



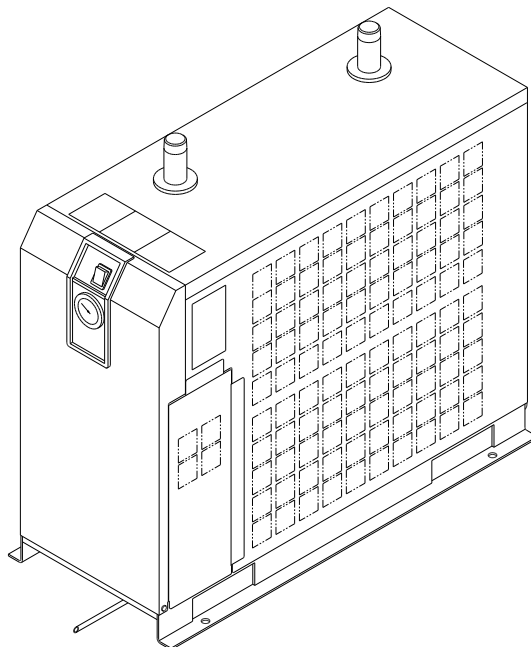
# Operation Manual

## PRODUCT NAME

# Refrigerated Air Dryer

## MODEL / Series

IDFB22E-11 □	IDFB22E-11 □ - A,K,R,S,T,V
IDFB22E-23 □	IDFB22E-23 □ - A,K,R,T,V
IDFB37E-23 □	IDFB37E-23 □ - A,K,R,T,V
IDFB55E-46 □	IDFB55E-46 □ - A,L,R,T,V
IDFB75E-46 □	IDFB75E-46 □ - A,L,R,T,V



Please read this manual prior of using the air dryer. Keep the manual readily available for reference.

© 2017 SMC CORPORATION All Rights Reserved.

# SMC Corporation

## To Customers

Thank you for selecting SMC Refrigerated Air Dryer.

This operation manual must be read and understood thoroughly before using the equipment. It provides all essential information pertaining to safety, as well as, maximizing equipment efficiency in order to extend the life of the equipment.

In addition, it is strongly recommended that you follow all the safety guidelines and regulations set forth by the local government agency for proper installation and usage.

This manual explains about installation and trial operation of the equipment. These tasks should be performed only by individuals with the proper training and have a good understanding of the air dryer.

There is no production amends or financial compensation due to dryers trouble.

This manual contains confidential information proprietary to SMC. It must not be reproduced or disclosed to others, or used in any other way, in part or in whole, except as authorized in writing by SMC.

<p>Caution: Please understand that the contents of this operation manual are subjected to change without prior notice.</p>
--



# Table of Contents

## Chapter i Safety Instructions

<b>i - 1</b>	<b>Warning: Before Using Air Dryer</b> .....	<b>i - 1</b>
<b>i - 1 - 1</b>	Hazard, Warning, and Caution Used in This Manual .....	<b>i - 1</b>
<b>i - 2</b>	<b>Danger Classifications/Position of Hazard warning Label</b> .....	<b>i - 2</b>
<b>i - 2 - 1</b>	Danger Classifications.....	<b>i - 2</b>
<b>i - 2 - 2</b>	Hazard of Electricity .....	<b>i - 3</b>
<b>i - 2 - 3</b>	Hazard of Hot Surface.....	<b>i - 3</b>
<b>i - 2 - 4</b>	Hazard of Rotating Fan Motor .....	<b>i - 3</b>
<b>i - 2 - 5</b>	Danger of Compressed Air Circuit.....	<b>i - 3</b>
<b>i - 2 - 6</b>	Positions of Hazard Warning Label .....	<b>i - 4</b>
<b>i - 2 - 7</b>	Hazard of Refrigerant.....	<b>i - 5</b>
<b>i - 2 - 8</b>	Cautions about Usage.....	<b>i - 6</b>
<b>i - 2 - 9</b>	Other Label.....	<b>i - 6</b>
<b>i - 3</b>	<b>Disposal</b> .....	<b>i - 8</b>
<b>i - 4</b>	<b>Limited warranty and Disclaimer / Compliance Requirements</b> .....	<b>i - 9</b>

## Chapter 1 Parts Name and Functions

<b>1 - 1</b>	<b>Parts Names and Functions</b> .....	<b>1 - 1</b>
--------------	--	--------------

## Chapter 2 Transportation / Installation

<b>2 - 1</b>	<b>Transportation</b> .....	<b>2 - 1</b>
<b>2 - 2</b>	<b>Installation</b> .....	<b>2 - 2</b>
<b>2 - 2 - 1</b>	Location .....	<b>2 - 2</b>
<b>2 - 2 - 2</b>	Tie Down .....	<b>2 - 3</b>
<b>2 - 2 - 3</b>	Air piping .....	<b>2 - 3</b>
<b>2 - 2 - 4</b>	Drain Tube.....	<b>2 - 3</b>
<b>2 - 2 - 5</b>	Electric Wiring .....	<b>2 - 4</b>
<b>2 - 3</b>	<b>Cautions for Reinstallation</b> .....	<b>2 - 6</b>

## Chapter 3 Operation / Shutdown

<b>3 - 1</b>	<b>Check points before operation</b> .....	<b>3 - 1</b>
<b>3 - 2</b>	<b>Operation</b> .....	<b>3 - 1</b>
<b>3 - 3</b>	<b>Shutdown</b> .....	<b>3 - 2</b>
<b>3 - 4</b>	<b>Cautions about restart</b> .....	<b>3 - 2</b>
<b>3 - 5</b>	<b>Check points before restart</b> .....	<b>3 - 2</b>
<b>3 - 6</b>	<b>Precautions for long-term non-operation</b> .....	<b>3 - 2</b>

## Chapter 4 Maintenance

<b>4 - 1</b>	<b>Daily inspection</b> .....	<b>4 - 1</b>
<b>4 - 2</b>	<b>Periodical maintenance</b> .....	<b>4 - 1</b>
<b>4 - 2 - 1</b>	Cleaning of ventilation grille (suction grille) .....	<b>4 - 1</b>
<b>4 - 2 - 2</b>	Service parts .....	<b>4 - 1</b>
<b>4 - 2 - 3</b>	Cleaning of the case assembly .....	<b>4 - 1</b>

<b>Chapter 5 Troubleshooting</b>	
5 - 1	Cause and countermeasure of errors ..... 5 - 1
5 - 2	How to reset the thermal relay and high pressure switch (Only IDFB55E, 75E)..... 5 - 3
<b>Chapter 6 References</b>	
6 - 1	Specifications ..... 6 - 1
6 - 2	Refrigerant with GWP reference ..... 6 - 2
6 - 3	Dimensions ..... 6 - 2
6 - 4	Electrical Circuit ..... 6 - 4
6 - 5	Compressed Air and Refrigerant Circuit / Operation Principles ..... 6 - 5
<b>Chapter 7 References for Option A</b>	
7 - 1	Safety instructions ..... 7 - 1
7 - 2	Specifications ..... 7 - 1
7 - 3	Air piping..... 7 - 1
7 - 4	Air flow capacity ..... 7 - 1
7 - 5	Compressed Air and Refrigerant Circuit / Operation Principles ..... 7 - 2
<b>Chapter 8 Specification for Option K</b>	
8 - 1	Safety instructions ..... 8 - 1
8 - 2	Specifications ..... 8 - 1
<b>Chapter 8 Specification for Option L</b>	
9 - 1	Safety instructions ..... 9 - 1
9 - 2	Specifications ..... 9 - 1
9 - 3	Specification of heavy duty auto drain (ADH4000-04)..... 9 - 2
9 - 4	Maintenance..... 9 - 2
<b>Chapter 10 Specification for Option R</b>	
10 - 1	Safety instructions ..... 10 - 1
10 - 2	Specifications of the GFCI..... 10 - 1
10 - 3	How to connect the power supply ..... 10 - 1
10 - 4	Cautions for handling the GFCI ..... 10 - 3
10 - 5	Electric circuit..... 10 - 3
<b>Chapter 11 Specification for Option S</b>	
11 - 1	Safety instructions ..... 11 - 1
11 - 2	Specifications ..... 11 - 1
<b>Chapter 12 Specification for Option T</b>	
12 - 1	Safety instructions ..... 12 - 1
12 - 2	Specifications ..... 12 - 1
12 - 3	Remote operation..... 12 - 2
12 - 4	How to connect the power supply and signal cable..... 12 - 2
12 - 5	How to re-start the operation ..... 12 - 3
12 - 6	Electric wiring diagram..... 12 - 4

**Chapter 13 Specification for Option V**


13 - 1	Safety instructions .....	13 -1
13 - 2	Specifications .....	13 -1
13 - 3	How to perform maintenance.....	13 -2
13 - 4	Electric circuit.....	13 -2

**Chapter 14 Service Record**

14 - 1	Service Record .....	14 -1
--------	----------------------	-------

**i-2     Danger Classifications & Position of Hazard warning Labels**

To help you recognize the hazards, the unit utilizes special graphics to indicate different hazards. Confirm the contents of the hazards and the location of the labels before operation.

