

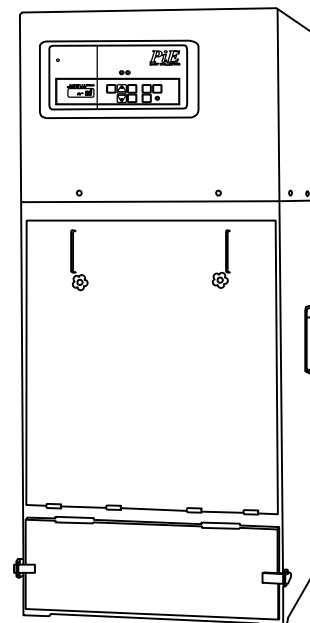
## INTELLIGENT DUST COLLECTOR

### *PiE* SERIES

## OPERATION MANUAL

**IMPORTANT :**




- Ⓞ Do not operate this dust collector before reading this manual.
- Ⓞ Only those who fully understand the contents of this manual should operate this dust collector.
- Ⓞ Carry out daily and periodic inspections, observing all operation and maintenance instructions given in this manual.
- Ⓞ Observe all applicable laws regulation regarding the installation and maintenance of the dust collector.



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# ■ Important Information on Safety

Safe notes described in this manual are designated as follows, depending on the levels and contents. Please read this information thoroughly before using the product.

-  **DANGER** : This symbol indicates mishandling in which a dangerous condition may occur and result in a serious injury or even death.
-  **WARNING** : This symbol indicates mishandling that may result in a serious injury or even death.
-  **CAUTION** : This symbol indicates mishandling that may cause injury to the worker as well as damage to the material.

- Serious injury refers to loss of eyesight, wounds, burns (high temperature, low temperature), electric shock, bone fracture, poisoning, etc. which have lasting effects or require hospitalization or long-term outpatient treatment.
- Injury means those that do not require hospital treatment and long-term outpatient treatment but includes burn and electric shock.
- Property damage refers to extensive damages to houses, properties, equipment, devices, etc.

## • Example of Illustrated Indications

	The  symbol represents warnings or precautions. A specific warning or caution is indicated by the picture inside.
	The  symbol shows a prohibited action. The specific prohibition is indicated by the picture inside.
	The  symbol shows a compulsory action. The specific compulsory action is indicated by the picture inside.

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# ■ INTRODUCTION

Thank you for purchasing the Amano PiE series dust collector.

It is important to read the operation manual carefully before using the equipment in order to operate it safely and correctly. Also, make sure to keep the manual close at hand so that you can refer to it when necessary.

- **The PiE Series Dust Collector is intended for collecting particles that do not pose the risk of dust explosion or fire.**
  
- **The manufacturer and dealers are not responsible for accidents or damage due to the following causes.**
  - Fire or explosion caused by dust in the dust collector.
  - Improper operating conditions or usage different from that specified in this manual.
  - Failure to maintain the dust collector or replace the consumable parts as specified in this manual.
  - Any modification, repair, or equipment transfer performed by a third party or personnel not authorized by AMANO.
  - Natural disasters or calamities, such as fires, earthquakes, or floods.
  - Any event that could not be predicted scientifically or technologically at the time of manufacture.
  - Use of a secondhand dust collector.
  - Other causes that are not the responsibility of AMANO.

- If anything related to the product or this operation manual is unclear, please contact the dealer or the sales office.
- The specifications and appearance of the dust collector and the description in this manual are subject to change due to improvements.
- When warning labels look like they might come off, contact the dealer or sales office to get new ones for replacement.
- The product warranty is not applied to consumable parts including filters.
- This book explains the product with standard specification. Be noted that the illustrations and descriptions in this manual may differ from those of the product with other specifications.
- The numerical values (such as pressure, air flow, current, etc.) displayed in this product are standard values, and they are not guaranteed values.











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# 1. FOR SAFE OPERATION

Before operating the dust collector, read the following warnings and cautions, and make sure you understand them.

 <b>WARNING</b>	
	<p>Do not suck the following materials.</p> <ul style="list-style-type: none"><li>• Explosive material ... Such as aluminum, magnesium, titanium, epoxy, flour, toner.</li><li>• Flammable materials ..... Such as gasoline, thinner, benzene, kerosene, paint.</li><li>• Dust containing sparks ... Such as dust produced by high speed cutting machines, grinders and welders.</li><li>• Ashes.....Such as from cigarettes and wood ashes etc</li></ul> <p>These substances could cause fires or explosions.</p>
	<p>Never install the dust collector at or near hazardous areas forbidden by laws and regulations.</p> <p>These substances could cause fires or explosions.</p>
	<p>Never operate the dust collector in or near an area where inflammable, explosive particles or corrosive mist, fumes or gases are present.</p> <p>These substances could cause fires or explosions.</p>
	<p>Do not suck the following materials.</p> <ul style="list-style-type: none"><li>• Corrosive substance such as chemicals.</li><li>• Harmful power such as asbestos.</li><li>• Dust polluted by radioactive substance or radioactivity.</li></ul> <p>This could reduce health.</p>
	<p>Never use any voltage other than the supply voltage shown on the dust collector. Do not overload one electrical outlet.</p> <p>This could cause fire or electric shock.</p>
	<p>Never touch the power cable with wet hands when connecting or disconnecting it.</p> <p>This could cause electric shock.</p>
	<p>Never allow the power cable to get damaged or broken.</p> <p>This could cause fire or electric shock.</p>
	<p>Never make any modifications to this dust collector.</p> <p>This could cause fire or electric shock.</p>
	<p>Be sure to ground the dust collector.</p> <p>Otherwise, electric shock could occur if a leak occurs. And malfunction and failure could occur because of electrostatic.</p>



## WARNING



If a fire occurs or there is a dust explosion inside the dust collector

- turn off the power immediately.
- use a fire extinguishing agent suitable for dust.
- even after the fire is out, don't open the door until the internal temperature drops to the normal level.

Otherwise, a secondary explosion could occur.



Clean the dust collector periodically to prevent build-up of dusts inside and outside, and inside the piping.

Ignition source put in the dust accumulation could cause a fire to occur.



Dispose of the collected dust every day and never build-up within the dust collector.

Neglecting this caution may prevent the machine from functioning normally and the ignition source put in the dust accumulation could ignite a fire.



Before opening the door or the roof, always turn off the primary power to the dust collector.

Failure to do this could cause electric shock.



When doing installation or inspection, follow the regulations and take actions for preventing danger and oxygen deficiency.

Ignoring it results serious injury or even death.



Before opening the door or the roof, always turn off the primary power to the dust collector.

Failure to do this could cause electric shock.



Do not operate with the inspection port opened.

Ignoring it results serious injury or leaking powders.



Do not operate the product without cover.

Serious injury may result.



## CAUTION



Do not suck the following materials.

- Sticky substances .....Soluble mist, oil mist, etc.
- Other materials .....Fluid, such as water and oil.

If ignored, the performance may be deteriorated.



Always wear protective clothing (such as gloves, mask, protective glasses, dustproof clothing) when discharging dust and inspection.

Failure to do this could cause injury.



Always wear protective clothing (such as gloves, mask, protective glasses, dustproof clothing) when doing an inspection or replacing the filter and other parts.

Failure to do this could cause injury.



Do not operate the dust collector with the suction and exhaust ports closed or blocked.

Such operation may cause an overheating, resulting in the occurrence of a fire.



Turn off the power immediately if abnormal noise, smoking, abnormal vibration, overheating or an abnormal smell develops during operation.

Operating under these conditions could cause electrical shock or fire.



If the motor stops during operation, turn off the primary power at once.

This could cause electric shock.



Be sure to turn off the power when performing inspection or repair to the machine.

This could cause electric shock.



Electrical wiring must be carried out by the qualified electrician.

Neglecting this caution could cause accidents to occur.



Keep the intake air temperature between 0°C and 40°C.

The intake air above such temperature could cause a machine failure.



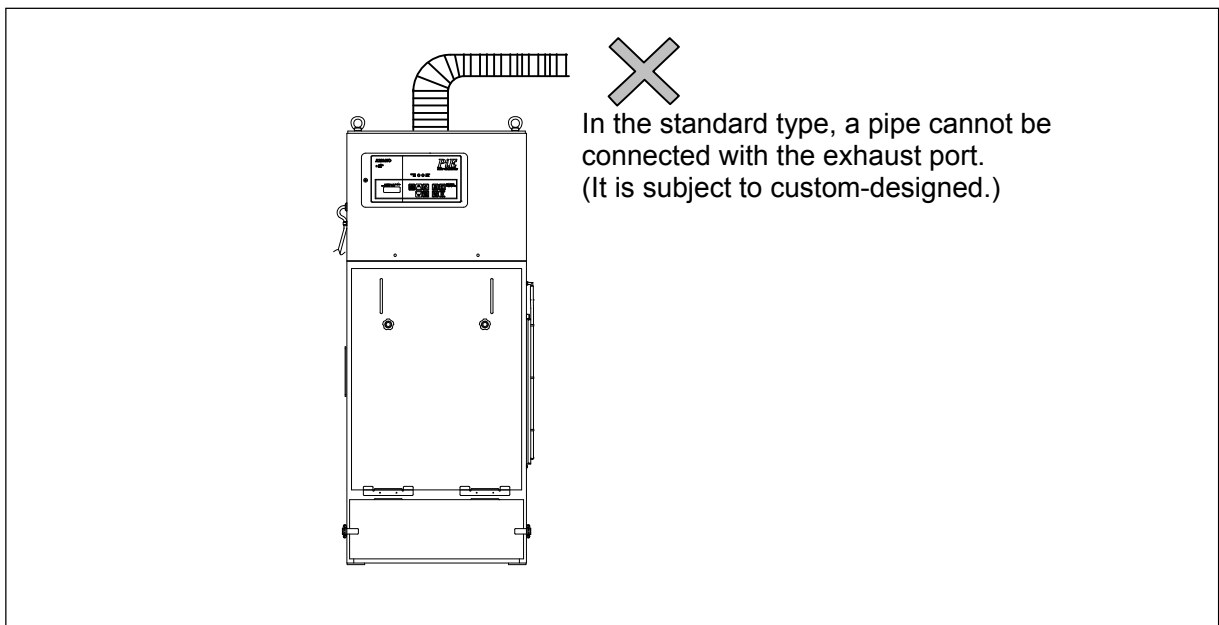
Always make sure that the motor rotates in the correct direction.

Reverse motor rotation may cause a machine failure or breakdown.

## ■ CAUTIONS REGARDING INSTALLATION

Satisfy the following conditions when installing this dust collector. Failure to do so will prevent the dust collector from functioning normally and may cause a breakdown of the product, which could lead to accidents to occur.

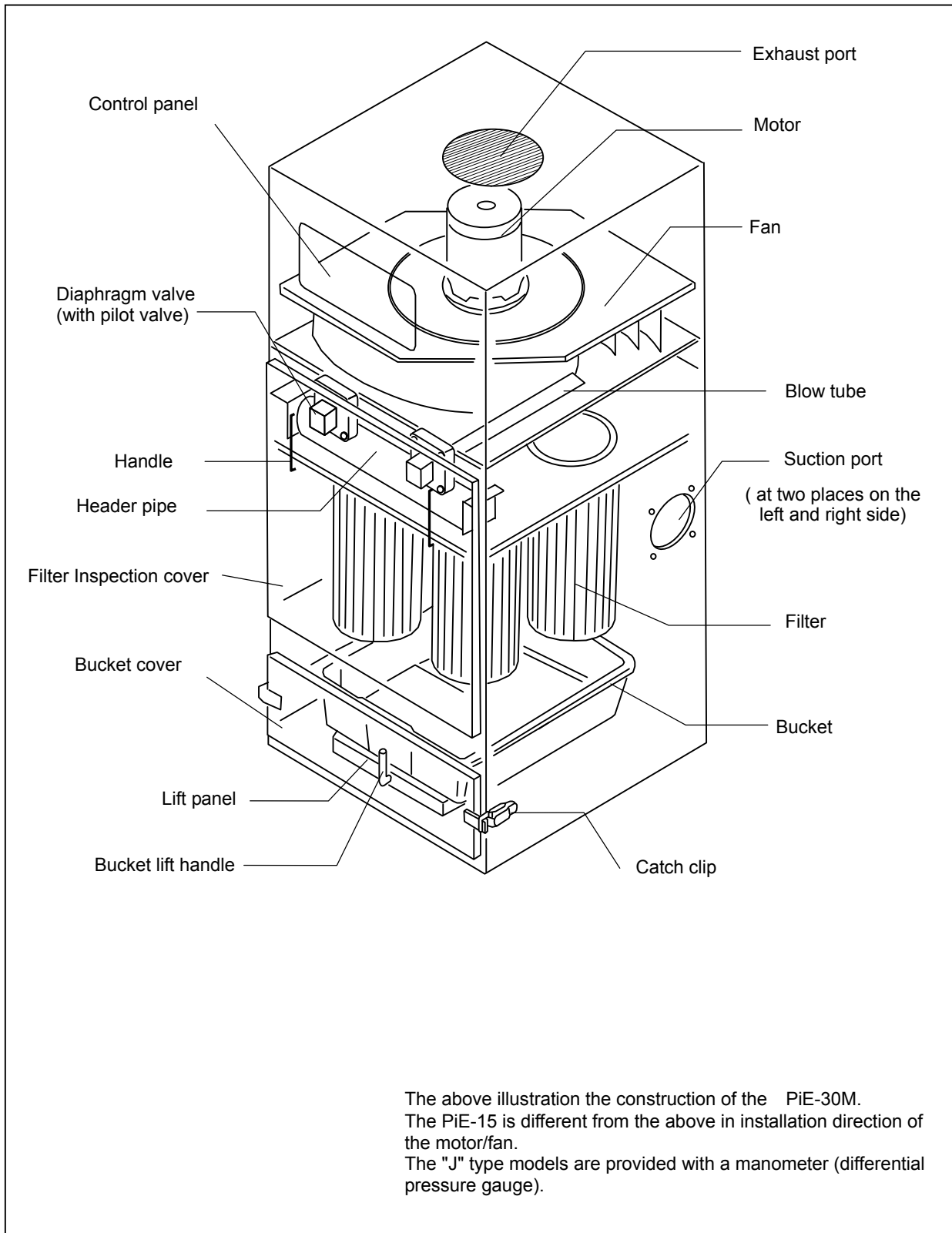
- If the equipment is an indoor type, install it in a place where it will not be exposed directly to the rain or dew.
- The floor surface must be strong enough to support the mass of the dust collector.
- Install the dust collector in a location free from strong vibration and shock.
- The location must be flat.
- The location should afford sufficient space for daily maintenance work.
- Maintain an ambient temperature of 0 to 40°C.
- The dust collector should be connected to a 3-phase power supply. Check the power supply specifications (voltage, frequency, etc.) given on the nameplate.
- For the prevention against electrical shock accidents, make sure the power cable ground wires are properly connected. Ensure that the earth is installed in accordance with the requirements which mean maximum grounding resistance of 100 ohms.
- In the case that the equipment is moved by a forklift or crane, the operation, including slinging work, must be done by the person who is qualified for such job.
- The compressed air used for dust removal off the filter surface should be supplied through the filter regulator. Check that the supplied compressed air pressure is maintained between 0.5 to 0.7 MPa.
- Do not install the dust collector at a place where it will be subject to sharp temperature fluctuations, or it may be directly exposed to sunlight, to avoid dew formation within the electrical equipment (control panel).
- If a pipe is connected to the exhaust port of the standard type, air may leak from the clearance at the upper part of the body, or the opening at the portion to which the operation switch is attached. If you need to connect a pipe, a custom-designed unit will be needed. So, contact one of our offices or sale agents.



