

# Electrostatic Air Cleaner

## INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

### Table of Contents

#### 1.0 Safety Precautions

#### 2.0 Introduction

- 2.1 About this document
- 2.2 Principle of operation
- 2.3 Product components

#### 3.0 Installation Instructions

- 3.1 Installation guide
- 3.2 Common mistake on installation
- 3.3 Airflow direction
- 3.4 Method for reversing airflow direction
- 3.5 Other precautions

#### 4.0 Operation

#### 5.0 Maintenance

- 5.1 Collector cell cleaning
- 5.2 Troubleshooting

#### 6.0 Appendix

- 6.1 Wiring diagram

### 1.0 Safety Precautions

Please familiarize with safety alert symbol show in this manual before using your AAF equipment.



#### High Voltage Warning

Isolate all electrical sources of supply before opening or removing the cover



#### Wear Goggles

Wear goggles to protect your eyes



#### Wear Mask

Wear mask to filter irritating odor



#### Attention

General attention symbol



#### Wear Glove

Corrosive, wear glove for protection



#### Ground

Grounding is a must to avoid risk of fire and electric shock

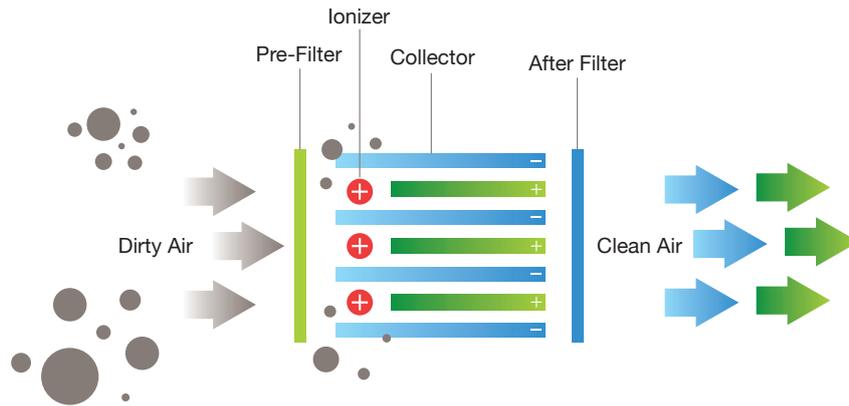
## 2.0 Introduction

### 2.1 About this Document

This document contains the information necessary to properly install, operate and maintain the AAF Electrostatic Air Cleaner. The purchaser, installer and operator of this equipment MUST read and comply with this document in its entirety prior to installation of the equipment and its operation. Failure to comply with the requirements of this manual may void the equipment warranty.

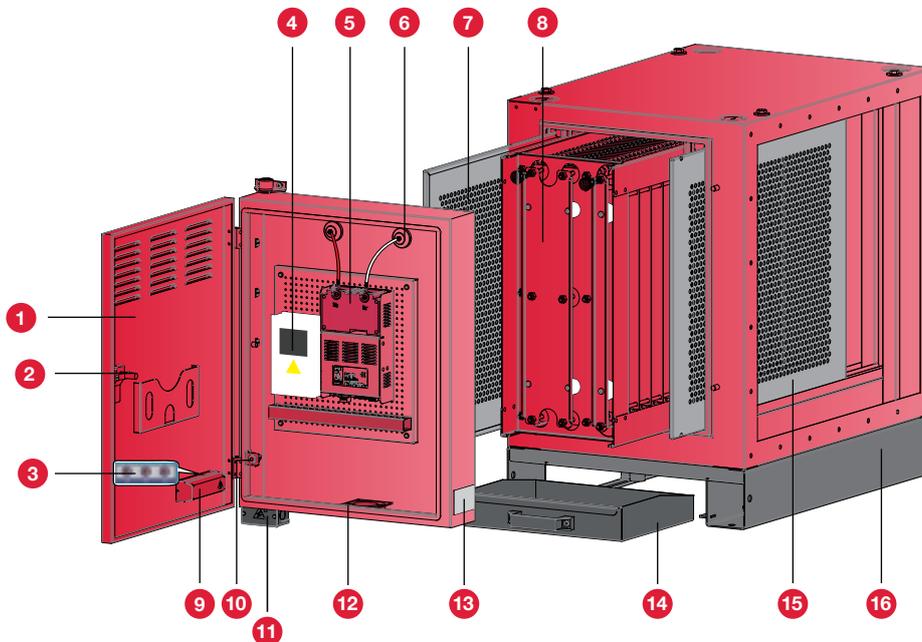
**CAUTION:** These instructions are specific to the AAF Electrostatic Air Cleaner. All ancillary tasks including, but not limited to, electrical and mechanical work, equipment handling and safety procedures must be performed in accordance with industry accepted practice and all relevant local, state and federal government codes, laws and policies.

