VESSEL®

Static Control Product Catalog

STAT·CLEAN

http://www.vessel.co.jp/english/staticelectric/

VESSEL,

Three Particular Reasons people choose VESSEL

1

We have the best selection

Vessel's lineup covers a wide range from fan, gun and bar-type air blow ionizers, EPA mats and wrist straps that prevent static discharge, to adhesive mats that prevent the scattering of dust. Our products provide solutions to your static removal and dust removal problems.

2

Our product development aims for user friendliness

To provide optimum products for production sites, our designs aim for ease of use. VESSEL aims for user convenience with our product lineup for various applications.

3

Our static removal and dust removal specialists improve your quality problems

Our static removal and dust removal specialists will visit your production site to propose the best available products. Customization is also available upon request.

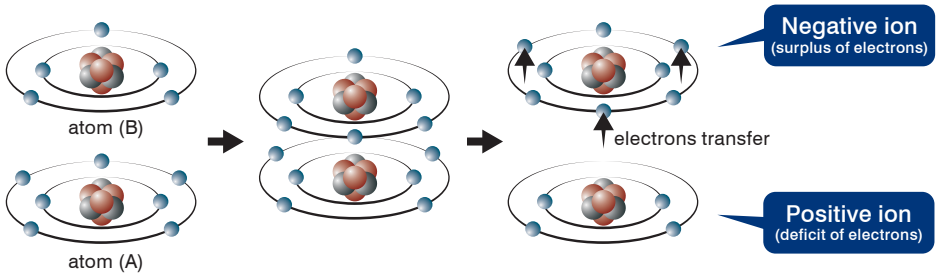
the ionizing and dust elimination expert, helps solve your quality problems.

Product quality is an important determination at manufacturing sites.
VESSEL has focused on countermeasures against static electricity and dust in relation to quality.
Since 2000, we have provided products to remove static and dust.
All to help improve our customer's quality.
Let VESSEL, the ionizing and dust elimination experts,
help you improve your product quality.

THE STATIC ELECTRICITY

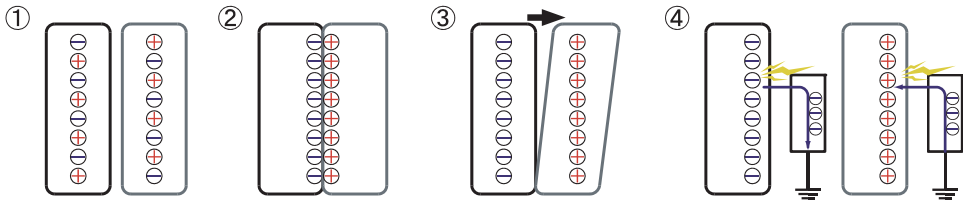
Theory

The static electricity comes from the transfer of electrons between two or more atoms becoming electrically unbalanced.

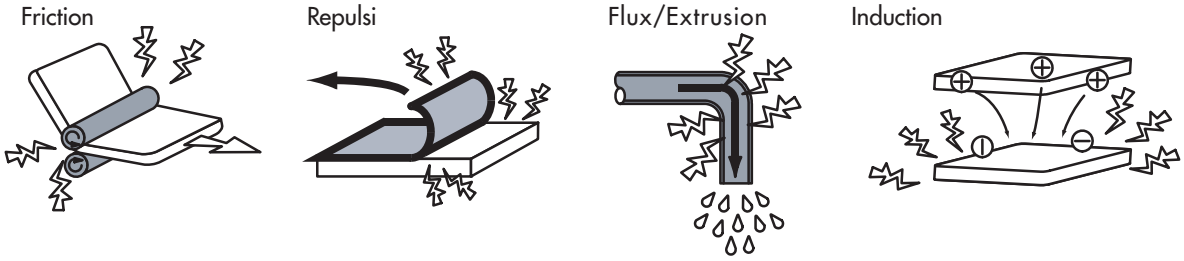


How is it created?

The static electricity is created after contact between two materials (which at least one of them is an insulator).
The static electricity level depends on humidity, materials, as well as on the pressure, the time, and the surface of contact.
An electric voltage of several kV might be easily generated.

