

## Workplace Health and Safety Queensland

## Metal product manufacturing industry – Brake presses (press brakes)

### What is the problem with brake presses (press brakes)

Most brake press injuries can result in fingers being amputated or badly crushed. Hands are trapped between the descending blade and the press block or between the press bed and the sheet of metal being shaped. Injuries are generally caused by the machine being unguarded or the guard protecting the operator is not active.

### How can you address the problem?

Guarding is required to prevent entrapment between the closing dies. One or more of the following guarding measures can be used:

- fully enclosed dies and limitation of stroke
- fixed guards that prevent access to any dangerous parts
- interlocking guards that prevent the press blade descending, unless the guards are closed
- non-contact guards (e.g. light guards, laser devices, etc.) to prevent the press operating if someone is in the danger zone.

**Note:** Generally, non-contact guards cannot be fitted to mechanical brake presses.

The front, sides and rear of the press need to be guarded or fenced and any control devices (e.g. foot pedals) also need to be shrouded to prevent accidental operation of the press.

Access to the hazardous area for production work via the front of the machine with guards removed or muted (turned off) is **only permitted where it is impracticable to operate the press with the guards in place** and the press is set so that it will only operate in the following modes of operation:

- the press is operated with the stroke of the tool within the mute stop position, with the maximum opening at the mute stop position being either as close to the thickness of material to be inserted (but no greater than 3mm from the top of the material) or a maximum of 6mm.
- the press is operated in the pulse mode and all of the following apply:
  - the blade descends in steps of 10mm or less;
  - the blade stops not less than 6mm and no more than 7mm above the work piece before the closing movement; and
  - there is a delay of at least 0.3 seconds between each step.
- the press is operated in the slow descent mode and all of the following apply:
  - the blade descent speed shall be constant and not exceed 10 mm/second;
  - pressure has to be maintained on the 'deadman' pedal to keep the blade descending; and
  - the blade stops not less than 6mm or more than 7mm above the work piece before the closing movement can be made.

**Note:** These options are **not** to be considered a substitute for effective guards.

Visual indication of the muted condition of a press must be provided by a clearly visible light or other clearly identifiable or distinguishable signal.

As with any type of plant and equipment, other controls should be in place to complement guarding, such as:

- information, instruction and training
- adequate supervision
- inspection and maintenance
- safe work procedures
- personal protective equipment.

**Operators** should be given comprehensive training and instruction to ensure they are completely familiar with the brake press, its controls, guards and safety devices, hazards associated with the press and any other control measures. Extra care should be taken to ensure that each operator fully understands and can **demonstrate** the safe operation of the press. Furthermore, extra attention should be paid to young and inexperienced workers and workers returning from absence.

**Supervision** must be provided, based on the competence of the operator (e.g. direct and constant supervision for a new worker) and complexity of the task being performed.

**Inspection and maintenance** of the press, including guards and other critical safety parts, should be done regularly. For guards and safety devices, this should be done at the start of each day or shift and whenever there is a change to the presses working configuration. The people responsible for inspection and maintenance should have thorough knowledge of the press and all requirements as per manufacturer's specifications (found in the manufacturer's instruction manual).

**Maintenance** activities should only be carried out when the machine is fully **isolated and locked-out** from all power (electrical, hydraulic and pneumatic) sources and appropriate warning signs should be securely attached to the controls. Manufacturer and suppliers have an obligation to provide

relevant information. If you do not have the information you need about the press, contact the manufacturer or supplier.

**Safe work procedures** should be written to cover such things as:

- operating the brake press (including work involving two operators)
- die changing and tool setting
- lifting, lowering and turning the block or bottom of the press
- emergency situations (including where a person gets trapped between the blade and press block)
- reporting faulty or defective equipment
- inspection and maintenance.

These safe work procedures should be developed in consultation with the workers.

Other ways to reduce the chance or severity of injury may include:

- ensuring that where there is more than one person operating a brake press, each person has a foot pedal that is electrically interlocked, so that the blade does not descend unless both operators have activated their foot pedal.
- with a segmented blade, removing segments not being used for the job, to avoid creating additional trapping spaces
- ensuring all start and stop controls are clearly marked
- setting realistic production demands, providing sufficient variety of work to avoid monotony and fatigue
- ensuring there is adequate space provided for working at the press, handling materials, and for changing and maintaining dies
- providing adequate lighting for the press
- ensuring emergency stop devices (buttons, pedals, etc.) are easily accessible and of the lock-in type.

Although personal protective equipment (PPE) is generally considered the last line of defence, appropriate PPE is important when using brake presses. The PPE needed is based on the hazards that exist when using the press, which include (but not limited to) noise, projectiles, dropped tools and material, and sharp edges of material.

Refer to *AS 4024* and *AS 1219*, which provide detailed information about safeguarding of machinery and brake presses.

For further information on plant and equipment and other workplace health and safety issues call 1300 369 915 or visit [www.deir.qld.gov.au](http://www.deir.qld.gov.au).

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