

# VESSEL

## ESD PRODUCT CATALOG



### VESSEL Co., Inc.

17-25, Fukae-Kita 2-chome, Higashinari-ku, Osaka 537-0001 JAPAN  
Tel : + 81 (0)6 6976 7778 Fax : + 81 (0)6 6972 9441

### VESSEL EUROPE


6, avenue du 1er Mai, ZAE Les Glaises, 91120 Palaiseau FRANCE  
Tel : + 33(0)1 69 19 17 42 Fax : + 33(0)1 69 19 42 20

E-mail : [export@vessel.co.jp](mailto:export@vessel.co.jp) URL : [www.vessel.co.jp/english](http://www.vessel.co.jp/english)

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- Product specifications, dimensions, pricing, and other information are subject to change without notice.
- Static electricity erasing capability values given in this catalog were obtained in our measurement environment.  
Your results may differ depending on the operating environment.



# VESSEL, 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.

## 3 particular reasons why VESSEL ionizers are chosen

1

### Wealth of product

VESSEL's line-up of reliable and 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 dust from scattering. Our products provide solutions to your problems in relation to static electricity and dust.

2

### User-friendly products

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

3

### Direct support from our specialists

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

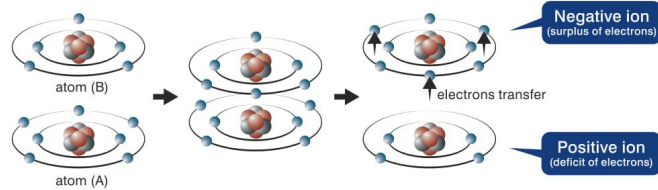




# THE STATIC ELECTRICITY

## Theory

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

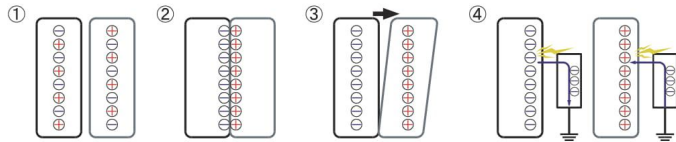


## How is it created?

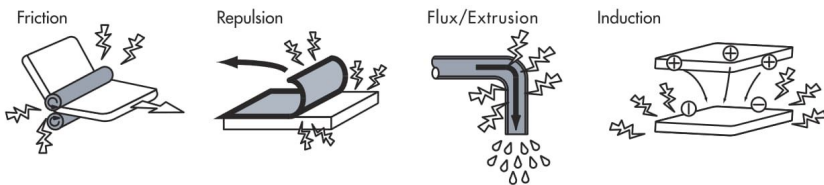
The static electricity is created after contact between two materials (one of which at least is an insulator).

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.

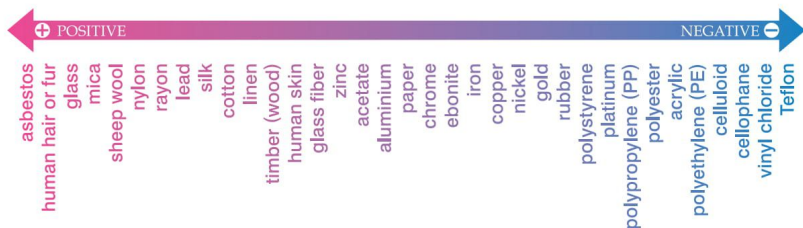


- Usually an object contains positive ions and negative ions. They are same in quantity and keep balance.
- When two objects come into contact, unstable electrons start moving (Charge Transfer). In such a state, however, electrons just move, and two objects in touch as a whole are not charged.
- Dragging 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.
- Then, the electrons transfer, once the object, either negatively or positively charged, approaches to a grounded metal.



## Triboelectric series

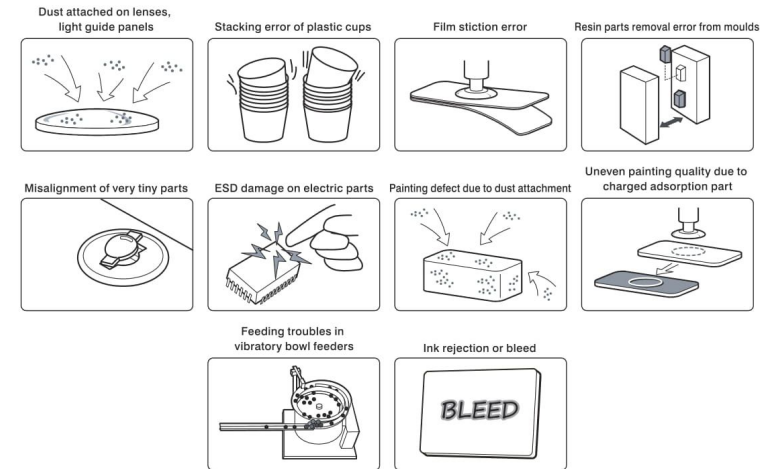
The Triboelectric Series chart shows the relative positive or negative charge of various materials.



## 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 an ionizer:

- The ionizer will send positive and negative ions to be combined with the positive 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 fingertips to your toes.

## VESSEL's line-up of a reliable and wide range of anti-static products.

Fan Type	Nozzle Type	Gun Type	Bar Type	Ion Parts Cleaner	EPA Working Mat	Clean Walker	Options
<p>Mount on a cell workbench, parts stock shelf, or belt conveyor. Switch the fan speed for neutralization in the close or far distance.</p> <p><b>&lt;Mini&gt;</b>  <b>F-6RCL-E</b>  <b>F-6RST-E</b>                      →P08</p> <p><b>&lt;Standard&gt;</b>  <b>F120R-E</b>  <b>F120S-E</b>                      →P09</p> <p><b>&lt;Wide width&gt;</b>  <b>CF300-E</b>                      →P10</p> <p><b>L-90-E</b>                      →P10</p>	<p>Assemble into manufacturing devices for pinpoint neutralization and dust-elimination within cramped spaces. Just replace the nozzle to use with various applications.</p> <p><b>N-1</b>  <b>N-3</b>                      →P12</p> <p><b>&lt;High Power Series&gt;</b>  <b>HPN-1</b>                      →P33</p> <p><b>HPF-1</b>                      →P34</p>	<p>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.</p> <p><b>G7R-E</b>                      →P14</p> <p><b>G-2-E</b>                      →P15</p> <p><b>G-9</b>                      →P16</p> <p><b>&lt;High Power Series&gt;</b>  <b>HPG-1</b>                      →P35</p>	<p>Suitable for neutralizing clean rooms, and preventing static generation on film moving at high speeds.</p> <p><b>&lt;Built-in power supply&gt;</b>  <b>C-series</b>                      →P19</p> <p><b>SJ-series* /SL-series</b>                      P21</p> <p>* Note                      SJ-** is available while stocks last. The model code will be changed to SL-** afterward (CE compliant).</p> <p><b>&lt;High Power Series&gt;</b>  <b>HPB-series</b>                      →P36</p>	<p>Perform air washing within static electricity removal area. Scattered dust is collected with the dust collector to maintain a clean environment.</p> <p><b>&lt;Gel Dust Collection Type&gt;</b>  <b>IPC-A4</b>  <b>IPC-A3</b>                      →P24</p> <p><b>IPC-250CR</b>                      →P25</p>	<p>ESD control mats for use in areas where parts are handled, assembled, repaired and tested.</p> <p><b>Conductive Rubber Mat</b>                      →P28</p> <p><b>&lt;Wrist Strap&gt;</b>  <b>EPS-05</b>                      →P28</p> <p><b>&lt;EPD Mat Grounding Kit&gt;</b>  <b>EPS-GK</b>                      →P28</p> <p><b>&lt;Conductive Anti-Fatigue Mat&gt;</b>  <b>AF-45</b>  <b>AF-90</b>                      →P29</p> <p><b>&lt;Surface resistance checker&gt;</b>  <b>SRC-01</b>                      →P29</p> <p><b>&lt;Electrostatic Field Meter&gt;</b>  <b>EYE-02</b>                      →P30</p>	<p>Adhesive mat placed before a clean room, collects dust off soles of work shoes. Non-peeling, washable type.</p> <p><b>&lt;Clean Walker&gt;</b>  <b>CW-900B</b>                      →P32</p> <p><b>&lt;Clean Walker Easy&gt;</b>  <b>CW-900EZ</b>                      →P32</p>	<p>Options and replacement parts.</p> <p>Needle Electrode Unit                      Needle Electrode Unit</p> <p>AC Adapter                      Filter</p> <p>Standard Nozzle                      Branch Box</p> <p>Brush                      Branch Adapter</p> <p>Speed Controller                      Silent Nozzle</p> <p>Adhesive Gel Sheet                      Needle Electrode</p>



**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



## F-6RCL-E/F-6RST-E

Compact and free installation  
Pinpoint neutralization

Decay time **3.0 sec or less**



## F120R-E

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**



## CF300-E

Wide area neutralization  
Easy cleaning of needle electrode

Decay time **1.5 sec or less**



## L-90-E

Efficient static electricity removal  
in the versatile application

Decay time **1.5 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.

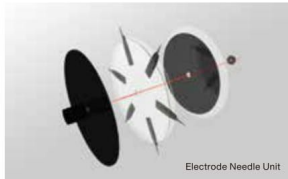


High-frequency piezoelectric transformer (Piezo)

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

## F-6RCL-E



Low  
noise  
Fan

EDP No.621662

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

Power supply	Fan Speed	LED	AC adapter	Needle electrode unit	ALARM FAN	ALARM
24VDC	HI/LOW	Illumination	100-240V included	replacement	LOCKUP	H.V.

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

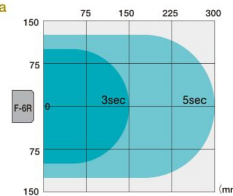


Can remove the clip when not needed    Easy removal    Built-in light

### Specifications

Model No.	F-6RCL-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/ 3.5kVAC
Power supply and current consumption	24VDC $\pm 5\%$ / 210mA(typ.)
Ion balance	within $\pm 10$ V (150mm at front)
Decay time	3 sec or less (150mm at front)
Operating distance	150 mm to 600 mm
HxWxDmm	H254xW77xD108mm(clip included)
Weight	514g
Airflow	0.78m <sup>3</sup> /min (Maximum flow rate)
Noise level	HI 5.3 dBA / LO 4.2 dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITF6E, AC cable (1.8m)

### Decay area



### Accessories



AC Adapter  
**AD24-ITF6E**    I/P : 100~240VAC 0.4A  
EDP No.806138    O/P : 24VDC 0.75A

### Ionizing Mini Fan with stand

Compact fan can be installed  
anywhere for pinpoint neutralization

## F-6RST-E



Low  
noise  
Fan

EDP No.621663

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

Power supply	Fan Speed	LED	AC adapter	Needle electrode unit	ALARM FAN	ALARM
24VDC	HI/LOW	Illumination	100-240V included	replacement	LOCKUP	H.V.

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

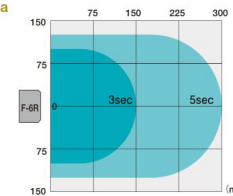


Can remove the stand when not needed    Easy removal    Built-in light

### Specifications

Model No.	F-6RST-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/ 3.5kVAC
Power supply and current consumption	24VDC $\pm 5\%$ / 210mA(typ.)
Ion balance	within $\pm 10$ V (150mm at front)
Decay time	3 sec or less (150mm at front)
Operating distance	150 mm to 600 mm
HxWxDmm	H142xW90xD81mm(stand included)
Weight	460g
Airflow	0.78m <sup>3</sup> /min (Maximum flow rate)
Noise level	HI 5.3 dBA / LO 4.2 dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITF6E, AC cable (1.8m)

### Decay area



### Accessories



AC Adapter  
**AD24-ITF6E**    I/P : 100~240VAC 0.4A  
EDP No.806138    O/P : 24VDC 0.75A

### Ionizing Fan

Butterfly louver, for neutralization in a wide area  
**F120R-E**



EDP No. 621651

High Voltage Transformer Piezoelectric high-frequency AC corona discharge	Ion balance within ±10 V	Decay time 1.5 sec or less	Directive CE
Power supply 24VDC	Fan Speed HI/MD/LO	AC adapter 100-240V included	Needle electrode unit replacement
ALARM FAN LOCKUP	ALARM H.V.	External grounding terminal	

- ▶ Butterfly Louver. Press outer side to disperse air. Press center to let air out straight.
- ▶ Apparent indication of operating status: 2-color LED illuminates red when errors or malfunction occurs.
- ▶ Easy maintenance. The needle electrode unit is set into the front cover.

