

Safe Operation of a Table Milling Machine (Manual Turret or Bed Mill)

Standard Operating Procedure (SOP)

1. Purpose

To prevent serious injury and machine damage when using a manual vertical turret mill or bed-type table mill

2. Scope

Applies to all manual knee mills, turret mills, and bed mills with table travel up to 1200 mm × 350 mm.

3. Responsibilities

Operator: Must be trained, authorised, and never remove or bypass guards.

Supervisor/PCBU: Ensure only authorised operators use the mill and that all guarding, drawbars, and clamping kits are maintained.

4. Major Hazards

- Entanglement with rotating cutter
- Workpiece or tooling ejection
- Cutter breakage and flying fragments
- Crush from moving table, knee, or ram
- Drawbar or tool falling

5. Mandatory Personal Protective Equipment (PPE)

- Safety glasses or full face shield (AS/NZS 1337.1 medium impact)
- Hearing protection (Class 5 – mills exceed 85 dB(A))
- Steel-cap safety boots
- NO GLOVES, loose clothing, rings, watches, or long hair (must be tied back and secured under cap)
- P2 dust mask when milling aluminium, cast iron, or plastics

6. Training & Authorisation

Only persons who have:

- Been assessed competent on this specific mill
- Current authorisation recorded in the training register

may operate unsupervised.

7. Pre-Operation Checks

- Power isolated and leads undamaged
- All guards in place (belt guard, spindle guard, chuck guard if drill used)
- Table, knee, and ram locks functional
- Drawbar tight (30–45 N·m on R8 or MT3/4)
- Cutter sharp, correct type, and securely held (minimum 2× diameter in collet or holder)
- Workpiece securely clamped – minimum two clamps or in vise with at least 80 % jaw contact
- Handles removed or swung clear when power feed used
- Coolant pump working and fluid clean (if used)
- Emergency stop button tested

8. Safe Operating Procedure

Set-Up

- Select correct spindle speed and feed rate (refer chart on machine).
- Lock knee, ram, and any unused axis.
- Take a light facing cut (0.05–0.10 mm) to prove setup.

Milling

Never place any part of the body near a rotating cutter.

- Put on all PPE – NO GLOVES.
- Conventional milling preferred for first cuts unless climb milling is intentional and backlash taken up.
- Use power feed whenever possible – never leave hand on table while power feed is engaged.
- Keep hands on handles or outside the table travel area.
- Clear chips with a brush only – never with hands or compressed air while spindle is turning.

9. Shut-Down & Cleaning

- Raise spindle fully, stop motor, wait for cutter to stop.
- Remove tooling and store properly.
- Brush or vacuum chips – never blow with compressed air near people.
- Apply light way oil to table and unpainted surfaces.
- Isolate at wall when finished.

10. Absolutely Prohibited Actions (Zero Tolerance)

- Wearing gloves while spindle is turning
- Removing or modifying any guard
- Leaving chuck key or drawbar spanner in machine
- Climb milling without taking up backlash first
- Reaching over or under a rotating cutter
- Using cracked or damaged cutters or holders
- Leaving the mill running unattended

11. Emergency Procedures

- Hit large red EMERGENCY STOP immediately for any entanglement, crash, or unsafe condition
- Isolate power at wall for electrical fault or shock
- Call 111 for serious injury

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