Powered Hand Tools

Powered Hand Tools – Use of Grinder Attachments

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What is a portable grinder?

A portable grinder is a hand-held power tool designed for grinding, cutting, sanding, or polishing a variety of materials. Due to their versatility and portability, these tools are widely used in construction, metalworking, woodworking, and other industries. Portable grinders are typically powered by electricity, compressed air, or batteries making them suitable for use in various settings, including areas without access to fixed power sources.

Portable grinders are compact and lightweight and offer interchangeable attachments such as grinding wheels, cutting discs, sanding pads, buffing pads, or wire brushes.

This OSH Answers Fact Sheet reviews the safety precautions to take while using different attachments. For more information on the safe use of these tools, see our OSH Answers Abrasive Wheels—Use of Portable Grinders.

What safety precautions should be followed when using a cutting disc or grinding wheel?

Always:

- Verify whether there is an expiry date stamped on the wheel. It is usually 3 years from the date of manufacture. Do not use a wheel past its expiry date.

- Inspect the disc for damage before use, such as cracks, chips, or warping. Do not use damaged discs as they may shatter during operation, causing serious injury.
- Disconnect the grinder from the power source before installing the cutting disc.
- Use the correct flange and mounting hardware to secure the cutting disc according to the manufacturer's instructions. Make sure the disc is mounted flat and tightly secured.
- Hand-tighten the mounting hardware to avoid overtightening, which could damage the disc or grinder.
- Hold the grinder firmly and maintain a steady grip to ensure control during operation.
- Hold grinders based on the type of grinder:
    - Horizontal grinder – the full grinding face width of the wheel is in contact with the grinding surface.
    - Right-angle grinder – the grinding face of the wheel or disc is at an angle of between 5 and 15 degrees from the grinding surface.
    - Vertical grinder – the grinding wheel face is in contact with the surface.
- Stand away from the wheel when starting grinders. Warn co-workers to do the same.
- Perform a "ring test" to check if the wheel is damaged. Ring tests do not apply to small wheels that are 10 cm (4 in.) in diameter or smaller.
- Ensure that the mounting flange surfaces are clean and flat.
- Ensure the wheel guard is in place while operating the grinder.
- Use the mounting blotters supplied.
- Run newly mounted wheels at operating speed for 1 minute before grinding.
- Inspect for unusual vibrations, wobbling, or noises. If any issues are detected, stop the grinder immediately, disconnect the power source, and investigate the cause.
- Wear the appropriate personal protective equipment (PPE) such as eye and face protection, tight-fitting gloves, protective footwear, hearing protection and respiratory protection as required.
- Use an appropriate ventilation exhaust system to reduce inhalation of dust, debris, and coolant mists. Exhaust systems must be designed and maintained appropriately.
- Apply light and steady pressure during cutting. Do not force the disc, as it may cause it to bind, overheat, or shatter.
- Avoid twisting or bending the disc during use, as this may cause breakage.
- Direct sparks and debris away from yourself and others. Keep flammable materials away from the cutting area.

- Store cutting discs in a clean, dry area to protect them from moisture, temperature extremes, and impact that could cause cracks or deformation.

Please see the OSH Answers on Abrasive Wheels for further information.

What safety precautions should be followed when using a wire brush attachment on a grinder?

- Inspect the wire brush for damage such as broken wires, corrosion, or distortion before use. Do not use a wire brush with missing or uneven bristles as it may result in uneven wear or excessive vibration.
- Make sure the wire brush is compatible with the grinder's specifications. Always match the speed rating and brush size with the tool. The rating on the wire brush should be equal to or greater than the tool's revolutions per minute (RPM) rating.
- Always disconnect the grinder from its power source before installing the wire brush.
- Use the appropriate size arbor and mounting hardware to secure the brush. Mount the brush using the tool's mounting instructions.
- Hand-tighten the mounting hardware to avoid overtightening, which may damage the brush or grinder.
- Always use the safety guard provided by the manufacturer to shield against debris or broken wires. Position the guard to direct debris away from you. Verify the machine guarding requirements of your jurisdiction.
- Test the installation by running the grinder with the wire brush installed in a safe, protected area for at least one minute before use.
- Inspect for unusual vibrations, wobbling or noises. If any issues are detected, stop the grinder immediately, disconnect the power source, and investigate.
- Wear the appropriate personal protective equipment (PPE) such as eye and face protection, tight-fitting gloves, protective footwear, hearing protection and respiratory protection as required.
- Store brushes in a clean, dry area. Handle and store them with care to prevent damage. Before use, the brush should be at the ambient temperature and humidity.
- Hold the grinder firmly and use a steady grip to maintain control.
- Operate the wire brush at the correct angle for optimal cleaning and minimal wear.
- Allow the wire tips to do the work. Applying excessive pressure may cause wires to break prematurely and generate more heat, reducing effectiveness.

