

# Operation Manual

## RYOUSEI Vacuum cleaner

Thank you for purchasing the RYOUSEI Vacuum cleaner at this time.

In order to use our machine correctly, ensure to read this manual. It will certainly help you to solve problems, if you encounter problems or questions while you use it.

Check the serial number of manufacturing nameplate on the product and the serial number printed on the guarantee card. Because the serial number of the product is important for quality control.

In this manual, the safety instructions are divided to “Warning” and “Caution.”

### ⚠ Warning

If you mishandle the product, that may cause a serious injury or death as a result.

### ⚠ Caution

If you mishandle the product, that may cause a minor or moderate injury or a material damage as a result.

### ■ Before Use

#### (1) Check item

On receiving the machine, check the following points.

- Check the manufacturing nameplate. (type, output, voltage, frequency)
- Check the damage for the accident in transportation. If you find something wrong, check the type of machine and the serial number. And then contact us.

#### (2) Transfer and installation

##### ⚠ Warning

- Transfer and install the machine by someone who has expert knowledge. When you transfer and install the machine, take care not to drop or overturn it. Because that may cause an injury. If the machine has the lifting bolts, use the lifting bolts when you transfer and install the machine.

##### ⚠ Caution

- Ensure to place the machine on a flat place. If it is necessary, do the work of foundation. Because that may cause falling of the machine.
- In the case of a wooden frame package, pay attention to the nail in unpacking. Because that may cause an injury.
- Keep the warning label sticker visible at all times, and do not peel it off or conceal it by an obstruction.

#### (3) Place of use

##### ⚠ Warning

- In place of the flammability or explosive atmosphere, do not use the machine especially in a normal model. Because that may cause an injury or a fire. If you use the machine at the place of Article 280 to 282 indicated in Occupational Health and Safety Regulation, please use explosion-proof model is suitable for such a place.

##### ⚠ Caution

- Except for the model of outdoor, do not use the machine outdoors. Because that may cause a short circuit.
- In modification of our product, we do not have guarantee of the product.
- Use the machine in an ambient temperature range from  $-15^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$  and at humidity is below 80 percent.

#### (4) Instructions in connecting the power supply

##### ⚠ Warning

- Connect wiring of the machine by someone who has the expert knowledge. Because that may cause an electric shock, injury or a fire. In connecting the power supply, refer to the wiring diagram.
- To prevent an electric shock accident from a short circuit, ensure to connect the main body to the earth (a ground resistance of  $100\ \Omega$  or less). The Ground wire is green. (Articles 18 to 28 indicated in Electric Equipment and Technology Standards)

##### ⚠ Caution

- Connect the cable and wire according to the Electric Equipment and Technology Standards and the electric power company's instructions. If the wiring distance is long, the voltage drop occurs. So, select the electrical capacity so that the voltage drop is less than or equal to 2 %.
- All of our products (except for the product is especially designed) have an overload protection device, but we recommend that you install a circuit breaker to prevent from a fire or an electric shock.
- Use the machine by the specified voltage, frequency on the manufacturing nameplate. Use the breaker of the required power supply's capacity (about three times of the capacity marked on the nameplate).

#### (5) Check direction of motor rotation

- After connecting power supply of the main body, check direction of motor rotation by using switch on the main body. In checking direction of motor rotation, open the maintenance door of the main body and check it to the direction of the arrow by your eyes.

##### ⚠ Warning

- Check direction of motor rotation by your eyes. Do not touch the motor by your fingers or tool because that may cause an injury.

##### ⚠ Caution

- In the case of a reverse rotation, connect wiring again in exchanging the red and black wires. Even if the motor can run in the reverse direction, you do not use the machine well. Also that may cause the motor overloaded or burn out.

#### (6) Set up the equipment such as the duct or hood efficiently.

### ■ Instructions for use

#### (1) Power supply

- Make sure that the power supply cable or the power supply plug is securely connected before use. If you do not connect wiring properly, that may cause the motor burn out. Also, single-phase operation may cause the motor burn out.