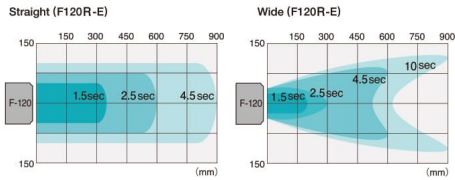


Butterfly Louver    RUN lamp LED    Front cover with needle electrode

#### Specifications

Model No.	F120R-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge / 10kVAC (p-p)
Power supply and current consumption	24VDC ±5% / 700mA(max.)
Ion balance	within ±10 V
Decay time	1.5 sec or less
Operating distance	150 mm to 900 mm
HxWxD(mm)	H198xW162xD70mm
Weight	0.9kg
Airflow	3.66m <sup>3</sup> /min (Maximum flow rate)
Noise level	HI : 61dBA / LO : 55dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITE AC cable (1.8m)

#### Decay area



#### Accessories



### Ionizing Fan

Silent fan model with mild airflow  
**F120S-E**



EDP No. 621646

High Voltage Transformer Piezoelectric high-frequency AC corona discharge	Ion balance within ±10 V	Decay time 2.5 sec or less	
Power supply 24VDC	Fan Speed HI/MD/LO	AC adapter 100-240V included	Needle electrode unit replacement
ALARM FAN LOCKUP	ALARM H.V.	External grounding terminal	

- ▶ Butterfly Louver. Press outer side to disperse air. Press center to let air out straight.
- ▶ Apparent indication of operating status: 2-color LED illuminates red when errors or malfunction occurs.
- ▶ Easy maintenance. The needle electrode unit is set into the front cover.

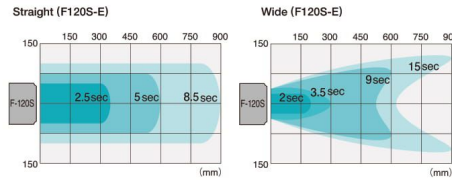


Butterfly Louver    RUN lamp LED    Front cover with needle electrode

#### Specifications

Model No.	F120S-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge / 10kVAC (p-p)
Power supply and current consumption	24VDC ±5% / 500 mA (max.)
Ion balance	within ±10 V
Decay time	2.5 sec or less
Operating distance	150 mm to 900 mm
HxWxD(mm)	H198xW162xD70mm
Weight	0.9kg
Airflow	2.21m <sup>3</sup> /min (Maximum flow rate)
Noise level	HI : 51dBA / LO : 44dBA
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITE AC cable (1.8m)

#### Decay area

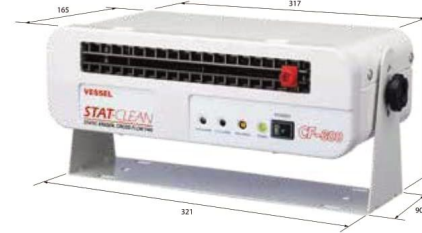


#### Accessories



### Ionizing Cross-Flow Fan

Wide area neutralization  
Evenly, straight, and far  
**CF300-E**



EDP No. 621657

High Voltage Transformer Coiled transformer AC corona discharge	Ion balance within ±10V	Decay time 1.5 sec or less	
Power supply 24VDC	No-stop airflow volume changeover	AC adapter 100-240V included	ALARM FAN LOCKUP
ALARM H.V.	External grounding terminal		

- ▶ Superior ionizing performance with a combination of a cross-flow fan for neutralization in a wide area and of a front cover for straight neutralization.
- ▶ Easy maintenance of needle electrode with a brush that can be slid by a finger.

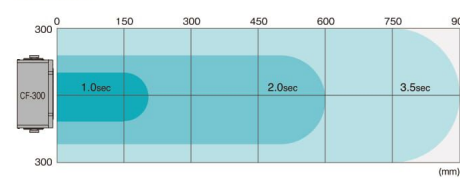


Cleaning Brush    Cross-Flow Fan    Stepless adjustment of fan speed

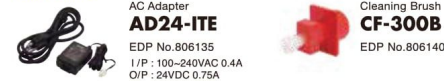
#### Specifications

Model No.	CF300-E
Ionizing method/Applied voltage	High voltage AC(20KHz) corona discharge / 9.2kVAC(p-p)
Power supply and current consumption	24VDC ±10% / 500 mA (max.)
Ion balance	within ±10 V
Decay time	1.5 sec or less
Operating distance	150 mm to 900 mm
HxWxD(mm)	H157xW348xD165
Weight	2.9 kg
Airflow	2.5m <sup>3</sup> /min (Maximum flow rate)
Noise level	48dBA (at 1m, Maximum flow rate)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITE AC cable (1.8m) Cleaning brush

#### Decay area

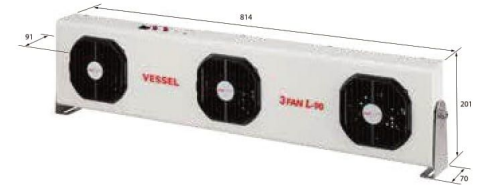


#### Accessories



### Overbench Ionizing Fan

Efficient static electricity removal  
in the versatile application  
**L-90-E**



EDP No. 621628

High Voltage Transformer Piezoelectric high-frequency AC corona discharge	Ion balance within ±10V	Decay time 1.5 sec or less	
Power supply 24VDC	No-stop airflow volume changeover	AC adapter 100-240V included	Needle electrode unit replacement
ALARM FAN LOCKUP	ALARM H.V.	External grounding terminal	

- ▶ Butterfly louvers for flexible setting of ionizing area.
- ▶ Unique capacitive-coupled needle electrode for stable and long-lasting ionizing performance.
- ▶ Easy maintenance.

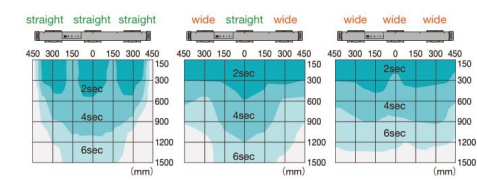


Butterfly louvers    Capacitive-coupled needle electrode

#### Specifications

Model No.	L-90-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge / 9.5kVAC(p-p)
Power supply and current consumption	24VDC ±5% / 3.0A (max.)
Ion balance	within ±10 V
Decay time	1.5 sec or less
Operating distance	150 mm to 900 mm
HxWxD(mm)	H182xW814xD91 (with stand : H201xW880xD91)
Weight	4.7kg
Airflow	7.1m <sup>3</sup> /min (a total of 3 fans) (Maximum flow rate)
Noise level	75.4 dBA (at 1m, Maximum flow rate)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-IT37E AC cable (1.8m)

#### Decay area



#### Accessories





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

# Nozzle Type



**N-1**  
Ultra-compact slim ionizing nozzle  
**Decay time** 1.0 sec or less



**N-3**  
Interchangeable nozzles for a versatile application  
**Decay time** 1.0 sec or less



**HPN-1** →P33  
Good for Highly Charged Products  
Good for an automated production line  
**Decay time** 0.5 sec. or less



**HPF-1** →P34  
Good for Highly Charged Products  
Flexible installation angle adjustment  
**Decay time** 1.0 sec. or less

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 Ionizing Nozzle

Super Compact Slim Body.

**N-1**



EDP No. 621639

<b>High Voltage Transformer</b> Piezoelectric high-frequency AC corona discharge	<b>Ion balance</b> within ±10 V	<b>Decay time</b> 1.0 sec or less
Power supply: 24VDC	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.
- ▶ Equipped with 6-pole terminals enabling high voltage alarm signal output as well as 24VDC daisy-chain connection.

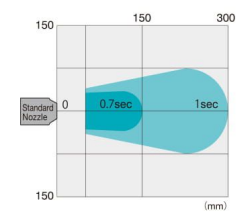


Alarm outputs and daisy chains possible.

### Specifications

Model No.	N-1
Ionizing method/Applied voltage	Piezo high-frequency AC Corona discharge method/5kVAC (p-p)
Power supply and current consumption	24VDC ±5% / 100mA(max.)
Ion balance	within ±10V
Decay time	1.0 sec or less (standard nozzle: 0.3MPa, 150mm) (measured values)
Operating distance	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 ∅6mm
Operating fluid	Clean dry air (0.1MPa to 0.6MPa), nitrogen N <sub>2</sub> (0.1MPa to 0.6MPa)
Air Consumption	219ℓ/min (With standard nozzle mounted, at 0.3 MPa)
Noise	96dBA (With standard nozzle mounted, at 0.3MPa)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	Standard Nozzle (included with device)

Decay area Air Pressure : 0.3MPa



### Accessories



Standard Nozzle  
**N-1SN**  
EDP No. 806120

## Pinpoint Ionizing Nozzle

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

**N-3**



EDP No. 621654

<b>High Voltage Transformer</b> High voltage AC corona discharge	<b>Ion balance</b> within ±10 V	<b>Decay time</b> 1.0 sec or less	<b>Directive</b> CE
Power supply: 24VDC	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.

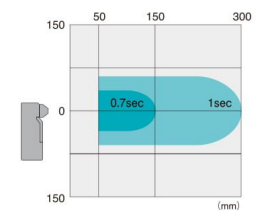


Standard Nozzle (included as accessory) Alarm outputs and daisy chains.

### Specifications

Model No.	N-3
Ionizing method/Applied voltage	Piezo high-frequency AC Corona discharge method/5.6kVAC (p-p)
Power supply and current consumption	24VDC ±5% / 90mA(max.)
Ion balance	within ±10V
Decay time	1.0 sec or less (standard nozzle: 0.3MPa, 150mm) (measured value)
Operating distance	50 mm to 600 mm
H×W×Dmm	L95×W50×H47mm
Weight	104g (with standard nozzle mounted)
Air supply hose diameter	tube fitting ∅6mm
Operating fluid	Clean dry air (0.1MPa to 0.6MPa), nitrogen N <sub>2</sub> (0.1MPa to 0.6MPa)
Air Consumption	210ℓ/min (With standard nozzle mounted, at 0.3 MPa)
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	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	Standard Nozzle (included with device), Power supply harness

Decay area Air Pressure : 0.3MPa



### Accessories



Standard Nozzle  
**N-1SN**  
EDP No. 806120

# Gun Type

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

1

The bright LED lamp makes dust visible

Use the LED lamp to check dust that has adhered on the workpiece.



2

Piezoelectric transformer enhances safety with no need to expose high-voltage cables

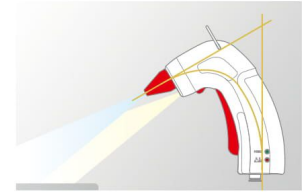
The high-voltage cable is not exposed, so there's no need to worry about current leaks or electric shock caused by wire breakage.



3

Ergonomically designed grip is easy to hold and adjusted to the optimum angle

The nozzle direction faces the optimum direction when the grip is held, allowing work to be started right away.



**G7R-E**  
Compact and lightweight  
High discharge air blow ionizer  
Decay time 1.0 sec or less

**G-2-E**  
Practicable handy ionizer  
with flexible cable installation  
Decay time 0.8 sec or less

**G-9 NEW**  
Self Power Generating  
Ionizing Gun  
Decay time 1.0 sec. or less

**HPG-1** →P35  
Good for Highly Charged Products  
Easy handling large trigger model  
Decay time 0.5 sec. or less

## Ionizing Gun

Our most popular ionizing air gun is compact, lightweight and user-friendly

### G7R-E



EDP No.621621

High Voltage Transformer Piezoelectric high-frequency AC corona discharge	Ion balance within ±10 V	Decay time 1.0 sec or less	Directive CE
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Power supply 24VDC	Air Pressure max 0.6MPa	LED illumination	AC adapter 100-240V included	Screw-type needle electrodes	"ON" lamp	ALARM H.V.
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- ▶ Bright green LED lamp makes dust visible.
- ▶ Ideal for neutralization and dust elimination from precision parts, for example, at hand in a cell production.
- ▶ Diverse options support various applications.



