

The Instruction Manual For Safe Use

Diamond wheel (Sawblade)

To ensure safety, be sure to carefully read before using the diamond wheel (sawblade) (below referred to as 'wheel'), the instruction manual of the wheel, and the instruction manual of the used machine.

After reading the manuals, be sure to sufficiently explain the instructions to operators, and to keep it within their easy reach.

Improper handling may result in faults or injuries.

Meaning of warning and caution

The Instruction Manual and Attention in the diamond tool security as follows according to the extent of risk and injury that could be caused by improper handling.



Warning Improper handling may result in death or serious injury.



Caution Improper handling may result in a minor injury or only material damage.

Prohibited action symbols



Prohibited



Do not touch

Instruction action symbols



Follow the instruction



Wear safety glasses



Wear safety shoes



Wear a safety hat



Wear a mask



Wear earplugs



Unplug the machine

Be sure to refer to the glossary in this manual for the terms underlined.

Do not exceed the maximum working circumferential speeds listed below.

Application	Maximum working circumferential speeds m/s
Stone material	60
Concrete Asphalt	70
Hand-held type Engine cutter Air tool	100

$$V = \frac{3.14 \times D \times n}{60 \times 1000}$$

V : Circumferential speed of the wheel (m/s)

D : Outer diameter of the wheel (Sawblade)




$$n = \frac{60 \times 1000 \times V}{3.14 \times D}$$

π : Circular constant $\doteq 3.14$

n : Spindle rotation speed (rpm)

1. Work environment

Warning

-  Be sure to properly install the safety cover specified by the manufacturer of the used machine. When a wheel or material breaks, the resulting dispersed fragments can hit nearby operators and cause serious injury.
-  No person other than authorized personnel is allowed to enter working zone of the used machine. Especially keep away from the rotary tool, a table and other parts of the used machine, and travel range of the machine.
-  Sparks may be generated by contact between the wheel and a material. Do not use the wheel in flammable or explosive environments.

Precautions

The wheel generates noise during use. Make sure not to cause noise problems to the surrounding area.

2. Clothing, Protective outfit

Warning



Be sure that operators wear dust goggles, safety shoes, hard hats and other protective outfits as well as work clothing with tight sleeves and trousers furled at the bottom. When the wheel breaks, the operator may be hit directly by a fragment and be seriously injured.



The operator must always wear a dust mask and earplugs as protective outfit. The inhalation of dust may damage the throat, lung, and other respiratory organs, and noise may cause ear disorders.

Caution

Wear clothes appropriate for the work.
Do not wear a tie, a shirt with loose sleeves, or knit gloves.

If your hair is long, cover it with a cap or hair cover. You may be injured if your hair gets entangled in the rotating wheel or rotational materials.

3. Before use

Warning

Be sure to exceed the maximum operating peripheral speed as specified in specifications. Use a machine whose no-load rotation speed is lower than the maximum working rotation speed noted on the wheel.

Make sure that the dimensions of the tool are compatible with the designated dimensions of the used machine (the outer diameter, thickness, and hole diameter of the wheel).

The wheel may break and cause injury.

Check for any bends, cracks, or defects in the tool visually and by the feel of hand. Check also for any abnormal abrasion in the blade and the basal part of the wheel.

Never use the wheel when you find these types of scars or abnormal abrasion of the blade or the basal part.

The wheel may break and cause injury.

Check for any play or fluctuation in the machine shaft on which the wheel is mounted.

If the fluctuation of the shaft is large, the wheel may undergo abnormal vibration, break, and cause injury.

Caution

Using a wheel that does not suit the material can cause abnormal abrasion, poor cutting performance, or abnormal overheating.

If you continue operating under such condition, the wheel may break and cause injury.


Caution

Do not modify the shape of the wheel. Please consult with us if necessary.

An inappropriately reprocessed surface is dangerous because it causes the tool to be mounted inappropriately.

4. Tool set up

Caution

-  When attaching the wheel, be sure to turn the power source off. Otherwise, an inadvertent start-up can cause injury.

Follow the instruction manual of the machine for the procedural steps to mount the wheel.

Use a flange that is compatible with the central hole diameter of the wheel.

The flange used shall be free of abrasion or foreign matter.

The collar, if used, should be compatible with the central hole diameter.

Align the central hole or the collar of the wheel to the flange or shaft, and tighten the wheel with the flange and nuts or screws to remove play or fluctuation.

Warning

After the machine has reached the working rotation speed, run the machine without loading for one minute to check for abnormal sound or vibration.

Using the machine without remedying abnormal sound or vibration may cause wheel breakage and injury.

Precautions

In the case of an air grinder, check and adjust the governor regularly and make sure that the no-load rotation speed does not exceed the maximum working rotation speed of the wheel.



Mount the wheel with its arrow direction matching with the rotational direction of the used machine.