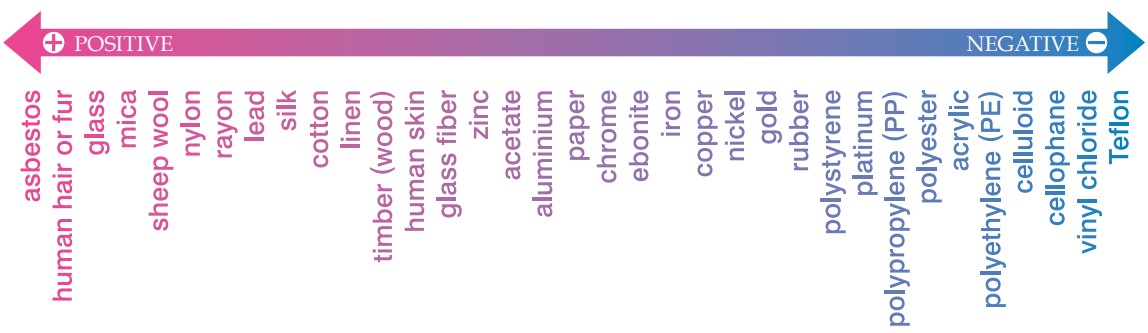


①Usually an object contains positive ions and negative ions. They are same in quantity and keep balance.
②When two objects come into contact, unstable electrons start moving (Charge Transfer).
In such a state, however, electrons just move, and two objects in touch as a whole are not charged.
③Dragging these objects away makes the number of electrons unbalanced.
At this time, one object which receives electrons is negatively charged, while another object which loses them is positively charged.
④Then, the electrons transfer , once the object, either negatively or positively charged, approaches to a grounded metal.



Triboelectric series

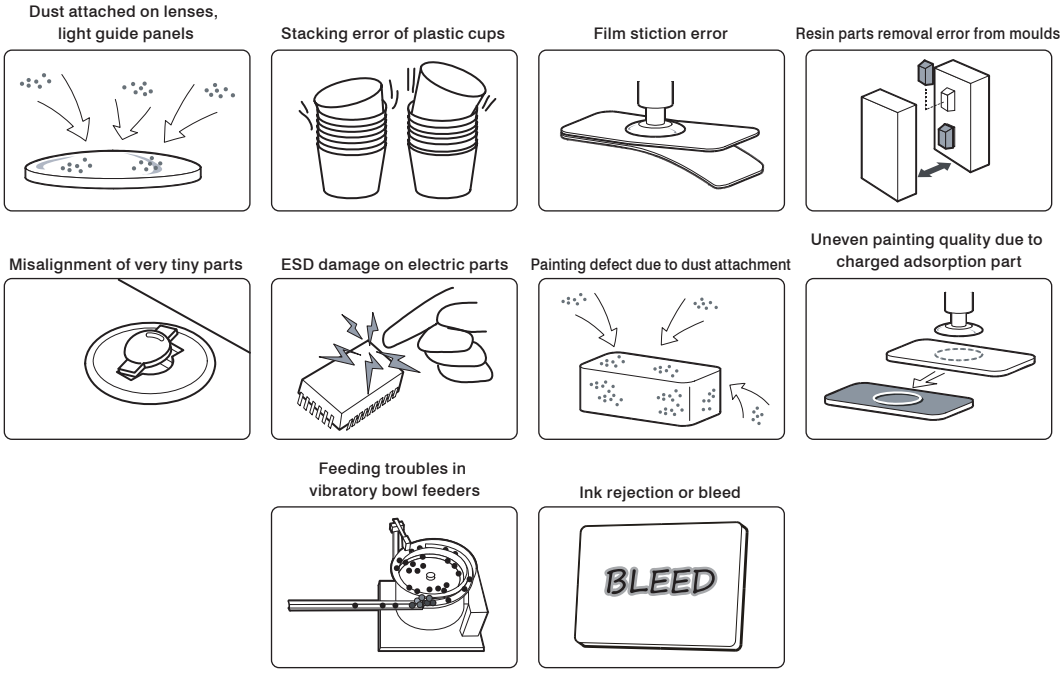
The Triboelectric Series chart shows the relative positive or negative charge of various materials.



Consequences

Three types of problems can result from static electricity:

- Apparition of electric arcs, which can damage the electronic circuits,
- Dust attraction, which can lead to unwanted defaults after parts painting or cause hygiene and cleanliness problems,
- And attraction or repulsion of other materials, which can cause, for instance, printing problems due to the repulsion of the ink or labeling problems due to the unwanted repulsion or attraction of the paper when being positioned.



How is it eliminated?

Different methods are used:

If possible and if it is a conductor, connect the part to the ground:

- The voltage of the part will be equal to 0V. However in certain cases, in order to avoid any sudden discharge, which could lead to electric arcs, it is necessary to use dissipative material with a controlled conductivity.

Otherwise use a ionizer:

- The ionizer will send positive and negative ions to be combined with the postive and negative charges on the targeted surface.
  The ions are created thanks to the corona discharge principle.
  The static electricity elimination is made without any contact.

Realize ionizing and clean control from your VESSEL's lineup of reliable and wide ranged

Fan Type

Mount on a cell workbench, part shelf or belt conveyor. Handle close to far distances by switching the speed.

<Mini>
F6CL-E
F6ST-E
→P08

<Standard>
SFQ9-E
→P09
F120R-E
F120S-E
→P09

<Wide width>
CF-30-E
→P11

Nozzle Type

Assemble into manufacturing devices for pinpoint neutralization and dust-elimination within a confined space. Just replace the nozzle to use with various applications.