 <b>Warning</b>
<ul style="list-style-type: none"> <li>• Only properly trained, qualified personnel are allowed to perform tasks such as: Operation, installation, relocation of equipment and maintenance works.</li> <li>• Should any problem occurs, address it according to instruction in this manual.</li> <li>• Identify problems following the guidelines in Chapter 5 for Troubleshooting before proceed with maintenance works.</li> <li>• The equipment should not be turn on in the event of any problems. When the equipment gets out of order, shutdown immediately, and contact for service</li> </ul>

**i-2-1     Danger Classifications**

Specific danger classification of this equipment is as follows.

**Hazard of Electricity**

Since this equipment operates with high voltage, there is the danger of electric shock. This special symbol is used, along with key words: “CAUTION”, “WARNING” or “DANGER”, on the equipment and in this manual.

**Hazard of Hot Surface**

Since this equipment becomes hot while running, there is the danger of burn injury. This special symbol is used, along with key words: “CAUTION”, “WARNING” or “DANGER”, on the equipment and in this manual.

**Hazard of Rotor**

Since this equipment has parts that rotate at high speed while running, there is the danger of bodily injury. This special symbol is used, along with key words: “CAUTION”, “WARNING” or “DANGER”, on the equipment and in this manual.



**i-2-2 Hazard of Electricity**

	<b>Warning</b>
<p>Inside of this equipment, there is a power-supplying section with high voltage separated by the cover panel. Do not operate the equipment with the cover panel off.</p>	

**i-2-3 Hazard of Hot Surface**

	<b>Warning</b>
<p>Since this equipment has parts that become hot during operation, there is the danger of burn-associated injuries. These parts remain hot even after power is off. Wait until the unit has cooled down before touching.</p>	

**i-2-4 Hazard of Rotating Fan Motor**

	<b>Warning</b>
<p>Since this equipment has parts that rotate during operation, there is the danger of injury resulting from direct contact. The fan and rotor will start/stop automatically. Thus, do not work on them when power is on.</p>	

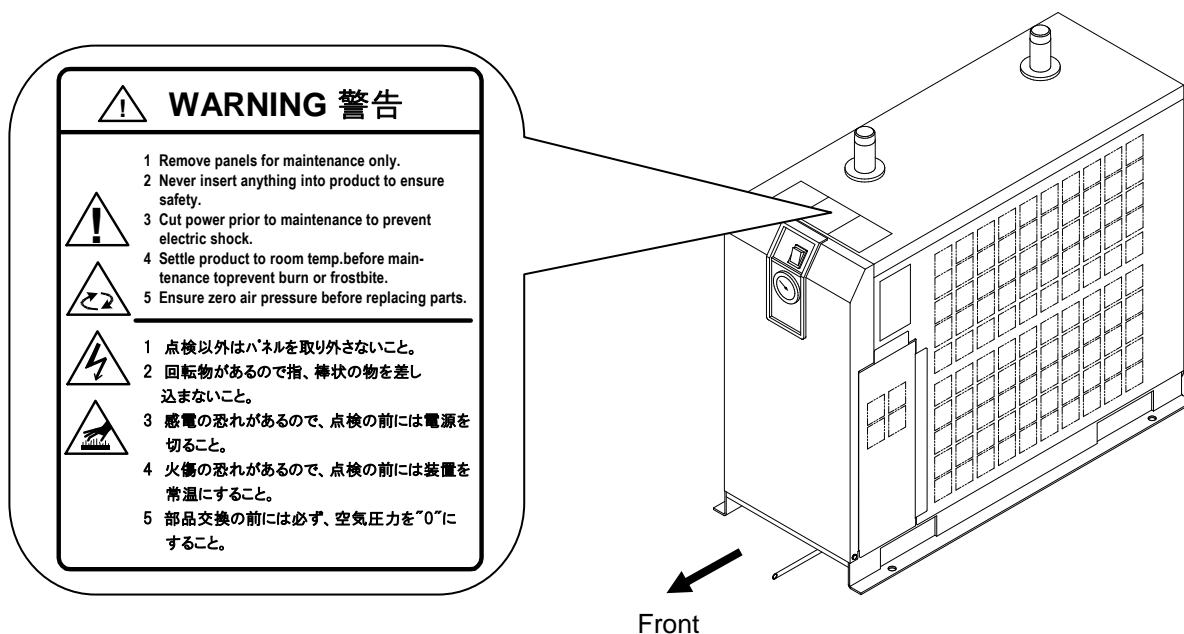
**i-2-5 Danger of Compressed Air Circuit**

	<b>Warning</b>
<p>Before replacing or cleaning parts, be sure to relief the pressure remained inside of the equipment until the gauge indicates "0". High pressure can propel object at high velocity and cause injury.</p>	

## i-2-6 Positions of Danger Warning Label

**Warning**

- Read with caution and pay attention to the notations of danger warning labels.
- Do not remove or rub danger warning labels.
- Confirm the positions of danger warning labels.

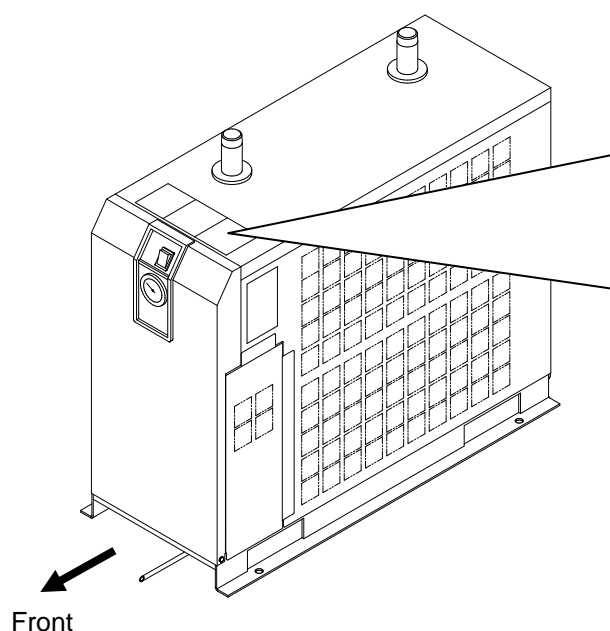




## i-2-7 Hazard of Refrigerant

**Caution**

- This equipment uses Fluorocarbon (HFC) as a refrigerant.
- It is strictly forbidden to emit Fluorocarbon into the atmosphere. Before you repair the refrigerant circuit, you should collect the refrigerant with proper evacuation system. The collected refrigerant should be properly recycled by qualified agency. Only personnel with proper credential are allowed to handle refrigerant.
- Only properly trained qualified personnel are allowed to remove the cover panel of the equipment.
- The quantity and the type of Fluorocarbon are mentioned on the specification label. See Page i - 6, i - 7.



Act for Rationalized Use and Proper Management of Fluorocarbons

フロン排出抑制法 第一種特定製品

- This product uses Fluorocarbon (HFC) as a refrigerant.
- 1 It is prohibited to release fluorocarbons without permission.
  - 2 For the disposal of the product, fluorocarbons must first be collected.
  - 3 The number and quantity of the refrigerant of the fluorocarbon used for this product is shown on the product label.
  - 4 GWP values of the calculated leakage of fluorocarbons to be reported are as in the table below.

この製品には冷媒として、フロン類 (HFC) が使用されています。

- 1 フロン類をみだりに大気中に放出することは禁じられています。
- 2 この製品を廃棄する場合には、フロン類の回収が必要です。
- 3 本製品に使用している、フロン類の冷媒番号、量は、型式銘板に記載されています。
- 4 算定漏えい量の報告に使用する、フロン類の GWP 値は以下になります。

Refrigerant No.	R134a	R407C	R410A	R404A
GWP values	1430	1770	2090	3920

## i-2-8 Cautions about Usage



## Warning

Please follow the instructions on all warning labels. Do not remove or deface warning labels, and confirm the location of warning labels.



## CAUTION 注意

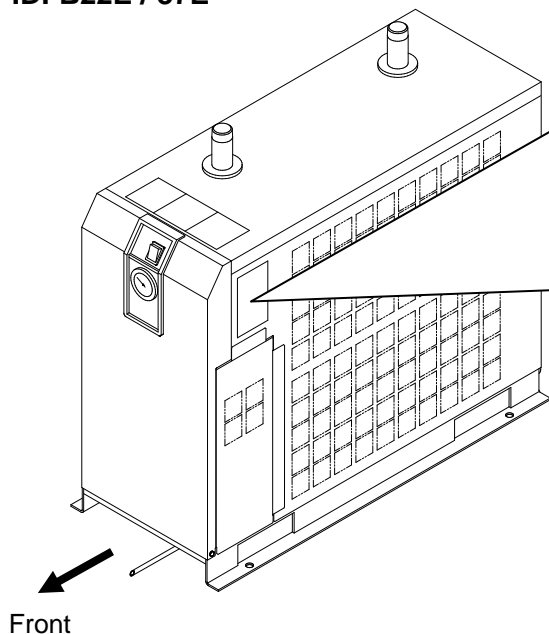
- 1 Read manual before operation.
- 2 Ensure ventilation and maintenance space.
- 3 Keep water away from the product.
- 4 Secure In / Out connector with spanner during piping.
- 5 Wait 3 minutes before restart.
- 6 Ensure Running Condition / Evaporating Temp. in green zone.