##### ⚠ Warning

- Do not bend the power supply cable or pinch it. Because that may cause an electric shock. Also, it is careful to prevent from dissolving the cable or code by the gasoline or oil.
- When you use the machine, do not run it with opening the control panel or terminal box door. Because that cause an electric shock.
- In the case of a power outage, stop working the machine or turn off primary power supply. Because the machine may automatically start running by the recovery from the power outage.

#### (2) Operation

##### ⚠ Warning

- Regardless of the machine's working, prevent from putting a burning substance or an equivalent into the suction port. Because that may cause a fire. During operation, do not touch the machine carelessly by your hands or something in opening the maintenance door. Because that may cause an injury.
- If you use the machine in an inflammable, an explosive powder or gas and install the machine in a hazardous atmosphere, use the machine that has an explosion-proof structure with criteria required electrical and structural.
- Except for the machine is especially designed, our machine is for dry dust only. Do not suck oil or wet dust.

- When you suck a large amount of particulate powder such as cement, lime, chemical, or toner, exhaust the dust to the outside through the filter. So, use the machine installed the HEPA filter in the clean room, such as a hospital or a chemical company, etc.

- Sometimes, you cannot use the machine any more. Because the model is not suitable for your dust. (For example, if you set it up the other place and change the dust.)

#### (3) Mechanism of removing the dust

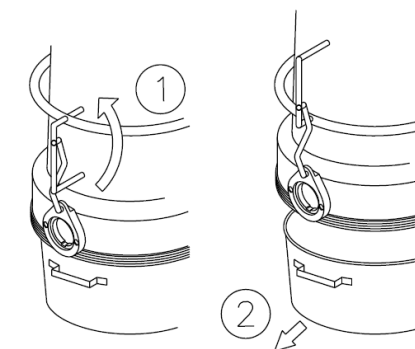
- When you use the vacuum cleaner for a long time, the machine does not work well for the dust on the filters. In this case, stop running once and remove the dust from the filter by working the mechanism of removing the dust.
- In working the mechanism of removing the dust, pull the knob (red or black ball) at the top of the filter's case upward strongly (about 10 times). If you use the machine with still working not well, the life of the blower may be short. So, do not use the machine with still working not well or work in closing of the inlet port.

#### (4) Dust disposal

- Dispose the dust as soon as possible. If you keep the dust in the dust bucket for a long time, that may cause clogging of the filter or a fire.
- After working the mechanism of removing the dust, take out the dust in the dust bucket each time. In removing the dust bucket, check to stop the machine completely.

- ① Turn the clip handle of the dust bucket's attachment still it stops to upward.
- ② Slide the dust bucket and pull it.

After taking out the dust in the dust bucket, set the dust bucket up and turn the clip handle of the dust bucket's attachment back to the initial position. Also, pay attention to the leak of the air from the packing of the dust bucket.



### ■ Maintenance and Inspection in using for a long time

#### (1) Maintenance

##### ⚠ Caution

- Before starting maintenance, repairing, or disassembling, turn off the main power supply or primary power supply to avoid an electric shock, injury, or a fire.

##### ※Caution of maintenance

- In maintenance, ensure enough safety according to the safety's standard of your company and Occupational Health and Safety Regulation.

- In maintenance, put on working clothes and wear protective equipment (dustproof mask, safety glasses or etc).

- If you are dealing with flammable materials, be strictly prohibited fire.

- If you do not run the machine in maintenance, turn off the primary power supply and indicate the running prohibition.

##### ※Maintenance item

##### ○Before running the machine

- Inspect the appearance to check if there is any harmful deformation or damage on the suction.

- Ensure that the maintenance door is closed and the dust bucket is definitely set up the right position.

- Ensure that the dust in the dust bucket is disposal.

○During operation

- Check no air leaks from the packing of the dust bucket.

- Make sure that the indicator lights turn on in the control panel.

- The motor and blower have the ball bearings. Also, the bearings of the machine have worn or damage by the dust leaked through the filter. So, check the noise from the motor or blower.

- Open all the inlet port of the pipes or ducts and check an electric current by the ammeter. If the current value is much lower than the rated value, the filter may be clogging.