Attach a brush to blow out dust



Operating and malfunction alarm LEDs are provided on both sides of the grip

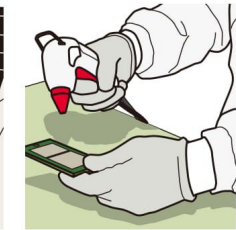
#### Specifications

Model No.	G7R-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/2kVAC
Power supply and current consumption	24VDC ±5% / 85mA (typ.)
Ion balance	within ±10 V
Decay time	1.0 sec or less (standard nozzle; measured 150mm from device at 0.3 MPa)
Operating distance	50 mm to 600 mm
HxWxDmm	L105xH150xD36mm
Weight	200g
Air supply hose diameter	tube fitting Ø6mm
Operating fluid	Clean dry air (0.1MPa to 0.6MPa)
Air Consumption	200 ℓ/min(0.3MPa)
Noise level	92 dBA (0.3MPa)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITC-E AC cable(1.8m)/ Standard Nozzle (included with device)

Dust removal from plastic trays



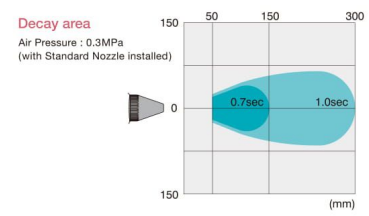
Dust removal from substrates



Dust and static-electricity removal from mobile phone parts



Dust and static-electricity removal from bumpers



#### Accessories





**Ionizing Gun**

Practicable handy ionizer with flexible cable installation

**G-2-E**



EDP No.621659

<b>High Voltage Transformer</b> Piezoelectric high-frequency AC corona discharge	<b>Ion balance</b> within ±10 V	<b>Decay time</b> 0.8 sec or less	<b>Directive</b> CE
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Power supply 24VDC	Air Pressure max 0.6MPa	AC adapter 100-240V included	Screw-type needle electrode	*ON* lamp	ALARM H.W.
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- ▶ Changeable wiring direction upward or downward. This makes it easy to use the G-2-E by hanging it from the top of a cell production table (e.g. when using a tool balancer).
- ▶ Compact, lightweight, and ergonomically designed grip that fits your hand.
- ▶ Operating status and alarm lamps.
- ▶ Interchangeable nozzle for various applications. (option)
- ▶ The needle electrode can be easily replaced with a dedicated tool.

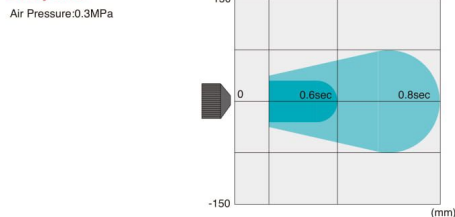


Powerful blow of ionized air through the dedicated nozzle.    Can fit the cable in the groove on the grip lateral side.

**Specifications**

Model No.	G-2-E
Ionizing method/Applied voltage	Piezoelectric high-frequency AC corona discharge/4.5 kVAC
Power supply and current consumption	24VDC ±5% / 100mA(typ.)
Ion balance	Within ±10 V (at 0.3 MPa, measured at 150mm)
Decay time	0.8 sec (measured at 150mm)
Operating distance	50 mm ~ 300 mm (Installation: indoor, non-hazardous area)
HxWxDmm	L 148mm x H 57mm x W 44mm
Weight	260g
Air supply hose diameter	QDφ6 mm x IDφ4 mm
Operating fluid	Clean dry air (0.1MPa to 0.6MPa)
Air Consumption	1.53 ℓ/min (0.3MPa)
Noise level	94dBA (0.3MPa)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40°C/35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter AD24-ITCS-E, AC cable (1.8m), Standard nozzle (included with device)

**Decay area**



Use by hanging above cell production benches



The air tube and the cable can be placed upward or downward.

Dust removal from plastic trays



※Possible to fix the direction of the air hose and the power cable.

**Accessories**



**Pneu-Power Ion Gun**

Innovative self-power generating ionizing gun. No need for electric wiring

**G-9**



EDP No.621670

<b>High Voltage Transformer</b> Coiled Transformer AC corona discharge	<b>Ion balance</b> within +/-30V	<b>Decay time</b> 1 sec. or less	<b>Directive</b> CE
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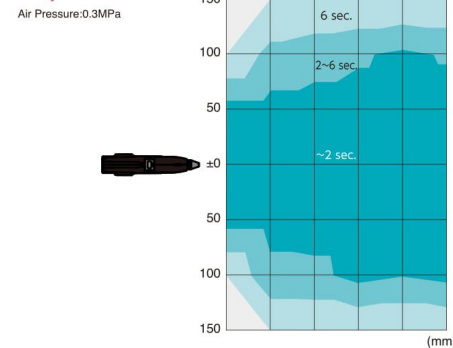
Air Pressure max 0.6MPa	Screw-type needle electrode	Adjustment lamp	Regulator
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- ▶ Innovative ionizing gun working only with a compressed air.
- ▶ Motor cartridge (replaceable) converts compressed air to the power. Rotor blades in the center of the motor generate power while rotating and supply it to the high voltage power unit.

**Specifications**

Model No.	G-9
Ionizing method/Applied voltage	AC corona discharge /8kVAC p-p
Ion balance	Within +/- 30 V
Decay Time	1 second or less
Operating distance	50mm ~ 300mm
Air speed	12.3m/s (0.5MPa, 200L/min, 150mm)
Air connection	φ8mm with one-touch joint
Operating fluid	Clean dry air
Air consumption	200L/min (0.5MPa)
HxWxD	191 x 233 x 51 mm (without protrusions)
Weight	470 g
Noise	88dBA (0.5MPa)
Operating temperature and humidity	0~45°C/10~90% RH (no condensation or freezing)
Accessories	Instruction manual

**Decay area**



Air turbine rotates the motor, and this generates the power for ion generation.



**Options**



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

# Bar Type

**C-series**  
Compact and clean design  
Super-high speed ionizer

**Ion balance** within  $\pm 30V$   
(Distance 1000mm)

**SJ-series\*** **NEW**  
For highly charged or fast moving products

\* Note  
SJ-\*\* is available while stocks last.  
The model code will be changed to SL-\*\*\* afterward.

**HPB-series** →P36  
Good for Highly Charged Products  
Optimum for installation in a cramped space

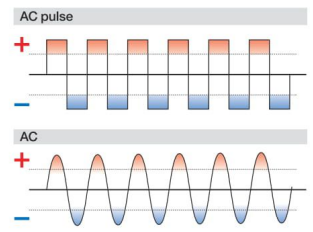
**Decay time** 2.0 sec. or less

## 1

### High Speed Static Electricity Removal

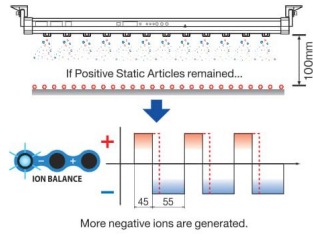
#### AC pulse method

Generating alternately positive ions and negative ions from each electrode. Since ions are generated at the maximum width of each positive and negative electrode cycle, the ion volume is high and static electricity can be removed quickly.



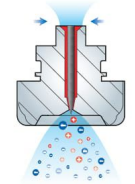
#### Auto Balance Mode

The C series are equipped with a mode to optimally adjust the ion balance automatically according to the polarity of the charged matter. (Target distance: 50 to 100 mm)



#### Air purge function

With air purged toward the needle electrode tip. This not only prevents contamination at the tip of the electrode needle, but also carries the generated ions quickly to the charged object and removes static electricity.



## 2

### Usability

#### Easy maintenance design

One-touch needle replacement. A socket type needle can be easily replaced.



#### Clean design

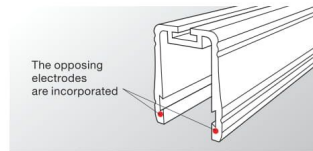
##### Needle cleaning time notified

The cleaning interval can be set between 1 and 60 days in one-day unit. When the time elapses, the needle-cleaning lamp lights up and it is notified on the



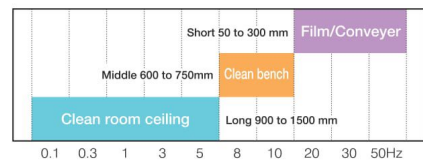
#### Body contamination prevention

Opposing electrodes are incorporated in the body. The induced voltage prevents particles from sticking to the outer side of the body, and limits the losses in applied voltage to improve the ion generation efficiency.



#### Frequency

Change the frequency according to the distance to the object to be neutralized, for quick static electricity



## 3

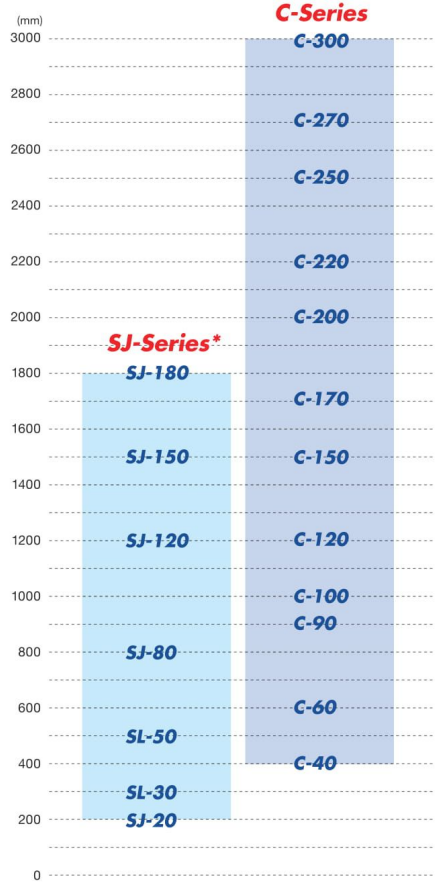
### Line-up at a glance

#### Sizes to match various working environments

Ionizing bars are available in a variety of sizes for assembly into small electronic part manufacturing systems to neutralization of large workpieces such as film and liquid crystal glass.



#### Bar Type Line-up





AC Pulse Ionizing Clean Bar

Clean & Compact.  
Newly designed high-precision and high-speed ionizer applying a new technology

**C-series**

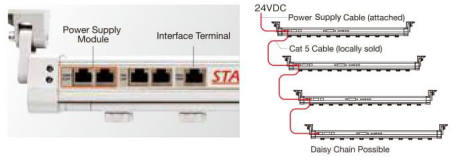


- C-40** EDP No.621857    **C-170** EDP No.621855
- C-60** EDP No.621858    **C-200** EDP No.621856
- C-90** EDP No.621851    **C-220** EDP No.621859
- C-100** EDP No.621852    **C-250** EDP No.621860
- C-120** EDP No.621853    **C-270** EDP No.621861
- C-150** EDP No.621854    **C-300** EDP No.621862

High Voltage Transformer	Ion balance
Pulse AC corona discharge	within ±30 V (measured 1000 mm)
Power supply 24VDC ±5%	Air Pressure max 0.3MPa
LCD Display	Electrode needs not replacement
Adjustable Ion Balance	Needs Clearing Timer (1 to 60 days) Ⓢ
ALARM H.V.	External output LAN Terminal

※ except C-40, C-60

- ▶ Newly designed super-fast ionizing air discharge port.
- ▶ Auto Balance Mode (Target distance: 50 to 100 mm).
- ▶ Terminals grouped on one side. Enabling a daisy-chain connection.

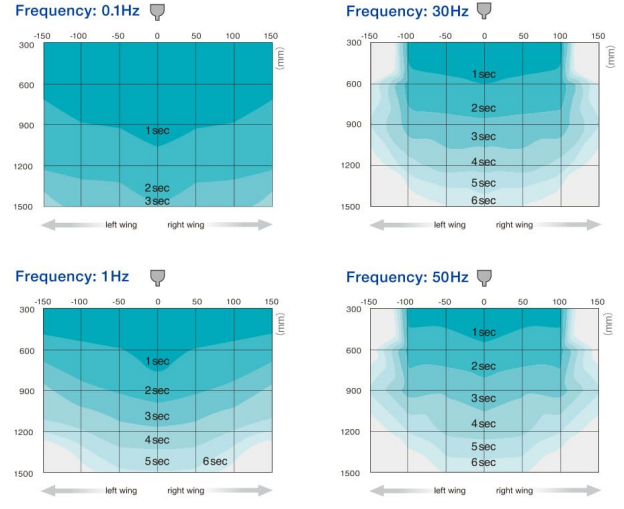


Common Specifications

Model No.	C-40 ~ C-300
Ionizing method/Applied voltage	Pulse AC Corona discharge / B~12.5kVAC (p-p)
frequency	0.1 to 50Hz (Select form ten steps)
pulse ratio	Positive ion 40 to 70 %, negative ion 60 to 30%
Power supply and current consumption	24VDC ±5% / 600mA(max.)
Ion balance	within ±30V (Distance 1000mm)
Decay time	See below
Operating distance	50 to 2000mm
HxWxDmm	Refer to the table on the right
Weight	Refer to the table on the right
Air supply hose diameter	PT1/8
Operating fluid	Clean dry air or nitrogen (N <sub>2</sub> ) (0.3 MPa or less)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	0~50°C / 35~85% RH (with no dew condensation or freezing)
Accessories	Remote controller (except C-40/60) / Interface cable (C-40/60 only) / Power cable (5m) / End bracket (included with device) / Middle bracket (included with device) (except C-40/60/90)

\*Silicon discharge needles also available. For more detail please contact us.

