



Hazards of Printing Presses

Printing presses vary by type and size, ranging from relatively simple manual presses to the complex large presses used for printing newspapers, magazines, and books. Printing presses are often part of a larger system that also includes cutting, binding, folding, and finishing equipment. Many modern printing presses rely on computer controls, and the high speeds of such equipment often require rapid machine adjustments to avoid waste.

This section discusses amputation hazards associated with two common types of printing presses: web-fed and sheet-fed printing press systems.

- Web-fed printing presses are fed by large continuous rolls of substrate such as paper, fabric, or plastic;
- Sheet-fed printing presses, as their name implies, are fed by large sheets of substrate.

In both types, the substrate typically feeds through a series of cylinders containing printing plates and supporting cylinders moving in the opposite direction.

As with other machines, printing press-related amputations occur during servicing and maintenance activities. For example, amputations occur when employees get their fingers or hands caught in the in-going nip points created between two rollers while:

- Hand-feeding the leading edge of paper into the in-running rollers during press set-up while the machine is operating;
- Adjusting ink flow on a press;
- Cleaning ink off the press while it is operating;
- Attempting to free material from the rollers;
- Straightening misaligned sheets of paper in the press;
- Jogging the printer and making adjustments to the equipment (such as adjusting the nip wheel on a sheeteer);
- Using rags to clean machinery adjacent to unguarded rollers.

Source: OSHA IMIS Accident Investigation Database.

Safeguarding Printing Presses

As with most machinery, you can rely on primary safeguarding methods to protect employees against injuries when using printing presses. For example, some primary safeguarding methods include the following:

- Install guards on all mechanical hazard points that are accessible during normal operation—such as accessible in-going nip points between rollers and power-transmission apparatus (chains and sprockets).
- Safeguard nip-point hazards with barrier guards or nip guards. Nip guards need to be designed and installed without creating additional hazards.
- Install fixed barrier guards, with tamper-proof fasteners, at rollers that do not require operator access.
- Properly designed, applied, and maintained safeguarding devices (such as presence-sensing devices and mats) may also be used to keep body parts out of machine danger areas. However, these control circuit devices are no substitute for lockout/tagout.

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- Use hold-to-run controls (such as inch or reverse) that protect employees from machine mechanical hazards by either:
 - 1) requiring the use of both hands for control initiation purposes; or
 - 2) are mounted at a safe distance so that an employee cannot inch or reverse the press and simultaneously access any unguarded danger area or otherwise reach into the danger zone while the press is operating.

Other Controls for Printing Presses

The following are some secondary safeguarding methods, work practices, and complementary equipment that may be used to supplement primary safeguarding either alone or in combination when primary safeguarding methods are not feasible:

- Make sure that printing presses attended by more than one operator or ones outside of the operator's viewing area are equipped with visual and audible warning devices to alert employees regarding the press's operational status—in operation, safe mode, or impending operation.
- Install visual warning devices of sufficient number and brightness, and locate them so that they are readily visible to press personnel.
- Ensure that audible alarms are loud enough to be heard above background noise.
- Provide a warning system that activates for at least 2 seconds prior to machine motion.
- Use additional secondary safeguarding methods such as safeguarding by location and safe work (operating) procedures for printing presses.
- Ensure that all press operators receive appropriate training and supervision until they can work safely on their own.
- Prohibit employees working with or near printing presses from wearing loose clothing or jewelry and require them to secure long hair with a net or cap.
- Conduct periodic inspections to ensure compliance.
- Perform servicing and maintenance under an energy-control program in accordance with the Control of hazardous energy (lockout/tagout), 29 CFR 1910.147, standard.

Sources of Additional Information

- OSHA Publication 3067, Concepts and Techniques of Machine Safeguarding (http://www.osha.gov/Publications/Mach_SafeGuard/toc.html)
- OSHA Machine Guarding eTool (<http://www.osha.gov/SLTC/etools/machine-guarding/index.html>)
- OSHA Lockout/Tagout Interactive Training Program (<http://www.osha.gov/dts/osta/lototrainning/index.htm>)
- ANSI B65.1-2005, Safety Standard – Printing Press Systems

Applicable Standards

- 29 CFR 1910.147, Control of hazardous energy (lockout/tagout).
- 29 CFR 1910.212, General requirements for all machines.
- 29 CFR 1910.219, Mechanical power-transmission apparatus.

Minor Servicing

At times, OSHA recognizes that some minor servicing may have to be performed during normal production operations, so a lockout/tagout exception is allowed. See the 29 CFR 1910.147(a)(2)(ii) Note for details. Minor servicing can include, among other things, tasks such as clearing of certain types of minor paper jams; minor cleaning; minor lubricating and minor adjusting operations; certain plate- and blanket-changing tasks; and, in some cases, paper-webbing and paper-roll changing. Generally speaking, minor servicing is considered to include those tasks involving operations that can be safely accomplished by employees and where extensive disassembly of equipment is not required. [See Loss Control Inch-SAFE-Service Risk Management Alert for complete guidelines.]

One such control method that does offer effective alternative protection is the Inch-SAFE-Service technique when it is used in conjunction with the main drive control. This technique is specified in the American National Standards (ANSI B65.1 and ANSI B65.2) for web- and sheet-fed printing presses and binding and finishing equipment, respectively.

Also, interlock guards and presence-sensing safeguarding devices, if properly designed, applied, and maintained, would also be considered effective protection. For example, you could simply open the barrier guard and rely on the protection afforded by the properly designed interlock control circuit while clearing minor paper jams and other minor servicing functions that occur using normal production operations and which meet the criteria in the lockout/tagout exception.

Source: 29 CFR 1910.147(a)(2)(ii) Note.