### 2.2 Principle of Operation



AAF Electrostatic Air Cleaner is a two-stage electrostatic precipitator. The two stages consist of ionizer section and collector section. Ionizer section will charge the fine particles. These charged particles will then enter the collector section which is made up of parallel spaced plated. Each alternating plate is charged with the same polarity as the charged particles which will in effect repel the particles onto the other set of plates which is grounded. The particles will remain collected at the grounded plates until it is washed away.

### 2.3 Product Components

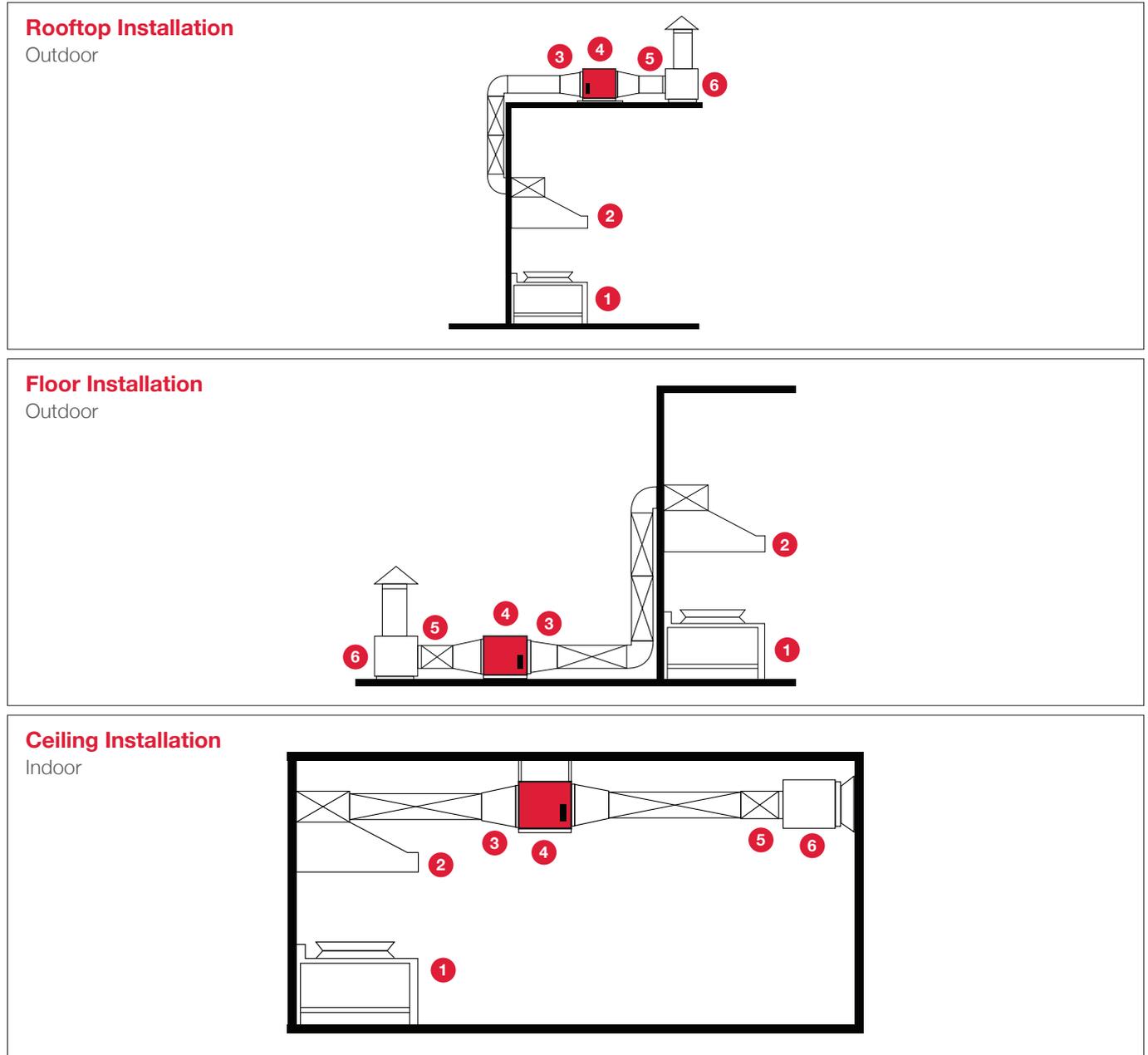


- |                       |                              |                        |                    |
|-----------------------|------------------------------|------------------------|--------------------|
| 1. Control Panel Door | 5. High Voltage Power Supply | 9. Indicator Light Box | 13. Name Plate     |
| 2. Door Lock          | 6. Insulation                | 10. Safety Interlock   | 14. Oil Sump       |
| 3. Indicator Light    | 7. Distribution Plate        | 11. Wire Connector     | 15. Protection Net |
| 4. Circuit Breaker    | 8. Collector Cell            | 12. Cooling Fan        | 16. Base Frame     |

- Insert distribution plate **7** (round hole, will increase at least 100 Pa pressure resistance) at air entering side should the air distribution is not even due to improper ducting installation. Insert protection net **15** (hexagonal hole) at air leaving side.
- Take out distribution plate **7** (round hole, will decrease at least 100 Pa pressure resistance) and insert protection net **15** at air entering side when the air is distributed evenly.
- Manufacturing setting: Distribution plate **7** is installed at air entering side while protection net **15** is installed at air leaving side.

