



**BRIDGEWOOD®**

**Spindle-to-table perpendicularity**

*Maas used a square to see if the tables were perpendicular to the spindle on which the chuck is mounted. On most of the drill presses, the tables were adjustable to correct for any errors.*

# Drill-Press Review

Nine floor models that sell for \$420 or less offer good options for the home shop

BY BERNARD MAAS

The drill press is an indispensable machine in any woodshop. A number of accessories can broaden the machine's usefulness, but mostly, you want a drill press to do one thing: Drill holes cleanly and accurately.

Drill presses come in a variety of sizes and prices, from small benchtop machines to heavier production-level floor models. For this review, I decided to search for lower-priced, full-height machines that might be a good choice for a home shop. After surveying the market, I chose nine 15-in. to 17-in. models, which ranged in price from \$297 to \$419: Bridgewood BW1785F, Craftsman 00922917000, Delta 17-965, General International 75-200, Grizzly G7947, Jet JDP17, Powermatic 1170, Ridgid DP15500 and Woodtek 816-805.

To evaluate and compare these drill presses, I established a set of broad-based criteria. First, I took note of the condition of each machine after shipping and the ease of assembly. I looked over the basic specifications of each machine: chuck-to-post distance, table size, overall height, motor rating,

speeds, length of quill stroke, finish and stability. I tested the accuracy of each machine out of the box: runout on the chuck and spindle-to-table perpendicularity. Finally, I looked at how each machine operated: noise level, vibration, table-height adjustment, speed changes, depth adjustment, quill-return tension and the presence or absence of a quill lock.

## The chuck, spindle and quill matter most

The business end of a drill press is where the chuck is attached to the spindle at the bottom of the quill. The quill is the hollow shaft that makes the plunge toward the workpiece. The spindle turns within the quill. You want a spindle that is perpendicular to the table and a chuck that rotates perfectly on center with very little, if any, runout (see the story at right). Although with all of these machines I found no problems with perpendicularity, I did find variances in runout measurements (see the chart on pp. 70-71).

All of the machines have  $\frac{3}{8}$ -in. capacity chucks, except for the General International, which has a  $\frac{1}{2}$ -in. chuck. The chucks

## Chuck runout

To check the comparative accuracy of the various machines, I took a series of readings from a  $\frac{1}{2}$ -in. ground steel rod chucked into the drill press with the spindle retracted.

To be sure that I was getting the best readings the machine could offer, I cleaned

out the taper fittings for all of the chucks. You might want to do this, too, if you find your machine has excessive runout. Start by tapping the chuck loose. Often chucks are mounted either by a taper fitting or by a combination of a taper fitting and a threaded ring. The drill-press manual or the manufacturer's service department should have instructions as to the chuck's removal. Once the chuck is in hand, see that the jaws meet properly when closed. Inspect the interior of the chuck for debris, burrs or machine tailings, which can affect the closure of the jaws. Next, use a solvent to clean both male and female taper fittings.

Readings for my runout test were taken within  $\frac{1}{2}$  in. of the underside of the chuck. The rod also was inverted and readings were taken. This way, the integrity of the rod was insured. Whether the rod was rotated or inverted, no appreciable difference in the various readings was detected.



vary in quality. The jaws on some of the machines opened and closed smoothly, while others tended to bind. I took the time to clean out the chucks first, because they all came covered with a sticky rust-preventive coating. After a thorough cleaning, I still found the chucks on the Grizzly and Craftsman to be difficult to turn at times. Also, the length of the jaws that grab onto a bit on all of these machines is only about ½ in. The Delta and Jet had the smoothest operating chucks.

Designs of the chuck keys also vary. Those with spring-loaded safety pins were difficult to manipulate and tended to kick themselves out of the chuck without a lot of hand-pressure to hold them in place. The Delta and Grizzly have springs that are very stiff. I found the Bridgewood and the General, both of which don't have springs, to be the easiest to use. I don't take safety lightly, and I would not advocate disabling any safety device. But I do prefer the old-style keys without springs, and I don't have a problem maintaining a good dose of vigilance when it comes to removing the chuck key before switching on a machine. One annoying chuck key that stood out to me was the one on the Jet. I'm left-handed, and the chuck-key handle is so long that it hits the nut holding the depth gauge in place on the left side of the machine. This made it difficult to use the chuck key with my left hand.

