

OVERVIEW

In this section, we will explore the essential components and procedures related to operating a drill press. We will cover the different parts of the drill press, including the hand feed, chuck, chuck keys, and work table. Proper techniques for inserting and tightening the drill bit will be explained, along with tips for ensuring its alignment. Safety precautions, such as wearing protective gear and maintaining focus, will be emphasized.



What is a drill press?

- The drill press is a stationary machine that raises and lowers a spinning drill bit to bore holes perpendicularly into a piece of stock.

Part of the drill press

a. Hand feed

Allows the operator to raise and lower the drill bit.



b. Chuck

Is the specialized type of clamp that holds the drill bit in place.



c. Chuck keys

- Are used to tighten down the jaws that hold the drill bit in place.
- After tightening the drill bit, place it in the holder.
- Never leave the chuck key in any of the holes, especially if you are going to turn the machine on; the chuck key can fly out and become a dangerous projectile.



d. Work Table

- The wood table in the drill press is attached to the column.
- The wood table is the supporting surface on which the stock is placed for drilling.



PROCEDURES

1. Gather the necessary materials and tools: Prepare the metal workpiece that needs to be drilled, the appropriate drill bits for metal, safety goggles, ear protection, and any necessary clamps or vises.
2. Set up the drill press:
 - a. Place the drill press on a stable work surface, ensuring it is securely anchored.
 - b. Ensure the power switch is turned off and the machine is unplugged.
 - c. Adjust the height of the drill table or work surface to a comfortable position for your work.



3. Select the appropriate drill bit: Choose the correct drill bit for the metal you are drilling. Refer to the drill bit's specifications for guidance.

4. Install the drill bit: Loosen the chuck by turning it counterclockwise. Insert the drill bit into the chuck and tighten it securely by turning the chuck clockwise. Use a chuck key, if required, to tighten it further.



5. Adjust the drilling depth:

a. Identify the depth of the hole you need to drill and measure it on the drill bit or use a depth stop if available.

b. Adjust the depth stop or set the depth on the drill press to limit how deep the drill bit will penetrate the metal. This ensures consistent hole depth across multiple workpieces.



6. Secure the workpiece: If necessary, use clamps or a vise to securely hold the metal workpiece in place on the drill table. This prevents movement during drilling and ensures accuracy.



7. Adjust the speed:

a. Refer to the drill press manual or the material guidelines to determine the appropriate speed for the specific metal and drill bit size.

b. Adjust the speed using the speed control mechanism on the drill press. Lower speeds are generally used for larger drill bits and harder metals, while higher speeds are suitable for



8. Put on safety equipment: Wear safety goggles to protect your eyes from flying metal chips, and wear ear protection to reduce noise exposure.



9. Align the drill bit: Position the drill bit over the desired drilling location on the metal workpiece. Ensure the bit is perpendicular to the surface of the workpiece to achieve a straight hole.



10. Turn on the drill press: Plug in the drill press and turn on the power switch.

11. Lower the drill bit: Use the lever or handle to lower the drill bit slowly and steadily onto the workpiece. Apply a moderate amount of pressure, letting the drill bit do the cutting.



12. Begin drilling: Hold the workpiece firmly and maintain a steady downward pressure on the drill bit as it cuts through the metal. Avoid exerting excessive force, as it can cause the drill bit to bind or break.

13. Monitor the drilling process: Pay attention to the drilling operation, ensuring the drill bit remains aligned and the cutting progress is smooth. If you notice any issues, such as excessive heat or difficulty in drilling, stop and assess the situation.



14. Withdraw the drill bit: Once the desired depth is reached, release pressure on the handle to stop drilling. Allow the drill bit to come to a complete stop before raising it from the workpiece.



15. Power off the drill press: Turn off the power switch and unplug the drill press.

16. Remove the workpiece: Release any clamps or vises holding the workpiece and carefully remove it from the drill table.



17. Clean the work area: Clear away any metal chips or debris from the drill table and surrounding area. Dispose of the waste materials properly.



1f MODULE 9: METALSHOP - DRILL PRESS **MODULE 9**