N-1
N-3
→P14

Gun Type

Ideal for air washing and neutralization after part acceptance and before part assembly, as well as for neutralization and dust elimination from resin formed products before painting.

G7R-E
→P16
BBZ-E
→P16

Bar Type

Suitable for neutralizing clean rooms, and preventing static buildup on film moving at high speeds.

<Built-in power supply>
C-series
→P19

<Separate power supply>
SH-series
→P21

SH-G3
→P22

→P07

→P13

→P15

→P17

fingertips to your toes.

static electricity countermeasure products.

Ion Parts Cleaner

Perform air washing within static electricity removal area. Scattered dust is collected with the dust collector to maintain a clean environment.

<Gel Dust Collection Type>

IPC-A4
IPC-A3
→P24

<Dust Collection Chamber built-in Type>

IPC20-E
→P25

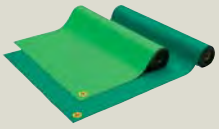
<Separate Dust Collecter Type>

IPC40-E
→P25

IPC-60
→P26

EPA Working Mat

ESD control mats for use in areas where parts are handled, assembled, repaired and tested. Available in ESD control mats and wrist straps.



Conductive Rubber Mat
→P28

<ESD Countermeasure Wrist Straps>

EPS-01G ***EPS-03M/S***
EPS-02M/S ***EPS-04/B***
→P29

<Surface resistance checker>

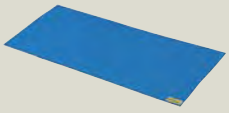
SRC-01 →P30

<Electrostatic Field Meter>

EYE-02 →P30

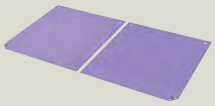
Clean Walker

Adhesive mat, set before a clean room, collects dust off soles of work shoes. Non-peeling, washable type.



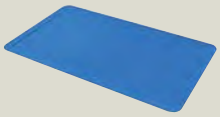
<Clean Walker>

CW-900B
→P32



<Clean Walker Easy>

CW-900EZ
→P32



<Tray>

CW-T900
→P32

Options

Options and replacement parts.

Electrode Needle Unit

Electrode Needle Unit

AC Adapter

Filter

Standard Nozzle

Branch Box

Brush

Branch Adapter

Speed Controller

Flared Nozzle

Adhesive Gel Sheet

Electrode Needle

→P23

→P27

→P31

→P33

Measurement Conditions

Ion balance : 300 mm from the front of the device at maximum airflow setting
Decay time : 300 mm from the front of the device at maximum airflow setting
(given as the time required for the voltage to attenuate from ±1,000 V to ±100V)(Charged plate monitor: 150 mm × 150 mm square, 20 pF)
Noise level : 1 m from the front of the device at maximum airflow setting

※Measurement values given in this catalog are typical values from a sample unit, and do not guarantee the performance.

Fan Type

F6CL-E/F6ST-E

Compact and free installation
Pinpoint neutralization

Decay time 3.0 sec or less

SFQ9-E

Dual piezoelectric transformer attains fastest neutralization in this class

Decay time 1.5 sec or less

F120R-E NEW

Butterfly louver realizes high-speed neutralization

Decay time 1.5 sec or less

F120S-E

Silent fan model with mild airflow

Decay time 2.5 sec or less

CF-30-E

High-efficiency cross fan neutralizes over wide range of areas

Decay time 1.4 sec or less

Why is VESSEL's fan type our customer's top choice?

1

High neutralization performance through efficient ion generation

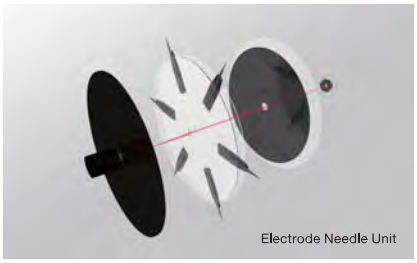
The high frequency piezoelectric transformer generates large volumes of ions, and eliminates losses caused by recoupling.

High-frequency piezoelectric transformer「Piezzo」

2

Advanced control technology with steady ion balance

The capacity coupling type electrode needle ensures a stable ion balance, and prevents static destruction of the semiconductor.



Electrode Needle Unit

3

Louver cover improves serviceability

The cover can be easily removed allowing the electrode needle to be cleaned where it will not contaminate the work environment.

Ionizing Mini Fan with clip

Clip onto workbench or pillar
for pinpoint neutralization

F6CL-E

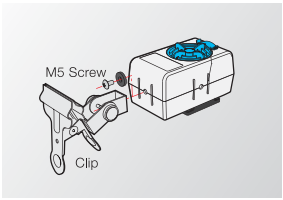
Low noise Fan

EDP No. 621632

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±10 V	3.0 sec or less	CE RoHS

Power supply	Fan Speed	LED	INCLUDED TRANSFOMER	Electrode needle unit	ALARM FAN	ALARM
DC24V	HI/LOW	illumination	100-240VAC	replacement	LOCKUP	H.V.

