

Safe Operation of a Manual or Hydraulic Pipe Bender (Non-Rotary Draw)

Standard Operating Procedure (SOP)

1. Purpose

To prevent crush injuries, strains, and material whipping when bending pipe or conduit using hand-operated, ratchet, or open-frame hydraulic pipe benders.

2. Scope

Applies to all non-rotary-draw pipe benders in the workplace capable of bending 15 mm to 100 mm NB (nominal bore) pipe and conduit, including:

- Hand conduit benders
- Ratchet benders
- Hydraulic open-frame benders

3. Responsibilities

Operator: Must be trained, authorised, and follow this SOP at all times.

Supervisor/PCBU: Ensure only authorised operators use the bender and that dies/rollers and frames are inspected regularly.

4. Major Hazards

- Crush between ram and former
- Pipe whipping or spring-back
- Manual handling injury (long or heavy pipe)
- Hydraulic-oil injection injury (hydraulic models)
- Trip / foot crush when frame is laid flat

5. Mandatory Personal Protective Equipment (PPE)

- Safety glasses or face shield (AS/NZS 1337.1 medium impact)
- Hearing protection if power pack >85 dB(A)
- Steel-cap safety boots
- Close-fitting clothing – NO GLOVES while pumping or operating controls
- No loose sleeves or jewellery

6. Training & Authorisation

Only persons who have:

- Completed documented pipe bender training
- Been assessed competent on the specific bender

- Current authorisation recorded in the training register may operate unsupervised.

7. Pre-Operation Checks

- Frame, pins, and welds undamaged
- Correct former and back shoes/rollers for exact pipe OD and wall thickness
- Hydraulic ram, hoses, and couplings – no leaks or damage
- Pump release valve closes and opens smoothly
- Pipe/conduit clean, round, and within the bender's rated capacity
- Work area clear, level, and stable

8. Safe Operating Procedure

Set-Up

- Select the correct former and back shoes for the exact outside diameter (e.g., 20 mm, 25 mm, 32 mm, 50 mm, etc.).
- Mark bend location and required angle on the pipe (use 10°, 22.5°, 30°, 45°, or 90° as required).
- Allow correct gain and take-up for the pipe size (refer manufacturer table).
- For lengths >3 m, use pipe supports or a second person.

Bending

Never place hands or body between the ram and former while pressure can be applied.

- Put on all PPE – NO GLOVES.
- Position pipe correctly in the former and engage back shoes.
- Hand or ratchet benders: apply steady, even force.
- Hydraulic benders:
 - Pump slowly and watch the bend angle
 - Stop immediately if pipe starts to kink or flatten
 - Stand to the side – never in line with the pipe ends

Do not exceed 90° in one hit on thin-wall pipe unless the manufacturer specifically allows it.

9. Shut-Down & Maintenance

- Fully retract ram (hydraulic models).
- Remove pipe and store former/back shoes together.
- Wipe excess lube/grease from dies.
- Report any damage immediately (red-tag the machine if unsafe).

10. Absolutely Prohibited Actions (Zero Tolerance)

- Placing fingers between ram and former while pumping
- Bending pipe larger or thicker than the bender is rated for
- Using wooden blocks or packing to “extend” the ram
- Wearing gloves while operating the pump handle
- Bending crushed, welded, or damaged pipe
- Leaving the bender under pressure unattended

11. Emergency Procedures

- Release pressure immediately if anything feels wrong
- Hydraulic oil injection: treat as serious – go to hospital immediately
- Crush injury: call 111

Approved by: Joshua Klein Ovink

Position: Director

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