



Bench Grinder Safety Rules

A bench grinder is a machine used to drive an abrasive wheel or wheels. Depending on the type of grinding wheel installed, it may be used for sharpening cutting tools.

Properly used and maintained, the grinder is typically not dangerous to use.

If you don't follow the safety rules, or if an unforeseeable accident occurs, the results can be truly disastrous. For this reason, **NEVER treat this tool with a casual attitude.** Always prepare for the worst, and if that happens, you'll have the best chance of walking away without serious or life altering injury.

To avoid accidents, the following safety rules must be observed by everyone working on the bench grinder. Failure to follow these safety rules may result in serious personal injury or injury to others and can result in a loss of shop privileges.

Start with a Risk Assessment to ensure a safe work area:

1. Follow all procedures in **CHARLOTTE WOODWORKERS' ASSOCIATION Shop Rules and Guidelines.**
2. A four (4) foot perimeter around the grinder should be kept clear of people and debris that impair traction or footing to avoid slips and falls.
3. If other people don't need to be in the area on the operator's side of the Bench Grinder, ask them to find another place to stand. Anyone on the operator's side of the grinder should wear the same personal protective equipment that the operator is required to wear. This is for their safety.
4. If you don't know how to use the Bench Grinder properly for the work you'd like to do, get instruction on how to use it correctly for that purpose before turning the machine on.

5. **Safety glasses with side shields and a face shield must be worn. Everyday eyeglasses are only made of impact resistant glass, they aren't safety glasses.** If you're not wearing actual safety glasses, wearing safety goggles over your regular glasses can provide the protection you would expect to get from wearing safety glasses.
6. **Consider a face shield mandatory when using the Bench Grinder.** This provides additional protection to your face should a grinding wheel disintegrate or explode.
7. Hearing protection should be worn.
8. Remove loose fitting clothing, jewelry, and tie back long hair.
9. The Bench Grinder should be mounted securely to a stable surface. Bench Grinders can be mounted to pedestals specifically made for them or they can be mounted to a solid bench top. **Don't operate a grinder unless it is securely mounted.**
10. Inspect the grinding wheels for hairline cracks before using. **DO NOT USE A CRACKED WHEEL.**
11. Make sure the wheel housing guards are in place and secure.
12. Give the work your undivided attention.

Operational Safety Rules:

1. Approach your work in the shop & on the Bench Grinder with a safe attitude!
2. Never connect a dust collector to a grinder. Sparks from the grinder could ignite the dust in the collection system causing a fire or an explosion.
3. Before working with a bench grinder, make sure the tool and its accessories are in proper working order. If you don't know how to do this correctly, ask the Shop Foreman to help you find someone who can assist you. This is doubly true for installing and truing the grinding wheels.
4. **When installing new grinding wheels or replacing an existing wheel, turn off and**

unplug the Bench Grinder and wait for it to come to a complete stop.