### 3.0 Installation Instructions

#### 3.1 Installation Guide

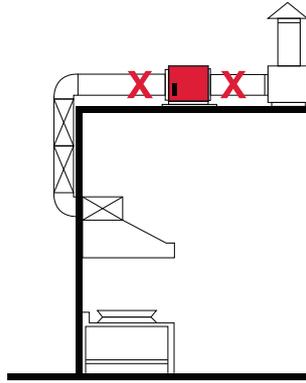


1. Kitchen
2. Hood
3. Reducer
4. Air Purification Unit
5. Flexible Coupling
6. Fan

### 3.2 Common Mistake on Installation

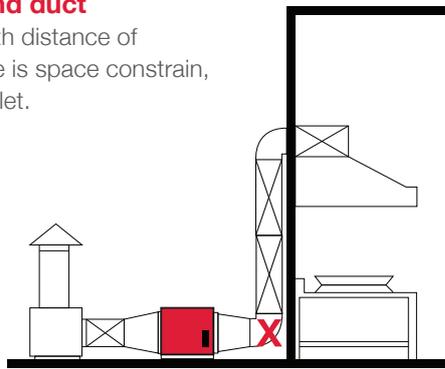
#### Reducer is not installed

Corrective Action - Install reducer



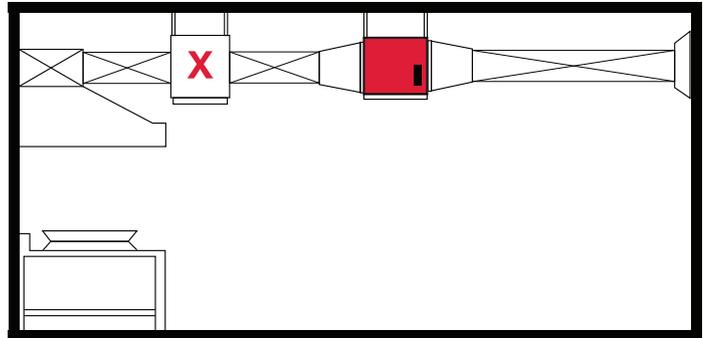
#### Straight duct is not installed after bend duct

Corrective Action - Install a straight duct with distance of 3~4D at air inlet of air purification unit. If there is space constrain, suggest to insert air distribution plate at air inlet.



#### Fan installed before air purification unit

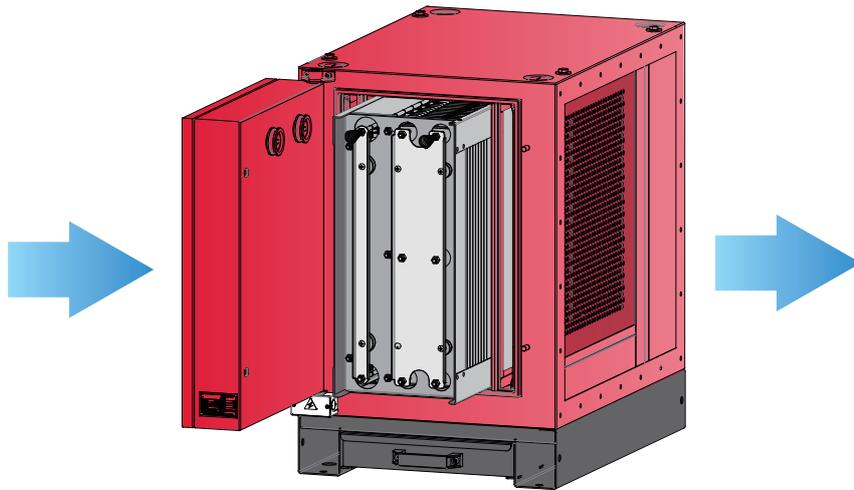
Corrective Action - Install fan after air purification unit



#### Note:

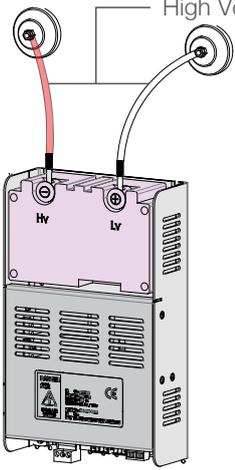
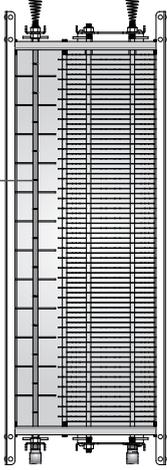
- 1) Cable diameter should be sized according to main circuit breaker (MCB) capacity.
- 2) The cable diameter for neutral line and live line should be identical. They should be connected properly.
- 3) Equipment should be grounded properly.

