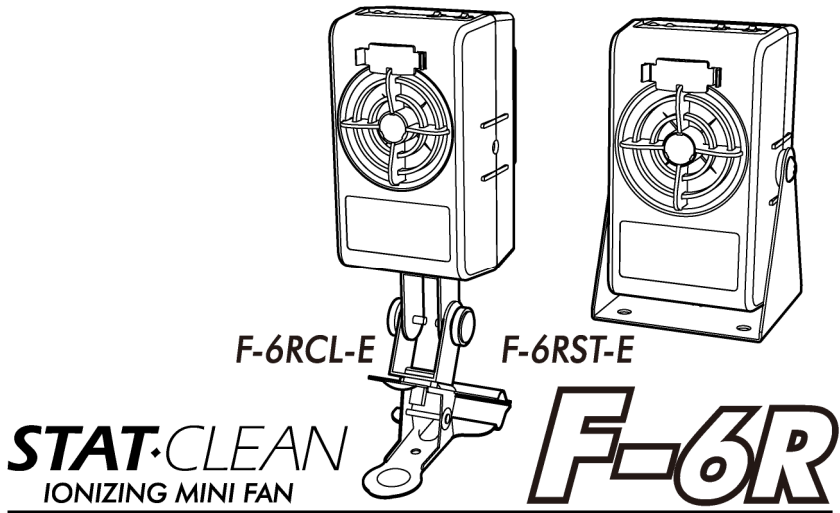


VESSEL

Instruction Manual



CE RoHS

Thank you for purchasing our Stat Clean No. F-6R.

Read this instruction manual before use. Keep it in a safe handy place for future reference.






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■For Your Safety

Safety Precautions

- Carefully read these Safety Precautions before use. Observe the precautions indicated herein to ensure safety.
- Safety precautions in this instruction manual are categorized into two types by the degree of danger associated with each of the followings. Based on danger analyses performed by Vessel, all recuations in this instruction 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

	PROHIBITED	Do not use F-6R in environments that require explosion - proofing.F-6R is not of explosion-proof construction, therefore explosion or fire may occur.
	PROHIBITED	Do not use F-6R in flammable atmospheres. The corona discharge can act as an ignition source and cause an explosion or fire.
	PROHIBITED	Do not use F-6R in environments subjected to sharp temperature fluctuations or dewing. This kind of environment can lead to breakdown.
	DO NOT WET	Do not use F-6R in highly damp places or anywhere it may be wet by water, oil, solvent or other liquid. Contact with moisture can result in electric shock or breakdown.
	PROHIBITED	Do not use F-6R for anything other than static erasure or dust removal.
	PROHIBITED	Do not use F-6R 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 F-6R until having understood the information in this instruction manual.
	REMEMBER	Keep this instruction manual in a safe handy place for future reference.
	CAUTION	VESSEL assumes no responsibility whatsoever for consequences arising from the use of this product.

■AC-TYPE CORONA DISCHARGE

- This is an AC corona discharge type ionizer. The ion balance is not disturbed by needle contamination.
- A high-frequency piezoelectric transformer is incorporated. Losses caused by recombination of ions are reduced, and ions are generated efficiently.

■SMALL FAN-TYPE STATIC ERASER

Built-in compact DC fan generates powerful airflow.

Fan speed can be switched to HIGH / LOW.

The components are compactly assembled in the body to make the unit smaller.

The input power is DC 24V. Use AC adaptor included.

A filter that can be removed and cleaned is provided as standard equipment.

F-6RCL-E comes with a clip for easy attachment to cell-production stands or workbenches.

F-6RST-E comes with a stand for easy installation to workbenches or machinery.

■DESIGNED FOR SAFETY

To prevent electrical shock, the circuit is cut off and the power turned off when the front guard is opened.

During operation, the interior high-brightness white LED lights up and the operating condition can be visually checked. (LED Lamp Function)

The red LED indicators on the top of the unit notify you in case of fan motor stoppage and abnormally high voltage.

