DEPARTMENT OF LABOR AND INDUSTRY

MNOSHA Instruction **STD 1-12.2B**
October 29, 2020

Subject: Metalworking Lathes - Safeguarding

Purpose

This instruction clarifies requirements for safeguarding lathes designed primarily for metal cutting, although they may be used for working other materials.

Scope

This instruction applies MNOSHA-wide.

References

29 CFR 1910.212(a)(1) requires one or more methods of machine guarding to protect the operator and other employees in the machine area from hazards such as those created by the point of operation, ingoing nip points, rotating parts, flying chips, and sparks.

ANSI B11.6-2001 (R2012), Safety Requirements for Manual Turning Machines, specifies the safety requirements for Manual Turning Machines with or without automatic control. The purpose of the ANSI B11 series of machine tool safety standards is to devise and propose ways to minimize risks of the potential hazards. This can be accomplished by appropriate machine design, by restricting personnel and other individuals' access to hazard areas, and by devising work procedures to minimize personnel exposure to hazardous situations.

ANSI B11.22-2002 (R2012), Safety Requirements for Turning Centers & Automatic Numeric Controlled Turning Machines, specify devices that minimize risks and improve safety.

29 CFR 1910.132: PPE assessment.

STD 1-6.6: PPE Used in General Industry.

Cancellations

This instruction cancels STD 1-12.2 Metalworking Lathes-Safeguarding, dated March 26, 2015.

Background

Machines covered by 29 CFR 1910.212 are intended to work metals and other man-made materials. This standard also applies to devices that are integral to the machine. These machines have automatic capability but may not be equipped with automatic part handling or bar-feed mechanisms nor automatic tool changing systems. This standard does not apply to NC Turning Machines where manual control is used only to set the machine for automatic production. See ANSI B11.22 for the safety requirements for Turning Centers and Automatic NC Turning Machines, and ANSI B11.13 for the safety requirements for Single-and Multiple-Spindle Automatic Bar and Chucking Machines.

Action

A. POINT OF OPERATION HAZARD

1. The point of operation on lathes, where the tool cutting edge is generating chips, will not require safeguarding. Although the point of operation itself does not present a hazard, flying chips, coolant, the rotating work piece, or the trapping area that exists when the tool approaches the work piece may create hazards to which employees could be exposed and may require safeguarding.

B. WORK HOLDING DEVICE HAZARD

1. When the operator is directly exposed within the danger zone to an unprotected hazard at the rotating work holding device (chuck) or driving device (dog) in the clamped mode, 29 CFR 1910.212(a)(1) shall be cited.

    a. The hazards that could exist at the rotating work holding device include components that project, are of irregular shape, or create a pinch point.

2. The operator is to be effectively protected by location, machine components, or other means such as a fixed or movable guard, device, awareness barrier, or peripheral cover over hazardous areas exposed to the operator. To be effectively protected by location, the operator's normal working position when the work piece is rotating should be far enough away from the hazard so the operator could not become injured through an accidental or inadvertent act.

3. Where the hazard cannot be feasibly eliminated by design or protection, precautionary instructions shall be given by the employer. This instruction or warning may take the form of method sheets, formal verbal instructions, color coding, or warning signs. A citation under AWAIR (lack of hazard analysis), and/or 29 CFR 1910.145(c)(3) (warning signs) may be issued as appropriate for lack of instruction or warning.

C. LOADING AND UNLOADING POWER-OPERATED WORK-HOLDING DEVICES

1. When power-operated work-holding devices have a clearance 1/4" or more from the surface of the work piece to be gripped, a means shall be provided to protect the operator or, if this is not feasible, precautionary instructions shall be given to the operator so that the operator is aware of the possible pinch-point hazard.

    a. These instructions may take the form of method sheets, formal verbal instructions, color coding, warning signs, etc. Cite AWAIR (lack of hazard analysis) and/or 29 CFR 1910.145(c)(3) for lack of instructions.

D. TOOL TRAPPING SPACE HAZARD

1. A fixed or moveable guard, device, awareness barrier, or awareness device shall normally be required when a lathe operates in the automatic or semi-automatic mode and a tool trapping space is created by rotating or non-rotating components where their relative motion is not directly controlled or initiated by the operator. This guard or device will not be required if the operator is effectively protected by location, lathe components, or other means.

    NOTE: Lathes operated in the manual, jog, or setup mode do not require safeguarding of the tool trapping space. When tracing is being performed, safeguarding of the tool trapping space shall not be required if each cycle (function) must be initiated by the operator.

E. INDEXED TURRET HAZARD

1. Turrets that are manually indexed are not considered a hazard which needs safeguarding.

2. A power-indexed turret containing an exceptionally long tool or tool-holding device which extends into the operator's normal work area shall require fixed or moveable guards, awareness barriers, railings, or some other safeguarding method. 29 CFR 1910.212(a)(1) shall be cited for this hazard.

3. Safeguarding does not need to be applied when the lathe is operated in the manual mode or during setup.

F. VERTICAL LATHE SAFEGUARDING

1. If the operator or other employees are exposed to rotating parts of a vertical lathe, an awareness barrier shall be provided that extends at least 42" above the floor or platform of the operator's normal work area. If there is no barrier, 29 CFR 1910.212(a)(1) shall be cited.

2. When the lathe operator's position is in or on a moving or stationary platform, the use of a restraining device such as a seat belt used in conjunction with a fixed seat or partial enclosure is acceptable in lieu of the 42" barrier.

G. CHIP OR COOLANT HAZARD

1. Where there is a hazard to the operator or other employees from flying chips or coolant splashes, a permanent or portable chip or coolant shield or other safeguarding means shall be provided. The shield may be either transparent or nontransparent and should be placed and used such as to most effectively control the chips or coolant.

    a. 29 CFR 1910.212(a)(1) shall be cited for the flying chip hazard.

    b. 29 CFR 1910.132(a) shall be cited to require shields or equivalent personal protective equipment if the coolant splashing is capable of causing skin irritation, other than to the eyes and face.

        1) If the shield does not protect splashes to the eyes and face, cite 29 CFR 1910.133(a)(1).

        2) Additionally, see STD 1-6.6 for guidance on citations of PPE, and 29 CFR 1910.132(d) for additional PPE assessment citation.

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