



# Operating manual

# **ELECTRIC ASPIRATOR**

Model : VE-11

Manual No. : 00HAA0001135 Version : 5.0



## **WARNING**

Please read this user manual carefully before using the product. Users should operate the product according to the operating instructions contained in this user manual. Users should be aware of cautions and warnings for your safety. Failure to follow these guidelines may result in serious injury or damage to your property.

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## Quality Management System ISO 9001

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## Disclaimer

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## 1.0 Safety

### 1.1 How to Use the User Manual

- (1) This user manual contains important information for maintaining product functionality and safe use. Be sure to carefully read all safety precautions and warnings before use.
- (2) Even after reading the user manual, please keep it handy and accessible at all times. Furthermore, when transferring or lending the product, please attach the user manual to a prominent location on the product to ensure the new user understands how to use it safely and correctly.

### 1.2 Warning signs for safe use of the product

- (1) The user manual uses caution and warning signs to ensure safe and correct use of the product and to prevent accidents or damage.
- (2) Information on safety precautions is classified and defined as warning signs and warning texts according to their importance and risk level.
- (3) Please read and understand the warning carefully before use.

| Safety Signs                                                                        | Contents                                                                                                         |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
|   | Indicates a hazardous situation which, if not avoided, will result in death, fatal injury, or property damage    |
|  | Indicates a hazardous situation which, if not avoided, could result in death, serious injury, or property damage |
|  | Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury                    |
|  | Notifies you careful actions that are not relevant to your injury                                                |

### 1.3 Product Disclaimer

- (1) We do not assume any warranty or responsibility for this product other than what is stipulated in our quality assurance terms.
- (2) We are not responsible for any direct or indirect damage suffered by the user or a third party due to an unforeseen defect or natural disaster while using this product.

## 2.0 Introduction

### 2.1 Application and Features

Electric aspirator VE-11 produces a low vacuum condition using Bernoulli's principle by pumping water through aspirator head. When using VE-11 with rotary vacuum evaporator or for Gel dryer or low vacuum oven, inflow of a little water or solvent into the equipment do not make trouble to the instrument. And you can use this equipment continuously if you change the water in the bath.

The VE-11 is manufactured as polypropylene that has chemical resistance against most solvents. For effective usage, a small quantify of water (100ml/min) has to be continuously supplied by a user through the drain cock at the bottom part of the bath and drained through the over-flow nozzle. It reveals liquid circulation of the inner bath and means dilution that helps the instrument to be used longer.

Check-valve is designed for preventing water from flowing backward during the power failure. But this valve can't protect the equipment permanently. It is for short protection that saves the time to fix its original troubles that may be happened.

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#### **CAUTION**

- To prevent flowing backward of water upon a power failure of the moment, the unit has a flowing backward double breaker. It only makes users have some times to deal with the situation however, it does not mean the complete stop valve.
-

### 3.0 Installation

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#### **CAUTION**

- Please read this operating manual carefully before you use this unit. If the unit is installed on an abnormal installing condition, it might cause damage or abnormal operating.

- 
- 1) Please check on the proper voltage for operating. You should check the electricity in accordance with the **ID label plate**. (The backside of unit).
- 

#### **CAUTION**

- Please check on the proper voltage, phase of capacity for an installing place.
- 

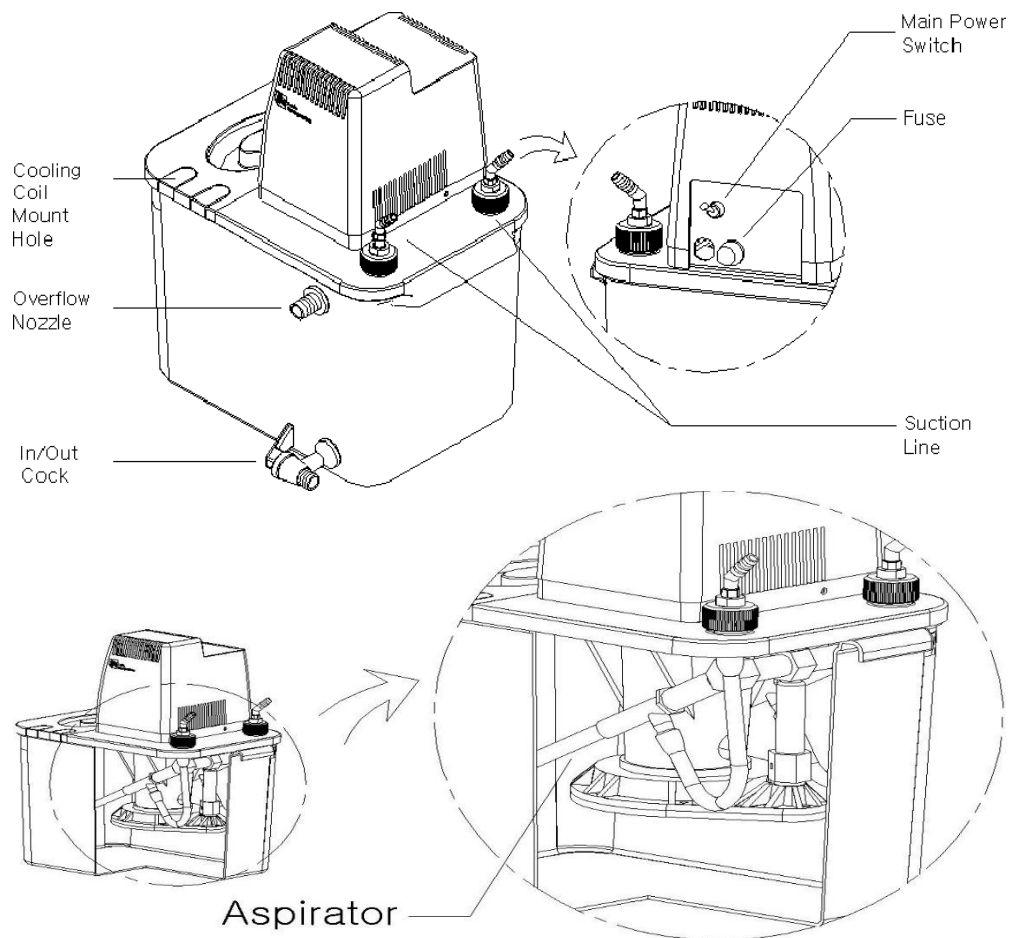
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#### **WARNING**