High-voltage transformer has the function of reducing output in case of short circuit and overloaded power.

■MAINTENANCE

Louver with electrode needles can be easily detached by removing the stopper, which improves the efficiency of maintenance.

High-brightness LED makes it easy to check for dirt on the electrode needles visually.

■EMI COUNTERMEASURES

Low noise emission, avoids affect on other electronic devices.

■CE MARKING

In the production and inspection of CE directed Model. F-6R Static Eraser has been tested and satisfied with its basic requirement according to the instructions of CE.

Application

Use to prevent trouble and dust adhesion caused by static electricity.

■ Product Specifications

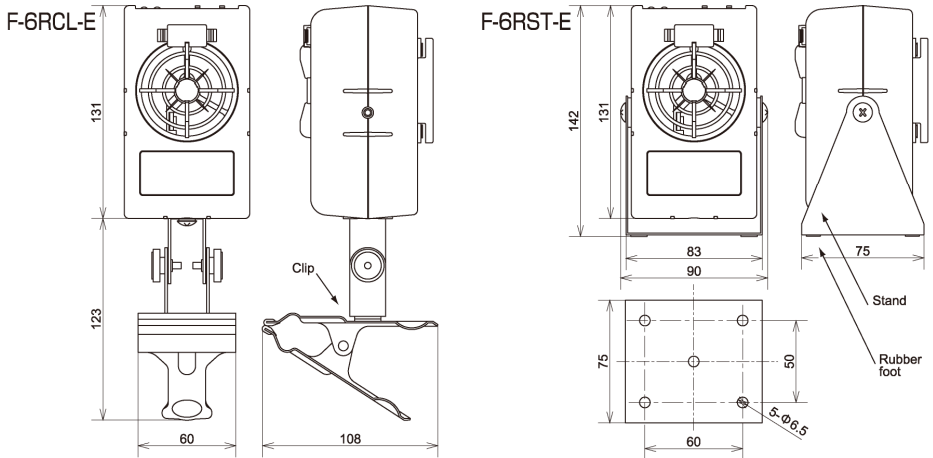
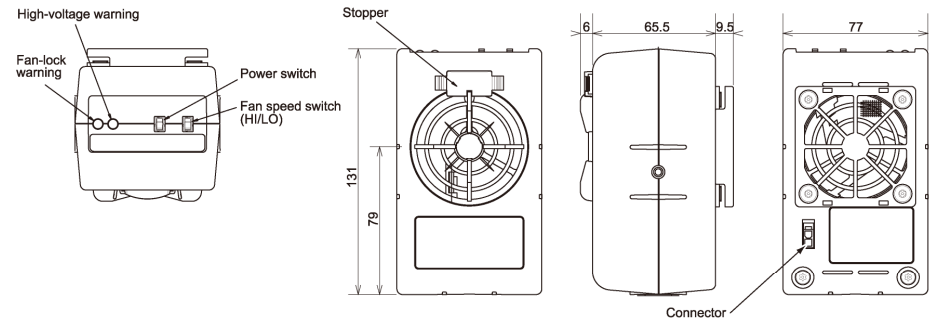
Eraser