- 1 ご使用前に必ず取扱説明書を読んでください。
- 2 通風、メンテナンススペースを確保してください。
- 3 雨や水滴がかからないようにしてください。
- 4 IN/OUTポートをスパナで固定して配管してください。
- 5 再起動は運転停止3分後に行ってください。
- 6 RUNNING CONDITION・蒸発温度計はグリーン帯で使用してください。

Front

## i-2-9 Other Label

IDFB22E / 37E



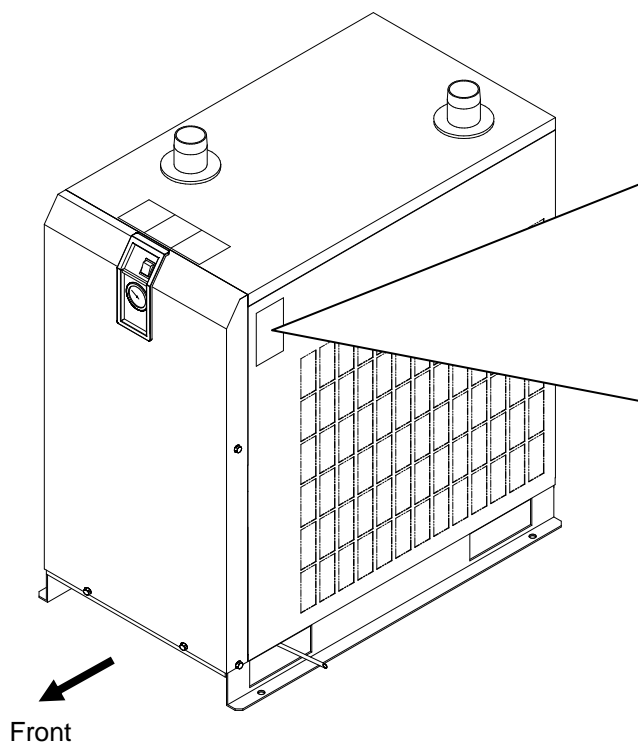
AIR DRYER

MODEL  
VOLTAGE  
RATED CURRENT  
MCA  
MOPD  
CMP LRA  
AIR FLOW RATE  
MAX. INLET PRESS.  
MAX. INLET TEMP.  
MAX. AMBIENT TEMP  
MIN. AMBIENT TEMP  
REFRIGERANT R134a  
LO. SIDE PRESS.  
HI. SIDE PRESS.  
WEIGHT  
SERIAL No.  
MAKER



\*12456789\*

## IDFB55E / 75E



AIR DRYER


MODEL  
VOLTAGE  
MCA  
MOPD  
COMPRESSOR RLA/LRA  
FAN MOTOR HP/FLA  
AIR FLOW RATE  
MAX. INLET PRESS.  
MAX. INLET TEMP.  
MAX. AMBIENT TEMP.  
MIN. AMBIENT TEMP.  
REFRIGERANT R407C  
LO. SIDE PRESS.  
HI. SIDE PRESS.  
WEIGHT  
SERIAL No.  
MAKER




\*12456789\*

### **i-3 Disposal**

When you dispose of the equipment, you should collect the refrigerant and the refrigerant oil inside the refrigerant circuit.

 <b>Caution</b>
<p><b>This equipment contains Fluorocarbon HFC.</b></p> <p><b>It is strictly forbidden to emit Fluorocarbon into the atmosphere. Before you repair the refrigerant circuit, you should collect the refrigerant with proper evacuation system. The collected refrigerant should be properly recycled by qualified agency. Only personnel with proper credential are allowed to handle refrigerant.</b></p> <p><b>Only properly trained and qualified personnel are allowed to remove the cover panel of the equipment.</b></p> <p><b>The quantity and the type of Fluorocarbon are mentioned on the specification label. See Page i - 6, i - 7.</b></p>

 <b>Caution</b>
<p><b>Dispose of the refrigerant and refrigerant oil according to the regulation of local government.</b></p> <p><b>Only personnel with proper credential are allowed to collect refrigerant and refrigerant oil.</b></p> <p><b>Only properly trained and qualified personnel are allowed to remove the cover panel of the equipment.</b></p> <p><b>For any questions, please contact our factory or SMC authorized dealers.</b></p>

## **i-4 Limited warranty and Disclaimer / Compliance Requirements**

The product used subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements". Read and accept them before using the product.

### **Limited warranty and Disclaimer**

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered. Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.  
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

### **Compliance Requirements**

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulation of the countries involved in the transaction. Prior to the shipment of a SMC product of a SMC product to another country, assure that all local rules governing that export are known and followed.



### **Caution**

**The Product is provided use in manufacturing industries.**

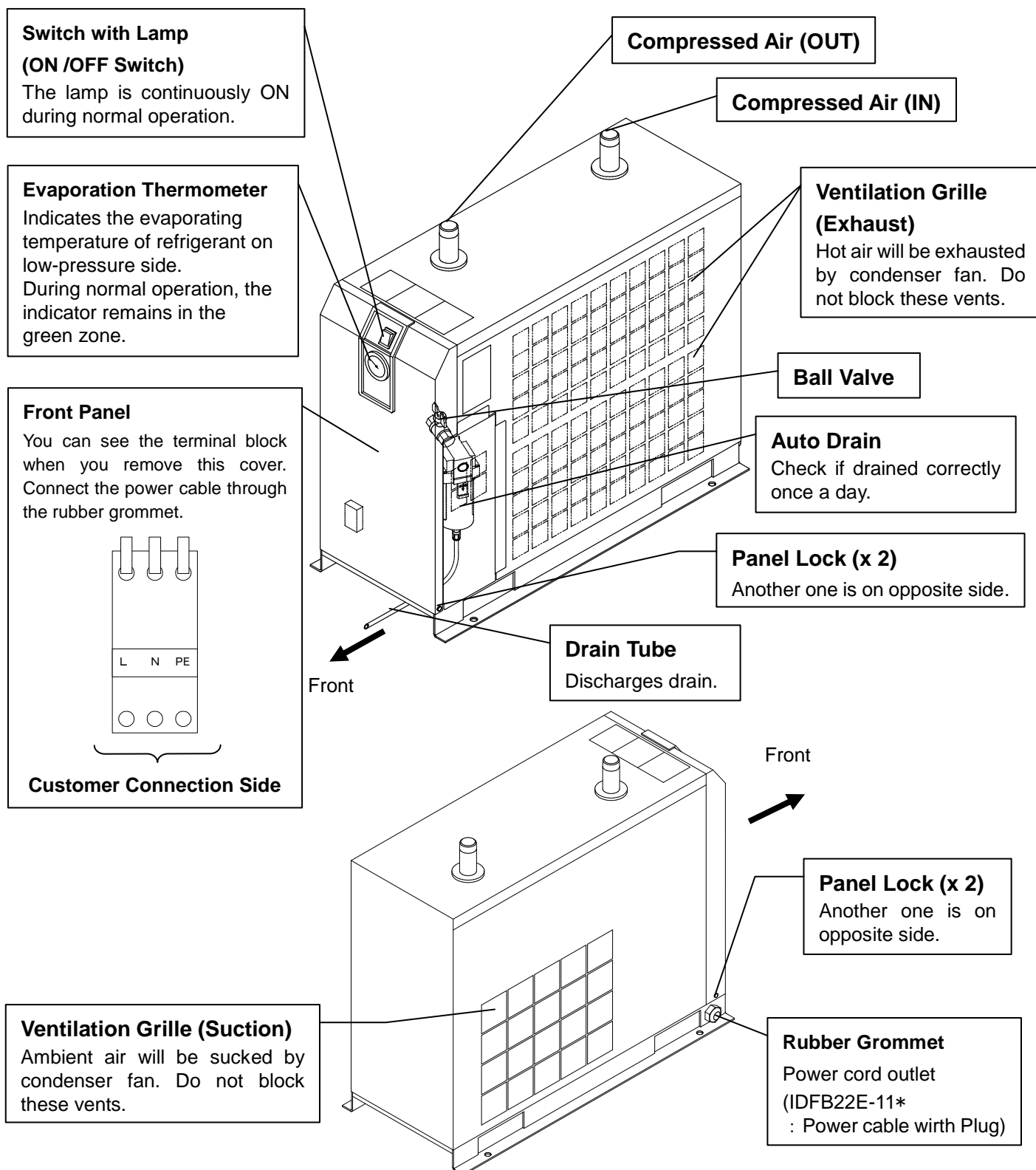
**The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contact if necessary. If anything is unclear, contact your nearest sales branch.**



