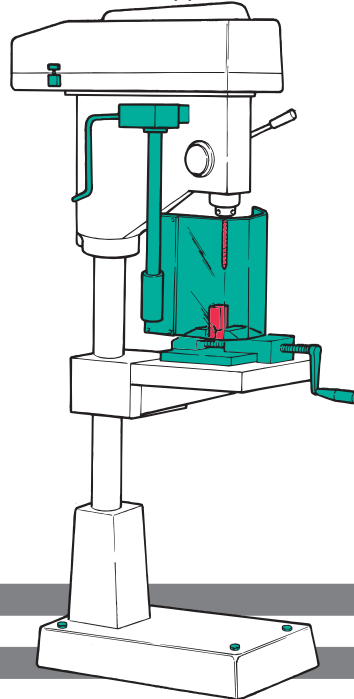


2.4.2 Manual pillar drill

Legislative Decree 81/08 App. V and VI, Presidential Decree 459/96 App. I, UNI EN 12717:2003



HAZARD

PROTECTION

Machine tool for cold-drilling metal using a rotary cutting tool.
The workpiece is clamped mechanically to a fixed table and does not move.

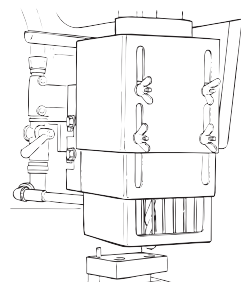
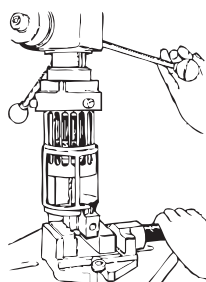
2.4.2.1 HAZARDS

Entanglement and dragging with the spindle or rotating tool

The spindle/tool must be protected with an adjustable fixed guard or a movable interlocked guard (see [“Movable guards” in 2.2.3.2](#)) that prevents direct access to the work area. Opening the movable interlocked guard should cause the machine to stop immediately; closing it should not start it immediately. For particular work requirements, a safety-sensitive rod can be used, which should be placed close to the spindle/tool.

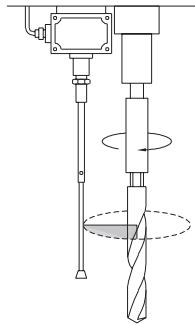
2.4.2.1A EXAMPLES OF ADJUSTABLE FIXED GUARDS

These guards (see [“Adjustable guards” in 2.2.3.2](#)) can be adjusted without tools. They can be removed, e.g. to replace cutting tools, only using tools.



2.4.2.1B SAFETY-SENSITIVE ROD

If the guard is replaced with a protective device such as a retractable sensitive device, the latter must be placed no more than 150 mm away from the outer diameter of each machine spindle and in the first rotation quadrant from the operator's position.



The spindle braking system linked to a sensitive device must have the following minimum characteristics:

Number of spindle rpm	Max. rpm to stop the drill
$n \leq 250$	1
$250 < n \leq 1000$	2
$1000 < n \leq 1500$	3
$n > 1500$	4

Ejection of chips or other materials

There must be an adjustable fixed guard or movable interlocked guard in front of the spindle/tool (see "Movable guards" in 2.2.3.2), to protect the front of the operator against the ejection of chips or other material during machining. Opening the movable interlocked guard should cause the machine to stop immediately; closing it should not start it immediately.

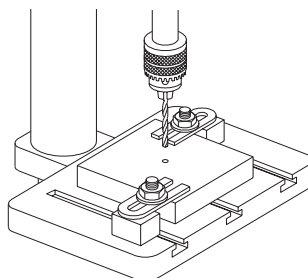
The guard must offer good visibility.

Impact, injuries and dragging by the workpiece rotating

The workpiece must be firmly clamped to the table with clamps, jaws or other clamping systems. Never hold the workpiece in position with your hands.

2.4.2.1C WORKPIECE CLAMPING SYSTEMS

Example of a workpiece clamping system



Entanglement and crushing with motion transmission equipment such as the variable speed drive

Pulleys and belts must be fully protected with a fixed guard (see “Fixed guards” in 2.2.3.2) or movable interlocked guard (see “Movable guards” in 2.2.3.2). Opening the movable interlocked guard should cause the machine to stop immediately; closing it should not start it immediately.