### 3.3 Airflow Direction

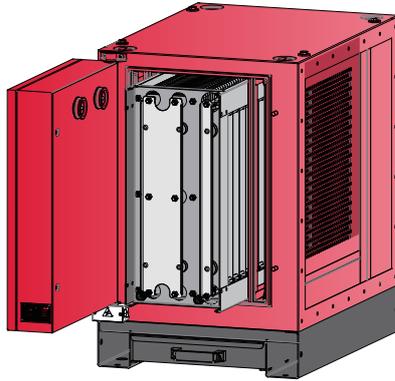
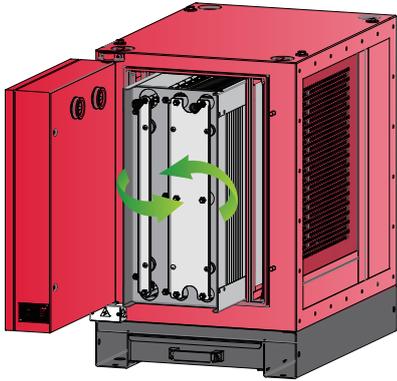


**Note:**

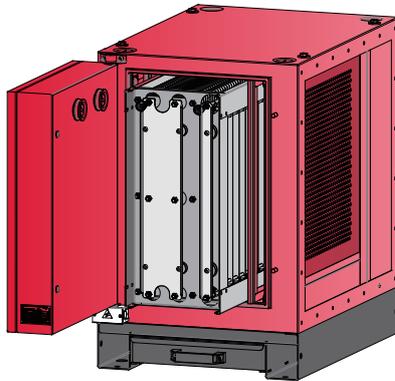
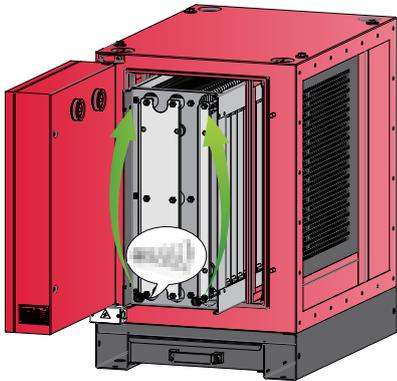
Default setting of airflow direction is from left to right

 <p>High Voltage Cable</p> <p><b>High Voltage Cable</b></p> <ul style="list-style-type: none"><li>• Air inlet at left side - Left is red cable while right is white cable</li><li>• Air inlet at right side - Left is white cable while right is red cable</li></ul>	 <p>Tungsten Wire</p> <p><b>Direction of Collector Cell</b></p> <ul style="list-style-type: none"><li>• Air inlet at left side - Tungsten wire is at left side</li><li>• Air inlet at right side - Tungsten wire is at right side</li></ul>
--	---

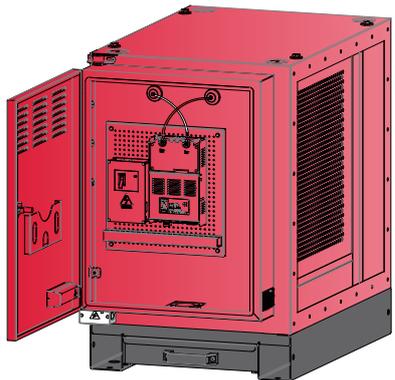
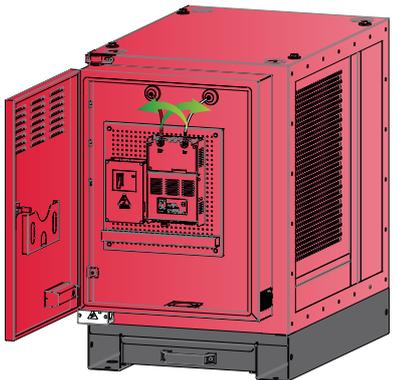
### 3.4 Method of Reversing Airflow Direction