- Main power must be grounded. If it would not be, may cause a serious injury or damage on the unit.
- 
- 2) This instrument is requested not to be used where is inclination and vibration place.
  - 3) Do not expose to a direct rays.
  - 4) Prevent overflowing of water in the bath, and do not operate with wet hands.

## 4.0 Operation

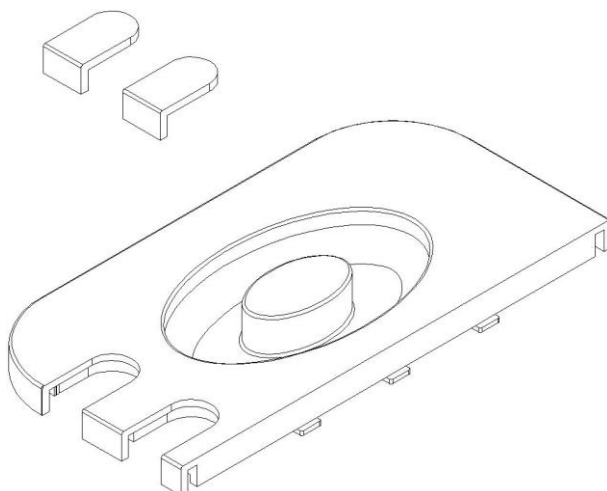
### 4.1 Name of each part



- Slots for cooling coil

When you need cooling coil, you can put in a cooling coil through these slots.

(Cooling coil is optional accessory.)



## 4.2 Precautions for using the organic solvents

- 1) Whenever possible, supply running water regularly in the tank.  
→ Connect the hose for supplying the running water from In/Out cock and drain from Overflow nozzle.
- 2) If you are using organic solvents, you must supply running water.  
→ After operation, drain the water in the tank. Draining the water will prevent the unit loss from the organic solvents and vapor.
- 3) If running water cannot be supplied, change the tank water as often as is necessary for its frequency of use. In case of using the toxic solvents, you must change the tank water more frequently.
- 4) After operation, Rinse the aspirator thoroughly after each use. Clean and empty the tank in order to avoid any contamination
- 5) Followings are example of organic solvents which need this sort of special care
  - Acetic Acid Chloride
  - Acetone
  - Acrylonitrile
  - Alcohols: Benzyl
  - Alcohols: Methyl
  - Alcohols: Diacetone
  - Ammonia
  - Benzene
  - Benzene Chloride
  - Carbon Tetrachloride
  - Cyclohexane
  - Chlorobenzene
  - Chloroform
  - Cyclohexanone
  - Dichloroethane
  - Diethyl Ether
  - Ethylene Dichloride
  - Ethyl Ether
  - Ethanolamine
  - Ethyl ether
  - Ethyl Acetate
  - Furfural
  - Hexane
  - Kerosene
  - Ketones
  - Methyl Acetate
  - Methyl Acetone
  - Methylene Chloride
  - Methyl Butyl Ketone
  - Methyl Ethyl Ketone
  - Nitrobenzene
  - Nitromethane
  - Pentane
  - Perchloroethylene
  - Pyridine
  - Toluene(Toluol)
  - Trichloroethylene
  - Turpentine
  - Xylene

### 4.3 Handling and operation

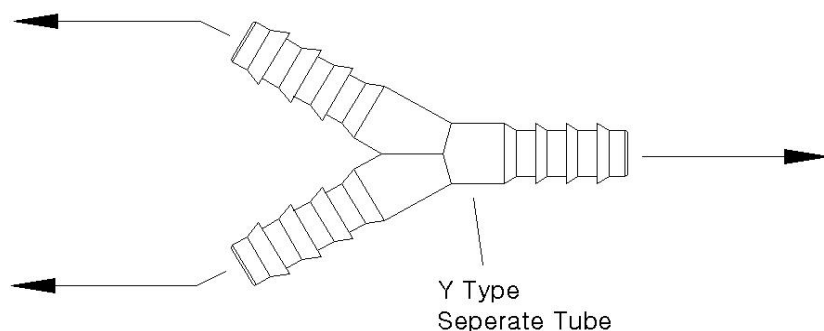
- 1) Use the machine in dry place, and keep away from flammable gas or dangerous explosive environment is.
- 2) For fear that scale might be occurred in the bath, you had better use Distilled water.
- 3) Only use inner circulation without infusing cooling water

① Fill up the water in the bath up to the over-flow-nozzle.

(About 2 cm below from the nozzle)

② Connect a Y separate type tube to each of the suction ports and also something which vacuum is needed with silicone Hoses (Ø6).