- Keep the work area safe by ensuring the area is clear of others and unnecessary equipment. If bystanders are in the area, ensure they are wearing proper protective equipment.
- Direct sparks and debris away from yourself and others.

What safety precautions should be followed when using a sanding pad attachment on a grinder?

- Inspect the sanding pad for damage, such as tears, cracks, or missing abrasive material before use. Do not use damaged or excessively worn pads, as they may detach or perform poorly.
- Make sure the sanding pad is compatible with the grinder's specifications. Match the pad's size, type, and speed rating to the grinder. The RPM rating of the sanding pad must be equal to or greater than the grinder's maximum speed.
- Disconnect the grinder from the power source before installing the sanding pad.
- Secure the sanding pad using the correct backing plate and mounting hardware. Follow the manufacturer's instructions to ensure proper installation.
- Hand-tighten the mounting hardware to avoid overtightening, which may damage the pad, backing plate, or grinder.
- Always use the safety guard provided by the manufacturer to shield against flying debris or fragments. Position the guard to direct debris away from you. Verify the machine guarding requirements of your jurisdiction.
- Test the installation by running the grinder with the sanding pad attached in a safe, protected area for at least one minute before use.
- Inspect for unusual vibrations, wobbling, or noises. If any issues are detected, stop the grinder immediately, disconnect the power source, and investigate the cause.
- Wear the appropriate personal protective equipment (PPE) such as eye and face protection, tight-fitting gloves, protective footwear, hearing protection and respiratory protection as required.
- Store sanding pads in a clean, dry area. Keep them flat and protected from moisture or extreme temperatures to prevent warping.
- Hold the grinder firmly and maintain a steady grip for control during operation.
- Operate at the correct angle (typically 5 to 15 degrees for sanding) to ensure even sanding and avoid gouging the surface.
- Use light to moderate pressure when sanding. Excessive pressure may cause the pad to wear unevenly, overheat, or damage the work surface.

- Allow the pad to do the work. Forcing the pad may reduce its effectiveness and increase the risk of detachment.
- Keep the work area safe and clear of bystanders and unnecessary equipment. If others are present, ensure they are wearing proper protective equipment.
- Direct debris and dust away from yourself and others. If applicable, use a dust collection system or wet sanding techniques to minimize airborne particles.

What safety precautions should be followed when using a buffing pad or polisher attachment on a grinder?

- Inspect the buffing pad for damage such as tears, fraying, or excessive wear before use. Do not use damaged or heavily worn pads, as these may lead to uneven polishing or loss of control.
- Make sure the buffing pad is compatible with the grinder's specifications. Match the pad's size and speed rating to the tool. The pad's RPM rating must equal or exceed the grinder's maximum speed.
- Disconnect the grinder from the power source before installing the buffing pad.
- Secure the pad by using the correct backing plate and mounting hardware. Follow the tool's mounting instructions for correct installation.
- Hand-tighten the mounting hardware to avoid overtightening, which may damage the buffing pad or grinder.
- Always use the safety guard provided by the manufacturer to protect against debris or accidental contact with the spinning pad. Position the guard appropriately for your work. Verify machine guarding requirements as per your jurisdiction.
- Test the installation by running the grinder with the buffing pad attached in a safe, protected area for at least one minute before use.
- Inspect for unusual vibrations, wobbling, or noises. Stop the grinder immediately and investigate the cause if any issues are detected.
- Wear the appropriate personal protective equipment (PPE) such as eye and face protection, tight-fitting gloves, protective footwear, hearing protection and respiratory protection as required.
- Store pads in a clean, dry area. Before use, ensure they are not deformed and are at ambient temperature and humidity.
- Hold the grinder firmly and maintain a steady grip to ensure control during operation.
- Operate at the correct angle to achieve optimal polishing results and avoid unnecessary wear on the pad.

- Use light to moderate pressure when buffing. Allow the pad to perform the work. Excessive pressure may cause the pad to overheat, wear prematurely, or damage the work surface.
- Keep the work area safe and clear of bystanders and unnecessary equipment. If others are present, ensure they are wearing proper protective equipment.
- Direct debris and polishing compounds away from yourself and others.

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