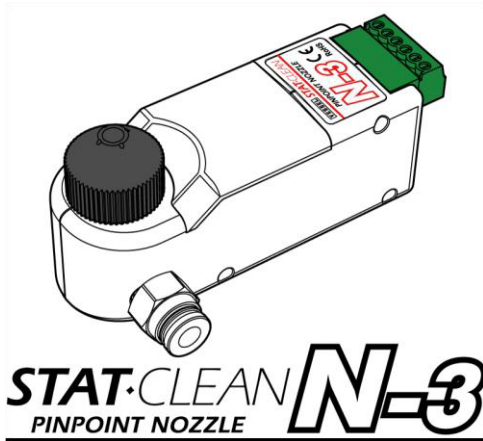




Your solution partner

Instruction Manual



Thank you for purchasing our Stat Clean the N-3.
Read this instruction manual before use. Keep it for your ready reference.

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■ For Your Safety

Safety Instructions

- * Read the Safety Instructions carefully before use. Observe the instructions indicated herein to ensure safety.
- * Safety instructions in this manual are categorized into two types by the degree of danger associated with each action or condition. Based on analyses conducted by Vessel, all instructions mentioned in this manual are of the CAUTION level.
- * If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

	WARNING	Indicates that improper handling can lead to serious injury or even death.
	CAUTION	Indicates that improper handling can lead to minor injury and property damage.
		This symbol indicates a WARNING or CAUTION.
		This symbol indicates a prohibited action.
		This symbol indicates a mandatory required action

 CAUTIONS	
 WARNING	Do not use the N-3 in environments that require explosion-proofing. TheN-3 is not of explosion-proof construction, therefore explosion or fire may occur.
 WARNING	Do not use the N-3 in flammable atmospheres. The corona discharge can act as an ignition source and cause an explosion or fire.
 PROHIBITED	Do not use the N-3 in environments subjected to sharp temperature fluctuations or dewing. This kind of environment can lead to breakdown.
 DO NOT WET	Do not use the N-3 in highly damp places or anywhere it may be exposed to water, oil, solvent or other liquids. Contact with moisture can result in electric shock or breakdown.
 PROHIBITED	Do not use the N-3 for any other purposes than static erasure or dust removal.
 PROHIBITED	Do not use the N-3 with power supplies of ratings not specified in the specifications. Inappropriate power supplies can result in fire and electric shock.
 PROHIBITED	Do not install, use or service the N-3 until having understood the information in this instruction manual.
 REMEMBER	Keep this instruction manual in a safe handy place for future reference.

Features

*** AC Corona Discharge System**

AC corona discharge system secures reliable ion balance, not to be affected by the contamination of electrode needles. Its high voltage transformer generates ion abundantly.

*** Air Nozzle–type Ionizer**

The N-3 neutralizes static charge and removes dust by powerful blow of compressed air. Nitrogen gas can be used as a substitute for compressed clean air.

*** Compact and Light Weight**

The N-3 is designed to be very compact with a built-in high voltage power supply.

*** Designed for Safety**

Warning signals can be sent externally by the open collector output.
A current-dependent fuse is incorporated to protect its circuit board.(0.5A 600V)

*** LED light makes it easy to see its operating status**

Features an LED light on the top, which glows green while in normal operation and turns red after the generation of the ion decreases due to abnormal operating conditions.
When an abnormality of High Voltage output is detected, the N-3 stops the output forcibly. To restart from the stopping, please turn off a power supply once and then turn on the power supply again.

*** Maintenance**

Electrode Needle can be easily replaced by using Electrode Needle Replacement Driver. (Option)

*** Environmentally Friendly**

Compliant with RoHS standards.

*** EMI-Prevention**

Influence on other electronic devices is kept minimum as the N-3 is designed to have limited electromagnetic noise.

*** CE Compliance**

The N-3 has been tested and approved under CE directive, EN61000-6-4, 6-2.