(Refer to the below image)

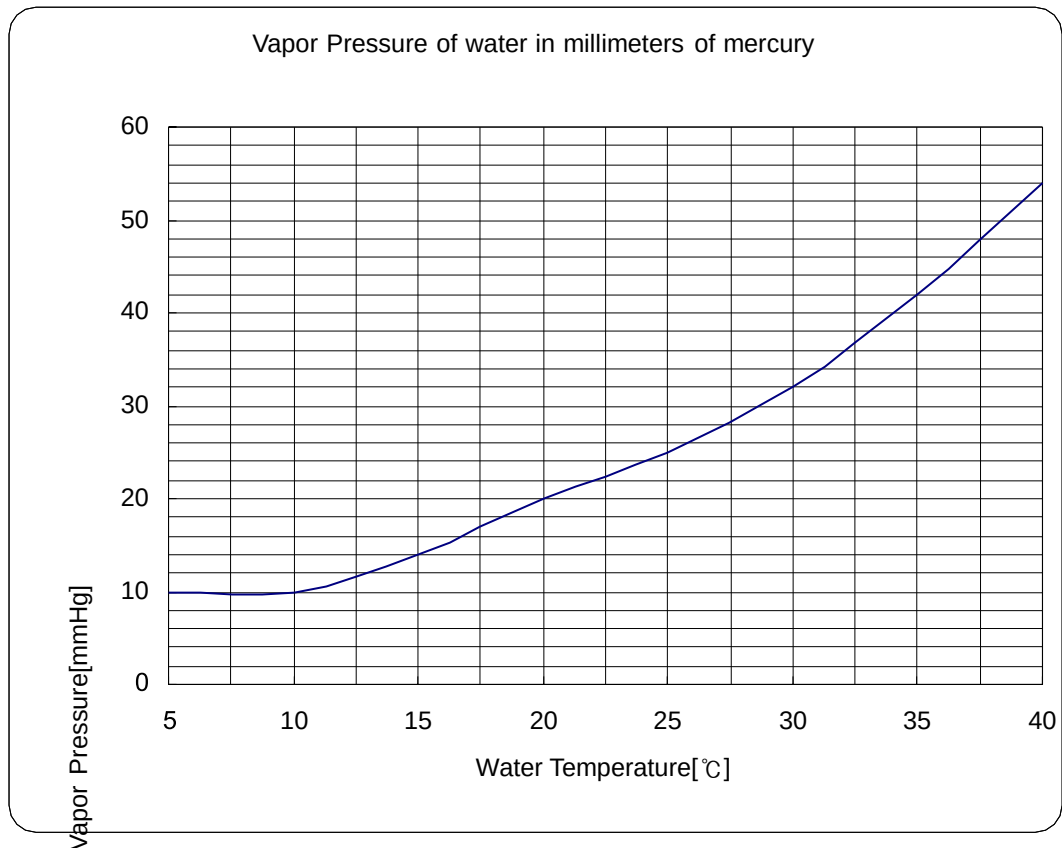


③ After then, turn on the main power switch. After the power on, the unit is working and is making vacuuming condition.

---

#### **CAUTION**

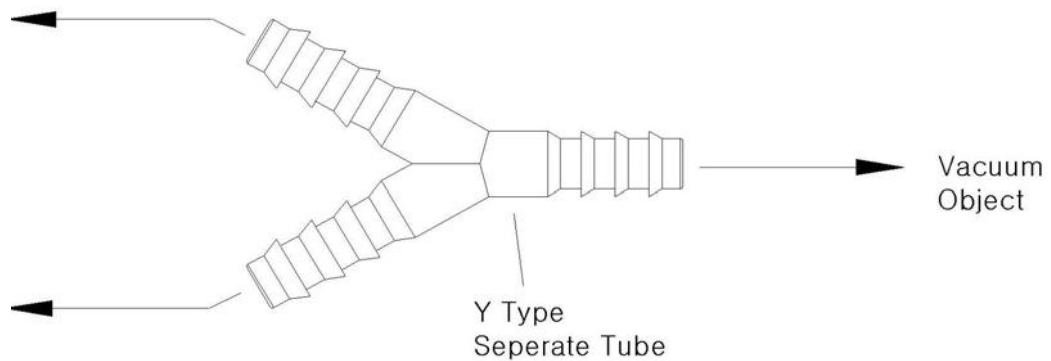
- In case of using for inner circulation for a long time, if the water temperature in the bath might increase, the vacuuming condition would be limited. In addition to the vacuuming condition might be influenced by dissolved gas or impurities that dissolving in the water.
-



The above graph shows that vacuuming fluctuation is depending on water temperature in the bath. In case of using for inner circulation for a long time, if the water temperature in the bath might increase by the motor, the vacuuming condition would be limited. When you use it for a long time, you had better infuse some cooling water to decrease the water temperature.

