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PRÉVENTEX

TABLETOP OR SELF-STANDING GRINDING WHEELS

COMMONPLACE AND DANGEROUS

Préventex

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Nearly every work facility is equipped with a tabletop or self-standing grinding wheel. This indispensable machine is highly useful but can also be very dangerous. The use of grinding wheels can result in numerous work injuries if safety measures are unclear or not respected. Among the most frequent causes of accidents is the break-up of the grinding wheel, which is generally due to excessive speed, use of a damaged wheel, incorrect mounting, uneven or excessive pressure, or uneven wear of the grinding wheel.

Learning the basic rules of operation, which will be explained in this information bulletin, can eliminate these hazards. In addition, it should be noted that the Quebec Health and Safety Board issued new safety measures concerning the use of grinding wheels. They are contained in the Quebec provincial regulation respecting occupational health and safety (Règlement sur la santé et la sécurité du travail- RSST), section 21 on machinery, chapters 4 and 5.

DEFINITION

The concise Oxford Dictionary defines 'grinding wheel' as follows: 'a thick revolving disc used for grinding, sharpening, and polishing'.

"We are never careful enough around grinding wheels".

Tabletop and self-standing grinding wheels can be found in any section of work facilities. In many cases, the location was not chosen according to a work plan and unsupervised access is common, while safety rules are sometimes inexistent. Yet this location is a workstation and as such, should be governed by clear safety rules and closely supervised.

ASPECTS OF SAFETY

Mounting of grinding wheels

Tabletop and self-standing grinding wheels should be firmly secured to the work surface or to the floor in a location that is usually permanent and therefore becomes a workstation. In addition, grinding wheels with wheels over 50 mm in diameter should be equipped with a protector that is appropriate for the intended use and offers the best available protection.

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It is primordial for users to ensure that the grinding wheel is securely installed and equipped with the proper type and size of wheel.

The LABEL on the grinding wheel contains information on how to use it safely.

1/2 HP
Heavy Duty
6"
Bench Grinder
BG600C 120 AC/VCA 3.0A 60Hz 3600 RPM/TR/MN ½" Arbor

WARNING : Wear Eye Protection For Safe Operation. Read Owner's Manual. Use grinding wheel suitable for speed of grinder.

AVERTISSEMENT : Pour un fonctionnement sûr, consulter le manuel de l'utilisateur. Toujours porter des lunettes de sécurité. Utilisez une meule prévue pour le régime de la meuleuse d'établi.

ADVERTENCIA : Para un funcionamiento seguro vea el manual del usuario. Siempre use lentes protectores. Use la muela adecuada a la velocidad de la esmeriladora.

LISTED
TOOL

"Never use grinding wheels put together with a washing machine motor".

Selection of wheels

The company should select and use wheels that are appropriate for the intended use. It is unadvisable to use grinding wheels for work other that the one they are intended for. Grinding wheel and machine manufacturers can provide technical information concerning the use of their products. Make sure this information is forwarded to users (RSST, articles 200.1 and 200.2).

The label on the wheel indicates the type of material it is intended to be used for, as well as the maximum surface speed. In no case should the surface speed exceed the maximum recommended speed in order to avoid shattering of the wheel.

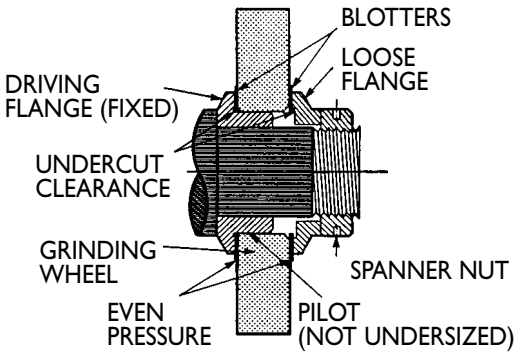
"Use only appropriate wheels; if in doubt, get information from the product manufacturer".

Installation of grinding wheels

Prior to use, the following basic principles should be respected:

1. Make sure the surface speed which is indicated on the grinding wheel NEVER EXCEEDS the recommended speed indicated on the wheel (RSST, article 200.2).
2. Inspect wheel before mounting on machine. The wheel should be free of cracks or chips and be well balanced (RSST, article 200.1).
3. Manipulate wheels with care and avoid dropping or hitting them.
4. Never stack tools or other objects on top of wheels.
5. Use and maintain wheels according to manufacturer's recommendations (RSST, article 199.1).
6. Make sure the wheel is free of any defect.

Installed grinding wheel

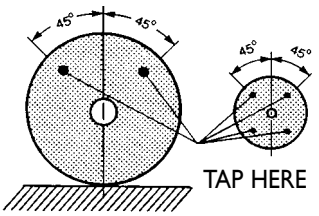


"Make sure the surface speed does not exceed the speed indicated on the wheel".

Inspection of wheels

In order to verify the condition of wheels, conduct a ring test. This test is only used for wheels of over 100 mm in diameter.

- Tap the wheel lightly with a non-metallic object such as a plastic screwdriver handle or wood mallet. A sound wheel will emit a clear, metallic sound. Reject wheels that produce a dull or cracked sound.



- When testing a heavy wheel, place it vertically on a clean and solid floor surface.
- When testing a small wheel, hold on a finger or run a thin wire through the centre.

"Never use a worn or finished wheel".

Mounting grinding wheels

Never attempt to force a wheel onto the grinding wheel shaft or to modify the size of the centre hole.