Applications

The N-3 is designed to blow away dust and remove static electricity to prevent dust accumulation.

■ Specifications

PINPOINT NOZZLE

Model	: N-3
Ion generation method	: High voltage AC corona discharge
Applied voltage	: AC 5.6 kV p-p (typ.)
Input voltage	: DC24V +/-5%
Power consumption	: 90mA max.
Applied fluid	: Clean air (0.1~0.6 MPa), Nitrogen gas (0.1~0.6 MPa)
Air consumption	: 210 Liter/min (0.3 MPa)
Ozone generation	: 0.05 ppm or less (Measured at 50 mm)
Working temperature / humidity	: 5~40°C 35~65%RH (No dewing)
Storage temperature / humidity	: 0~60°C 35~85%RH (No dewing)
Decay time	: ±1000V to ±100V, within 0.7sec, 0.3MPa / 150mm
Ion balance	: Within±10V (0.3 MPa / 150 mm)
Safety feature	: It stops when the HV power supply is abnormal. (Lock and Red LED Lighting.)
Weight	: 104g
Dimensions	: L95xW50xH47mm
Material	: Casing: ABS, Nozzle: ABS, Electrode Needle: Tungsten
Degrees of protection	: IP20 (IEC 60529)
Overvoltage category	: II (IEC 60664-1)
Pollution degree	: 2 (IEC 60664-1)
Accessories	: Instruction Manual, Power harness

Replacement part

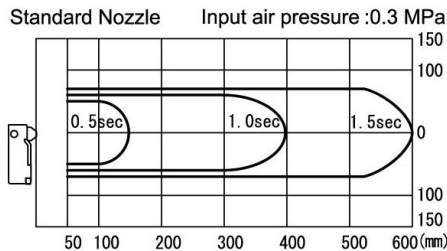
Electrode Needle :GN-H



Air consumption

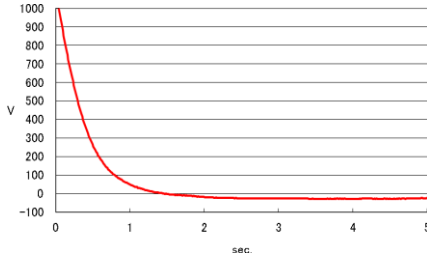
Air Pressure (MPa)	0.1	0.2	0.3	0.4	0.5	0.6
Air consumption w/ Standard Nozzle (Liter/min)	86	150	210	260	315	375

Effective Ionization Range

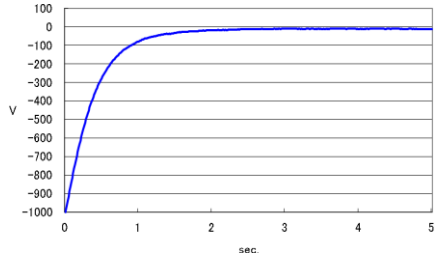


Decay Time

1) Standard Nozzle (+1000 to 0V)



(-1000 to 0V)



