

BENCH GRINDERS

One of the most common pieces of machinery in use in maintenance shops is the bench grinder. However, people who regularly use bench grinders may not be aware of their hazards.

Perhaps the biggest hazard occurs when fingers or hands get too close while grinding.

Another hazard associated with bench grinders is eye injuries. The grinding operation can loosen chips or particles that can fly into the eye of the person operating the grinder, even if safety glasses are being worn.

On rare occasions, excessive speed or damaged wheels can make an abrasive wheel disintegrate, which sends pieces of the abrasive wheel flying like bullets through the work area. With the employee standing directly in front of the bench grinder this could mean that these bullet-like fragments make a direct hit in the employee's abdomen, chest and face.

Some people think of those adjustable clear plastic shields that are present on many bench grinders as guards. The truth is that those adjustable pieces of clear plastic are likely more of a hazard than a guard. They are frequently dirty and scratched, making the view of the point-of-operation obscured. Furthermore, they may provide a false sense of security, that eye and face protection is not necessary. Many are surprised to learn that OSHA regulations mention nothing about having a clear plastic shield.

The guards that are required include an upper periphery tongue and side enclosure guards. (See diagram on the back of this brochure)

The upper periphery tongue is an adjustable guard that must be kept within $\frac{1}{4}$ inch of the wheel surface and thus must be adjusted as the abrasive wheel gets smaller. The purpose of this guard is simply to help contain the pieces in the event that the abrasive wheel breaks apart while spinning... Remember the bullet-like fragments mentioned above?

The side enclosure guards are plate-like pieces of metal that prevent contact with the spindle end and also help to contain fragments in the event that the abrasive wheel breaks.

Although not technically a "guard," OSHA requires bench grinders to have a work-rest that can support the object being ground. The work-rest can't be more than one-eighth of an inch away from the wheel. Therefore (like the upper periphery tongue) the work-rest must be adjusted as the abrasive wheel gets smaller in diameter. Otherwise, there's a risk that the object being ground will jam between the wheel and the work-rest, which could break the wheel or risk injury to the operator's fingers.

Although the guards and work-rests (if properly adjusted) will help prevent injuries, proper care of the abrasive wheels is also very important. The person mounting the wheel onto the bench grinder must make sure that the machine's *maximum operating speed* is no higher than the speed marked on the wheel. A mismatch could cause the wheel to disintegrate while in use.

Additionally, the abrasive wheels need to be inspected prior to mounting to make sure they haven't been damaged while being moved or stored. In addition to a visual inspection the person who is mounting the wheel should perform a "ring test." This "ring test" is very simple to perform. Simply tap (gently) a dry clean wheel with a light nonmetallic tool while it is suspended. The tap should produce a clear metallic "ping." If the sound is more like a dull thud, the wheel is probably cracked and shouldn't be used.

Another very important consideration when using bench grinders is the use of personal protective equipment. Safety glasses with side-shields in addition to a full-face shield should be worn whenever grinding.

Neither safety glasses nor a face shield provides ample protection alone. Although employees may be tempted to wear gloves to protect their hands, gloves are not recommended when working

near any rotating equipment, as the glove could be pulled into the grinder and pull the employee's hand in too. Because of the same concern, employees should be instructed not to wear anything loose that could get caught in the bench grinder. Scarves, ties, loose hair, and dangling jewelry are dangerous around any rotating equipment.

Last, but certainly not least important, employees who operate bench grinders should be provided with training. Because bench grinders are so commonplace and are operated countless times without injury, employees can easily become complacent. This training should include the topics discussed above (guards, abrasive wheel mounting and inspection, and personal protective equipment), but should also include instruction relative to work practices. The specific content of this training will depend upon the specific characteristics of the grinders and the items being ground. However, a few fairly common rules are provided below to provoke thought.

- Whenever adjusting the upper periphery guard or work-rest make sure that the bench grinder is unplugged to prevent it from starting if the power switch is bumped.
- Grind only on the face of the wheel. Grinding on the side can cause the grinder wheel to explode due to heat stress buildup.
- Don't use stone-type grinding wheels to grind aluminum, brass, or copper because the soft metal becomes imbedded in the stone, overheats, and can explode.



**The wheels can revolve at 10,000 surface feet per minute.
A hand or finger that hits the moving wheel surface is in
real danger of being mangled or cut off.**

For additional information, review the web sites listed on the back of this brochure.

For additional information on bench grinder safety, review the following web-sites

www.elmacovijay.com/safetyrules.htm This site has a list of safety rules and operating procedures for bench and pedestal grinding operations.

http://www.ccohs.ca/oshanswers/safety_haz/abrasive_wheels/safeuse2.html This site addresses the question, "What safety procedures should you follow when using bench and pedestal grinders?"