



Loss Control TIPS

Technical Information Paper Series

Innovative Safety and Health SolutionsSM

Guarding Point of Operation Exposures: The Quarter-Inch Rule for Machine Safeguarding

What is the Point of Operation?

The *point of operation* is that place in a machine where material is altered (e.g., drilled or punched) and where value is added to the product. However, this value adding step can be rich with exposure to the operator. Point of operation (POO) exposures must be safeguarded.

For most material manipulations, if the exposure can be reduced to one quarter inch or less, there is no requirement to safeguard the exposure. This is the allowable opening that an OSHA compliance officer will accept because, by definition, it is not considered a hazard. Where is it determined that a one quarter inch opening is an acceptable exposure?

What is the Quarter-Inch Rule?

The answer comes primarily from the guidance found in the OSHA regulation 29 CFR 1910.217 (c)(1)(ii), which refers to point of operation guards for power presses. This reference states that the requirement to use Table O-10 "shall not apply to point of operation (POO) openings one-fourth inch or less." Simply put, if the exposure to the operator at the POO is "one-fourth inch or less," there is no requirement to safeguard the exposure. However, if the opening is greater than one-fourth inch, the exposure must be safeguarded.

Distance Of Opening From Point Of Operation Hazard (Inches)	Maximum Width Of Opening (Inches)
1/2 to 1-1/2	1/4
1-1/2 to 2-1/2	3/8
2-1/2 to 3-1/2	1/2
3-1/2 to 5-1/2	5/8
5-1/2 to 6-1/2	3/4
6-1/2 to 7-1/2	7/8
7-1/2 to 12-1/2	1-1/4
12-1/2 to 15-1/2	1-1/2
15-1/2 to 17-1/2	1-7/8
17-1/2 to 31-1/2	2-1/8

Source: OSHA: 29 CFR 1910.127



The OSHA regulation at 29 CFR 1910.212 (a)(3)(ii) for all machines states: "The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards [such as ANSI or OSHA] therefore, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operational cycle."

Table 0-10 is the appropriate guidance used universally by OSHA to apply to any machine safeguarding exposure for the point of operation. The more the point of operation is exposed, the greater risk there is to the operator.

The Quarter Inch Rule is Widely Used

Similar application of the principle can be found in other standards:

- A correctly adjusted tongue guard for an abrasive grinder is set to one quarter inch from the grinding wheel. (Incidentally, remember that one eighth of an inch is the maximum opening between a grinding wheel and its tool rest.)
- A rigid guard for the in-running nip of a printing press is set one quarter inch from the surface of the rotating cylinder.
- The stroke for equipment cutting sheet metal or chopping light gauge scrap is frequently set to a maximum opening of one quarter inch.

In a variation of the theme, press brake safeguarding can be accomplished using the "two hand down and step through" technique. The operator places his or her hands on the two hand control buttons which bring the knife (sized for the operation) of the press brake down to within one quarter inch of the work piece. The operator then steps on the foot control to bring the knife into contact with the work piece, keeping the hands free to support other steps of the operation.

Consider Engineering To Reduce Exposure

Engineering production systems to keep exposures to an opening of one quarter inch or less is preferable to using guards to protect the point of operation. Engineering offers these advantages:

1. Guards do not have to be fabricated, so no cost or time is involved.
2. Maintenance staff does not have to worry about replacing guards following maintenance work if guards are not required.
3. Potentially serious injury to operators at the POO is truly minimized because of substantial engineering control.

Summary

Review your firm's compliance with point of operation safeguarding requirements. If cited by OSHA, these violations can be costly (depending on the number of pieces of equipment and number of exposed operators), because they will likely be rated "serious" for the point of operation.

Besides any observations that you make; here are four questions that you can ask about your operations:

1. Do you use standardized guidance (Table 0-10) to determine if all hard guards have been properly fabricated, set, or adjusted for the POO?
2. Do your (written) procedures for maintaining or servicing equipment include the removal and replacement of safeguards? Remember, lockout/tagout is required if safeguards are defeated or removed. (See 29 CFR 1910.147)
3. Are your operators trained and refreshed, on a scheduled basis, in what constitutes good safeguarding practice? (i.e., familiarization with their equipment safeguards, prerequisite equipment condition *before* operations, appropriate procedures, and reporting of deficiencies)
4. Do you perform self audits of your safeguard practices for both operator and maintenance groups on a periodic basis? (typically quarterly)

Even if production methods cannot be adjusted to apply the one quarter inch guidance (it is not an easy task), a supportable “yes” to each of the four questions indicates an operations management system that will enhance loss control and reduce the potential for injury.

References

1. United States Department of Labor. Occupational Safety and Health Administration. General Industry Standards. 29 CFR 1910.217 “Mechanical Power Presses.”
2. United States Department of Labor. Occupational Safety and Health Administration. General Industry Standards. 29 CFR 1910.212 “General Requirements for All Machines”

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