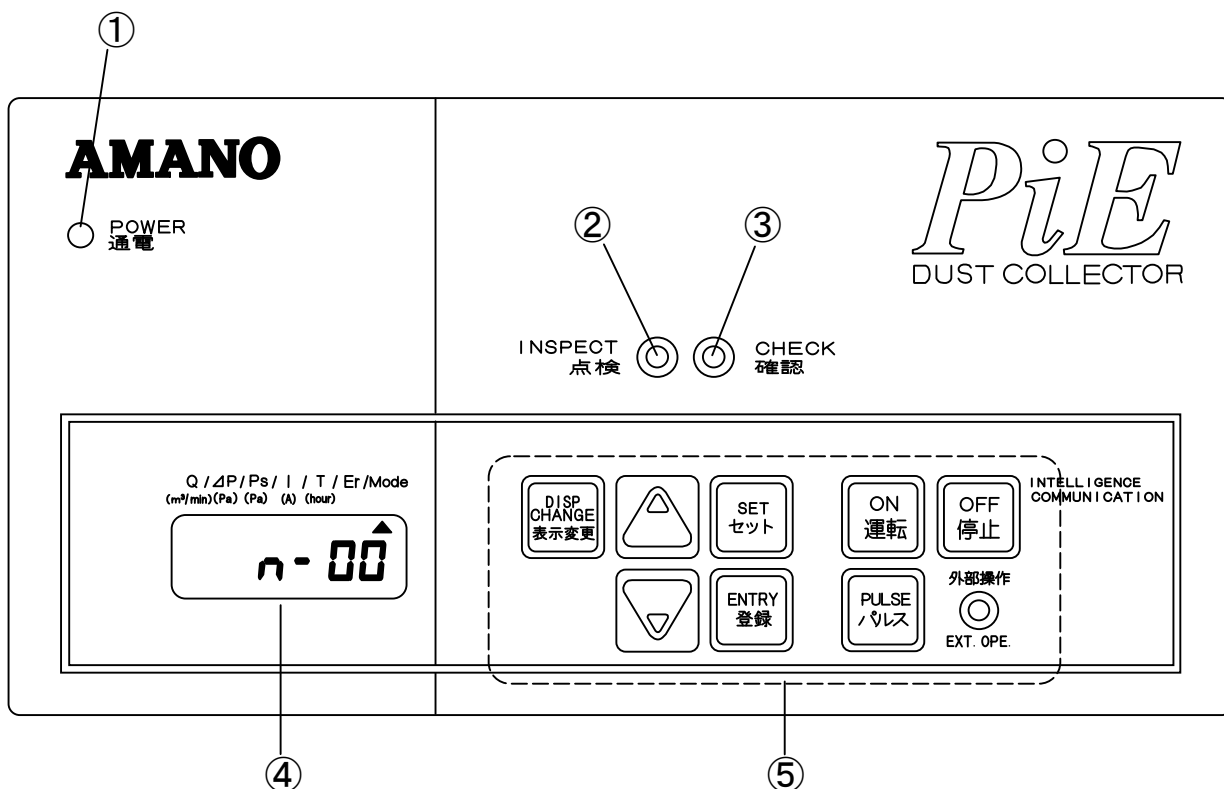


## 2. STRUCTURE AND NAMES OF COMPONENTS

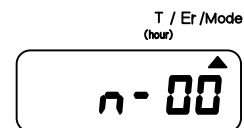
### ■ BODY



## ■ Control panel

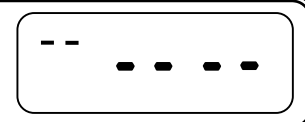


The drawing on the right shows a message window on the “J” type machine control panel (Without “Q / ΔP / Ps / I” display).

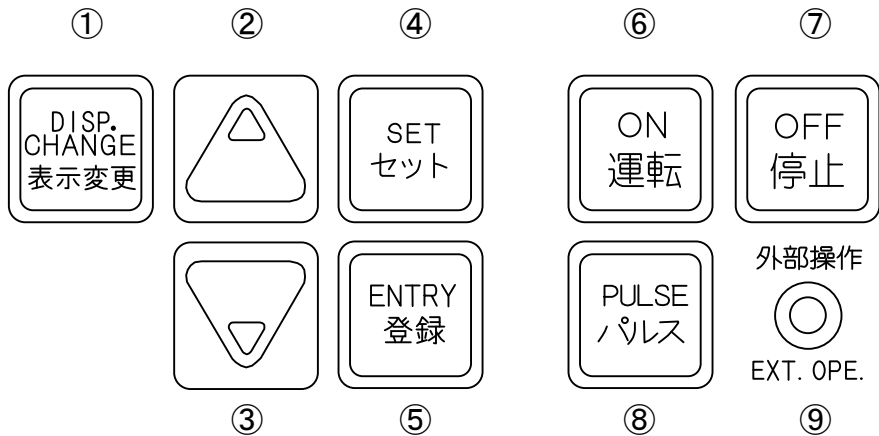


No.	Part name	Function
①	POWER lamp	This lamp goes ON when the power cord is connected to the primary power supply and the power is applied to the equipment.
②	INSPECT lamp	The content to be inspected is displayed in the message window at the same time this lamp is lit.
③	CHECK lamp	The content to be checked is displayed in the message window at the same time this lamp is lit. (When two events, one requiring “inspection” and the other “check” on the operator’s side, occur at the same time, both of these lamps are lit concurrently.)
④	Message window	Codes appear in the message window to indicate operation status and inspection and check items when errors occur. During data setting, information regarding the setting is displayed. (When there are two or more items regarding the operation status, inspections, or checks, the display changes every 10 seconds to show each code.) Display in “Setting” mode: <b>St</b> Display in “Pulse” mode: <b>P M</b>
⑤	Key-switches/lamps	See the next page.

After it is energized (before start of operation), the message window seen right will be displayed on the screen.



## ■ KEY-SWITCHS / LAMPS ON THE CONTROL PANEL
















No.	Part name	Function
①	DISP CHANGE key	Use this key to change the mode of display in the message window. Each time this key is pressed, the next message is displayed in the window.
②	Addition key	Use this key to change the numeric value of the data when setting the operation data. Each time this key is pressed, the numeric value is increased by “1” or “10”.
③	Subtraction key	Use this key to change the numeric value of the data when setting the operation data. Each time this key is pressed, the numeric value is decreased by “1” or “10”.
④	SET key	Use this key to make changes in the set operation data (resetting). A push on this key will change the operation mode to setting mode.
⑤	ENTRY key	Use this key to enter the input data to the memory when setting the operation data.
⑥	START (ON) switch	Pressing on this switch will start the operation.
⑦	STOP (OFF) switch	Pressing on this switch will stop the operation.
⑧	PULSE JET switch	A press on this switch will carry out one cycle of pulse jet operation.
⑨	External operation lamp	The start (ON)/stop (OFF) operation is usually controlled with switches on the control panel. It can also be remote-controlled using the externally linked switches. This lamp lights up in yellow when the operation is executed by the commands from such external device.

※In the outdoor type, the operation, stop and pulse switches provided on the control panel will not be used, but the pushbuttons on the electrical system box are used for operation.

### 3. PREPARING FOR OPERATION

Make sure to read and understand the following warnings and cautions when preparing for the operation of the dust collector.

 <b>WARNING</b>	
	<p>Never install the dust collector at or near hazardous areas forbidden by laws and regulations.</p> <p>These substances could cause fires or explosions.</p>
	<p>Never operate the dust collector in or near an area where inflammable, explosive particles or corrosive mist, fumes or gases are present.</p> <p>These substances could cause fires or explosions.</p>
	<p>Never use any voltage other than the supply voltage shown on the dust collector. Do not overload one electrical outlet.</p> <p>This could cause fire or electric shock.</p>
	<p>Never touch the power cable with wet hands when connecting or disconnecting it.</p> <p>This could cause electric shock.</p>
	<p>Never allow the power cable to get damaged or broken.</p> <p>This could cause fire or electric shock.</p>
	<p>Be sure to ground the dust collector.</p> <p>Otherwise, electric shock could occur if a leak occurs. And malfunction and failure could occur because of electrostatic.</p>

 <b>CAUTION</b>	
	<p>Do not operate the dust collector with the suction and exhaust ports closed or blocked.</p> <p>Such operation may cause an overheating, resulting in the occurrence of a fire.</p>
	<p>Turn off the power immediately if abnormal noise, smoking, abnormal vibration, overheating or an abnormal smell develops during operation.</p> <p>Operating under these conditions could cause electrical shock or fire.</p>
	<p>If the motor stops during operation, turn off the primary power at once.</p> <p>This could cause electric shock.</p>
	<p>Be sure to turn off the power when performing inspection or repair to the machine.</p> <p>This could cause electric shock.</p>
	<p>Electrical wiring must be carried out by the qualified electrician.</p> <p>Neglecting this caution could cause accidents to occur.</p>

## ■ Installation Precautions

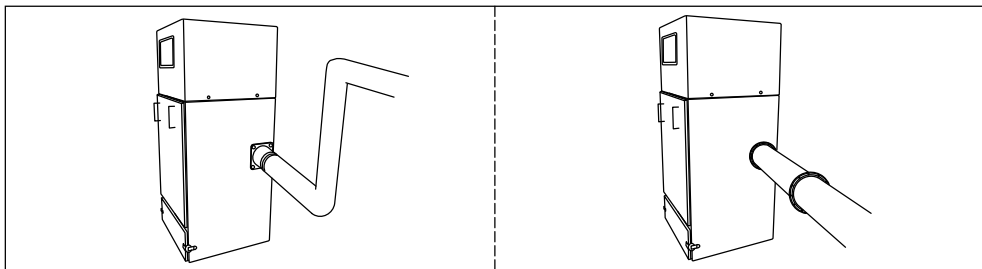
Please follow all precautions given below when using this dust collector. Otherwise, you will not have the full performance of the dust collector, or even may suffer from malfunctions, which could lead to causing an accident to occur.

- Do not use it for purposes other than dust collection.
- Do not collect dust containing abrasive particles.
- Do not start or stop machine operation directly by turning on and off the primary power supply. Instead, always do it by manipulating the ON (start running)/OFF (stop running) switches on the control panel or via remote controlled on/off operation, with the primary power supply turned on beforehand.
- Do not modify electrical wiring inside the dust collector. Wrong value display on the control panel, or machine malfunction could be caused.
- The standard type dust collector has a built-in fan (exhauster). If the duct connection is made on the exhaust side, then, do not install any fan to the piping side. To reduce the exhausting resistance, an exhaust ventilating fan can be installed separately. However, this may cause wrong data display on the control panel.
- Keep the suction air temperature between 0 and 40°C.
- Maintain the ambient temperature between 0 and 40°C.

### (1) Installing Ducting

Install the ducting between the dust source and the dust collector.

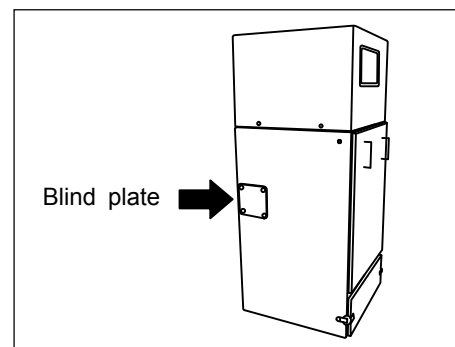
- Connect the duct or hose to the suction port. Fasten firmly using a hose band or any other kind of clamps, preventing them from coming off.
- Flanges for piping, 2-way branch pipes, 3-way branch pipes, flanges for exhaust duct are respectively available as an option.



#### CAUTION

- Do not allow the duct hose to hang down from the suction port, to avoid dust accumulation in the duct hose. Also, to minimize the suction resistance, determine the duct diameter according to the type of dust to be collected and take the shortest path to install the duct.
- If you use a PVC hose for the prevention of static-attributable operation errors, take anti-static measures including ground wire installation to the hose, etc. Some kinds of tubes/hoses and dust may allow easier generation of static electricity in and around the equipment in action.

- You can use either the left or right suction port. However, the unused port must be covered tightly with a blind plate.

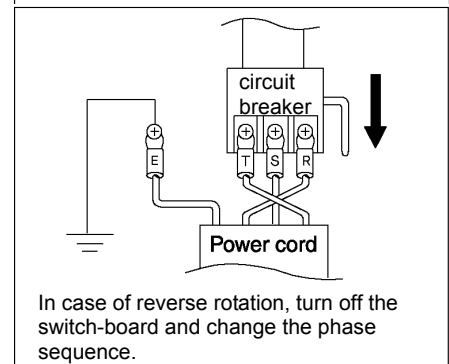
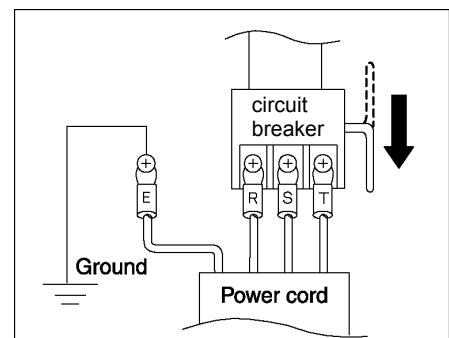


## (2) Connecting the Power Supply

### CAUTION

- Connect the power cord to a 3-phase power supply following the steps given below. Make sure the specifications of the power supply to be used meet the requirements given on the identification plate affixed to the body unit. Power supplies of different specifications must not be used for this machine. If you desire to change the power supply specifications on the machine side, contact the dealer, or our local office.
  - . Conversion from 200V/60Hz to 220V/60Hz, or vice versa, requires changing some settings.
  - . Conversion to any power supply specification other than above cannot be made valid even by changing settings, for such a machine uses different parts.
- Make sure that the grounding resistance is less than 100  $\Omega$ .
- The power supply connection should be carried out by the qualified electrician.

- ① Make sure that the power supply specifications on the dust collector match the power supply you will use.
- ② For electric shock prevention, be sure to cut the power supply to the circuit breaker (primary power supply).
- ③ Install the ground wire (Green) of the power cord. Make sure it affords a grounding resistance of less than 100  $\Omega$ .
- ④ Fasten power cord core wires other than the ground wire to the respective terminal blocks on the circuit breaker (primary power supply).
- ⑤ Check for the above ① to ④ items once again. Then, turn on the circuit breaker (primary power supply).
- ⑥ After the power connection, check if the fan motor rotates in the proper direction.

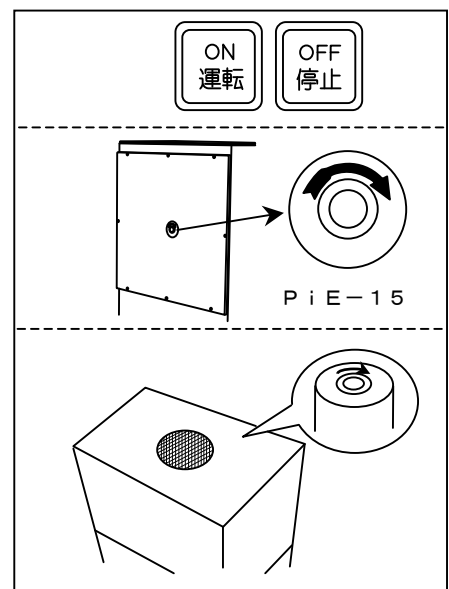


### <Reverse-phase connection>

If reverse-phase connection of the power supply is detected, the error code "Er01" will appear in the message window, keeping the fan from rotating. If this happens, turn off the circuit breaker (primary power supply) and rework the power cord wire connection so that the "T" and "R" phases will change places each other. Turn the power on once again and make sure that the error code is no more displayed in the message window.

### IMPORTANCE:

When changing the phase sequence, be sure to turn off the circuit breaker (primary power source) before setting to the work. This could cause electric shock.



### <Check on rotation direction>

Operate the fan to check if the motor rotates in the proper direction. Give a push to the [ON] switch to start fan rotation. Immediately, turn on the [OFF] switch. When the fan slows down, you can see in which direction the fan motor rotates.

The PiE-15 has a "rotation direction check window" at the rear of the main frame. Remove the rubber cap and check rotation direction through that window.

With other models, do it through the exhaust port.

### <Checking of breaker>

For safety, install a breaker on the side of the primary power supply, which meets the following requirement.

Model	Type of breaker	Breaker capacity (200V power supply)
P i E - 1 5	NFB (molded case circuit breaker), or	1 0 A or over
P i E - 3 0		1 5 A or over
P i E - 4 5	ELB (ground fault circuit breaker)	2 0 A or over
P i E - 6 0		3 0 A or over

## (3) Connecting the Compressed Air Supply

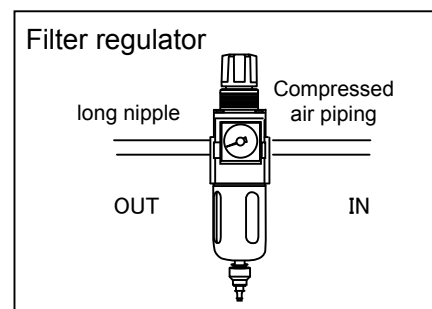
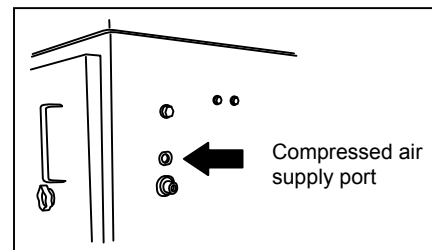
Connect the compressed air supply line to remove the accumulation of dust from the filter. Install the filter regulator (air filter with a regulator that is attached as an accessory) in the manner as follows:

#### CAUTION

- Before supplying the compressed air to the inside of the dust collector, use the attached filter regulator to remove the dust, moisture, oil and other contaminants from it. If the filter regulator is not used, the compressed air supplied will be contaminated by metal particles, and/or moisture or oil mist will not be removed, and which might affect the filter life or dust collecting efficiency.
- The supply pressure of the compressed air should be regulated at 0.5 to 0.7 MPa.
- Do not remove the sealing tape (white) from the tip of the long nipple.
- Do not make impact or apply force on the filter regulator from outside. The broken or deformed nipple, union or filter regulator could be blown off away by the compressed air.

- ① Connect the compressed air line to the air supply port through the attached filter regulator. At this time, be attentive to the arrow mark on the filter regulator which indicates the air flow direction, so that the attached long nipple comes to the "OUT" side in which the arrow mark is pointing.
- ② Connect the compressed air piping to the filter regulator "IN" side.
- ③ Supply the compressed air at 0.5 to 0.7 MPa.