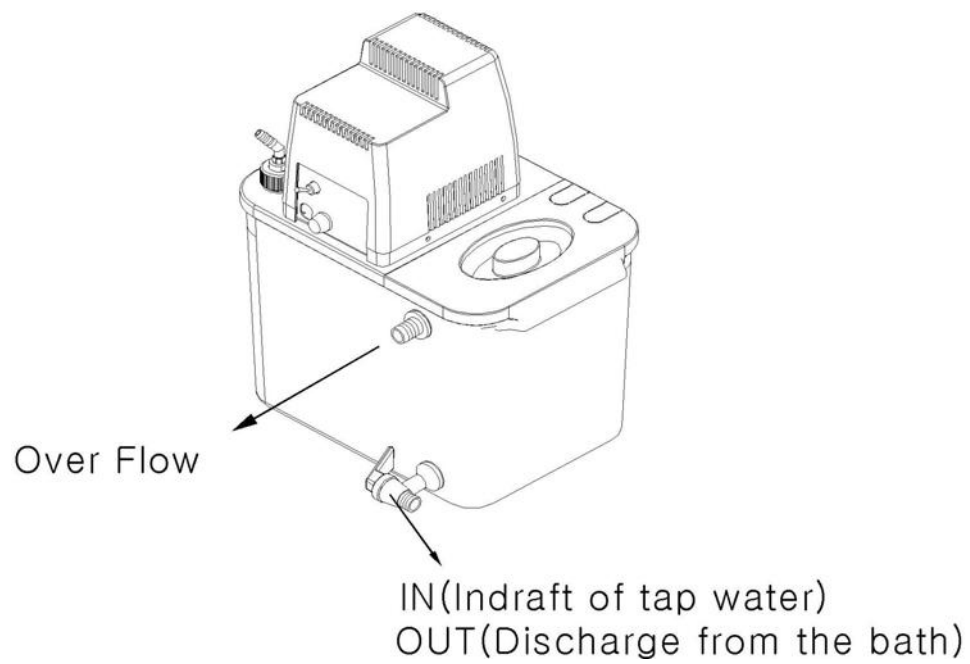
#### 4) Use with inserting cooling water

- ① Fill up the water in the bath up to the over-flow-nozzle.  
(Under about 2 cm of the nozzle)
- ② Connect a Y separate type tube to the suction ports each and also something which vacuum is needed with silicone Hoses (Ø6).  
(Refer to the below image)



- ③ Connect a hose with the over flow nozzle to discharge water.

- ④ Connect a hose to the cock to infuse water (cooling water).



- ⑤ Turn on the main power switch.  
After the power on, the unit is working and is making vacuuming condition.

## 5.0 Maintenance

### 5.1 Maintenance and its cleaning

#### 1) Cleaning the body

- Remove the power plug from the consent first
- Clean up the body using a soft cloth or sponge damped with neutral detergent.
- Wipe with dry cloth.
- ※ Do not use organic solvent.

#### 2) Cleaning the bath

- Clean with sponge or soft cloth with neutral detergent.
- Clean with wet cloth.
- If you do not use it for a long time, leave the water in the bath empty.

#### 3) Silicon hose or Connector

- Immerse the silicon hose or connector in the water for 3~5minutes.
- Clean all surfaces with the wet sponge or cloth by neutral detergent.
- Rinse with a wet cloth by clean water.
- Wipe down all surfaces with dry cloth.

---

 **CAUTION**

- The main plug must be separated from a terminal before cleaning and repairing it. It might cause an electric shock.
-

## 6.0 Trouble Shooting

### 6.1 Causes of malfunction and its repairs

| Symptoms                                           | Problems                                                          | Solutions                                                                                                           |
|----------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 1. When the unit stops running                     | Check on the fuse connection.                                     | Exchange with new same one.                                                                                         |
|                                                    | Check on the power failure.                                       |                                                                                                                     |
|                                                    | Check on the main power switch is on                              | Turn on the main power switch.                                                                                      |
|                                                    | Check on the terminals of the motor and capacitor.                | If the motor is corroded, request the service.<br>If the capacitor terminal has problems, request the service.      |
| 2. Has trouble with the vacuuming condition.       | Check on the hose nipple sticks to the check valve.               | If it is loose, exchange those.                                                                                     |
|                                                    | Check on the temperature of water in the bath. (over 40°C)        | If it has a high temperature, exchange the water in the bath or connect with a piped water line to cool it.         |
| 3. After vacuuming, The water is flowing backward. | Check on the chuck plate that is between chuck (A) and chuck (B). | After checking, if the causes are damage or decrepitude, exchange it.                                               |
| 4. Making excessive noise                          | Check on shortage of the water.                                   | If it is short of water, fill up the water in the bath up to the over-flow-nozzle. (Under about 2 cm of the nozzle) |
|                                                    | Check on the vacuuming hose gets left out.                        | Fixing up the vacuuming silicon hose tightly.                                                                       |
|                                                    | Check on the corrosion of the motor.                              | If it is corroded, request the service.                                                                             |
| 5. A liquid (water) leaks out from the cock part.  | Check on the nut is untied.                                       | After checking, if it keeps leaking, exchange it.                                                                   |

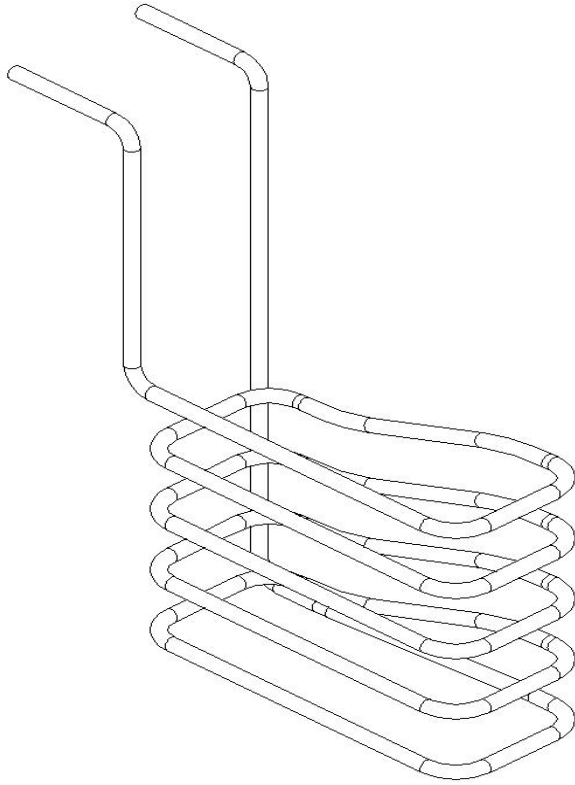
#### CAUTION

- The motor has a thermal protector within. In case of the motor over heating, it would stop automatically. After the over heated motor is getting cool, it will operate again normally.

