

Bench Grinder and Right Angle Grinder Safety

A continual training effort of TAP Automotive's IIPP

Bench Grinders are a common piece of equipment found in our shops that pose a potential to cause serious injury. Try to imagine a very high speed rotating stone wheel exploding in your face and understand the seriousness of the danger this equipment poses. Eye protection is mandatory for all grinding types. Gloves are highly recommended to protect operators' hands from impact injury and burns.

BENCH AND PEDESTAL GRINDERS SAFE SETUP

- ❖ Bench grinders are to be mounted to something solid that will not move when you push. Bolted into the bench, wall bracket or suitable stand. Mounts that move around easily are **NOT ACCEPTABLE**. Grinders should not move. Pedestals are acceptable to mount a grinder on, but **MUST BE SECURED TO PREVENT MOVEMENT!** If you can lean on it gently and it moves, you must correct this situation immediately and ensure that the bench grinder is mounted firmly.
- ❖ Each grinder wheel is to have work rest installed on both wheels and eye protection shields above both wheels. Replace eye protection shields as needed, generic shields are acceptable.
- ❖ Before a wheel is mounted (installed), it needs to be examined for cracks and imperfections that might cause it to disintegrate. Perform a "Ring Test" by suspending the wheel on a string and tap it gently. If the wheel rings, it is probably sound. (Think of how a bell sounds and think of how a bell sounds with a crack in it.)
- ❖ Wheels purchased through national accounts such as Barnes distributing meet the rpm ratings of most grinders in TAP facilities, but you still need to check the rpm rating of the wheel and **VERIFY** it is suited for use on your grinder. **Never mount or even purchase a wheel unless the rpm rating is equal to or greater than the grinder rpm.**
- ❖ If you store a grinding wheel, make sure it is stored and handled properly to prevent cracking or exposure to moisture. The wheel can absorb liquids such as oil that will weaken the wheels structure plus cause the wheel to be unbalanced. Wheels that have absorbed any liquids will be critically unbalanced and will explode if mounted on the grinder and the device is started. Discard the wheel and get one that has no damage or liquids soaked into it. This applies to abrasive wheels and not wire wheels.
- ❖ Never use a wheel that has been dropped or received a heavy blow, even if there is no apparent damage. The wheel may shatter on startup.
- ❖ Wheels are to be kept true and in balance. True means the grinding surface is flat and not uneven from over use on one side of the wheel.

Adjustments

- ❖ **IMPORTANT:** OSHA guidelines dictate that bench grinder work rest should be set **no greater than 1/8 inch from the face of the wheel**. See FIG 1 and 2 below. This prevents material from being caught between the wheel and the rest that might cause the wheel to explode.
- ❖ Normal use will cause the gap between the wheel surface and the work rest to change; re-adjust as needed.

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- ❖ All bench grinders are to be equipped with side shields that cover 2/3 or more of the SIDE of the grinding wheels. See Fig 6.
- ❖ All bench grinders have a “tongue” above the tool rest. See FIG 3 and 4 below. This adjustable device prevents material that may get drawn into the wheel cavity from being expelled from the grinder with extreme force. The adjustable tongue needs to be adjusted to within 1/4” of the grinding wheel. Check this periodically as the wheel wears.

As you can see, there are many hazards presented by grinders and adjustments required to keep operators safe.

Safe Use:

- ❖ **EYE PROTECTION IS MANDATORY FOR ALL GRINDING TYPES!**
- ❖ **Allow the grinder to reach full speed before stepping into the grinding position.** This is important. Faulty wheels usually break (or explode) at the start of an operation.
- ❖ **Operators should not ever grind materials on the sides of the wheel.** The face of the wheel is the only part that should be used! See FIG 5 below. If a grinding wheel shows wear on the sides of the wheel, it should be replaced and operators **further trained** in proper use. Grinding on the side of the wheel weakens the face of the wheel and it could explode causing severe injury.
- ❖ **Grind hard metal only** (ferrous metals containing iron). Do not grind soft metals such as brass or aluminum. These softer materials clog the pores in the wheel surface and cause it to become unbalanced.
- ❖ **Slowly move work-pieces across the face of wheel in a uniform manner.** This back and forth motion of the work piece will keep the wheel sound and wearing normally. Holding the work in one place too long causes a gouge in the center of the wheel and reduces the wheel life and operator safety.
- ❖ Use tools such as vise-grips, pliers or clamp to hold small pieces. **DO NOT HOLD SMALL WORK PIECES WITH YOUR HAND ALONE!**
- ❖ Ensure that no combustible or flammable materials are nearby that could be ignited by sparks from the grinder wheel. This includes shop rags, paper, and cardboard. Any combustible material can be ignited by grinder sparks.
- ❖ For wire brush wheels, the tips of the brush do the work and materials are not to be forced into the brush as this causes the wires to be dislodged or can result in the wires grabbing the part. Also, the wires becoming dislodged presents a major safety hazard as the individual wires will occasionally be ejected from the wheel. **EYE PROTECTION IS ALWAYS MANDATORY.**

RIGHT ANGLE / PORTABLE GRINDERS

- ❖ Manufacture installed guards are **not to be removed** and the equipment is not to be altered.
- ❖ The top portion of the wheel is always to be enclosed.
- ❖ Protect wheels from exposure to liquids and blows from other tools.
- ❖ Avoid striking the sides if the wheel against objects when in use.
- ❖ Wear appropriate clothing and retrain long hair so as not to become entangled in the rotating wheel.

SERVICE OPERATIONS

JRM2014

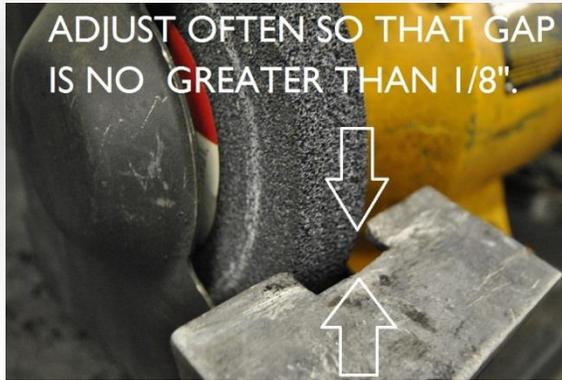


Fig 1



Fig 2



Fig 3

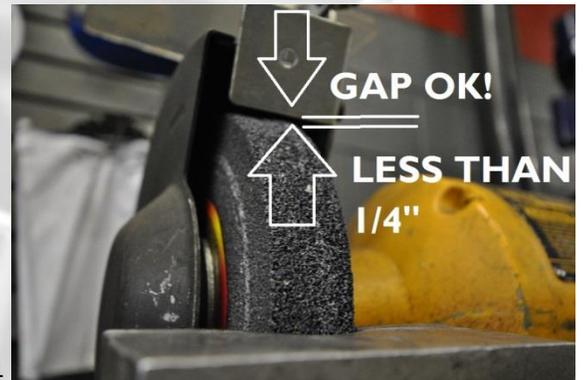


Fig 4



Fig 5



Fig 6

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