- Install anywhere
- Easily remove louvers
- Confirm operation status and electrode tip contamination with built-in light.



Remove clip when not needed

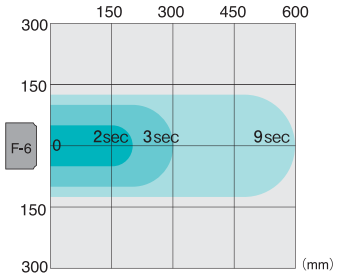
Easy removal

Built-in light

Specifications

Model No.	F6CL-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/AC 3.5kV
Power supply and current consumption	DC24V±5%／253mA(typ.)
Ion balance	within ±10 V
Decay time	3.0 sec or less
Operating range	150 mm to 600 mm
H×W×Dmm	H254×W77×D108mm(clip included)
Weight	514g
Fan speed	0.78m³/min (max.)
Noise level	HI 53 d BA／LO 42 d BA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITF6-E, AC cable (1.8m)

Decay area



Accessories

AC Adapter
AD24-ITF6-E
EDP No. 806096

I/P : AC100V~240V 0.4A
O/P : DC24V 0.75A

Ionizing Mini Fan with stand

Compact fan can be installed
anywhere for pinpoint neutralization

F6ST-E

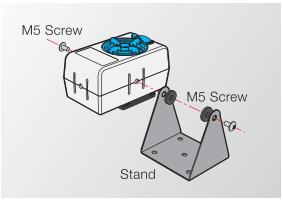
Low noise Fan

EDP No. 621631

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±10 V	3.0 sec or less	CE RoHS

Power supply	Fan Speed	LED	INCLUDED TRANSFOMER	Electrode needle unit	ALARM FAN	ALARM
DC24V	HI/LOW	illumination	100-240VAC	replacement	LOCKUP	H.V.

- Install anywhere
- Easily remove louvers
- Confirm operation status and electrode tip contamination with built-in light.



Remove clip when not needed

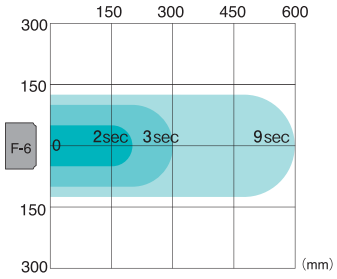
Easy removal

Built-in light

Specifications

Model No.	F6ST-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/AC 3.5kV
Power supply and current consumption	DC24V±5%／220mA(typ.)
Ion balance	within ±10 V
Decay time	3.0 sec or less
Operating range	150 mm to 600 mm
H×W×Dmm	H142×W90×D81mm(stand included)
Weight	460g
Fan speed	0.78m³/min(max.)
Noise level	HI 53 d BA／LO 42 d BA
Ozone production	0.05ppm or less(measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITF6-E, AC cable(1.8m)

Decay area



Accessories

AC Adapter
AD24-ITF6-E
EDP No. 806096

I/P : AC100V~240V 0.4A
O/P : DC24V 0.75A

Fan-type Ionizer with Integrated Sensor

Ion balance is monitored by a sensor and adjusted automatically

SFQ9-E

EDP No. 621626

High Voltage Transformer	Ion balance	Decay time	Directive
Dual piezoelectric high-frequency AC corona discharge	within ±5 V	1.5 sec or less	CE RoHS

Power supply	Fan Speed	LED	INCLUDED TRANSFOMER	Electrode needle unit	ALARM FAN	ALARM	External grounding
DC24V	HI/MD/LO	illumination	100-240VAC	replacement	LOCKUP	H.V.	terminal

- Our original feedback sensor controls the ion balance to within ± 5V.
- Dual piezoelectric transformers and high-speed fan provide double the neutralization speed.
- Indicator shows the maintenance timing and fluctuations in ion balance.

Dual piezo

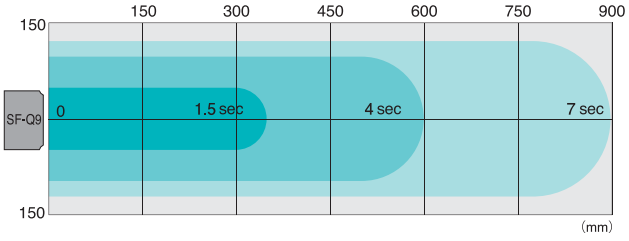
Ion blance indicator

Interior LED light

Specifications

Model No.	SFQ9-E
Ionizing method/Applied voltage	Piezoelectric high-frequency DC corona discharge/DC±4 to ±8kV
Power supply and current consumption	DC24V±5%／340mA (typ.)
Ion balance	within ±5 V
Decay time	1.5 sec or less
Operating range	150 mm to 900 mm
H×W×Dmm	H205×W141×D80mm(stand included)
Weight	980g
Fan speed	1.8m³/min (max.)
Noise level	HI：50dBA / MD：45dBA / LO：40dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-IT-EX AC cable (1.8m)