Decay area Measurement conditions \*Product : C-150 \*Voltage : 10.5kV(IP-06 N-06) \*Air pressure : 0.3MPa \*Temperature : 24°C±1°C \*Humidity : <math>40\% \pm 2\% RH</math> \*Decay time : <math>1000V \rightarrow 100V</math> \*CPM : 20pF±2pF(150x150mm)



Options

Adapter specification

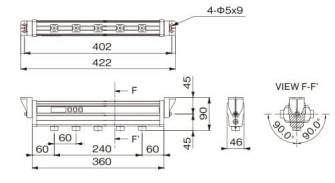
AC Adapter  
**AD24-IT**  
● EDP No. 806051  
**AD24-ITE**  
● EDP No. 806135  
I / P : 100~240VAC 0.4A  
O/P : 24VDC 0.75A  
Operation : One bar

AC Adapter  
**AD24-IT19**  
● EDP No. 806081  
**AD24-IT19E**  
● EDP No. 806137  
I / P : 100~240VAC 1.2A  
O/P : 24VDC 1.8A  
Operation : 2 or 3 bars  
(Please consult us for more detail)

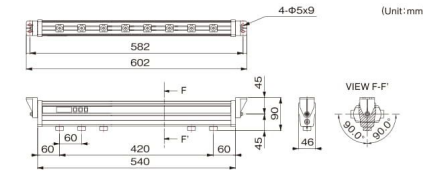
Power Supply Cable (5m)  
For AC adapter  
**CT-5**  
EDP No. 621709  
※When using AC adapter, Power Supply Cable (CT-5) is necessary.

Remote Control  
**RMC-01**  
EDP No. 806104

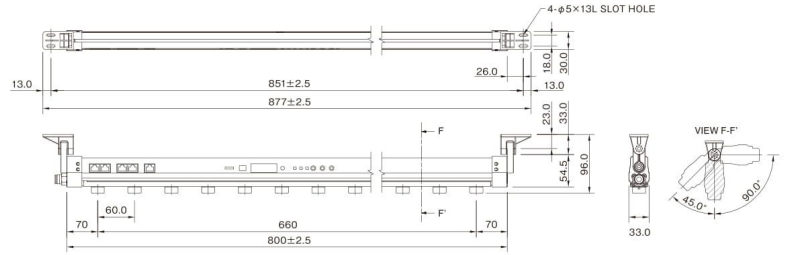
**C-40**



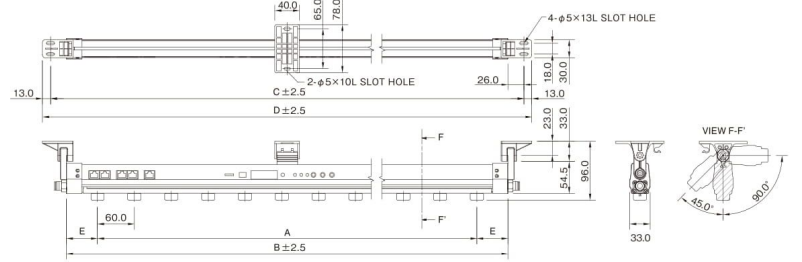
**C-60**



**C-90**



**C-100, 120, 150, 170, 200, 220, 250, 270, 300**



Dimension / Needle Electrode/ Middle Bracket

Model.No	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Needle Electrode	Middle Bracket	Weight (kg)
<b>C-40</b>	240	360	402	422	60	5 pcs	—	0.78
<b>C-60</b>	420	540	582	602	60	8 pcs	—	1.08
<b>C-90</b>	660	800	851	877	70	12 pcs	—	0.9
<b>C-100</b>	900	1001	1052	1078	50.5	16 pcs	1 pc	1.0
<b>C-120</b>	1140	1241	1292	1318	50.5	20 pcs	1 pc	1.2
<b>C-150</b>	1380	1481	1532	1558	50.5	24 pcs	1 pc	1.4
<b>C-170</b>	1620	1721	1772	1798	50.5	28 pcs	2 pcs	1.6
<b>C-200</b>	1860	1961	2012	2038	50.5	32 pcs	2 pcs	1.8
<b>C-220</b>	2100	2201	2252	2278	50.5	36 pcs	2 pcs	2.3
<b>C-250</b>	2340	2441	2492	2518	50.5	40 pcs	3 pcs	2.6
<b>C-270</b>	2580	2681	2732	2758	50.5	44 pcs	3 pcs	2.8
<b>C-300</b>	2820	2921	2972	2998	50.5	48 pcs	3 pcs	3.1

Pulse Ratio

The ion balance can be adjusted by changing the pulse ratio.

Voltage Level

The applied voltage can be changed (common). The one for the positive side and the negative side can be changed respectively (except C-40/60). The amount of ions varies by different output (10 steps: 8.0~12.5kVp-p).

Voltage level	1	2	3	4	5	6	7	8	9	10
Positive voltage (kV)	4	4.25	4.5	4.75	5	5.25	5.5	5.75	6	6.25
Negative voltage (kV)	4	4.25	4.5	4.75	5	5.25	5.5	5.75	6	6.25
kV p-p	8	8.5	9	9.5	10	10.5	11	11.5	12	12.5

Address

When using multiple units, an address allocation setting (1 to 16) is available to identify each ionizing bar. (except C-40/60)

**Ion parts cleaner IPC CLEAN**

Highpower bar  
For highly charged or fast moving products  
**SJ-series\*/SL-series**

**NEW**

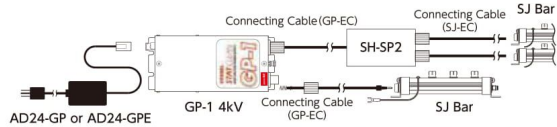


- SJ-20** EDP No.621591    **SJ-120** EDP No.621595
- SL-30** EDP No.621878    **SL-150** EDP No.621882
- SL-50** EDP No.621879    **SJ-180** EDP No.621597
- SJ-80** EDP No.621594

\* Note  
SJ\*\* is available while stocks last. The model code will be changed to SL-\*\* afterward.  
(Example)  
SJ-20 → SL-20  
SJ-EC2.5 → SL-EC2.5

**Optional High Voltage Power Unit and Branch Box enable the use of multiple ionizing bars.**

1 x High Voltage Power Supply Unit (No.GP-1) can be directly connected to max.2 ionizing bars. In addition, 3 ionizing bars in total can be connected when Branch Box (No. SH-SP2) is used.



※The maximum cable length is 10m in total. If you require more length please contact us.

High Voltage Transformer	Ion balance	Decay time
AC corona discharge	within +/- 50V (measured 1000 mm)	1 sec. or less (measured at 300 mm)

Power supply	Air pressure
No.GP-1 4kV	max. 0.3 MPa

- ▶ Compact and slim design
- ▶ Detachable and replaceable discharge needles
- ▶ Detachable high voltage cable
- ▶ Wide variety of sizes
- ▶ Brackets enable to change the installation in angle
- ▶ Fine ionizing adjustment control with the GP-1

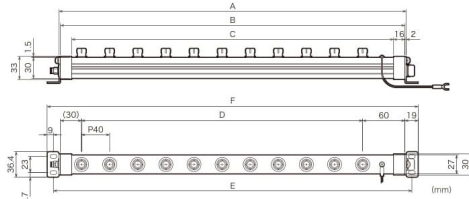
**Specifications**

Model	SJ-20 / SL-30 / SL-50 / SJ-80 / SJ-120 / SJ-150 / SJ-180*
Ionizing method/ Applied voltage	AC corona discharge / 4 kVAC
Power Supply	High Voltage Power Supply No.GP-1 4kV (Option)
Ion Balance	Within ±50V (measured at 1,000mm, at air pressure 0.3MPa)
Decay Time	1 second or less (measured at 300mm, at air pressure 0.3MPa)
Operating Distance	50 ~ 2000mm
Ozone production	0.05ppm or less (measured at 50mm from the discharge needle)
Air Connection	PT1/8, with one-touch joint
Air hose	SJ-80 or smaller: Hose O.D.6mm x I.D.4mm SJ-120 or larger: Hose O.D.8mm x I.D.6mm
Operating Fluid	Clean dry air or Nitrogen gas (0.3MPa or less)
Operating Environment	5~50°C/35~85%RH (without freezing or dew condensation)
Accessories	Ground wire, Instruction manual



**Options**

- Connecting cable (2.5m) **GP-EC2.5** EDP No. 623053
- Connecting cable (5m) **GP-EC5** EDP No. 623054
- Connecting cable (2.5m) **SL-EC2.5** EDP No. 621884
- Connecting cable (5m) **SJ-EC5\*** EDP No. 623052
- Needle electrode **SJ-00HR\*** EDP No. 623055
- Branch Box **SH-SP2** EDP No. 621552



**Dimensions / Needle Electrodes**

Model No.*	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Needle Electrode	Weight (kg)
SJ-20	174	170	138	80	190	208	3 pcs	0.2
SL-30	334	330	298	240	350	368	7 pcs	0.3
SL-50	494	490	458	400	510	528	11 pcs	0.7
SJ-80	814	810	778	720	830	848	19 pcs	0.9
SJ-120	1,134	1,130	1,098	1,040	1,150	1,168	27 pcs	1.1
SL-150	1,454	1,450	1,418	1,360	1,470	1,488	35 pcs	2.0
SJ-180	1,774	1,770	1,738	1,680	1,790	1,808	43 pcs	2.2

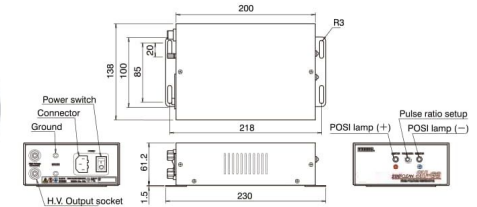
**Power supply units**

Power Supply units supporting 100V AC

**SH-G3**



EDP No. 621555



**Specifications**

Model No.	SH-G3
Ionizing method/Applied voltage	AC corona discharge / 5kVAC
Power supply	100~240V AC ±5%
H x W x D	61 x 138 x 200 mm (without protrusions)
Weight	1.5 kg

**AC power cable**

For 100VAC

For 200VAC



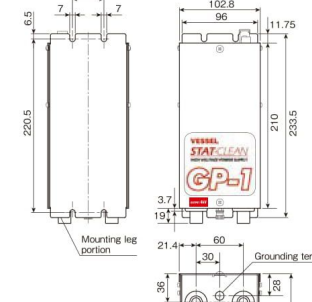
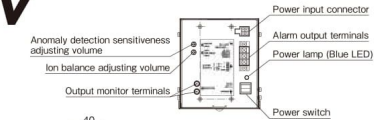
**Power supply units**

High Voltage Power Supply Unit  
**GP-1 4kV**



EDP No. 623044

**OUTPUT 4kV**



**Specifications**

Model	GP-1 4kV
Operating Temp./Humidity	0 ~ 50°C/10 ~ 90%RH(without freezing or dew condensation)
Storage Temp./Humidity	-30 ~ 70°C/10 ~ 95%RH(without freezing or dew condensation)
Installation Place	Indoors
Rated Input Voltage	24V DC±10%
Variable Output Range Without Load (rms)	AC output 4kVAC DC output -150 to +550V
Secondary Short Circuit Current	5 mA or lower
Output Monitor	1/1000V±5% of the output voltage is emit to the monitor terminals.
Low-voltage Detection	Anomaly detection function will operate when each output drops to about 85% or less of the set voltage due to high voltage short circuit or abnormal spurs.
Overcurrent Detection	Anomaly detection function will operate when the output current is about 4mA or more.
Anomaly Detection Sensitivity Adjustment	The anomaly detection response speed can be adjusted (using external adjustment knob)
Power Supply Input	Molex 5569-04A1-210
High Voltage Output Connector	Ceramic high voltage output terminalx2
Alarm Output Terminal	C contact relay output
Switches And Displays	On-off rocker switches, Blue LED power indicator lamp (goes off when anomaly is detected)
Material	Housing SPPC, painted white
Size	W102.8xD233.5xH114.2mm
Weight	Approx. 4.5kg

**Option**



- AC Adapter **AD24-GP** EDP No. 806049
- AD24-GPE** EDP No. 806048
- I/P : 100~240VAC 0.4A
- O/P : 24VDC 0.75A



# Ion Parts Cleaner

**IPC-A4**  
Ideal A4 size for cell workbenches

**IPC-A3**  
Ideal A3 size for cell workbenches

**IPC-250CR** **NEW**  
New concept of neutralization

Why is VESSEL's ion parts cleaner our customer's top choice?

