




# 1 For safe operations

This product is not explosion-proof. Be sure to take extreme care for safety during operation.

 <b>Warning</b>	<b>Never install the unit in a dangerous atmosphere.</b> This product has not been designed as explosion proof. Operating in a dangerous atmosphere may cause a fire.
 <b>Caution</b>	<b>Connect pipes as instructed.</b> Wrong connection of pipes may prevent normal operation of the unit and may cause a malfunction or an accident.

## 2 Product overview

### 2-1 Application

 <b>WARNING</b>
<b>Never attempt to modify the product. Operate the unit for the specified purpose only.</b> An electric shock or a malfunction may result if the product is modified or used for any purposes other than that specified.

This vacuum pump is a depressurizing unit for a condensation unit including a rotary evaporator, a test tube evaporator or a centrifugal evaporator, a vacuum drying unit or a suction filter.

※This product employs anti-corrosion parts, which does not necessarily mean it withstands all types of solvents.

Depending on the solvent or the operating conditions, the diaphragm, the valves or the suction/discharge nozzles might degrade and lead to compromised depressurizing capacity.

When this is suspected, install a solvent collector such as a cooling trap between the depressurizing container and the vacuum pump and operate for about five minutes without any load to suction air for cleaning.

Replacement of the diaphragm and the valves require adjustment. Ask your dealer or nearest service center for such work.

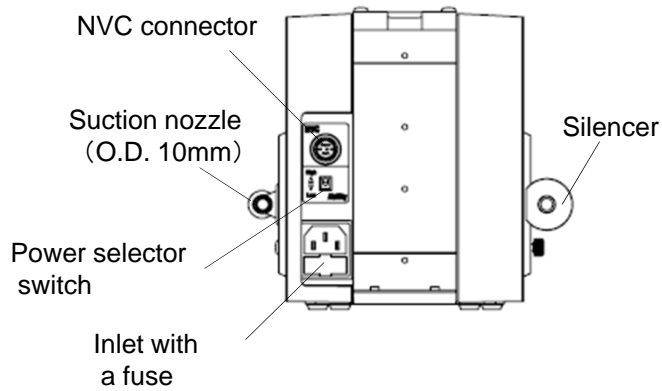
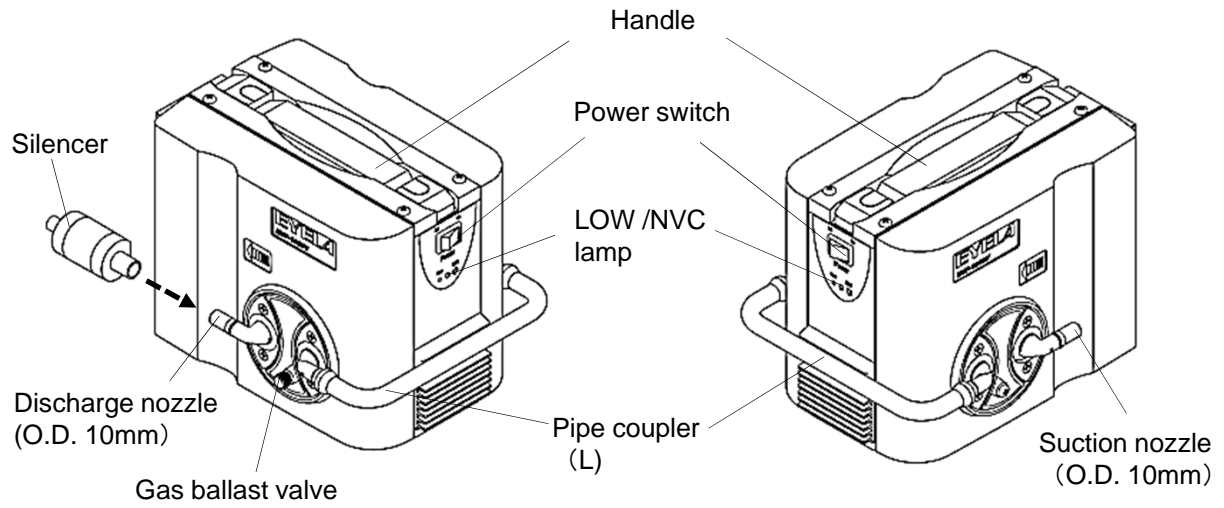
## 2-2 Specifications

Product name		Inverter diaphragm type vacuum pump		
Model		NVP-1000V	NVP-2000V	NVP-2100V
Performance	Discharge rate (HIGH · LOW)	30L/min · 20L/min	44L/min · 30L/min	30L/min · 20L/min
	Attainable vacuum level	10hPa (Approx. 7.5Torr)		2hPa (Approx. 1.5Torr)
Safety function		Motor malfunction detection		
Configuration	Motor	Output 90W		
	Cylinder	2 stages	2 stages × 2	4 stages
Standard	Gas contacting part material	Teflon®, PPS, Kalrez®		
	Suction/Discharge nozzle	O.D. 10mm hose nozzle (Suction/Discharge nozzle supports all directions)		
Operating environmental temperature		5~40°C		
External dimensions (mm)		138(177)W × 206(260)D × 180H	138(177)W × 206(260)D × 252H	
Mass		Approx. 6kg	Approx. 8kg	
Power input / Supply voltage		0.88A 101VA / AC115V 60Hz  0.65A 143VA / AC220V 50/60Hz	1.74A 200VA / AC115V 60Hz  1.2A 264VA / AC220V 50/60Hz	

