

Woodshop Drill Press Tool Tutorial

The [Setup](#), [Operation](#), and [Cleanup](#) Checklists of this guide are what instructors use to ensure that you can use the equipment according to community expectations.

Provides a stable setup to drill repeatably vertical holes.

Usage Highlights

[Woodshop Drill Press Clearance](#) or [Class Equivalent](#) Required Before Use

SAFETY	CARE	CLEANUP
1. Always clamp workpieces to the table	1. Be careful not to drill into the metal table	1. Brush chips off of the surfaces
2. Keep hands away from spinning bit	2. Unlock the table before turning the height adjustment crank	2. Sweep chips from the floor
3. Unplug the machine when changing belts	3. Submit a maintenance request when needed.	

Personal Protective Equipment

Safety glasses must always be worn. Hearing protection is highly recommended in the workshop, especially when the dust collection fan is active.

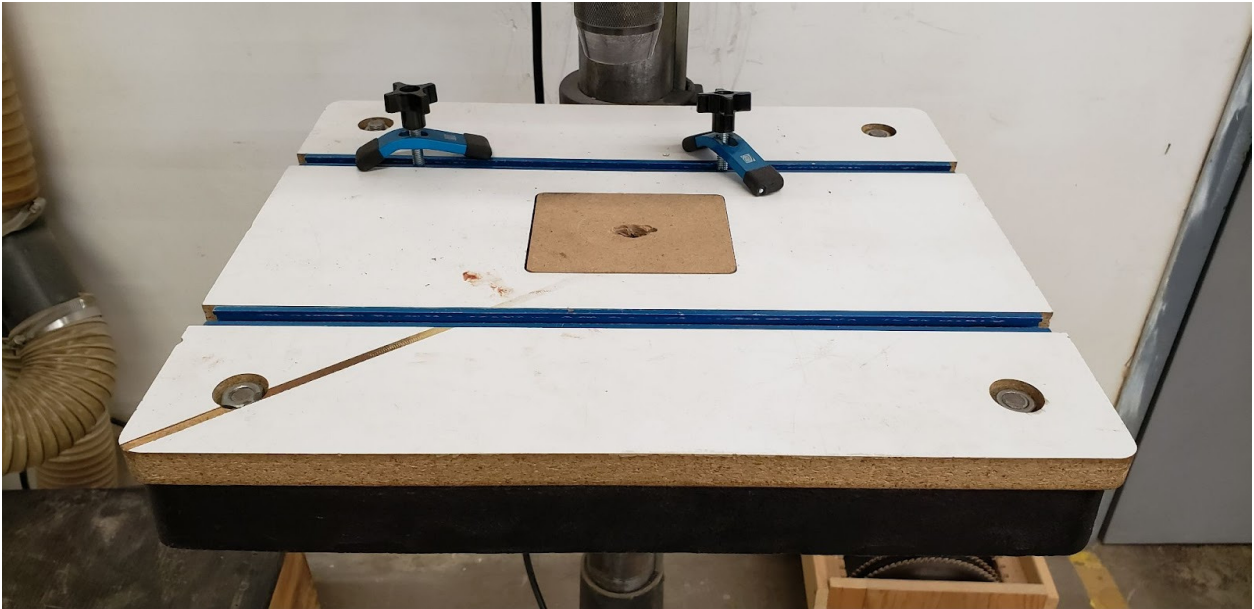
Tool Anatomy

MACHINE ANATOMY

Power Switch - on/off switch

Maintenance Tag - Manually tracks the usability status with Green/Yellow/Red cards

Table - Features clamp rails and sacrificial table inserts



Chuck - 3-finger chuck opens and closes by hand to hold drill bits



Feed Handle - Used to lower the drill into the workpiece

Depth Stop - Can be used to limit the depth of a drilling operation



Drive Belts - Used to transmit the power of the motor to the chuck at varying RPMs



Belt Tension Lever - Adds or removes tension from the drive belts

Belt Tension Locks - Locks the belt tension in place



Tool Safety

COMMON HAZARDS

If a drill gets stuck in a workpiece during a drilling operation, it can spin the workpiece violently, causing broken fingers or other injuries. Always clamp workpieces to the table and never rely on holding a workpiece by hand.

Spindle entanglement can occur when fabric gets caught by or wrapped around the chuck or spindle. Never wear gloves while using a drill press, and keep loose clothing and hair away from moving parts.