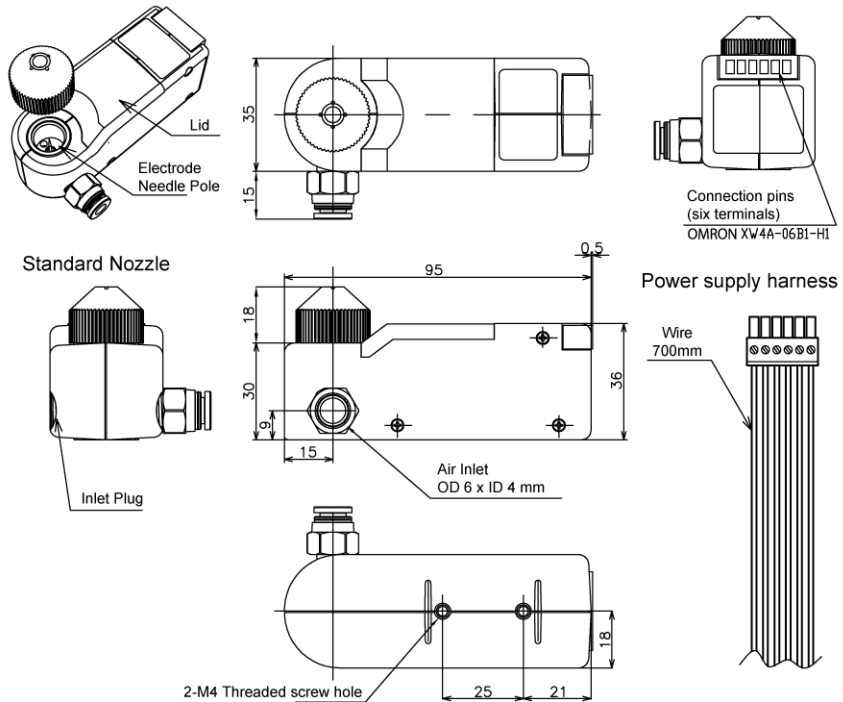
The data shown above was measured with initially charged voltage of $\pm 1000V$.

(Air Pressure: 0.3 MPa Temperature : 25.0°C Humidity : 50.0%R.H.)

CPM : 20pF-150mm square)

* Tube fitting Nozzle with a tube (O.D .6mm length 300mm)

■ External View



■ Installation

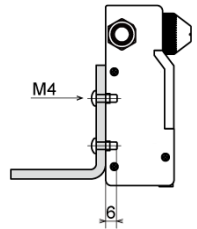
⚠ CAUTIONS FOR INSTALLATION	
● REMEMBER	Use an air hose appropriate for required pressure resistance. Air hoses of insufficient pressure resistance will rupture and leak air.
● REMEMBER	Ground the N-3 before use. Using this unit without proper grounding runs the risk of electric shock.
● REMEMBER	Use the N-3 only in the environment specified as follows: Adverse environments cause product deterioration and breakdown. Humidity: 35~65%RH (No dewing) Temperature: 5~+40°C
⊘ PROHIBITED	Do not use the N-3 in the following environments. Adverse environments cause product damage and breakdown as well as personal accidents. Where explosion-proofing is required, where found flammable atmospheres, high temperature and high humidity, or sharp temperature fluctuations, where dewing occurs, where possibly wet by water, oil or solvent

Installation

Take account of the static erasing range before setting the installation height.

The N-3 can be locked down using the screw holes (M4) on the bottom. See page 6.

- * Use a mounting screw that can be sunk up to 6 mm maximum from the surface of the N-3 housing.
- * Do not install the N-3 in a place where it is possibly exposed to water or oil, dust or dirt, or to high temperature or humidity.
- * Prevent obstructions between the N-3 and the object.
- * Select a supporting structure of sufficient strength to hold the N-3.



Air hose

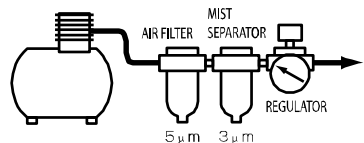
Uses an air hose (OD6 mm x ID4 mm) of sufficient pressure resistance.

Air supply

Remove all impurities with a mist separator (0.3μm).

Remove all moisture with an air filter.

Supply air at a temperature of 0~40°C.



Grounding

Provide the unit with proper grounding.

Power supply

Make sure that the unit can be supplied with stable 24V DC power.

Wrong wiring connection may cause a breakdown.

Please make sure all the electrodes are connected according to their polarity before turning on the unit.