2.4.2.2 CONTROL EQUIPMENT**Starting**

The only way to start the machine is to use specific control devices (see 2.2.6.1 “Starting”) that are easy to recognise and are protected against the risk of being accidentally activated (e.g. dual-action lever, pushbuttons with guard ring, shrouded pedals, etc.).

Unexpected restart

Spontaneous restarts (see 2.3 “Machine electrical systems”) of the machine after power is restored must be prevented using a specific device.

Stopping

The machine must have a control device (see 2.2.6.3 “Stopping”) to stop it safely.

Emergency stop

All machines must have at least one emergency stop device (see 2.2.6.4 “Emergency stop”) placed within easy reach of the operator.

2.4.2.3 ERGONOMICS**Positioning**

Machines must be installed so that there is free access to the work area even when setting, loading and unloading devices, etc. are being used (for example, lifting devices).

Platform

The operator should stand on a wooden or plastic platform with a grating through which chips can fall and which is strong enough to walk on. Ergonomic aspects should be considered when choosing the platform height.

2.4.2.4 OCCUPATIONAL HEALTH AND SAFETY**Noise**

Find out the noise level to which staff are exposed when using the machine and follow the employer's instructions.

2.4.2.5 PERSONAL PROTECTIVE EQUIPMENT

The machining work must be assessed carefully so that the use of PPE can be defined:



Safety glasses (see 5.4 “Eye and face protection”).



Gloves (see 5.6.4 “Gloves giving protection from mechanical risks”) protecting against mechanical risks and which are waterproof when cutting fluid is used: gloves cannot be worn while the spindle is rotating but only when changing or preparing the workpiece.



Safety shoes (see 5.7 “Foot protection”) with protective toe cap (S1). If the machining produces chips that could perforate the soles of shoes, these must have an anti-perforation sole (S1P).



Hearing protectors (see 5.3 “Hearing protection”).

2.4.2.6 OPERATING INSTRUCTIONS

The machine must come with a manual, in Italian, explaining correct use and maintenance, including a programme of periodic inspections.

2.4.2.7 OCCUPATIONAL HEALTH AND SAFETY ACTIONS

Before use

- Read the Operating Instructions and be trained on using the machine safely.
- Check that the guards (see 2.2.3 “Guards”) and safety devices (see 2.2.5 “Safety devices”) are present and positioned correctly.
- Check that the protective screen is in good condition (undamaged, clean, transparent) and adjust it to the size of the workpiece.
- Check that the guard interlock systems work (see 2.2.5.1 “Interlock systems”).
- Check that the emergency stop button works (see 2.2.6.4 “Emergency stop”).
- Check that there is a device to fasten the workpiece (suitable for its shape and size) properly secured to the table.
- Clamp the workpiece (do not hold it with your hands).
- Check the sharpness of the tip.
- Direct the cutting fluid nozzle correctly (if necessary).
- Activate the exhaust system if the work conditions require one to be installed.
- Wear clothes that cannot become entangled with the rotating tool/spindle (e.g. scarves, overalls or shirts with cuffs not fastened); tie back long hair.
- Wear the PPE indicated in this data sheet.

During use

- Put workpieces in place and remove them only when the machine is stopped.
- Fit or remove the tool when the machine is stopped (do not use its rotation force).
- Lower the tool slowly so that the tip does not go into the workpiece.
- If the tip gets locked in the workpiece, do not raise the lever but activate the emergency stop.
- Remove chips only when the machine is stopped.
- Avoid using compressed air (for example, to clean workpieces, etc.).
- Report any malfunctions or faults promptly to the supervisor.
- Avoid getting cutting fluid on your hands or clothes (do not wear dirty overalls or canvas shoes, do not clean your hands on your overalls, do not keep dirty cloths in your pocket); wash your hands often (after finishing work and before eating, going to the bathroom and putting on gloves).
- Contain any cutting-fluid spills with special materials or substances provided by the employer.

After use

- Switch off the machine.
- Remove the tool.
- Leave the area around the machine (especially the workstation) clean and tidy.