Balance the pressure of wheel flanges located on both sides of the wheel and check with straight ruler. Worn or deformed flanges should be replaced. Never invert wheel flanges on flat wheels.

When installing a flat wheel, make sure the diameter of wheel flanges are at least 1/3 of the wheel diameter. Place paper blotters between the wheel and the flanges to compensate for minor irregularities in the wheel. (RSST, article 198)

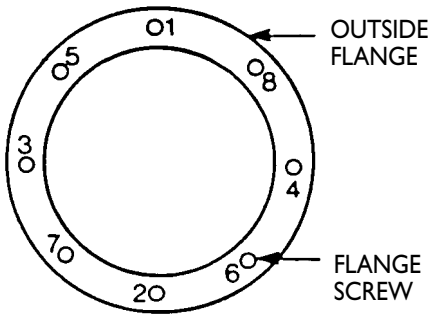
Adjust the gap between the support or adjustable tool rack and the wheel according to degree of wear on wheel. The gap should not exceed 3 mm. (RSST, article 204)

Check that the mounting gauge is rounded. Its length should equal 2/3 of the wheel width.

Check that threading is engaged in the flanges.

Tighten just sufficiently to prevent the wheel from slipping.

If flanges have several screws, they should be equally tight and screwed in the following sequence:



Use a torque wrench to tighten each screw at 20 to 27 joules, or 15-20 foot pound.

Position threads of central shaft to ensure that nut tightens with grinding wheel rotating movement.

USE OF GRINDING WHEEL

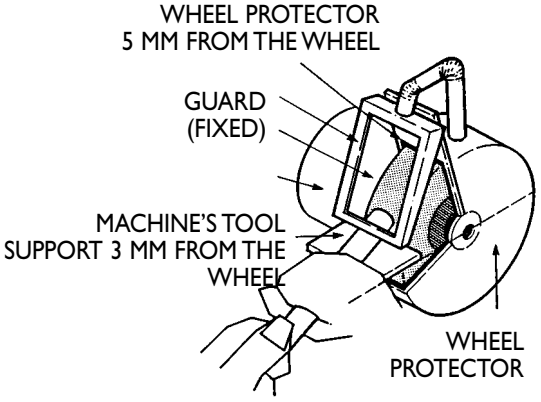
Prior to starting machine, ensure all protective equipment is in place, including:

- Wheel guard and, if applicable, metal brush guard;
- Adjustable spark screen.
- Support or adjustable tool rack.
- Transparent protection screen (RSST, article 201.1-4).

Place machine's tool support 5 mm from the wheel. Never attempt to move the support while the wheel is turning. The support should be at the level of the centre of the shaft. (RSST, article 204).

Leave a gap of 5 mm between the wheel and the wheel protector, whether this is a band or a removable protector (RSST, article 203).

Make sure no one is standing in the vicinity of the machine before starting it.



When testing the grinding wheel, step out of the way and let it run for at least one minute. If you note any vibrations, stop the machine and make the necessary adjustments.

Never grind wood, plastic or non-ferrous metal on regular wheels.

Feed parts slowly to the grinding wheel in order to avoid any shock or unwanted contact.

Gradually increase pressure to warm up the wheel. Apply only the pressure that is necessary to accomplish the work.

Move the part back and forth to ensure even wear on the wheel.

Even out or straighten out wheel with a grinding tool. Repeat regularly.

Replace wheels when they are worn out and can no longer be evened or straightened out.

"Hard wheels will speed up work but wear out more rapidly."

The harder the material, the softer the wheel should be, otherwise it will become too smooth and will not remove any material. In addition, wheels that are too smooth tend to produce low-frequency vibrations that are hazardous to users.

Individual protection equipment and safety precautions

Grinding wheel operators should wear the following protective equipment:

- A visor to protect eyes from flying metal fragments and others.
- Closely fitting clothing.
- Hearing protectors (plugs or ear muffs).
- Safety footwear with caps.
- A mask, according to the nature of the work.

Also:

- Use clamps to hold pieces being worked on.
- Avoid wearing jewellery.
- Hold back long hair with net or tie it up.

N. B. Wearing gloves can be hazardous because they can get caught in the stone. However, if the piece to grind is likely to become hot and cannot be held in place with clamps, the operator may wear a tight-fitting glove on the hand holding the piece.

WHEEL STORAGE

When storing wheels, take the following precautions:

- Store wheels on stands or in specially fitted boxes appropriate to the type of wheel (RSST, article 199.1).
- Place straight or cone-shaped wheels in upright position and secure them to prevent them from rolling.
- Thin wheels should be laid flat.
- Stack cylindrical or saucer shaped wheels and isolate them with cardboard pieces or other shock absorbing material.
- Never store wheels near a source of excessive heat or cold, nor in a humid or oily environment, nor in a drawer containing unorganized tools (RSST, article 199.3).

CHECKLIST

- Make sure grinding wheels are not vibrating or shaking.
- Step away from the grinding wheel when starting machine.
- Make sure wheels are free of cracks or defects before mounting.
- Ensure flanges are clean and straight before installing wheel.
- Use supplied buffers to install wheels.
- After mounting a new wheel, run machine at idle speed for a minute before using.
- Protect eyes, ears and face appropriately; wear safety footwear.

WARNING

- **Do not use wheels that have been dropped.**
- **Never grind parts made of wood, plastic or non-ferrous metal on a regular wheel.**
- **Never let wheels soak in liquid. This would upset their balance.**
- **Do not side-grind with a wheel not intended for that purpose.**