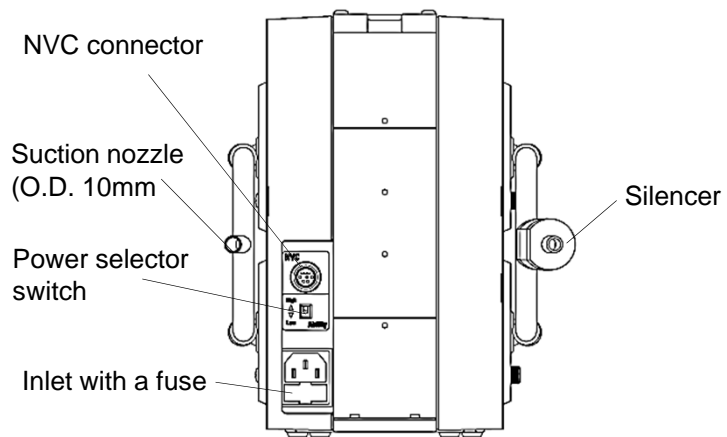
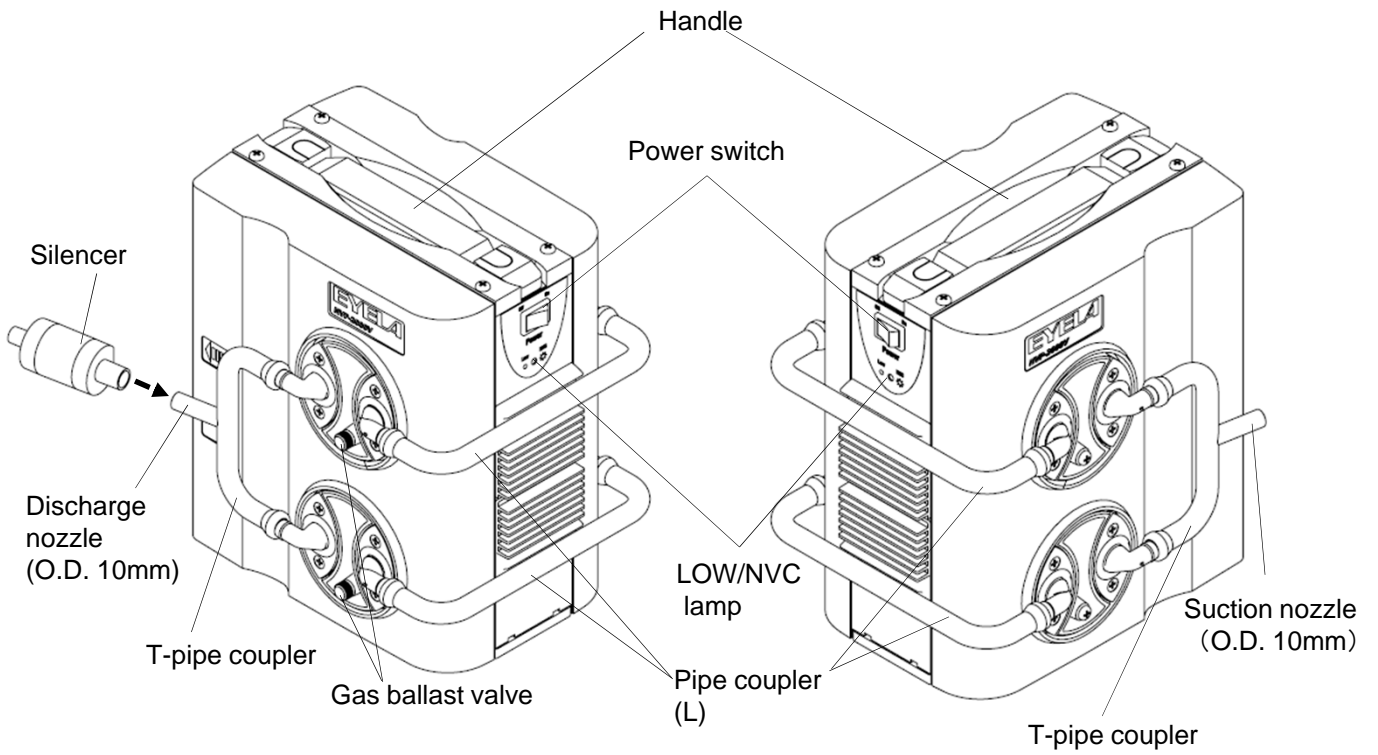
- ※ Performance data have been measured at room temperature of 20°C, rated supply voltage, 50Hz, no-load, and dry condition.
- ※ Dimensions in parentheses ( ) include protrusions.

## 2-3 Names of parts

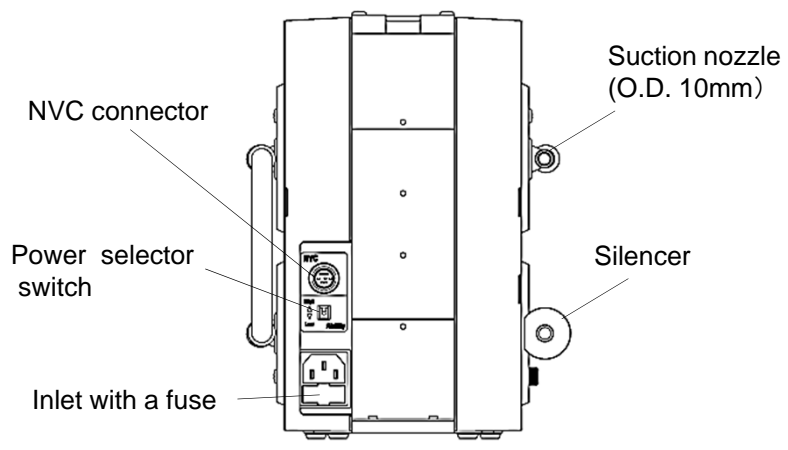
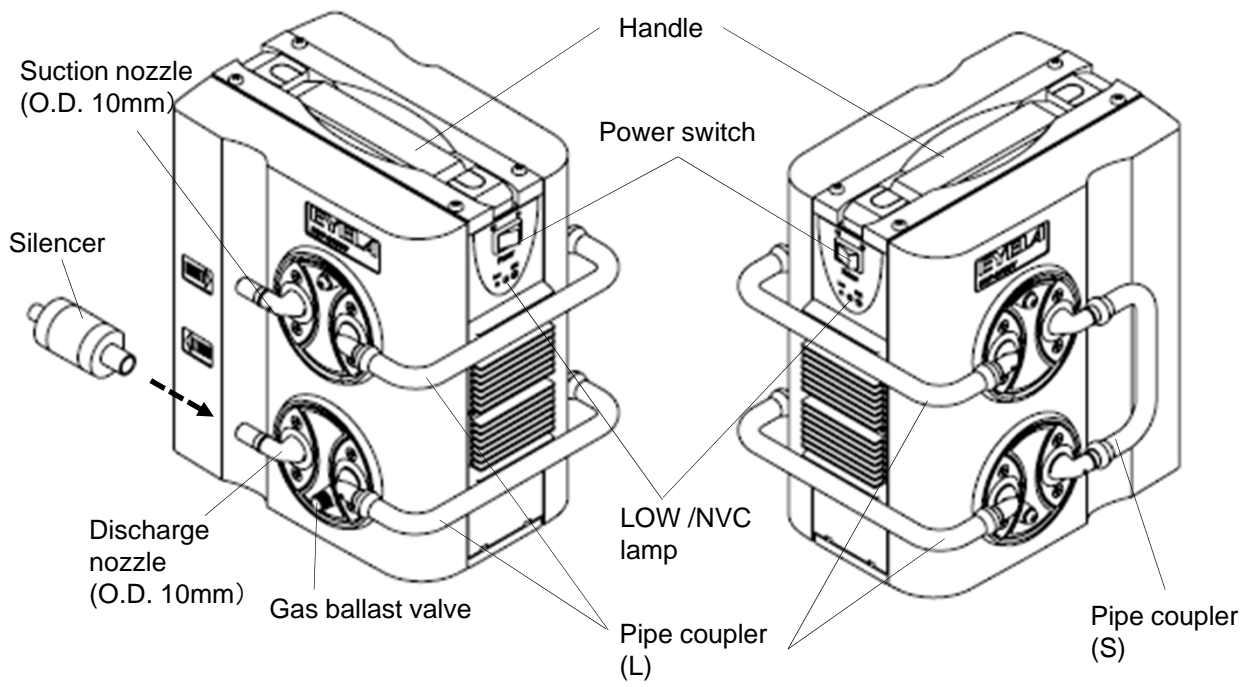
### ■ Model NVP-1000V