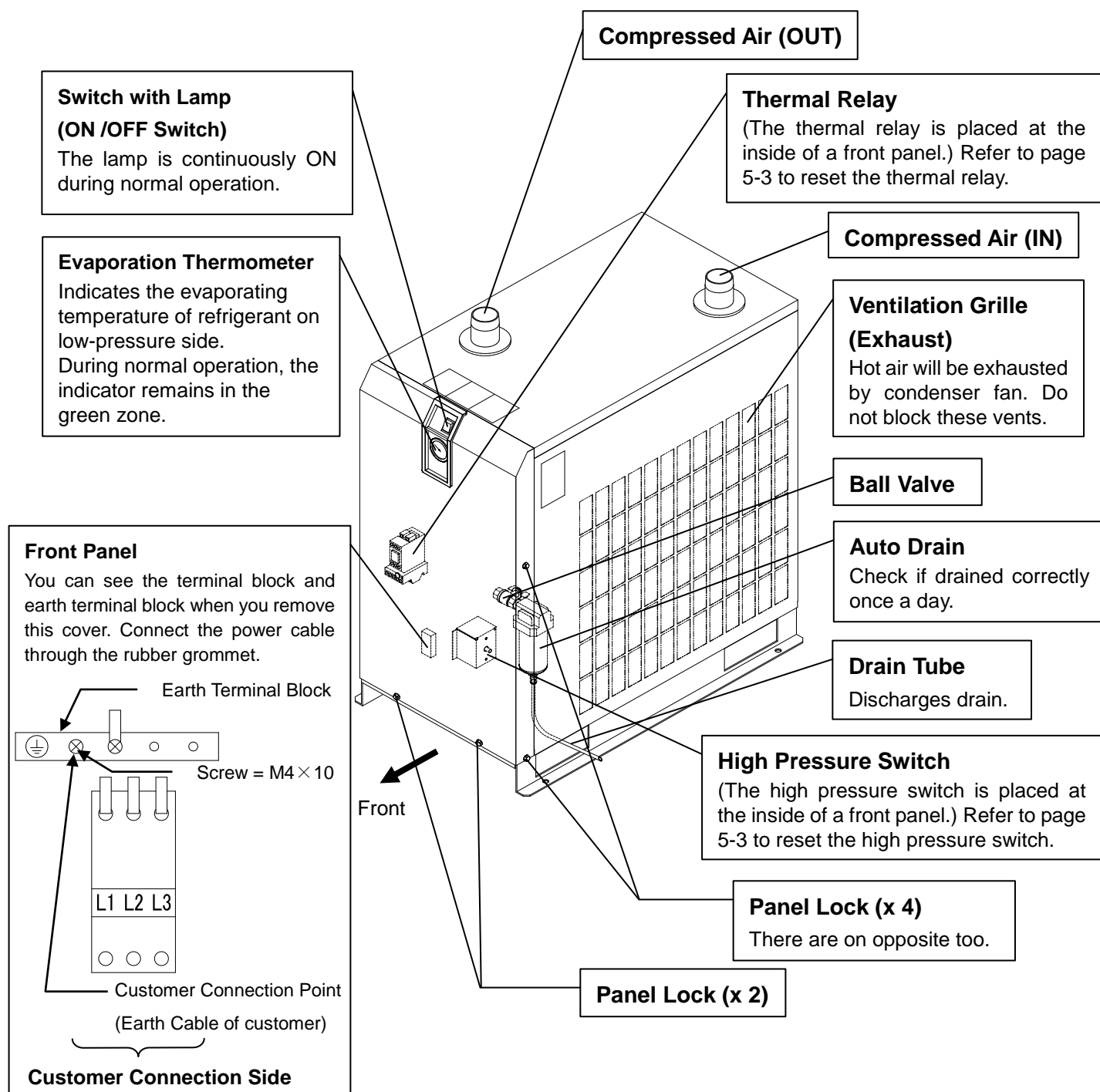
# Parts Name and Functions

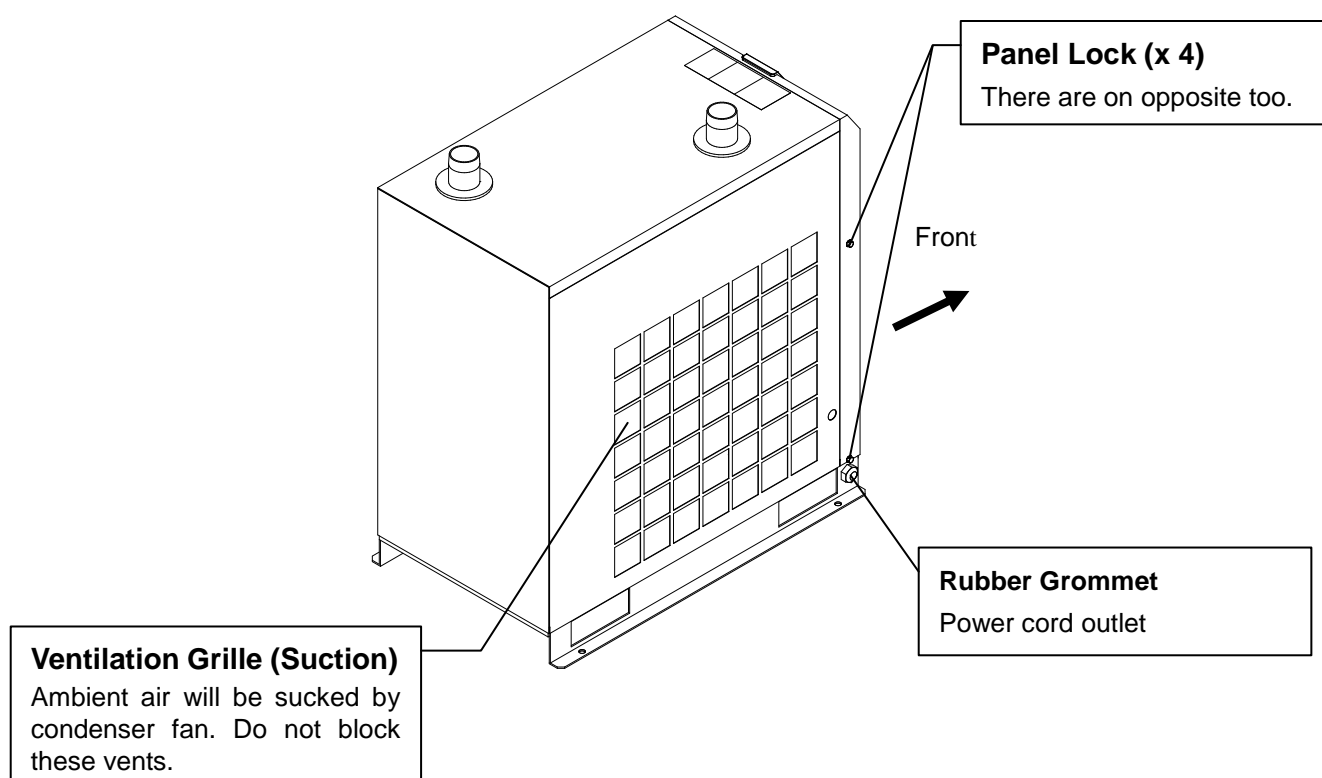
## 1-1 Parts Name and Functions

### • IDFB22E, 37E



## • IDFB55E, 75E







**2****Transportation / Installation****Warning**

- Only properly trained, qualified personnel are allowed to perform tasks such as: Operation, installation, relocation of equipment and maintenance works.
- Strongly recommend to prepare the spare dryer when applying the dryer for important equipment or system.

**2-1 Transportation**

When you transport the equipment, you should follow the instructions below:

- You should lift the equipment from the base surface with careful attention to prevent tipping over.
- Do not lay the equipment sideways, or you will damage the equipment.
- Do not suspend the equipment from the ceiling or hang from the wall.
- 

**Warning**

This equipment is heavy.

Each model weights about 110lbs (50kg) or more. More than one person is required to move it, a forklift is necessary.

