

GOT PRESS BRAKES? GET SAFEGUARDING!

PRESS BRAKE SAFEGUARDING BASICS



Press Brakes are currently a hot topic in the “Machine Safeguarding” arena. OSHA regulations consider press brakes to be a 1910.212 machine, saying to the employer; “one or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, in-going nip points, rotating parts, flying chips, and sparks”...1910.212 requirements are good place to start, but they leave out the details of exactly how to go about safeguarding any particular machine. Therefore, a reference to an ANSI Standard like B11.3 on press brakes is often used to identify specific safeguarding alternatives. ANSI B11.3 may however need some help from ANSI B11.19 on safeguarding methods, to provide a complete picture of how to go about protecting people.

Older press brakes, like those manufactured in the mid-1980’s and before, were mechanical (flywheel-type) machines, some of which are still in use today. Because the stopping times on mechanical press brakes are long, equally long light curtain safety-distances result, making that safeguarding device impractical in many cases.



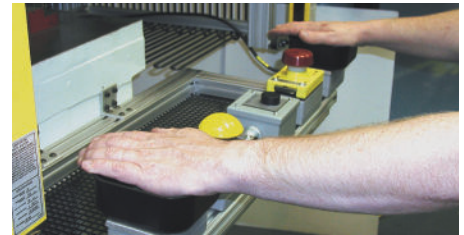
New Control System on a Mechanical Press Brake

Press brakes manufactured after the mid-1980’s are much more likely to be hydraulic. Hydraulic press brakes allow for a wider variety of safeguarding options than mechanical press brakes do, and offer faster stopping-times, resulting in closer safety-distances where light curtains or two-hand controls are used.

A common method of safeguarding press brakes is with a vertically mounted infra-red light curtain. Hydraulic press brakes allow for short stopping times so that a light curtain can be mounted relatively close to the dies.



Infra-red Light Curtain



Two-Hand Controls

Two-hand controls on press brakes are often used in the sequence-mode of operation where the actuators bring the machine down and stop before the dies close, allowing just enough die-space to feed the part. The part is placed in the remaining die-opening, then a foot-switch is used to make the bend and return the machine to its full-open position.

Safety distance is required for both light curtains, and two-hand controls. That distance must be calculated with a stop-time measurement (STM) device on a quarterly basis. STM readings must be documented to show safety inspectors.

ANSI B11.3 which was updated in 2012, offers two completely new categories of protection for hydraulic press brakes: Active Optical Protective Devices (lasers) and Safe Speed Safeguarding. Active Optical Protective Devices (AOPDs) detect hands and fingers in a danger area. The biggest attraction for AOPDs are for jobs where the operator must hand hold small parts up close to the dies. A unique feature of AOPDs is that they are designed to be mounted with zero safety distance, unlike light curtains that must be mounted at a calculated safety-distance, as outlined in ANSI B11.3. Safe Speed Safeguarding is based on a ram speed of 10mm per second or less, providing that speed is carefully monitored. Again, these two new methods of protection can only be applied to hydraulic press brakes (and potentially Servo-Drive Press Brakes).



Laser Scanner

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The Lazersafe Sentinel Plus is the most advanced guarding solution available designed specifically for hydraulic press brakes. The Lazersafe ties directly into the machine's existing hydraulic and electric control circuits, providing a Category 4 solution. The Lazersafe is CE rated and allows machine operators to hold workpieces within 20mm of the point of operation. Encoder feedback ensures that the speed and position of the tooling is continuously monitored, and a 4.3" HMI provides machine operators immediate feedback of all vital functions. The Lazersafe Sentinel Plus is compatible with a wide variety of machines and tooling types, material thickness and easily allows for box shapes to be formed.



*Lazersafe Sentinel Plus
Press Brake Guarding System*

The backs of press brakes cannot be left wide open. Two hazards exist often exist here. The first is reaching the dies from the back. The second is the possibility of a multi-axis back gauge moving and creating pinch points. As to exactly what is required on the back of equipment often depends on local OSHA interpretation. The very least, an awareness barrier, like a railing, chain, or cable with a "Danger" or "Warning" sign, complete with Pictograms, not just verbiage.



For local OSHA interpretations that won't accept awareness barriers, a full perimeter guard may be the answer for the back of a press brake. That guard can either be bolted into position, or if it's movable, an electrical interlock switch can be installed to make sure it stays closed.



Perimeter Guard

As with any industrial machine, Lockout/Tagout on Press Brakes must strive for "Zero Energy State" to and within each piece of equipment using both locks and tags.

Also mentioned in the ANSI standard is die safety blocks; please see our related blog post on "Demystifying Die Safety Blocks".

Please call 1-800-922-7533 or visit rockfordsystems.com for more information.