**1** Rotate the collector cell 180°



**2** Move the spring and connector to top of collector cell

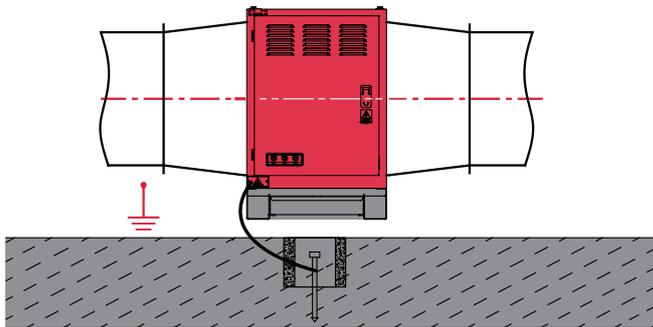


**3** Swap the location of high voltage cable

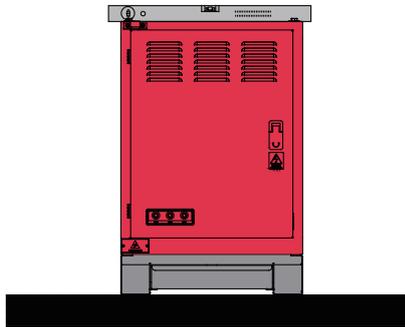
#### Attention!

Strictly follow the instructions to prevent any malfunction of equipment due to incorrect operation.

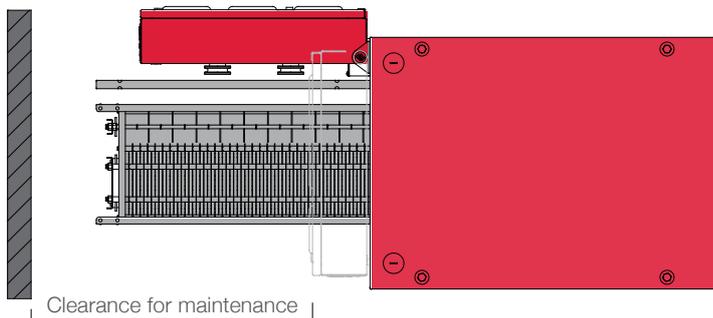
### 3.5 Other Precautions



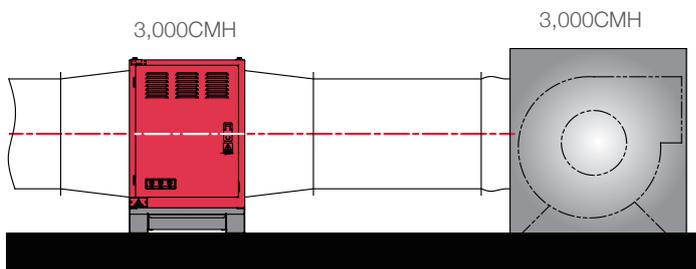
**1** The equipment must be grounded properly



**2** The equipment must be horizontally aligned.



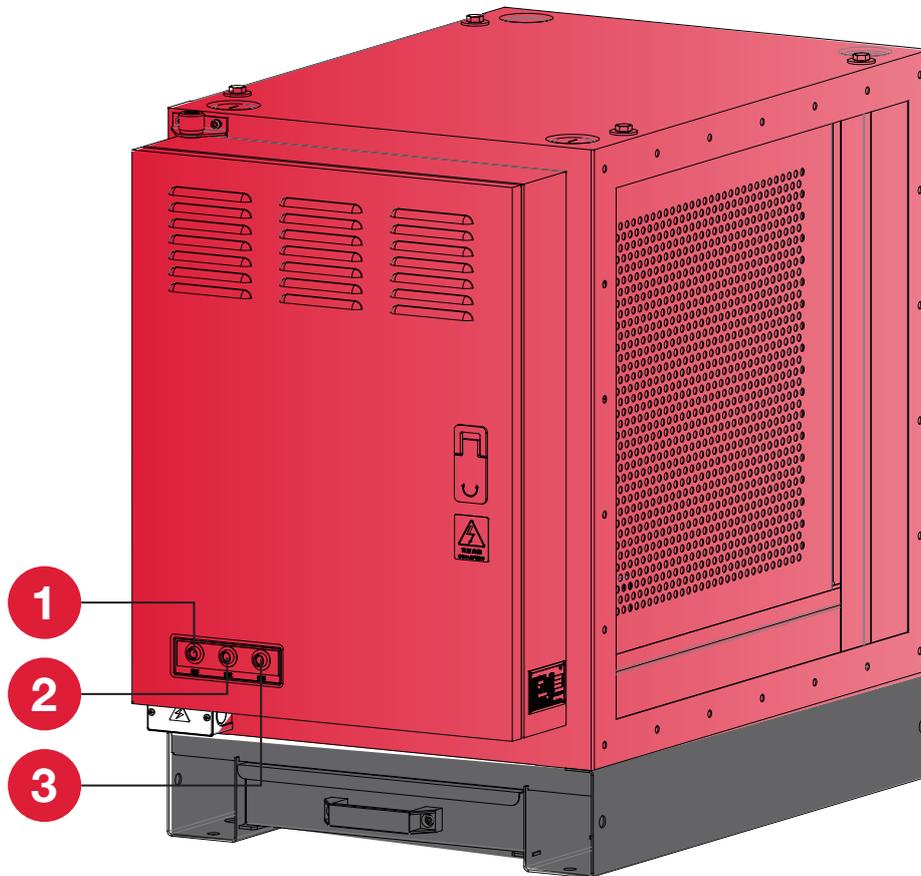
**3** Reserved enough space clearance for access door to be opened during collector cell maintenance.