## **2-2 Installation**

### **2-2-1 Location**

**The equipment should not be used or stored in the following conditions: Those conditions will cause not only malfunction but also failures.**

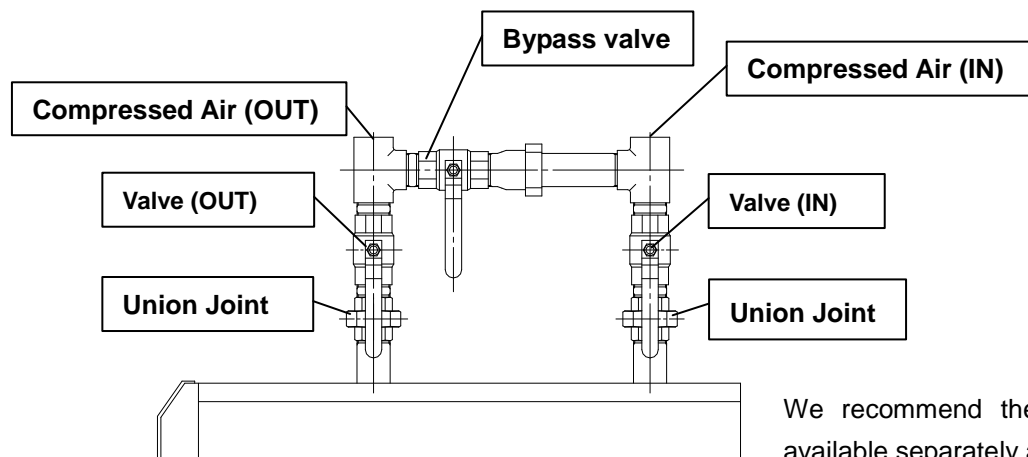
- Environment where the equipment is exposed to rainwater, moisture, salt water or oil.
- Locations where the equipment is exposed to dust or particles
- Locations where the equipment is exposed to flammable, combustible or explosive fumes.
- Locations where the equipment is exposed to corrosive gas or solvent.
- Locations where the equipment is exposed to direct sunlight or radiated heat.
- Locations where ambient temperature is beyond following range:
  - On-stream: 36 to 104° F (2 to 40°C)
  - Storage: 32 to 122° F (0 to 50°C)
  - (when there is no drain water inside of the piping)
- Locations where temperature changes rapidly.
- Locations where strong electromagnetic noise is generated.
- Circumstances where static electricity is produced or discharged through the body of the equipment
- Locations where strong high frequency shock wave is generated
- Locations where danger of thunder is apparent.
- Locations where loading on vehicles, marine vessels, and so on
- Locations where altitude is higher than 2,000 meters
- Circumstances where strong vibration or impact are transmitted.
- Circumstances where too much force and weight are put on the body of the equipment that causes it to deform.
- Circumstances where not enough clearance spaces to do maintenance
  - Spaces needed for maintenance
  - Front : 2feet (0.6m)
  - Rear : 2feet (0.6m)
  - Top : 2feet (0.6m)
  - Right : 2feet (0.6m)
  - Left : 2feet (0.6m)
- Locations where ventilation grille of the equipment can be blocked.
- Locations where the dryer could intake warm air (for example from a compressor or other dryers).
- Condition which has sudden pressure/flow rate changes.

### 2-2-2 Tie Down

- The air dryer should be installed on a vibration-free, stable, horizontal, flat surface.
- Refer to “Chapter6 6-3 Dimensions” for the dimensions.
- This model should be installed using anchor bolts (not included) to prevent shifting during a potential earthquake.

### 2-2-3 Air piping

- Connection to the inlet and outlet of compressed air should be made removable by using union or similar connection.
- Support the IN/OUT ports with a wrench during tightening or loosening of fittings.
- Do not allow the equipment to support the weight of the piping.
- Isolate the vibration generated by the compressor.
- If the temperature of compressed air on the inlet side is higher than 122° F (50°C), place an aftercooler unit after the air compressor.
- If the air supply makes high pressure fluctuation (pulsation), take any countermeasures such as installing air tank.
- Clean pipes and fittings before use and select a suitable filter to prevent dust, oil or chips from entering the air dryer, which can cause failure to the equipment.
- Use pipes and fittings that can withstand the operating pressure and temperature of the compressed air. Make sure all connections are leak-free.
- Provide bypass piping to make it possible to do maintenance without stopping the air compressor.



### 2-2-4 Drain Tube

- A polyurethane tube (3/8inch) O.D. is attached to the auto drain. The end of the tube is open to atmosphere to let drain flow through the tube into a collector or drain pipe.
- The compressed air is used to push out the drain periodically. Fix the outlet end of the tube in order to prevent whipping action during discharge.
- Install the drain tube in such a way so that no drain is trapped.
- During installation, make sure the dryer does not sit on the drain tube which is at the bottom of the unit. Be careful to avoid the dryer from crushing the tube during installation.

**Warning**

- To handle drain discharge, follow the safety guidelines such as wearing protective goggles, apron, and gloves.
- In cases where oil is mixed in the wastewater discharged from the auto drain, the liquid would be considered as toxic waste and treatment is necessary in accordance with local regulations.

**2-2-5 Electric Wiring****Warning**

- Only properly trained and qualified personnel are allowed to perform wiring work.
- Before wiring, you must disconnect the power. Do not work under any energized conditions.
- Supply power from a stable source that is free from the effect of surge.
- Referring to “6-1 Specifications,” make sure to install a GFCI breaker that has the right short circuit capacity and load capacity.
- Supply power of the equipment should meet the specifications on page 6-1.
- The equipment must be grounded for safety.
- Do not connect ground wire to a water pipe, a gas pipe, or a lightning rod.
- Do not plug too many leads into a single socket.
- The customer must prepare for countermeasures of the power failure. The dryer may not start normally at the moment of power failure.
- Circuit breaker must be properly selected to meet safety standard of local regulations.
- Always be sure to connect the protective conductor first, disconnect it last in respect to the other connections.
- Be sure that the protective conductor has some additional length in respect to the live conductors, so that it is not subject to mechanical stresses.
- Be sure to install the circuit breaker correctly so that it disconnects all live conductors and so that the operating handle can be easily accessible.

**How to connect wiring**

- Take off the front panel in front of the product and connect the power supply (AC230V) to the terminal base.
- Install a Ground Fault Circuit Interrupter(GFCI) to the power supply. (Prepare by yourself)  
[sensitivity of leak current: 30mA and below, Rated current 10A (IDU75E...Rated current 20A) ]

**Specification of power cable**

Prepare following power cable.

Power cable: 16AWG (1.25mm<sup>2</sup>), Three-cores (including the ground cable) [IDFB22E/37E], Four-cores (including the ground cable) [IDFB55E/75E], External diameter: about 0.3inch (8mm) to 0.5inch (12mm). Additional length of about 4inch (0.1m) is needed to wire inside of the equipment.

**Length of the power cable**

The maximum length of the power cable should be no more than 98feet (30m).

**Connecting to the power supply**

Connect the power cable and the ground to the terminal block.

**Wiring procedure**

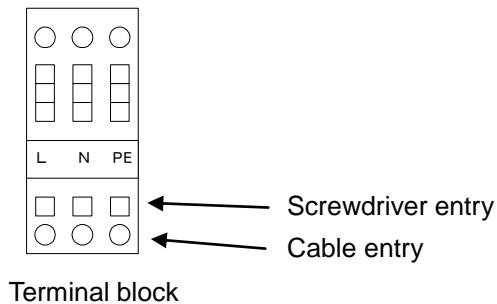
1. Remove the terminal block cover or the front panel.
2. Insert the cord through the rubber grommet and connect it to the terminal block (refer to the label on the terminal block).

During wiring work, do not touch other sections except terminal block.

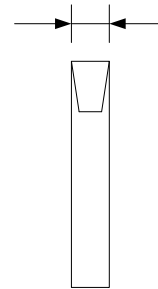
3. Insert the screwdriver into terminal block and open spring of terminal.

(The cable insulator must be stripped at 3/8inch (10mm).)

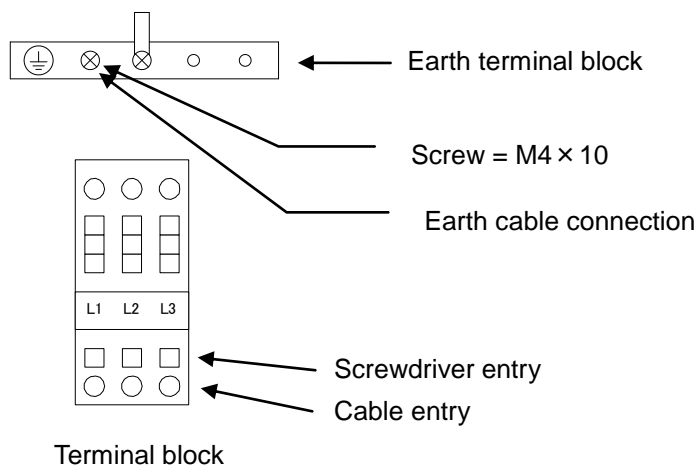
4. Insert the cable and remove the screwdriver.
5. Re-attach the cover or real panel after wiring is done.

**IDFB22E, 37E**

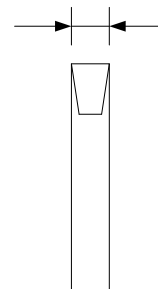
118 to 138 mil  
(3 to 3.5mm)



Applicable screwdriver

**IDFB55E, 75E**

118 to 138 mil  
(3 to 3.5mm)



Applicable screwdriver

## 2-3Cautions for Reinstallation



### Caution

**No one but someone who has enough knowledge about the product and incidental devices should reinstall in another place. And following instructions must be executed.**

If you move the product and reinstall it into another place after some operations (including trial running), instructions that are not only following ones but also all of those in the chapter 2 should be followed.

#### Disassembly of the power cable

Cut off the power source when you disassemble the power cable.



