

Machine Guarding Standard – Metal Manufacturing

According to OSHA, amputations are among the most severe and disabling workplace injuries that often result in permanent disability. Each year approximately 6,200 amputations occur with 58 percent of amputations involving some type of machinery (U.S. Bureau of Labor Statistics 2018 survey). Therefore, there is a need to understand OSHA's requirement for guarding of machinery or equipment to protect employees from injury.



The metals industry faces its own unique challenges to meet OSHA's requirement for machine guarding. By understanding the requirements, "best practices" can be developed to control exposures associated with guarding machinery used in metal manufacturing. Here are some examples of common equipment requiring guarding in this industry:

- Power Presses – Punch Presses, Drill Press
- Press Brakes
- Shears
- Forming Rolls/Steel Slitting
- CNC Milling/Lathes
- Grinders – Bench, Belt
- Band Saws/Exposed Blades

How to Protect Employees:

The purpose of machine guarding is to protect the machine operator and other employees in the work area from severe injuries or even death. To assure operators are protected, the point of operation on machinery needs to be adequately guarded. The point of operation is the area on a machine where the work is performed. This can be where a metal product is being cut, bent, etc. The point of operation is where the greatest exposure exists for an employee injury. Guarding on machinery needs to be designed to prevent employees from having body parts enter the point of operation. The guards need to be secure and not allow workers to easily remove or tamper with any aspect of the guarding.

Types of Guarding:

OSHA's General Requirements for machine guarding fall under CFR 1910.212. This regulation requires one or more methods of machine guarding be provided to protect the operator and other employees in the machine area. There are different options to protect employees using guards or devices. Examples of guarding methods are barrier guards, two-hand trip devices, electronic safety devices, pullbacks/restraints, etc. It is important to know that there are multiple regulations, even specific requirements per type of guarding or device used on machinery. Below are a few pictures of adequately guarded machines.

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Two-Hand Device



Electronic Safety Device /
Light-Curtain



Fixed Barrier Guard

Hand Tools:

Special hand tools for placing and removing materials in and out of machinery can only be used to supplement protection, however, cannot replace machine guarding requirements. The hand tools should not create an additional hazard when used.

Machine Guarding Inspection:

The inspection of machine guarding should be completed on all equipment to ensure guarding meets OSHA's requirements to protect employees from serious injury. Both existing and new machinery should be inspected. Do not assume new equipment meets guarding requirements.

The use of machine guards and devices alone is not enough. Employee training and administrative controls can help prevent serious injuries also. A hazardous energy control (Lockout/Tagout) program needs to complement machine guarding methods to protect employees during maintenance work activities.

If you need additional information on machine guarding compliance, please contact your West Bend Mutual Insurance Loss Control Representative or check out these additional technical bulletins:

- Rockford Systems Machine Safeguarding Preferred Vendor Brochure
- Machine Guarding Inspection Checklist

Bureau of Labor Statistics, U.S. Department of Labor, *The Economics Daily*, Machinery involved in 58 percent of work-related amputations in 2018 on the internet at <https://www.bls.gov/opub/ted/2020/machinery-involved-in-58-percent-of-work-related-amputations-in-2018.htm>

OSHA Facts Sheets, Amputations: https://www.osha.gov/OshDoc/data_General_Facts/amputation-factsheet.pdf