Drill Press Safety

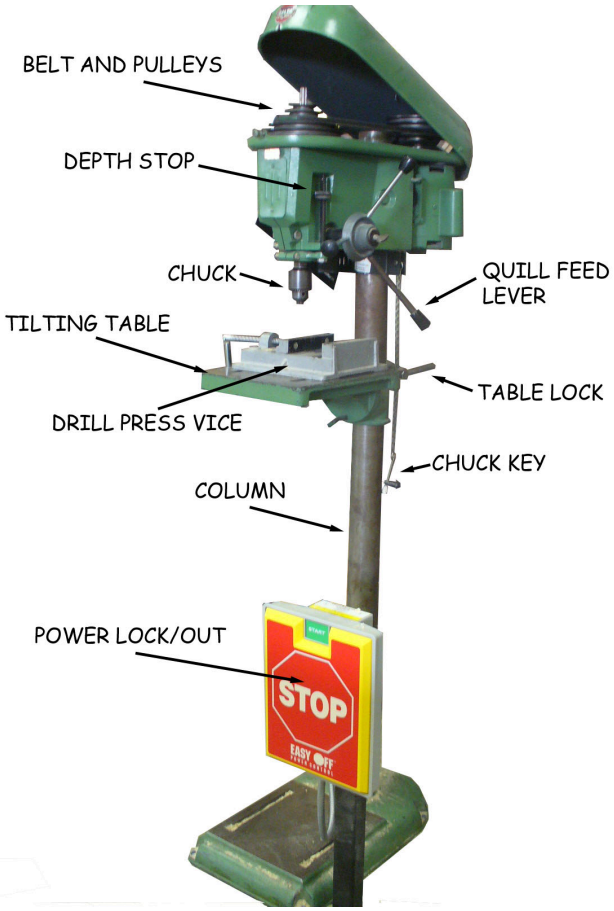
You must complete this lesson - activity and pass the Drill press Safety test with a mark of 80% before using the drill press independently. There are 4 steps:

1. Read this lesson
2. Watch a demonstration.
3. Pass the Safety Quiz with a mark of 100%.
4. Demonstrate Drill press operation to your teacher.

Step 1. Lesson

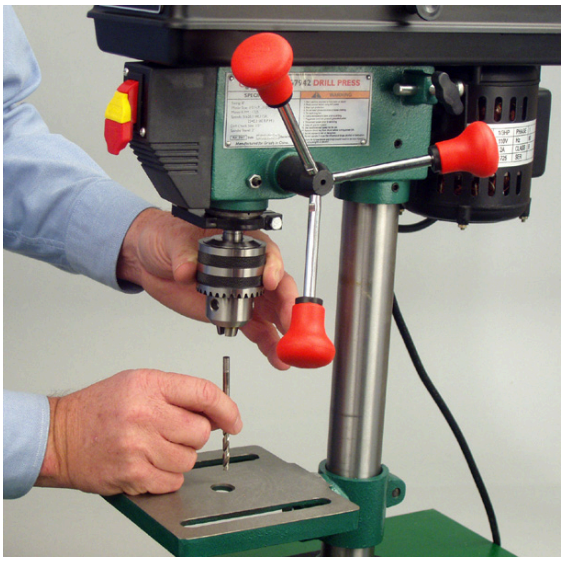
Familiarize yourself with the parts of the drill press in your classroom.

Make sure you can find all of the parts listed on this picture on your own Drill press. Pay attention to the Depth Stop and make note of how it limits the action of the feed lever. Note the main On/Off magnetic switch and make note of any other power switches. Not all tables are "tilting". Some can be unlocked and then cranked up and down. Other tables need to be held up and then positioned manually.



Rules

- Tie back and restrain long hair.
- Remove jewelry.
- Roll up long sleeves.
- Wear safety glasses.
- Set the cutting speed higher for wood or plastic and smaller holes. Lower for metal and larger holes.
- Clamp the work to the table or use the vice to hold the work.
- Position the table so that if you bore through the workpiece the bit travels into the hole in the centre of the table. You don't want to accidentally drill into the table.
- Support wood and plastic with scrap. This will prevent "chipping out" as the drill bit exits the work piece.
- The belt and pulley cover must be down and secure.
- Double check to make sure the chuck key is removed from the chuck before turning on the drill press.



Set Up

- Use a manual switch or unplug to de-energize Drill press.
- Insert the drill bit and tighten the chuck by hand.
- Use the chuck key to tighten the chuck onto the bit. Do not over tighten.
- Remove the chuck key.
- Energize the Drill press.
- Start and stop the motor quickly. Pay attention to the end of the drill bit. If it loops around instead of spinning then
    - it is not in straight - go right back to the top of this procedure and start again.