Check before use

Before use, check the unit, tube and power harness in order to make sure there is no damage, loose screws, disconnected hosing, loose connectors, etc

⚠ CAUTIONS IN OPERATION	
⊘ PROHIBITED	Do not use the N-3 for anything other than static erasure or dust removal.
● REMEMBER	If you notice any abnormalities, stop using the N-3 immediately.
● REMEMBER	Supply clean dry air. Improper air quality can lead to the N-3 deterioration and contamination of the object.
⊘ PROHIBITED	Do not remodel or disassemble the N-3 as the unit contains high voltage parts.
⊘ PROHIBITED	Do not drop the N-3 or subject it to any shock / vibration.
⊘ PROHIBITED	Do not pull the tube forcibly. Inappropriate handling can damage the N-3 and internally disconnect the power cable and air hose.
⊘ PROHIBITED	Do not damage the hose or wiring. Keep the hose and wiring away from any heat source.
⊘ PROHIBITED	Do not use the N-3 if it has a defect.

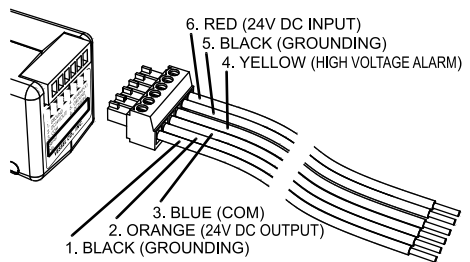
Instructions for wiring

Power Source

- 1) Connect the DC24V power to No.6 connection pin of the power harness, and the grounding wire to the No.5 connection pin. (Please refer to the illustration at the right)

* Connection pins No.2 and No.1 are connected in parallel with No.6 and No.5 respectively.

For the multiple connection of this unit, power supply to next unit can be done by No.2 pin for DC24V and No.1 pin for the grounding. (Please refer to the illustration at the right)



- 2) Make sure to ground the unit by the appropriate wiring.

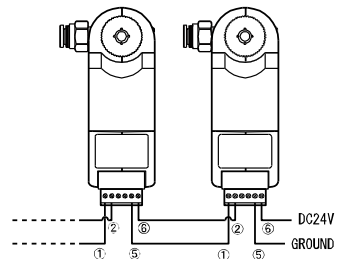
- 3) Supply 24V DC power.

* N-3 does not have a power switch.

Switching on/off should be done by external equipment.

* Supplied 24V DC power should be stable within 60m seconds. Otherwise, high voltage alarm will be activated and the unit will shut off.

* It can supply a power up to 11 by wiring.



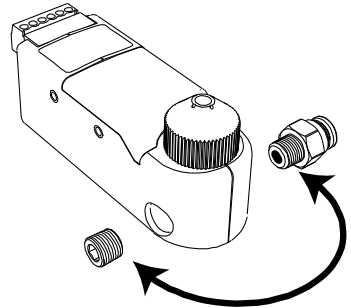
■ Operation

- 4) When the N-3 is activated, the top part will glow in green and ion will be generated.
 - * Please turn off the unit when air supply is stopped.
 - * Takes around 60 seconds until ion generation is stable after switching on.

Air Control

Air output has to be controlled by external equipment like an electro valve or a foot valve.

- * The screw plugs at the sides of N-3 can be removed with a key wrench (5mm) so that the air inlet can be set at either side. Please refer to the illustration.

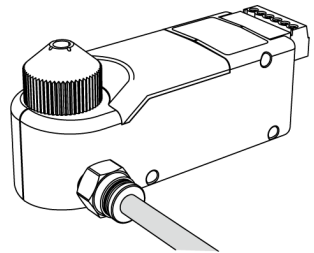


- 1) Connect an air hose ($\phi 6.0 \times \phi 4.0$ mm) to the air inlet of N-3.

- 2) Air pressure should be adjusted within the range between 0.1 and 0.6 MPa with an appropriate air regulator.

- * Ion balance fluctuates according to air pressure and volume in use.

- * Lower air pressure is recommended for semiconductor material sensitive to static electricity.



- 3) Supply dry clean air without moisture in the air.