- Locate the filter regulator in a convenient place to perform maintenance.



## (4) Connecting the Manometer (For J Type only)

The evaluation of filter clogging is made on the differential pressure of the suction air between before and after-filtration. If the differential pressure is large, the filter should have got clogged. The manometer is used to measure this differential pressure. (The M/U type machines do not have a manometer; instead they are provided with a differential pressure. The filter differential pressure is displayed in the message window.)

### [Connection]

- ① From either A or B insertion plug, remove the hose that has connected the manometer with the main frame.
- ② Through the open end of the detached hose, pour water into the hose little by little. Adjust so that the static water in the hose will stabilize at "0". Bubbles in water may cause measuring errors. So, tap the hose to break them away.
- ③ Reconnect and firmly secure the detached hose to the insertion plug as before.

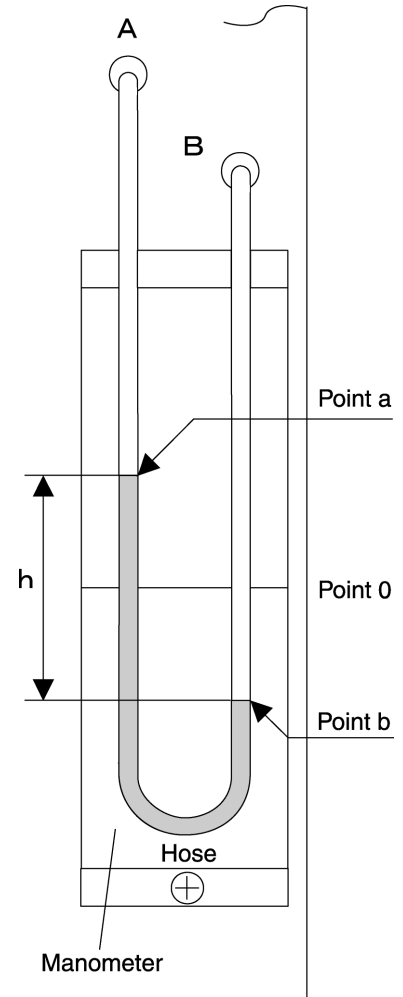
### [Usage]

- ① When the dust collector is operated, the water level on the "A" side of the manometer hose rises to the "a" point, and that on the "B" side, lowers to the "b" point. At this time, take the reading of the difference (h) between these two water levels, which indicates the difference in pressure between "a" and "b" points.

The A side is subjected to the static pressure (negative pressure) of the suction air after the filtration, and so is the B side to that before the filtration. Therefore, the difference between the two water levels indicates the amount of the pressure loss due to filtration. Scale unit: 20 Pa

The clogging level of the dust collector can be judged by measurement "h" on the manometer.

- ② Pulse jet operation contributes to recovery of the filter so that 'h' will be restored to the initial value. The pulse jet operation period should be determined according to the filter clogging severity which will be checked by the manometer reading.





## (5) Setting for Remote-Operation

In addition to the operation with switches on the control panel, a remote operation through external signals is also possible with this machine. If you desire to operate the machine from a remote location, make the following connections. Also, make the remote operation data setting effective according to the setting items tabulated in the next section, since these data should have been made invalid as per specifications applied at factory shipment.

### ⚠ CAUTION

- The remote operation connection wiring must be performed by the qualified electrician.
- Don't touch any electrical parts on the equipment other than those at locations specified below, to avoid suffering from machine faults or breakdown.
- Use wiring, switches and relays meeting the specifications given below.
- Available wiring extension for remote operation is 50 meters at the maximum.

## ■ Specifications

### <Wiring materials>

Items	Specs
Wire type	Sheath wire
Conductor cross section	0.75mm <sup>2</sup> and over
Withstand voltage	125V and over

### <Push-button switches>

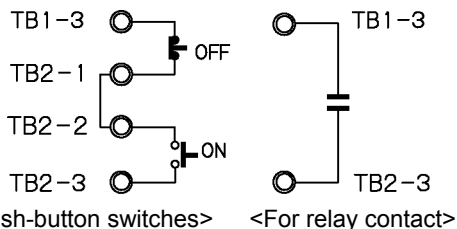
Items	Specs
Contact capacity	1A and over
Withstand voltage	DC 30V and over
Min. application load	DC 12V, 10mA and less

### <Relays>

Items	Specs
Contact capacity	1A and over
Withstand voltage	DC 30V and over
Min. application load	DC 12V, 10mA and less

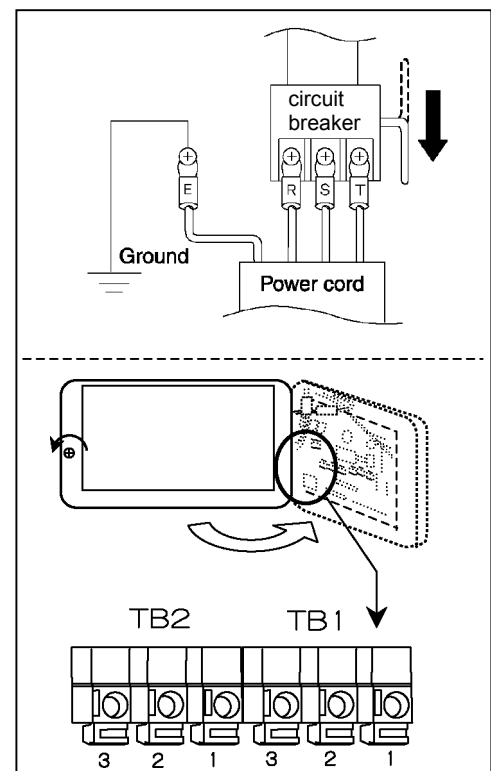
## ■ Connecting the wires

- ① Turn off the circuit breaker (primary power supply) for safety.
- ② Open the control cover. Referring to the below diagram, connect external operation switches to the terminal assemblies arranged on the back of the control panel.



- ③ Close the cover of control panel and fasten it with screws.
- ④ Turn on the circuit breaker (primary power supply).

To set the remote operation function on, make the necessary data settings following the description in (8) "Setting for Remote Operation" of the next Section 4 "Setting the Data".



## ■ Signal Output Terminal

Terminal assembly TB1-1 and TB1-2 are connected with non-voltage contact, and the contact breaks (ON) when the inspection/check lamp turn on. (Utilized for revolving warning lights, etc.)  
Output contact: AC250V, 1A (See the wiring diagram on pages 48 to 50)

## 4. SETTING THE DATA

Before running the machine, users should make settings for certain functions as follows from the control panel. This chapter mainly relates to settings for pulse jet operation (filter dust removal operation). Setting items should vary by the type of machines (U, M, J). See the table below.

Note: Settings for remote control (at page 25) must be made before starting operation. Other settings may be provided even after the machine enters operation. If you hasten to start the machine running, you can put off the data setting.

	Item	Content	Function	U	M	J
(1)	—	Airflow setting	The amount of the suction air can be set here. With this setting, the airflow is maintained at a fixed quantity during the operation regardless of the filter clogging condition. (See P.18.)	○	×	×
(2)	—	Setting the pulse starting	The clogged filter will decrease the collection efficiency. This setting is made to specify the value of the filter differential pressure (indicating filter clogging degree) at which the automatic dust removal (pulse jet) operation is activated. (See P. 19.)	○	○	×
(3)	n - 0 0	Pulse jet operation mode	This setting is made to select filter dust removal mode from the followings: <001> In this mode, dust removal is continuously performed throughout the run. The operating time of the dust removal (pulse jet operation time) and its halt duration are set by ON TIME and OFF TIME respectively. <002> This is the mode in which the automatic dust removal (pulse jet operation) is started when the specified pulse starting differential pressure is attained. The operating time and halt duration are set by ON TIME and OFF TIME respectively. <003> In this mode, the automatic dust removal (pulse jet operation) is performed when the specified pulse starting differential pressure is attained, plus once every hour. The operating time and halt duration are set respectively by ON TIME and OFF TIME. <004> If this mode is selected, the pulse operation is activated only when the [PULSE] switch is pressed by the operator. (See P.20.)	○	○	△
(4)	n - 0 1	ON TIME	This sets the continued operating time of automatic dust removal (pulse) operation. (See P. 21.)	○	○	○
(5)	n - 0 2	OFF TIME	This sets the duration of halt of automatic dust removal (pulse) operation. (See P. 21.)	○	○	○
(6)	n - 0 3	Interval	Following the start of the pulse operation, the solenoid valves are sequentially operated to complete dust removal of all filters installed. The setting for 'interval' specifies the time (minutes) until the next start of the pulse operation. (See P. 22.)	○	○	○
(7)	n - 0 4	End pulse	This setting enables the dust removal operation to be performed at the time the machine stops running. Set the desired number of cycles of that operation, considering that "ON TIME" plus "OFF TIME" constitutes 1 cycle of the dust removal operation. (See P. 23.)	○	○	○
(8)	n - 0 5	Pulse stop target differential pressure	The operation of the automatic dust removal (pulse) will resolve the filter clogging and reduce the filter differential pressure. So, this sets the target differential pressure that effects the automatic stop of the dust removal operation. (See P. 24.)	○	○	×

	Item	Content	Function	U	M	J
(9)	n - 0 6	Remote operation	In addition to the operation with switches on the control panel, a remote operation through external signals is also possible with this machine. If you desire to perform remote operation, make this setting valid. (See P. 25.)	○	○	○
(10)	n - 0 8	Abnormal filter differential pressure	If the filter gets clogged, the filter differential pressure ( $\Delta P$ ) goes high. Specify the set point at which an error alarm indicating abnormality in the differential pressure is issued on the display. (See P. 26.)	○	○	×

○ : Available

× : Unavailable

△ : Available for 001 and 004 modes only. If the setting is made for 002 or 003 mode, it will be considered as the mode 001.

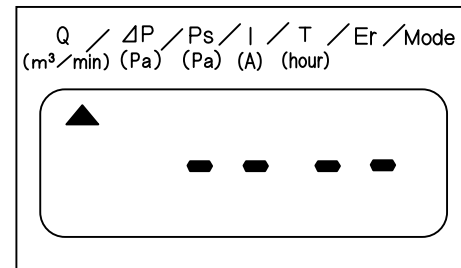
\* The setting for the item "n-07" is unchangeable.

## (1) Airflow Setting

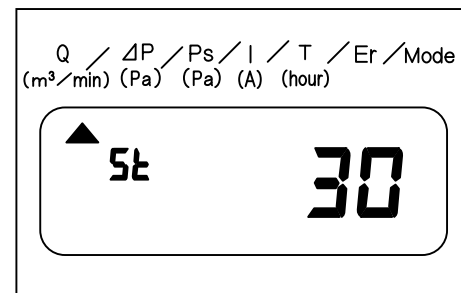
**U**

The desired value of suction airflow can be given to the machine. If this value is given, or preset, in response to the severity of clogging, the frequency will change by itself between 40 to 70 Hz in order to maintain the airflow at the set point.

- Press the DISPCHANGE key and locate ▲ just under "Q (m<sup>3</sup>/min)". (This "display selection" screen will return to the original screen if no access is made to the screen within 1 minute. Do the next key manipulation within 1 minute.)
- Press the SET key. Select the set value using ▲/▼ keys. Press the ENTRY to enter the selected data to the memory. If you fail to press this key, you will not be able to update the settings. (While the setting mode prompt "St" remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)



	Default value (m <sup>3</sup> /min)	Setting range (m <sup>3</sup> /min)
PiE-15 (U)	10	5 to 13
PiE-30 (U)	20	10 to 25
PiE-45 (U)	30	15 to 38
PiE-60 (U)	40	20 to 50



The set point should be the desired value given to the machine. In actual operation, correction for the airflow may be made approximately, not absolutely, to the set point according to the operating conditions (pipe/tube diameter, clogging state, etc.).

(The values displayed above are just for reference.)

- Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen, and after a lapse of 1 minute, make transition to the original screen.

## (2) Setting the pulse starting

U

M

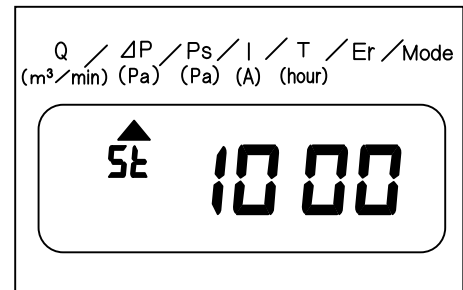
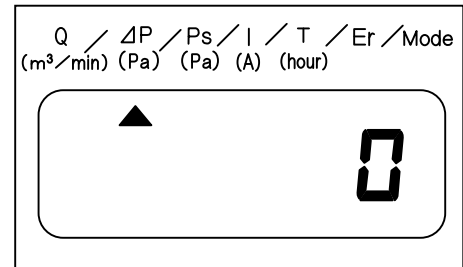
Clogged filter will cause a decrease in the volume of air intake. Here, the setting is made to perform automatic removal of the dust (pulse operation) from dust accumulation on the filter surface that is the cause for lowering of air intake efficiency. Input the filter differential pressure at which the pulse operation is made to start.

\* **“Filter differential pressure” is indicated by the difference in the suction air pressure between before and after passing through the filter. The filter clogging gets worse in proportion to the size of this difference.**

① Press the DISP CHANGE key and locate ▲ just under “ $\Delta P$  (Pa)”. (This “display selection” screen will return to the original screen if no access is made to this screen within 1 minute. Start the setting change key manipulation within this 1 minute.)

② Press the SET key. Select the set value using ▲/▼ keys. Press the ENTRY to enter the selected data to the memory. If you fail to press this key, you will not be able to update the settings. The setting should be made within a range of 500 to 2500 Pa, and 1000 Pa is the default. If the default value is acceptable, no data update is necessary. (While the setting mode prompt “SE” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)





③ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen, and after a lapse of 1 minute, make transition to the original screen.

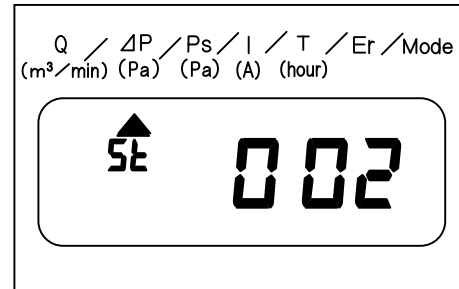
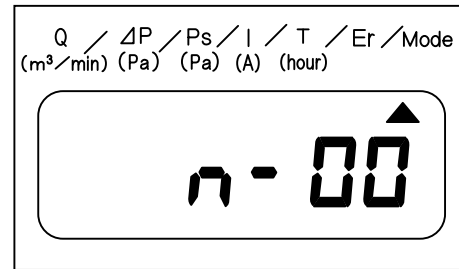


### (3) Setting the pulse jet operation mode

U M J



This setting is made to select a mode of filter dust removal operation.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item “n-00” appears on the display. If not, continue pressing on   keys until the target item appears. Press the SET key. (This screen will return to the original screen, if no access is made to this screen within 1 minute. To proceed to the task, manipulate the next key within 1 minute.)
- ③ Press   keys to make a selection from “001” to “004”. “002” is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)



<001>	In this mode, dust removal is continuously performed throughout the run. The operating time of the dust removal (pulse operation time) and its halt duration are set by ON TIME and OFF TIME respectively.
<002>	This is the mode in which the automatic dust removal (pulse operation) is started when the specified pulse starting differential pressure is attained. The operating time and halt duration are set by ON TIME and OFF TIME respectively.
<003>	In this mode, the automatic dust removal (pulse operation) is performed once every an hour of operation, as well as whenever the specified pulse starting differential pressure is attained during runs. The operating time and halt duration are set respectively by ON TIME and OFF TIME.
<004>	In this mode, the pulse operation is activated only when the [PULSE] switch is pressed by the operator.







※For how to make ON TIME and OFF TIME settings, see the description at pages 21 and 22.

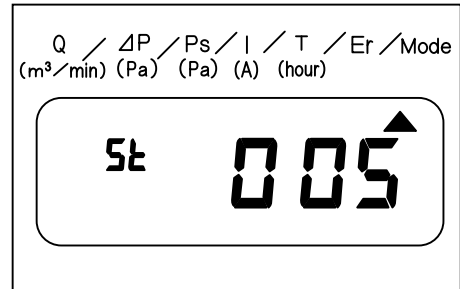
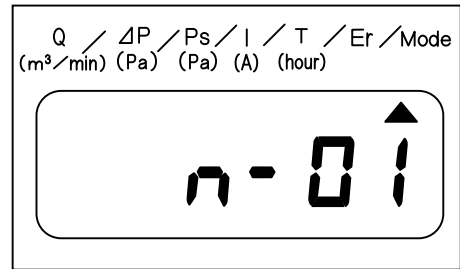
- If “001” setting mode is selected, the pulse operation will start 1 minute after the start of dust collector run.
  - The “J” type can operate in 001 and 004 modes only. 002 or 003 mode selected for “J” type should be considered as “001” mode.
- ④ Press the ENTRY to enter the selected mode to the memory. If you fail to press this key, you will not be able to update the mode settings.
  - ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-00” displayed). If you desire to continue updating the settings for “n-01” and subsequent items, select the target item number with   keys. If not, after 1 minute more lapse of time, the screen will make transition to the original screen.