1

## Neutralization and dust elimination inside hoods

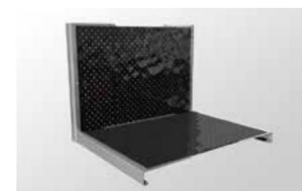
Dust adhered with static electricity is neutralized inside the ionized hood and eliminated with automatic powerful air blow.



2

## Capture dust with self-adhesive urethane gel

The adhesive surface of the urethane gel mat enables to catch any dust blown away by the ionized air inside the booth. The washable gel sheet can be used repeatedly (IPC-A4/A3).



## Ion Parts Cleaner

A4 size is ideal for capturing dust with adhesive urethane gel at cell workbench

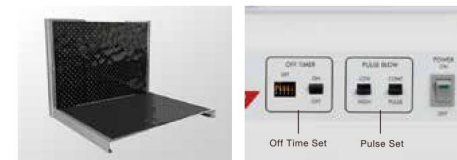
### IPC-A4



EDP No. 621610

<b>Sensor</b> Diffused reflection type	<b>Air blow</b> Continuous/pulse blow selection	<b>Off delay timer</b> 1 to 30 seconds (5 steps)
<b>Power supply</b> 24VDC	<b>Air Pressure</b> max.0.6MPa	<b>Ionizer</b> N-3x1pc
<b>AC adapter</b> 100~240V included	<b>Regulator</b> Built-in	<b>Self-adhesive polyurethane gel sheets and non-woven fabric filter</b>
<b>Integrated hood/dust collector</b>		

- ▶ With no built-in dust collector, its power consumption is substantially reduced.
- ▶ Dislodged dust will be collected by the adhesive gel sheets.
- ▶ Select continuous or pulse blow of ionizing dust collection air from nozzle-type ionizer.



#### Specifications

Model No.	IPC-A4
Ionizing method/Applied voltage	Piezoelectric high frequency AC corona discharge / 5.6kVAC (p-p)
Power supply	24VDC ±5%
Current consumption	700mA or less
Dust collection airflow	3.5 m <sup>3</sup> /min (Built-in fan)
Static pressure	105Pa (Built-in fan)
Dust collection filter	Self-adhesive polyurethane gel sheets and non-woven fabric filter
HxWxDmm	H361xW314xD253mm
Weight	6kg
Air supply hose diameter	Tube fitting 8mm
Operating fluid	Clean dry air (0.1 to 0.6MPa)
Air Consumption	147ℓ/min(0.3MPa, Continuous mode)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40 °C / 35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter, Adhesive gel sheet plate (included with device) x 2pcs

#### Accessories



## Ion Parts Cleaner

A3 size is ideal for capturing dust with adhesive urethane gel at cell workbench

### IPC-A3



EDP No. 621612

<b>Sensor</b> Diffused reflection type	<b>Air blow</b> Continuous/pulse blow selection	<b>Off delay timer</b> 1 to 30 seconds (5 steps)
<b>Power supply</b> 24VDC	<b>Air Pressure</b> max.0.5MPa	<b>Ionizer</b> N-3x2pcs
<b>AC adapter</b> 100~240V included	<b>Regulator</b> Built-in	<b>Self-adhesive polyurethane gel sheets and paper pack filter</b>
<b>Integrated hood/dust collector</b>		

- ▶ With no built-in dust collector, its power consumption is substantially reduced.
- ▶ Dislodged dust will be collected by the adhesive gel sheets.
- ▶ A paper pack filter can be attached to the exhaust port on the rear side (standard).



#### Specifications

Model No.	IPC-A3
Ionizing method/Applied voltage	Piezoelectric high frequency AC corona discharge / 5.6kVAC (p-p)
Power supply	24VDC ±5%
Current consumption	900mA or less
Dust collection airflow	1.13 m <sup>3</sup> /min (Built-in fan)
Static pressure	460Pa (Built-in fan)
Dust collection filter	Self-adhesive polyurethane gel sheets and paper pack filter
HxWxDmm	H411xW420xD300mm
Weight	9.5kg
Air supply hose diameter	Tube fitting 10mm
Operating fluid	Clean dry air (0.1 to 0.6MPa)
Air Consumption	315ℓ/min(0.3MPa, Continuous mode)
Ozone production	0.05ppm or less (measured 50mm)
Operating environment temperature and humidity	5~40 °C / 35~65% RH (with no dew condensation or freezing)
Accessories	AC adapter, Adhesive gel sheet plate (included with device) x 2pcs, Duct flange (for φ75mm), Paper pack filter (6pcs)

#### Accessories



Ion parts cleaner IPC CLEAN

"ION CLEANING" - New Concept of Neutralization

**IPC-250CR**

**NEW**



EDP No. 623201

- Air blow**
- Continuous
  - Power supply 24V DC
  - DC type ionizer
  - AC adapter 100~240V (Option)
  - Airblow port
  - Air volume regulator built-in
  - HEPA filter

- Cleaned air blow with HEPA filter
- DC ionizer incorporated, creating an ionized space
- Adjustable air blow volume
- No exhausted air by the air circulation system

Built-in HEPA filter. Replaceable by unit.



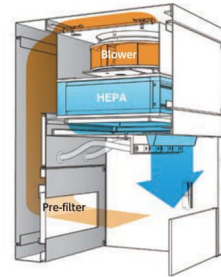
Specifications

Model No.	IPC-250CR
Ionizing method/Applied voltage	DC corona discharge / +6 kV, -3 to -7 kV
Power supply	24V DC ±5%
Current consumption	4.5 A max. (excluding inrush)
Air flow	Max. 14 m <sup>3</sup> /min (No internal filter clogging, output value of the blower)
Wind speed	Max. 25m/sec. (No clogging of built-in filter, output value of the blower)
Dust collection method	Built-in pre-filter and HEPA filter (two-stage)
HxWxD	515 x 350 x 345 mm (without protrusions)
Weight	22 kg
Noise	74 dBA (Maximum air flow, no clogging of built-in filter or deterioration of blower)
Operating temperature and humidity	+5 to +40°C 35 to 65% RH (no condensation or freezing)
Accessories	Caution label sticker / Instruction manual

The generated ions are blown off downward with the air through the wide air discharge port.



Air circulation type, with no exhausted air.



Replacement parts



Pre-filter  
**IPC-250CRPF**  
EDP No.623203



HEPA filter  
**IPC-250CRHF**  
EDP No.623202



Needle electrode  
**SDJ-05RH**  
EDP No.806044

Option



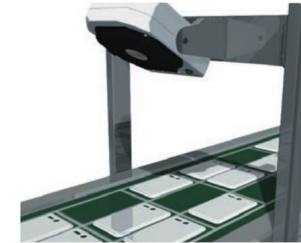
Adapter specification

- AC Adapter **AD24-150-PD4**
- EDP No.806146
- IP: 100V to 240 V AC, 50/60 Hz
- O/P: 24V DC 5A
- Inquire us of the 2 round pin type.

VESSEL ionizers for a variety of applications.



Inspection process



Dust prevention on molded parts



Wide conveyor



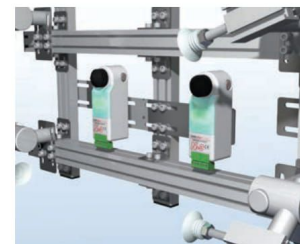
Cell production table



Bottle cleaning



Vibratory bowl feeder (joint nozzle + shower tube)



Robots for molded parts



Removal of fluid spills in filling lines



Using with flexible shaft



Moval in a bottle



Check the small points with LED Beam Light.



Static electricity removal of resin parts



Over a belt conveyor



Injection molded plastic objects

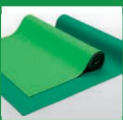


Packing process of food containers



Why is VESSEL's EPA Working Mat our customer's top choice?

# EPA Working Mat



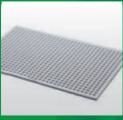
**Mat**  
Ideal for workbenches needing static-erasing measures



**EPS-5** **NEW**  
Anti-Static Wrist Strap



**EPS-GK** **NEW**  
ESD Mat Grounding Kit



**Anti-Fatigue Mat**  
Alleviate fatigue caused by standing for a long time



**Surface Resistance Checker**  
Easy checking of surface resistance on floor or mat



**Electrostatic Field Meter**  
Essential item for static electricity measurement  
Visualize the static charge and discharge state

## 1

Creating an optimum EPA environment from a working table, a floor, to a human body with one-stop solution.

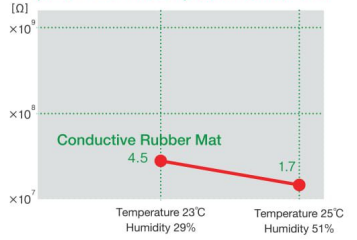
Our IEC61340-5-1 compliant products include the ESD protection items, the EPA working mats for workbenches, storage shelves, or trolleys, the EPA floor material for vinyl or painted floors, and the anti-static wrist straps.



## 2

Stable conductivity performance

Conductivity rates fluctuate frequently according to changes in humidity in the working environments. VESSEL's conductive rubber mats realize a "conductive performance" that complies with strict criteria.



## 3

# RoHS

Environmental Measures

Pb (lead) / Cd (cadmium) / Hg (mercury) / Hexavalent chromium / PBB (polybrominated biphenyl) / PBDE (polybrominated diphenyl ether) / DEHP, BBP, DBP, DIBP (phthalate esters)

The products with this mark in this catalogue are compliant with the RoHS directives (EU) (usage limit of the above 10 substances).

Note: For the updated information on RoHS compliant products, visit our homepage, because some products or sizes are under investigation or are not compliant at the time of publication of this catalogue.

### EPA Working Mat - Conductive Rubber Mat

Controlling electroconductivity between 10<sup>8</sup>Ω and 10<sup>7</sup>Ω, unsusceptible to the working environment. Ideal for workbenches requiring anti-static measures.



### RoHS

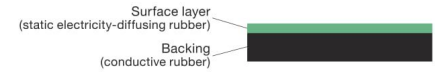
**10m ROLL**  
**LG-100** EDP No. 621464  
**SG-100** EDP No. 621461



Applications	Conductivity	Material	Directive
Work benches	10 <sup>8</sup> ≤ R ≤ 10 <sup>7</sup> Ω	NBR+SBR	<b>EPA RoHS</b>

- ▶ Offers uniform, consistent conductive performance.
- ▶ Features a matte surface finish, reducing reflections and preventing eye fatigue.
- ▶ Heat resistant to solder drops.