**4** Airflow capacity for the equipment and fan should be identical

5. If the equipment is installed on a stand, it should be properly connected with the stand.
6. The gap between flange of the equipment and duct should be sealed properly.
7. Prohibited for non-trained personnel to dismantle, commission and service the equipment.
8. Any breakdown occurred, the power supply of equipment should be cut-off immediately and inspected by authorized service personnel.

## 4.0 Operation



1. On/Off light is on: High Voltage Power Supply is operating
2. HV light is on: Ionizer section is operating
3. LV light is on: Collector section is operating

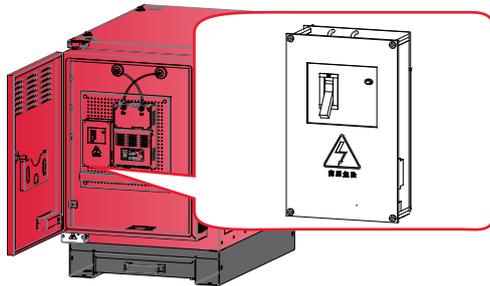


There will have a “siss” sound when power is turned on

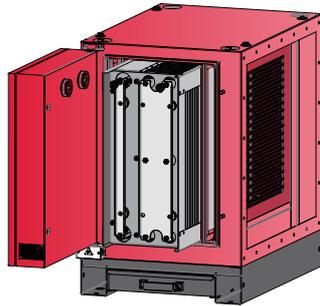
1. Check oil sump periodically.
2. Clean collector cell periodically to maintain equipment efficiency.
3. Clean collector cell immediately should below symptoms occurred.
  - Equipment efficiency has dropped and smoke is spotted after the equipment
  - Cracking sound is spotted frequently from the equipment due to electric discharge
  - HV light or LV light is flickering or dimmed for a long period
4. Check and wash distribution plate and protection net periodically.

## 5.0 Maintenance

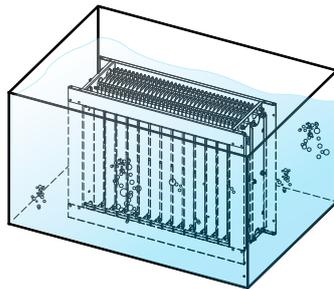
### 5.1 Collector Cell Cleaning



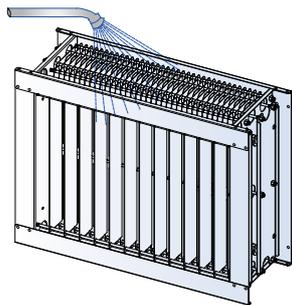
**1** Open control panel and turn off the circuit breaker



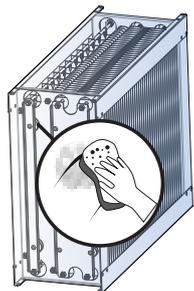
**2** After 10 min of discharge, take out collector cell, distribution plate and protection net



**3** Fully immerse the collector cell into diluted detergent for 3-5 min

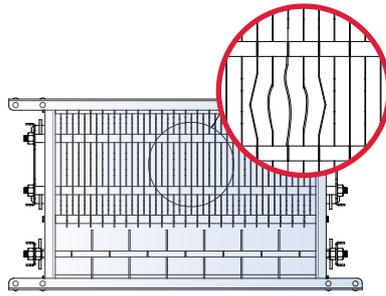


**4** Rinse collector cell under running water

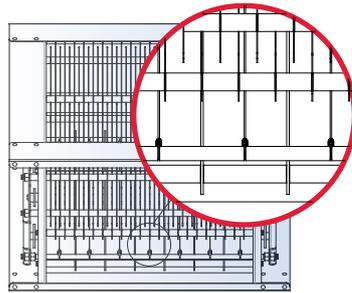


**5** Wipe collector cell's insulation with dry cloth

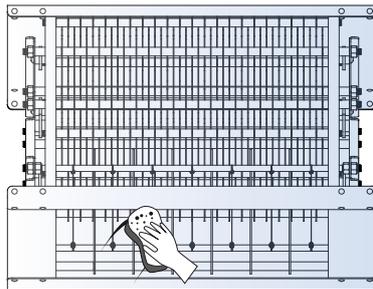
## 5.1 Collector Cell Cleaning



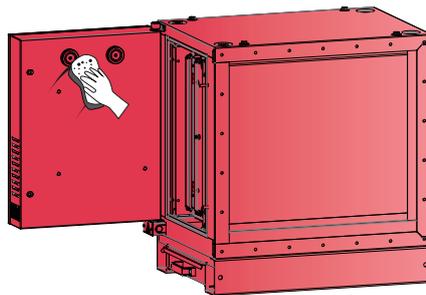
**6** If collector cell has deformed, rectify it