Model	: No.F-6R (F-6RST-E with Stand / F-6RCL-E with Clip)
Ion generation method	: High voltage AC corona discharge
Output voltage	: AC 3.5 kV
Input voltage	: DC 24 V \pm 5 % 210 mA (typ.)
Dimensions	: H 131 x W 77 x D 81 mm (not including stand nor clip)
Weight	: F-6ST-E 470 g F-6CL-E 524 g
Wind speed	: HI 1.07m/s LO 0.50m/s (Measured at 300mm)
Noise emission	: HI 58.5 dB(A) LO 39.5 dB (A) (Measured at 1m)
Ozone generation	: 0.05ppm or less (Measured at 50mm)
Indicator lamp	: Operation Lamp (White LED, Illuminating combined) High voltage alarm (Red LED), stop due to fan lock (Red LED)
Safety function	: Fan motor rotation monitoring function (Detecting rotation lock) : High-voltage output shut down function (overload detection) : Front cover safety device (circuit cut off when open)
Protective function	: Over current protection fuse (1.0 A) Reverse-current connector protection diode (60 V / 1 A)
Working temperature/humidity	: 5 ~ 40°C / 35 ~ 65% RH (No dewing or freezing)
Storage temperature/humidity	: 0 ~ 60°C / 35 ~ 85% RH (No dewing or freezing)
Distance from target area	: 150 ~ 600 mm (Installation location: Non-dangerous indoor location)
Static electricity removal time	: Refer to the items in the capabilities chart.
Ion balance	: Within \pm 10V (At 300mm)
Material	: Casing ... ABS, Louver...PC, Stand...Stainless, Clip...Steel, Electrode...Inconel

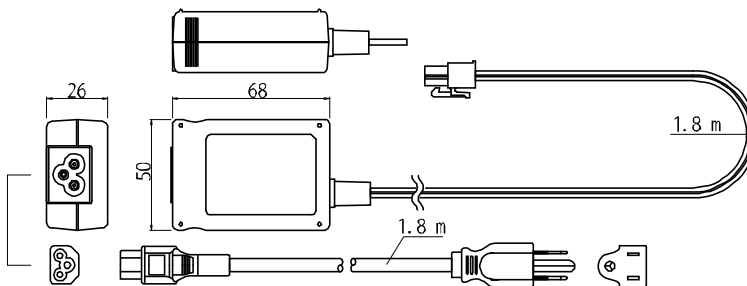
Accessories

Adapter No.AD24-ITF6	
Rated input voltage	: AC 100 V – 240 V (50 / 60 Hz) 0.4A
Rated output voltage	: DC 24 V 0.75 A
Working temperature /humidity	: 0~40°C 10~85%RH (No dewing or freezing)
Cable length	: DC output cable:1.8 m , AC input cable:1.8m
Weight	: 135g

External View



AD24-ITF6



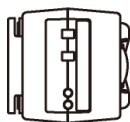
■ Performance

Static Electricity Removal Capacity

Measurements conforming to ANSI/EOS3.1, CPM:TREK model 581, Temperature:25°C,

Humidity:50%

The values above are the measurements but NOT the guaranteed performance.



50mm	100mm	150mm	200mm	250mm	300mm	
-0.4	-0.7	-0.7	-7.1	-7.8	-2.6	150mm
>200	52.8	24.8	10.0	10.3	11.3	
>200	116.8	48.9	11.2	17.5	17.8	
+6.5	+9.9	+4.5	-3.7	-7.4	-5.5	100mm
6.8	4.4	5.5	4.6	5.2	5.6	
4.9	4.5	6.8	5.1	6.4	7.9	
-9.8	-8.5	-8.9	-1.8	-6.2	-4.1	50mm
2.4	2.6	2.9	3.0	4.0	4.3	
1.6	2.6	3.1	3.6	4.9	5.7	
-3.5	-0.9	-6.3	-4.0	-5.9	+3.5	±0mm
3.0	2.5	2.6	3.1	3.5	4.2	
1.5	2.1	2.7	3.5	4.1	4.9	
+9.8	±0	-0.4	+0.3	+1.9	+4.5	50mm
2.1	2.4	3.0	3.2	3.8	4.2	
3.5	2.6	3.3	3.7	4.4	5.4	
+8.5	+3.8	+4.6	+4.7	+1.2	-0.7	100mm
4.0	4.2	4.5	4.7	4.8	4.7	
3.0	4.4	5.1	5.2	5.5	6.1	
-0.5	-2.2	5.2	+4.5	+0.8	+1.5	150mm
55.5	17.5	11.1	9.0	8.0	6.5	
44.8	20.5	12.4	9.8	9.3	10.6	

Legend

Ion balance [V]

Decay time (+1000V→+100V) [Sec.]

