

Milling and machining centre work

How most accidents happen

■ Entanglement and contact with rotating cutters when:

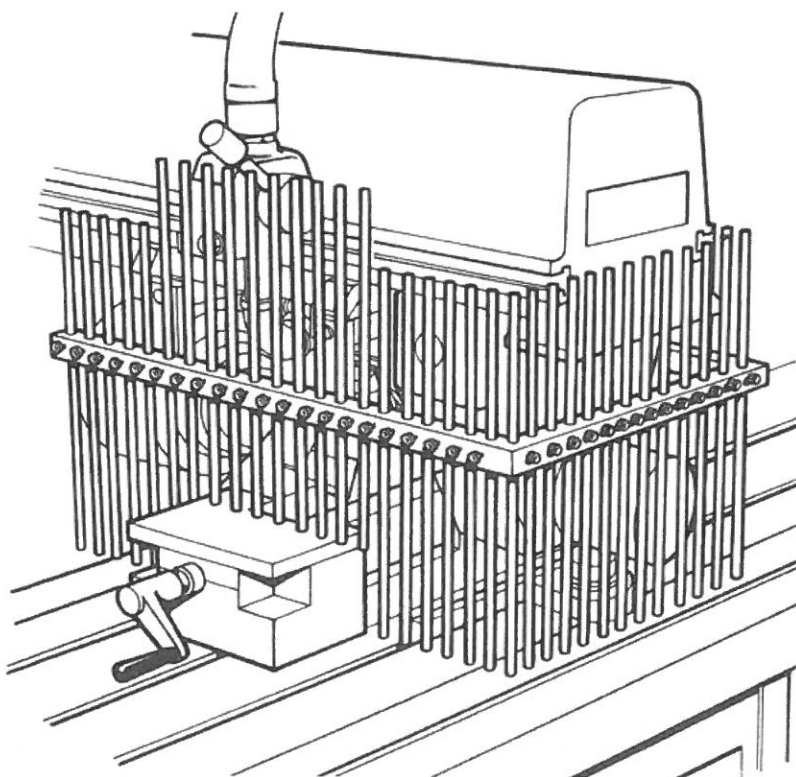
- loading/unloading components
- removing swarf
- measuring
- adjusting coolant flow.

These cause entanglement injuries such as broken bones, and dislocations, amputations and lacerations

■ Not wearing eye protection when machining, cleaning and removing swarf.

Most **ill health** arises from:

- unsafe handling (see pages 20–26), harmful metalworking fluids (see pages 48–50), and too much noise (see pages 51–56), but in particular
- handling heavier workpieces at larger machines which may require mechanical aids such as hoists
- noise (which may be difficult to predict and reduce at source) from cutters operating against workpieces.



Training specifics

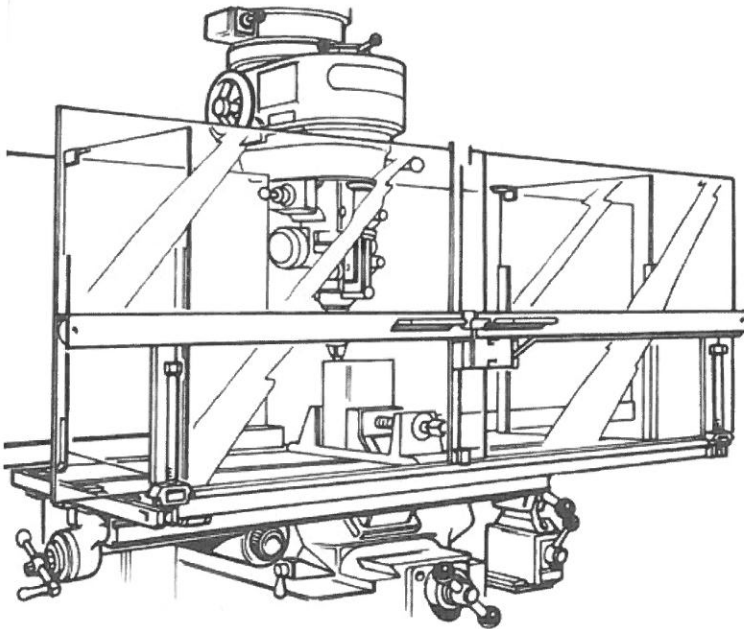
As well as understanding general rules for the safe operation of machinery (see pages 41–42), operators need to know how to:

- remove swarf
- adjust coolant flow
- load and unload components safely.

Key safety measures

For a manual horizontal milling machine used for a variety of workpieces:

- Fixed guard adjustable by means of a tool
- False table to help restrict access to cutter.



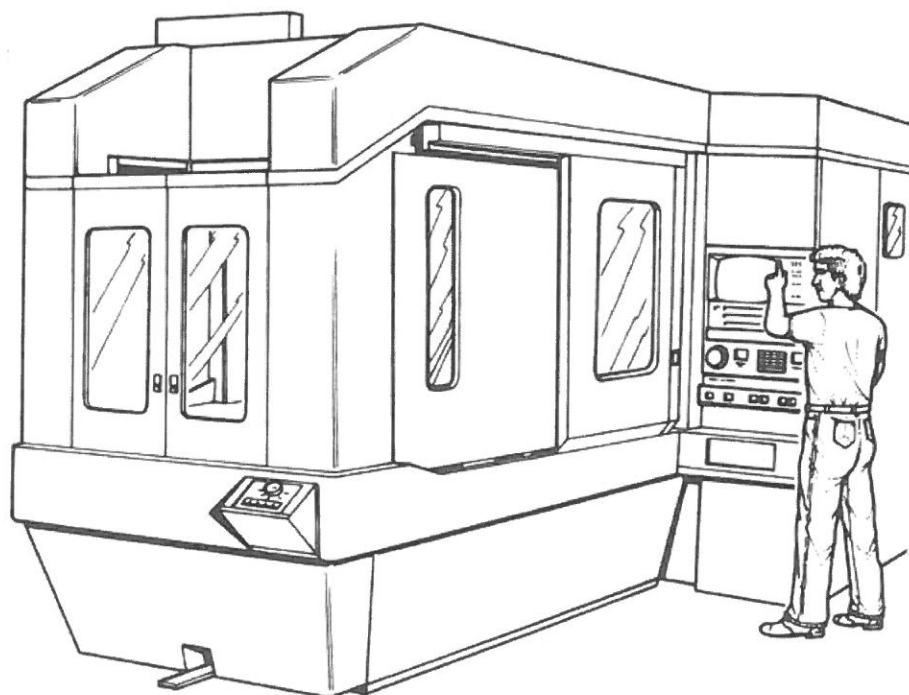
Key safety measures

For a vertical milling machine used for batch production work:

- Fixed and interlocking moveable guards to prevent access to the cutters and chip ejection
- For a vertical milling machine used for a variety of one-off jobs (including toolroom applications)
- Fixed and interlocked moveable guards, or an adjustable table guard
- Component securely fixed in all cases.

For a small machining centre:

- Sliding interlocking guards to prevent access to dangerous movements when guards are open
- If access to machine movements is necessary when the guards are open, safe slow movements under hold-to-run control may be provided
- Guards also help control metalwork fluid and swarf
- Exhaust ventilation fitted or capable of being connected.



Key references: BS EN 13128: 2001 *Machine tools – Safety – Milling machines (including boring machines)*;
BS EN 12417: 2001 *Machine tools – Safety – Machining centres*