

# SAFETY AND HYGIENE REGULATIONS



Servei de Prevenció de Riscos Laborals  
UNIVERSITAT POLITÈCNICA DE CATALUNYA

## DRILL PRESSES

CODE

**SHR 206**

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### DESCRIPTION OF A DRILL PRESS

A drill press is a machine that uses a single cutting tool whose main movement is rotation. The main characteristic of a drill is that the workpiece remains stationary during machining, and all the movements that are generated are applied to the tool. The general term “drilling” refers to the set of machining operations that can be undertaken using this machine tool. A drill can be used to make perforations or holes in a workpiece parallel to the axis of rotation of the tool.

The main movement of drilling is rotation, which is carried out by the tool. Forward and penetration movements coincide and are carried out by the tool in a straight line.

The transmission powertrain (belts, gears, friction gears, etc.) is attached to the driving motor and transmits power to the main movement of rotation of the tool. This rotation takes place around the main axis or spindle of the machine, which is vertical. A press drill can be moved manually parallel to the main axis so that the tool can move forward and penetrate the workpiece.

The tool is usually secured by a drill chuck that functions in a similar way to the jaw chuck used in the lathe.

Opposite the drill chuck is the clamping bench where the workpiece is secured. The height of the clamping bench can be altered as an operation prior to the drilling itself, so that it is possible to work on pieces of different sizes.

All of these elements are fixed to a base plate so that the machine tool can be attached to the floor and each of the elements is structurally rigid.



### GENERAL RECOMMENDATIONS

1. The pulleys and drive belts of the drill press must be protected with covers.
2. The electrical circuit of the drill press must be connected to earth. The distribution board that the machine is connected to must have a circuit breaker that is sufficiently sensitive.
3. The protective covers of pulleys and drive belts should have a switch that prevents the milling machine from starting up when the covers are not closed.
4. The machine must have an emergency stop switch or device that can be reached immediately by the operator.
5. All operations of cleaning, maintenance, inspections, etc. (e.g. removing a part, cleaning up chips or checking measurements) must be carried out when the press drill is completely shut down.



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### PERSONAL PROTECTION EQUIPMENT (PPE) TO USE

1. Workers must wear safety goggles or shields that protect against impacts, particularly when hard, fragile or easily broken materials are machined.
2. Safety goggles should also be used during operations to sharpen drill bits.
3. If, despite all precautions, a foreign body enters your eye, **DO NOT** rub it: this could cause an injury. Clean your eye with abundant water, cover with gauze attached with surgical tape, and go to the nearest health centre.
4. Chips produced during drilling must never be removed by hand.
5. Use a brush to remove loose shavings. For long, sharp chips, use a hook with a handguard.
6. If you work with heavy pieces, use safety shoes that protect against the pieces falling.
7. Operators should wear well-fitting clothing to work with the drill press, with sleeves above the elbow and rolled up inwards. If you have long sleeves, they should be tightly fitting at the wrists, with elastic instead of buttons, and they should not be baggy.
8. Operators working on the drill press should not wear rings, watches, bracelets, neck chains, ties, scarves or loose belts.
9. When you work with a drill press it is very dangerous to wear long hair loose. Hair should be tied back under a cap or similar item. In any case, be careful not to get your head close to the axis that turns.

**NOTE:** The use of gloves during the drilling operation could lead to accidents. Therefore, do not wear gloves while the press drill is switched on. However, you could use fine rubber gloves whose fingertips have been cut down to the second phalanx.



Protecció obligatòria  
de la cara



Protecció obligatòria  
de la vista



Protecció obligatòria  
dels peus

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### BEFORE DRILLING

Before a drill is switched on to start the machining work, the following checks should be made:

- For tasks with a radial drill or drill press, the work table and the arm must be fully locked.
- If the drill is a bench version, the headstock must be fully locked and in the right position.
- The clamp, screw or other securing device must be firmly anchored to the work table.
- The workpiece must be firmly secured in the gripping device, so that it cannot turn and cause injuries.
- Nothing should obstruct the arm and its forward, rotating movement.
- The drill bit must be properly attached to the chuck and perfectly sharpened, in accordance with the type of material that is going to be machined.
- All tools, loose materials, and the drill chuck key in particular must be removed.
- The protective cover around the drive belt and pulleys must be in the right place.

### WHILE DRILLING

1. While you are drilling, keep your hands away from the turning drill bit.
2. All inspection and adjustment operations must be carried out when the **drill and the axis are shut down and have stopped moving**, particularly:
  - Securing and releasing drill bits and parts.
  - Measuring and checking the finish.
  - Cleaning, greasing and adjusting protection devices.
  - Filing or scraping workpieces.
  - Locating or guiding the flow of coolant.
  - Moving away from or leaving the workplace.
3. Whenever you have to leave the drill, you must switch it off and disconnect the cable.
4. Never hold the workpiece in your hands when it is being drilled. Whatever the workpiece, it must be secured mechanically using clamps, screws, etc. so that it cannot turn around when it is drilled.
5. The shaft cone should be cleaned before the drill bit is fitted. If a drill bit is not fitted correctly it could break and fragments of it could fly out.
6. A drill bit should not be secured to the chuck by turning on the drill and holding the chuck in your hand so that it closes faster. The drill bit must be fitted and secured with the drill switched off.
7. Drill punches should not be used if the head has any burrs, as fragments may be projected if they splinter.
8. To increase safety, the automatic feed function should not be used at the start or end of drilling. The manual feed must be used at the start and end of drilling.



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## MANTENANCE, ORDER AND CLEANING

1. The drill press must be kept in good condition, clean and well-lubricated.
2. Likewise, care must be taken to keep tools, implements and accessories clean, well-maintained and in good order. Each item must have a place and be kept in it.
3. The work area and the area around the drill press must be kept clean and free from obstacles. Any oil spills must be cleaned up with sawdust, which will then be deposited in a metal recipient with a lid.  
Objects that have fallen or are scattered on the floor could cause people to trip or slip and put them at risk. Therefore, all objects that fall on the floor must be picked up before this can happen.
4. Chips must be removed regularly, rather than waiting for the end of the day, using a hook with a handguard for long, sharp chips and a brush for loose chips.  
In addition, burrs around the hole made by the drill must be filed or scraped off. These operations should be carried out when the drill press is switched off.  
Chips on the floor must be swept up using a dustpan and brush and put in a bin.
5. During work, tools, gauges, oilcans, brushes, etc. must be placed within easy reach, without having to get your body close to the machine.
6. Tools must be kept in a suitable cupboard or place. No tool or object should be left loose on the drill press. Drill bits must be kept in a special support, depending on their diameter, with the sharp end pointing downwards to avoid cuts when you select one.
7. Both raw and machined pieces must be stacked safely and in an orderly way, and suitable containers should be used if the pieces are small. An entry and exit corridor to the drill press must be left free. No materials should be stacked up behind the operator.
8. All waste, cloths or cotton that is impregnated with oil or grease, which could easily set fire, must be deposited in suitable containers (metal and with a lid).
9. Electrical faults in the drill press can only be inspected and repaired by specialist staff. Whenever a fault of this type is detected, however small, the machine must be disconnected and an **“OUT OF ORDER”** sign hung on it. Specialized staff must be notified.
10. Electric wires must be protected against cutting and damage caused by chips and/or tools.  
During repairs, a sign stating **“DO NOT TOUCH – DANGER – MEN AT WORK”** must be hung on the main switch. If possible, the main switch should be padlocked or its fuses removed.