



Press Brake Safeguarding

Safeguarding devices, inspections and training for worker safety

Press brakes cause thousands of serious injuries every year, some of which are fatal. With proper safeguarding and safe work practices, these accidents can be avoided. This includes formal safeguarding controls and procedures, the appropriate use of devices, training press brake operators and establishing a comprehensive inspection, service and maintenance program.

Press brakes are mechanically and hydraulically powered and operate as full revolution clutch or part revolution press brakes. These metalworking machines are primarily used for bending and forming sheet metal.

Hazards of Power Press Brakes

Inefficient training, lack of proper safeguarding devices, and/or operators bypassing the safeguards are the primary causes of many injuries. Hazards include:

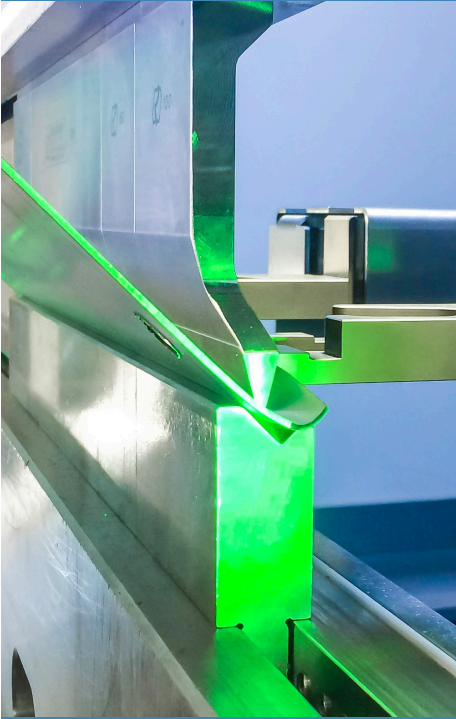
- Crushed or amputated fingers or hand at the front or rear of the machine.
- Inadvertent cycling via unprotected foot pedal actuation when the operator's hands are in the point-of-operation.
- Struck by metal stock while feeding material into press brake – more common with large pieces during the actual bend.
- Injuries stemming from the failure to properly lockout/tagout during adjustments, clearing jams, performing maintenance, installing or aligning dies and cleaning the machine.

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Press Brake Guarding Requirements

Operator tasks include selecting and installing dies, placing and positioning stock, activating the press cycle with palm buttons or foot pedals and removing the completed part. Point-of-operation devices are frequently used for press brake safeguarding and protect the operator by:

- Restraining personnel from inadvertently reaching into the point-of-operation.
- Inhibiting machine operation if one's hand(s) are within the point-of-operation.
- Automatically withdrawing the operator's hands if they are within the point-of-operation.
- Requiring application of both operator's hands to the machine operating controls and positioned at a safe distance from the point of operation.

In addition to the point-of-operation guarding devices, all power transmission components should be fully enclosed and guarded on the press brake.

Point of Operation Safeguard Devices

Safeguard devices must be designed to prevent the operator from reaching under the ram during the downward stroke. Common devices to consider include the following:

- Presence Sensing Devices (PSD): PSDs are designed to automatically stop the machine stroke if the sensing field is interrupted. Operator resistance to these types of safety devices is minimized due to their nonrestrictive design. These are commonly referred to as light curtains and cannot be used on machines using full revolution clutches.
- Two-Hand Control Devices: This device keeps the operator's hands away from the point-of-operation during the entire machine stroke. Two-hand controls are a safeguarding device that can be used in the single-stroke mode on part revolution clutch presses. Two-hand trips are safeguarding devices on full revolution clutch press brakes.
- Pullback Devices: These are designed to automatically pull the operator's hands away from the closing dies during each power press stroke. They allow the freedom of movement for loading and unloading parts without interference and can be used on both full and part revolution power presses.
- Restraint Devices: Often referred to as holdouts, these are similar to pullback devices. When properly anchored, restraints are adjusted so that the operator can never reach the point-of-operation. These are usually applied on press brakes that perform long-run jobs and can be used for both full and partial revolution mechanical power presses.

Please reference the Press Brake Safeguarding Devices Fact Sheet for general requirements on these types of devices.

Additionally, the following measures need to be considered:

- Feed Table (or other material support) allow the controls to be operated remotely. With this, the controls must be positioned so that the operator cannot activate them while simultaneously reaching into the point-of-operation.
- In operations where stock is automatically fed into a progressive die and it is not necessary for the operator to reach under the ram, a fixed barrier guard can be used.
- Often, manufacturers will ship press brakes without the proper guarding. It is the employer's responsibility to ensure that the appropriate guarding or safeguarding devices (or both) are installed on prior to operation.
- Ensuring that your press brake has the appropriate safeguarding device is very important. Due to the complexity and variability of the equipment, a reputable machine guarding company should be consulted.

Inspection and Maintenance

Press brakes must be operated and maintained according to the manufacturer's recommendation. Employers should establish and follow a schedule of press brake inspections to ensure that all parts, auxiliary equipment and safeguards are in a safe operating condition and adjusted properly. This includes the following:

- At least weekly, conduct a functional performance check to determine the safe operating features of the press brake (anti-repeat, single stroke control, clutch/brake mechanism).
- Complete necessary maintenance or repairs before the press is operated.
- Document all records of inspections, test and maintenance, including:
 - Date of inspection, test or maintenance work performed.
 - Serial number, or another identifier, of the press brake that was serviced or inspected.
 - Signature of the person who performed the activity.

When cleaning, repairing, servicing, setting up and adjusting press brakes, lockout/tagout procedures must be followed for protection against unexpected energization or startup of the machine. Use of safety blocks, inserted between the press dies, should be used.

Training

Employers must provide effective training for employees who inspect and maintain press brakes:

- Complete the training before machinery use is authorized.
- Review the details of the point-of-operation safeguarding devices and other press brake guarding that will be used.
- Place a list of trained operators on or near the press brake to ensure only these individuals are utilizing the machine.
- Provide adequate supervision to confirm the operators are following procedures correctly.

For complete regulatory information on press brake guarding, inspection and training requirements, refer to Cal/OSHA Title 8 Article 55 and Fed OSHA 29 CFR Part 1910, Subpart O.