■ Model NVP-2000V

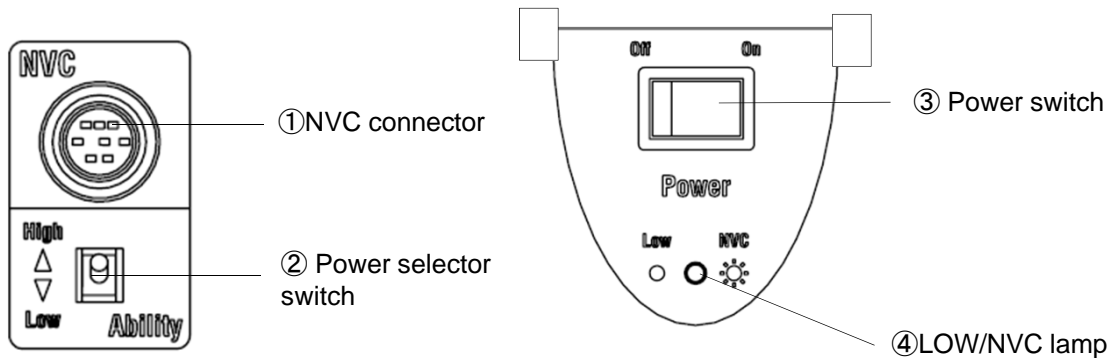


■ Model NVP-2100V



## 3 Names and functions of the controller

### 3-1 NVC connector ▪ power selector switch



No.	Name	Description
①	NVC connector	Connect a dedicated cord to this connector when it is to be used in combination with the vacuum controller (model NVC-3000). ※ With the dedicated cord connected, power supply to the vacuum controller (Model NVC-3000) is made from NVP.
②	Power selector switch	Used to select the exhaust velocity during independent use of NVP. With the switch at HIGH, NVP performs the maximum exhaust power. Set the switch at LOW when the maximum exhaust power becomes unnecessary as the degree of vacuum stabilizes or when the exhaust velocity is to be decreased gradually. ※ This switch is not active during use in combination with the vacuum controller (Model NVC-3000).
③	Power switch	With this switch ON, the lamp inside the switch goes ON and power supply to the vacuum pump; is turned ON.
④	LOW/NVC lamp	Used to show the operation state of the vacuum pump. Lamp flashes during use in combination with the vacuum controller (Model NVC-3000). This lamp goes ON also when the power selector switch is at LOW during independent use of NVP. ※ This lamp does not go ON while the power selector switch is at HIGH. (The power selector switch is set to HIGH before shipment.

### 3-2 Safety functions

This product has the following safety functions.

When an error occurs, take appropriate measures referring to P.15 "Troubleshooting and countermeasures".

Safety unit	Operations	Causes
Fuse	The fuse melts to shut power off.	Overcurrent has flown.
Detection of motor errors.	Stops when a motor error (overcurrent, overvoltage, insufficient voltage, overheat, open phase, motor lock) occurs.	Overcurrent, overvoltage, insufficient voltage, overheat, open phase, or motor lock occurred.

## 4 Installation

### 4-1 Installation environment



#### Warning

**Do not install the product in a potentially hazardous location.**

This products is not designed with explosion-proof structure. Using the unit in a potentially hazardous location may cause a fire.



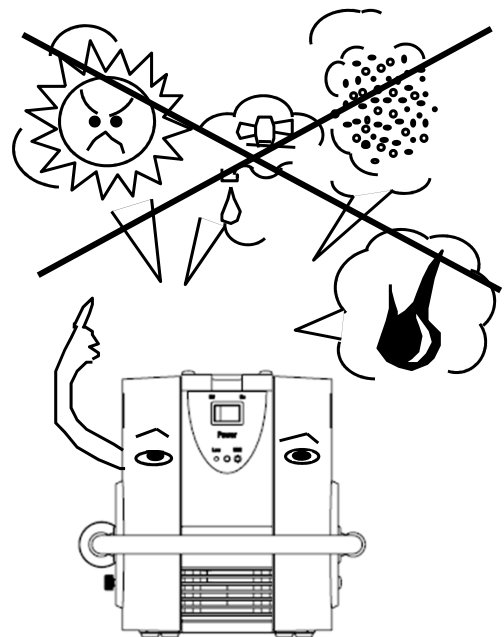
#### Caution

**Install the product on a level , stable and firm surface.**

Installation and operation on a slope, irregular, wet with water or with spilt oil may cause the unit to move and fall from vibrations and a malfunction or consequential troubles.

Select an installation site as follows for this product.

- Where there is not combustible solid, liquid, or gas nearby
- Place free from direct sunshine
- Place where the ambient temperature can be kept within a range of 5~40° C.
- Place free from condensation
- Place where airy or well-ventilated
- Place with less humidity and free from splashing water
- Place with minimum dust
- Level, stable, and firm place



## 4-2 Connecting the utilities

**Warning**

**Confirm the voltage phase capacity and the type of receptacle of power supply.**

Wrong connection of power supply may cause fire or electric shock

**Warning**

**Do not use the branching socket or table tap.**

Over-current may cause cable burn, fire.

**Warning**

**Check the plug terminal before connecting to an outlet.**

Dusts or dirt on the plug terminal may make it humid, short-circuited and ignition.

**Warning**

**Be sure to connect the earth wire.**

Failure to connect the earth wire may cause an electric shock.

**Warning**

**Be sure to connect the earth wire correctly.**

To prevent an electric shock, never connect the earth wire to a gas pipe or a water pipe.

- (1) Check the product type as well as the voltage, phase, and capacity of power supply to be connected.  
Power supply to be connected to the product is as shown in the right.
- (2) Check the AC outlet at the installation location. Prepare a grounding-type AC outlet.

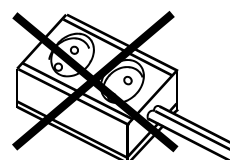
Product type	Required power supply
	Voltage / Capacity
NVP-1000V	AC115V / 15A
NVP-2000V	AC220V / 7A
NVP-2100V	

\* At this time, do not connect the power plug.

\* When connecting to the power supply, do not use a branch socket or table tap.

\* Make sure that the sleeve of power cord is not damaged.  
Such damage may cause electric shock.

\* Use attached power cord.  
Otherwise, lack of capacity, etc. may cause fire or electric shock.



Power supply plug shape

A Type (for115V)	B Type (for220V)	C Type (for220V)	O Type (for220V)

Specification of Power Cord					
Name	Code No	Cable		Cross-sectional area of cable	Remarks
		Length	Thickness (Outer dia.)		
Power Cord A Type (for115V)	264009	Approx. 2.0m	Approx. 9.7mm	2.0mm <sup>2</sup>	Option
Power Cord B Type (for220V)	264003	Approx. 2.0m	Approx. 7.1mm	1.0mm <sup>2</sup>	
Power Cord C Type (for220V)	264002	Approx. 2.0m	Approx. 7.1mm	1.0mm <sup>2</sup>	
Power Cord O Type (for220V)	264007	Approx. 2.0m	Approx. 8.4mm	1.0mm <sup>2</sup>	



## 5 Operation

### 5-1 Preparing for operation

#### Warning

**Never attempt to operate the pump with the sealing stopper (white resin cap) attached on the discharge nozzle.**

Remember to remove the white resin cap from the discharge and the suction nozzles before starting the pump. Operating the unit with the cap on may allow the cap to pop off the pump and lead to injuries of nearby staff.

#### Caution

**Grasp the handle for transportation.**

Transporting the unit by grasping any parts other than the handle may cause the unit to fall and personal injury.

#### Caution

**Do not use the unit for suctioning liquid.**

Suctioning liquid may cause damages to the diaphragm or the valves or a malfunction of the motor.

#### Caution

**Do not use while the handle is broken**

Carrying around the product with the broken handle may result in falling and injury. Request for repair in case of broken handle.

#### Caution

**Assure proper ventilation when suctioning organic solvent**

Operating the unit in an organic solvent atmosphere may cause an abnormal odor or damage to health.

#### Caution

**When the decompression container is made of glass, take care for its status or handling.**

Glass items with cracks or flaws might lead to an accident. Take sufficient care for handling of such containers.