Decay time (-1000V→-100V) [Sec.]

<div> <div>⚠</div> <div>CAUTIONS</div> <div>IN INSTALLATION</div> </div>	
<div>●</div> <div>REMEMBER</div>	Use only the included power supply adapter. Use of other adapters may results in fire, electric shock and static electricity removal trouble.
<div>●</div> <div>REMEMBER</div>	Install F-6R securely. F-6R can be damaged or malfunctioned if it falls.
<div>●</div> <div>REMEMBER</div>	Install F-6R based on below stated environment. Adverse environments cause product deterioration and breakdown. Humidity: 35~65%RH (No dewing or freezing) Temperature: 5~40°C
<div>⊘</div> <div>PROHIBITED</div>	Do not use F-6R based on below stated environments. Adverse environments can result in explosion, fire, electric shock and accident. *Where explosion-proofing is required. *Where flammable atmospheres found. *Where temperature and humidity are outside specified ranges. *Where dewing or sharp temperature fluctuations occurs. *Where there is heavy dust or smoke. *Where possibly wet by water, oil, chemicals, etc. *Where strong electric or magnetic fields are generated.

1. To be installed on desktop (F-6RST-E)

Do not place the unit on an unstable surface. It may cause breakage if the unit falls.

2. To be mounted to walls or structures (F-6RST-E)

The installation height should be determined with its effective ionizing area in mind.

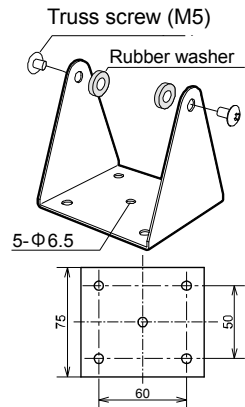
The unit can be mounted onto structures / cell-production benches by the 5 screw holes (φ6.5mm) on the bottom.

Also, the unit angle becomes adjustable by loosening the Truss screws on its sides. Fasten the screws securely after adjustment. Make sure there is no obstacle between the unit and the work material.

Make sure the strength of the structure to which the unit is mounted.

When installing the unit, make sure not to block the air intake area.

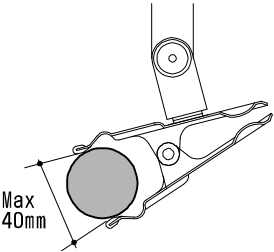
At least 10cm distance shall be kept between the air intake area and the wall.



■ Installation

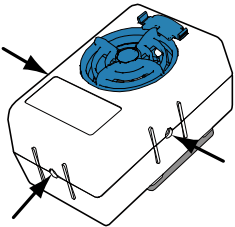
3. To be installed by the clip (F-6RCL-E)

The attached clip is for temporary installation.
Vibration and other factors may change the direction of the fan blow or cause the unit to fall. The clip cannot be used for objects whose thickness is more than 40mm.



4. To be installed to machinery (F-6RCL-E/F-6RST-E)

If the clip / stand are detached, there are screw holes (M5 x P0.8) on the three surfaces. Please refer to the diagram at the right.
The unit must be securely mounted by a jig or other means.
※The length of M5 screws should be up to 6 mm from the surface of the unit.



■ Before Use



CAUTIONS IN BEFORE USE

●	REMEMBER	Use only the included power supply adapter. Use of other adapters may results in fire, electric shock and static electricity removal trouble.
●	REMEMBER	If noticing anything strange, stop using F-6R immediately.
⊘	PROHIBITED	Do not use F-6R other than static electricity removal.
⊘	PROHIBITED	Do not remodel or disassemble F-6R. F-6R contains high voltage parts.
⊘	PROHIBITED	Do not drop F-6R or apply strong impacts.
⊘	PROHIBITED	Keep F-6R away from sources of heat.
⊘	PROHIBITED	Do not test the electrode wires for grounding, short-circuiting or sparking. These tests can adversely affect ion balance.