## (4) Setting “ON TIME”

**U M J**

This sets the continued operating time of automatic dust removal (pulse operation). The setting is made effective when the pulse mode, explained in the previous page, is set to “001”, “002”, or “003”.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press   keys to display the target item number “n-01”. Then, press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press   keys to display the desired time in a range of “005” to “015” (in units of 10 ms). “005” (x 10 ms) is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter the selected time to the memory. If you fail to press this key, you will not be able to update the settings.
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-01” displayed). If you desire to continue updating “n-02” and the subsequent setting items, select the next target item number with   keys. If there is no manipulation, after 1 minute more lapse of time, the screen will make transition to the original status screen.







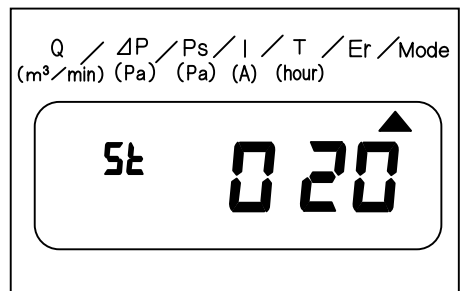
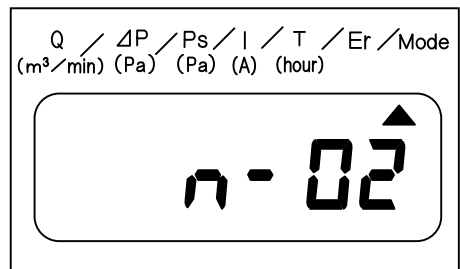
【 1ms = 1/1000 second 】



## (5) Setting “OFF TIME”

**U M J**

This sets the duration of halt of dust removal (pulse operation). The setting is made effective when the pulse mode, explained in the previous page, is set to “001”, “002”, or “003”.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press   keys to display the target item number “n-02”. Then, press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press   keys to display the desired time in a range of “005” to “080” (sec). “020” (sec) is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter the selected time to the memory. If you fail to press this key, you will not be able to update the settings.









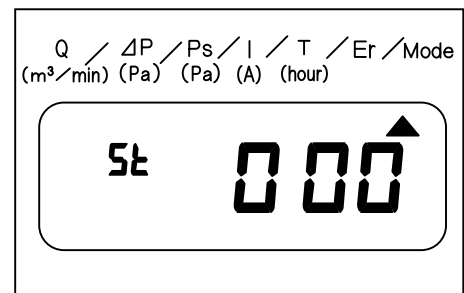
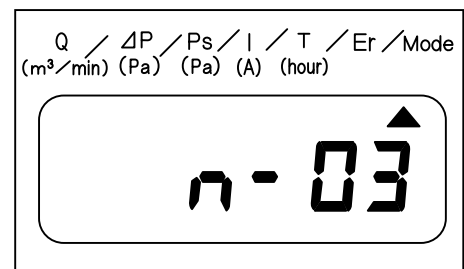
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-02” displayed). If you desire to continue updating “n-03” and the subsequent items, select the next target item number with   keys. If there is no manipulation, after 1 minute more lapse of time, the screen will make transition to the original status screen.

## (6) Interval

**U M J**

Following the start of the pulse operation, the solenoid valves are sequentially operated to complete dust removal of all filters installed. The setting for ‘interval’ specifies the time (minutes) until the next start of the pulse operation. It is valid when the pulse mode is set at ‘001’.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press   keys to display the target item number “n-03”. Then, press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press   keys to display the desired time in a range of “000” to “099” (min). “000” (min) is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter the selected time to the memory. If you fail to press this key, you will not be able to update the settings.
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-03” displayed). If you desire to continue updating “n-04” and the subsequent items, select the next target item number with   keys. If there is no manipulation, after 1 minute more lapse of time, the screen will make transition to the original status screen.



## (7) End pulse

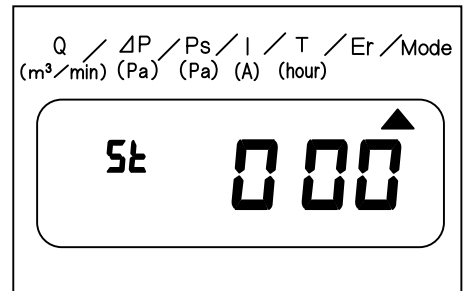
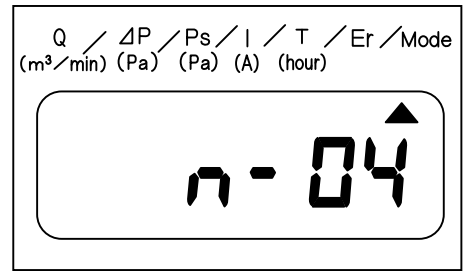
U

M

J

This setting enables the dust removal operation to be performed at the time the dust collector stops running. Set the desired number of cycles of that operation.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press ▲▼ keys to display the target item number “n-04”. Then, press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press ▲▼ keys to display the desired cycle frequencies in a range of “000” to “010” (cycles). “000” (cycle) is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter the selected cycle number to the memory. If you fail to press this key, you will not be able to update the settings.
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-04” displayed). If you desire to continue updating “n-05” and the subsequent items, select the next target item number with ▲▼ keys. If there is no manipulation, after 1 minute more lapse of time, the screen will make transition to the original status screen.



- “END-PULSE” setting is valid for dust collector runs lasting for more than one consecutive minute.
- “END-PULSE” operation will start 2 minutes after the stop of the dust collector run.



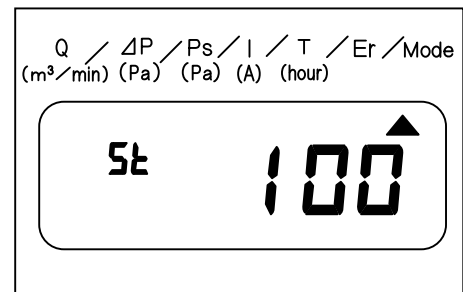
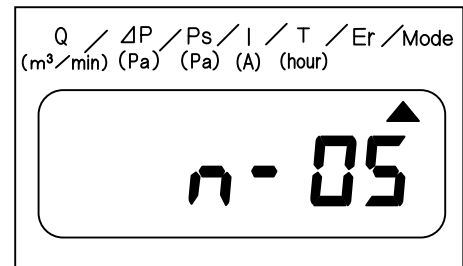
## (8) Setting the pulse stop target differential pressure

U

M

This setting enables automatic stop of the pulse jet operation. Enter the amount of filter differential pressure to be deducted from the pulse-jet-operation starting differential pressure value in order to effect pulse-jet-operation stop. For example, if the pulse-jet-operation starting differential pressure is 1000 Pa, and this setting is 100 Pa, the pulse-jet-operation will automatically stop when the differential pressure becomes 900 Pa. Normally, use the default value “100 Pa”.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press ▲▼ keys until the target item number “n-05” appears on the screen. Press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press ▲▼ keys to display the desired pressure value ranging “050” to “300” (Pa). “100” (Pa) is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter the selected pressure value to the memory. If you fail to press this key, you will not be able to update the settings.
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-05” displayed). If you desire to continue updating “n-06” and the subsequent items, select the next target item number with ▲▼ keys. If there is no manipulation, after 1 minute more lapse of time, the screen will make transition to the original status screen.



## (9) Setting the remote operation

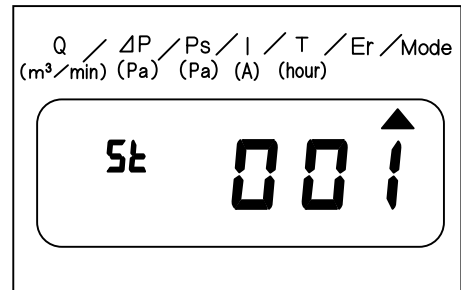
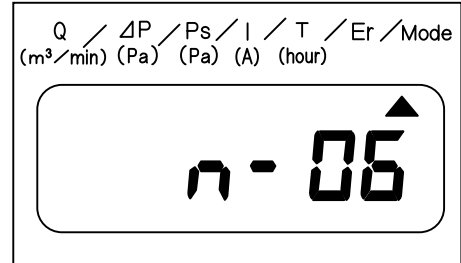
U

M

J

This equipment can be operated not only by switches on the control panel, but remotely by external signals. For the remote operation, the system needs to be set up accordingly. In an outdoor type model, the remote operation mode is set as default, and such setting must not be changed unless a special instruction is made by the maker.

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press ▲▼ keys until the target item number “n-06” appears on the screen. Press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press ▲▼ keys to display “001” (remote operation OFF) or “002” (remote operation ON). Indoor type is set to “001” as default, and out door type is set to “002” as default (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter above setting to the memory. If you fail to press this key, you will not be able to update the setting.
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-06” displayed). There is 1 minute more lapse of time, and the screen will make transition to the original status screen.



## (10) Setting the abnormal filter differential pressure

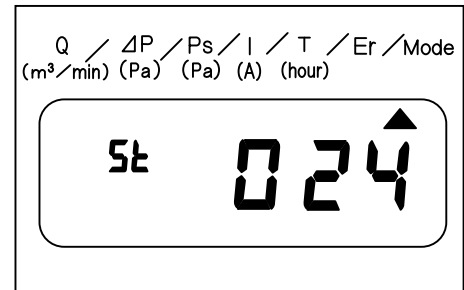
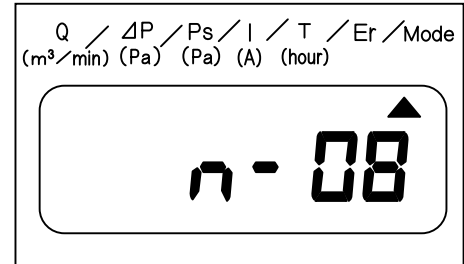
U

M

If the filter differential pressure increases exceedingly, an error indication (Er 13) is given on the display. Specify the set point at which the error display is started. The initial value has been set to 2400 Pa. If the error indication is displayed repeatedly even after the execution of the pulse operation, it should be taken as an indication of the time for filter replacement.

\* **“Filter differential pressure” is indicated by the difference in the suction air pressure between before and after passing through the filter. The filter clogging gets worse in proportion to the numerical value of this difference.**

- ① Press the DISP CHANGE key several times to locate ▲ just under “Mode”.
- ② The setting item is displayed in two digits headed by a letter “n”, like “n-00”. Press ▲▼ keys until the target item number “n-08” appears on the screen. Press the SET key. This screen will return to the original status screen in 1 minute. If you desire to change the data, press the SET key this while.
- ③ Press ▲▼ keys to display the desired pressure value ranging “020” to “030” (×100Pa). “024” (×100Pa) is the default. (While the setting mode prompt “St” remains on the display, if no input is made in 10 seconds, the screen will return to the previous one.)
- ④ Press the ENTRY to enter above setting to the memory. If you fail to press this key, you will not be able to update the setting.
- ⑤ Press the SET key or leave the screen as it is for 10 seconds. The screen will return to the previous screen (with prompt “n-08” displayed). There is 1 minute more lapse of time, and the screen will make transition to the original status screen.



## (11) Other settings

Do not make change in settings for the items “n-07” and the subsequent (for n-08, see the description in the previous section). A wrong setting in any of these may impede proper operation of the safety device (operational fault/error detection device).









When you make a mistake in setting operation, do not press the ENTRY key, but press the SET key to change the screen back to the “DISPLAY SELECTION” screen. If you should have pressed the ENTRY key in error, reset that setting to the default as follows.

### < List of default values >

n – 07 Unalterable	n – 08 See the previous section	n – 09 Unalterable	n – 10 Unalterable	n – 11 0	n – 12 0
n – 13 0	n – 14 0	n – 15 0	n – 16 Blank	n – 17 0	n – 18 0
n – 14 0	n – 20 0	n – 21 0	n – 22 0	n – 23 0	n – 24 Blank
n – 25 0	n – 26 0	n – 27 0	n – 28 Unalterable	n – 29 Unalterable	n – 30 Unalterable
n – 31 Unalterable	n – 32 Unalterable	n – 33 Unalterable	n – 34 Unalterable	n – 35 Unalterable	

# 5. OPERATION

Make sure to read and understand the following warnings before operating the dust collector.

 <b>WARNING</b>	
	<p>Do not suck the following materials.</p> <ul style="list-style-type: none"><li>• Explosive material ... Such as aluminum, magnesium, titanium, epoxy, flour, toner.</li><li>• Flammable materials ..... Such as gasoline, thinner, benzene, kerosene, paint.</li><li>• Dust containing sparks ... Such as dust produced by high speed cutting machines, grinders and welders.</li><li>• Ashes.....Such as from cigarettes and wood ashes etc</li></ul> <p>These substances could cause fires or explosions.</p>
	<p>Do not suck the following materials.</p> <ul style="list-style-type: none"><li>• Corrosive substance such as chemicals.</li><li>• Harmful power such as asbestos.</li><li>• Dust polluted by radioactive substance or radioactivity.</li></ul> <p>This could reduce health.</p>
	<p>Never allow the power cable to get damaged or broken.</p> <p>This could cause fire or electric shock.</p>
	<p>Do not operate with the inspection port opened.</p> <p>Ignoring it results serious injury or leaking powders.</p>
	<p>Do not operate the product without cover.</p> <p>Serious injury may result.</p>
	<p><b>If a fire occurs or there is a dust explosion inside the dust collector</b></p> <ul style="list-style-type: none"><li>• turn off the power immediately.</li><li>• use a fire extinguishing agent suitable for dust.</li><li>• even after the fire is out, don' t open the door until the internal temperature drops to the normal level.</li></ul> <p>Otherwise, a secondary explosion could occur.</p>
	<p><b>Dispose of the collected dust everyday and never build-up within the dust collector.</b></p> <p>Neglecting this caution may prevent the machine from functioning normally and the ignition source put in the dust accumulation could ignite a fire.</p>



## CAUTION



Do not suck the following materials.

- Sticky substances .....Soluble mist, oil mist, etc.
- Other materials .....Fluid, such as water and oil.

If ignored, the performance may be deteriorated.



Do not operate the dust collector with the suction and exhaust ports closed or blocked.

Such operation may cause an overheating, resulting in the occurrence of a fire.



Turn off the power immediately if abnormal noise, smoking, abnormal vibration, overheating or an abnormal smell develops during operation.

Operating under these conditions could cause electrical shock or fire.



If the motor stops during operation, turn off the primary power at once.

This could cause electric shock.



Keep the intake air temperature between 0°C and 40°C.

The intake air above such temperature could cause a machine failure.



Always make sure that the motor rotates in the correct direction.

Reverse motor rotation may cause a machine failure or breakdown.

## (1) Start and Stop of the Operation

To start the machine operation, press the ON switch on the control panel.

To stop the machine from running, press the OFF switch.

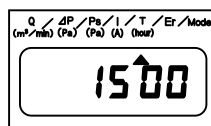
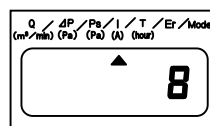
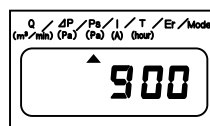
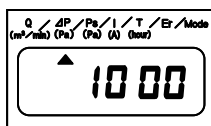
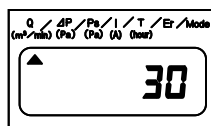


During running, the pulse operation (filter dust removal) is performed automatically. See the previous chapter for setting the pulse operation.

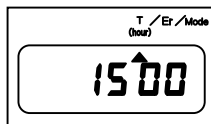
### 【 Screen displayed during operation 】

『 U · M type 』 : the status is displayed one after another.

Q (air flow) → P (filter differential pressure) → Ps(Static pressure) → I (current) → T (operation time)



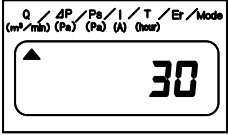
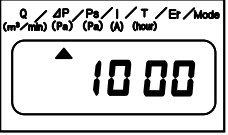
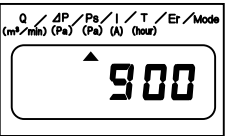
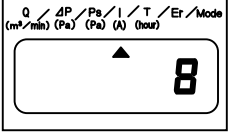
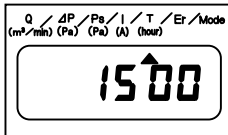
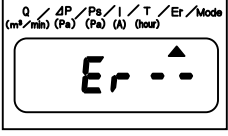
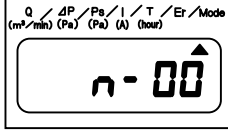
『 J type 』 : displays T (operation time).



Empty out the collected dust from the bucket every day after the run. See “(1) Discharging the Collected Dust” in the next chapter.