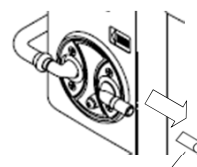
#### Caution

**Use a trap for suctioning to prevent solvent from entering in the pump.**

Solvent may enter the pump and change to liquid to compromise attainable vacuum, damage to the diaphragm or the valves or a malfunction of the motor. It is also possible to cause a strange odor or ignition.

#### 1. Connecting the hose

- (1) Install at the place of use.
- (2) Remove the sealing stopper (white resin cap) from the suction nozzle and the discharge nozzle.



Sealing stopper  
(White resin cap)

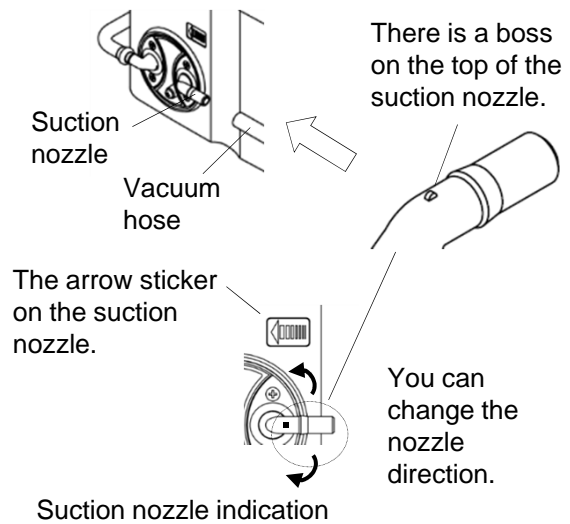
(3) Connect the depressurizing system and the suction nozzle using a vacuum hose of I.D. 6mm (O.D. of the suction nozzle is 10mm).

※ Take care not to mix the suction nozzle and the discharge nozzle.

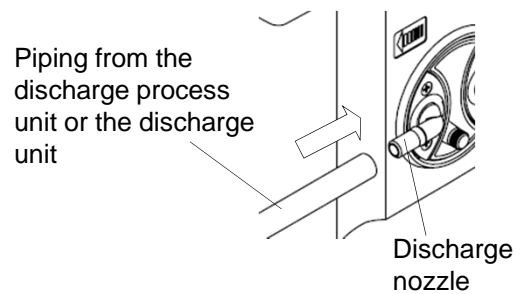
Suction nozzle has a boss on its top.  
Also check the arrow sticker on the external case.

※ Using a vacuum hose with I.D. smaller than 6mm may deform the nozzle.  
Be sure to check the hose size.

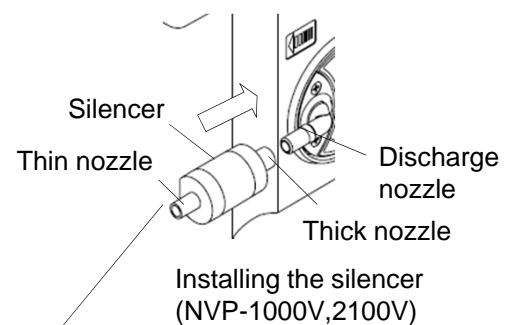
※ You can change the nozzle direction depending on the installation site.  
Hold the nozzle and move it slowly.



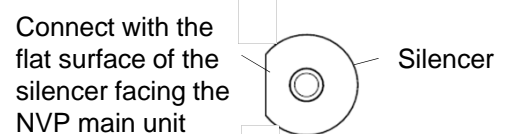
(4) Connect the discharge nozzle to the solvent collecting unit or to the discharge trap supplied by the customer as necessary (Discharge nozzle O.D. is 10mm.)



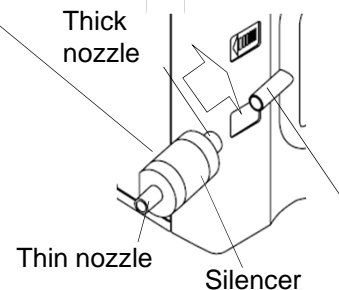
If you do not connect to the solvent collecting unit or to the discharge trap, you can connect the silencer included to the discharge nozzle to lower discharge noise.  
Insert the thick end of the silencer nozzle into the discharge nozzle.



※ Connect with the flat surface of the silencer facing the NVP main unit so that the silencer will not interfere with the NVP main unit.



※ Discharge temperature may become hot, which does not indicate an abnormality.



Installing the silencer (NVP-2000V)

※ Take care not to mistake the suction nozzle for the discharge nozzle. Check the direction of the arrow on the exterior case. The discharge pressure of the discharge side is 0.2MPa or higher.

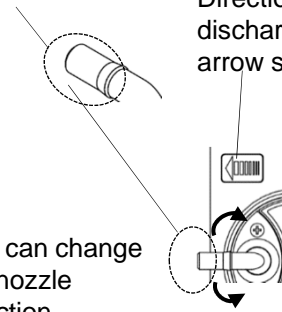
※ You can change the nozzle direction depending on the installation site.  
Hold the nozzle and rotate slowly.

No boss on the top of the discharge nozzle

Direction of the discharge nozzle arrow sticker

You can change the nozzle direction.

Discharge nozzle indications



## 5-2 Operating procedures

### Caution

**Stop operating the unit if you notice an abnormality.**

When you notice an abnormality, immediately turn the power switch off and take appropriate measures referring to the section "Causes and solutions for troubles".

### Caution

**To end operation, be sure to release depressurization before turning the power switch OFF.**

Turning the power switch OFF without releasing depressurization might have adverse effects on valves.

### Caution

**Do not disconnect the piping during pressure reduction.**


Otherwise, sudden change in pressure may cause adverse effects on the vacuum pump and the pressure reducing device.

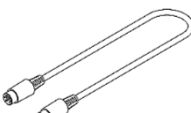
This product can be used in combination with the vacuum controller, Model NVC-3000.

This product can also be used independently.

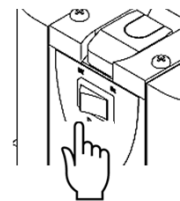
### 5-2-1 For use in combination with the vacuum controller, Model NVC-3000

※ Provide the following parts (optional).

		
Code No.	Name	Quantity
270100	Mounting plate NVC3000-NVP-V	1

		
Code No.	Name	Quantity
269410	NVC-NVPV connecting cord NNV0.5M	1

(1) Turn OFF the NVP power switch.

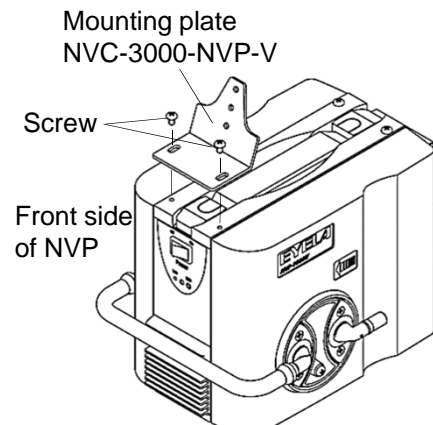


Turn OFF the power switch.

