



**JOB AID**

**Bench Grinder Safety**

# Bench Grinder Safety

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## Common Causes of Injury

Bench and pedestal grinders are powerful tools that require precision and precaution. A jagged wheel fragment can fly fast enough to penetrate the soft tissue of your neck, eyes and face.

In addition to projectiles from wheel breakage, other common hazards are:

- Contact with the wheel
- Burns and fires from sparks and hot parts
- Flying chips, debris and parts of the grinding wheel
- Exposure to loud noise and grinding dust
- Slippery floors from grinding dust and particles
- Entanglement in rotating equipment

## Safety Features of a Bench Grinder

- The **tongue guard** (spark guard) is adjustable and helps contain sparks and particles thrown from the wheel. This guard plays an important role in containing shrapnel from wheel breakage
- The **flange** is designed to grip the grinding wheel more securely and distribute contact stresses applied during tightening – stresses on the side of the wheel that can damage or break it
- The **spindle guard** (side guard) covers the side surfaces of the wheel and protects the operator from abrasions, entanglement and thrown particles in the event of wheel failure. It also protects against inadvertent contact with the wheel sides, which can lead to wheel breakage
- The **eye shield** provides another layer of protection against thrown particles. Some grinders don't have this feature, but when present it must be maintained.
- The **work rest** (tool rest) helps steady the workpiece. The work rest is adjustable to maintain a narrow gap, or nip area. The larger the gap, the greater the risk of materials becoming jammed between the rest and the wheel, and the greater the risk of serious hand injuries and wheel breakage

## General Precautions and Safe Use

Some general precautions you can take for your safety include:

- Inspecting the grinder before each use
- Not wearing anything that may get caught in moving parts, such as loose clothing, neckties and jewelry
- Containing long hair
- Avoiding reaching past the wheel
- Never leaving the grinder running unattended
- Keeping the work area clean
- Wearing eye and face protection at all times (safety glasses with side shields and face shield) and body, foot and hearing protection as required
- Working in well-ventilated areas with approved safety equipment, including respiratory protection as required
- Using locking pliers, tongs or another method for holding the work

Gloves should be worn with caution. The spinning wheel could grab a glove and pull your hand into the grinder. If worn, they must be tight fitting. Follow your employer's policy.

### ***Tips for Safe Use***

- Ensure the grinder is mounted on a solid bench or pedestal and securely bolted to a rigid mounting surface
- Unplug the grinder when changing the wheel or adjusting the guards, and make sure that the switch is in the "off" position before plugging in the grinder
- Grind only on the grinding face of the wheel to prevent weakening or breaking the wheel or injury
- Whenever possible, use the work rest to support the workpiece during the grinding operation. Turn the grinder off if it jams
- Gradually increase the feed rate as the wheel comes to speed and warms up. Never force the workpiece into the grinder

### **Wheel Maintenance, Selection and Testing**

- Dress (trim) the wheel face periodically
- Never grind soft metals like aluminum
- Replace cracked and chipped wheels IMMEDIATELY
- Worn wheels MUST be replaced when guards will not adjust inward enough to maintain required tolerances
- When replacing a worn wheel, remove grinding dust from the wheel guard area. Wear gloves to protect your hands from hot or sharp pieces that may be present as a result of normal use
- Choose a grinding wheel of a suitable size and speed for the grinder, as indicated by the grinder's data plate and wheel markings, and the dimensions listed in the owner/operator manual
- Conduct a ring test by suspending the wheel on a string or on the shank of a screwdriver, tapping the outer edge with a non-metallic object, and listening for a "ring"
  - Rotate the wheel 45 degrees and repeat the test
  - Discard any wheel that doesn't "ring" as it probably has an internal defect
- Store wheels vertically and in a rack to avoid damage

### **Wheel Replacement**

Follow these steps ONLY AFTER REMOVING THE POWER:

1. Tighten the spindle nut just enough to prevent the wheel from slipping, but not so much that the wheel is damaged from the stress.
  - a. Reattach the side guard so that it covers the spindle, flange, nut and at least 75% of the grinding wheel periphery
2. Readjust the tongue guard and work rest clearance to the MINIMUM clearance of 1.6 millimeters (1/16 inch).
3. Position the eye shield so that it is in the line of sight to the work rest.
4. Turn the wheel by hand, making sure it is clear of obstructions and that it turns freely.
5. Remove adjusting tools, check that the controls are switched off, and restore power.
6. Stand to the side for a minute of rotation at full speed. If the grinder doesn't come up to speed smoothly and without vibration, shut it off immediately and determine the reason.