Ion Box

Integrated the static neutralization, dust removal and dust collection processes into one box!

3 functions in 1 unit! All in one

- Static neutralization
- Dust removal
- Dust collection

Adopted a dedicated ionizer with improved static neutralization efficiency.

Blow nozzle with improved dust removal efficiency

Pneumatic dust collector enables quick dust collection response.

A4 size [ZVB20]
210 x 297 mm (Dimensions)
202 x 212 mm (Static neutralization space)

A3 size [ZVB40]
400 x 384 mm (Dimensions)
392 x 298 mm (Static neutralization space)

Supports workpieces of various sizes.

Series ZVB

Electronic components
Smartphone
Lamp cover
Cosmetic case
Parts for home appliances
Improved the static neutralization and dust removal efficiency with a separate ion blow and air blow structure!

**Ionizer**

Offset voltage: ±10 v

* Static neutralization distance: 100 mm

Discharge time: 0.3 s

* 1000 V → 100 V

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1. **Minimized attenuation of ion**
   - Separate ion blow/air blow structure. Reduced the attenuation of the ion by an air blow.

2. **Adopted a nozzle that neutralizes static electricity in a wide range.**
   - Adopted a diffusion type nozzle for the ionizer, so that ionized air reaches all corners of the box. Supports an extensive range of large workpieces.

3. **Easy maintenance of emitter**
   - Since the emitter can be removed easily, replacement and cleaning can also be performed easily.

4. **Secured a large static neutralization space.**
   - Reduced the dust collector space using a pneumatic dust collector (vacuum flow), to secure the static neutralization space to the utmost.

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Static neutralization space (Width x Depth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZVB20 A4</td>
<td></td>
<td>202 x 212</td>
</tr>
<tr>
<td>ZVB40 A3</td>
<td></td>
<td>392 x 298</td>
</tr>
</tbody>
</table>

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5. **Nozzle dedicated for the blow without impairing the generation efficiency of the ion**
   - Equipped with an additional air blow nozzle only for dust removal. Besides the ionized air, the angle and flow rate of the air blow can be adjusted (Optional). The pressure can also be adjusted with an additional air blow pressure regulator installed on the back side of the body.

6. **Adopted a maintenance-free pneumatic dust collector.**
   - Since a built-in pneumatic dust collector blows the sucked in dust to the exhaust port by the power of compressed air, dust will not remain inside the dust collector. The maintenance-free dust collector without a drive unit also reduces the risks of malfunction.

7. **Quick dust collection response**
   - The pneumatic dust collector starts collecting dust immediately after the built-in solenoid valve is opened. Reduces the cycle time with a quick response, from the input of an electrical signal to the start of suction.

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Photoelectric sensor reflecting plate is installed on the upper surface in the box. Sensor detects a workpiece and starts the operation.

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**Static neutralization**

**Dust removal**

**Dust collection**

3 functions in 1 unit! All in one
Ion Box
Series ZVB

How to Order

ZVB 20 - B S A -

1 Size
2 Additional air blow
3 Photoelectric sensor
4 AC adapter
5 Option

Table:

<table>
<thead>
<tr>
<th>Component</th>
<th>Item</th>
<th>Model</th>
<th>ZVB20</th>
<th>ZVB40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ionizer</td>
<td>Type</td>
<td>Nozzle type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of mounted units</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ion generation method</td>
<td>Corona discharge type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Method of applying voltage</td>
<td>High frequency AC type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discharge time</td>
<td>0.3 s (1000 V → 100 V)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Offset voltage</td>
<td>Within ±10 V (Static neutralization distance: 100 mm from the nozzle)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dust collector</td>
<td>Type</td>
<td>Pneumatic type, Vacuum flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of mounted units</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supply pressure range</td>
<td>0.1 to 0.7 MPa</td>
<td>820 to 3160 L/min (ANR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exhaust flow rate</td>
<td>410 to 1580 L/min (ANR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body</td>
<td>Fluid</td>
<td>Air (Dry air)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating pressure range</td>
<td>0.2 to 0.8 MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power supply voltage</td>
<td>85 to 264 VAC 50/60 Hz (when using the exclusive AC adaptor)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating time setting</td>
<td>Continuous/Timer [2/5/10 s]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Additional air blow setting</td>
<td>Continuous blow/Pulse blow [50/100 ms intervals]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating temperature range</td>
<td>0 to 55°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air consumption</td>
<td>420 L/min (ANR)</td>
<td>800 L/min (ANR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>5.1 kg</td>
<td>9.9 kg</td>
<td></td>
</tr>
</tbody>
</table>

Options (∗ The number of sets provided when selected in ① differs by the size.)