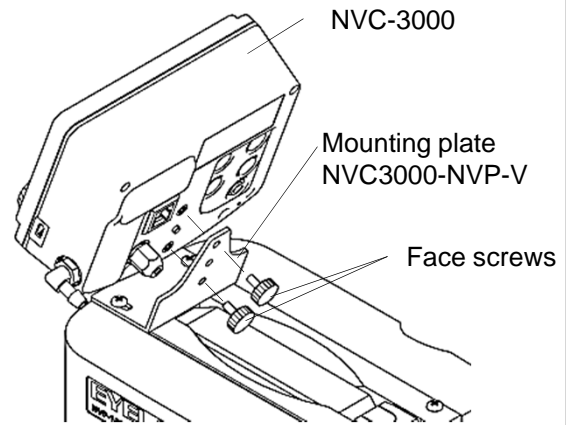
(2) Install the mounting plate NVC3000-NVP-V to the front side with two screws provided in the top of NVP main body.

(The front side is a side with the power switch.)

Mounting holes of the mounting plate NVC-3000-NVP-V are slots, which allows fine adjustment of the mounting position in the front-back direction.

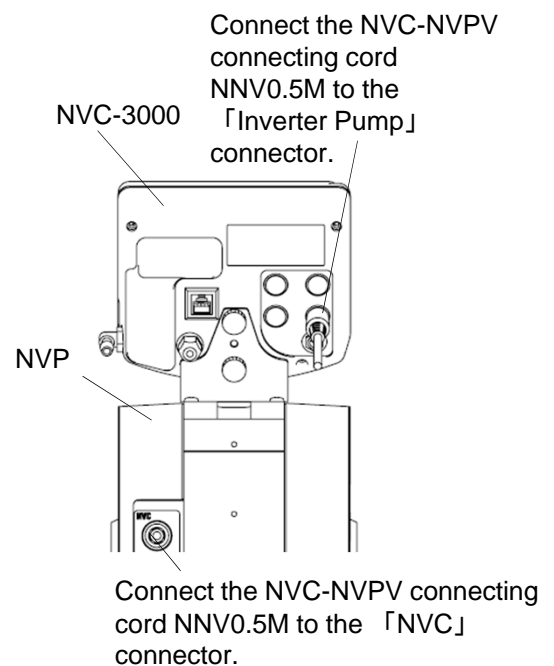


- (3) Secure NVC-3000 by using face screws attached to the mounting plate (Model, NVC3000-NVP-V)



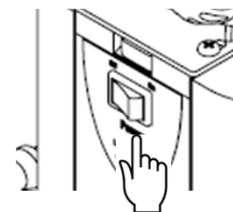
- (4) Using the cord to connect NVC-NVPV (Model NNVO.5M), connect NVC-3000 and NVP. Connect NVC-3000 to the "Inverter Pump" connector on the backside and NVP to the NVC connector on the backside.

※ Connector of the NVC-NVPV connecting cord can be connected to each of NNVO and NVC connectors.



- (5) Turn ON the NVP power switch.

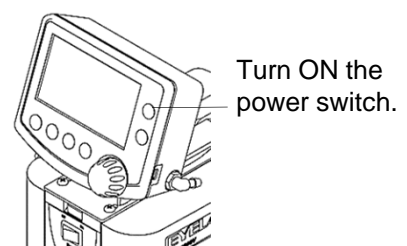
※ Confirm that the suction nozzle and the pressure reduction system are connected with the vacuum hose and that no excessive pressure is on the exhaust side, and turn ON the power switch.



Turn ON the power switch.

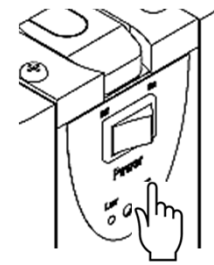
- (6) Turn ON the power switch of NVC-3000 and carry out settings necessary for operation. For details of settings, refer to the NVC-3000 operation manual.

※ At startup, the exhaust rate is high, so that the exhaust sound becomes loud.



## 5-2-2 For independent use of NVP

- (1) Turn the power switch ON.  
The motor rotates, starts suctioning at the suction nozzle, discharging at the discharge nozzle to start depressurization.
  - ※ Amount of discharged air is larger at start resulting in a louder discharge noise.
  - ※ Make sure that the suction nozzle and the depressurization system are connected with the vacuum hose and the discharge side is not subjected to excessive pressure before turning the power switch ON.
- (2) The power selector switch enable selection of exhaust velocity.  
At HIGH, maximum exhaust is performed.  
Set the switch at LOW when the vacuum becomes stable, making maximum exhaust power unnecessary and allowing the exhaust velocity to be decreased gradually.



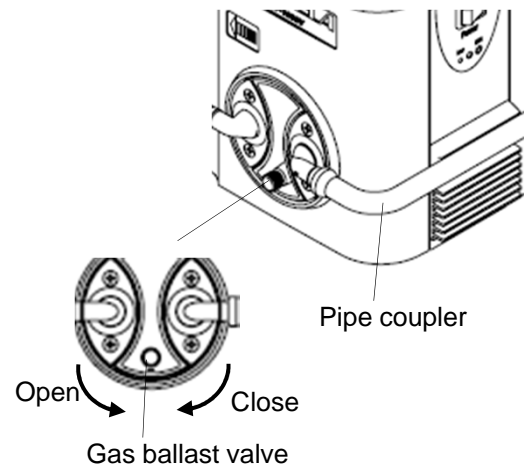
Turn the power switch ON.



Power selector switch

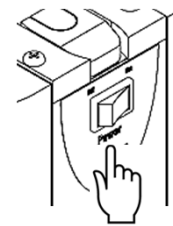
## 5-2-3 During and after use

- (1) When vacuum level is compromised due to condensate liquid in the pump, open the gas ballast valve leaving the pump operating. Condensate liquid will be discharged at the discharge nozzle.  
When condensate liquid has been discharged, close the gas ballast valve.  
When condensate liquid is not seen in the pipe coupler, discharging has been completed.
  - ※ The vacuum level is compromised and the operating noise will be louder while the gas ballast valve is open.When condensate liquid has been discharged completely, immediately close the ballast valve.
- (2) To finish operation, be sure to release depressurization gradually, operate with no load for about five minutes and then turn the power switch OFF.
  - ※ The diaphragm, the valves, the suction and the discharge nozzles may degrade depending on the solvent used or operating conditions to make depressurization impossible, when you need to install a cooling trap or other solvent collecting unit between the depressurization container and the vacuum pump and operate without load for about five minutes to suction air for cleaning.
  - ※ Wait for at least two seconds before resuming operation to protect the motor and the control unit.



Pipe coupler

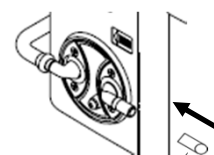
Gas ballast valve



To finish operation, release depressurization and then turn the power switch OFF.

### Procedures after operation

Turn the power switch OFF and remove the power plug from the outlet when you are not going to use the unit for an extended period of time.



Sealing stopper (White resin cap)

For storage after disconnection from the piping, provide a sealing stopper (white resin cap) to suction and exhaust nozzles.

**6****Troubleshooting and countermeasures**

Contact your dealer or the nearest service center for troubles not listed here.

