JET JDP-2800VS Drill Press

by Allen Barrett

The Drill Press is a deceptively simple piece of machinery. That's probably why there are so many cheap Drill Presses on the market. Their failings are rarely obvious and are only encountered when the machine is actually used over a period of time.

The diagram below shows the principal components of a Drill Press and their relationships. While the standards applied in the manufacture of a woodworking drill press are generally a little lower than those used for a metalworking drill press, for either kind of machine to function properly:

- *The axes of the support column and the drill spindle must be parallel in both planes*
- *The worktable must be square to the drill spindle and must remain square during operation*
- *The run-out or lateral movement of the drill/chuck/spindle must be negligible throughout the entire travel of the spindle*

Whether or not the axes of the column and spindle are parallel is determined by the quality of manufacture. If they are not parallel, there are no adjustments that will correct the fault and the machine will never give satisfactory service.

Unfortunately, there is no easy way to check, so brand name and reputation are the only guides that are immediately available to the prospective purchaser.

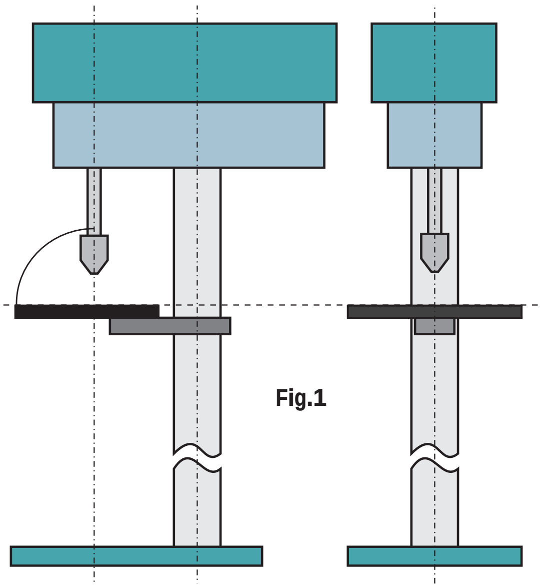

Fig.1

There are, however, checks that can be made with respect to the relationship between the worktable and the drill spindle.

A square placed on the worktable of the JET 2800VS shows that it is square to the spindle. Pressure on the outer edge of the table (to simulate the force exerted on the table when drilling) makes no discernible difference to the angle.

This is not surprising, given the size of the joint and bearing that support the table from the column (Photos.2&3).

While the machine is in use, this joint is locked by its retaining bolt. Loosening this bolt and withdrawing a spring loaded pin allows the table to be tilted to left or right.

(There is a cautionary note in the Instruction Booklet to the effect that the bolt must only be slackened slightly 'otherwise the table assembly will separate from the column and fall'.

Although it is obviously necessary to be aware of the possibility, in practice, this is not a problem.)

It should be mentioned that there is a little tolerance in the pin detent positions and their use does not eliminate the need for checking that the table is at the required angle.

The run-out on the 16mm chuck (ie. the lateral movement of the chuck when it is rotated) was checked at the top, bottom and approximate centre of the spindle travel.

The measurement was made with a dial gauge which recorded just 0.1mm at all three points. Although this would be unlikely to change when the machine was running, the same measurement was nevertheless made during operation and returned the same result.

Since the run-out on other woodworking Drill Presses is commonly 10 or more times greater, this series of tests is a convincing endorsement of the quality of the JET 2800 VS.

Features

Variable Speed

The most outstanding feature of this new JET Drill Press is its abili-

Photo.2: The worktable is supported by a robust, calibrated joint with pin held detents at 0°, 45° and 90° on either side.

Photo.3: The worktable swung to the near vertical (90°) position — note the size of the pivoting bracket that holds the table and the table's sliding extensions

ty to change speeds smoothly from minimum to maximum in a matter or seconds while the machine is running.

When a knob on the left side of the machine head is loosened by less than a turn, the lever to which it is attached can be pushed back and forth horizontally (Photo.4). All the way to the front, the spindle speed is 330rpm and all the way to the back, it's 2500rpm.

