 15-in. planer and \$350 for the 16-in. planer, installed. Twelve replacement knives are included. Stock Bridgewood cutterheads used to be similar to the basic Chiu Ting models, but the company has switched to jack-screw cutter-

heads. Powermatic will also offer Esta cutterheads as an option.

Adjusting the Makita knives is a trial-and-error process, much as it is with the Taiwanese machines. A disadvantage is that there are no springs in the cutterhead behind the knives. But there is a plus. By turning a lever, the Makita's cutterhead locks in position.

Many of the differences are in the details

Tools sometimes act like magnets for small children who may want to emulate a parent in the shop. The switches on the Sears and Makita planers can be locked with a key. Delta's switch has a hole predrilled for a padlock, sold as an accessory.

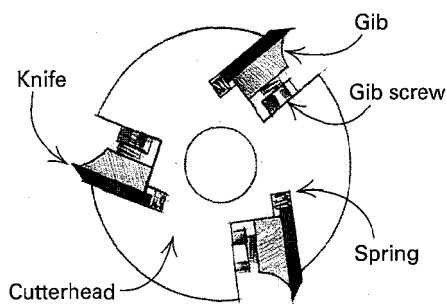
The General, Sears and Powermatic machines have large stop buttons that have to be reset before turning on the machine. We didn't like where the switches are located on the Sears planer. You



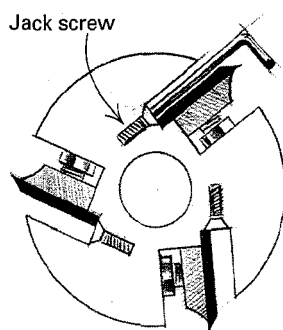
Setting knives can be fussy. Positioning knives accurately is crucial for top performance. A knife-setting jig helps, but cutterhead designs on some planers in this group make knife changes easier.



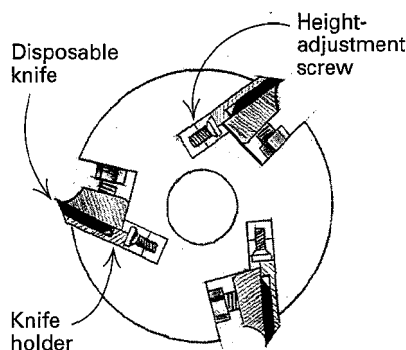
CUTTERHEADS AND KNIVES



Typical cutterhead—Knives rest on springs and are held in place by gibs and gib screws.



Cutterhead with jackscrews—Knives rest on adjustable jack screws; gib and gib screws keep knives in place.



Esta disposable knives—Double-edged knives fit into a holder that rests on height-adjustment screws. Same gib and gib screw setup.

Unlike benchtop planers, many internal components of these mid-sized machines can be adjusted to account for wear and tear. For example, if the table gets out of whack and isn't parallel with the cutterhead, you can readjust it. Infeed and outfeed rollers can be set for depth and pressure. Table rollers can also be adjusted. The 16-in. Bridgewood is the only machine we evaluated that has a lever for quick table-roller adjustments. For rough stock, you raise table rollers to reduce friction; the downside is that there's more snipe. For smooth stock, the rollers are set just a few thousandths of an inch above the tabletop and snipe is minimized. Adjusting the table rollers on the other machines is a time-consuming procedure that requires an Allen wrench, an open-ended wrench, a straightedge and a feeler gauge. You're better off finding a setting that works for both rough and smooth stock. We found that if the rollers are about 0.003 in. to 0.004 in. above the tabletop, the machines performed well for all types of lumber.

Most of the machines are built with solid-metal infeed and outfeed rollers. There were a few exceptions. The 15-in. Bridgewood, Delta and Woodtek have polyurethane outfeed rollers. The Makita has neoprene infeed and outfeed rollers. Manufacturers claim that softer outfeed rollers help reduce marring of lumber. We found that if you use a dust collector, which removes chips before they get trapped between the outfeed roller and the stock, either type of roller works fine.

The 16-in. Bridgewood has a segmented infeed roller and segmented cast-iron chippers. Those features allow you to feed stock of slightly different thicknesses through a planer at the same time.

Machines that stood out

The General is a fine machine: sturdy and smooth to operate. With the 16-in. Bridgewood, you get a lot of features not found on the other machines, including sheer mass. Either machine seems fit to handle the needs of a busy shop.

Among the 15-in. machines, we had a hard time finding major differences. You could safely pick one based on price alone. However, we liked the Delta and Jet for a number of reasons: improved cutterhead design that makes knife-adjusting easier, sturdy stands and two-year warranties. We liked the optional Esta disposable knife system that's offered on the Bridgewood planers. The Makita is a solid machine too, yet at 254 lbs., the lightest in weight. For someone who needs to take a mid-sized planer to the job site, the Makita is a good choice. □

Fine Woodworking editors William Duckworth, Scott Gibson, Vincent Laurence, Strother Purdy and shop technician Anthony Bezok also contributed to this article.

have to reach under the long outfeed table rollers to get to them.

The 16-in. Bridgewood has a lot of safety features, including more warning stickers than you'd find on a nuclear reactor. There's an emergency power cutoff lever within easy reach. If you've ever had an uneven board jam in a planer, you'll appreciate this feature. This machine has additional cutoff switches that prevent the motor from running if the top or sides of the machine are opened.

A planer is one of the noisiest tools in the shop, and these were no exception. Under load, with a dust collector hooked up, most of the machines ran at about 100dB. They're also one of the messiest tools. Most come with dust chutes, but Delta, General and Makita make you pay extra to own one.