Symptom	Cause	Countermeasures
Power cannot be turned on.	Power is not supplied.	Turn on the circuit breaker of the switchboard.
	The power plug is disconnected from the electric outlet or inserted inadequately.	Turn off the power switch, and firmly insert the power plug to the electric outlet.
	The power cord has come off the inlet.	Turn the power switch OFF and insert the power cord into the inlet.
	Control output is not coming from the vacuum control unit or other relevant products.	Check for control output from the vacuum control unit or other relevant products and make sure that connections or settings are correct.
	The motor error detection function has activated.	Remove the power plug from the outlet, wait a while and then turn the power switch ON. If the unit does not start after carrying out this counter measures, immediately stop operation and contact your dealer or nearest service center.
	The fuse has blown.	Replace the fuse. If the fuse blows soon again, , immediately stop operation and contact your dealer or nearest service center.
Depressurization will not start after starting operation.	The depressurization container has some defects.	Take appropriate measures referring to the operation manual of the connected unit.
	The pipe has come off or shows leaks from degradation.	Check the connected pipe along its piping route.
	Pipes are connected incorrectly.	
Depressurization is not effective or vacuum level remains low after starting operation.	The diaphragm or the valve has worn or broken.	Immediately stop operation and contact your dealer or nearest service center.
	Condensation gas has accumulated inside the pump.	Discharge condensation gas to the externals using the gas ballast valve.

## 7 Maintenance and Inspection

### 7-1 Cleaning and care of the product



#### Caution

**Never attempt to disassembly the product.**

The unit contains parts with high voltage applied or may become hot, and disassembly may cause an electrical shock or an injury.



#### Caution

**Do not clean and care the product while the unit is still hot.**

Touching hot surface may burn your hands.



#### Caution

**Remove dusts off the outlet in short intervals.**

Leaving and operating the unit connected to an outlet for an extended period of time will allow dusts to accumulate in the gap between the outlet and the power plug and may cause a malfunction or a fire. (Tracking phenomenon)



#### Caution

**Always employ and use correct procedures and items for cleaning and maintenance.**

Never splash water over the external package or the inside or use scorching powder, thinner, petroleum, kerosene, acid or similar items. Otherwise, an electric shock or damage to the product may result.



#### Caution

**Do not leave the product in an adverse atmosphere.**

Leaving the product at a place with high concentration of acids or organic solvents may cause a discoloration of the external package or peeling-off of the paint. Also, corrosion of the internal substrates will proceed and cause a malfunction.

- (1) Perform maintenance after turning off the power switch and disconnecting the plug from the electric outlet.
- (2) Clean the main unit by wiping with a soft cloth dipped in water and tightly wrung water from it. Use neutral detergent for dirt which is hardly removed, and wipe off the detergent if used.

※ Inspection of the pipes

Be sure to inspect the pipes before and after operation for loosening or degradation of the vacuum hose.

The extent of degradation or aging of the vacuum hose will differ depending on the use conditions and replace it when inspection results indicate it is necessary.



## 7-2 Replacing a fuse

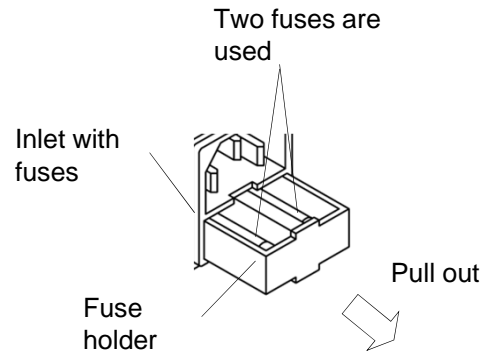


### Caution

**Be sure to use a specified type of fuse.**

Fuses not specified may not blow when overcurrent flows and may lead to a fire.

- (1) Turn the power switch OFF and remove the power cord from the fused inlet.
- (2) Pull out the fuse holder and the fuse using narrow tweezers or similar tools.
- (3) The unit uses two fuses. Replace only the blow fuse with the spare.




※ Fuse depends on the NVP power supply voltage value.  
Check the power supply voltage value of NVP,  
Please select the fuse from the right table.


Code No.	Name	Q' ty	Remarks
264010	Fuse	2	4A (for 115V)
147670	Fuse	2	3.15A (for 220V)

- ※ Be sure to use a specified type of fuse.  
Fuses not specified may not blow when overcurrent flows and may lead to a fire.
- ※ If the new fuse soon blows, stop using the unit and contact your dealer or the nearest service center.

### 7-3 Replacing the pipe coupler

 **Caution**

**Be sure to use the specified pipe coupler.**  
 The type and the installation position will differ depending on the products.  
 If you use a pipe coupler other than those specified, the product will not exert its performance to the fullest.

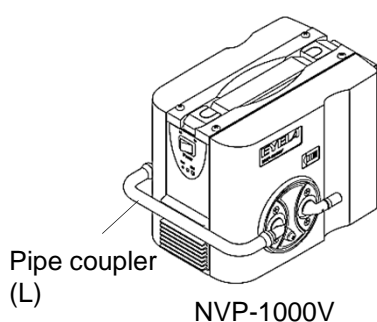
 **Caution**

**Note that model change is impossible by replacing the pipe coupler.**  
 The inner structure has different design between NVP-2000V and NVP-2100V so the model change is impossible by replacing the pipe coupler for NVP-2100V onto NVP-2000V. and vice versa.

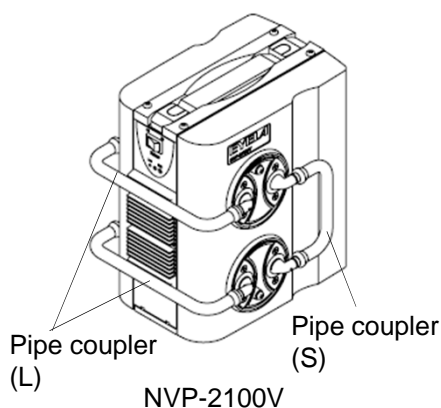
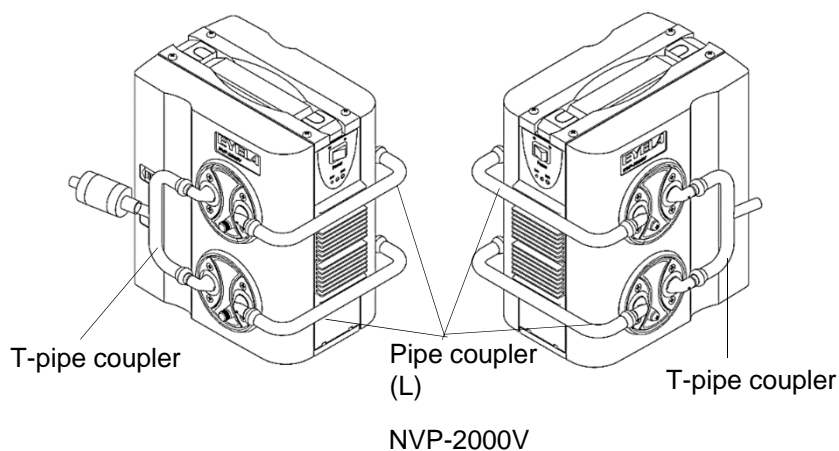
You can replace a dirty pipe coupler.

The type and the installation position of a pipe coupler for different products.