Decay area



Accessories

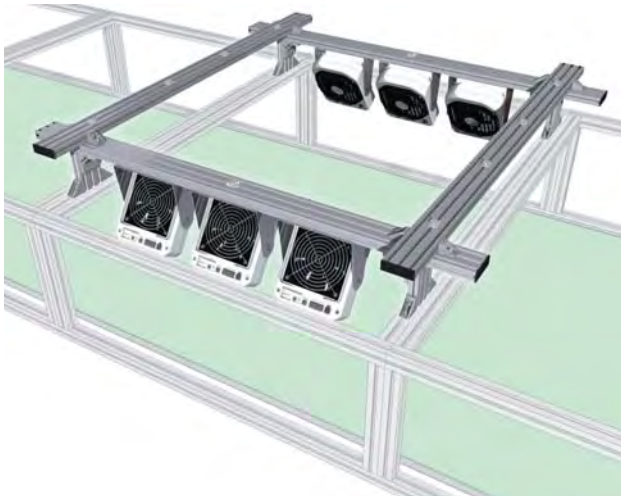
AC Adapter

AD24-IT-EX

EDP No. 806050

I/P : AC100V~240V 0.4A
O/P : DC24V 0.75A

Applications (F120R-E)

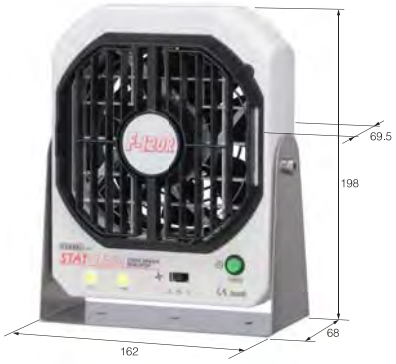


Fan-type Ionizer

Butterfly Louver !
for wider and far reach static erasing area

F120R-E

NEW

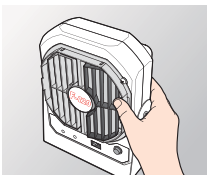


EDP No. 621651

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±10 V	1.5 sec or less	CE RoHS

Power supply	Fan Speed	INCLUDED TRANSFOMER	Electrode needle unit	ALARM FAN	ALARM	External grounding
DC24V	HI/MD/LO	100-240VAC	replacement	LOCKUP	H.V.	terminal

- Butterfly Louver. Press outer side to disperse air. Press center to let air out straight.
- Apparent operation status indication. The new alarm function uses a 2-color LED. The red light indicates various errors.
- Easy maintenance.The electrode needle unit is set into the front cover.


Butterfly Louver

RUN lamp LED

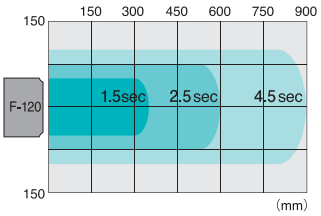

Electrode Needle Unit

Specifications

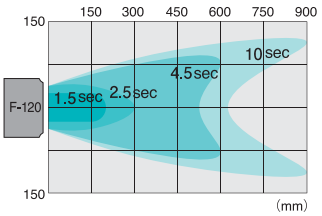
Model No.	F120R-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/AC 10kV (p-p)
Power supply and current consumption	DC24V±5%／700mA(max.)
Ion balance	within ±10 V
Decay time	1.5 sec or less
Operating range	150 mm to 900 mm
H×W×Dmm	H198×W162×D70mm
Weight	0.9kg
Fan speed	3.66m³/min (max.)
Noise level	HI : 61dBA / LO : 55dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-IT-EX AC cable (1.8m)

Decay area

Straight (F120R-E)



Wide (F120R-E)



Accessories

AC Adapter
AD24-IT-EX
EDP No. 806050

I/P : AC100V~240V 0.4A
O/P : DC24V 0.75A

Fan-type Ionizer

Silent fan model
with mild airflow

F120S-E

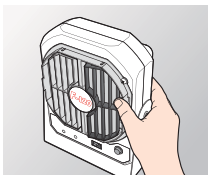
NEW

EDP No. 621646

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±10 V	2.5 sec or less	CE RoHS

Power supply	Fan Speed	INCLUDED TRANSFOMER	Electrode needle unit	ALARM FAN	ALARM	External grounding
DC24V	HI/MD/LO	100-240VAC	replacement	LOCKUP	H.V.	terminal

- Butterfly Louver. Press outer side to disperse air. Press center to let air out straight.
- Apprent operation status indication. The new alarm function uses a 2-color LED. The red light indicates various errors.
- Easy maintenance.The electrode needle unit is set into the front cover.