Connector connection

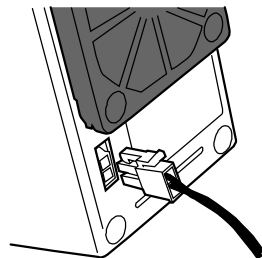
Insert the included special AC adapter connector into the jack on the back of the body.

Power Supply Adapter

Use the power adapter (AD24-ITF6) which is specifically designed for use of F-6R.

The AC adapter plug is a 3-pronged plug.

Connect this to a power outlet that has a ground terminal.



Daily Checks

Check F-6R for inspection before use.

- Dust on electrodes
- Dirty filter
- Loose connector
- Damaged or loose parts
- Adhering condensation or water droplets

If damage or trouble is detected, contact the supplier for servicing.

■ Operation

POWER

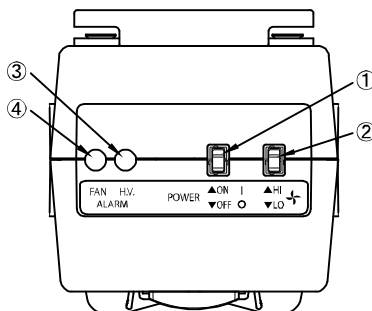
This is used to start and stop the unit.

When switched to [-], the power is turned on and operation starts.

When switched to [o], the power is turned off and operation stops.

A built-in high-intensity white LED is provided to visually check if the discharge needles are dirty.

* The internal lighting turns on at the same time the power is turned on. (Low power consumption)



FAN SPEED

Fan speed can be changed by two steps; "HI", "LO".

ALARM LAMPS

H.V.ALARM (High voltage alarm lamp)

High voltage alarm lamp lights when electrode needle is grounded, short circuited, or high voltage booster unit does not output enough voltage. If any foreign object attached to the electrode needles. Please refer to the "How to Clean the Electrode needle" on page 11.

(In case abnormally high voltage is detected, the output from the transformer will be stopped.

However, the fan will be kept operating.)

FAN ALARM

Fan lock alarm lamp lights when the fan motor stops rotating. When any of the alarm lamps lights, unplug the power cable and check the following items. If any foreign object inserted into the fan motor. Removing the cause of the error, supply power again and check if the alarm lamp does not light.

* If the alarm lamp comes on again, contact the supplier for servicing

(In case the fan is locked, the output from the transformer will be stopped as well.

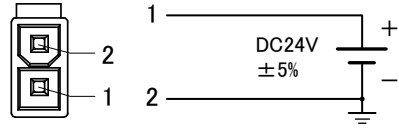
However, if it is caused by a jammed object, the fan will be repeatedly re-activated.)

■ Operation

To be installed to automated machinery (remote operation)

The operation can be switched on/off by controlling the power input if the power switch on the unit is kept on.

When an external power supply is used
Without use of Attached AC adapter, Power supply from outside is available.



■ Maintenance

⚠ CAUTIONS IN MAINTENANCE AND CHECKS		
⊘	DO NOT DISASSEMBLE	Do not disassemble F-6R. Servicing is reserved for service engineers.
●	UNPLUG POWER CABLE	Before making checks, unplug the power cable. Working with the power on can result in electric shock and breakdown.
⊘	PROHIBITED	Do not wipe F-6R with detergent or solvent. It may cause cracking and result in electric shock or breakdown.
⊘	DO NOT WET	Do not wet F-6R. Contact with moisture can result in electric shock or breakdown.
●	CHECK	Periodically check F-6R. Failure of periodical inspection can result in early breakdown.

In normal usage, the F-6R does not require maintenance, but the casing and electrode needle may sometimes require cleaning. Dirt and wear in the electrode needle area can cause a decline static erasing capacity. It is also recommended to measure ion balance and ion output as a means for checking for a drop in capacity.