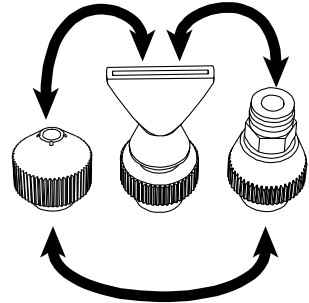
- * Moisture interferes with corona discharge on the electrode needle.

- 4) Supply power and direct the ionized air toward the work piece.

- 5) When static elimination is completed, turn off the power and air supply.

Selecting nozzles

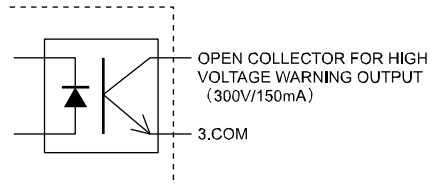
Flare Nozzle and Tube-fitting Nozzle are available as option. Depending on installation place and object to be neutralized, you may choose an appropriate nozzle. Note: Please be sure to attach the nozzle in a correct way.



High Voltage Warning and Automatic Shut-off

When the incorporated high voltage transformer detects electrical overload, corona discharge stops and the LED light on the top turns red. Please switch off the unit as soon as the alarm has been activated.

If the electrode needle is contaminated with dust or other substances, clean it and confirm whether or not the unit can be turned on properly. If the LED light still glows red after cleaning the needle, please contact the local distributor for repairing or maintenance service. Do not attempt to repair the unit on your own.



External Output of Warnings

The N-3 can be connected to warning device like patrol lamp through its external pin.

■ Maintenance

⚠ CAUTIONS IN MAINTENANCE AND CHECKS

⊘ DO NOT DISASSEMBLE	Do not perform any maintenance on the N-3 except for maintenance and replacement of the electrode.
● REMEMBER	Before cleaning the electrode, shut off power and air supply at the source and disconnect the air hose.
⊘ PROHIBITED	Do not wipe the ionizer with detergent or solvent. Substances of the sort can cause cracking and result in electric shock or breakdown.
⊘ DO NOT WET	Do not wet the N-3. Exposure to moisture can result in electric shock or breakdown.

Dirt and wear in the electrode area can deteriorate the performance of this ionizer. Clean the electrode every 300 hours of use. If the electrode is not kept in an optimum condition, the performance will drop and product life might shorten as well. If the unit is used for a long period of time, the tip of its electrode may wear out and consequently static erasing efficiency will decrease. In such case, replace the electrode with a new one. It is recommended that the electrode be replaced every 1,200 hours of operation. Keep the unit in good working condition by measuring its ion balance and ion output regularly as a means for checking for a drop in capacity.

■Maintenance

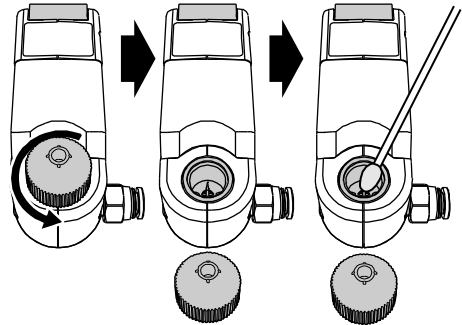
How to Clean the Casing

Remove the dirt over the casing with dry, soft cloth.
Never apply alcohol / thinner solvent / detergent.

How to Clean the Electrode Needle

Power supply to the N-3 should be shut off before cleaning the Electrode Needle.
Please follow the instructions below:

- 1) Remove the Nozzle.
- 2) Clean the tip of the needle with a cotton stick. If it is especially dirty, use a few drops of alcohol-wet cloth.
- 3) Place the Nozzle back in place.
Attach the Nozzle firmly. If it is fastened too tightly, it may be damaged or break, but if it is fastened too lightly, the nozzle may come off while in use.