Butterfly Louver

RUN lamp LED

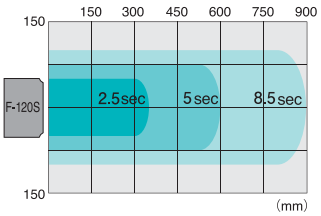

Electrode Needle Unit

Specifications

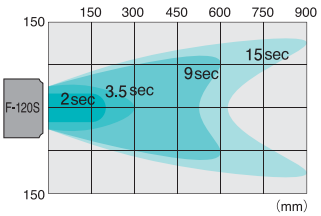
Model No.	F120S-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/AC 10kV (p-p)
Power supply and current consumption	DC24V±5%／700mA(max.)
Ion balance	within ±10 V
Decay time	2.5 sec or less
Operating range	150 mm to 900 mm
H×W×Dmm	H198×W162×D70mm
Weight	0.9kg
Fan speed	2.21m³/min (max.)
Noise level	HI : 51dBA / LO : 44dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-IT-EX AC cable (1.8m)

Decay area

Straight (F120S-E)



Wide (F120S-E)



Accessories

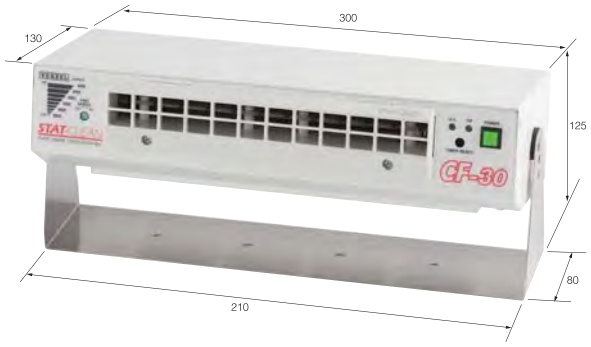
AC Adapter
AD24-IT-EX
EDP No. 806050

I/P : AC100V~240V 0.4A
O/P : DC24V 0.75A

Wide-type Ionizer with Cross-flow Fan

Compact, low-profile design saves space

CF-30-E



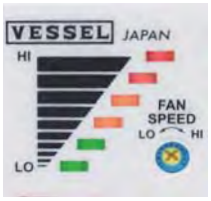
EDP No. 621375

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±5 V	1.4 sec or less	CE RoHS

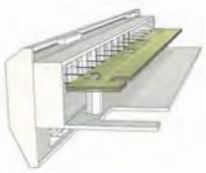
Power supply DC24V | No-step airflow volume changeover | INCLUDED TRANSFOMER 100-240VAC | Electrode needle unit replacement | ALARM FAN LOCKUP | ALARM H.V. | External grounding terminal

- Maintains an ion balance of ±5 V using capacitive-coupled electrode needles.
- LED indicator lights up progressively to indicate airflow.
- LEDs all flash after 200 hours of operation to indicate cleaning time.

High-efficiency cross-flow fan built in



LED display and airflow volume adjustment knob

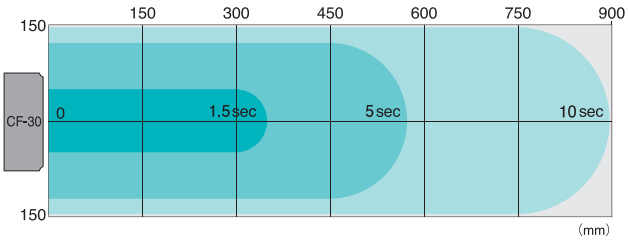


Capacitive-coupled electrode needles

Specifications

Model No.	CF-30-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/AC p-p9kV
Power supply and current consumption	DC24V±5%／650mA (max.)
Ion balance	within ±5 V
Decay time	1.4 sec or less
Operating range	150 mm to 900 mm
H×W×Dmm	H125×W310×D130mm
Weight	2.1kg
Fan speed	1.58m³/min (max.)
Noise level	HI：51dBA / LO：40dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITCF-EX AC cable (1.8m)

Decay area



Accessories

AC Adapter

AD24-ITCF-EX I/P : AC100V~240V 1.2A
O/P : DC24V 1.5A

EDP No. 806074

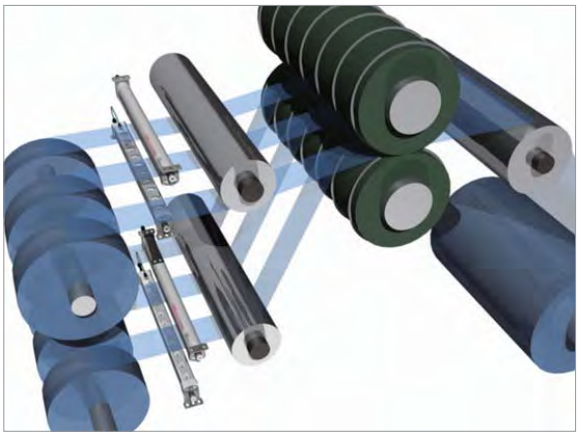
VESSEL ionizers for a variety of applications.