## (2) Changing the Display Content

During the operation, the message window displays various contents that can be changed in order each time the [DISP CHANGE] key is pressed.

	Display	Content	Remarks
Q (m <sup>3</sup> /min)		Air flow	Available only for U/M type.
ΔP (Pa)		Differential between the two static pressures before and after passing through the filter	Available only for U/M type.
Ps (Pa)		Static pressure before passing through the filter	Available only for U/M type.
I (A)		Current value	Available only for U/M type. Note) If the voltage specification applied to the machine is other than 200V 50/60Hz or 220V 60Hz, the motor amperage (I) indicated with a bar, instead of numerals.
T (hour)		Run hours	
Er		Error number display	See the next section.
Mode		Mode display	Use when setting data.

※ The values displayed above are just for reference because they are a calculated value having some error.

### (3) Message Display

During the run, if any fault or error message appears in the message window, take the appropriate collective action following the instructions given below. Any check or inspection on this dust collector must always be done with the power turned off and in the protective wear to ensure your safety.

#### ■ List of Message Display (In normal operation and when CHECK lamp is lit)

Display	Alarm content	Corrective action	Check Lamp	U	M	J
E r - -	Normal	Normally, the message window displays operation status (see the previous page).	OFF	○	○	○
E r 0 1	Reverse rotation of fan motor	<ul style="list-style-type: none"> <li>The 3-phase power supply is connected in the wrong phase sequence. → Rework the power cord wire connections to change the “T” and “R” phase sequences each other. (See P. 13.)</li> <li>Bunt fuse and fuse contact failure → Check the contact of the 1A fuse at F1 and F3, or the 0.5A fuse at F2 on the circuit board, and if the fuse is burnt, replace it.</li> </ul>	ON	○	○	○
E r 0 2	Insufficient air pressure	<ul style="list-style-type: none"> <li>No pulse signal is being output. → Stop the compressed air supply and check the sound (click-clack) that all solenoid valves ( pilot valves) are working properly.</li> <li>Filter dust removal (pulse jet)function does not go on because of insufficient pressure in the compressed air. → Check that the compressed air pressure is maintained at 0.5 to 0.7 MPa. → Check the compressed air piping for any loose or disconnected hose or duct.</li> </ul>	ON	○	○	×
E r 0 3	Duct blocking	<ul style="list-style-type: none"> <li>The duct or suction port is almost completely blocked up with dirt or foreign matters. → Remove dirt or foreign matters from inside of duct or suction port.</li> <li>The suction side damper (for airflow control) is closed. → Check and see if it is closed.</li> </ul>	ON	○	○	×
E r 0 4	Airflow sensor	<ul style="list-style-type: none"> <li>Bad contacts in electrical wiring → Check for any dislocated CN 10 connector.</li> </ul>	ON	○	○	×
E r 0 5	Model setting	<ul style="list-style-type: none"> <li>DIP switch setting has been changed on the circuit board. → Contact Amano or your dealer of Amano’s representative for the revised setting guide and follow the given instructions.</li> </ul>	ON	○	○	○
E r 0 7	External error 1	<ul style="list-style-type: none"> <li>An external signal alarm is generated. → Remove the cause.</li> </ul>	ON	△	△	△
E r 0 8	External error 2	<ul style="list-style-type: none"> <li>An external signal alarm is generated. → Remove the cause.</li> </ul>	ON	△	△	△

Note) Er 06 will not be displayed.

Note) ○ : Displayed ×: Not displayed △ : Displayed if the external input terminal (option) is in use.



## ■ List of Message Display (When INSPECT lamp is lit)

Display	Alarm content	Corrective action	U	M	J
E r 0 9	Fan (overload)	<ul style="list-style-type: none"> <li>• Fault in the inverter (for U type) → Check the inverter for any fault.</li> <li>• Overload to fan motor. (for M/J type) → Remove the cause of overload to the fan motor.</li> </ul>	○	○	○
E r 1 0	Pilot valve	<ul style="list-style-type: none"> <li>• Some of pulse signals are not being output. → Check and ensure by the sound (click-clack) that all solenoid valves (pilot valves) are working properly.</li> <li>• Fault or failure in solenoid valves (pilot valves) or diaphragm valves was detected. → Check for loose connection, disconnection and contact error of connectors.</li> </ul>	○	○	×
E r 1 1	Δ P sensor	<ul style="list-style-type: none"> <li>• The before/after-filter differential pressure is abnormally high/low. → Check if the filter is installed properly.</li> <li>→ Check if the filter is free of damage or defects.</li> <li>→ Check if the pressure detection tube is free of dislocation, breakage, cuts, or abnormality.</li> <li>→ Check for absence of obstacles in the way of air intake.</li> </ul>	○	○	×
E r 1 2	Ps sensor	<ul style="list-style-type: none"> <li>• The static pressure before filtration is abnormally high/low. → Check if lines (duct, hoses) are installed properly.</li> <li>→ Check if the pressure detection tube is free of dislocation, breakage, cuts, or abnormality.</li> <li>→ Check for absence of obstacles in the way of air out.</li> </ul>	○	○	×
E r 1 3	Abnormal filter differential pressure	<ul style="list-style-type: none"> <li>• Abnormal difference in pressure between flows before-filtration and after-filtration (when the filter differential pressure reads a value higher than the set point to start error indication) → Execute pulse operation to remove dust from the filter.</li> <li>→ Dispose of the dust from the bucket.</li> <li>→ Carry out filter replacement.</li> </ul>	○	○	×
E r 1 5	External error 3	<ul style="list-style-type: none"> <li>• An external signal alarm is generated. → Remove the cause.</li> </ul>	△	△	△
E r 1 6	External error 4	<ul style="list-style-type: none"> <li>• An external signal alarm is generated. → Remove the cause.</li> </ul>	△	△	△

Note) ○ : Displayed × : Not displayed △ : Displayed if the external input terminal (option) is in use.

Note) Er14 will not be displayed.

## (4) Dust Removal from the Filter

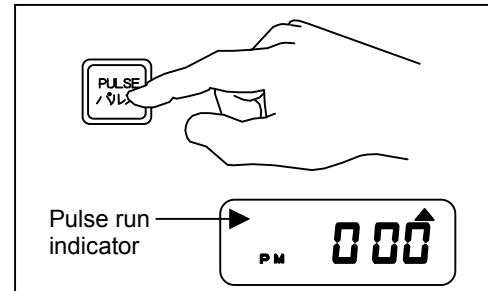
Press the [PULSE] switch on the control panel to carry out dust removal from the filter.

### ⚠ CAUTION

- Before pressing the PULSE switch, make sure the filter inspection cover is closed. If the switch should be pressed with the door open, the dust removed off the filter by the pulse jet would scatter outwards through that opening.

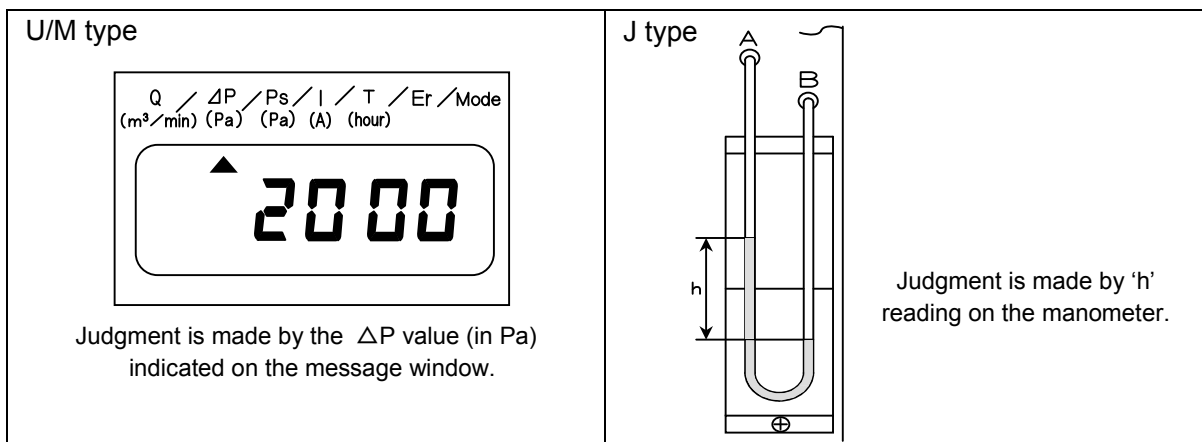
Press the PULSE switch. This activates the “pulse jet” to carry out dust removal from the filter. (The switch is operable regardless of the ON/OFF state of the fan motor.)

At a press on the PULSE button, one complete cycle of the “pulse jet” operation is performed, during which time the prompt “PM” remains ON in the message window.



## (5) Filter Dust Clogging Severity

The severity of filter clogging can be judged by the restoration of filter’s differential pressure just after the execution of filter dust removal. The filter differential pressure will be indicated on the message window or by measurements taken with a manometer.



The severity of filter clogging depends on dust type and working conditions. For evaluation criterion, read the following description.

Under the use in an ordinary condition, the rough standard of pressure loss (h value) to replace the filter is about from 1000Pa to 2000Pa in general. A new filter first has a high performance to filtrate dust, and after dust removal, the filter pressure loss is solved, but when it is being clogged, the filtration performance decreases gradually. If clog is not solved even after dust removal, it is the time to replace it with a new one. So, replace it. Be noted that the time to replace filter differs depending on the kind and characteristic of dust, condition of use (such as air flow, air flow speed, pressure loss at dust). When the filter is soon clogged with dust, or air flow speed through the filter is fast, the filtration performance lowers rapidly, and the filter may need to be replaced earlier. Judgment should be made by yourself whether it is clogged or not from the condition of use.

## (6) Reset of Thermal Relay

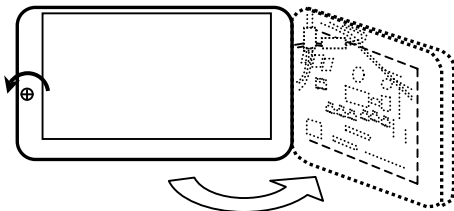
If the motor is overloaded, the thermal relay may trip to bring a stop to the motor. In that case, reset it as follows:

### ⚠ CAUTION

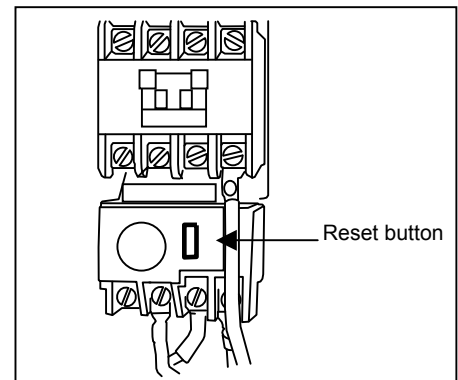
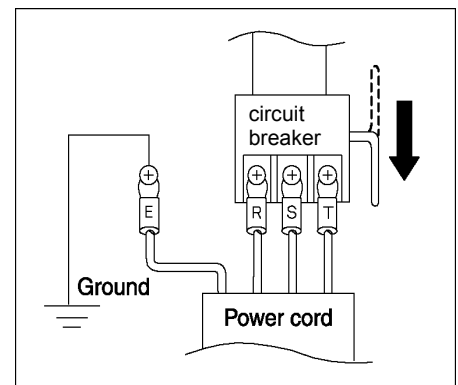
- In cases the dust collector cannot be restored to normal operation by resetting, or current interruption is often caused by the trip of thermal relay, contact Amano, or your dealer of Amano representative.
- If the cause of the thermal relay trips should be attributable to any other factors than this machine, conduct an on-the-spot current/voltage investigation by the qualified electrician on your side.

#### [ M/J type]

- ① Turn off the circuit breaker (primary power supply) for safety.
- ② Open the control panel.

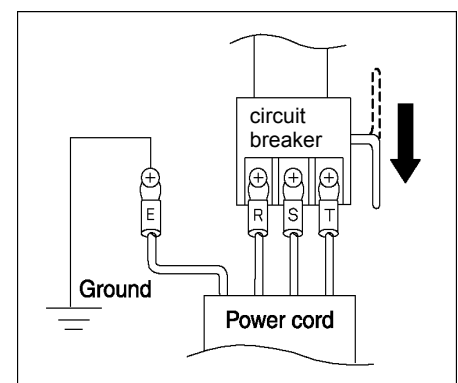


- ③ Check the electrical wiring for any defects or connection error (and remove the cause of thermal relay trip). After that, press the thermal relay reset button provided on the electromagnetic switch box.
- ④ Close the control panel and secure with the screw.
- ⑤ Turn on the circuit breaker (primary power supply). Then, press the ON switch on the control panel to run the dust collector for operational test. Check for abnormal sound, overheat, malfunction, etc.



#### [ U type]

- ① Turn off the circuit breaker (primary power supply). Check the electrical wiring for any defects or connection error (and remove the cause of thermal relay trip).
- ② Wait for 10 seconds or so. Turn on the power once again. This will cause the inverter thermal relay to reset.
- ③ Press the ON (START) switch on the control panel to run the machine for operational test. Check for abnormal sound, overheat, malfunction, etc.



## 6. MAINTENANCE

Make sure to read and understand the following warnings and cautions before performing maintenance.

### DANGER



Never operate the machine with its cover removed.

This could cause serious injury.



Never insert your hands into the rotary unit area.

This could cause serious injury.

### WARNING



Never touch the power cable with wet hands when connecting or disconnecting it.

This could cause electric shock.



Before opening the door or the roof, always turn off the primary power to the dust collector.

Failure to do this could cause electric shock.



Never make any modifications to this dust collector.

This could cause fire or electric shock.



Clean the dust collector periodically to prevent build-up of dusts inside and outside, and inside the piping.

Ignition source put in the dust accumulation could cause a fire to occur.



Dispose of the collected dust every day and never build-up within the dust collector.

Neglecting this caution may prevent the machine from functioning normally and the ignition source put in the dust accumulation could ignite a fire.



Before opening the door, always turn off the primary power to the dust collector.

Failure to do this could cause electric shock.

### CAUTION



Always wear protective clothing (such as gloves, mask, protective glasses, dustproof clothing) when discharging dust and inspection.

Failure to do this could cause injury.



Always wear protective clothing (such as gloves, mask, protective glasses, dustproof clothing) when doing an inspection or replacing the filter and other parts.

Failure to do this could cause injury.



Do not operate the dust collector with the suction and exhaust ports closed or blocked.

Such operation may cause an overheating, resulting in the occurrence of a fire.



Be sure to turn off the power when performing inspection or repair to the machine.

This could cause electric shock.



Electrical wiring must be carried out by the qualified electrician.

Neglecting this caution could cause accidents to occur.

# (1) Discharging the Collected Dust

## [ Standard bucket type ]

At the end of every working day, the collected dust should be discharged from the dust collector inside. If this caution is not observed and an ignition source is put in the accumulation of dust, a fire can be caused to occur. The discharged dust, then, should be disposed of appropriately according to your in-company rule or the related local regulations.

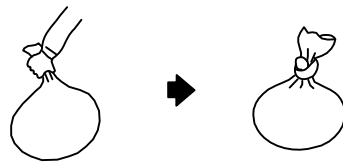
- ① Press the OFF (STOP) switch and confirm the motor has stopped completely from rotating.
- ② Press the PULSE switch to start the filter dust removal operation. In case "end pulse" function is set on, wait until the "end pulse" dust removal operation is finished.

"PM" is displayed while the pulse operation is in progress.



- ③ For a while wait until the dust scattering inside the dust collector is settled down

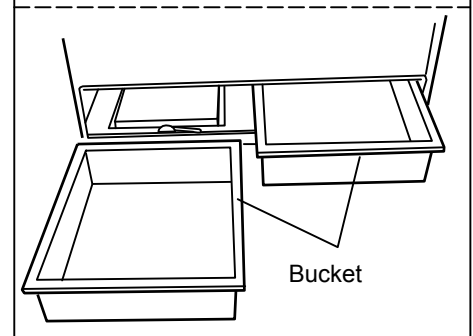
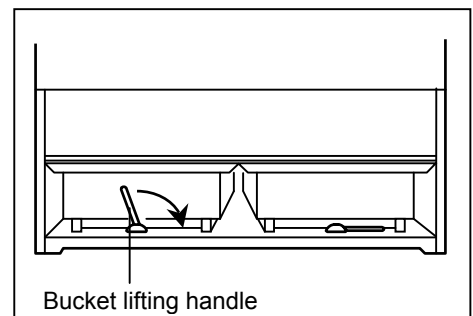
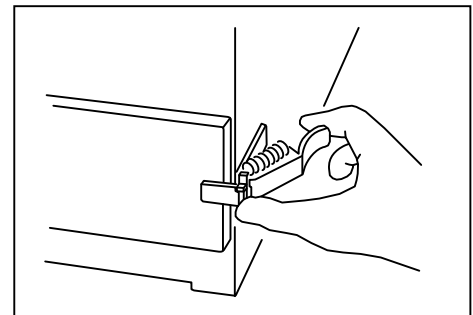
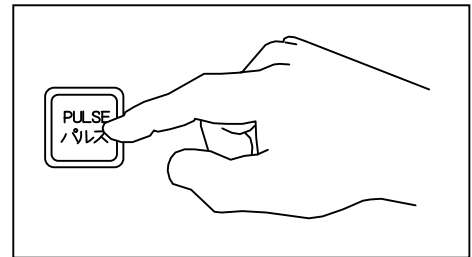
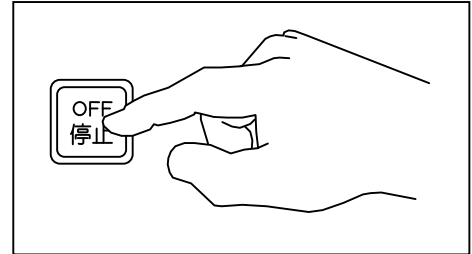
- ④ Undo the catch clips retaining the bucket cover at both sides.
- ⑤ Turn the bucket lift handle to the right and pull out the bucket to your side.
- ⑥ Discharge the dust in the bucket. If you use a dust-pack (an option), discharge the dust and pack all together.