As for the quill travel, with the exception of the Delta, Grizzly and Jet, I was surprised to find that many of the machines I tested have a miserly quill stroke of under 4 in. This is barely adequate for the range of operations in a busy shop. Drilling through 8/4 lumber wouldn't be a problem, but plunging all the way through a 4x4 in a single stroke would

## NINE MODELS TO CHOOSE FROM

Overall, most of these drill presses are built solidly enough to serve you well with the occasional use that a small home workshop demands. But Maas's favorite was the Delta, because of its smoothly operating chuck, quick-action depth stop, unique quill lock and long quill stroke. The Ridgid was his second choice, a solid value for the money with minimal chuck runout.



MODEL	BRIDGEWOOD BW1785F	CRAFTSMAN 00922917000	DELTA 17-965
PRICE / CONTACT	\$329 (800) 235-2100 wilkemach.com	\$399 (800) 407-4567 sears.com	\$399 (800) 438-2486 deltamachinery.com
CHUCK-TO-POST DISTANCE	8½ in.	8½ in.	8¼ in.
TABLE SIZE	13¾ in. dia.	14 in. square	14 in. square
QUILL STROKE	3⅝ in.	3¾ in.	4⅞ in.
MOTOR RATING	¾ hp	¾ hp	¾ hp
NUMBER OF SPEEDS	12	16	16
WEIGHT	154 lbs.	175 lbs.	195 lbs.
RUNOUT	0.008 in.	0.005 in.	0.002 in.

cause you some grief. The Delta, Grizzly and Jet each has a quill stroke of more than 4 in., but they still are shy of the 6-in. capacity that I prefer.

You should be able to adjust the tension on the mechanism that retracts the quill if the movement feels either too

loose or too tight as you drill holes and release the bit. Unfortunately, none of these drill presses makes that easy to do. The procedure requires dealing with a tenuously held coiled spring that is all too prone to release itself with a loud snap. My reward for attempting this ad-

justment left me with one very blue thumbnail.

To me, a quill lock is an important feature. The ability to lower a bit to the work surface and lock it in place (to set cutting depth) or to register a bit against a jig (to position it properly) is often critical. At best,



GENERAL 75-200	GRIZZLY G7947	JET JDP17	POWERMATIC 1170	RIDGID DP15500	WOODTEK 816-805
\$349 (819) 472-1161 general.ca	\$375 (800) 523-4777 grizzlyindustrial.com	\$399 (800) 274-6848 jettools.com	\$419 (800) 274-6848 jettools.com	\$297 (800) 474-3443 ridgidwoodworking.com	\$379 (800) 645-9292 woodworker.com
8½ in.	8½ in.	8½ in.	8½ in.	7½ in.	8⅞ in.
12 in. square	13⅝ in. square	13¾ in. dia.	12 in. square	11 in. square	11 in. square
3¼ in.	4¾ in.	4¾ in.	3¼ in.	3¾ in.	3¼ in.
¾ hp	1 hp	¾ hp	1 hp	½ hp	¾ hp
12	12	16	16	12	12
200 lbs.	275 lbs.	178 lbs.	188 lbs.	179 lbs.	165 lbs.
0.0055 in.	0.007 in.	0.0035 in.	0.0055 in.	0.0006 in.	0.007 in.

this is a two-handed job, but without a quill lock to set and hold a bit in place temporarily, at least three hands are needed. The only drill press in this lot with a conventional-style quill lock is the Delta. It's nothing more than a small hole tapped into the head of the machine, in

which a brass screw bears against the quill. Brass is used because it's softer than steel and won't dig into the quill when you tighten it. The Craftsman, Grizzly and Jet use lock-nuts on the depth rod to lock the quill. While not as convenient, it works.

Another innovative plus on Delta's part is the quick-release positioning nut on the depth-stop rod. This is a wonderful design detail, and it simplifies setting the depth. Any woodworker who has ever twirled one of the old-style nuts up and down, over and over, for the

full depth of travel will appreciate this improvement.

### Motors and belt changes determine power and speed

With the exception of the Craftsman, all of the machines were equipped with motors rated 110/220 volts or 120/240

## Changing speeds

*Belts are difficult to change when there is not enough slack, which was true with the General, shown here.*



**Setting belt tension.** Belt tension is adjusted by moving the motor away from the spindle. All of the models have a crank handle for this adjustment.



volts. The Delta and Ridgid machines have wiring diagrams displayed on their motors, and the Jet includes wiring diagrams in its manual. This is important if you want to convert the motor to run on higher voltage circuits, which help machines start up faster, run cooler and not bog down as readily under load. Also, higher voltage circuits often eliminate that annoying momentary dimming of the house lights as a motor starts.