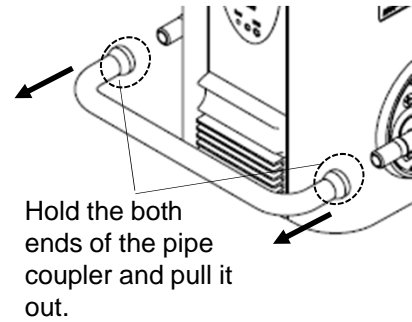
Number of pipe couplers to be used on different products



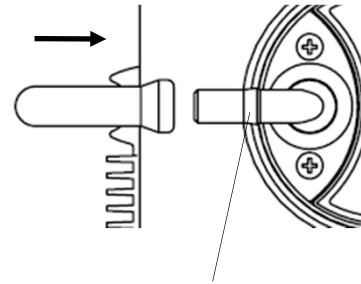
	Pipe coupler for NVP(L)	Pipe coupler for NVP(S)	T-pipe coupler for NVP
Code No.	263960	263970	263980
No. for NVP-1000	1	0	0
No. for NVP-2000	2	0	2
No. for NVP-2100	2	1	0



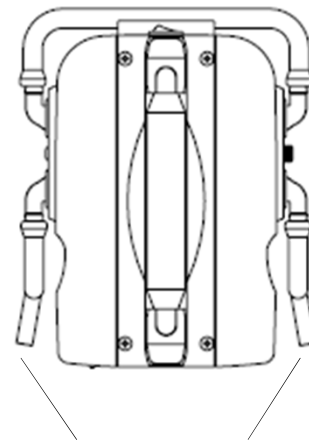
- (1) Pull out the pipe coupler.  
Hold the both ends of the pipe coupler and pull it out.



- (2) Install a pipe coupler of the same type as the original.  
Insert the pipe coupler until it contacts the stopper on the nozzle.



- (3) Install the T-shaped pipe coupler for NVP-2000V so that its nozzle will face the opposite direction of the NVP main body.

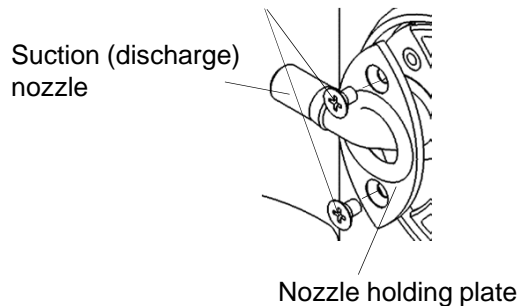


## 7-4 Cleaning the nozzle

When the nozzle become dirty and the performance has become low, remove and clean it with the following procedures.

- (1) Loosen two screws of the nozzle holding plate and remove the nozzle holding plate and the suction nozzle (discharge nozzle) from the pump head.

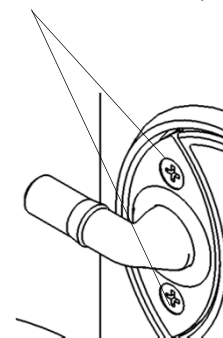
Loosen the screws and remove the nozzle holding plate and the suction (discharge) nozzle.



- (2) Do not disassemble the removed nozzle and clean as it is using an ultrasonic cleaner.

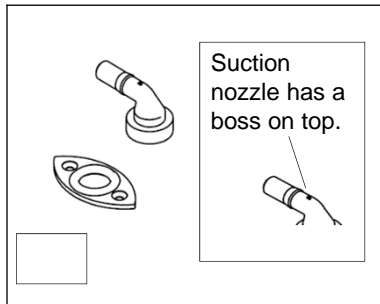
- (3) Install the nozzle to the pump head and secure using the screws you have removed to remove the nozzle holding plate. Be sure to install the nozzle to the original position. Tighten two screws only until the nozzle will not move.

Secure the nozzle holding plate using screws. (Tighten only until the nozzle will not move.)

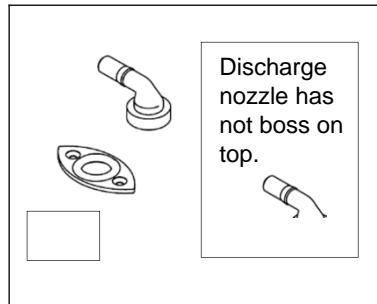


## 7-5 Replacing the L · I-nozzle

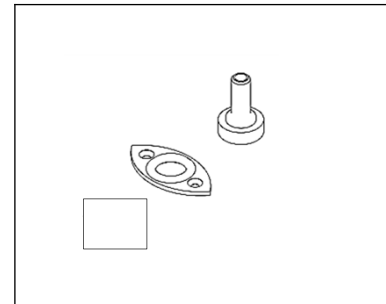
Follow the procedures below to replace the L · I-nozzle.



Code No.	Name
263920	L-nozzle set for NVP (suction)

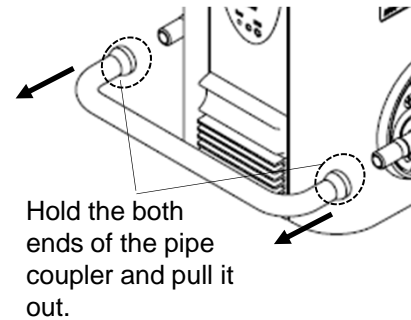


Code No.	Name
263930	L-nozzle set for NVP (discharge)



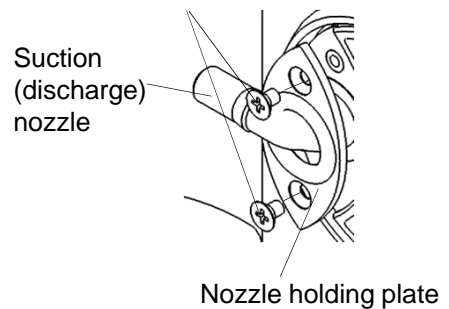
Code No.	Name
263940	I-nozzle set for NVP

- (1) Pull out the pipe coupler.  
Hold the both ends of the pipe coupler and pull it out.

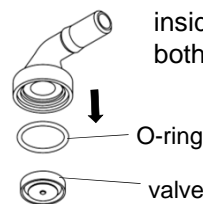


Loosen two screws of the nozzle holding plate and remove the nozzle holding plate and the suction nozzle (discharge nozzle) from the pump head.

Loosen screws to remove the nozzle holding plate and the suction (discharge) nozzle.

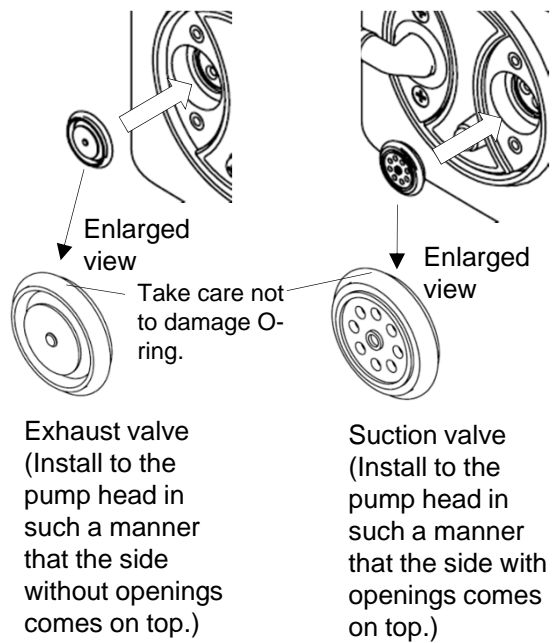


- (2) Make sure there are the valve and the O-ring in the place where detaching the nozzle.  
If there is no valve and O-ring, the both should be in the nozzle so remove the valve and the O-ring with care not to scratch the both.



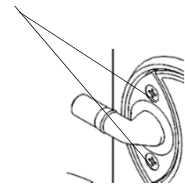
If the valve and the O-ring are inside the nozzle, remove the both.

Attach the O-ring onto the nozzle periphery with care not to scratch and twist.  
 And install the valve with the O-ring to the pump head.  
 When installing, ensure that no dust is adhering onto the pump head or the valve.  
 The direction of the valve is different between Exhaust and Suction. See the figure on the right.



