

Safe Operation of an Ercolina Tube & Pipe Bender

Standard Operating Procedure (SOP)

1. Purpose

To prevent crush, amputation, and serious injury when bending tube, pipe, square section, or solid bar on Ercolina rotary-draw tube and pipe benders.

2. Scope

Applies to all Ercolina (and CML-branded) tube/pipe benders in the workplace, whether top-hand, sidewinder, or mandrel models.

3. Responsibilities

Operator: Must be trained, authorised, and never remove or bypass any guard or safety device.

Supervisor/PCBU: Ensure only authorised operators use the machine and that tooling and guarding are maintained.

4. Major Hazards

- Crush/amputation between former die and pressure die or counter-roller
- Material whipping or ejection on breakthrough
- Mandrel rod breaking and flying forward
- Trapping fingers in moving tooling
- Heavy tooling dropping during changeover

5. Mandatory Personal Protective Equipment (PPE)

- Safety glasses or full face shield (AS/NZS 1337.1 medium impact)
- Hearing protection (Class 5 if >85 dB(A))
- Steel-cap safety boots
- Close-fitting clothing – NO GLOVES while machine is running
- No loose sleeves, jewellery, or long hair (must be tied back and secured)

6. Training & Authorisation

Only persons who have:

- Completed Ercolina-specific or rotary-draw tube bender training
- Been assessed competent on the exact model
- Current authorisation recorded in the training register

may operate unsupervised.

7. Pre-Operation Checks

- All guards in place (pressure-die guard, counter-roller guard, mandrel-rod guard if fitted)
- Foot pedal fully shrouded or two-hand anti-repeat control functional
- Emergency stop buttons (minimum two) tested
- Hydraulic oil level correct and no leaks
- Former die, pressure die, and wiper die clean and correctly aligned
- Mandrel (if used) correctly positioned and lubricated
- Drop-away supports or roller tables ready for long tubes
- Bend program (CNC machines) proof-run in “dry-cycle” mode first

8. Safe Operating Procedure

Tooling Change (Only by authorised setter)

1. Isolate and lock out machine.
2. Use two-person lift or overhead aid for dies >15 kg.
3. Torque all die bolts to manufacturer specification.

Bending

Never place hands or body in the die area while the machine can move.

1. Put on all PPE – NO GLOVES.
2. Load tube/pipe fully against the locating stop.
3. For long lengths, use at least one helper or roller supports at each end.
4. Manual/semi-auto machines:
5. Keep foot clear of pedal until ready
6. Keep both hands on tube or on the two-hand control (if fitted)

Mandrel machines:

- Confirm mandrel is retracted before opening pressure die
- Never reach past the wiper die while mandrel rod is extended

On breakthrough (first bend that goes all the way through): stand well clear – material can whip violently.

9. Shut-Down & Cleaning

- Return bend head to home position.
- Retract mandrel fully.
- Remove tube and supports.
- Isolate at main switch if leaving the area.
- Wipe excess lube from dies; store tooling properly.

10. Absolutely Prohibited Actions (Zero Tolerance)

- Removing or bypassing pressure-die guard or mandrel guard
- Reaching into the die area while machine is live
- Bending material or radius the machine/die set is not rated for
- Leaving the machine running unattended
- Wearing gloves while bending
- Using damaged or incorrectly matched tooling

11. Emergency Procedures

- Release pedal or hit any red emergency stop immediately
- If someone is trapped: DO NOT reverse – isolate power first, then use manual hand pump to open dies
- Call 111 for serious injury

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