

Safe Operation of an NC Press Brake

Standard Operating Procedure (SOP) - New Zealand

1. Purpose

To prevent crush, amputation, and serious injury when operating a manual (foot-pedal or lever-operated) press brake for bending sheet metal and plate.

2. Scope

Applies to all conventional, NC press brakes including older mechanical flywheel types and newer hydraulic manual machines.

3. Responsibilities

Operator: Must be trained and authorised; never operate alone until signed off.

Supervisor/PCBU: Ensure only competent, authorised persons operate the machine and that all guards are never bypassed.

4. Hazards

- Crush/amputation between punch and workpiece
- Unintended ram descent (runaway, repeat stroke)
- Ejection of material
- Foot-pedal accidental operation
- Manual handling of heavy tooling

5. Mandatory Personal Protective Equipment (PPE)

- Safety glasses
- Hearing protection
- Steel-cap safety boots
- Close-fitting clothing – NO GLOVES when feeding material
- Hi-vis vest in shared workshops

6. Training & Authorisation (NZ Requirement)

Only persons who have:

- Been assessed as competent on this exact type of machine
- Current authorisation recorded in the training register,

may operate unsupervised.

7. Pre-Operation Checks

Safeguarding

- Fixed guards or interlocked movable guards in place and functional
- Two-hand control (if fitted): buttons <250 mm apart, anti-tie-down working, simultaneous operation within 0.5 s
- Foot pedal fully shrouded or requires deliberate two-motion activation and is protected against accidental operation
- Emergency stop bar or palm buttons tested

Tooling

- Punch and die correctly seated, clamped, and matched
- No cracks or excessive wear
- Correct V-opening and tonnage for material thickness

Machine condition

- No hydraulic leaks (hydraulic machines)
- Clutch/brake (mechanical machines) adjusted correctly – single stroke only
- Ram does not creep when pedal released

Area clean, dry, well-lit, and free of trip hazards

8. Safe Operating Procedure – Manual Press Brake

Set-Up (Only by authorised setter)

- Isolate and lock out machine before changing tools.
- Use correct lifting technique or overhead aid for punches/dies >15 kg.
- Never exceed rated tonnage (refer plate on machine).

Bending Operation

Approved safeguarding methods – ONE of the following must be in place at all times:

A. Two-hand control (most common on manual hydraulic machines)

Both buttons must be pressed and held for the entire closing stroke

Hands stay clear of the danger zone

B. Foot pedal + fixed/rear/side guards that physically prevent any body part entering the point of operation

C. Light curtain (retro-fitted) set to correct safety distance (AS 4024 Table E.2) – tested daily

Additional rules (mandatory)

- Never put hands or fingers under the punch unless the ram is fully supported on blocks or the machine is isolated.
- For small parts that cannot be held safely outside the guards:
 - Use magnetic hold-downs, pushers, or dedicated jigs
 - Never hold by hand inside the danger zone
- Use sheet supports or roller tables for large sheets.
- Stand to the side – never directly in line with the ram.

9. Shut-Down & Cleaning

- Lower ram onto timber blocks or to bottom dead centre.
- Isolate at the main switch.
- Clean swarf with brush or industrial vacuum (never blow with air near people).
- Report any faults immediately (use red fault tag).

10. Absolutely Prohibited Actions (Zero Tolerance)

- Bypassing, taping, wedging, or defeating any guard or two-hand control
- Using the foot pedal without the shroud or cover in place
- Holding workpieces by hand under the punch
- Operating in “continuous” or “inch” mode unless a risk-assessed hold-to-run system is in place
- Leaving the foot pedal unprotected or uncovered
- Operating without current training/authorisation

11. Emergency Procedures

- Hit the emergency stop bar or palm button immediately
- If someone is trapped: do NOT reverse the ram – isolate power first, then use mechanical jacks or the manual lowering valve (hydraulic machines)
- Call 111 if injury occurs

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