Machining

What You Should Know About Grinding Wheel Guards

Brought To You by Norton Abrasives | Feb 05, 2020

Reports indicate customers in the grinding wheel industry break approximately one grinding wheel per day. Most of these breakages are caused by human error, do not result in personal injury, and generally go unreported. Grinding wheel guards are one of the key components in keeping these grinding wheel mishaps from becoming a personal injury.

Dangerous Conditions Caused by the Ineffective Use of Grinding Wheel Guards

Incorrect: Cup wheels such as Type 6 and 11 used on a portable angle grinder with a Type 27 and 28 raised hub or depressed center grinding wheel guard.

Explanation: While a properly adjusted Type 27 and 28 guard works with a Type 27 or Type 28 wheel, it offers little or no protection with a Type 6 or 11 cup wheel. The cup wheel "hangs" below the guard meant for a Type 27 or Type 28 wheel and in the event of a wheel breakage, it offers little or no protection.

Incorrect: Straight cutting off wheels such as Type 41 (formerly denoted as Type 1) used on a portable angle grinder with a Type 27 and 28 raised hub or depressed center grinding wheel guard.

Explanation: Type 27 and 28 guards are open on the bottom to allow for side grinding with raised hub/depressed center wheels. When side grinding with the Type 27 or Type 28 wheel, the workpiece acts as a portion of the guard, protecting the operator in the event of a wheel breakage. Cutting off wheels are not designed for use on their side and must be used on their outer periphery only. Guards for cutting off wheels must cover a full 180° area on all sides of the wheel. When using a cut-off wheel with a Type 27 and Type 28 guard, there is no guard on one side of the wheel, protecting the operator in the event of a wheel breakage. Do not use cut-off wheels on angle grinders without the proper guard.

Incorrect: Floorstand grinders that use foundry wheels 24" and larger, equipped with the old style guards that have not been retrofitted, are dangerous. These guards are not equipped with a self-closing device and when a wheel breakage occurs, it can result in serious injury or death.

Explanation: Since 1993, ANSI requires that all floorstand grinders using foundry wheels 24" and larger must be equipped with self-closing, or automatically closing guards. Self-closing or automatically closing guards save lives!

In Summary: Grinding wheel guards designed for one type of machine and used on another type of machine or the wrong guards for the type of wheel are dangerous.

Ineffective Grinding Wheel Guards:

1. The most ineffective guard is the one that has been removed from its machine and is sitting in storage. The removal of a wheel guard on a machine in operation is not only extremely dangerous, but illegal.

2. Using a damaged wheel guard is extremely dangerous to the safety of the operator and bystanders. Guards that are cracked, deformed, bent, or severely worn must be replaced. Once a guard has been damaged, it may become ineffective in a future wheel breakage. If a wheel breakage occurs, the guard must be inspected and if there is any sign of damage, the guard must be replaced.

3. Machines with missing wheel guard fasteners are also very dangerous. Sometimes during routine machine maintenance, the guard fasteners are damaged and not replaced when the machine is reassembled. During a wheel breakage, the missing fasteners may allow the guard to move, become unattached from the machine or open. This improperly attached guard may become a new hazard to the operator, exposing him/her to being injured by the guard or not containing the wheel fragments in the event of a wheel break.
4. A guard made of paper, tin, cloth, wood or other materials not designed to contain wheel fragments may fail when struck by a wheel fragment. Always use the guard that is recommended for the machine and its operation. Never paint or disguise the wrong material for a proper guard.
5. Guards that have been altered or cut back are dangerous. An example of this type of activity is the reduction in size of a Type 27 and Type 28 guard, from its original state (designed to cover the wheel and the plane of rotation between the machine and the operator for at least 180°) to only 90° coverage of the wheel. The potential danger to the operator is nearly as bad as having no guard in place.

Guards Not Properly Adjusted:

1. A wheel guard that is set too high on a portable angle grinder will allow the wheel to hang below the guard. This improper setting may render the guard useless in the event of a wheel breakage.

2. The wheel guard of a portable machine positioned improperly. A guard used on a portable machine must be positioned so it is located between the operator and the grinding wheel. Also, bystanders must not be positioned in front of the wheel guard's open area.

3. Failure to maintain the proper setting of the adjustable tongue guard (AKA spark arrester) on bench, pedestal, or small floor stand grinder. OSHA requires a maximum clearance of ¼" between the grinding wheel and the tongue guard. If a wheel breakage should occur, maintaining the proper distance will help to contain the wheel fragments and reduce the probability of an injury.

Previously Featured on Norton's Resources page.