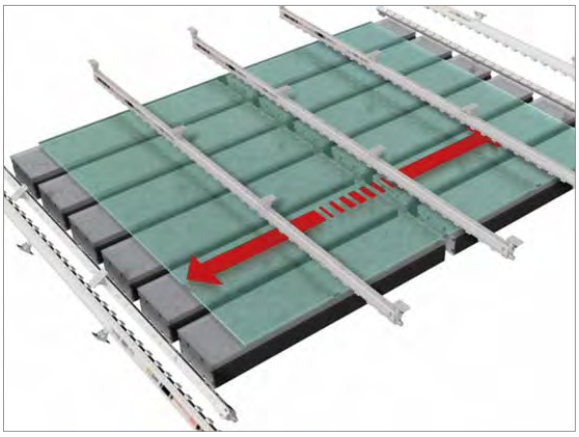
Inspection process

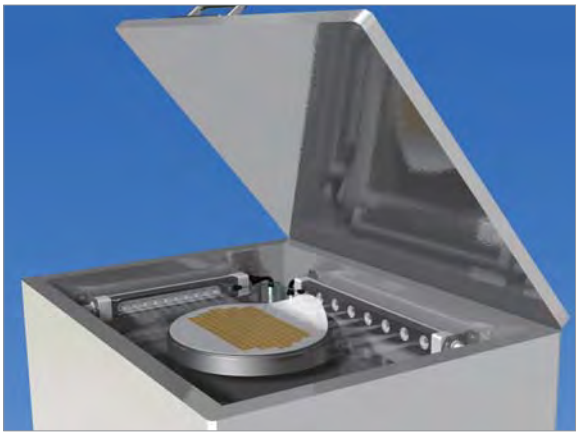

Dust prevention on molded parts

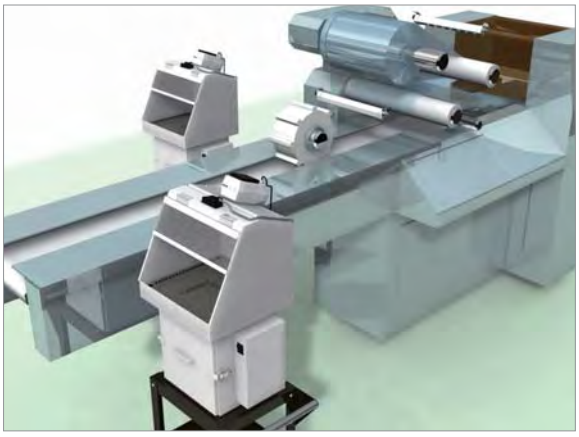

Static electricity removal in a bottle


Dust and/or static electricity removal from large resin parts


Film unwinding and winding


Glass substrate transfer


Production of the wafer film


Static electricity removal from films and/or products

Nozzle Type

N-1 NEW

Ultra-compact slim body
Rotary nozzle increases installation choices

Decay time 1.0 sec or less

N-3

Operation status displayed on LED lamps
Interchangeable nozzle increases suitable applications

Decay time 0.7 sec or less

Why is VESSEL's nozzle type our customer's top choice?

1

LED indicators clearly indicate the operating status

The bright LED lamps show the operating state even when installing in dark systems.

2

Diverse lineup of optional nozzles support various applications

Use the optional shower nozzle or silent nozzle.

3

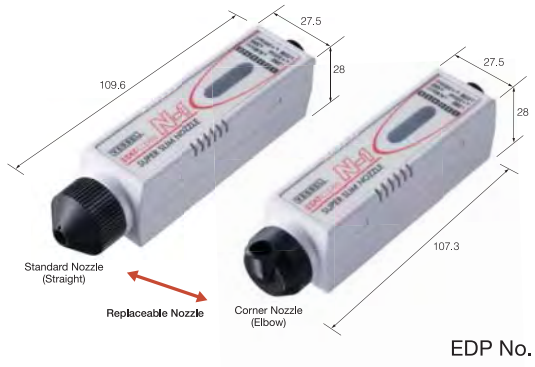
Daisy-chain the power cables to keep high-voltage cables inside and ensure safety

Power can be supplied to multiple units by daisy-chaining them. 24 VDC wiring enhances safe connection.

Super Slim Nozzle-Type Ionizer

Super Compact Slim Body.
A rotating nozzle enables to ionize anywhere

N-1

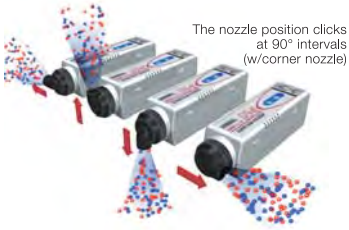


EDP No. 621639

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±10 V	1.0 sec or less	CE RoHS

Power supply DC24V | Power supply: AIR/N2 max 0.6MPa | AC Adapter (Option) | Screw-type needle electrode | "ON" lamp | ALARM H.V. | External grounding terminal

- Super slim and compact design enabling to be installed at any place for any direction. 27.5mm×28mm.
- Change the blow direction by turning the rotary corner nozzle.



