OSHA Guard Safety Scale

Point-of-operation barrier guards must be designed, constructed, applied, and adjusted so that individuals cannot reach through, over, under, or around the guards and reach the hazard. Most barrier guards have openings in them due to their design or because they are constructed out of materials such as wire mesh, expanded metal, rods, or hairpins. These openings must be checked for safety compliance.

Table O-10 and the Safe Openings Diagram of OSHA 29 CFR 1910.217 for mechanical power presses are used for reference when determining maximum guard openings and minimum mounting distances of barrier guards so that body parts such as hands and fingers cannot reach the hazard area. The dimensions in Table O-10 and the Safe Openings Diagram come from a series of machine-guarding drawings developed by Liberty Mutual Insurance Company in the 1940s. These drawings represent the relationship between guard openings and mounting distances. The recommended dimensions in these drawings are based upon what was then termed “average-size hands.”

ANSI incorporated the recommended dimensions from Liberty Mutual’s machine-guarding drawings into its 1971 revision of the ANSI B11.1 safety standard for mechanical power presses. OSHA used ANSI B11.1-1971 as the basis for its own mechanical power presses standard, 1910.217, which was also published in 1971. Therefore, Liberty Mutual’s machine-guarding drawings and their recommended dimensions were used for Table O-10 and the Safe Openings Diagram of OSHA 29 CFR 1910.217, which remain unchanged and are still used today for compliance.

Our OSHA guard safety scale can check the openings in barrier guards for OSHA compliance. The yellow-colored, three-section folding scale has inches on both sides and includes the maximum permissible opening of six inches. It is made out of anodized aluminum and has easy-to-read text and graphics that will not rub or scratch off. It can be used during the design, installation, and inspection of barrier guards to make sure they comply with OSHA 29 CFR 1910.217.

OSHA Guard Safety Scale
Part No. OGSS-217
Point-of-operation barrier guards must be designed, constructed, applied, and adjusted so that individuals cannot reach through, over, under, or around the guards and reach the hazard. Most barrier guards have openings in them due to their design or because they are constructed out of materials such as wire mesh, expanded metal, rods, or hairpins. These openings must be checked for safety compliance.

ANSI (American National Standards Institute) and CSA (Canadian Standards Association) standards are used for reference when determining maximum guard openings and minimum mounting distances of barrier guards so that body parts such as hands and fingers cannot reach the hazard area.

Although an original study and drawings for machine guarding were created in the 1940s, it wasn’t until the mid-1990s that a comparison of newer studies to the original drawings had been done. In 1995, a study entitled “A Review of Machine-Guarding Recommendations” was published in Applied Ergonomics (Vol. 26, No. 2, pp. 141–145); Donald R. Vaillancourt and Stover H. Snook of the Liberty Mutual Research Center for Safety and Health conducted this study. The purpose of their investigation was to determine whether the original drawings from the 1940s were still consistent with the data in the modern studies, especially relating to women and minorities, who are now much more prevalent in the American workplace. In their study, Vaillancourt and Snook compared data from six anthropometric surveys to the original machine-guarding recommendations.

Vaillancourt and Snook found many of the dimensions in the original drawings to be valid. However, they suggested several important modifications. Moreover, several of the dimensions from the original 1940s drawings showed no correlation to body reference points, so Vaillancourt and Snook suggested that they be eliminated.

The drawings from Vaillancourt and Snook’s study have been adopted and are used in several current ANSI B11-series safety standards for machine tools as well as in the ANSI/RIA R15.06 safety standard for industrial robots and robot systems. The data from the study is also used by Canadian safety standards CSA Z142 for power presses, CSA Z434 for robots, and CSA Z432 for safeguarding of machinery.

Our ANSI and CSA guard safety scale can check the openings in barrier guards for ANSI and CSA compliance. The gold-colored, folding scale has inches on one side and millimeters on the other. It is made out of anodized aluminum and has easy-to-read text and graphics that will not rub or scratch off. It can be used during the design, installation, and inspection of barrier guards to make sure they comply with ANSI and CSA machine and robot safety standards.
**Fan Guard Safety Scale**

According to OSHA 29 CFR 1910.212(a)(5), "When the periphery of the blades of a fan is less than seven (7) feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than one-half (½) inch."

Our one-of-a-kind, U.S. Copyright Office–registered fan guard safety scale can easily check the openings in fan guards for OSHA compliance. The blue-colored scale is made out of durable, 0.090”-thick anodized aluminum, it has a 0.25”-diameter hole, and it has easy-to-read text and graphics that will not rub or scratch off. It is about the size of a credit card, which makes it convenient to carry and store.

**Fan Guard Safety Scale**  
Part No. FGSS-150

![Fan Guard Safety Scale](image)

Checking a fan guard that is in compliance.

Checking a fan guard that is not in compliance—a piece of the wire guard is broken off, allowing more than a 1/2” opening.

**Point-of-Operation-Opening Safety Scale**

OSHA 29 CFR 1910.217(c)(1)(i) requires point-of-operation guards or properly adjusted point-of-operation devices on every operation performed on a mechanical power press. However, according to 29 CFR 1910.217(c)(1)(ii), this requirement does not apply when the point-of-operation opening is 1/4" or less.

A 1/4" (6 mm) or less point-of-operation opening is common on machines that have a very short working stroke and in situations where the hazard has been designed out.

Our unique point-of-operation-opening safety scale can quickly check the point-of-operation opening for no safeguard required in accordance with OSHA 29 CFR 1910.217(c)(1)(ii) as well as applicable ANSI (American National Standards Institute) and CSA (Canadian Standards Association) machine safety standards. It has a tapered design allowing it to be used in tight, obstructive areas. The natural-aluminum scale is made out of durable, 0.090”-thick anodized aluminum, it has a 0.25”-diameter hole, and it has easy-to-read text and graphics that will not rub or scratch off. It is about the size of a credit card, which makes it convenient to carry and store.

**Point-of-Operation-Opening Safety Scale**  
Part No. POSS-250

Price: $9.25

![Point-of-Operation-Opening Safety Scale](image)
Osha 29 CFR 1910.215 for grinders is one of the most frequently cited machine-safety standards for violations during OSHA machine-safety inspections. This is due to improperly adjusted work rests and tongues on bench grinders (sometimes called offhand or pedestal grinders). According to 29 CFR 1910.215(a)(4), work rests must be kept adjusted closely to the wheel with a maximum opening of 1/8” to prevent the workpiece from being jammed between the wheel and the rest, which may cause wheel breakage. In addition, 29 CFR 1910.215(b)(9) states that the distance between the wheel periphery and the adjustable tongue must never exceed 1/4”.

Since many people are unaware of these OSHA-required adjustments for bench grinders, our U.S. Copyright Office–registered bench grinder safety scale can check the openings between the grinding wheels and the tongues and work rests for compliance with OSHA 29 CFR 1910.215 as well as the ANSI B11.9 and ANSI B7.1 grinder safety standards (which have the same requirements). This scale has a 0.25”-diameter hole in it for attachment to bench grinders for easy verification of the proper adjustments by employers and operators.

The orange-colored scale is made out of durable, 0.090”-thick anodized aluminum and has easy-to-read text and graphics that will not rub or scratch off. It is about the size of a credit card, which makes it convenient to carry and store. It can be used during the installation, maintenance, and inspection of bench grinders to make sure the work rests and tongues comply with OSHA and ANSI safety grinder standards, which can help reduce OSHA violations.

Bench Grinder Safety Scale
Part No. BGSS-102