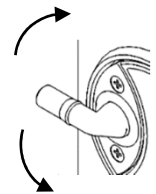
(3) After replacing the nozzle, fix the screws on the nozzle plate as light as the nozzle can be moved.

Fix the screws on the nozzle plate as light as the nozzle can be moved.



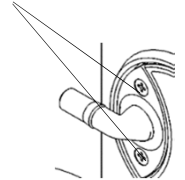
(4) Turn the nozzle up and down several times.

Turn the nozzle up and down several times.

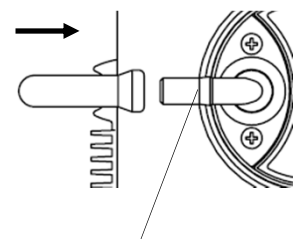


(5) Tighten further screws of nozzle fixing plate.  
 (Tighten with force enough to turn the nozzle lightly.)

Tighten further screws of nozzle fixing plate. (Tighten with force enough to turn the nozzle lightly/)



(6) Install a pipe coupler of the same type as the original.  
 Insert the pipe coupler until it contacts the stopper on the nozzle.



Insert the pipe coupler until it contacts the stopper on the nozzle.

## 8 Disposal of the product

When disposing the product, please follow the instructions as below.

Main components and disposal instructions

Component	Model	Weight	External dimensions (mm) ( including protrusions)	Method for disposing
Inverter diaphragm vacuum pump	NVP-1000V	Approx. 6kg	138(177)W × 206(260)D × 180H	Request the disposal operator for disposal.
	NVP-2000V	Approx. 8kg	138(177)W × 206(260)D × 252H	
	NVP-2100V	Approx. 8kg	138(177)W × 206(260)D × 252H	

※Properly classify and discard packing materials.  
(White cushioning material is made of polyethylene foam.)

Composing unit	Major components	Major materials
Inverter diaphragm vacuum pump	Chassis (metal panel)	Stainless steel
	Chassis (resin)	PC
	Chassis (base)	Zinc die-cast
	Chassis (top plate)	Aluminum die-cast
	Substrate, electric components	Glass epoxy, lead-free solder, copper
	Wiring, connector, cable	Copper, PVC, nylon
	Pump head, nozzle, nozzle holding plate	PPS
	Diaphragm	Teflon, neoprene rubber
	Valve	Fluorine rubber
	Piping parts	Teflon
	Screw	Stainless steel
	Driving assembly	Aluminum die-cast, iron, POM

※When disposing of the product, separate materials according to the table above before disposal.

## **9 After-sale Services**

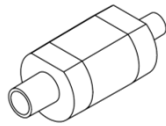
1. In case the product does not function satisfactorily, check first by referring to the page on troubleshooting to see if this is actually a trouble.
2. If the product remains unsatisfactory even after checking, contact the shop from which the user has purchased the product or the service center described in the manual and request repair.
3. Repair during the guarantee period will be made according to the guarantee stipulations.
4. After expiration of the guarantee period, the charged repair will be made at the customer's request.



# 10 List of consumables and replacement parts/ optional parts


## 10-1 Consumables and replacement parts

① Silencer for NVP




No.	Spec.	Q' ty	Code No.
1		1	263910

② L-shaped nozzle set for NVP (suction)



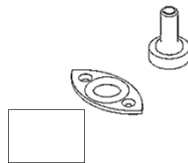
No.	Spec.	Q' ty	Code No.
2		1set	263920

③ L-shaped nozzle set for NVP (discharge)



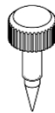
No.	Spec.	Q' ty	Code No.
3		1set	263930

④ I-shaped nozzle set for NVP



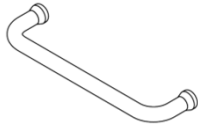
No.	Spec.	Q' ty	Code No.
4		1set	263940

⑤ Gas ballast valve for NVP




No.	Spec.	Q' ty	Code No.
5		2	263950

⑥ Pipe coupler for NVP (L)



No.	Spec.	Q' ty	Code No.
6		1	263960


⑦ Pipe coupler for NVP (S)



**Common to Models NVP-2100 and 2100V**

No.	Spec.	Q' ty	Code No.
7		1	263970

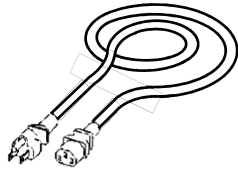
⑧ T-pipe coupler for NVP



**Common to Models NVP-2100 and 2100V**

No.	Spec.	Q' ty	Code No.
8		1	263980

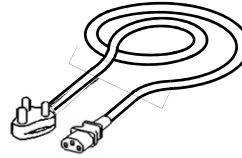
⑨Power cord A Type



for 115V Spec.

No.	Spec.	Q' ty	Code No.
9		1	264009

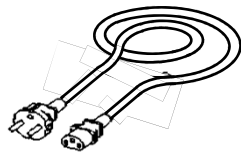
⑩Power cord B Type



for 220V Spec.

No.	Spec.	Q' ty	Code No.
10		1	264003

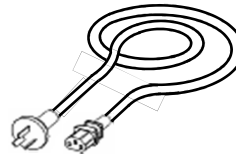
⑪Power Cord C Type



for 220V Spec.

No.	Spec.	Q' ty	Code No.
11		1	264002

⑫Power Cord O Type



for 220V Spec.

No.	Spec.	Q' ty	Code No.
12		1	264007

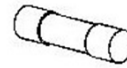
⑬Fuse



for 115V Spec.

No.	Spec.	Q' ty	Code No.
13		2	264010

⑭Fuse

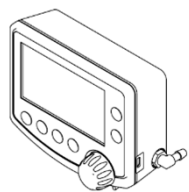


for 220V Spec.

No.	Spec.	Q' ty	Code No.
14		2	147670

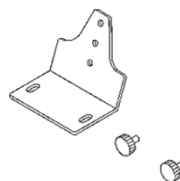
## 10-2 Optional parts and related products

① Vacuum controller NVC-3000



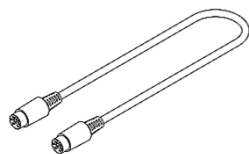
No.	Spec.	Q' ty	Code No.
1		1	269370

② mounting plate NVC3000-NVP-V



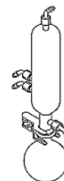
No.	Spec.	Q' ty	Code No.
2		1	270100

③NVC-NVPV connecting cord NNVO.5M



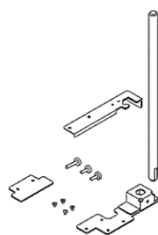
No.	Spec.	Q' ty	Code No.
3		1	269410

④Exhaust trap set for diaphragm Vacuum Pump



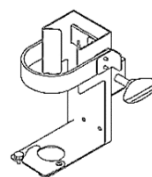
No.	Spec.	Q' ty	Code No.
4		1	261460

⑤Stand pole for exhaust trap set



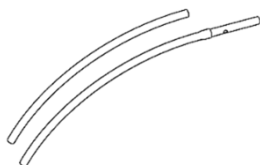
No.	Spec.	Q' ty	Code No.
5		1	262960

⑥Condenser holder for NVP



No.	Spec.	Q' ty	Code No.
6		1	262970

⑦Cleaning tube for NVP



No.	Spec.	Q' ty	Code No.
7		1	263390

⑧Effluent trap bottle holder for NVP



for Effluent trap bottle  
(Code No. 235460)

No.	Spec.	Q' ty	Code No.
8		1	265560