

Press Brake (metal)

Detail Sheets

A press brake is a metalworking machine that forms parts through the use of dies attached to a plate type ram or slide and a plate type bed. These machines may be mechanically or hydraulically powered and are primarily used for bending and forming sheet metal. Metalworking occurs by placing stock on a bottom die and striking it with a top die attached to the moveable ram. A press brake is similar to a mechanical power press in that it uses a vertical reciprocating motion and is used for repetitive tasks. Press brakes are either mechanical or hydraulic and either general-purpose or special-purpose. The press brake is designed to bend metal sheets or strips and may have more than one operating station.

Operator involvement: Requires maximum operator involvement. It is usually the operator's duty to select and install dies, place and position the stock between the dies, activate the press cycle and remove the completed part. After machine set up, the operator must hold the piece in place, often using a tool or hand(s) while actuating the machine using a foot control. At the completion of the initial cycle, additional bends may be necessary in the same piece. The part is removed from the machine at the conclusion of all bends.

Hazards: Crushing hazard from contact with the point of operation or body parts getting caught in the pinch points created between the stock and the press brake frame while the bend made.

Safeguarding:

Safeguard the point of operation for both the operator(s) and helpers. Use presence sensing devices, restraints, two hand controls or safe opening (no more than 1/4-inch opening) as viable safeguarding methods. **29 CFR 1910.212**

If two hand controls are used, protect the buttons against unintended actuation or arrange them so that hands must be on both buttons to actuate the press brake.

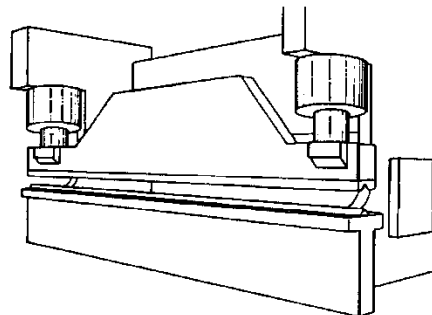
Protect foot controls to prevent actuation from falling or moving objects, or from unintended actuation.

Make sure that control systems providing for more than one operator station are designed to be used as a complete operating station.

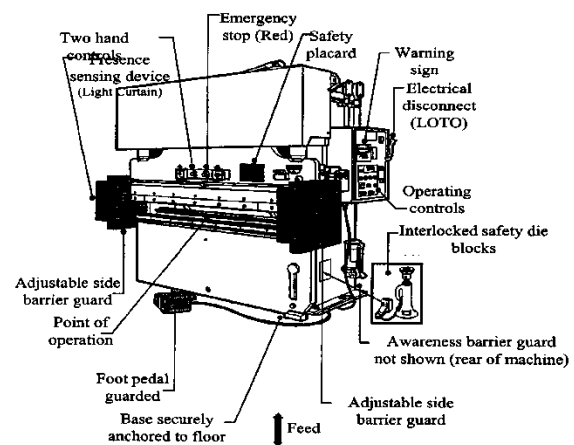
Provide safeguards for all other moving parts of the machine; eliminate pinch points and shear points between material and machine body.

Make sure stop controls shall be readily accessible to all operators.

Unguarded Press Brake



Guarded Press Brake

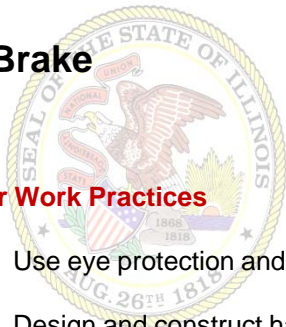


References: 29 CFR 1910.212; ANSI B11.3; See also OSHA CPL 2-1.25, *Guidelines for Point of Operation Guarding of Power Press Brakes* for limited use of "safe distance" safeguarding.

Case Study

An operator was bending metal parts using a 36-ton part-revolution power press brake that was foot-activated and equipped with a light curtain. About 3-4 inches of the light curtain had been "blanked out" during a previous part run. While adjusting a part at the point of operation, the employee accidentally activated the foot pedal and crushed three fingers.

Press Brake



Safer Work Practices

- ❖ Use eye protection and hearing protection; use gloves when handling sharp materials.
- ❖ Design and construct hand tools so they do not, in themselves, create a hazard when used.
- ❖ Prohibit use of hand tools in lieu of point of operation guarding.
- ❖ Establish a die-setting procedure using control devices or safeguarding means to protect the die setter(s) from hazards.
- ❖ Instruct operator in the correct method to hold the workpiece to prevent injury caused by a hazard between the workpiece and the machine or its attachments during bending.
- ❖ Establish a procedure for safe removal of jammed material or work pieces.

The number of accidents and the circumstances in which they occur show that most can be avoided by a knowledge of the risks and by adopting safety measures. The simple safety steps given will help to prevent most accidents. You may find them useful as a safety check list.