### Warning

**No one but qualified personnel should do the electric wiring.  
Cut off the power supply for safety before the wiring. Do not work under energized condition.**

#### Disassembly of the air piping



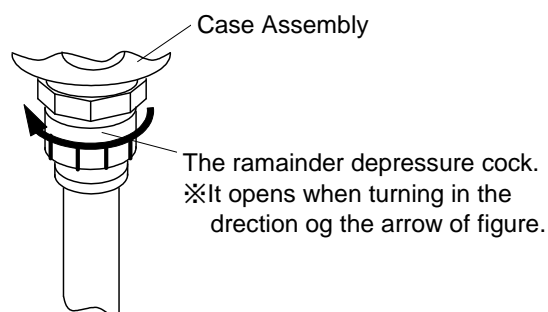
### Warning

**No one but qualified personnel should do the air piping.  
Separate the compressor from the product for safety before removing the piping. Do not remove any piping when there is remaining compressed air pressure inside of it.**

- Remove the seal tape completely after detaching the piping. Remained tape will cause imperfect cooling and failure by entering into the body of the product.

#### Residual compressed air pressure release procedure

- Even while the dryer is removed, only when compressed air is needed, open the bypass piping valve.
- Close the compressed air inlet and outlet valve.
- Make sure the ball valve located next to the auto drain opened.
- Open the auto drain residual pressure release valve to release air pressure inside the product. Refer to the Figure at right.



## **3 Operation / Shutdown**



### Caution

**Only properly trained and qualified personnel are allowed to perform operation/shutdown of the equipment.**

### **3-1 Check points before operation**

Before trial run, check the following points:

- **Installed Conditions:**  
By visual inspection check that the equipment is level.  
Make sure the equipment is tied down with anchor bolts.  
Do not place heavy objects on the top of the equipment. Make sure piping does not add weight to the equipment.
- Power cord, and the ground should be connected firmly.
- Drain tube should be connected correctly.
- Make sure the piping for compressed air is connected correctly.
- Make sure the ball valve located next to the auto drain opened.

### **3-2 Operation**

Start operation according to the procedure below.

- Turn on the breaker of the main power supply. Then, turn ON the ON/OFF switch.
- The lamp will light up. Few minutes later, the cooling fan will rotate and hot air will be exhausted from the ventilation grille.  
Location of the ventilation grille: Right Side
- Open the IN/Out side valve slowly. Make sure the bypass valve is completely closed. Confirm there are no air leaks.
- Depending on the condition of compressed air or ambient temperature, the cooling fan sometimes alternates between start/stop at the beginning. Then, the refrigerant compressor will start and the pointer of the evaporating temperature will indicate in the green zone. If the pointer indicates higher than the green zone, refer to "Chapter 5 Troubleshooting."
- After running for a while, moisture will be discharging from the drain tube automatically.



### Caution

- **Avoid frequent On/Off operation, which may cause problems.**
- **The auto drain used for the equipment has a structure that closes the valve with air pressure higher than 22psi (0.15MPa) .**  
Therefore, until the pressure increase, air will be emitted form the drain outlet at the begining of opening the IN side valve. Keep in mind that sometime the pressure cannot increase enough with air compressor that has low dischage flow rate.
- **Avoid using this product under the condition which has sudden pressure/flow rate changes. Otherwise, drain (condensed water) may flow out to the secondary piping.**

### **3-3 Shutdown**

- ① Turn off the ON/OFF switch.
- ② The lamp will go out and then, the operation will stop. Depending on the condition of operation, hot air continues to be emitted from the ventilation grille by the cooling fan for a while after turning off the switch.

### **3-4 Cautions about restart**

- Wait at least 3 minutes before restarting the air dryer after it has been shut down. Failure to do this may cause safety devices to trip due to over load. If it is not possible to restart, refer to “Chapter 5 Troubleshooting.”

### **3-5 Check points before restart**

Check following points before you start operation. If any abnormalities occur, immediately stop the operation.

Turn off the ON/OFF switch follow by the breaker of the main power supply.

- There are no air leaks.
- Air pressure, temperature, flow rate, and ambient temperature meet the specifications.
- Moisture is being discharged from the drain tube.
- The pointer of evaporating temperature indicates in the green zone.
- Drainage should not be exhausted from the outlet of the air dryer.
- There are no abnormal sound, vibration, or odor.

### **3-6 Precautions for long-term non-operation**

- If the product will not be operated for more than 24 hours, for example at the weekend, turn off the ILS (Switch with lamp) or power supply, for energy saving and safety. It is also recommended to release the pressure and residual drainage inside the compressed air piping and this air dryer.
- The residual drainage in the air dryer may splash over the outlet when the operation is re-started, so it is recommended to install a filter on the outlet of the air dryer.



## 4

## Maintenance

**4-1 Daily Inspection**

Check following points during normal operations. If you find some problems, immediately stop the dryer and refer to "Chapter 5 Troubleshooting" as soon as possible.

- There is no air leaks.
- The running lamp is on during operation
- Moisture is being discharged from drain tube
- The pointer of the evaporating temperature indicates in the green zone
- The pointer of the evaporating temperature indicates about 41 to 59° F (5 to 15°C) lower than that of the ambient temperature when compressed air stops supplying to the air dryer.
- There is no abnormal odor or smoke coming from the equipment.
- It is recommended to keep a maintenance/service record. Please refer to "Chapter 12-1 Service Record"

**4-2 Periodical Maintenance****4-2-1 Cleaning of ventilation grille (suction grille)**

Clean dust and other foreign particles from the ventilation area with vacuum cleaner or air blow nozzle once a month.

**Caution**

During air blowing, put on protective glass and mask to prevent dusts from coming into throat or eyes.

**4-2-2 Service parts**

It is recommended to replace the following parts regularly. The interval shown in this operation manual depend on the operating conditions (ambient temperature, installation environment, etc.), so that they are for reference .

- Table 1. List of parts to be replaced regularly

Description	Recommended replacement interval
Pressure switch	One Million times.
Fan motor	20,000 hours
Magnetic Contactor, Magnetic Switch (Note)	One Million times.

\*Note) If it is mounted by option "T" (With terminal block for power supply , run , alarm signal and remote operation) or special order.

**4-2-3 Cleaning of the case assembly**

Remove the dust deposited in the auto drain case assembly every month. Use neutral detergent for cleaning. If the degree of dirt is heavy and operating failure still continues even after cleaning, replace the product. Also, shorten cleaning interval from the next time.

- Part No. of case assembly

Parts No.	Description	IDFB22E	IDFB37E	IDFB55E	IDFB75E
AD48N-Z (Thread Symbol : N)	Auto Drain	1	1	1	1
AD48 (Thread Symbol : None)	Auto Drain	1	1	1	1



## Warning

- Maintenance of the air dryer should only be carried out by someone with sufficient knowledge and experience of air dryers and related equipment.
- Before carrying out maintenance, the important warnings in this manual must be thoroughly read and understood.



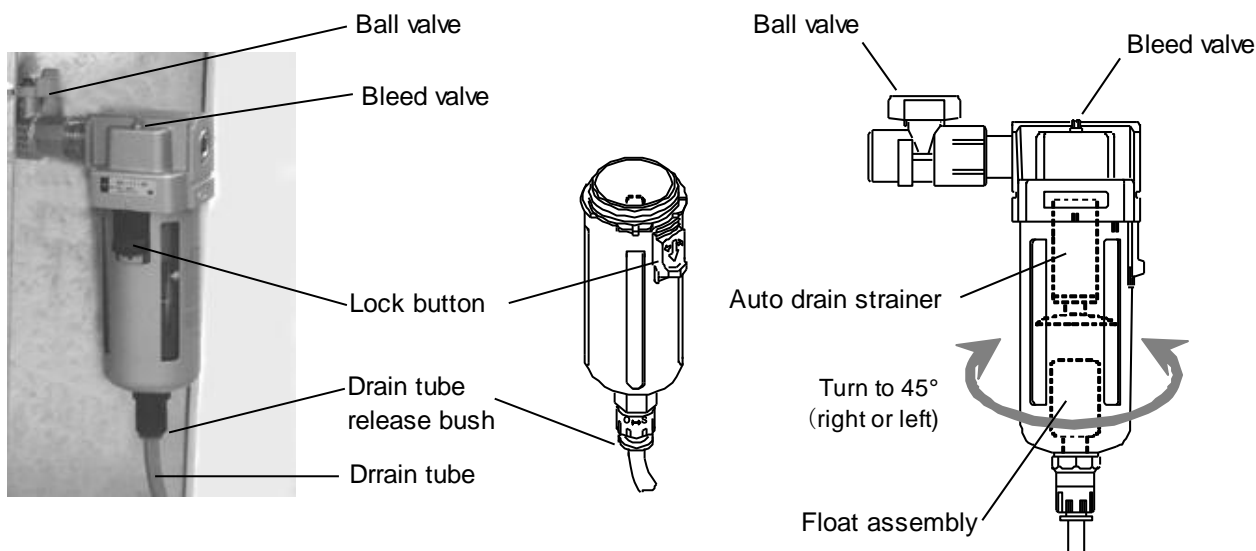
## Danger

- When replacing or cleaning parts of the air dryer, be sure to remove the compressed air pressure inside the air dryer to "0". Never remove the case assembly when the air dryer is operated or air pressure remains inside. It is extremely dangerous if compressed air pressure remains inside the air dryer, as parts may come flying off at speed when loosened, or other unexpected accidents.
- This product has parts that become hot during operation and a power supply with high voltage applied. There is a risk of burns due to heat or electrification by high voltage. Even when operation is shut down after switching off the air dryer's illuminated light, there are also charging lines. When working on the charged sections, be sure to switch off the earth leakage breaker installed before starting work.
- As some parts of the air dryer will remain hot, there is a risk of burns due to residual heat after the power is switched off. So do not carry out replacement work until the temperature of these parts has fallen to 50°C or less. Wait for about 10 to 15 minutes as a guide.
- When carrying out maintenance work on the auto drain strainer and auto drain, there is a risk of touching the drain fluid during work. Please follow the safety procedure for operators specified by customer. (Example: carry out work wearing safety glasses, apron and gloves to prevent discharged fluid from touching the human body.)
- Use neutral detergent solution to clean parts such as the auto drain strainer and auto drain. Never use solvent such as thinner.
- When removing the outer casing panel or case assembly of the auto drain, wear gloves to prevent injuries.