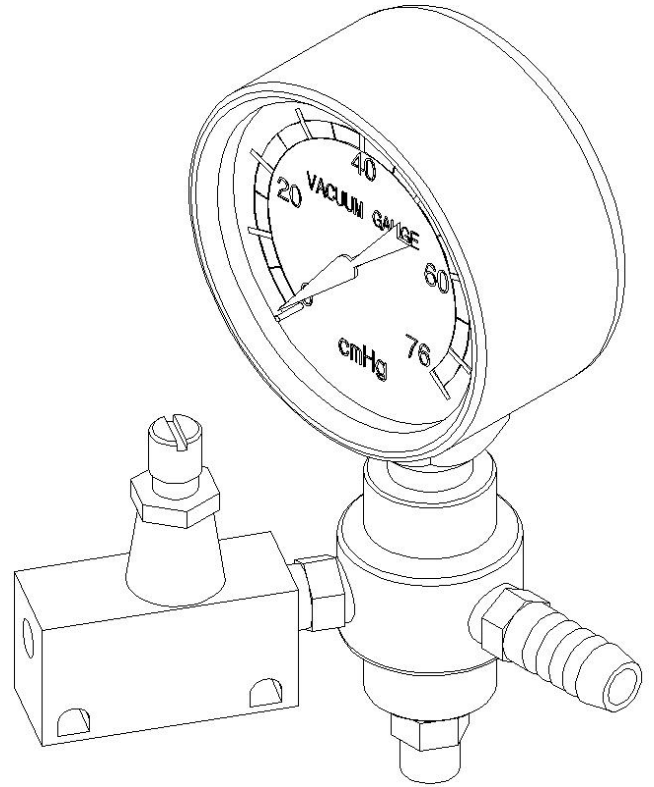
## 7.0 Accessories

Accessories are optional.