If the wheel is mounted in the opposite direction, its cutting performance will drop, abnormal overheating will occur, and the tool performance will not be realized.

5. During use



Warning

-  Never perform zigzag cutting, curve cutting, oblique cutting (without using a guide), prying, or use of the side of the tool. Otherwise, the wheel may break and cause serious injury.
-  Never touch the wheel when it is rotating. Touching the rotating wheel or getting caught in the machine may result in a serious injury.

Do not use the wheel for purposes other than cutting and grooving.

Do not impact the tool during cutting and grooving. Otherwise, the wheel may break.

If no anomalies are observed during no-load rotation, cut a shallow slit on a pre-cutting and make adjustments as necessary so that the circumference of the wheel blade evenly contacts the material.

If the contact is not even, a part of the blade circumference may be subject to a high load, and the wheel blade or the material may break and cause injury.

Particularly in the case of a hand-held engine cutter, use the cutter at a stable place where a stable posture can be assumed, and be sure not to be swung by the machine, drop the machine, nor bump the machine against surrounding objects.

The wheel may bend, crack, or become chipped and then break.

Secure the material in place.

Otherwise, the operation may become unstable and an accident may result; the material may become chipped and fly or get engaged abnormally.

Never use the machine at a power exceeding the rated power indicated on the nameplate of the machine.

Otherwise, the cutting performance may degrade, abnormal overheating may occur, and the tool may break.

If abnormal sound or vibration occurs, disengage the wheel immediately, and fully stop the operation. If one continues operation in this state, the wheel and/or material may break and scatter, causing injury.

Using the machine without remedying abnormal sound or vibration may cause wheel breakage and injury.

Conduct dressing when the cutting performance drops.

If you continue with cutting without conducting dressing, abnormal overheating may occur, and the wheel may break and cause injury.


Method of dressing

Cut coarse grindstone or soft work material (concrete block, brick, or sandstone) to conduct dressing.

6. After use



Caution

-  After using the wheel, be sure to turn the power source off. Otherwise, an inadvertent start-up can cause injury.

Precautions

After using the wheel, check for any bends, cracks, or defects in the tool visually and by the feel of hand.

When unpacking and storing the tool, keep it in a dry place protected from falls and impacts.

◆Glossary◆

1. Diamond wheel

Rotational tool using diamond abrasive grain on the blade. Used for cutting a material by high-speed rotation.

2. Safety cover

Guard to protect the operator from fragments that fly when the wheel breaks during its rotation. Also used for protecting the user from injury caused by touching the wheel during its rotation.

3. Protective outfit

Equipment to protect the operator from fragments that fly when the wheel breaks during its rotation. Also used for protecting the operator from the fragments and dust dispersed from the material. Protective outfit includes protective helmets, dust-proof glasses, safety shoes, various masks, and earplugs.

4. No-load rotation speed

Idle rotation speed of a machine with a wheel mounted.

5. Bend

State of a wheel being not parallel or planar.

6. Crack

Presence of a crack or cracks at the blade or basal part of a wheel.

7. Defect

Presence of a break or crack in the basal part of wheel or the blade.

8. Abnormal abrasion of the blade and the basal part

The abnormal abrasion of the blade refers to a decrease in the blade thickness due to greater abrasion on the blade sides than the blade circumference or substantially different states of abrasion between both sides of the blade.

The abnormal abrasion of the basal part refers to the presence of grooves and dents that are larger than fine scratches.

9. Play

Presence of a large clearance between the flange and the main shaft of the machine when they are matched.

10. Fluctuation

Fluctuation in the circumference and sides of a wheel when the wheel is mounted on the used machine.

11. Flange

Ring-shaped fixture used for mounting a tool on the main shaft of the used machine and holding the wheel in place.

12. Collar

Ring that fits in the central hole of the wheel and is used when the central hole diameter of the wheel is greater than the flange diameter.

13. Abnormal sound

High-pitched metallic chattering and vibrating noise, different from the constant sound of the wheel during normal rotation.

14. Abnormal vibration

Irregular vibration, different from the constant vibration of the wheel during normal rotation.

15. Oblique cutting

Method of cutting by tilting a wheel without using a guide.

16. Prying

Act of pressing a wheel against the material surface in a digging manner.

17. Use of a wheel side

Act of pressing the side of a wheel against the material for grinding.

18. Cutting

Act of cutting the material off by pressing the wheel rotating at high speed against the material surface.

19. Grooving

Act of cutting a linear groove by pressing the wheel on the machined surface while rotating the wheel at high speed.

20. Pre-cutting

Act of getting the feel of cutting at the start of using a wheel by cutting a shallow slit on the machined part abrasion between both sides of the blade.

21. Dressing

Act of restoring the performance of the wheel by treatment when the surface of the wheel is in poor condition and the cutting and other performance is unsatisfactory.