

GOT GRINDERS? GET SAFEGUARDING!

SAFEGUARDING STANDARDS FOR BENCH AND PEDESTAL GRINDERS

Grinders are one of the most frequently cited machines during OSHA machine-safety inspections. This is frequently due to improperly adjusted work rests and tongue guards on bench/pedestal grinders, as well as a lack of ring testing for the grinding wheels.



OSHA 29 CFR SubPart O 1910.215 is a “machine specific” (vertical) regulation with a number of requirements, which if left unchecked, are often cited by OSHA as violations. ANSI B11.9-2010 (Grinders) and ANSI B7.1 2000 (Abrasive Wheels) also apply.

WORK RESTS AND TONGUE GUARDS

OSHA specifies that work rests must be kept adjusted to within 1/8-inch of the wheel, to prevent the workpiece from being jammed between the wheel and the rest, resulting in potential wheel breakage. Because grinders run at such a high RPM, wheels actually explode when they break, causing very serious injury, like blindness and even death.

In addition, the distance between the grinding wheel and the adjustable tongue guard (also known as a “spark arrestor”) must never exceed 1/4-inch. Because the wheel wears down during use, both these dimensions must be regularly checked/adjusted.

“Grinder safety gauges” can be used during the installation, maintenance, and inspection of bench/pedestal grinders to make sure the work rests and tongue guards comply with OSHA’s 1910.215 regulation and ANSI standards. Wait until the wheel has completely stopped and the Grinder is properly “Locked Out” before using a “grinder safety gauge”. Grinder coast-down time takes several minutes, which tempts employees to use the “grinder safety gauge” while the wheel is still rotating. This practice is very dangerous because it can cause wheel breakage.



Grinder Gauge 1/8 Work Rest



Grinder Gauge 1/4 Tongue Guard

Where grinders are concerned, personal protective equipment (PPE) usually means a full face-shield, not just safety glasses. You cannot be too careful with a machine that operates at several thousand RPM.

Remember, you must DOCUMENT any and all safety requirements set forth by OSHA, as that is their best evidence that safety procedures are really being followed.

RING TESTING

OSHA says that you must “ring test” grinding wheels before mounting them to prevent the inadvertent mounting of a cracked grinding wheel.



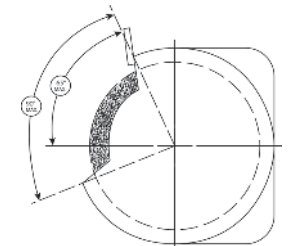
Ring Testing

Ring testing involves suspending the grinding wheel by its center hole, then tapping the side of the wheel with a non-metallic object. This should produce a bell tone if the wheel is intact. A thud, or a cracked-plate sound indicates a cracked wheel. NEVER mount a cracked wheel.

For larger grinders, grinding wheels are laid flat on a vibration-table, with sand evenly spread over the wheel. If the wheel is cracked, the sand moves away from the crack.

To prevent cracking a wheel during the mounting procedure, employees must be very carefully trained in those procedures. This starts with making sure the wheel is properly matched to that particular grinder, using proper blotters and spacers, and knowing exactly how much pressure to exert with a torque-wrench, just to mention a few things.

This OSHA-compliant “Wheel-Cover” allows no more than 90 degrees (total) of the wheel left exposed. (65 degrees from horizontal plane to the top of wheel-cover). Never exceed these wheel-cover maximum opening dimensions. Larger wheel-cover openings create a wider pattern of flying debris should the wheel explode. A well-recognized safety precaution on bench/pedestal grinders is to stand well off to the side of the wheel for the first full minute before using the machine. Accidents have shown that grinding wheels are most likely to shatter/explode during that first minute.



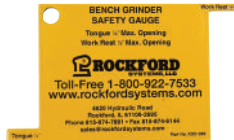
Wheel Cover

There is an OSHA Instruction Standard #STD 1-12.8 October 30, 1978 addressing the conditional and temporary removal of the “Work Rest” for use only with larger piece parts based on the condition that “Side Guards” are provided.

ROCKFORD SYSTEMS CAN HELP

BENCH GRINDER SAFETY GAUGE

The bench grinder safety gauge is laser-cut, Grade 5052 aluminum with H32 hardness. The safety yellow, durable powder-coated gauge has silk-screened text and graphics. The bench grinder safety gauge measures 2 3/4-inches wide by 2 1/4-inches high by .1000-inches thick and has a 1/4-inch hole for attachment to the bench grinder.



Grinder Safety Gauge

STANDARD MOUNT GRINDER SHIELDS

These standard mount grinder shields are available in various sizes for protection from the swarf of bench or pedestal grinders. The frames are constructed of reinforced fiber nylon or heavy cast aluminum. Each shield is furnished with a threaded support rod. The transparent portion of the standard mount grinder shields is made of high-impact resistant polycarbonate to minimize scratching and provide durability.

DOUBLE-WHEEL AND SINGLE-WHEEL BENCH GRINDER SHIELDS

Double-wheel bench grinder shields provide protection for both wheels of the grinder with one continuous shield. The durable shield is made of clear, 3/16-inch-thick polycarbonate and measures 18-inch x 6-inch. A special shield bracket adds stability to the top of the shield. The single-wheel bench grinder shield is made of clear, 3/16-inch-thick polycarbonate and measures 6-inch x 6-inch. This sturdy, impact-resistant shield is designed for use when a single wheel needs safeguarding. These shields have a direct-mount base that attaches directly to the grinder table or pedestal.



Direct-Mount or Magnetic-Mount Bench Grinder Shields with Flexible Arms

ELECTRICALLY-INTERLOCKED GRINDER AND TOOL GRINDER SHIELDS

These electrically-interlocked grinder and tool grinder shields are ideal for single- and double-wheel grinders. When the heavy-duty shield is swung out of position, the positive contacts on the microswitch open, sending a stop signal to the machine control. The safety microswitch electrical wires are furnished with a protective sheath and connect to the safety circuit of the machine that switches off the control to the movement



Electrically-Interlocked Grinder

of the grinding wheel. All safety micro switches are mounted in an enclosed housing with an enclosure rating of IP 67. The multi-adjustable, hexagonal steel arm structure allows easy mounting on the most diverse grinders. A versatile clamp allows horizontal and vertical adjustment of the shield. All electrically-interlocked grinder and tool grinder shields consist of a high impact-resistant, transparent polycarbonate shield with an aluminum profile support and provide operator protection from flying chips and coolant.

SINGLE-PHASE DISCONNECT SWITCH AND MAGNETIC MOTOR STARTER

This single-phase unit is designed for motors that have built-in overloads. Typical applications for these combinations include smaller crimping machines, grinders, drill presses, and all types of saws. The 115-V, 15-A disconnect switch and non-reversing magnetic motor starter are housed in a NEMA-12 enclosure. Enclosure size is 8" x 6" x 3-1/2". It includes a self-latching red emergency-stop palm button and a green motor control start push button. It can be used on machines with 115-V and is rated up to 1/2 HP maximum. The disconnect switch has a rotary operating handle which is lockable in the off position only. This meets OSHA and ANSI standards.



Single-Phase Disconnect Switch

DANGER SIGN FOR CUTTING AND TURNING MACHINES

Don't forget to post the appropriate danger signs near all machinery in the plant. The purpose of danger signs is to warn personnel of the danger of bodily injury or death. The suggested procedure for mounting this sign is as follows:

1. Sign must be clearly visible to the operator and other personnel
2. Sign must be at or near eye level
3. Sign must be PERMANENTLY fastened with bolts or rivets



Please call 1-800-922-7533 or visit www.rockfordsystems.com for more information.