Casing Cleaning

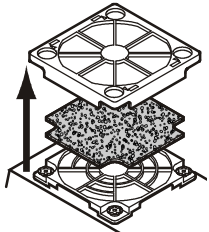
To clean the casing, wipe with a dry soft cloth. Suck up dust from openings with a vacuum cleaner. Do not use detergent or solvents such as alcohol or paint thinner.

How to clean/replace the filter

How quickly the filter becomes dirty will vary depending on the installation location and the operation conditions. A dirty filter will degrade the static erasing performance and the fan wind volume, so clean the filter first. Before cleaning the air filter, shut OFF power and unplug the power supply adapter from the electrical outlet. Also, lay F-6R on a cloth or mat to clean not to damage the casing and other parts.

How to Clean

- 1) Detach the filter cover.
 - 2) Remove the pre-filter.
 - 3) Wash under running water.
 - 4) Once clean, drain of excess water and dry before reinstalling.
- * If unable to clean or if severely damaged, replace the pre-filter.
* Use the optional filter SDJ-08F.



Cleaning / replacement of the electrode needle unit (Louver and needles)

After using long hours, dust adhered around the electrode wires. Dust adhesion can lower the performance of ionizing. Clean the electrode needles after every 100-hour operation. Before cleaning the front guard, shut OFF power and unplug the power supply transformer from the electrical outlet.

The electrode needles and the stopper should be securely put back on the unit after cleaning. If the louver is not properly mounted, the unit cannot be turned on due to its safety mechanism.

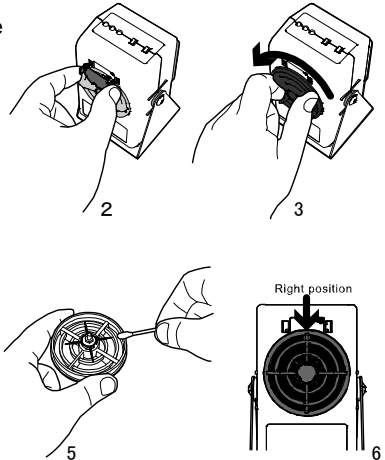
※Please replace it with a new one if the electrode needles are broken, missing or loose.

(Electrode needle unit F-6H is available for replacement.)

⚠ CAUTION	
● CLEANING	A dirty louver could lower the static erasing performance or cause dust to fly around. Be sure to clean it as required by the operation environment.
⚠ WARNING	
⊘ PROHIBITED	If the electrode needle unit is broken or dropped out, stop the operation and replace it with a new one. It can lead to an electric shock or injury.

Instructions for cleaning

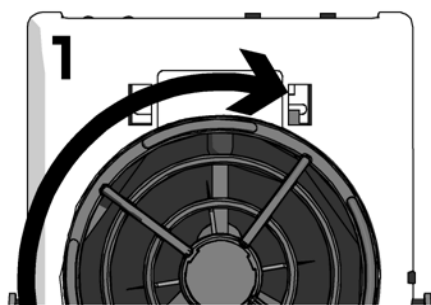
1. Pull off the plug of the AC-DC power transformer from the power socket or pull off the connector of the transformer from the unit.
2. Remove the stopper from the unit by pressing the sides of the stopper.
3. Rotate the needle unit counter-clockwise and remove it.
4. Wipe the louver with a dry clean cloth. Be careful not to hurt your fingers or hands with the needles attached to the backside of the louver.
5. Clean the electrode needles with a cotton swab. Stubborn stains may be removed with a cloth lightly dampened with alcohol. Be careful not to give too much pressure on the needles as they might be warped or bent. Beware of the needles not to hurt yourself.
6. Return the electrode needle unit back on properly with its blades positioned as shown in the right-side diagram.
7. Put back the stopper to the unit. Make sure to return it properly. Otherwise, the safety mechanism prevents the unit to be turned on.
8. Connect the AC-DC power transformer.