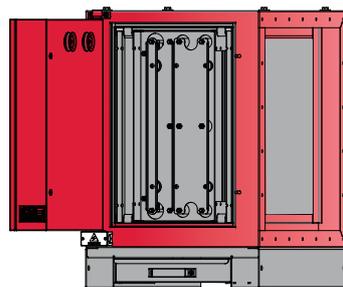
**7** If tungsten wire has snapped or shifted, rectify it



**8** Wipe tungsten wire should impurity is spotted



**9** Wipe insulation on access door with industrial alcohol and let it dry



**10** Assemble back and test run equipment

### Reminder

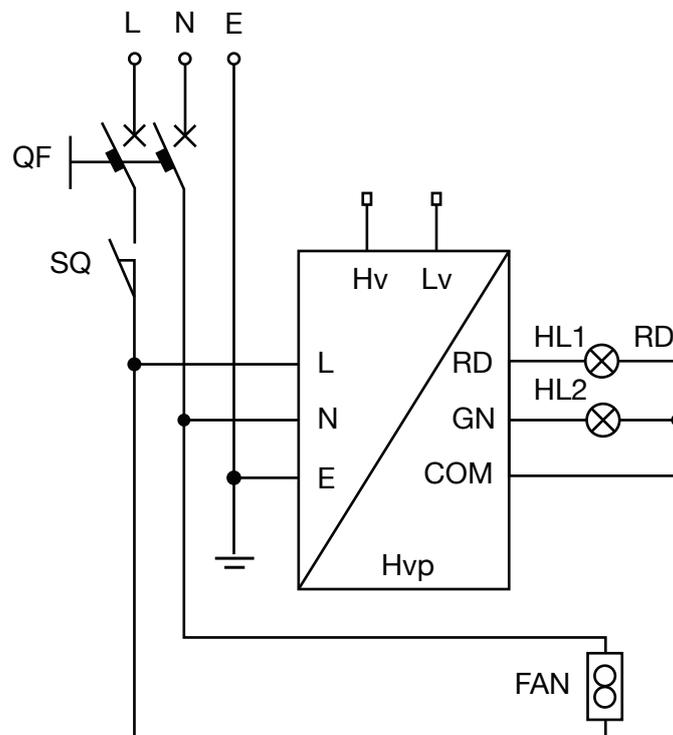
Wear goggles, safety shoes and anti-erode gloves during collector cell cleaning.

## 5.2 Troubleshooting

Problem	Possible Causes	Recommended Solutions
All indicator lights do not light on	Power supply has disconnected	Check power supply condition and rectify it Check wire diagram and connect back with power supply
	High voltage power supply has failed	Replace high voltage power supply
On/Off light is on while HV and LV lights are off	HV or LV of collector cell has short circuit	Check whether collector cell has deformed
		Check whether tungsten wire has snapped or shifted
		Clean debris in between cell plate
On/Off light is on while HV and LV lights are flickering	Collector cell is open circuit	Check the orientation of collector cell
		Check the spring and connector of collector cell is in position
		Make sure spring and HV connector is in contact
On/Off and HV lights are on while LV light is off	LV side of collector cell has short circuit	Check whether collector cell has deformed Clean debris in between cell plate
On/Off and LV lights are on while HV light is off	HV side of collector cell has short circuit	Check whether tungsten wire has snapped or shifted
		Check the condition of insulation
Cracking sound is spotted frequently due to electric discharge	Debris or impurity in collector cell	Clean debris in between cell plate
	Collector cell has deformed	Make good at the deformed area
	Dirty collector cell	Clean collector cell
	Loose connection on HV side	Re-insert the collector cell and check HV connector