    - it is bent (unlikely but possible) - tell your instructor.
- Adjust the height of the table so that the bit is 1/2 to one inch above the stock with the scrap material or vice in place.
- If necessary, adjust the speed of the Drill press.
    - Lift the cover.
    - Move the belt starting at whatever end is going from larger to smaller. Finish the move by rolling the belt onto the matching level on the other end.
    - Secure the cover and check that the drill press is operating at the desired speed.
    - Wash your hands. The belt will leave your hands stained by black rubber dust.

- This Drill press is set to the middle range of speed.
- For faster drill bit speeds move the belt up on the left and then right.
- For slower drill bit speeds move the pulley down on the right and then on the left.
- The belt should be the same count of pulleys up from the bottom on both sides

Drilling - also called boring

- To drill or bore a hole you should locate the centre of the hole measuring carefully.
- Centre marks are usually done using two measurements and locating the intersection of 2 lines draw parallel to two edges.

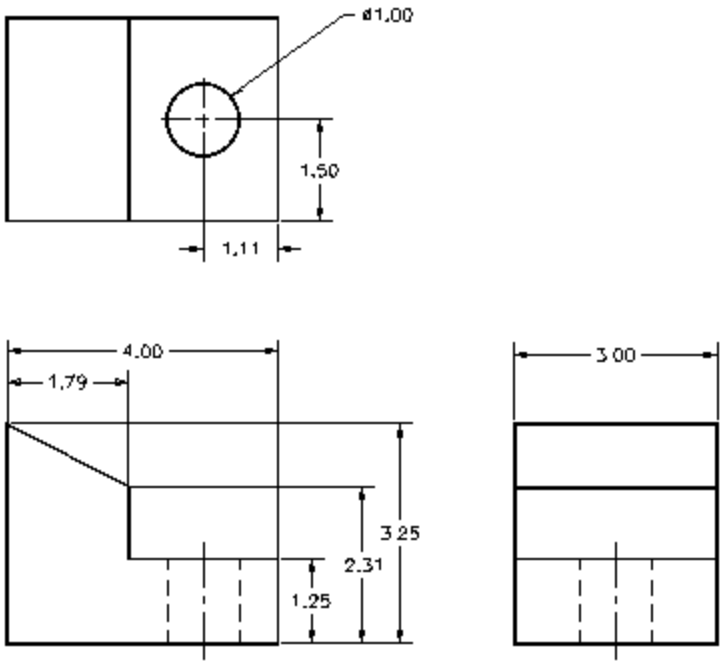


Figure 5B

- Use a centre punch for greater accuracy. Locate the tip of the punch onto the centre mark and give one blow with a hammer. Without this small divot the drill bit might "wander" off the mark as it comes into contact with the stock.
- Secure the stock using clamps and test that the bit comes down on the centre mark.
- Start the drill press with the bit clear of the stock.
- Push on the feed lever slowly and watch the drill closely. It should feed into the stock at a speed appropriate for the material.
    - Wood - slow
    - Hard wood and plastic - slower
    - Metal - slowest
- Clear the hole every so often by pulling the bit all the way out and then resuming drilling. Sawdust can impede the drill bit, overheat and smolder.

- Drilling steel requires patience and other special techniques. See your teacher before drilling steel greater than 1/8 inch thickness or hardened steel of any kind.

Blind holes

A blind hole is a hole that goes to a specific depth into the stock. It is "blind" because it does not go all the way through.

- Mark the stock to be drilled to the desired depth on a convenient edge.
- Get the stock supported and clamped loosely.
- Move the stock so that the bit slides down the side where the depth is marked.
- Hold the bit to the desired depth and adjust the depth stop (both nuts).
- Reposition the stock to the centre mark.
- Drill down until the depth stop prevents further travel.

Circuit boards

Circuit boards are the exception to the rule. The drill bit is very small so use a high speed and very light pressure on the feed lever. Support the board with scrap and hold it down firmly with your fingers. Since there are so many holes to drill a clamp becomes cumbersome and slow.

- Make sure your fingers are one inch away from the drill bit.
- Adjust the table height so that the bit starts just 1/4 inch above the circuit board.
- Feed the bit all the way through and then gently reverse until the bit is all the way up.
- Let go of the feed lever and reposition the board. You may need to readjust the position of the board as the bit gets close to the board. Make sure to apply firm pressure to the board as the bit begins cutting.
- If the bit catches and begins spinning your board let go completely with both hands and stop the drill press. Gently separate the bit and board remembering that the bit breaks easily.

Step 2. Watch a demonstration.

Go see Mr. Druiven or Mr. Brooks for a demo

Step 3: Pass the Safety Quiz with a mark of 100%.

The safety quiz may be found here: Drill Press Safety Quiz

Step 4: Demonstrate Drill press operation to your teacher.

Show Mr. Druiven or Mr. Hines that you know how to safely use the tools.