- Cooling Coil



- Vacuum Controller

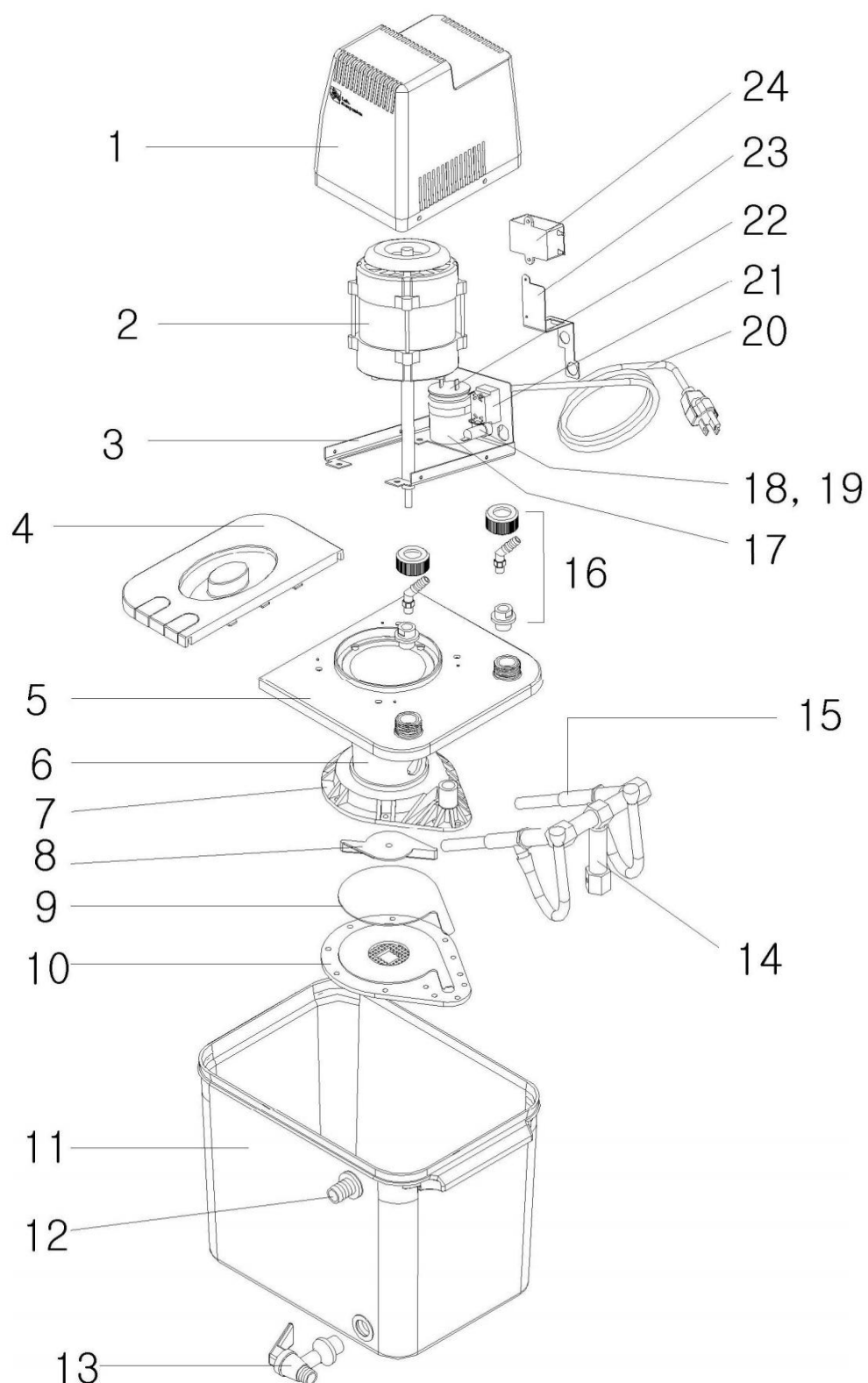


8.0 Appendix

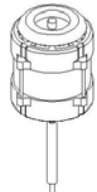
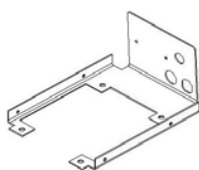
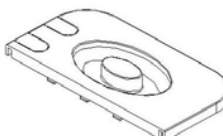
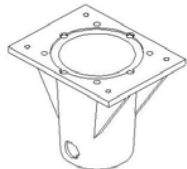
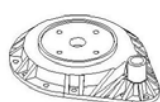
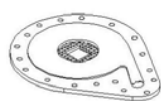
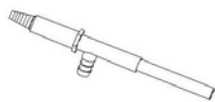
8.1 SPECIFICATION

| Model                         |                                               | VE-11                                 |                            |
|-------------------------------|-----------------------------------------------|---------------------------------------|----------------------------|
| Bath volume(L/cu ft)          |                                               | 9.5 / 0.3                             |                            |
| Max. vacuum range(Mpa/inchHg) |                                               | 0.0998 / 29.5                         |                            |
| Free-air capacity             |                                               | 18L/minute (0.6cfm) × 2ea             |                            |
| Material                      | Bath                                          | Polypropylene                         |                            |
|                               | Aspirator                                     | Nickel-coating brass × 2ea            |                            |
| Safety device                 |                                               | Fuse , Check valve, Thermal protector |                            |
| Dimensions                    | Bath internal<br>(W×L, D)(mm/inch)            | 298×210, 227 / 11.7×8.3, 8.9          |                            |
|                               | Overall(W×D×H)<br>(mm/inch)                   | 330×265×390 / 13.0×10.4×15.4          |                            |
|                               | Inhale nozzle                                 | External Ø9.5mm(0.4") × 2ea           |                            |
|                               | Drain cock,<br>over flower<br>nozzle(mm/inch) | Ø17.0 / 0.7                           |                            |
| Electric Requirements         |                                               | AC120V / 50/60Hz /<br>1.4A            | AC230V / 50/60Hz /<br>0.7A |
| Net Weight(kg/lbs)            |                                               | 5.7 / 12.6                            |                            |

## 8.2 Exploded View



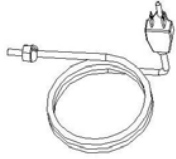
## 8.3 Part List

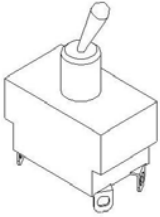
| <p>1. Head</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1153</td></tr> </table>            | Q'ty                  | Part No. | 1 | FDA1153 | <p>2. Motor</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>CGF1170[230V/50Hz]</td></tr> <tr> <td>1</td><td>CGF1179[120V/60Hz]</td></tr> <tr> <td>1</td><td>CGF1178[100V/50,60Hz]</td></tr> </table> | Q'ty | Part No. | 1 | CGF1170[230V/50Hz] | 1                                                                                                                                                                                                        | CGF1179[120V/60Hz] | 1        | CGF1178[100V/50,60Hz] | <p>3. Bracket</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>AAA2401</td></tr> </table> | Q'ty                                                                                                                                                                                                            | Part No. | 1        | AAA2401 | <p>4. Bath Cover(B)</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1167</td></tr> </table> | Q'ty | Part No. | 1 | FDA1167 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------|---|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|---|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|---|---------|
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1153               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | CGF1170[230V/50Hz]    |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | CGF1179[120V/60Hz]    |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | CGF1178[100V/50,60Hz] |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | AAA2401               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1167               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| <p>5. Bath Cover(A)</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1166</td></tr> </table>   | Q'ty                  | Part No. | 1 | FDA1166 | <p>6. Motor Rack</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1137</td></tr> </table>                                                                                                          | Q'ty | Part No. | 1 | FDA1137            | <p>7.Casing(Upper)</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1144</td></tr> </table> | Q'ty               | Part No. | 1                     | FDA1144                                                                                                                                                                                             | <p>8. Impeller</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1139</td></tr> </table>           | Q'ty     | Part No. | 1       | FDA1139                                                                                                                                                                                                    |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1166               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1137               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1144               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1139               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| <p>9. Viton Packing</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FAA4218</td></tr> </table> | Q'ty                  | Part No. | 1 | FAA4218 | <p>10. Casing(Bottom)</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1146</td></tr> </table>                                                                                                   | Q'ty | Part No. | 1 | FDA1146            | <p>11. Bath</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>FDA1165</td></tr> </table>      | Q'ty               | Part No. | 1                     | FDA1165                                                                                                                                                                                             | <p>12. Overflow Nozzle</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>EFA6115</td></tr> </table> | Q'ty     | Part No. | 1       | EFA6115                                                                                                                                                                                                    |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FAA4218               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1146               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | FDA1165               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | EFA6115               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| <p>13. Cock</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>EFA9128</td></tr> </table>         | Q'ty                  | Part No. | 1 | EFA9128 | <p>14. T type separate pipe</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>1</td><td>EFA9116</td></tr> </table>                                                                                             | Q'ty | Part No. | 1 | EFA9116            | <p>15. Aspirator</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>2</td><td>EFA9111</td></tr> </table> | Q'ty               | Part No. | 2                     | EFA9111                                                                                                                                                                                             | <p>16. Hose Nipple</p>  <table> <tr> <th>Q'ty</th><th>Part No.</th></tr> <tr> <td>2</td><td>FDA1172</td></tr> </table>     | Q'ty     | Part No. | 2       | FDA1172                                                                                                                                                                                                    |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | EFA9128               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 1                                                                                                                                                                                                          | EFA9116               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 2                                                                                                                                                                                                          | EFA9111               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| Q'ty                                                                                                                                                                                                       | Part No.              |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |
| 2                                                                                                                                                                                                          | FDA1172               |          |   |         |                                                                                                                                                                                                                                                                                                                |      |          |   |                    |                                                                                                                                                                                                          |                    |          |                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |          |         |                                                                                                                                                                                                            |      |          |   |         |