○In inspecting regularly or disassembling

- Check the filter from the bottom of the filter's case. If it is clogging heavily, wash or clean it. If you find something wrong, replace it with a new one.

- Inspect the packing of the dust bucket packing. If you find the unacceptable deformation or deterioration, replace it with a new one.

- Inspect the hose. If you find the unacceptable deformation or deterioration, replace it with a new one.

○Other parts

- Check the hood, hose, and pipe is correctly installed and there is no deformation or damage. In running the blower, check no air leaks from the connection. In addition, if you find the dust inside, please clean it.

- Inspect the control panel. If you find the dust inside, that may cause a leak current to the ground or a short circuit. So, clean it regularly.

- Inspect the filter's case. If you find a lot of dust, the filter may be installed incorrectly, torn off, or broken.

(2) Replacement of the filter

- During you use the machine for a long time, the filter will be clogging, worn or broken. So, wash the filter or replace it with a new one every year. If you wash the filter, check it carefully to find damage of the filter.

- Sometimes, the machine does not work well by working the mechanism of removing the dust. In such a case, remove the filter from the main body and clean it by an electric cleaner or washing it by water (if you use a commercial cleaner in washing, you can clean the filter more effectively). In addition, install the filter after the filter is completely dry.

- Sometimes, you cannot wash the filter by the filter's type. In such a case, contact us.

**⚠ Cautions**

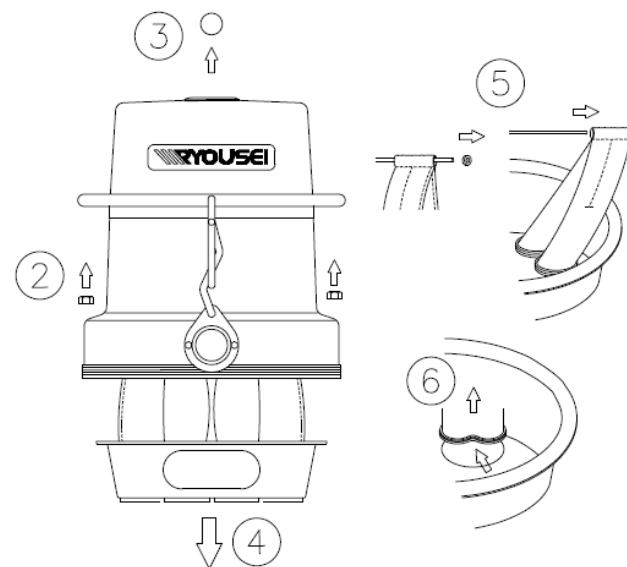
- Before inspecting or replacing the filter, turn off the primary power supply and ensure the machine stops working completely.
- When you install or remove the filter, be careful not to cut your fingers by the mounting plate. So, when you install or remove the filters, we recommend putting on the protective gloves.
- If the filter is incompletely installed, the dust may be discharged from the outlet port. So, install the filter correctly.

Procedure of filter's replacement

- ① Remove the dust bucket.
- ② Remove the nut (3 or 4 pieces) around the filter's case.
- ③ Remove the knob (red or black ball) at the top of the filter's case.
- ④ Pull down the mounting plate from the filter's case.
- ⑤ Remove the filter's stopper and the filter from the filter's hanger.
- ⑥ Remove the filter from the mounting plate.

After setting up the filter, touch it to check the filter is set up correctly.

\*When you set up the filter again, please reverse the procedure.



○HEPA filter

In using the machine installed the HEPA filter, the dust passing the primary filter will be collected by the HEPA filter. Also, the HEPA filter cannot reuse. So, please replace the HEPA filter every year. (the final pressure loss of 0.5 kPa or more in reading the differential pressure)

(3) Maintenance of the motor

The motor has the ball bearings. So, if you use the machine for a long time, the ball bearings will have damage by dust contamination. In such a case, the noise or vibration from the motor is something wrong. So, pay attention to the running noise in operation. If the noise and vibration from the motor is something wrong, repair or replace the motor.