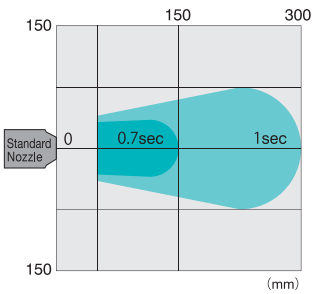
Alarm outputs and daisy chains possible.

Specifications

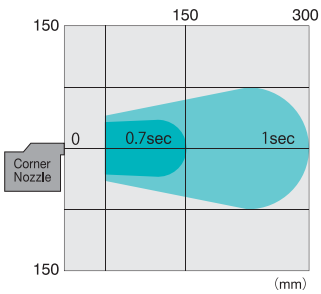
Model No.	N-1
Ionizing method/Applied voltage	Piezo high-frequency AC Corona discharge method/AC10kV (p-p)
Power supply and current consumption	DC24V±5%／100mA(max.)
Ion balance	within ±10V (standard nozzle・0.3MPa、150mm) (measured values)
Decay time	1.0 sec or less (standard nozzle・0.3MPa、150mm) (measured values)
Operating range	50 mm to 600 mm
H×W×Dmm	L109.6×W27.5×H28mm (with standard nozzle mounted)
Weight	80 g (with standard nozzle mounted)
Air supply hose diameter	tube fitting Φ6mm
Operating fluid	Clean dry air (0.1MPa to 0.6MPa). nitrogen N^2 (0.1MPa to 0.6MPa)
Airflow	190 ℓ/min(With standard nozzle mounted at 0.3MPa)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	Standard Nozzle (included with device), Corner Nozzle

Decay area Air Pressure : 0.3MPa

<with Standard Nozzle installed>



<with Corner Nozzle installed>



Accessories

Standard Nozzle
N-1SN
EDP No. 806120

Corner Nozzle
N-1CN
EDP No. 806121

Pinpoint Nozzle Ionizer

Featuring an LED indicator that communicates the device's operating status at a glance

N-3

NEW

EDP No. 621654

High Voltage Transformer	Ion balance	Decay time	Directive
Piezoelectric high-frequency AC corona discharge	within ±10 V	0.7 sec or less	CE RoHS

Power supply DC24V | Power supply: AIR/N2 max 0.6MPa | AC Adapter (Option) | Screw-type needle electrode | "ON" lamp | ALARM H.V. | External grounding terminal

- Easy to wire with connector terminals.
- Diverse nozzles support various applications.

Standard Nozzle (included as accessory)

Flared Nozzle can be angled appropriately (not included as accessory)

Tube-fitting Nozzle provides connection with air tube. (not included as accessory)

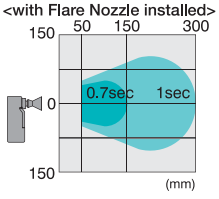
Alarm outputs and daisy chains.

Specifications

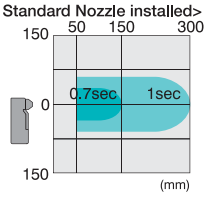
Model No.	N-3
Ionizing method/Applied voltage	Piezo high-frequency AC Corona discharge method/AC6kV (p-p)
Power supply and current consumption	DC24V±5%／90mA(max.)
Ion balance	±10V or less (at the time of factory shipment)
Decay time	0.7 sec or less (±1000V >±100V)(at the time of factory shipment)
Operating range	50 mm to 600 mm
H×W×Dmm	L95xW50xH47mm
Weight	104g (with standard nozzle mounted)
Air supply hose diameter	tube fitting Φ6mm
Operating fluid	Clean dry air (0.1MPa to 0.6MPa). nitrogen N^2 (0.1MPa to 0.6MPa)
Airflow	170 ℓ/min(With standard nozzle mounted at 0.3MPa)
Noise level	99.4 dBA(With standard nozzle mounted at 0.3MPa)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5°C to 40°C/35% to 65% RH (with no dew condensation or freezing)
Accessories	Standard Nozzle (included with device), Power supply harness

Decay area Air Pressure : 0.3MPa

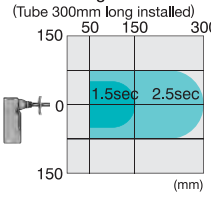
<with Flare Nozzle installed>



<with Standard Nozzle installed>



<Tube fitting Nozzle installed>
(Tube 300mm long installed)



<Tube fitting Nozzle and Shower Tube installed>