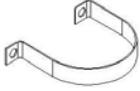
|                                                                                   |                    |
|-----------------------------------------------------------------------------------|--------------------|
| 17. Motor Condenser                                                               |                    |
|  |                    |
| Q'ty                                                                              | Part No.           |
| 2                                                                                 | CIE6221[100V~120V] |
| 2                                                                                 | CIE6220[220V~230V] |

|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| 18. Fuse Holder                                                                   |          |
|  |          |
| Q'ty                                                                              | Part No. |
| 1                                                                                 | CDE5150  |

|                                                                                    |                    |
|------------------------------------------------------------------------------------|--------------------|
| 19. Fuse                                                                           |                    |
|  |                    |
| Q'ty                                                                               | Part No.           |
| 2                                                                                  | CDE5561[100V~120V] |
| 2                                                                                  | CDE5562[220V~230V] |

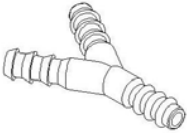
|                                                                                     |                    |
|-------------------------------------------------------------------------------------|--------------------|
| 20. Powercord Set                                                                   |                    |
|  |                    |
| Q'ty                                                                                | Part No.           |
| 2                                                                                   | CBE5701[100V~120V] |
| 2                                                                                   | CBE5010[220V~230V] |

|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| 21. Power Switch                                                                  |          |
|  |          |
| Q'ty                                                                              | Part No. |
| 1                                                                                 | CCM5220  |

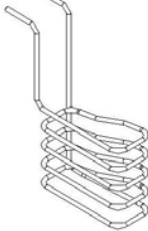
|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| 22. Clamp                                                                         |          |
|  |          |
| Q'ty                                                                              | Part No. |
| 1                                                                                 | AAA2101  |

|                                                                                    |          |
|------------------------------------------------------------------------------------|----------|
| 23. Filter Bracket<br>(for only AC230V 50Hz)                                       |          |
|  |          |
| Q'ty                                                                               | Part No. |
| 1                                                                                  | AAA2301  |

|                                                                                     |          |
|-------------------------------------------------------------------------------------|----------|
| 24. Noise filter<br>(for only AC230V 50Hz)                                          |          |
|  |          |
| Q'ty                                                                                | Part No. |
| 1                                                                                   | CIL6336  |

|                                                                                     |          |
|-------------------------------------------------------------------------------------|----------|
| Y type separate tube                                                                |          |
|  |          |
| Q'ty                                                                                | Part No. |
| 1                                                                                   | EAA7111  |

|                                                                                     |          |
|-------------------------------------------------------------------------------------|----------|
| Silicone Packing<br>(Option)                                                        |          |
|  |          |
| Q'ty                                                                                | Part No. |
| 1                                                                                   | FAA4211  |

|                                                                                      |          |
|--------------------------------------------------------------------------------------|----------|
| Cooling Coil<br>(Option)                                                             |          |
|  |          |
| Q'ty                                                                                 | Part No. |
| 1                                                                                    | AAA71510 |

|                                                                                       |          |
|---------------------------------------------------------------------------------------|----------|
| Vacuum Controller<br>(Option)                                                         |          |
|  |          |
| Q'ty                                                                                  | Part No. |
| 1                                                                                     | AAA71531 |

|                                                                                     |      |
|-------------------------------------------------------------------------------------|------|
|  |      |
| 4 X 6 (Stainless steel)                                                             | 4EA  |
| 4 X 16 ( " )                                                                        | 4EA  |
| 5 X 10 ( " )                                                                        | 18EA |
| 5 X 12 ( " )                                                                        | 4EA  |

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## 8.4 Technical Report

### 1) Bath

The bath is made of P.P (Poly Propylene). Please be attention to use the unit because P.P is an excellent durable material against drugs and chemicals, but it may transform the shape with the follow conditions.

- Need to avoid the follow conditions
  - It may be burned, but be fired no so easily. Avoid getting in touch with oxidizer, overheating, spark and flame.
- Need to avoid the follow materials
  - Chlorine (liquid): reaction of explosion
  - Hydrogen peroxide: a danger of fire and explosion
  - Nitric acid: a danger of fire and explosion
  - Oxidizer (strong): a danger of fire and explosion
  - Hydrogen magnetic acid potassium: firing
  - Benzene, toluene (aromatic hydrocarbons, halogenations hydrocarbon): On over 80°C, dissolving by aromatic hydrocarbons like benzene and toluene.

### 2) Viton Packing

Viton is an excellent durable material against thermo-stability and chemical. Such as, antifriction, fuel oils, aliphatic hydrocarbons, aromatic hydrocarbons, hydrocarbon solvents.

