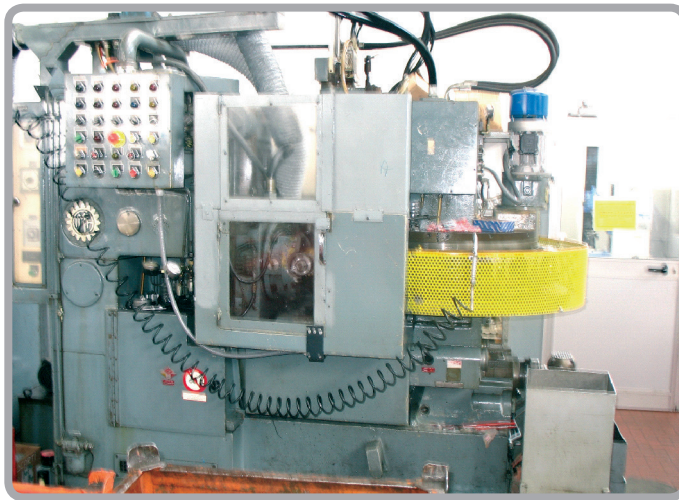


2.4.18 Gear hobbing machine

Legislative Decree 81/08 App. V and VI, Presidential Decree 459/96 App. I



Machine tool that removes chips of material, used to make external gear teeth. The tool (hob) rotates and travels tangentially to the workpiece, which rotates on a perpendicular axis to that of the tool. The synchronised movements of the tool and workpiece produce the gear teeth. The workpiece can be loaded manually or in an automatic loader. Machining is done in a cutting-oil bath.

2.4.18.1 HAZARDS

Contact with the tool, entanglement with the workpiece and rotating tool, ejection of material

On all machines, access to the tool work area must be prevented using a movable interlocked guard (see “Movable guards” in 2.2.3.2) with or without guard-locking (see “Movable interlocked guards with guard-locking” in 2.2.3.2) configured in such a way as to make the work area inaccessible, while at the same time offering good visibility of the machining in progress and protection from ejection of material.

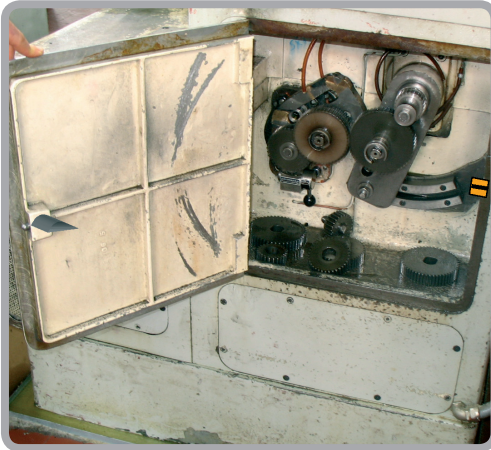


The area surrounding the work area must be segregated or protected with fixed or movable interlocked guards to make the work area inaccessible from all directions and at the same time to contain the ejection of material.

For machines capable of machining workpieces of very different sizes, fixed guards can be used (see “Fixed guards” in 2.2.3.2) whose position can be adjusted, using a tool, so that machining can take place while keeping the area protected.

Contact with motion transmission and adjustment equipment

Motion transmission equipment must be fully enclosed with fixed guards (see [“Fixed guards” in 2.2.3.2](#)) or movable interlocked guards (see [“Movable guards” in 2.2.3.2](#)) if frequent access is required (i.e. more than once a shift). In machines in which, when the interlocked guard is opened, the hazardous moving equipment does not stop immediately, an interlock device with guard-locking must be used (see [“Movable interlocked guards with guard-locking” in 2.2.3.2](#)).

**Crushing of upper limbs during set-up**

Access to the work area is needed when placing and setting up some machines. In this case, to move the hob or activate the workpiece clamping tailstock, a two-hand control must be used (see [2.2.5.2 “Two-hand control devices”](#)) or, if it is possible to operate at slow speed, a hold-to-run control (see [2.2.6.2 “Hold-to-run”](#)).

2.4.18.2 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. 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.

2.4.18.3 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).

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.



2.4.18.4 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.

2.4.18.5 PERSONAL PROTECTIVE EQUIPMENT

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



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 must be worn when changing material, removing workpieces and cleaning and only when the machine is stopped.



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



Hearing protectors (see 5.3 "Hearing protection").

2.4.18.6 OPERATING INSTRUCTIONS

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

2.4.18.7 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.
- 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.
- Workpiece changeovers should take place only when the machine is stopped.
- Report any malfunctions or faults promptly to the machine 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 chips, swarf and cutting fluid) and tidy.
- Reactivate any deactivated guards.