(4) Maintenance of the blower

①Replacement of the bearing

The blower is roated at high-speed. So, the bearings of the blower have damage for a long time. When the noise or vibration from the blower is something wrong, you will repair or replace the blower. When you repair or replace the blower by yourself, contact us before repairing or replacing it. Also, in repairing or replacing the blower by yourself, repair or replace it according to our instruction. But, in repairing or replacing the blower, you need to adjust the all balance. So, request the repairing or replacing the blower.

②Replacement of the belt

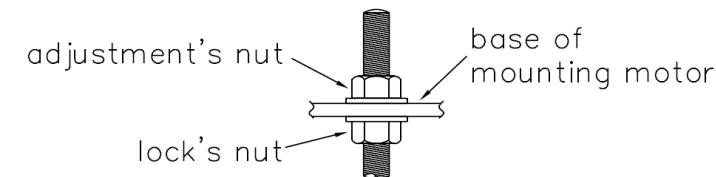
While you use the machine for a long time, the belt connects the motor and the blower has damage. Check it regularly. If you find wering, cracking, peeling, and etc, replace it with new ones.

**⚠ Cautions**

- In replacing the belt, turn off the main power supply and replace the belt after the machine stops working completely.

○Procedure of the belt's replacement

- (A) Open the maintenance door of the motor and blower's case.
- (B) Check the motor and blower's pulley and belt. (Check the damage of the belt and pulley.)
- (C) If you replace a new belt, install it by narrowing the distance between the motor and blower's pulley instead of installing the belt forcibly. Also, take care not to adhere the oil the pulley and belt.
- (D) When you install the belt, do not use in conjunction with a new belt and a used belt. Because reduce the endurance of the belt significantly.
- (E) The belt's tension is adjusted automatically by the motor's weight or spring of compression. In the case of the special designed machine (output is 5.5 kW or more), the adjustment of the belt's tension is required. After replacing the belt, run the machine once and check the belt works well by your eyes with opening the maintenance door of the motor and blower's case. If the belt does not work well, the adjustment of the belt's tension is not enough. So, adjust the belt's tension by the adjustment's nut again. Until the belt works well, tighten the adjustment's nut (upper nut) downward. At the end, tighten the lock's nut (lower nut) upward and fix the belt's tension.



Until the belt works well in fitting the pulley, it takes several days. So, you run the machine a few days later, adjust the belt's tension again.

**■ After-Sales Service**

(1) Guarantee period

The guarantee period is one year from the day purchasing our machine.

(2) When you repair the machine during the guarantee period

Inspect your machine according to the list "If you find something wrong,..." firstly, check your machine." If you can not solve the problem, contact us.

(3) When you repair the machine after the guarantee period

Contact us. If we judge the machine keeps the performance by repairing, we will repair the machine with fee.

(4) Minimum holding period for maintainance or repair parts.

We keep maintenance or repair parts of our machine at least six years after discontinued production.

(5) If you have any question about after-sales service, such as repair in the guarantee period, contact us.

(6) This guarantee and service are valid only in Japan.

**■ If you find something wrong, ... Firstly, please check your machine**

Condition	Possible cause	Countermeasure
Do not run even if you turn on the switch	Power supply does not turn on	Turn on power supply.
	Overload protection device works	After checking, start again
	Overload relay of magnetic switch works	After checking, reset it
	Switch is something wrong	Repair or replacement
	Motor is something wrong	Repair or replacement
Motor stops in operation	Power supply cable is broken	Repair or replacement
	Reverse operation	Check direction of motor rotation.
	Protection device works to start and stop frequently	Wait for minutes and then restart running.
Vibration or noise is bigger	Motor is something wrong	Repair or replacement
	Motor bearing has damage	Repair or replacement
Dust leaking from exhaust port	Part of mounting motor are loosen	Tighten bolt
	Filter has damage	Replacement
Reduce the power of suction or do not vacuum	Setting up the filter is not good	Check and set up again
	Clogging of the filter	Wash or replacement
	Dust bucket is full of dust	Dispose dust.
	Setting up dust bucket is not good	Check and set up again
	Clogging in duct or hose	Clean the inside
	Deformation or damage of duct or hose	Replacement
The connection of duct or hose is not good	Check and connect again	

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