5. Ensure that you know the direction of the threads on the Bench Grinder spindle so that you turn the arbor nut in the proper direction. If you don't know the proper direction consult the owner's manual (if available) or ask the Shop Foreman to help you find someone who does. (If you have internet access, operator's manuals can often be found online).
6. Install the correct type and size of grinding wheel(s) for the work you plan to do.
7. Aluminum oxide wheels are appropriate for grinding tool steel and other ferrous metals.
8. Choose a wheel like one of Norton's Premium White Aluminum Oxide Bench and Pedestal Grinding Wheels for maximum cut rate and cool cutting action on hardened or high-speed tool steels. While it's still possible to burn a tool using a wheel like this, you have a greater margin for error than you will with the standard grey wheels that come on most grinders when they are new.
9. **DO NOT grind non-ferrous metals in the CWA shop facilities.**
10. **Warning: Grinding non-ferrous metals such as aluminum, brass, bronze, copper, lead, or zinc on an Aluminum Oxide grinding wheel can cause the wheel to load up with the non-ferrous metal and may cause it to explode, which is very dangerous.**
11. A grinding wheel of a proper width should be selected. Chances are that the operator's manual for the Bench Grinder will provide direction as to what wheel thickness is the correct choice for the specific machine you'll be working with.
12. Grinding wheels are often shipped with blotters attached to each side. These blotters are often printed with the wheel's specifications, manufacturer's name, etc. If these blotters are in good condition, and if they are at least as large as the outer diameter of the flanges, they can be used when first installing the new wheel. Otherwise use one clean, new blotter between each flange and the wheel being mounted. These aren't homemade items. They can be obtained from the company that makes your grinding wheels, or from other suppliers that make these items. They play an important role in properly mounting the grinding wheel and help reduce the chances of the wheel disintegrating in use. For more information on blotters for grinding wheels go on the internet and search for "blotters for mounting grinding wheels" and you'll find something quickly. Select material from one of the major suppliers of grinding wheels and accessories that will explain why the use of blotters of the proper type is a critical part of mounting the grinding wheel.
13. It's important to make sure that the operating speed of Bench Grinder does not exceed the speed marked on the grinding wheel, its blotter, or its container. Using a grinding wheel on a grinder that exceeds the wheel's rated maximum speed is an invitation for disaster if the wheel were to come apart.
14. Unless you have installed special wheels for grinding non-ferrous metals, stick with grinding steel. **If you have any doubts about what you're planning to attempt, get the facts before you cause an accident that can seriously injure yourself or others in the vicinity.**
15. Inspect the spindle, the inside and outside wheel flanges, and the arbor nut for damage prior to mounting the grinding wheel.
16. Flanges should be clean, flat and smooth on the contact surfaces. They should be recessed in the center so that their contact surfaces are the only points that touch the wheel and the spindle shaft and the arbor nut. This will provide a sure and stable hold on the wheel once it is mounted.
17. Use flanges with matching diameters to mount the wheel. Ideally, these flanges will be the originals that came on the grinder and that have been checked for damage and found to be in good condition. The flanges should be at least 1/3 the diameter of the wheel being mounted.
18. The holes in the flanges should match the diameter of the spindle on the Bench Grinder.
19. **Never substitute washers (large or small) for the correct type of flange.** Washers aren't designed to hold the wheel properly the way the flanges are. (ONEWAY's

Wolverine Precision Balancing System uses specially designed replacement flanges that can be balanced to remove all wheel induced vibration from your Bench Grinder. They are available for 6, 7, and 8 inch grinding wheels)

20. If any of these parts are damaged, contact the Shop Foreman so that they can make arrangements to have the problem corrected before using the grinder.
21. "Ring Test" grinding wheels before mounting. Suspend the wheel on a pencil (or other similar object) held horizontally through the center of the arbor hole. Tap the wheel lightly with a plastic screwdriver handle, in spots 45 degrees from vertical. If it produces a clear ringing tone it is in good condition. If it sounds dull, REPLACE it. It's wise to also inspect the wheel for cracks or other damage, particularly damage in the area of the arbor hole, even if the "Ring Test" is fine. It never hurts to be careful with these wheels to ensure that they are in good condition. Don't use damaged wheels!
22. Once the wheel is verified good, use the proper hardware to install it on the Bench Grinder's spindle. The arbor nut should be in good shape and should either be the original arbor nut, or a suitable replacement.
23. Never make alterations to the spindle hole in the grinding wheel or force a wheel onto the spindle.
24. If the spindle hole is too large in diameter and a bushing or set of nesting bushings are available that will allow the wheel to be installed securely with a good, snug fit then these bushings can be used to adapt the wheel's arbor hole to the size of the spindle. In no case should you mount a wheel that doesn't fit well either directly or with an appropriate selection of adapter bushings.
25. Tighten the arbor nut only enough to hold wheel firmly. Over tightening will damage the wheel.
26. Once the wheel is installed, replace any covers and turn the wheel by hand to ensure that there is no interference between the covers and the wheel. If you encounter any problems, they will need to be resolved before continuing.
27. Once the covers have been installed successfully, install and adjust the tool rest, also verifying that it doesn't hit the wheel while the wheel is being turned by hand. Adjust the tool rest so that it is approximately 1/16 to 1/8 of an inch from the wheel at the closest point of the wheel's rotation.
28. Reinstall the eye shield(s) and adjust to the proper position.
29. After being installed, new grinding wheels should be balanced by dressing and truing to minimize vibration. If the grinder vibrates significantly once the new wheels are dressed and trued, there is probably a more serious problem with the grinder. Contact the Shop Foreman who will document the issue and ensure that someone is assigned to correct the problem. Don't use a grinder that is vibrating excessively until the problem has been corrected.
30. Dressing and truing a grinding wheel generates a lot of dust and dirt as the wheel surface is cut away. The components of this dust are extremely bad for your lungs. **When performing these operations a proper dust mask or respirator that seals well around the mouth and nose must be worn for your safety.**
31. Shut off the grinder, unplug it and wait for the wheels to stop before making any adjustments.
32. Adjust tool rests *with **a maximum opening of one-eighth (1/8) inch to prevent the work from being jammed between the wheel and the rest,*** which may cause wheel breakage. The work rest must be securely clamped after each adjustment.
33. Set spark or shatter guards (at the top of the wheel housing guards) a maximum of 1/16" away from the wheels.
34. Re-adjust both tool rests and shatter/spark guards as the wheels wear down to a smaller diameter so that proper minimum openings are maintained.
35. **Never adjust the tool rests, shatter guards, or any other part of the bench grinder's protective equipment unless the grinder is powered off and has come to a complete stop.**
36. Stand to one side of the wheel(s) when turning on power. Allow the grinding wheel to