1 3 m exhaust duct hose
Model: ZVB-D3A
- ZVB20: 1 set
- ZVB40: 2 sets

2 Dust collecting bag
Model: ZVB-P1A
- ZVB20: 1 set
- ZVB40: 2 sets

3 AC adapter
Model: ZVB-AC1

4 Emitter
Model: IZN10-NT-X325

Specifications

Note 1) No freezing
Note 2) When supply pressure to the dust collector is set to 0.3 MPa (ZVB20)/0.4 MPa (ZVB40) and additional air blow supply pressure to 0.2 MPa. Based on SMC’s measuring conditions.
Note 3) Overall weight excluding optional parts
## Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ionizer</td>
<td>ZVB20: 1 unit, ZVB40: 2 units, With diffusion nozzle</td>
</tr>
<tr>
<td>2</td>
<td>Additional air blow nozzle</td>
<td>ZVB20: 2 pcs., ZVB40: 4 pcs., Nozzle diameter ø1.0</td>
</tr>
<tr>
<td>3</td>
<td>Regulator for adjusting supply pressure to the dust collector</td>
<td>With pressure gauge</td>
</tr>
<tr>
<td>4</td>
<td>Regulator for adjusting supply pressure for additional air blow</td>
<td>With pressure gauge</td>
</tr>
<tr>
<td>5</td>
<td>Top cover assembly</td>
<td>Static electricity restriction grade (PET)</td>
</tr>
<tr>
<td>6</td>
<td>Side cover</td>
<td>Static electricity restriction grade (PET)</td>
</tr>
<tr>
<td>7</td>
<td>Photoelectric sensor</td>
<td>ZVB20: 1 pc., ZVB40: 2 pcs., Reflection type (built into the body)</td>
</tr>
<tr>
<td>8</td>
<td>Mesh</td>
<td>Detachable</td>
</tr>
<tr>
<td>9</td>
<td>Power supply switch</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Operation time set switch</td>
<td>Continuous/2 s/5 s/10 s</td>
</tr>
<tr>
<td>11</td>
<td>Additional air blow pulse operation time set switch</td>
<td>Continuous (no pulse)/50 ms/100 ms</td>
</tr>
<tr>
<td>12</td>
<td>Cover for valve maintenance</td>
<td>Used when replacing the built-in valve</td>
</tr>
<tr>
<td>13</td>
<td>Terminal block</td>
<td>Signal output/External input/COM+/COM-</td>
</tr>
<tr>
<td>14</td>
<td>AC adapter (DC plug) entry</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>ON/OFF switch for dust collector</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Exhaust port of the dust collector</td>
<td>ZVB20: 1 port, ZVB40: 2 ports, Exhaust dust hose connection port (OD: ø32)</td>
</tr>
<tr>
<td>17</td>
<td>Compressed air supply port</td>
<td>ZVB20: ø8, ZVB40: ø10</td>
</tr>
<tr>
<td>18</td>
<td>Grounding screw</td>
<td></td>
</tr>
</tbody>
</table>

*Although the components are common to the ZVB20 and ZVB40, the number of attached parts differs. (Refer to the note column.)*

## Construction

(Photograph shows the ZVB20.)
Operation Flow

The following shows the operating sequence during continuous operation and timer operation with the photoelectric sensor.

1 Main unit operation
The photoelectric sensor detects the workpiece.

2 Start of dust collection
The dust collector (vacuum flow) is activated, and starts the dust collection.

3 Start of static neutralization and dust removal
The dust collector (vacuum flow) is activated, and starts the ionizer (static neutralization) and the additional air blow (dust removal) after 0.5 seconds.
* The additional air blow can be set to continuous or pulse (50/100 ms intervals).