All of these drill presses have a motor pulley, a spindle pulley and an idler pulley set between the two. A pair of belts completes this arrangement. Cranking back on the tensioning lever tightens the belt running from the motor to the idler. The idler, in turn, has to draw the belt between itself and the spindle taut. Any stretching or mismatching

of these two belts is apt to cause a loss of traction, and thus a loss of torque.

Changing the belts on all of these drill presses required following the same procedure. First, I loosened a bolt that swivels the motor, which released tension on the belts. Then it was a matter of moving the belts to the correct pulley. Each drill press provides a diagram of the correct pulley placement for the desired speed. The Craftsman was the easiest to change because there was enough slack to slip the belts on and off easily. The belts on the

General and Grizzly machines, however, were very tight, which made belt changes difficult.

### A comparison of basic specs

While all of these machines are in the same price range, they do vary in size. It struck me that these machines all have a relatively small footprint, except for the Grizzly, which is the largest and weighs in at 275 lbs. All of the machines have bases designed to be fastened to the floor to help dampen potential vibration, but only the Delta and Grizzly actually come with instructions on how to do it,

and only Delta includes the bolts for doing so. Many manufacturers recommend attaching the drill press to a large piece of plywood to help stabilize these top-heavy machines.

The table sizes differ somewhat, with the Craftsman and Delta having the largest tables at 14 in. square, and the Ridgid and Woodtek having the smallest at 11 in. square. The chuck-to-post distances vary, too: Ridgid has the smallest at 7½ in., while the others range from 8¼ in. to 8½ in.

The fit and finish varied considerably among the machines, with the Woodtek being the worst. When I finished assembling the Woodtek, I noticed that my hands were yellow with paint that had rubbed off the table bracket. Also, the plastic pulley shroud could not be seated properly. On the other end of the scale was the Ridgid, which one of my students dubbed the “Martha Stewart model” because of its nearly impeccable fit and finish and its tool-caddy accessory.

### Other features, good and bad, worth noting

A nice feature on some of these models is an on-board lamp that makes it easier to view the workpiece. I wouldn't base a purchase decision on this feature, but it is a handy perk. With the exception of the Delta and Jet, all of these drill presses come with lamps. I should point out, though, that on the Bridge-wood and Powermatic, the bulbs hang down far enough to constitute a breakage hazard. And bulb installation on the General was difficult due to its small opening.

A minor point, perhaps: The angle scale for the tilting table on the Woodtek and General International have stick-on decals that look as though they won't hold up to wear and tear very well, rather than the typical

## Depth stops



**Two styles of depth locks.** On the models examined, the depth lock (which sets the bit depth) is often mounted on the feed handle (above) or on a simple stop mechanism (right) with knurled nuts.



**Depth lock slides into place.** For easy depth adjustment, Delta's depth locknut slides up and down with the push of a button.

riveted metal plates found on the other machines.

The Ridgid is the only drill press with the option to change the quill handle, or feed lever, from the right side of the machine to the left. Left-handed woodworkers will likely find this feature useful, though I must confess that after all these years of using a right-handed drill press, I'm so used to it that I didn't bother to make the switch on this machine.

All of these drill presses feature rack-and-pinion crank mechanisms to raise and lower the table—a big improvement over older designs that could strain your back when you have to raise a heavy table. The General is the only drill press that does not have a setscrew that al-

lows the user to adjust the table for perpendicularity.

### Final recommendations

If outfitting your shop with a drill press is something that you're looking forward to, I'd like to offer a few suggestions. Before you go any further with your purchase decision, decide what your performance expectations will be. Then research the choices and go shopping. Don't rely on glossy catalog

photos: I advise against buying a machine sight unseen. Go to a showroom and look at machines up close. Ask to see the floor model run and inquire about returns and parts replacement. Should you decide you want to buy one, take a machine from the stockroom, have the shipping carton opened and (if at all possible) inspect the drill press before you buy it. Make sure that all the parts are there and in working order. If

you look before you pay, you might avoid the frustration of having to wait for a missing part to be shipped to you later.

Overall, if these drill presses are up and running to the published specifications, they are an excellent value for the money. If the limited quill stroke and the absence of a quill lock don't bother you, then you'll find that most of these drill presses are built solidly enough to serve you well with the occasional use that a small home workshop demands.

My pick? Because of its smoothly operating chuck, decent runout results, quick-action depth stop, unique quill lock and longer quill stroke, I liked the Delta. As a second choice, the superior fit and finish of the Ridgid, including the tool caddy and the option of moving the quill handle to the left side of the machine, as well as the price, all made it an appealing alternative. □

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## Table-tilt mechanisms

To tilt the tables on these machines, you must remove a pin and loosen a nut. But it's faster and safer to use a tilted-table jig instead of tilting the table itself.