run at full operating speed for one minute.
DO NOT use a wheel that vibrates.

37. **Do Not Grind on the Side of the Grinding Wheel.** We understand that people have told you that it's OK to do this BUT **Bench Grinders of the sort we have in the shop are not designed to be used in this fashion,** and **grinding on the side of the wheel could cause the wheel to fracture from side pressure potentially injuring anyone who's in the path of the flying debris.**
38. Bring the object into contact with the grinding wheel slowly and smoothly avoiding impact or bumping motions. While grinding wheels have good radial strength when running, they don't respond well to sudden shocks or side loads (which is why we don't grind on the side of these wheels).
39. While grinding, don't stand in line with the plane of the grinding wheel's rotation, if you can avoid it and still do your work effectively
40. Move the object being ground back and forth across the face of the wheel only, as this prevents "ruts" or grooves from forming in the wheel.
41. Never grind small stock while holding the stock in your hand(s). Use clamping pliers or other holding jigs when grinding parts that cannot be held easily by hand.
42. Do not attempt to grind or sharpen anything that cannot be adequately supported by the tool rest.
43. Always use a light touch when grinding. Steel heats quickly and can lose its temper if you get it too hot. Using a light touch on the grinder and regularly pausing to allow the workpiece to cool helps avoid this problem. Don't hesitate to dip the item you're grinding in cool water to help it cool faster. This will help keep the workpiece cool and it won't cause problems with hardened and tempered tool edges. Remember these tools have been through far greater thermal shocks during the manufacturing process.
44. Do not touch the ground portion of the workpiece to your finger or body until it's completely cooled.
45. Used wheels should be dressed and trued when worn out of round, or when the surface face is clogged or worn smooth. This provides a clean sharp grinding surface and rebalances the wheel. Dress the wheel on the face only. Dressing the side of the wheel isn't necessary because you will not be grinding on the side of the wheel so it should stay as flat as it was when received from the manufacturer. Furthermore, applying pressure to the side of the wheel while it's rotating could cause the wheel to disintegrate with potentially disastrous results.
46. Keep bystanders a safe distance away from the work area. Anyone entering the work area must wear his/her personal protective equipment (PPE) which MUST include proper safety glasses with side shields and a full face shield.
47. When done grinding, turn off the grinder and wait until it comes to a complete stop. Never stick any object into the wheel to stop the grinder quicker. Let it stop on its own.
48. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
49. Wire wheels can be used on a Bench Grinder, though it may be more appropriate to use this sort of wheel on a buffer/grinder where there are fewer guards blocking access to the wire wheel and longer shafts that provide easier access to the turning wire brush. If you use a wire wheel on a grinder, be aware that pieces of wire can break off and be thrown toward you at high speed. Face and eye protection is just as important as it is with a regular grinding wheel, and the face shield will help keep these pieces of metal from sticking in your face.