- Need to avoid materials (Please refer Page 5 "Precautions for using the organic solvents")

### 3) Silicone Packing

General rubber is eroded by strong acid and alkali, but it is durable against normal acid, base, basic inorganic drugs, alcohol, and polar organic compound like animal / vegetable oil.

- Need to avoid the follow materials  
Gasoline, toluene and carbon tetrachloride etc  
(It is swelled by above of the nonpolar solvent but, if the solvent evaporates, it turns back to the original condition.)



- Please read this operating manual carefully and obey with the operating condition. If you would not obey, it might cause damage or abnormal operating.
-

## 8.5 SERVICE

When there are malfunctions caused in producing in spite of user's normal operation, then repairs are going to be provided free of charge for 2year limited warranty from purchasing. Please give us the information as below

- Malfunctioning parts and status (if possible, please explain the state of problems in details.)
- Type of model
- Serial Number
- Purchasing day/month/year

## 8.6 Warranty

### 8.6.1 Warranty period

- (1) If the product fails during normal and proper use, the warranty period for manufacturing liability shall be two years from the date of delivery.
- (2) If you request a repair, please check the items below and let us know so that you can get a quicker and more accurate repair.

- |                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Date of purchase</li><li>• Customer name / address / phone number / email</li><li>• Fault status</li><li>• Model name</li><li>• Serial number</li></ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 8.6.2 Service Contact

Headquarters Address: Jeiotech Co., Ltd., 153 Techno 2-ro, Yuseong-gu, Daejeon (34025)

Phone: 1522-4298

Website: [www.jeiotech.com](http://www.jeiotech.com)

Email : [help@jeiotech.com](mailto:help@jeiotech.com)

### 8.6.3 Certificate of Product Warranty

This is a guide to the product quality warranty and service terms provided by JEIOTECH Co., Ltd.

All products are guaranteed to operate normally when installed under proper conditions, as specified in the user manual for each product, and used according to the intended purposes and permissible operating conditions.

The warranty period for product quality starts from the delivery date and is indicated in the catalog provided for each product or in the purchase order agreed upon with the customer. If a product malfunctions within the warranty period, JEIOTECH Co., Ltd. provides free repair services. However, among the transportation costs incurred during the repair process, any special costs resulting from the customer's site conditions (e.g., door or wall modifications, use of special handling equipment) are not covered under the warranty. Furthermore, JEIOTECH's liability under this warranty is limited to replacing the product or refunding the original purchase price at JEIOTECH's sole discretion if reasonable attempts to repair or replace the product fail.

Parts replaced during free repairs within the warranty period become the property of JEIOTECH Co., Ltd. Additionally, the warranty period is not extended due to free repairs. JEIOTECH is not responsible for any losses incurred by the customer due to delays in repairs caused by issues such as part shortages or shipping delays.

The following cases will be handled as paid repairs, even within the warranty period:

1. Non-defective cases

- \* Requests to resolve issues arising from improper operating environments or abnormal installations.
- \* Reinstallation requests or connections with external equipment other than the initial installation.
- \* Requests for usage instructions or simple adjustments that do not require disassembly.
- \* Inspections of non-defective products.
- \* Cleaning or debris removal service requests.

2. Failures caused by user errors:

- \* Malfunctions due to usage not in accordance with the user manual.
- \* Issues resulting from improper operating environments or abnormal installations.
- \* Malfunctions caused by incompatible chemical usage.
- \* Malfunctions caused by irregular or improper electrical or utility supplies.
- \* Damage due to product movement, storage, external impact, or dropping by the customer.
- \* Malfunctions resulting from unauthorized modifications or repairs without prior written approval from JEIOTECH Co., Ltd.
- \* Malfunctions caused by using consumables or optional components not specified by JEIOTECH Co., Ltd.
- \* Repairs performed by personnel other than JEIOTECH or its authorized service agents.

3. Other cases

- \* When the product model or serial number has been damaged, removed, manipulated, or altered.
  - \* Malfunctions caused by fire, flooding, or other natural disasters.
  - \* Failure due to consumable parts reaching the end of their lifespan (e.g., lamps, filters, fuses, gaskets, packings, hoses, heat transfer fluids).
  - \* Natural wear and tear (e.g., discoloration, screen printing degradation).
  - \* Damage or malfunction of product accessories (e.g., power cables, data cables, glass components) or options.
  - \* Malfunctions caused by errors in computers, computer components, or connected network systems.
- Before JEIOTECH performs free or paid repairs or accepts the return of a product, the customer must ensure the product has been decontaminated of chemical and biological hazards.
  - Replacement parts used during repairs may differ from the original but will function correctly and be equivalent in performance.
  - JEIOTECH does not bear any responsibility for damage to stored samples, data loss, or any other direct or indirect damages caused by product malfunctions, regardless of the warranty period.
  - JEIOTECH does not guarantee issues related to computers, computer components, or network systems connected to the product, regardless of the warranty period.

- This warranty is the sole and exclusive warranty provided. Any implied warranties imposed by applicable laws are limited to the warranty period stated herein. This warranty cannot be modified by any verbal advice, statements, or documents on behalf of JEIOTECH unless explicitly labeled as a "Warranty Amendment" and signed by an authorized representative of JEIOTECH.
- This warranty applies only to products purchased for direct use by the customer. It does not cover products purchased for resale purposes without prior written approval from JEIOTECH.
- This warranty does not apply to consumables and is non-transferable.

- The contents of this manual can be changed or upgraded without prior notice in order to improve the performance of the product and to convey accurate information.
- The copyright of this manual is reserved by JeioTech.