What is a press brake and what standards and rules apply?

A press brake is a machine used to punch, form, and bend metal. Press brakes are covered under Part 1 General Provisions R4081.0034 (4) and (5). Press brakes are activated by a foot pedal, two hand controls, or both used in sequence.

When is operator protection required while operating a press brake?

Any time a press brake is in use and there is point of operation or pinch point opening more than ¼-inch, operator protection is required. Without protection a press brake is dangerous and can cause severe injuries.

What types of operator protection is used for press brakes?

Press brakes have various types of operator protection available depending on how the press brake is used. Refer to the Operator Protection Decision Flow Chart on page 2.

Point of Operation Guards and Devices

Light curtains and other presence sensing devices are effective protection methods for press brakes. Light curtains can be set up to activate during the hazardous part of the cycle, and muted during the non-hazardous part of the cycle. Muting allows the bending to occur without interrupting the light curtains. Refer to diagram on page 2.

Two hand controls are effective when the parts are small, can be placed on holders, and parts don’t require holding during the bend. Magnets and other devices can hold the part in place. Two hand controls can also be used to lower the ram to ¼-inch or less and then change to foot pedal to complete the bend.

Pullbacks and restraints can be used to prevent hands from entering the point of operation. Pullbacks are adjusted to allow more access to the die opening but pulling the hands back during the hazardous closing of the die. Restraints have a fixed position to prevent hands from entering the point of operation.

Barrier guarding is more common on press brakes when used in conjunction with other guards and devices. Barrier guards may protect exposed portions of the die other than where the bending takes place.

Other Operator Protection

Hand tools are required if guards or devices are not used and the operator is required to hold work pieces within 4-inches of the point of operation. They must be designed to prevent hands from entering the point of operation. A sign must be placed in plain view on the machine stating “Hand tools shall be used to hold stock.”

Hand tools may be used in conjunction with other guards or devices such as restraints, pullbacks or barrier guards to allow the operator to place small parts in the point of operation.

If there are 25 or more work pieces of one specific bend, a guard or device is required and hand tools are not permitted alone as operator protection.

Safe distance is a form of operator protection that should be used only when other protection is not possible. Safe distance protection may be applied when the operator is not required to hold the work piece within 4-inches of the point of operation. Safe distance is measured 4-inches or more from tooling or the pinch point closest to the operator.

When safe distance is used for operator protection there is an increased risk of injury. Point of operation guards and devices are a more effective method of operator protection.
Light Curtain Function Example Diagram

- **Active light curtain zone is “blanked” for feed table.**
- **Light curtain zone is active during down-stroke of press brake to protect operator from the point of operation opening hazard.**
- **Light curtain is “muted” when point of operation opening is 1/4-inch or less. Operator may enter the light curtain zone without interruption.**
- **Muted light curtain allows material to bend in the light curtain zone without interruption.**
- **The light curtain is muted during the up-stroke of the press brake.**

Press Brake Operator Protection Decision Flow Chart

1. **Point of operation opening is 1/4-inch or less.**
   - True: No point of operation guard or device is required.
   - False: Point of operation guard or device is required.
2. **Press brake operation includes stamping, piercing or shearing.**
   - True: Point of operation guard or device is required.
   - False: No point of operation guard or device is required.
3. **Holds work piece greater than 4-inches from point of operation opening.**
   - True: Hand tool is required and sign must be posted.
   - False: Point of operation guard or device is required.

*NOTICE:* To avoid a point of operation guard or device requirement for a press brake bending operation, one of the following conditions must be met:
1. The point of operation opening must be 1/4-inch or less.
2. Operator must hold the work piece greater than 4-inches from the point of operation opening at all times.

Through the MIOSHA and Precision Metalforming Association Alliance, this fact sheet was developed for informational purposes.