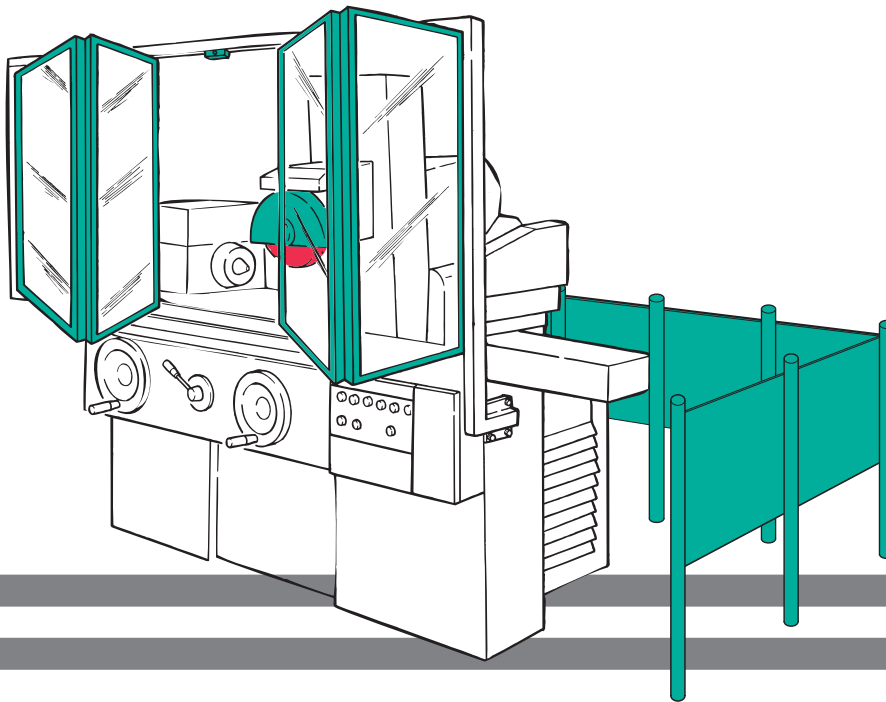


2.4.8 Grinding machine

Legislative Decree 81/08 App. V and VI, Presidential Decree 459/96 App. I, UNI EN 13218:2006



HAZARD

PROTECTION

Machine that combines rotation of the abrasive wheel with the rotation or tangential travel of the workpiece clamped to the table. The grinding wheel is brought into contact with the surface of the workpiece and does finishing work, with considerable precision.

2.4.8.1 HAZARDS

Contact with the grinding wheel, entanglement with the rotating workpiece, crushing between wheel and workpiece, ejection of material

The grinding wheel must have a robust metal sleeve covering the entire width and as much of the periphery of the wheel as possible.

Appropriate movable guards must be installed on the machine to make the tool inaccessible and protect against ejection of material.

2.4.8.1A MOVABLE GUARDS

Because of the speed and inertia of the rotating grinding wheel it is hard to stop it immediately when opening the normal movable guards (see “Movable guards” in 2.2.3.2). These guards must therefore be fitted with a guard-locking device (see “Movable interlocked guards with guard-locking” in 2.2.3.2).

Alternatively, opening the movable guard can be linked to the immediate retraction of the wheel-holder head from the workpiece, creating a safe space between the two of them. This is not the best solution, however, as there is still a residual risk of contact between elements that are still moving. Additional safety measures and procedures are therefore needed.



Contact with motion transmission equipment

Motion transmission equipment must be fully enclosed with fixed guards (see 2.2.3.1 "Fixed guards") or movable interlocked guards (see "Movable guards" in 2.2.3.2) if frequent access is required to the protected area (i.e. more than once a shift).

The surrounding work area must be segregated or protected so that the work area is inaccessible from all directions and to contain the projection of material.

2.4.8.2 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.

2.4.8.2A RISK OF ACCIDENTAL ACTIVATION

If the workpiece is fastened to the table magnetically, the machine must have a device that prevents the grinding wheel starting if the magnetic plate is deactivated.

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 to stop it safely.

2.4.8.2B STOPPING SAFELY

If the workpiece is fastened to the table magnetically, the stop control must not deactivate the magnetic plate until the grinding wheel has fully stopped moving or has been moved to a safe distance from the workpiece.

2.4.8.3 ERGONOMICS

Positioning

The machine 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).

Particular attention must be paid to positioning for "tangential" grinding. The distance between this machine and other machines or walls, pillars or fixed elements, must take into account the maximum space occupied by the moving table and the residual space, which should not expose people to a crushing risk (see 2.2.4 "Safety distances").

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.

2.4.8.4 OCCUPATIONAL HEALTH AND SAFETY

Emissions

The machine must be fitted with an appropriate local exhaust ventilation system (see 3.6 "Local exhaust ventilation systems").

Noise

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

2.4.8.5 PERSONAL PROTECTIVE EQUIPMENT



Safety glasses (see 5.4 "Eye and face protection") can be omitted if the guards fully protect the work area, preventing any material or cutting fluid being ejected towards the operator.



Gloves (see 5.6.4 "Gloves giving protection from mechanical risks") protecting against mechanical risks and which are waterproof when cutting fluid is used. Moving towards the workpiece or the grinding wheel while it is still rotating while wearing gloves must be banned.



Safety shoes (see 5.7 "Foot protection") with protective toe cap (S1).



Hearing protectors (see 5.3 "Hearing protection").

2.4.8.6 OPERATING INSTRUCTIONS

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

2.4.8.7 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 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").

- Make sure that the right amount and pressure of cutting fluid needed for machining is used (to avoid overheating and fumes).
- Activate the exhaust system if the work conditions require one to be installed.
- Fasten the workpiece appropriately to the table (if there is any doubt about the strength of magnetisation of the workpiece or if the workpiece has a small supporting surface, it should be mechanically clamped).
- Before fitting a new grinding wheel, check that it is not cracked (ring test) and its expiry date (never use a grinding wheel beyond this date).
- Before starting to machine with a new grinding wheel, run it for several minutes at the operating speed.
- Make sure that there are no keys, tools or other items on the table or near the workpiece being machined.
- Wear clothes that cannot become entangled with the hazardous moving parts on the machine.
- Do not wear scarves, necklaces, bracelets, watches or rings and tie up long hair.
- Wear the personal protective equipment (PPE) shown in this data sheet.

During use

- Keep the guards on the machine positioned correctly.
- Do not override or tamper with the safety devices. If they have to be deactivated for a specific job, other safety measures must be adopted immediately, such as very slow machining speed and hold-to-run controls, etc.
- Always wear protective gloves to change the grinding wheel ([see 5.6.4 "Gloves giving protection from mechanical risks"](#)).
- Never leave the machine unsupervised while it is in operation (only move away from the machine when the machining is complete or the machine is stopped).
- Workpiece changeovers should take place only after the machine is stopped or put into safe condition.
- Carry out cleaning operations only when the machine is stopped.
- 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.
- Put measuring equipment and instruments back in their containers.
- Leave the machine and the area around it (especially the workstation) clean (free of machining residue and cutting fluid) and tidy.
- Reactivate any deactivated guards.