#### Structure



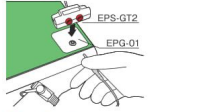
#### Common Specifications

Model No.	LG-100	SG-100
Color	Light green	Green
Size	W1.0m x L1.0m x T2.0mm	W1.0m x L1.0m x T2.0mm
Conductivity	10 <sup>8</sup> ≤ R ≤ 10 <sup>7</sup> Ω	10 <sup>8</sup> ≤ R ≤ 10 <sup>7</sup> Ω
Weight	29kg/roll	29kg/roll
Material	NBR+SBR	NBR+SBR

### Grounding Tap

Neatly wire the grounding cords around your workbench

## EPS-GT2



EDP No. 621402

Model No.	EPS-GT2
Size	Approx. 3.0 m (with round jack)
Resistance value	1MΩ
Material	ABS

### Grounding Cord

Connect to mat-connecting gel with a single touch

## EPC-18



EDP No. 621393

#### Common Specifications

Model No.	EPC-18
Size	max. length of 1.8m, (max. length 0.5m)
Resistance value	1MΩ
Accessories	Alligator clip

### Wrist strap

Anti-Static Wrist Strap (10pcs/box)

## EPS-05



### RoHS

EDP No. 621471

- ▶ Anti-static product, complying with JIS C 61340-4-6: 2016
- ▶ Contractile band with rubber woven, adjustable to the wrist
- ▶ Ground cord with 1M ohm current-limiting resistor

#### Specifications

Model No.	EPS-05	
Weight (g)	38 per piece, including alligator clip	
Band length (mm)	Approx. 190	
Cord length (m)	Max. 2.5 (0.72 when shrunken)	
Resistance (Ω)	Approx. 1M between the body and the ground cord	
Contents	Wrist strap, Ground cord, Alligator clip, Instruction manual	

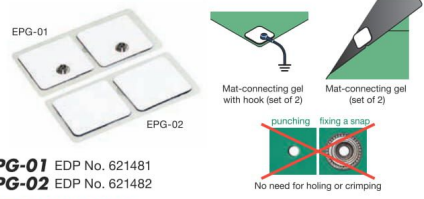
#### Replacement

Wrist Strap Cord	Weight (g)	24 including alligator clip
<b>No.EPS-05-C</b>	Embedded resistor (Ω)	1M
EDP No. 621472	Cord length (m)	Max. 2.5 (0.72 when shrunken)

### Mat-connecting gel

Made from medical-grade conductive gel, with no need for time-consuming eyelet setting

## EPG-01 / EPG-02



**EPG-01** EDP No. 621481  
**EPG-02** EDP No. 621482

#### Common Specifications

Model No.	EPG-01	EPG-02
Size	50x50mm	
Conductivity	104Ω or less	
Operating environment temperature and humidity	5°C to 30°C / 60% RH or less	
Material	Conductive polyurethane, SUS, carbon film, PET	Conductive polyurethane, carbon film, PET

### ESD Mat Grounding Kit

From the floor or mat to the working bench, provides an optimal EPA environment

## EPS-GK



### RoHS

▶ Grounding kit for a conductive rubber mat. EDP No. 621484

#### Specifications

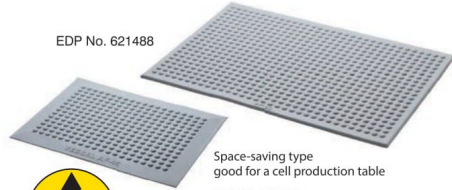
Model No.	EPS-GK	
Ground cord	Wires : Stranded wire 0.5mm2(AWG20 Length 2.4m)	Snap dia. : 10mm
Weight (g)	45g	
Resistance (Ω)	1M (built in the ground cord)	
Contents	Ground cord with snap Snap hardware/Screw, Single-use punch, Instruction manual	

## Conductive Anti-Fatigue Mat

Alleviate Fatigue caused by standing for a long time

# AF-90/ AF-45

EDP No. 621488



Space-saving type good for a cell production table  
EDP No.621489



## RoHS

Applications	Conductivity	Material	Directive
Cell production, line work, assembly process	$R \leq 1.0 \times 10^9 \Omega$	NBR	EPA RoHS

- ▶ Conductive mat for fatigue alleviation from long standing work.
- ▶ Non-slip mat with embossments on the surface.
- ▶ Air pockets on the reverse side for spreading the body weight to alleviate fatigue.
- ▶ Light gray mat for easy detection of dirt, which may cause the conductive failure.
- ▶ 900mm x 600mm convenient size for the working stand for cell production.
- ▶ Space-saving 600x477mm good for one person. (AF-45)
- ▶ Inclined marginal area prevents workers from stumbling or falling. (AF-45)



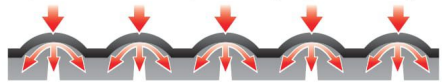
**Fall Prevention**  
The inclined marginal area prevents workers from stumbling or falling. (AF-45 only)

AF-45 sectional view

Comfortable and which make you feel like jumping up



Air pocket on the reverse side spread the body weight to alleviate fatigue.



### Specifications

Model No.	AF-90	AF-45
Size	W900mm x L600mm x t15mm	W600mm x L477mm x t15mm
Color	Gray	Gray
Conductivity	$R \leq 1.0 \times 10^9 \Omega$	$R \leq 1.0 \times 10^9 \Omega$
Weight	4.2kg	2.0kg
Material	NBR	NBR

※ Grounding wire is not attached.

## Surface Resistance Checker

Easy measurement of surface resistance on a floor or mat

# SRC-01



EDP No. 621604

### Measurement

4 types

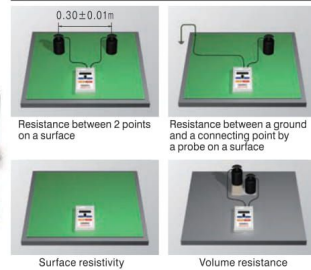
- One 9V battery
- With probes
- With a carrying case
- Auto-off

- ▶ All necessary for 4 types of measurement in one package.
- ▶ This can also measure temperature and humidity. (The values are for reference)
- ▶ Applied voltage selector switch enables to measure either the range from  $1.0 \times 10^3 \sim 10^5 \Omega$  or from  $1.0 \times 10^6 \sim 10^{12} \Omega$ .

### 4 types of measurement

#### With a carrying case

Useful to carry all necessary items for measurement



### Specifications

Conformity standards	IEC61340-4-1, JIS-C2170
Measurement range	$10^3 \sim 10^{12} \Omega$ (Ω/sq)
Applied voltage	10V ( $R < 1.0 \times 10^6 \Omega$ or Ω/sq), 100V ( $R \geq 1.0 \times 10^6 \Omega$ or Ω/sq)
Display	Triple-digit LCD (□□□ e□□) ex.: 3.14 e10 → 3.14 × 10 <sup>10</sup>
Power source	9 V battery x 1 (Type: 006P, recommended alkaline battery)
L x W x Dmm	L190 x W101.5 x D54.7mm
Weight	Body: around 340 g (including a battery), gross weight: around 62 kg (including the carrying case)
Operating temperature and humidity	0°C ~ 37°C 10% ~ 90%RH
Material	Body case: ABS resin

### Accessories

- Probe (outer diameter: about ϕ6 mm, about 2.3 kg): 2
- Curled cord for a body earth (banana plugs at both ends): 1
- Curled cord for measurement for the point-to-point resistance and resistance to ground (banana plug/mono plug): 2
- Crococlip clip: 1, Large crocodile clip: 1, Stainless plate (142mm x 67mm): 1
- Carrying case: 1, 9 V battery (006P type: manganese dry battery): 1
- Manuals

※ An inspection report and a calibration certificate available as option. Please consult us for more detail.

## Electrostatic Field Meter

Visualizing invisible static electricity  
Peak hold supports long-time measurements

# Eye-02



EDP No. 621603

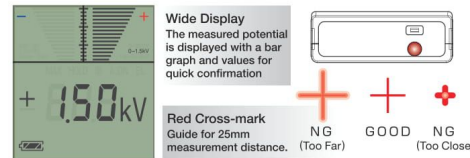
Measurement	Measurement	LCD display
Charge potential	Ion balance	Bar graph+3 digits

- One 9V battery
- Ion balance measurement plate
- Measuring distance 25mm
- Auto power off
- Out of measuring range alarm
- Peak hold function
- Battery level display
- Anti-Drop strap

- ▶ Easily establish measurement distance with cross mark LED.
- ▶ Color LCD clearly shows the polarity.
- ▶ Mountable onto a tripod.



**Charged Potential Measurement**  
Check anywhere with this handy tester.



**Wide Display**  
The measured potential is displayed with a bar graph and values for quick confirmation

**Red Cross-mark**  
Guide for 25mm measurement distance.

NG (Too Far) GOOD NG (Too Close)

### Specifications

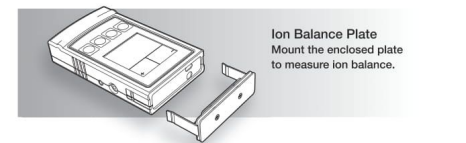
Model No.	EYE-02
Charge potential measurement	$\pm 0$ to $\pm 1.50$ kV (LO range) / $\pm 1.0$ to $\pm 20.0$ kV (HI range)
Ion balance measurement	0 to $\pm 200$ V
Response time	within 1sec
Accuracy	$\pm 10\%$
Power	One 9V battery (006P)
Charged potential measurement distance	25mm±0.5mm
LxWxDmm	L123xW70xD25mm
Weight	170g / Ion balance measurement plate 30g
Operating environment temperature and humidity	10°C to 50°C / 80% RH or less
Accessories	Ion balance measurement plate, Grounding cord, alligator clip, Soft case

◆ Complies with ISO 9000 traceability standards.

Calibration tables and certificates can be issued for this instrument. (Option)



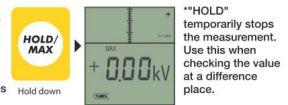
**Ion Balance Measurement**  
Can check the performance of the ionizer in a cell production table or the one installed in an in-line equipment.



**Ion Balance Plate**  
Mount the enclosed plate to measure ion balance.

### Maximum (peak) value display

MAX

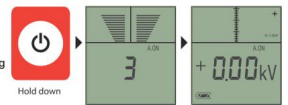


HOLD

temporarily stops the measurement. Use this when checking the value at a difference place.

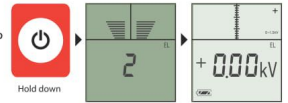
### Automatic power OFF / continuous measurement

A.ON



### Backlight

EL



illuminate the display to see clearly even in a dark place. Hold down the power button to switch the modes (EL/A.ON).



Why is VESSEL's Clean Walker our customer's top choice?

# Clean Walker



**CW-900B**  
5mm thick  
Capture dust off shoe soles



**CW-900EZ**  
3mm thick  
Strong and tear resistant even under heavy objects

1

**Non-peeling type adhesive mat**

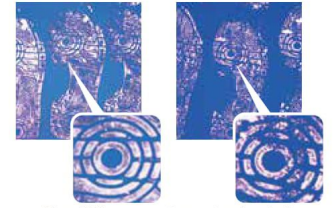
There's no need sacrifice cleanliness by limiting the number of sheets peeled to save costs.



2

**Reliable dust removal**

Self-adhesiveness of polyurethane resin is the key. The thick mat flexibly contacts against shoe treads and carefully catches dust between them.



Clean Walker    Conventional peel-off mats

3

**Wash & dry to restore adhesiveness**

Wet the surface with water, alcohol or diluted household detergent, and the dirt will lift right up. Wash and dry the mat well to restore the original adhesiveness.



**Clean Walker**

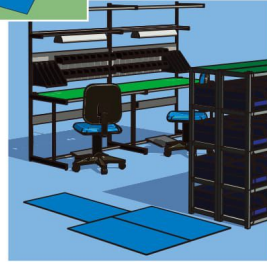
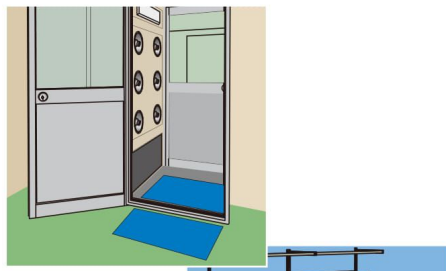
High elasticity.  
Outstanding dust collection performance  
**CW-900B**



EDP No. 621485

Applications	Material	Washable	Directive
For indoor use (especially in front of clean rooms)	Polyurethane	✓	EPA RoHS

- ▶ The 5mm high elasticity mat.
- ▶ Powerfully catches dust from shoe soles.
- ▶ Collected dust can be easily wiped off with a wet cloth.