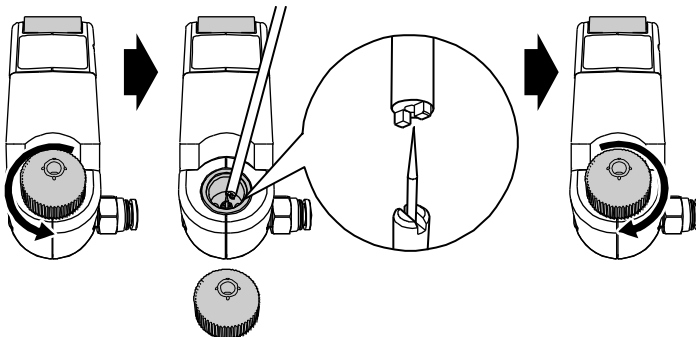
How to Replace the Electrode Needle

Needle must be replaced with the Electrode needle Replacement Driver. (Separate be sold)
Make sure to shut off power supply before the replacement.

Replacement Order:

- * Remove the Nozzle.
- * Release the screw with the attached Electrode needle Replacement Driver.
- * Replace it with a new needle and fasten it firmly.
- * Put the Nozzle back in place.

Make sure that the nozzle is mounted firmly. Otherwise, it might come off while in use.
On the contrary, it may be broken or damaged if it is fastened too tightly.



Checking Ionizer's Performance

Measure ion balance and decay time regularly by a charge plate monitor.

Reference: IEC61340-5-1, 2

Maintenance

As the N-3 employs AC output for ion generation, its output ion balance is not adjustable.

Please contact VESSEL for maintenance service if the ion balance is out of the specified range.

■Troubleshooting

⚠CAUTIONS IN TROUBLESHOOTING	
⊘ PROHIBITED	Do not use the N-3 in the following situations. It can result in fire or electric shock. * If the power cable is damaged or hot * If the N-3 has been damaged because of dropping or shock.
● SHUT POWER OFF	Unplug power cable if the N-3 has a defect.
⊘ DO NOT DISASSEMBLE	Do not disassemble the N-3.

Using broken N-3 may cause product damage or personal accident.

Therefore, request servicing promptly if such trouble occurs. For servicing, contact your local distributor.

■Storage

⚠CAUTIONS IN STORAGE	
⊘ PROHIBITED	Do not store the N-3 in the following places. Adverse environments can cause product breakdown. * Where it may be exposed to vibrations or shock * Where temperature and humidity are outside specified ranges * Where dewing occurs * Where temperature fluctuates sharply * Where there is the possibility of ignition or explosion of flammable solvents, dust, etc. * Where there is heavy dust or smoke * Where it may be wet by water, oil , chemicals, etc. * Where strong electric or magnetic fields are generated

LIMITED WARRANTY:

VESSEL expressly warrants that for a period of one (1) year from the date of purchase, VESSEL static erasers will be free of defects in material (parts) and workmanship (labour). Within the warranty period, Defects occurring will be repaired or products will be replaced at VESSEL's option and expense, if VESSEL receives notice during the warranty period. Defective products must be returned to VESSEL Osaka Japan with proof of purchase date. And if your unit is out of warranty, VESSEL will quote repair charges necessary to ship your unit freight prepaid to where you have originally purchased.

WARRANTY EXCLUSIONS:

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING FITNESS AND MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED.

The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean, or repair products.

LIMIT OF LIABILITY:

This electronic static eraser use high voltage corona discharge and should not be used in or near flammable or explosive environments. In no event will VESSEL or any seller is responsible or liable for any injury, loss or damage, direct or consequential, whether based in tort or contract arising out of the use of or the inability to use the product. Fulfillment of VESSEL's warranty obligations will be Customer's exclusive remedy and VESSEL's and Seller's limit of liability for any breach of warranty or otherwise. Before using this unit, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.

Model	N-3	
Warranty	(1) year from the date of purchase	
Customer	Name	
	Address	
	Tel. No.	
Dealer	Name/Address/Tel. No.	



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