## How to clean and replace the case assembly.

**When carrying out maintenance work on the auto drain and auto drain strainer, please follow the steps below.**

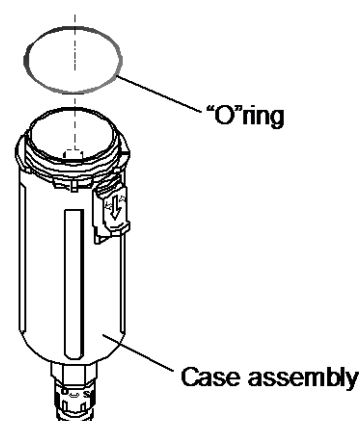
- Turn off the illuminated ON/OFF switch.
- Disconnect the earth leakage breaker at the power supply or unplug the power plug from the socket.
- Fully close the IN/OUT valves. Only open the bypass when compressed air is required during work.
- Only the point that is necessary for work please remove a decoration panel.



- Close the ball valve.
- Open the bleed valve by turning it anticlockwise to release air left in the product.
- Remove the drain tube from the case assembly.
- Hold the case assembly lightly and pull down the lock button with thumb. Then, turn the case assembly to the left (or right) to 45° to align the marks, Release your thumb from the lock button and slowly pull down the case assembly (vertically) to remove it.
- Pour solution of neutral detergent into the case assembly and shake it well to clean.
- Check the case O-ring for damage such as scratches, twisting or foreign particles attached to it. Then, apply grease thinly and fit it in the groove in the case assembly.
- Fit the case assembly to the auto drain body. Turn it until the lock button clicks.
- Try to turn the case assembly lightly and check that it does not turn. If it turns, start with fitting the case assembly to the body again.
- Try to turn the case assembly lightly and check that it does not turn. If it turns, start with fitting the case assembly to the body again.
- Close the bleed valve by turning it clockwise and fit the drain tube as it was.
- Open the ball valve.
- If the case assembly is damaged or very dirty, replace it with a new one.



Pull down the case assembly slowly



## 5 Troubleshooting

### 5-1 Cause and countermeasure of errors

Should any problem occur, inspect the following table, and if the problem cannot be solved, shut off the power supply and then contact one of our sales offices for further instructions.

Problem	Probable Causes	Remedy
Although the switch with lamp is turned on, the lamp does not light up and the product does not start operating.	The power supply cable has been loosened or disconnected.	-Perform proper connection on the power cord and plug.
	The ground fault circuit interrupter is not turned on.	Check the capacity of the ground fault circuit interrupter. - Check the product was not restarted within 3 minutes after being stopped. - Turn on the ground fault circuit interrupter and try to operate. If the ground fault circuit interrupter turns back off, the insulation failure of the product is suspected. Turn off the power supply and contact SMC.
	Power line connection is wrong. (Phase Reversal Relay switch can't be ON.)	-Connect the power line correctly.
Running lamp extinguishes and compressor stops during operation but resumes normal operation Switch with lamp after a period of time.	The product is installed in an inappropriate location. Ambient temperature is excessive.	- Improve ventilation condition and reduce the ambient temperature as much as possible.  -Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch." (Only IDFB55E,75E)
	The ventilation port is obstructed by a wall or clogged with dust.	- Keep the product 600mm or more away from the surrounding walls. - Clean the ventilation ports once every month. -Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch." (Only IDFB55E,75E)
	The compressed air temperature is too high.	- Improve the ventilation in the location where the air compressor is installed, or decrease the ambient temperature to allow the discharge air temperature of the air compressor to go down. - Install an aftercooler after the air compressor to reduce the temperature. -Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch." (Only IDFB55E,75E)
	The fluctuation of the power supply voltage is too large.	- Install a power supply transformer or use a different power supply to provide appropriate voltage. - The fluctuation of the power supply voltage should be kept within +/-10% of the rated voltage. -Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch." (Only IDFB55E,75E)

Problem	Probable Causes	Remedy
The evaporation thermometer is over the green area without hot air coming from the ventilation port (exhaust port). (The compressor for refrigeration has stopped with the lamp lit up).	The product is installed in an inappropriate location. Ambient temperature is excessive.	- Improve ventilation condition and reduce the ambient temperature as much as possible.
	The ventilation port is obstructed by a wall or clogged with dust.	- Keep the product 600mm or more away from the surrounding walls. - Clean the ventilation ports once every month.
	The compressed air temperature is excessive.	- Improve the ventilation in the location where the air compressor is installed, or decrease the ambient temperature to allow the discharge air temperature of the air compressor to go down. - Install an aftercooler after the air compressor to reduce the temperature.
	The fluctuation of the power supply voltage is too large.	- Install a power supply transformer or use a different power supply to provide appropriate voltage. - The fluctuation of the power supply voltage should be kept within +/-10% of the rated voltage.
The evaporation thermometer is over the green area with hot air coming from the ventilation port (exhaust port).	The built-in overload relay of the compressor for refrigeration has started.	- Check the product was not restarted within 3 minutes after being stopped.
	The product is installed in an inappropriate location. Ambient temperature is excessive.	- Improve ventilation condition and reduce the ambient temperature as much as possible.
	The ventilation port is obstructed by a wall or clogged with dust.	- Keep the product 600mm or more away from the surrounding walls. - Clean the ventilation ports once every month.
Moisture is generated at the downstream of the compressed air line.	The compressed air temperature is excessive.	- Improve the ventilation in the location where the air compressor is installed, or decrease the ambient temperature to allow the discharge air temperature of the air compressor to go down. - Install an aftercooler after the air compressor to reduce the temperature.
	The bypass valve is open.	- Be sure to fully close the bypass valve.
	Condensate is not drained from the auto drain.	- Check the draining piping is not used in an upward direction nor bent. - Check the auto drain. - Check the auto drain strainer.
	The pressure fluctuation (pulsation) of the compressed air is too high.	-Install an air tank on the primary side of the dryer. -Avoid intermittent compressed air flow.
	Residual drainage in the air dryer splashes over when the unit is re-started.	-Install a filter on the outlet of the air dryer. - Blow the unit by air to eliminate the residual drainage after stopping or re-starting the operation.
The compressed air pressure is too large.	The piping of a different system without an air dryer joins the piping after the product.	- Install another air dryer (this product) in that system. - Keep the two systems separate.
	The valves at the inlet and outlet of the piping of the product are not fully opened.	- Be sure to fully open the valves at the inlet and outlet of the product.
	The air filter, etc. installed in the compressed air piping has got clogged.	- Replace the element of the air filter. (Follow the Operation Manual of the equipment.)

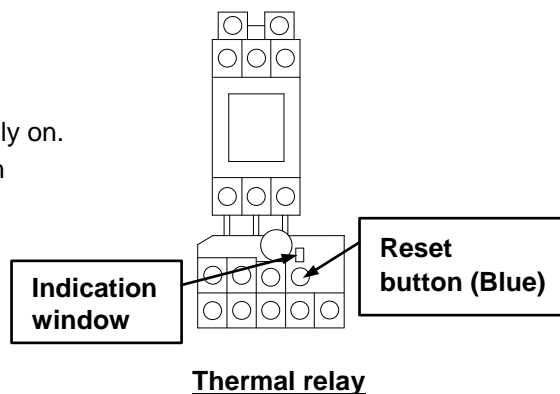
**5-2 How to reset the thermal relay and high pressure switch (Only IDFB55E, 75E)**

If light goes off during operation and refrigerating compressor stops, the thermal relay or high pressure switch (for only the IDFB55E and IDFB75E) to protect the refrigerating compressor starts operating and needs to be reset manually. For the position of the thermal relay and high pressure switch, refer to page 1-2.