**Specifications**

Model No.	CW-900B
Color	Blue
Size	W900mm×L500mm×5mm
Conductivity	Insulator
Weight	2.4kg
Material	Polyurethane

**Clean Walker Easy**

Easy maintenance.  
Just 3mm thickness  
**CW-900EZ**



EDP No. 621486

Applications	Material	Washable	Directive
For indoor use (especially in front of clean rooms)	Polyurethane, non-woven textiles	✓	EPA RoHS

- ▶ Non-woven textiles are sandwiched with a 3mm thickness to attain a high strength
- ▶ Resist tears even under the pressure of trolleys.
- ▶ Take the mat out of the floor and wash it with water. Hang from hook holes to dry off.



**Specifications**

Model No.	CW-900EZ
Color	Light purple
Size	W450mm×L500mm×3mm
Conductivity	Insulator
Weight	1.6 kg (2 pieces)
Material	Polyurethane, non-woven textiles

### High Power Ionizing Nozzle

Good for Highly Charged Products

Nozzle type ionizer suitable for installation in an automated production line

## HPN-1



EDP No. 623043



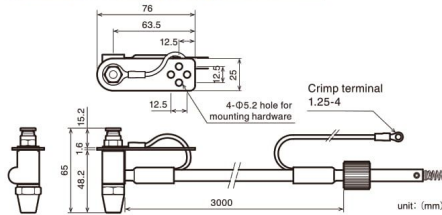
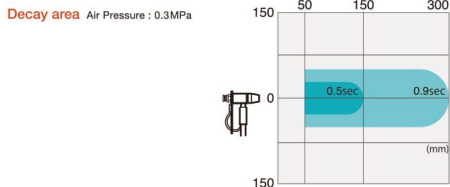
<b>High Voltage Transformer</b> Piezoelectric high-frequency AC corona discharge (Option)	<b>Ion balance</b> Adjustable on the GP-1	<b>Decay time</b> 0.5 sec or less
Power supply 3.5kVAC	Air Pressure max 0.7MPa	GP-1 Option
GP-1 Option	AC adapter Option	

- ▶ Titanium discharge needle (discharge electrode). Less-wearing titanium provides the long-term stable ionizing performance.
- ▶ The high voltage cable is shielded so that it is less affected by the external electrical noises.
- ▶ High speed ionizing performance with compressed air.
- ▶ Ultra-compact and light-weight model suitable for installation in equipment.

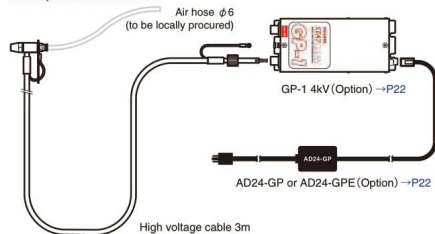
#### Specifications

Model No.	HPN-1
Applied High Voltage	High Voltage Power Supply Unit GP-1 4kV
Ionizing Method	AC corona discharge (Structure: Direct-coupled *1)
Applied Voltage / Frequency	3.5kVAC / 50/60Hz *2
Operating Fluid / Input Pressure	Clean air/max. input pressure of 0.7MPa *3
Operating Temp./Humidity	0~45°C/10~90%RH (without freezing or dew condensation)
Storage Temp./Humidity	-30~50°C/10~90%RH (without freezing or dew condensation)
Installation Distance	Approx. 50~300mm (between a charged product and a discharge tip of the ionizer)
Decay Time	Approx. 0.5 sec. (Input air pressure: 0.3MPa, Distance: 150mm)
Ion Balance	Adjustable on GP-1 4kV *4
Installation Place	Indoor
Protective Circuit	High Voltage Power Supply GP-1 4kV has high voltage anomaly detection function and automatic stop circuit.
High Voltage Cable	3m (standard), silicon shielded cable *5 (High voltage connector CON-4)
Air Connection	One touch joint, outer dia. 6mm tube applied
Weight	Approx. 350g, including high pressure cable (3m), standard mounting hardware, and high pressure connector.
Noise	Approx. 95dBA (Air pressure: 0.3MPa, Distance: 1m)
Air flow	Approx. 100L/min (Air pressure: 0.3MPa)
Accessories	High voltage warning sticker, Instruction manual

\*1: Do not touch the electrode when applying current; otherwise it may bring electric shocks.  
\*2: Use the high voltage power supply unit GP-1 4kV. \*3: DO NOT SUPPLY AIR WITH MORE THAN THE DESIGNATED PRESSURE, BECAUSE OF SERIOUS RISK OF DAMAGE OR BREAKAGE ON THE BODY AND OTHER PARTS. \*4: Charged plate monitor or an equivalent is required for ion balance adjustment. \*5: A custom-made cable up to 5m is available on request. However, when connecting 2 sets of ionizer to the GP-1 4kV, use the 3m cable with either of them.



#### Example of connection



### High Power Ionizing Flexible Nozzle

Good for Highly Charged Products

Pin-point static electricity removal even in a place difficult for installation

## HPF-1



EDP No. 623048



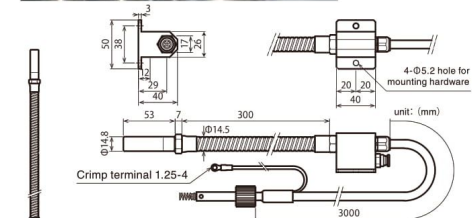
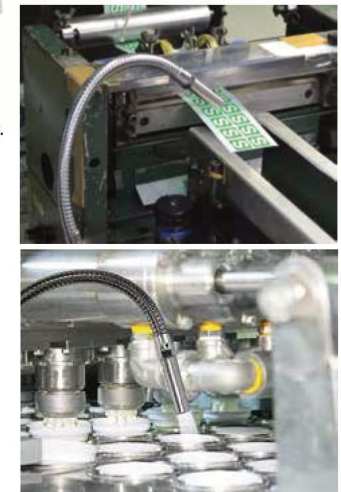
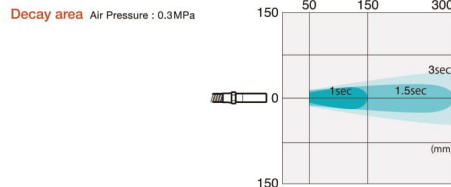
<b>High Voltage Transformer</b> Piezoelectric high-frequency AC corona discharge (Option)	<b>Ion balance</b> Adjustable on the GP-1	<b>Decay time</b> 0.5 sec or less
Power supply 3.5kVAC	Air Pressure max 0.4MPa	GP-1 Option
GP-1 Option	AC adapter Option	

- ▶ Titanium discharge needle (discharge electrode). Less-wearing titanium provides the long-term stable ionizing performance.
- ▶ The high voltage cable is shielded so that it is less affected by the external electrical noises.
- ▶ Free angle adjustment and pin-point ionizing from a distant place. 300mm flexible tube enables to adjust the ion emission angle freely. It is possible to perform the pin-point neutralization on a charged product.  
\* Fix the tip of the HPF-1 with a hardware or alike, so that it does not slip, when using it by bending approximately 30° or more. (Minimum bending radius: inside dimension radius 60mm)
- ▶ High speed ionizing performance with compressed air.
- ▶ Ultra-compact and light-weight model suitable for installation in equipment.

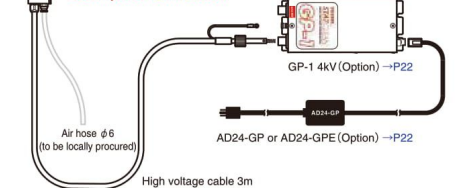
#### Specifications

Model No.	HPF-1
Applied High Voltage	High Voltage Power Supply Unit GP-1 4kV
Ionizing Method	AC corona discharge (Structure: Direct-coupled *1)
Applied Voltage / Frequency	3.5kVAC / 50/60Hz *2
Operating Fluid / Input Pressure	Clean air/max. input pressure of 0.4MPa *3
Operating Temp./Humidity	0~45°C/10~90%RH (without freezing or dew condensation)
Installation Distance	Approx. 50~300mm (between a charged product and a discharge tip of the ionizer)
Decay Time	Approx. 1 sec. (Input air pressure: 0.3MPa, Distance: 150mm)
Ion Balance	Adjustable on GP-1 4kV *4
Installation Place	Indoor
Protective Circuit	High Voltage Power Supply GP-1 4kV has high voltage anomaly detection function and automatic stop circuit.
High Voltage Cable	3m (standard), silicon shielded cable *5 (High voltage connector CON-4)
Air Connection	One touch joint, outer dia. 6mm tube applied
Weight	Approx. 690g, including high pressure cable (3m), standard mounting hardware, and high pressure connector.
Noise	Approx. 86 dBA (Air pressure: 0.3MPa, Distance: 1m)
Air flow	Approx. 100L/min (Air pressure: 0.3MPa)
Accessories	High voltage warning sticker, Instruction manual

\*1: Do not touch the electrode when applying current; otherwise it may bring electric shocks.  
\*2: Use the high voltage power supply unit GP-1 4kV. \*3: DO NOT SUPPLY AIR WITH MORE THAN THE DESIGNATED PRESSURE, BECAUSE OF SERIOUS RISK OF DAMAGE OR BREAKAGE ON THE BODY AND OTHER PARTS. \*4: Charged plate monitor or an equivalent is required for ion balance adjustment. \*5: A custom-made cable up to 5m is available on request. However, when connecting 2 sets of ionizer to the GP-1 4kV, use the 3m cable with either of them.



#### Example of connection





**High Power Ionizing Gun**

Good for Highly Charged Products  
For neutralization of charged products or dust removal before painting

**HPG-1**



**HPG-1** EDP No. 623046  
(High voltage cable 3m)

**HPG-1-4.5M** EDP No. 623050  
(High voltage cable 4.5m)

**HPG-1S-E** EDP No. 623047  
A set of high voltage power supply unit + AC adapter (High voltage cable 3m)

<b>High Voltage Transformer</b> Piezoelectric high-frequency AC corona discharge (Option)	<b>Ion balance</b> Adjustable on the GP-1	<b>Decay time</b> 0.5 sec or less
Power supply 3.5kVAC	Air Pressure max.0.7MPa	GP-1 Option (Except HPG-1S)
AC adapter Option (Except HPG-1S)		

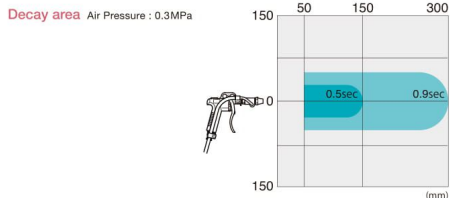
- ▶ Titanium discharge needle (discharge electrode). Less-wearing titanium provides the long-term stable ionizing performance.
- ▶ The high voltage cable is shielded so that it is less affected by the external electrical noises.
- ▶ Robust and easy handling ionizing gun. The body of the ionizing gun is made by robust aluminum die-casting. Easy handling large trigger for superior operability. Compact model for elimination of both static electricity and dust.



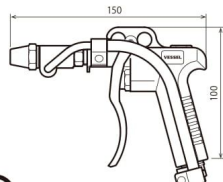
**Specifications**

Model No.	HPG-1
Applied High Voltage	High Voltage Power Supply Unit GP-1 4kV
Ionizing Method	AC corona discharge (Structure: Direct-coupled *1)
Applied Voltage /Frequency	3.5kVAC / 50/60Hz *2
Operating Fluid / Input Pressure	Clean air/max. input pressure of 0.7MPa *3
Operating Temp./Humidity	0~45°C/10~90%RH (without freezing or dew condensation)
Storage Temp./Humidity	-30~50°C/10~90%RH (without freezing or dew condensation)
Installation Distance	Approx.50~300mm (between a charged product and a discharge tip of the ionizer)
Decay Time	Approx. 0.5 sec. (Input air pressure: 0.3MPa, Distance: 150mm)
Ion Balance	Adjustable on GP-1 4kV *4
Installation Place	Indoor
Protective Circuit	High Voltage Power Supply GP-1 4kV has high voltage anomaly detection function and automatic stop circuit.
High Voltage Cable	3m (standard), silicon shielded cable *5 (High voltage connector CON-4)
Air Connection	One touch joint, outer dia.6mm tube applied
Weight	Approx. 550g,including high voltage cable (3m) and high voltage connector.
Noise	Approx. 95dBA (Air pressure:0.3MPa, Distance: 1m)
Air flow	Approx. 100L/min (Air pressure:0.3MPa)
Accessories	High voltage warning sticker, Air consent, Instruction manual

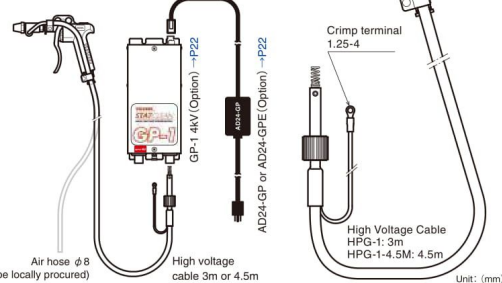
\*1: Do not touch the electrode when applying current; otherwise it may bring electric shocks.  
\*2: Use the high voltage power supply unit GP-1 4kV. \*3: DO NOT SUPPLY AIR WITH MORE THAN THE DESIGNATED PRESSURE, BECAUSE OF SERIOUS RISK OF DAMAGE OR BREAKAGE ON THE BODY AND OTHER PARTS. \*4: Charged plate monitor or an equivalent is required for ion balance adjustment. \*5: A custom-made cable up to 9m is available on request (for a single piece).