The actual spindle speed appears on a digital read-out on the front of the machine head (Photo.5) so there's no guess work involved in setting the speed for a particular job.

The drive belts on woodworking Drill Presses must generally be changed by hand. The machine must be stopped, the top cover removed or swung out of the way, the tension on the belts reduced and the belts physically shifted to the appropriate pulleys to achieve the desired ratio between the speed of the motor shaft and that of the drill spindle.

The belts have then to be re-tensioned, a screw or screws tightened to hold this tension and the cover replaced before the machine can be used.

Anyone who has ever used a Drill Press knows that this procedure leads to an understandable reluctance to change speeds unless it is absolutely necessary. Unfortunately, this can, in turn, lead to all of the problems that may be associated with using the wrong speed for a job — poor cutting, inefficient waste removal, overheating, etc. It can also lead to a substantial reduction in safety.

The variable speed head on the JET 2800 VS overcomes all that by making it easy to shift speeds in a few seconds. The pulley and belt mechanism is shown in Photo.5.

Another difference between this Drill Press and most other machines of this type which are intended for woodworking, is that it uses toothed flat rather than simple vee belts. This eliminates slipping of the belts on the pulleys.

A table of recommended speeds is given in the Instruction Booklet, all to apply when using a 10mm HSS Drill. (Drills smaller than this would usually require a higher speed, while larger drills should be used at lower speeds. The maximum drill size accepted by the chuck is 16mm (approx. 5/8")

Wood – 2000rpm
Plastic – 1500rpm
Aluminium – 1500rpm
Brass 1500 – rpm
Mild Steel – 800rpm
High Carbon Steel – 600rpm
Stainless Steel – 300rpm

The Worktable

The worktable support bracket has already been mentioned but there are other aspects of this table that are also worth commenting upon.

The first is its unusually large size — 420mm deep x 530mm wide or 780mm when extended. As can be seen in Photo.3, the extensions are supported on hollow tubes which are held in any location from fully open to fully closed by simple twist clamps.

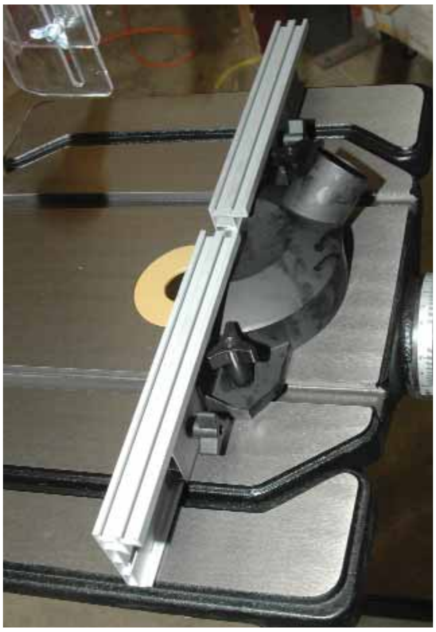

Photo.6: A fully adjustable extruded aluminium split fence is provided

The Fence

The table has two 'T' slots into which are fitted the components of a router style split fence complete with dust extractor port (Photo.6). This appears to be one of very few woodworking Drill Presses in the world that have this feature as standard.

One of the most important admonishments given to those who are about to operate a Drill Press for the first time is that they must never, NEVER, handhold a workpiece while it is being drilled. If the drill grabs, the workpiece will be spun out of their hands and what happens next will depend on circumstances and luck.

If the workpiece is long enough to be

Photo.4: After releasing the knob at right by about a half turn, the lever can be pushed back and forth to adjust the spindle speed continuously from 330 to 2500rpm

Photo.5: Removing the top cover reveals the variable speed mechanism. Note that the belts are toothed for positive traction. The digital read-out on the front of the machine indicates the speed. The on-off switches are below this. The toothed metal wheel just above the bearing on the front shaft is part of the speed sensor. The feed levers can be moved to the other side of the machine for left handed operation.

stopped by the column, it may be merely ruined or it may be smashed, with bits of it flying about the workshop.