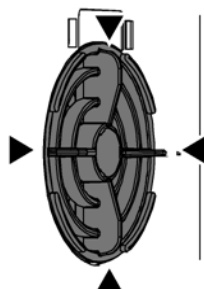
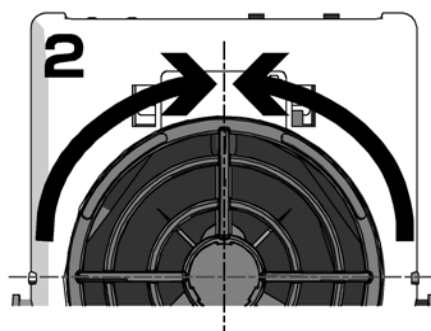
On mounting the electrode needle unit of F-6R

Notes for cleaning and replacement of the electrode needle unit in reference to the page 27 of the instruction manual.

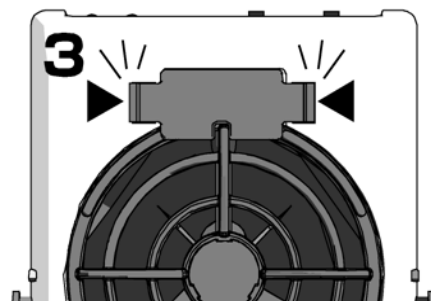
Confirm the right direction of the electrode needle unit.



1. Mount the electrode needle unit by rotating it clockwise.



2. Make sure that the unit is firmly mounted in a manner shown in the diagram. Check if the four blades are properly positioned.



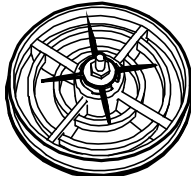
3. Mount the stopper.
The stopper cannot be inserted if the electrode needle unit is wrongly positioned.

Accessories

Electrode

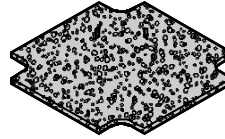
Needle Unit

: F-6H



Filter

SDJ-08F



Static Erasing Capacity Check

Measure ion balance and charge voltage dampening time using a charge plate monitor.

Reference: IEC61340-5-1-2, ANSI/EOS3.1

Adjustment

Because ions are generated with AC output, the SDJ-08 does not have an adjustment feature of ion balancing. If ion balance is not good, contact Vessel.

■ Troubleshooting

Using F-6R when in anything but proper working condition can cause product damage or personal accident. Therefore, promptly request servicing if trouble occurs. For servicing, contact the place of purchase.



⚠ CAUTION TROUBLESHOOTING	
⊘ PROHIBITED	Do not use F-6R in the following situations. It may result in fire or electric shock. * When F-6R has been damaged because of dropping or shock * When air is not blowing though the power switch of the eraser is in the ON position * When the power cable is damaged or hot * When the power supply adapter is loosely connected to the electrical outlet
● UNPLUG POWER CABLE	If trouble occurs with F-6R, turn the power switch OFF and unplug the power cable.
⊘ DO NOT DISASSEMBLE	Do not disassemble F-6R.

In the following cases, contact the supplier for servicing.

Do not service F-6R yourself as this can be dangerous.

- * If the power lamp does not light when the power switch is in the ON position
- * If air is not blown when the fan speed varistor is turned
- * If the casing moves during use and air blow turns on and off
- * If the power cable is excessively hot
- * If the power supply adapter is excessively hot
- * If F-6 emits strange noises or vibrates during use
- * If sparks are seen coming from electrode wire tips (In normal operation, sparks are not seen.)

■ Storage

 CAUTION STORAGE	
 PROHIBITED	<p>Do not store F-6R in the following places. Adverse environments can cause product breakdown.</p> <ul style="list-style-type: none">* Where 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 possibly 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	F-6R	
Warranty	(1) year from the date of purchase	
Customer	Name	
	Address	
	Tel. No.	
Dealer	Name/Address/Tel. No.	

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