Initial Setup

SETUP CHECKLIST

Install a bit

Adjust the RPMs

Adjust the table height

Clamp the workpiece

SETUP BREAKDOWN

Install a bit

Choose a bit sized appropriately for your project. Open the fingers of the chuck by using two hands to twist the top and bottom knurled pieces. Place the bit into the chuck centered between the three fingers. Close the jaws of the chuck by using two hands to twist the knurled pieces. As the jaws close, double-check that the bit is held by all three fingers and not caught between just two fingers.

Adjust the RPMs

Depending on the diameter of the bit, you may need to adjust the RPMs at which it is spun. Wood is generally forgiving about drill speed, and a medium speed will do for most jobs, but drilling with large forstner bits will require slower speeds due to the forces required for the high material

removal rate. Similarly, very small bits will need faster speeds in order to cut properly.

Unplug the machine before adjusting the drive belts. After unplugging the machine, open the belt cover at the top of the machine. Loosen the tension lock knobs found towards the rear of each side of the machine's head. Once loosened, pull the tension lever toward the front of the machine to remove tension from the drive belts.

Remove both belts from the pulleys. Start with the highest belt and remove it from the top of the 'pyramid' pulley, then the 'tornado' pulley. Repeat for the second belt.

Look up the desired RPMs on the chart provided inside the lid of the belt housing. Reinstall the drive belts as shown on the chart, starting by installing the lowest belt first, 'tornado' pulley first, then 'pyramid'. Do the same for the second belt.

Standing behind the drill press, pull the lever towards the rear of the machine. As you pull, check that tension is added evenly to both belts. Some shaking of the middle pulley may be needed to get the tension to be even. Maintaining the tension on the lever with your left hand, lock the far tension lock knob with your right hand. Finish by locking the near lock knob. Close the pulley cover.

Adjust the table height

Unlock the table with the table lock found where the table hooks to the vertical column. Turn the height adjustment crank to raise or lower the table so that the travel of the chuck will allow the entire depth of the hole to be drilled. Note that the table can also be rotated around the column while the table is unlocked. Lock the table in place when it is appropriately positioned.

Clamp the workpiece to the table

Using the blue clamps and the clamp rails embedded in the table, securely attach the workpiece to the table. The drilling operation can not only spin, but lift a workpiece, so make sure it is completely immobilized. If the blue clamps are too small to clamp your workpiece, utilize the bar clamps available in the woodshop to clamp around the edge of the table to secure your workpiece to the table.

COMMON SETTINGS

N/A

CONSUMABLES

While there are often drill bits in the wood shop tool bins available for general use, it is considered the responsibility of each member to provide their own bits. This ensures that each member will

have sharp bits that are the size they need.

Basic Operation

OPERATION CHECKLIST

1.
Position the workpiece
2.
Drill the hole
3.
Turn off the machine

OPERATION BREAKDOWN

Position the workpiece

Place the workpiece on the table and position the location where you want the hole directly below the tip of the drill. It is often useful to not only mark the position of the hole, but punch the location so that the drill does not wander or walk away from the correct position when it touches the surface of the work. The wider the tip of the drill is, the more likely it will be to wander. For large bits it is often useful to drill a smaller pilot hole first that the larger bit can then follow in a second pass.

Lock the clamps and table in place to keep the piece solidly positioned below the drill throughout the process.

Drill the hole

Turn the motor on and slowly lower the drill to the surface of the material using the feed handle. Once you are at the surface, slowly lower the drill into the material. After a half-inch or so of drilling, pull the drill back out of the hole to clear any chips that are building up in the flutes of the drill. Continue this 'drill then clear' pattern until you reach the desired depth or break through the bottom of the workpiece.

Turn off the machine

Slowly return the drill to its highest position and turn the motor off.

Cleanup

CLEANUP CHECKLIST

Brush any chips from the surfaces of the machine

Sweep any chips from the floor around the machine

Note any maintenance needs or concerns on the tag and at protohaven.org/maintenance

Troubleshooting

Common Issues	Possible Causes	Resolutions
The fingers of the chuck aren't moving	The chuck is unscrewing in the middle	Tighten the smooth core of the chuck against the lower knurled portion of the chuck, then operate normally.
The bottom of each hole splinters badly	Lack of support is causing blowout	Use a backer board to support the bottom of the workpiece.

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