If the workpiece is shorter, it may just spin. At 2000rpm the operator has just three hundredths of a second to get his or her hand out of the way before the workpiece hits it!

Other scenarios can quickly unfold with even more dire results so it is normal to set up a vice on the table and clamp the workpiece in it before drilling.

A worktable fence is much easier to use and for some operations, such as drilling a series of holes along the edge of a piece of wood, it is much more convenient.

A router style cutter insert disc is provided in the worktable; perhaps it was this that suggested to me that it might be worth trying to use larger router cutters (such as Panel Raising bits) in the Drill Press. There would be some safety issues but I can't see that they would be any more serious than those that attend the use of similar bits in a router table.

It might even be an advantage to be able to see the cut face as it is being formed. The 2500rpm top speed would be unlikely to cause difficulty since this is not far away from the maximum speeds often recommended for such cutters.

It also occurred to me that some woodworkers might find it advantageous to look at ways to secure a router to the underside of the table. Everything else is there — an individually adjustable split fence, cutter aperture disc and 50mm dust extractor attachment.

Switches

The electrical switches are grouped together on the front face of the machine head (Photo.8).

A European flap style emergency switch button covers the on and off switches. The circuitry includes a no-volts relay to guard against the machine restarting again if the power is interrupted.

The two button switches on the right of the digital spindle speed display are for the in-built lamp and the laser cross hairs.

Photo.8: The emergency off switch which covers the on/off switches is below the digital speed read-out and the switches for the light and laser cross hairs

Laser Cross-hairs

On either side of the Drill Press Head are two small covers beneath which are located the lasers that draw lines on the surface of the workpiece. The left-hand laser (with its cover) can be seen in Photo.9, while the right hand laser (with its cover removed) can be see in Photo.10.

The lasers are fully and easily adjust able and the cross hairs that they draw on the workpiece are an excellent aid to accurate drilling. Photo.11 shows the cross hairs on a workpiece. (Note that the forward sections of the lines in this photo are obscured by the ambient light but that this does not detract from their use, since the point of intersection is clearly visible.)

Finally

A few specifications should be added here. First, the throat distance of the Press is 225mm, the Chuck spindle has an M2 taper and the overall height is 1750mm. The column diameter is 80mm, the net weight is 95kg and the output power of the motor is 0.75kW (1hp).

The recommended R.R.P. of the JET JDP 2800VS is $1605 ex-Brisbane. W

Photo.9: The left hand laser unit is mounted under the black cover behind the boss for the alternative feed handles. Note the drill guard and the depth gauge with adjustable lock nuts

Photo.10: The right hand laser unit with its cover removed

Photo.7: The fence, dust extractor port and router style cutter insert

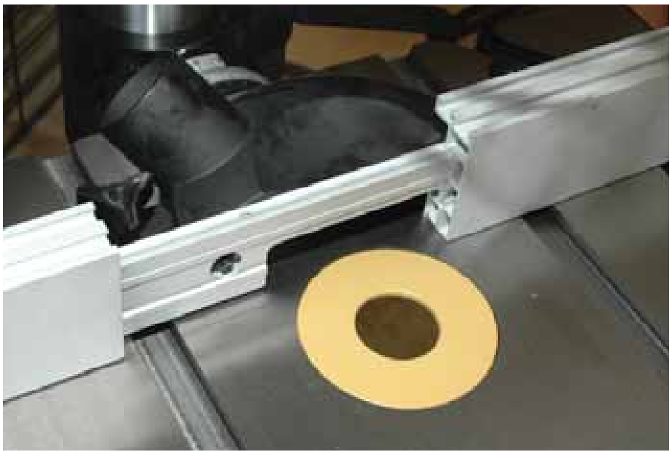

Photo.11: Cross hairs drawn by two lasers aid accuracy