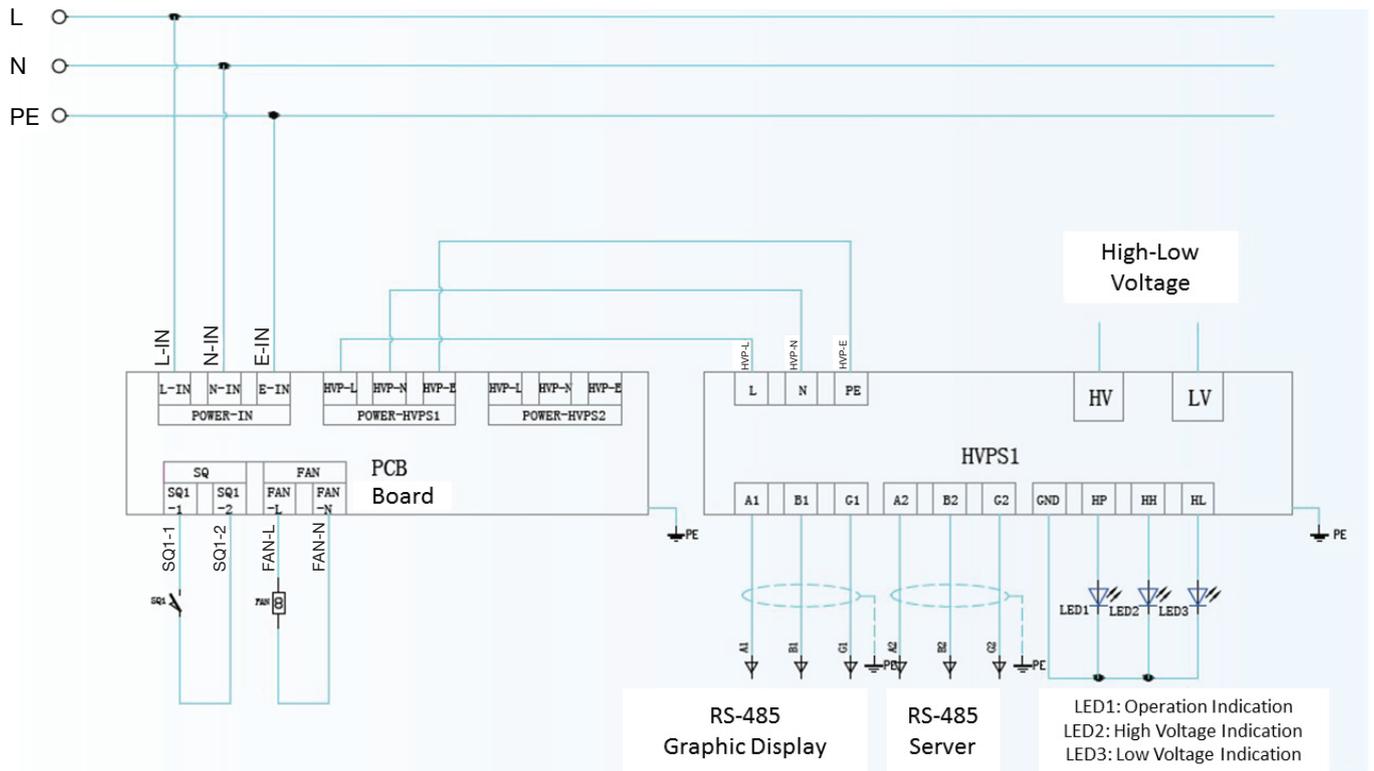
## 6.0 Appendix

### 6.1 Wiring Diagram



Q-Series

## 6.1 Wiring Diagram



ESP-E1 Series

## Proven Expertise of AAF

We take pride in our commitment to providing the total solution for integrated airborne contamination control for food waste, helping home and building owners to solve their air quality problems. Talk to our sales team to learn more about how you can benefit from our clean air solution and also explore our product catalog to learn more or login to our website at [www.aafintl.com](http://www.aafintl.com) for more detail information and solutions.

### Asia Sales Office

American Air Filter Manufacturing Sdn. Bhd. (Malaysia)  
AAF Australia Pty. Ltd. (NSW Sales Office)  
AAF Australia Pty. Ltd. (VIC Sales Office)  
AAF India Private Limited (Noida)  
AAF India Private Limited (Bangalore)  
AAF International (Thailand) Co., Ltd.  
AAF International Air Filtration Systems L.L.C (UAE)  
AAF Singapore Pte. Ltd.  
PT, AAF International Indonesia  
AAF Saudi Arabia Ltd.

Tel : +60 3 5039 7777  
Tel : +61 2 9725 5443  
Tel : +61 3 9701 5251  
Tel : +91 120 640 8278  
Tel : +91 802 783 9903  
Tel : +66 2348 3870  
Tel : +04 339 7688  
Tel : +65 6897 0383  
Tel : +62 21 574 6188  
Tel : +96 61 265 1116  
+96 61 265 2285

For enquiries email us at  
[marketing@aafmal.com](mailto:marketing@aafmal.com)



Bringing clean air to life:  
[www.aafintl.com](http://www.aafintl.com)

AAF has a policy of continuous product research and improvement and reserves the right to change design and specifications without notice.

©2020 AAF Malaysia

MAFP-3-361B 04/20