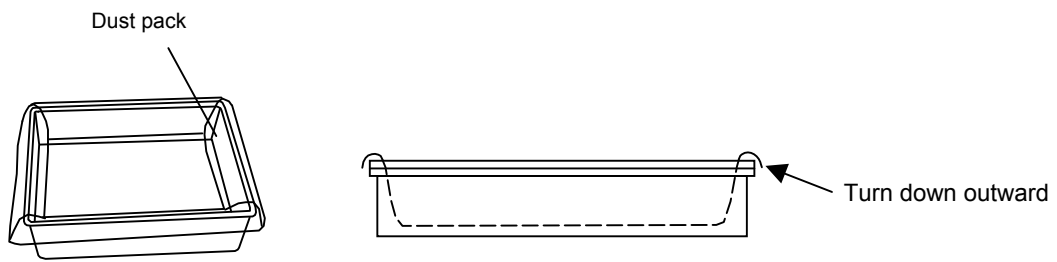
The discharged dust should be disposed of appropriately according to your in-company rule or the related local regulations.

- ⑦ After the discharge of dust, mount the empty bucket on the lift panel and push them deep into the main frame until they hit against the stopper.

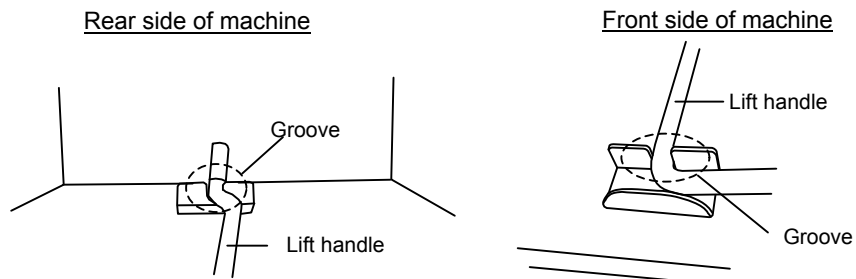
If you desire to put in the dust-pack (an option), spread it uniformly on the entire bottom and internal side surfaces of the bucket, and turn down its four edges outwards along the external side surfaces of the bucket.



Method to install the dust pack

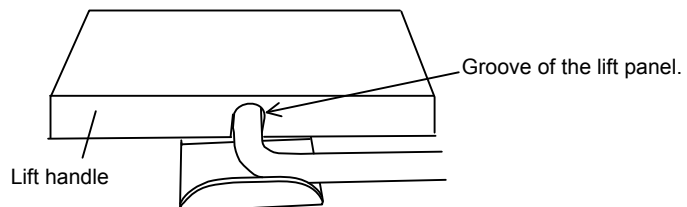


Method to install the lift handle.



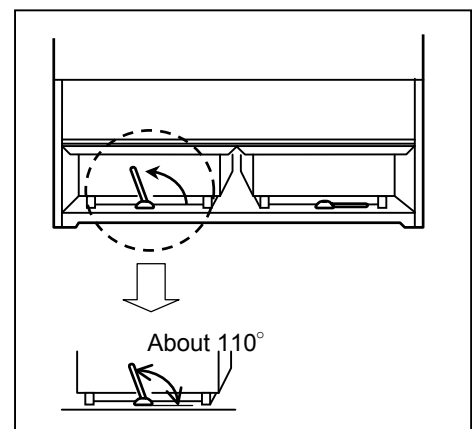
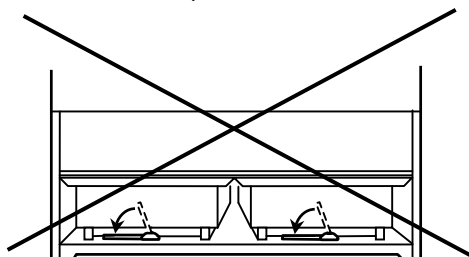
Insert the lift handle into the groove on the front side of the machine while inserting the lift handle into the groove on the rear side of the machine.

Method to install the lift panel.

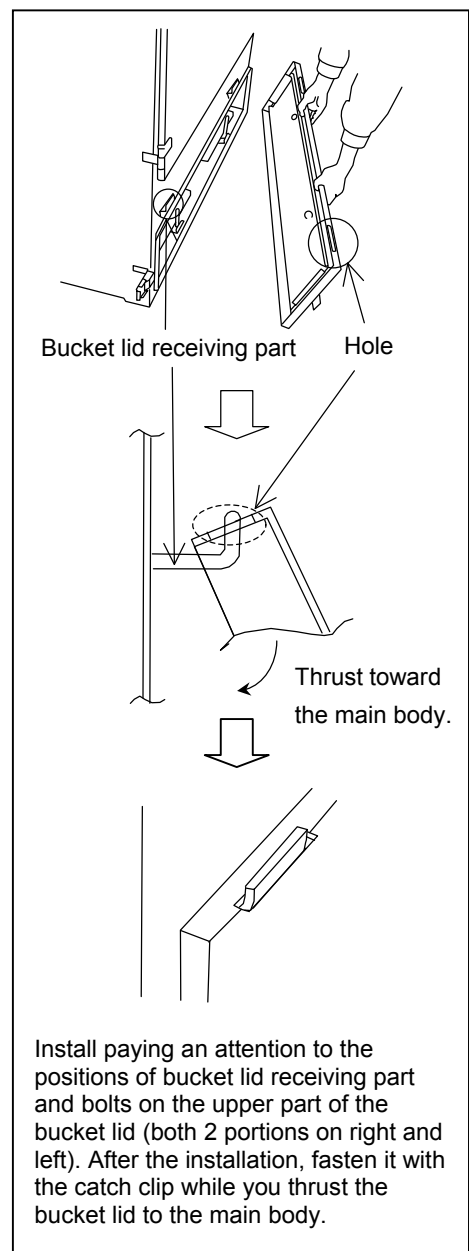
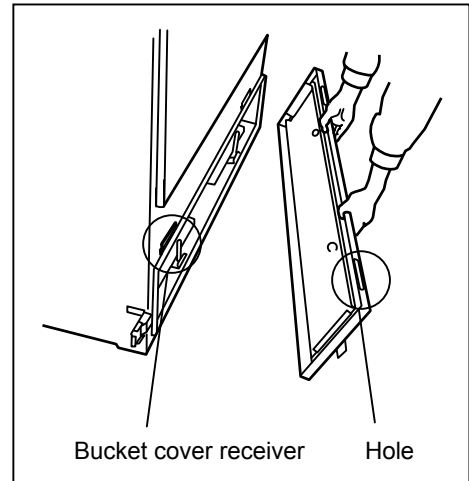


Put the lift panel on the lift handle. At this time, set it so that the lift handle fits to the lift panel with the groove.

✗ Act of forcibly falling down from the state in which the lift handle stops at a certain position.



- ⑧ Turn up the bucket lift handle to the left to secure the bucket.
- ⑨ Fit the hole in the bucket cover to the bucket cover receiver of the main frame.
- ⑩ While pressing the bucket cover against the main frame, secure it with the catch clips.



## [Notes on the rotary valve type]

If the equipment is equipped with the automatic discharge device "rotary valve", be sure not to put your hands in the spinning portion of the rotary valve during operation. Ignoring it results in a serious injury.

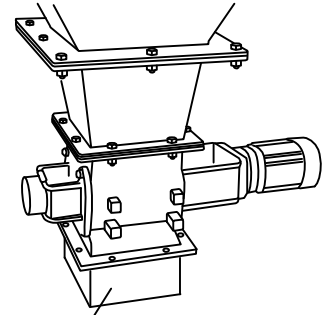
### Important!



The discharge pipe is provided with a metal grating for safety. However, according to the specifications, some discharger does not have a discharge pipe, and some, although having the discharge pipe, may not have the grating. With such types, the operator's hand can easily reach the rotating part of the valve, which is very dangerous.

Never put the hand in the rotating part of the discharger.

Do not remove the discharge pipe.



Do not put the hand in the rotating part.



## (2) Inspection and Replacement of Filter

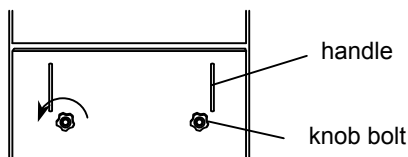
The filter should be periodically inspected and replaced. The standard interval between replacements is 1 to 1.5 years. (Subject to change depending on the kind, size of the dust to be collected, and machine's working environment. If the filter gets clogged earlier, replace immediately.) If you find any torn, broken or worn-out part in the filter, immediately replace it with new one.

### CAUTION

Follow the instructions below. Neglecting these cautions can cause breakdown of products or deteriorate their efficiency.

- Do not operate the dust collector with the filter removed.
- Firmly secure the filter with wing nuts.

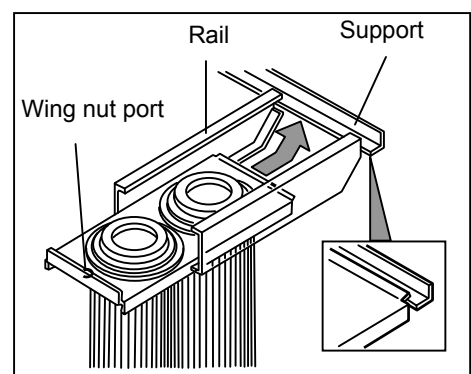
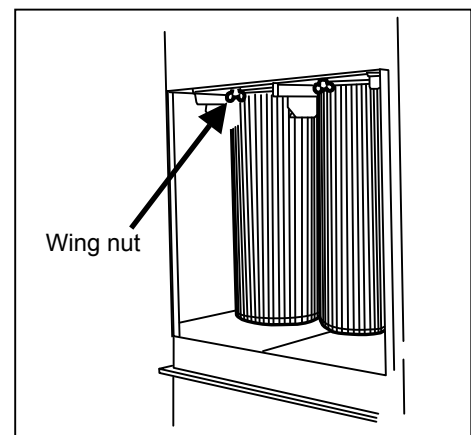
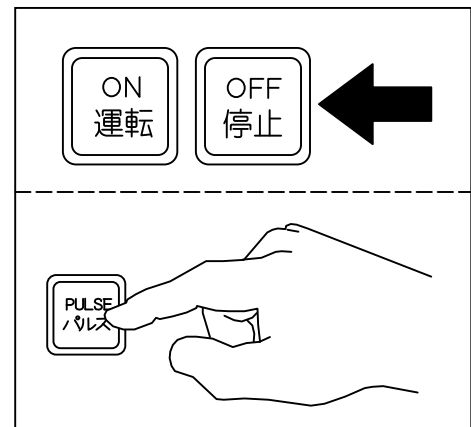
- ① Press the [OFF] stop switch and wait for approximately 2 minutes until the motor stops completely.
- ② Press the [PULSE] switch to carry out the filter dust removal operation. In case "end pulse" function is set on, wait until the "end pulse" dust removal operation is finished.
- ③ Just for safety, turn off the power that is supplied to this equipment.
- ④ Remove the wing nuts retaining the filter inspection door. Open the inspection cover.



### Note :

- Loosen the star knob bolts while holding the cover in place to avoid the fall of the cover.
- Grip both handles firmly with your hands and detach the cover from the main body with due care not to let it fall on your foot.
- Keep the detached cover in a safe place where it will not be obstacle to your work.

- ⑤ Remove wing nuts securing the filter frame. Pull out the filter and filter frame all together to your side.
- ⑥ Take the filter off the filter frame. Check the filter for the absence of clogging, damaged or broken parts. If any fault is found, replace with new one.
- ⑦ Insert the filter frame between rails and push in deeply until the rails' ends hang on the support at the back of the main frame.



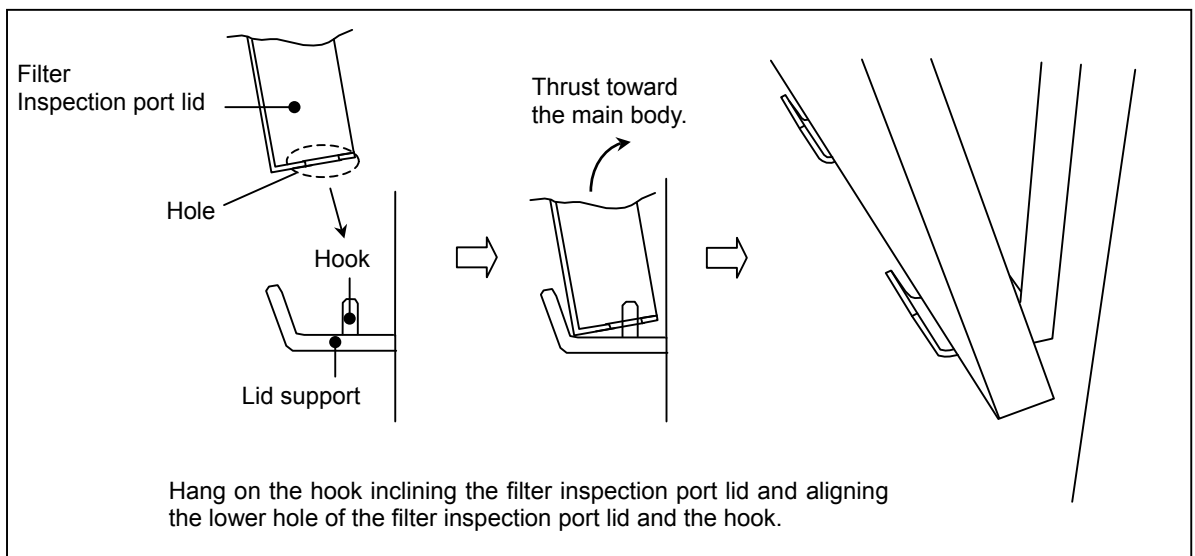
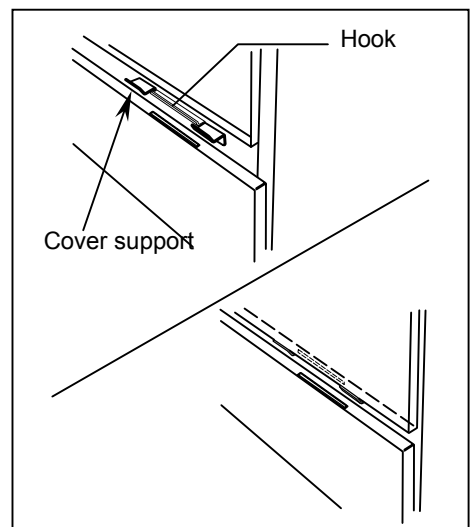
- ⑧ While holding up the filter frame, secure it with the wing nut.



- ⑨ Insert the hook on the cover support of the main frame in the hole in the filter inspection cover.

Note:

- Hold the filter inspection cover by grasping both handles and put it on the cover support.
- Check if the support hooks are set in the holes in the filter inspection cover.



- ⑩ While pressing the filter inspection cover against the main frame, secure with the star knob bolt.

**Note:**

- secure the inspection cover with star knob bolts while holding the cover against the main body with the hand to avoid the fall of the cover.

**Important:**

- Replace all filters at a time when changing.  
If new filters are used together with old ones, air tends to concentrate in the new filters of low flow resistance, and the new ones get clogged earlier.
- Do not wash the filter with water.
- Dispose of the used filter in the manner conforming to your rule or the related local regulations.

### (3) Maintenance of Dust Removal Components

- Drain the filter regulator periodically. Check the drain amount through the filter regulator inspection window.
- Drain the header pipe and do diaphragm maintenance one or two times a year.