High Power Series



**Example of connection**



**High Power Ionizing Bar**

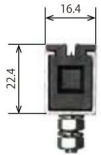
Good for Highly Charged Products  
Super slim model, designed for installation in a cramped space

**HPB-series**



High Power Series

- HPB-300** EDP No. 623316
- HPB-600** EDP No. 623336
- HPB-810** EDP No. 623350
- HPB-1005** EDP No. 623363
- HPB-1200** EDP No. 623376
- HPB-1500** EDP No. 623396
- HPB-1800** EDP No. 623416

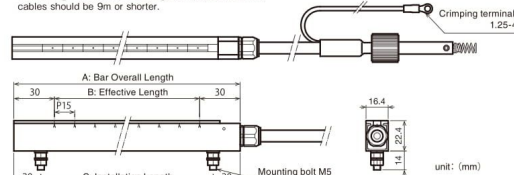


- ▶ Titanium discharge needle (discharge electrode). Less-wearing titanium provides the long-term stable ionizing performance. The needles are allocated every 15mm on the bar, allowing to generate many ions effectively. Optimum for a high speed film transfer application.
- ▶ The high voltage cable is shielded so that it is less affected by the external electrical noises.
- ▶ Super slim ionizing bar: 16.4x22.4mm (sectional dimensions). Suitable for a cramped space.
- ▶ Option: Air Assist Bar - Custom-made size is available according to the length of the HPB used together. Compressed air enables to eliminate dust and static electricity more quickly and in the distance.

**Specifications**

Model No.	HPB-300/600/810/1005/1200/1500/1800
Applied High Voltage	High Voltage Power Supply Unit GP-1 4kV
Ionizing Method	AC corona discharge (Structure: Direct-coupled *1)
Applied Voltage /Frequency	3.5 kVAC / 50/60 Hz *2
Operating Temp./Humidity	0~45°C/10~85%RH (without freezing or dew condensation)
Storage Temp./Humidity	0~50°C/10~85%RH (without freezing or dew condensation)
Installation Distance	Approx.50~100mm (between a charged product and a discharge tip of the ionizer)
Decay Time	Approx. 2 secs. (No compressed air, Distance: 100mm)
Ion Balance	Adjustable on GP-1 4kV *4
Installation Place	Indoor
Protective Circuit	High Voltage Power Supply GP-1 4kV has high voltage anomaly detection function and automatic stop circuit.
High Voltage Cable	3m (standard), silicon shielded cable *5 (High voltage connector CON-4)
Weight	Approx. 540g/m, not including high voltage cable
Accessories	Instruction manual, High voltage cable (already mounted), Mounting bolt M5 (already mounted)

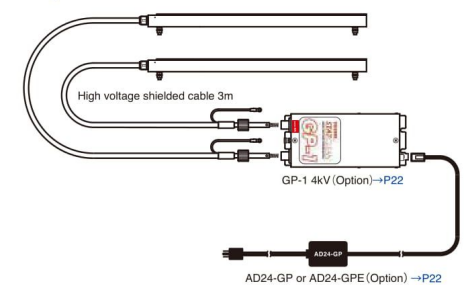
\*1: Do not touch the electrode when applying current; otherwise it may bring electric shocks.  
\*2: Use the high voltage power supply unit GP-1 4kV. \*3: DO NOT SUPPLY AIR WITH MORE THAN THE DESIGNATED PRESSURE, BECAUSE OF SERIOUS RISK OF DAMAGE OR BREAKAGE ON THE BODY AND OTHER PARTS. \*4: Charged plate monitor or an equivalent is required for ion balance adjustment. \*5: A custom-made cable is available on request. When connecting 2 HPB, the total length of the bars and the cables should be 9m or shorter.



**Dimensions/No. of Needle Electrode**

型番	A (mm)	B (mm)	C (mm)	No. of Discharge Needle	Weight (kg)
<b>HPB-300</b>	300	240	260	17	0.16
<b>HPB-600</b>	600	540	560	37	0.32
<b>HPB-810</b>	810	750	770	51	0.44
<b>HPB-1005</b>	1005	945	965	64	0.54
<b>HPB-1200</b>	1200	1140	1160	77	0.65
<b>HPB-1500</b>	1500	1440	1460	97	0.81
<b>HPB-1800</b>	1800	1740	1760	117	0.97

**Example of connection**



## Options and replacement parts

Adapter specification   

### Needle Electrode Unit / Front Cover (Subject to change without prior notice)

 <b>F-6H</b> EDP No. 806094 Use with: F6RCL-E, F6RST-E	 <b>F-120RCH</b> EDP No. 806127 Use with: F120R-E	 <b>F-120SCH</b> EDP No. 806128 Use with: F120S-E	 <b>L-90CH</b> EDP No. 806132 Use with: L90-E
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### Filter

 <b>SDJ-08F</b> EDP No. 806039 Use with: F6RCL-E, F6RST-E	 <b>F-120FS</b> EDP No. 806123 Use with: F120R-E, F120S-E	 <b>L-90-F</b> EDP No. 806133 Use with: L90-E, F120R-E, F120S-E	 <b>L-90FS</b> EDP No. 806134 Use with: L90-E
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### AC Adapter

 <b>AD24-ITF6</b> ● EDP No. 806095 <b>AD24-ITF6E</b> ● EDP No. 806138 Use with: F6RCL-E, F6RST-E I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A	 <b>AD24-IT</b> ● EDP No. 806051 <b>AD24-ITE</b> ● EDP No. 806135 Use with: F120R-E, F120S-E I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A	 <b>AD-24-IT37</b> ● EDP No. 806131 <b>AD24-IT37E</b> ● EDP No. 806139 Use with: L90-E I/P : 100-240VAC 1.5A O/P : 24VDC 3.75A
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### For Gun / Nozzle Type

 <b>G-7SN</b> EDP No. 806057 Use with: G7R-E	 <b>G-7THN</b> EDP No. 806063 Use with: G7R-L, BBZ-E	 <b>N-2TN</b> EDP No. 806085 Use with: G7R-E, G2-E N-1*, N-3 *When installed, there is a gap between the nozzle and the body due to the difference in the thread length.	 <b>N-2C6B</b> EDP No. 821706 Use with: N-3 [Should be used together with N-2TN]
 <b>N-2WN</b> EDP No. 806087 Use with: G7R-E, G2-E BBZ-E, N-1*, N-3 *When installed, there is a gap between the nozzle and the body due to the difference in the thread length.	 <b>BB-ZSN</b> EDP No. 621708 Use with: G7R-E, G2-E BBZ-E, N-1*, N-3, G-9 *When installed, there is a gap between the nozzle and the body due to the difference in the thread length.	 <b>G-9WN</b> EDP No. 806151 Use with: G-9*	 <b>N-15N</b> EDP No. 806120 Use with: N-1, N-3, G2-E
 <b>G-7B</b> EDP No. 806059 Use with: G7R-E	 <b>G-7SB</b> EDP No. 806062 Use with: G7R-E	 <b>G-9UTP</b> EDP No. 806148 Use with: G-9	 <b>G-9MC</b> EDP No. 806147 Use with: G-9
 <b>G-7DR</b> EDP No. 806061 Use with: G7R-E, BBZ-E, N-1, N-3, G2-E, G-9	 <b>G-7SC</b> EDP No. 621373 Use with: G7R-E, BBZ-E, N-1, N-3, G2-E	 <b>G-7F</b> EDP No. 621702 Use with: G7R-E, BBZ-E Filter eliminates at least 99% of particles with a diameter of 0.01 μm or greater. Install a 1 μm to 10 μm air filter and mist separator on your air compressor before using this item.	 <b>GN-H</b> EDP No. 806124 Use with: G7R-E, BBZ-E, N-1, N-3, G2-E, G-9

 <b>AD24-ITC</b> (2.5m) ● EDP No. 806060 <b>AD24-ITC-E</b> (2.5m) ● EDP No. 806067 Use with: G7R-E, G2-E I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A	 <b>AD24-ITB</b> ● EDP No. 806075 <b>AD24-ITB-E</b> ● EDP No. 806076 Use with: BBZ-E I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A	 <b>AD24-ITCS</b> (1.5m) ● EDP No. 806083 <b>AD24-ITCS-E</b> (1.5m) ● EDP No. 806084 Use with: G2-E I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A	 <b>G-7EC5</b> EDP No. 621703 Use with: G7R-E [Should be used together with AD24-ITC or AD24-ITC-E]
			 <b>G-7EC10</b> EDP No. 621704 Relay cables are used to connect the G7R-E to its dedicated power supply transformer (AD24-ITC-E).


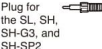

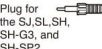
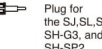

Adapter specification   

### For C-series

 <b>C-00HR8</b> EDP No. 806150	 <b>CT-5</b> EDP No. 621709 When using AC adapter, Power Supply Cable [CT-5] is necessary.	 <b>RMC-01</b> EDP No. 806104
 <b>AD24-IT</b> ● EDP No. 806051 <b>AD24-ITE</b> ● EDP No. 806135 I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A Operation : One bar	 <b>AD-24-IT19</b> ● EDP No. 806081 <b>AD24-IT19E</b> ● EDP No. 806137 I/P : 100-240VAC 1.2A O/P : 24VDC 1.9A Operation : 2 or 3 bars [Please consult us for more detail]	

### For SJ-series\*

\* Note  
SJ-\*\* is available while stocks last.  
The model code will be changed to SL-\*\* afterward.

 <b>SH-SP2</b> EDP No. 621552 [Connecting cable is required.]	 <b>GP-EC2.5</b> EDP No. 623053 Plug for the SL, SH, SH-G3, and SH-SP2	 <b>GP-EC5</b> EDP No. 623054 Plug for the GP-1	 <b>SL-EC2.5</b> EDP No. 621884 Plug for the SJ, SL, SH, SH-G3, and SH-SP2	 <b>SJ-EC5*</b> EDP No. 623052 Plug for the SJ, SL, SH, SH-G3, and SH-SP2	 <b>SJ-00HR*</b> EDP No. 623055
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### For Ion Parts Cleaner

 <b>IPC-A4F</b> EDP No. 806092 Use with: IPC-A4	 <b>IPC-A3F</b> EDP No. 806126 Use with: IPC-A3	 <b>IPC-A4G</b> EDP No. 806091 Use with: IPC-A4, IPC-A3 [two sheets required per unit]	 <b>GN-H</b> EDP No. 806122 Use with: IPC-A4, IPC-A3
 <b>AD-24-IT19</b> ● EDP No. 621703 <b>AD24-IT19E</b> ● EDP No. 806137 Use with: IPC-A4, IPC-A3 I/P : 100-240VAC 1.2A O/P : DC24V 1.9A	 <b>IPC-250CRPF</b> EDP No. 623203 Use with: IPC-250CR	 <b>IPC-250CRHF</b> EDP No. 623202 Use with: IPC-250CR	 <b>SDJ-05RH</b> EDP No. 806044 Use with: IPC-250CR
		 <b>AD24-150-PD4</b> ● EDP No. 806146 I/P : 100-240VAC, 50/60 Hz O/P : 24V DC 5A Use with: IPC-250CR	

### For CF300-E Contact us for replacement of the needle electrodes.

 <b>CF-300B</b> EDP No. 806140	 <b>CF-300F</b> EDP No. 806141	 <b>AD24-IT</b> ● EDP No. 806051 <b>AD24-ITE</b> ● EDP No. 806135 I/P : 100-240VAC 0.4A O/P : 24VDC 0.75A
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