

BENCH GRINDERS

OFTEN UNCONSIDERED RISKS & MITIGATIONS

RISK ASSESSMENT

All machine safeguarding should start with a risk assessments for the specific task, application, and environment. A great place to start that assessment is with consideration of OSHA 1910.212(a) (1):

“One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are—barrier guards, two-hand tripping devices, electronic safety devices, etc.”

Nevertheless, risk assessments for standard shop tools share many similarities and the discussion below will help to identify hazards and remediation strategies.

MOST SIGNIFICANT BENCH GRINDER HAZARDS

1. **Shrapnel From a Wheel Explosion** (Fatalities Common)
2. **Clothing and Appendages Getting Caught In The Wheel Housing** (Amputations Common)
3. **Contact with Grinding Disc** (Abrasions and Lacerations Common)
4. **Flying Chips, Sparks, Coolant, and Other Debris** (Irritation, Burns, and Eye Injury Common)

OFTEN UNCONSIDERED FACTORS

Many EHS experts fail to consider the greater context of the operation, including the time before and after the intended operation. There are two significant exposures to consider:

1. **Silent But Deadly Coasting**

Bench grinders are notorious for exceedingly long spin-down times between 2 and 4 minutes. During this time, a well tuned grinder offers no auditory or visual cues that it is still spinning. All of the aforementioned hazards are still present during this coast-down time and the risk is multiplied because subsequent operators and other nearby employees are not conscious of the hazard and therefore at greater risk of injury.

2. **Visual Aides & Realistic Expectations**

The best way to prevent getting caught in the wheel housing and to limit the severity of a wheel explosion is to regularly measure and adjust work rests and tongue guards to meet OSHA requirements. With work rest angle adjustments and the the variability of worn wheel diameters as everyday variables, this is a verification that should happen each time you step up to a grinder. However, an operator's visual assessment of these spacings is highly variable and most don't take the time to find a measuring device. That leaves them at risk.

MITIGATION STRATEGIES

The table below focuses on the less commonly known mitigation strategies and does not include other common requirements such as chip guards, shields, PPE, equipment inspections, side guards, or scheduled maintenance.

Hazard	Activity	Mitigation
Shrapnel from a wheel explosion	- During grinding - After grinding	- Develop procedures for visually inspecting and ring testing new grinding wheels before they are mounted [OSHA 1910.215]. - Install a tethered grinder gauge and develop procedures to verify rest and tongue guard spacing [OSHA 1910.215].
Getting caught in wheel housing	- During grinding - Before/after grinding	- Bring the grinding wheel to a controlled stop before the operator leaves the machine by installing a motor brake. ⚡ - Install anti-restart protection [1910.213(b)(3)]. ⚡ - Install a tethered grinder gauge and develop procedures to verify rest and tongue guard spacing [OSHA 1910.215]. - Approved lockout/tagout means and procedures [OSHA 1910.147]. ⚡ - Install an emergency stop button [NFPA 79]. ⚡
Contact with grinding disc	- During grinding - Before/after grinding	- Bring the grinding wheel to a controlled stop before the operator leaves the machine by installing a motor brake. ⚡ - Install anti-restart protection [OSHA 1910.213(b)(3)]. ⚡ - Approved lockout/tagout means and procedures [OSHA 1910.147]. ⚡ - Install an emergency stop button [NFPA 79]. ⚡
Flying chips, sparks, and/or coolant	- During grinding - Before/after grinding	- Install a tethered grinder gauge and develop procedures to verify rest and tongue guard spacing [OSHA 1910.215]. - Provide and wear PPE.

Table 1 – Bench Grinder Hazards & Mitigations; GREEN = preventative, RED = lessening of incident severity

AN ALL-IN-ONE SOLUTION ⚡

The MAKESafe Power Tool Brake is a plug-and-play braking solution for grinders that also includes anti-restart and emergency stop. The lightning symbol above indicates each of the mitigation strategies provided by this all-in-one device. All you have to do is plug it in, perform a calibration that takes less than five minutes, and you've added multiple machine safeguards to your bench grinder. See a demonstration video and device specifications online for more information.