4 Stop of static neutralization and dust removal
The operation of the ionizer (static neutralization) and the additional air blow (dust removal) stops by the progression of the set time (2/5/10 seconds), or the OFF detection of the photoelectric sensor after a workpiece is removed.
(However, the dust collector continues to operate for 0.5 seconds.)

5 Stop of dust collection
Stops the operation of the dust collector (vacuum flow).

6 Remove the workpiece.
## Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D' Note 1)</th>
<th>E</th>
<th>F</th>
<th>F' Note 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZVB20</td>
<td>211</td>
<td>202</td>
<td>212</td>
<td>310</td>
<td>351</td>
<td>210</td>
<td>297</td>
<td>341</td>
</tr>
<tr>
<td>ZVB40</td>
<td>248</td>
<td>392</td>
<td>298</td>
<td>349</td>
<td>390</td>
<td>400</td>
<td>384</td>
<td>428</td>
</tr>
</tbody>
</table>

Note 1) Dimension D’ is the overall height including the knob of the regulator.
Note 2) Dimension F’ is the overall depth including the switch lever on the front and the exhaust port on the back.

Refer to the operation manual for detailed dimensions.


### Installation/Mounting

**⚠️ Warning**
1. Avoid using in a place where noise (electromagnetic wave and surge) is generated.
   It may cause failure or damage to the product. Take measures to prevent noise at source and avoid power and signal lines from coming into close contact.
2. Do not allow foreign matter, workpiece or tool to enter the ionizer nozzle.
   There is an emitter inside the nozzle. If the emitter gets in contact with metallic workpieces or tools, electrical shock may cause injury. If emitter is damaged, it may interfere with the specified function and performance, and may also cause operation failure and accident.
3. When the dust collector is operating, air is discharged vigorously from the exhaust port.
   Prevent exhausted air from contacting people or objects. Piping (I.D. 32 mm) or dust collecting bag must be connected to the exhaust port.

### Wiring/Piping

**⚠️ Warning**
1. Power supply required to the product is 24 VDC and 1 A.
   When power is supplied to the product without using the exclusive AC adapter, make sure to use a stabilization power supply and connect wiring to the DC plug that is provided with the product as an accessory.
2. D-class ground connection must be used to the product.
   Without grounding, the product will not provide the designed performance.
3. For air piping, use SMC or equivalent tubing of diameter 8 mm (for ZVB20) or 10 mm (for ZVB40). It is strongly recommended to use clean dry air (with a dew point at approximately -20°C).
4. Air connections should only be made with the pressure supply turned off.
   Flush the system before piping to prevent foreign matter from entering inside the product.

### Operating Environment

**⚠️ Warning**
1. Operate in an environment in the specified ambient temperature and fluid temperature ranges (0 to 55°C).
   Avoid sudden temperature changes even within specified temperature range, as it may cause condensation.
2. Do not use this product in an enclosed space. This product utilizes the corona discharge phenomenon.
   Although the amount is very small, Ozone and NOx are generated. Ozone condensation can increase if used in an enclosed space, which can affect the human body, so ventilation is necessary.

### Maintenance

**⚠️ Warning**
1. Perform maintenance regularly and clean the emitters. (every 2 weeks suggested.)
   The maintenance must be performed by an operator who has sufficient knowledge and experience. If the ionizer is used for a long time and there is dust on the emitters, performance of the product will be reduced. When the NDL LED (maintenance signal LED) is ON, the emitter will need to be cleaned. If the emitter gets worn and static neutralization ability does not recover even after cleaning, replace the emitter. (Emitter part no.: IZN10-NT-X325)
2. Before starting inspection, cleaning or replacing the emitter, or replacing the valves, be sure to turn OFF the power and air supply to the main body to prevent electric shocks or accidents.

### Handling

**⚠️ Caution**
1. Do not drop, hit or apply excessive shock to the product.
   Even if the body is not damaged, the internal components may be damaged, leading to a malfunction.
Safety Instructions: Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.