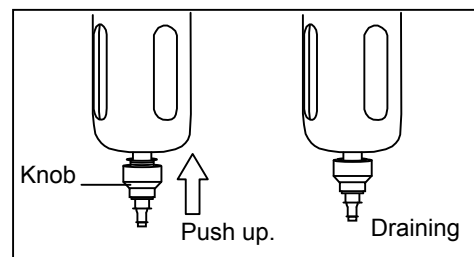
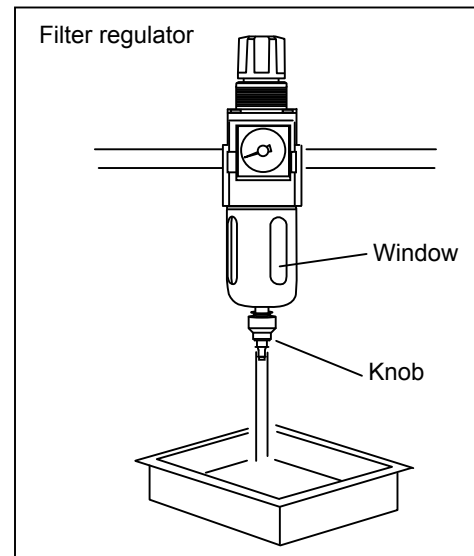
#### [Draining of the filter regulator]

The amount of drain may be different depending on the working conditions of the machine.

- ① Prepare a drain pan and lay it under the drain hose so that the hose nozzle will be open against the pan.
- ② Let the drain out through the hose.  
Turn the knob in the lower part of the filter regulator to let the drain out into the pan.

**Caution:**

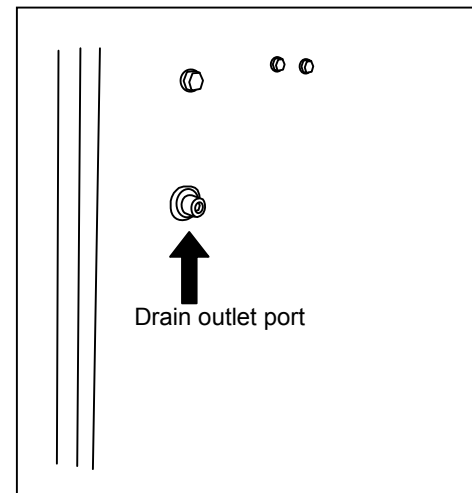
Be noted that it is likely for the drainage to be scattered around by compressed air.  
To secure safety, stop the power supply to this machine.



## [Draining the header pipe]

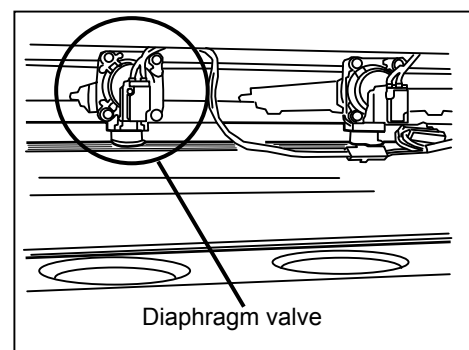
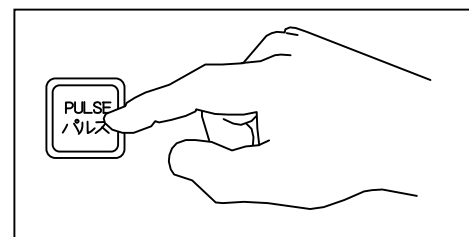
Although the drain amount may vary depending on your operating conditions, the header pipe should be drained periodically (once or twice a year, or so).

- ① Press the OFF (STOP) switch. Wait for approximately 2 minutes until the fan motor rotation makes a complete stop.
- ② Stop the supply of the compressed air.
- ③ Operate the pulse jet several times with the pulse switch, and release the pressure from the header pipe.
- ④ To secure safety, stop the power supply to this machine.
- ⑤ Prepare a drain pan, and put it underneath the drain port.
- ⑥ Slowly remove the drain bolt by an Allen wrench, and drain it.
- ⑦ After drain, wrap a new seal tape around the drain bolt, and tighten it firmly.
- ⑧ Supply the compressed air of the specified pressure (0.5 to 0.7MPa).
- ⑨ Supply power, push the pulse switch, and check the action of the pulse jet.



## [Maintenance of diaphragm valves (with a pilot valve)]

- The maintenance of the diaphragm valve (with pilot valve) needs to be carried out one or two times a year.
- The diaphragm (rubber portion) valve is a consumable part. It should be replaced regularly once every year.
- For further information, contact Amano, or your dealer of Amano representative.



# 7. APPENDIX

## ◆ SPECIFICATIONS

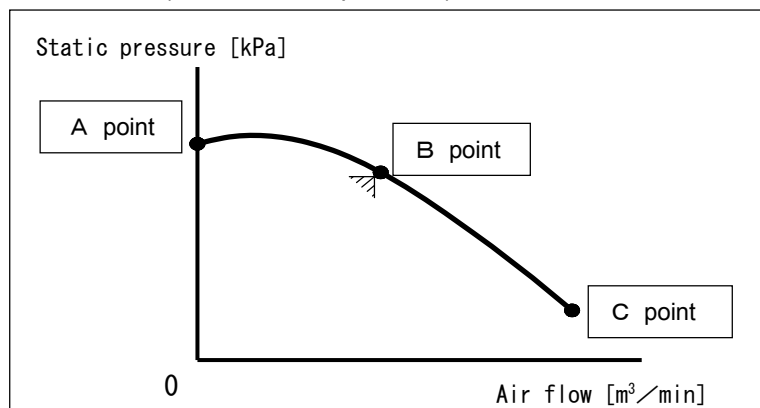
Model name		PiE-15			PiE-30			PiE-45			PiE-60		
Power supply	M · J type	3-phase,200V,50 or 60Hz for exclusive-use ; V and Hz as per nameplate											
	U type	3-phase,200V,50 or 60Hz shared-use ; V and Hz as per nameplate											
Performance	(Point)	A	B	C	A	B	C	A	B	C	A	B	C
	Airflow [m <sup>3</sup> /min]	0	10	14	0	20	30	0	30	45	0	40	60
	Static pressure [Pa]	2550	1569	441	2548	2058	1078	2548	1960	637	2940	2254	980
Noise [dB(A)] (1m on machine side and 1.2m on the ground)		Less than 65±2			Less than 67±2			Less than 67±2			Less than 70±2		
Filter	Area [m <sup>2</sup> ]	4.5			9			13.5			18		
	Quantity	2			4			6			8		
	Material	Polyester span-bond											
	Geometry	Molded cartridge type											
	Dust removal method	Automatic pulse jet method											
	Air pressure [MPa]	0.5~0.7											
Motor	Type	Totally enclosed outer-fan type			Totally enclosed vertical flange type								
	Output [kW]	0.75			1.5			2.2			3.7		
	Inverter (U type)	0.75kW			1.5 kW			2.2 kW			3.7 kW		
	Freq. Adjusting range (U type)	40~70Hz (Automatic adjustment by microcomputer)											
Type of fan		Turbo fan											
Number of pilot valves [ pcs. ]		2			2			3			4		
Compressed air consumption [L/min]		10			20			30			40		
Bucket capacity [ liter ]		18			25			18×2			25×2		
Power cord		3m (4心プラグなし)											
Suction port dia. [mm]		φ127			φ150			φ200			φ250		
Weight (mass) [kg]		90			150			190			290		
Dimensions (W×L×H) [mm]		650×400×1205			650×650×1572			850×650×1602			1100×700×1727		

※For U type, it is the static pressure and noise value when it runs in 60Hz.

※This specification is for the standard model for Japan domestic market. The custom specification and specification for overseas markets differ from that in this book.

※The noise value is a value for reference which is taken from our actual measurement in our plant. But the functional sound of the pulse jet is excluded.

Performance (air flow, static pressure)



※A point: Fully closed (cannot be used)  
 ※B point: Recommended to use.  
 ※C point: Fully open (cannot be used)

- It is recommended to use it with the suction air flow at the vicinity of B. Use it below the rated current value of the motor.
- A point indicates the maximum static pressure, and C point indicates the maximum air flow. So, they are not values which can be used in an actual operation.
- If it is used at the point A, air does not come out, and suction does not take place. Adversely, if it is used at the point C, it could cause problems such as filter clogging, overload on motor, etc.

## ◆ SERVICE PARTS

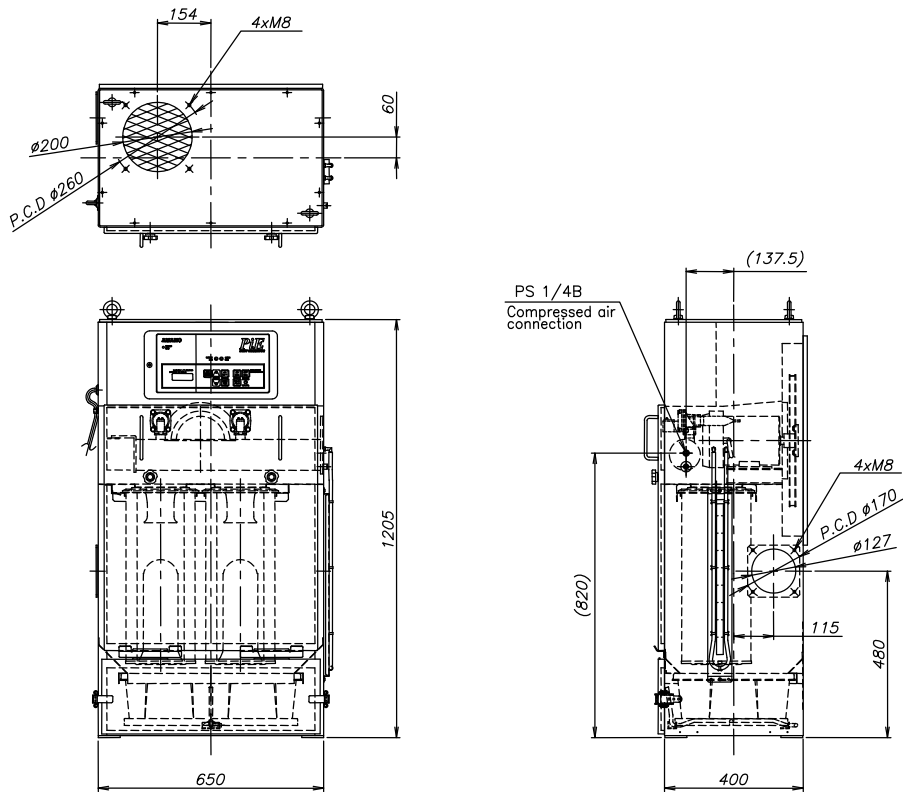
Name		Part Number	Remarks
Standard filter		PIB-210070	with the Filter packing
Finefil filter	※	PIB-213070	with the Filter packing
Anti-static filter	※	PIB-220070	with the Filter packing
OW filter	※	PIB-219070	with the Filter packing
Filter packing		PIB-211300	Urethane sponge
Diaphragm valve (with pilot valve)		PIP-312050	AC 200V
Diaphragm		CWE-130500	Rubber spare
Filter inspection port cover packing, upper		PIP-115000	For PiE-15
		PIQ-115000	For PiE-30
		PIR-115000	For PiE-45
		PIS-115000	For PiE-60
Filter inspection port cover packing, lower		PIP-115100	For PiE-15
		PIQ-115100	For PiE-30
		PIR-115100	For PiE-45
		PIS-115100	For PiE-60
Bucket packing		VNV-116800	For PiE-15・30
		VNX-116800	For PiE-45
		VNY-116800	For PiE-60

※: Optional items

The last digit of a part number may be added by one when the model is renewed.  
For the order for a part, the part of the updated part number will be delivered. Even though the number at the last digit differs from that shown in the manual, it can be used without problems.

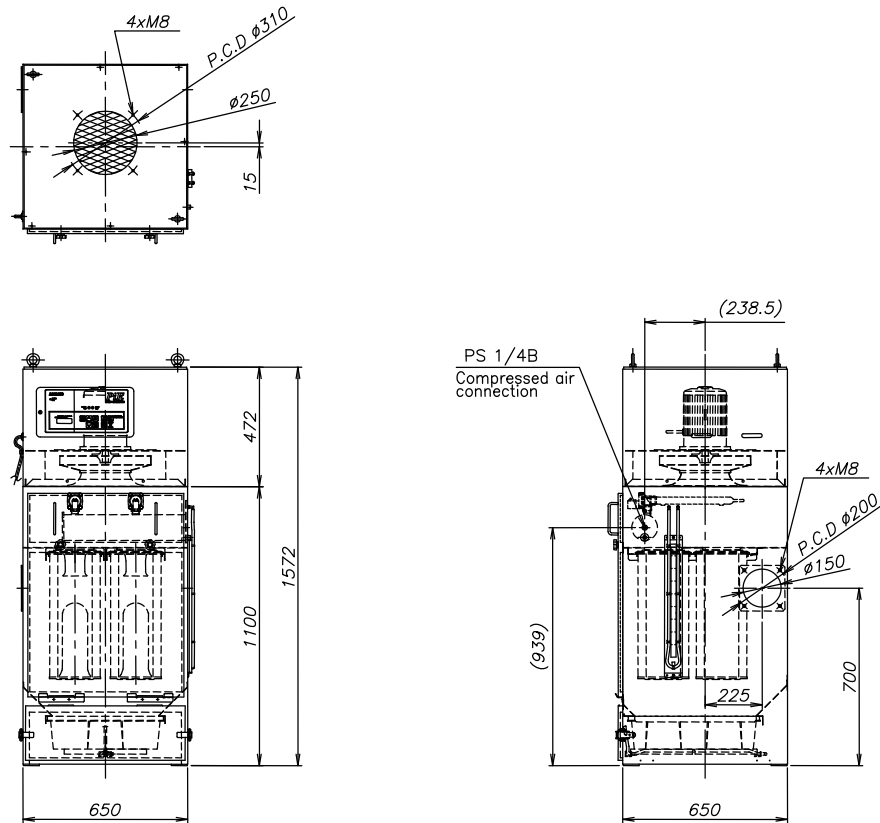
# ◆ OUTSIDE DRAWING

PiE-15



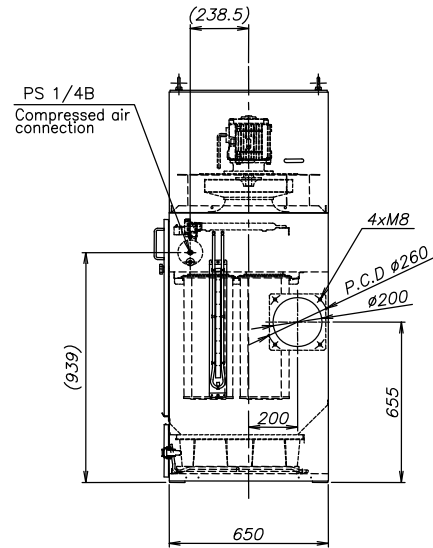
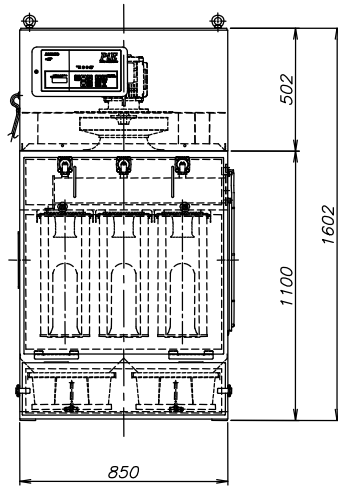
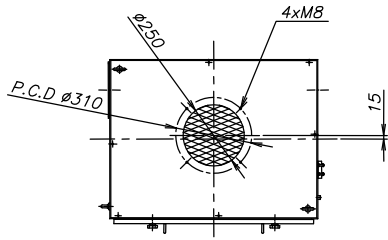
Drawing is common for U, M and J types --- A manometer is attached only to J type.

PiE-30



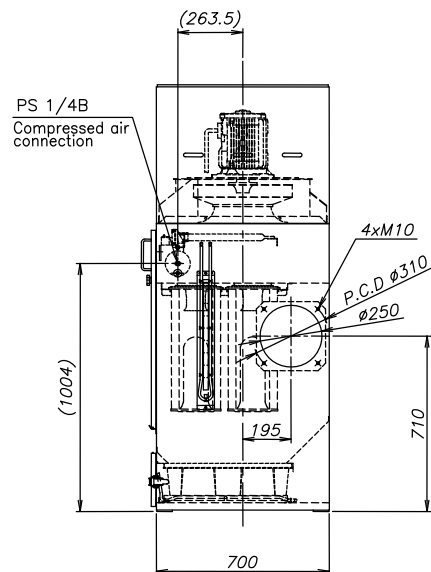
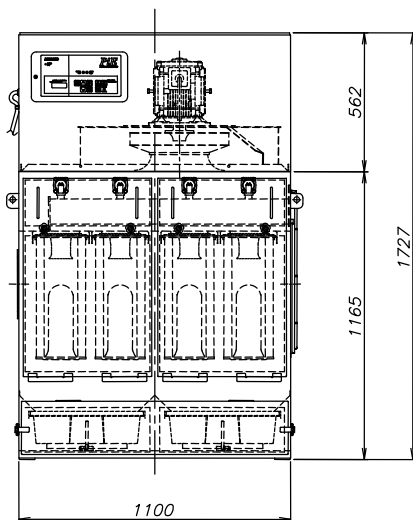
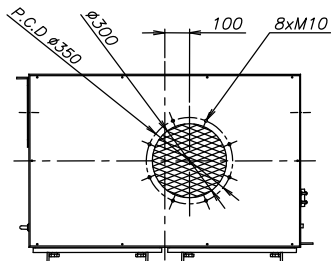
Drawing is common for U, M and J types --- A manometer is attached only to J type.

PiE-45



Drawing is common for U, M and J types --- A manometer is attached only to J type.

PiE-60

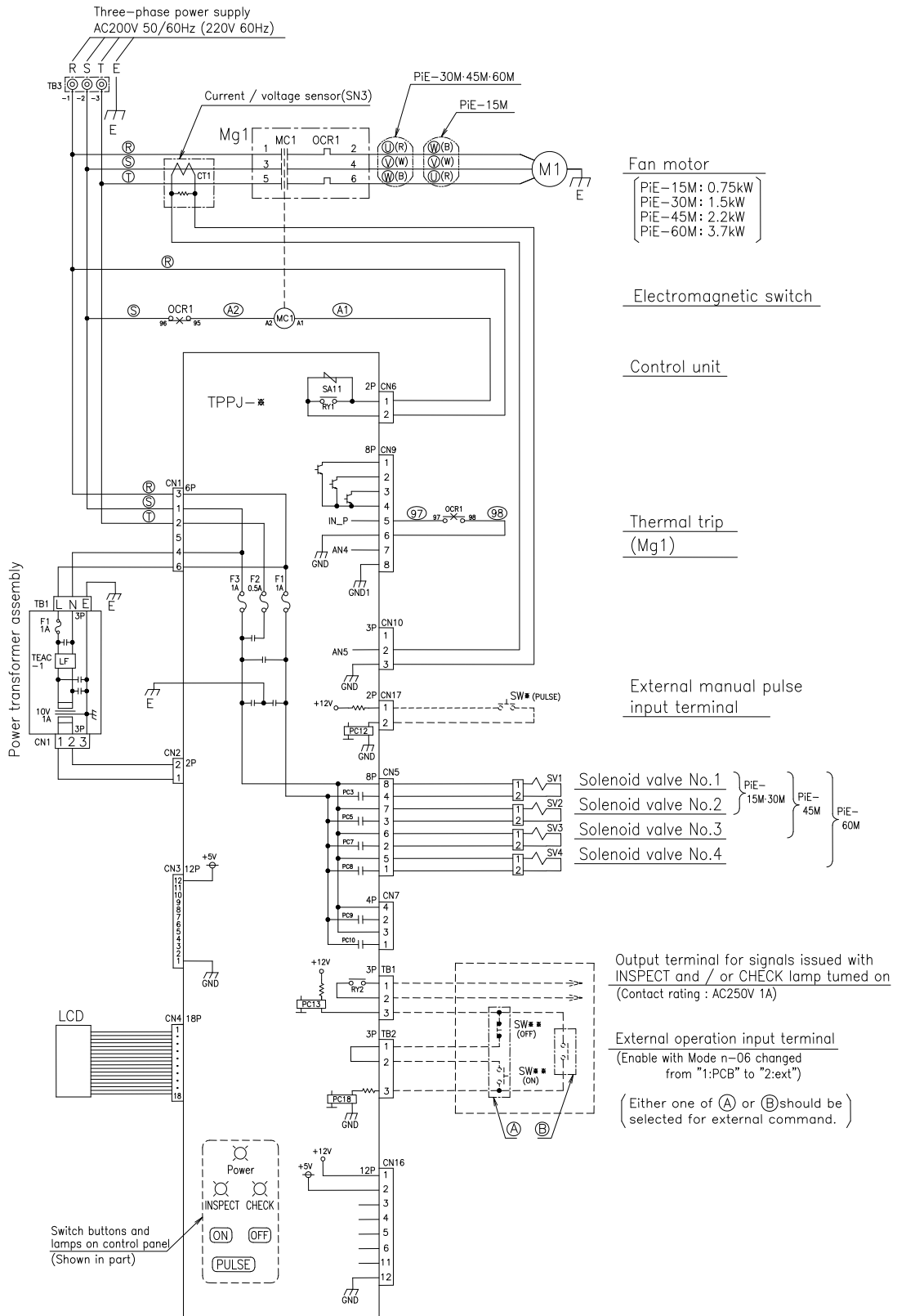


Drawing is common for U, M and J types --- A manometer is attached only to J type.



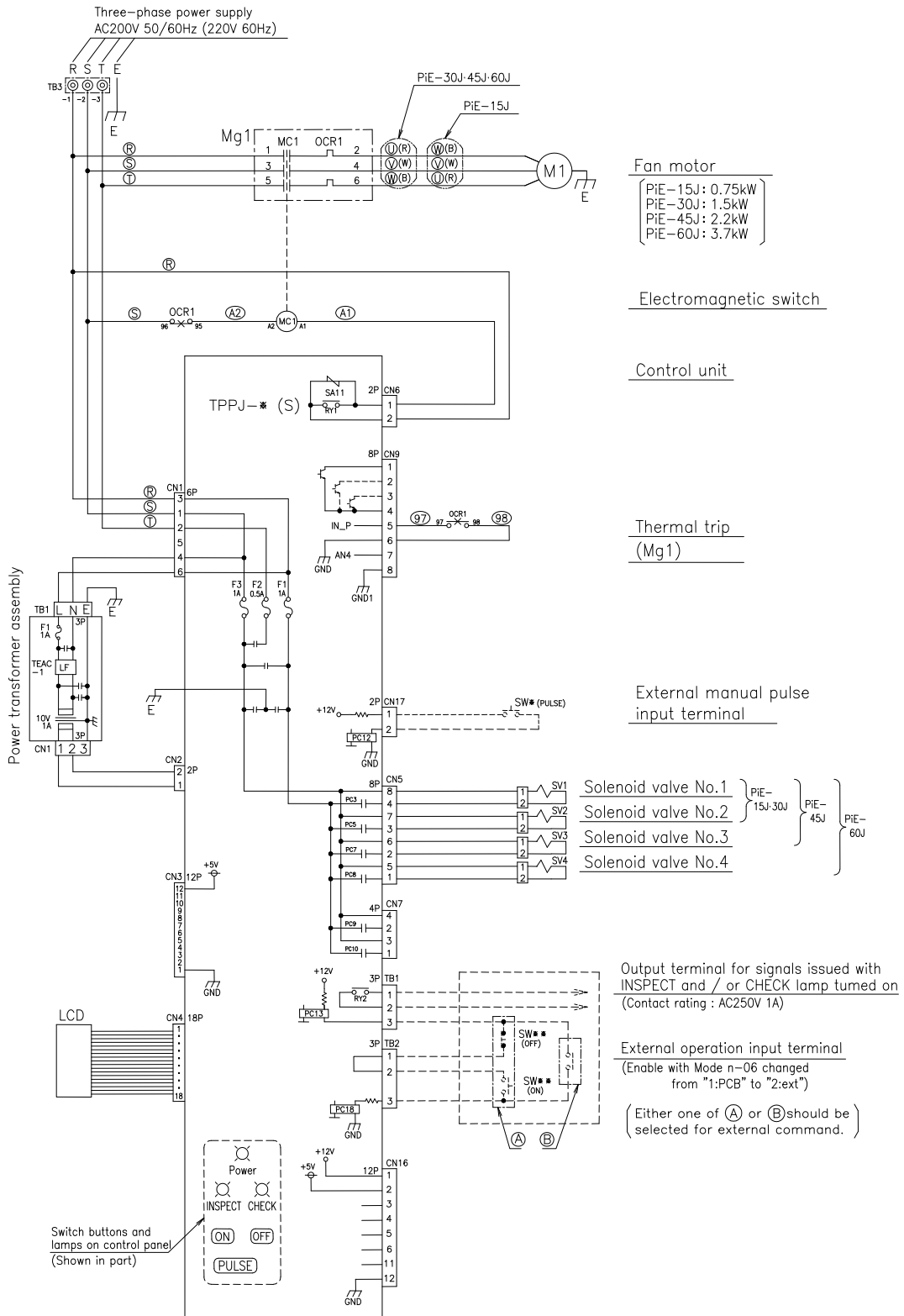
# ◆ WIRING DIAGRAM

PiE M type



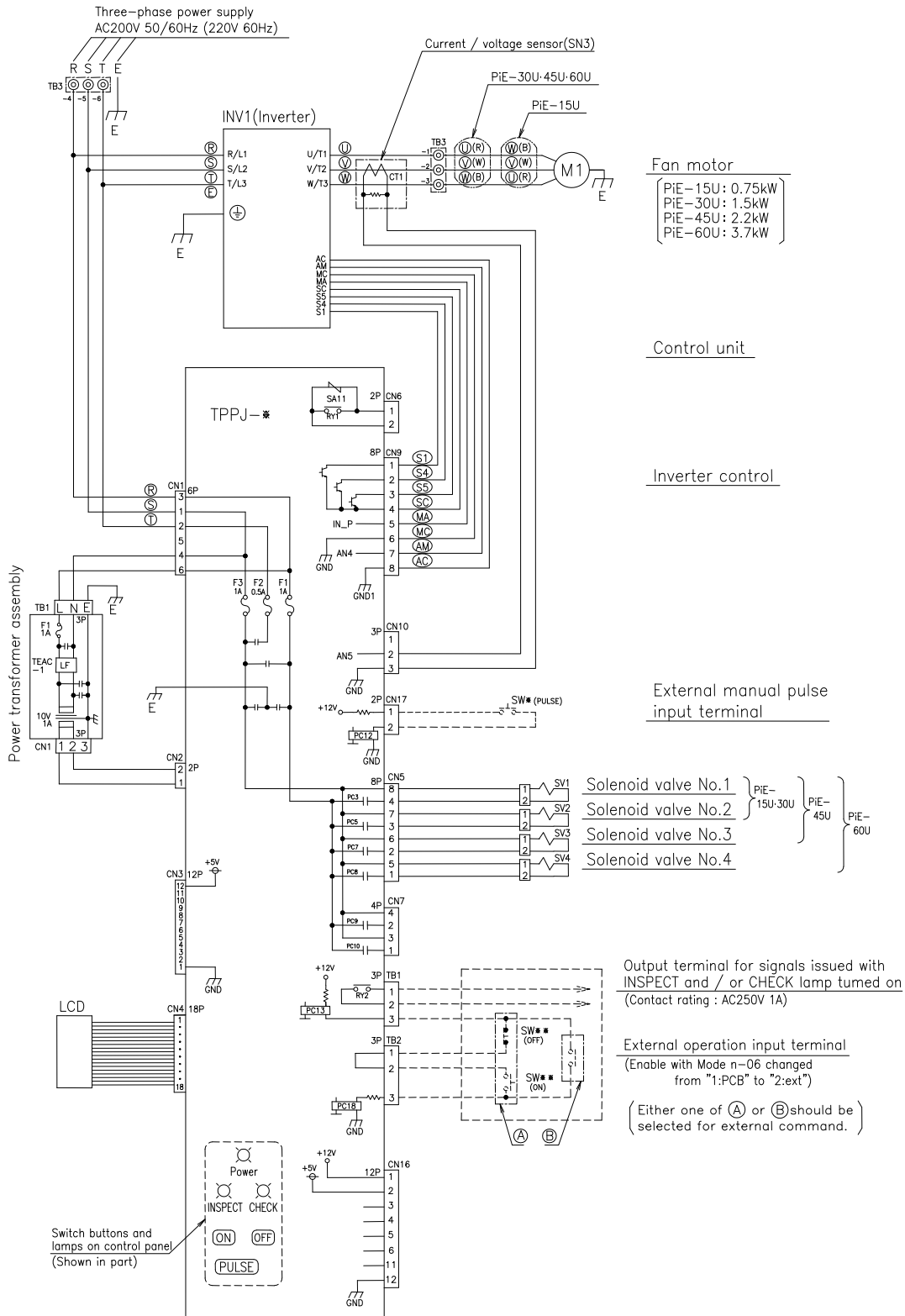
The above are wiring diagram for standard dust collectors for domestic use; the dust collectors built for special use or foreign use may have different data from above in the contents. Refer to the machine number plate for the power supply voltage and frequency.

**PiE J type**



The above are wiring diagram for standard dust collectors for domestic use; the dust collectors built for special use or foreign use may have different data from above in the contents.  
Refer to the machine number plate for the power supply voltage and frequency.

# PiE U type



The above are wiring diagram for standard dust collectors for domestic use; the dust collectors built for special use or foreign use may have different data from above in the contents. Refer to the machine number plate for the power supply voltage and frequency.

## ◆ TROUBLESHOOTING

To ensure safety, if a fault or error is detected during operation, turn off the power supply before everything. After that perform inspection. If repairs are needed, contact your dealer or Amano representative.

Trouble/problem	Cause	Remedy
The ON (START) switch was pressed, but the dust collector will not go on.	<ul style="list-style-type: none"> <li>• Disconnection of power cord.</li> <li>• No power application.</li> <li>• Power failure has occurred.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the power cord.</li> <li>• Check the power supply source.</li> <li>• Wait for power recovery.</li> </ul>
Unusual or abnormal sound	<ul style="list-style-type: none"> <li>• Single phase operation is being performed due to the broken power cord.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the power cord.</li> </ul>
Immediately stops after starting up.	<ul style="list-style-type: none"> <li>• The thermal relay has tripped because filter inspection door is opened, or of other causes.</li> </ul>	<ul style="list-style-type: none"> <li>• Find the cause for thermal relay trip, and remove the cause. Reset the relay.</li> </ul>
Sudden stop of during operation	<ul style="list-style-type: none"> <li>• The thermal relay has tripped due to the drop of power supply voltage.</li> <li>• Power failure has occurred.</li> </ul>	<ul style="list-style-type: none"> <li>• Stabilize the power supply voltage and reset the thermal relay.</li> <li>• Wait until the power is recovered.</li> </ul>
Inadequate suction force	<ul style="list-style-type: none"> <li>• The filter is clogged up.</li> <li>• The suction port, hose or duct is clogged.</li> <li>• The filter inspection door is open.</li> <li>• The filter has got expired.</li> <li>• The bucket, is filled up with the collected dust.</li> <li>• A voltage lower than the given one is supplied from the power source.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove the filter dust by pulse jet.</li> <li>• Remove dirt and dust with which the suction port, hose or duct is clogged up.</li> <li>• Close the filter inspection door.</li> <li>• Replace the filter.</li> <li>• Empty the bucket collected dust.</li> <li>• Check if the power supply voltage meets the specification.</li> </ul>
Dust leak from exhaust port	<ul style="list-style-type: none"> <li>• The filter is broken/damaged.</li> <li>• Defects in filter installation.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the filter.</li> <li>• Re-install the filter in correctly.</li> </ul>
Vibration, abnormal sound/odor	<ul style="list-style-type: none"> <li>• Faults in motor or fan.</li> </ul>	<ul style="list-style-type: none"> <li>• Turn off the power and carry out inspection.</li> </ul>
Fan is pulsing. (Surging phenomenon)	<ul style="list-style-type: none"> <li>• Operated under insufficient air flow.</li> </ul>	<ul style="list-style-type: none"> <li>• Keep increasing air flow until the pulsation disappears.</li> </ul>

## ◆ PERIODIC INSPECTION TABLE

Inspection point	Inspection frequency				Method and contents
	Daily	Weekly	Monthly	Half-yearly	
Discharge section (Bucket)	○				1. Discharge collected dust from the bucket every day. The discharged dust should be disposed of according to your in-company rule or related regulations by the local government.
Dust leak from exhaust port	○				1. Check that if any dust leaks from the exhaust. If any, check the filter and replace at need.
Filter		○			1. Open the filter inspection cover to check the filter installation for any defects. Remedy if any. 2. Open the filter inspection cover to check for any broken or damaged part, or cleanliness. If any damage is detected or dust removal operation cannot recover the air intake, replace the filter.
Hood Duct/hose Internal/external surfaces of main body		○			1. Check if these are properly installed. If any defect is found, correct and remedy. 2. Check for any broken or deformed part. If any, repair or replace with new one. 3. Check the interior of duct, hose or hood for any accumulation of dust. Remove the dust/dirt away, at need, and re-arrange lines for the prevention of such dust accumulation. 4. Clean the interior/exterior of the main body and interior of the duct thoroughly to remove dust accumulations.
Power cord			○		1. Check for breakage/deterioration of power cord, or defects in wire connection. If the core wire is exposed through the tear in the covering, immediately replace the cord. 2. If a power plug is used, check it for any deformation or breakage.
Filter regulator				○	1. Check the drain amount through the window and let the drain out at need.
Header pipe				○	1. Drain once or twice every year.
Diaphragm valve				○	1. Replace once every year.
Measurement of insulation resistance				○	1. When you measure the insulation resistance, first remove the connector from CN1 on the TPPJ board.
Motor	The motor needs inspection and maintenance service every 2 or 3 years of operation. Contact Amano, or your dealer of Amano's representatives.				

## ◆ ABOUT DISPOSAL OF THE PRODUCT

When disposing of the dust collector, attempt it appropriately by observing related laws and bylaws of local government.







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