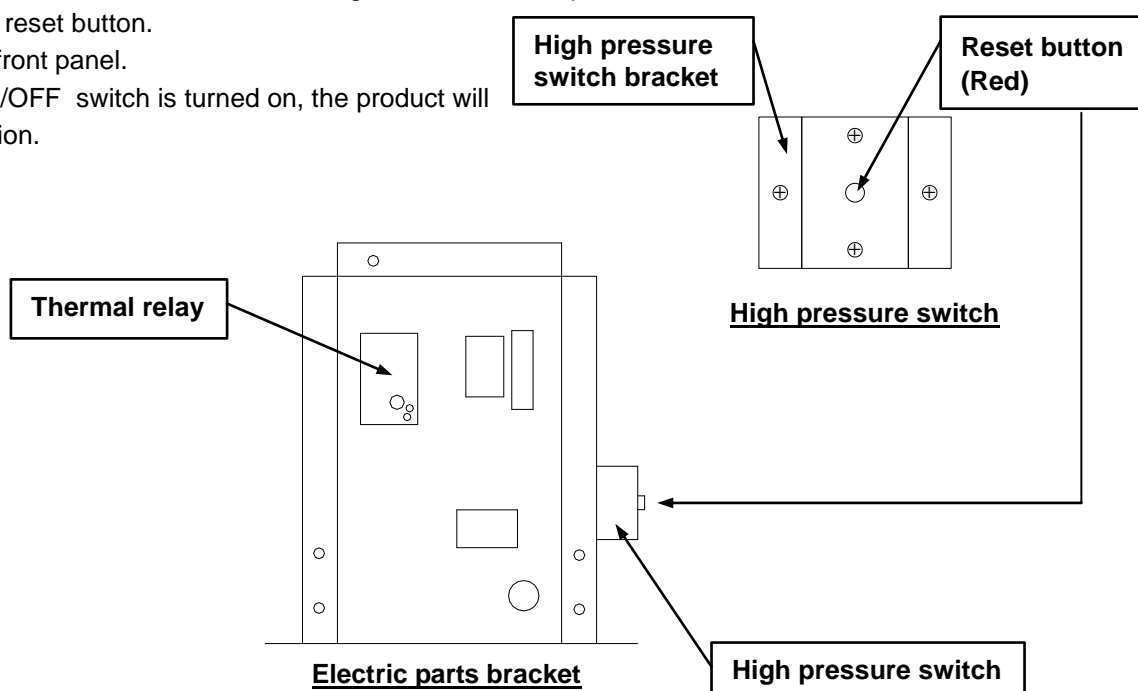
Before resetting the thermal relay and high pressure switch identify and cure problem that caused the unit to trip out, by referring to “5-1 Cause and countermeasure for errors”.

**How to reset a thermal relay**

- ① Turn off the ON/OFF switch.
- ② Take off the front panel. You can see the electric parts bracket.  
The thermal relay can be found left side and upper side in the electric parts bracket.
- ③ Confirm that a green indication does not appear in the indication window of thermal relay.  
If the green indication appears, there are other possible causes and contact an SMC Authorized Dealer keeping the power supply on.
- ④ Press the blue reset button and confirm that the green indication comes to appear at the indication window.
- ⑤ Put back the front panel.
- ⑥ When the ON/OFF switch is turned on, the product will restart operation.

**How to reset a high pressure switch**

- ① Turn off the ON/OFF switch.
- ② Take off the front panel. You can see the electric parts bracket.  
The high pressure switch can be found at right side of electric parts bracket.
- ③ Press the red reset button.
- ④ Put back the front panel.
- ⑤ When the ON/OFF switch is turned on, the product will restart operation.



## 6

## References

**6-1 Specifications**

Model		IDFB22E-11	IDFB22E-23	IDFB37E-23	IDFB55E-46	IDFB75E-46
Specification						
Air FlowRate (ANR)(Note 1)	At Expected Outlet Press.Dew Point of 37 ° F ( 2.8 )	107SCFM (182 m³/h)		161SCFM (273 m³/h)	226SCFM (384 m³/h)	300SCFM (510 m³/h)
	At Expected Outlet Press.Dew Point of 45 ° F (7.2 )	120SCFM (205 m³/h)		173SCFM (294 m³/h)	258SCFM (438 m³/h)	353SCFM (600 m³/h)
	At Expected Outlet Press.Dew Point of 50 ° F (10 )	130SCFM (221 m³/h)		181SCFM (308 m³/h)	297SCFM (504 m³/h)	406SCFM (690 m³/h)
Rated Condition	Operating Pressure	100psig (0.7MPa)				
	Inlet Air Temperature	100 ° F (37.8 )				
	Ambient Temperature	100 ° F (37.8 )				
	Voltage	115V 60Hz	230V 60Hz		460V 60Hz	
Operating Range	Working Fluid	Compressed Air				
	Inlet Air Temperature	40-122 ° F (5-50 )				
	MIN.Inlet Air Pressure	22psig ( 0.15MPa )				
	MAX.Inlet Air Pressure	150psig ( 1.0MPa )				
	Ambient Temperature	36-104 ° F (2 ~ 40 ) Relative Humidity of 85% or less				
Electrical Specification	Power Source	1 AC115V ± 10% 60Hz (Note4)	1 AC230V ± 10% 60Hz (Note4)		3 AC460V ± 10% 60Hz (Note4)	
	Starting Current and LRA (Note2)	42A	26A	30A	27A	
	Operating Current (Note2)	9A	4.5A	5.6A	3.8A	
	Power Consumption (Note2)	1000W		1270W	2400W	
	Circuit Breaker Capacity (Note3)	15A			10A	
Condenser		forced air cooling				
Refrigerant		R134a(HFC)			R407C(HFC)	
Refrigerant Charge Quantity		18.7 ± 0.4oz (530 ± 10g)		25.7 ± 0.4oz (730 ± 10g)	15.2 ± 0.4oz (430 ± 10g)	20.8 ± 0.4oz (590 ± 10g)
Thread Type and Size	Thread Symbol “N” (male)	NPT1		NPT1-1/2	NPT2	
	Thread Symbol “None” (male)	R1		R1-1/2	R2	
Drain Tube	Thread Symbol “N”	3/8inch				
	Thread Symbol “None”	10mm				
Painting Finish		baking finish				
Colour		Panel : Urbanwhite1				
Weight		119lbs (54kg)		137lbs (62kg)	258lbs (117kg)	271lbs (123kg)

Note1: The data for SCFM (ANR) is referring to the conditions of 68 ° F (20°C), 1atm . pressure & relative humidity of 65%.

Note 2: The value is that of under specified condition.

Note 3: Install GFCI breaker with sensivity of 30mA.

Note 4: When short period power shortage (including instantly recovered shortage) is recovered, it may take a longer starting period than usual starting or may not start due to the protective devices.

**6-2 Refrigerant with GWP reference**

Refrigerant	Global Warming Potential (GWP)	
	Regulation (EU) No 517/2014 (Based on the IPCC AR4)	Revised Fluorocarbons Recovery and Destruction Law (Japanese law)
R134a	1,430	1,430
R404A	3,922	3,920
R407C	1,774	1,770
R410A	2,088	2,090

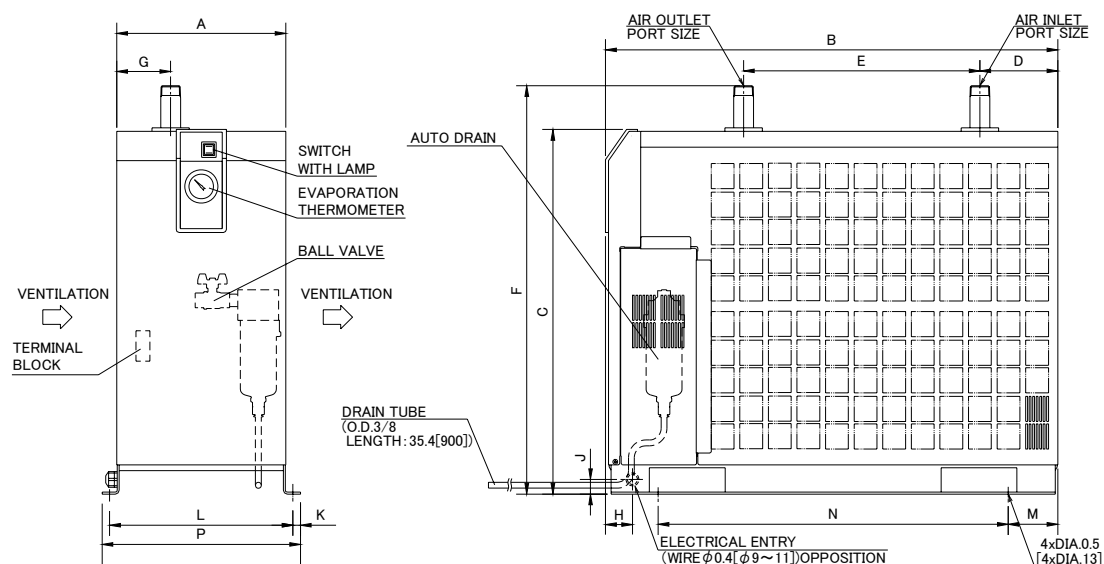
Note:

1. This product is hermetically sealed and contains fluorinated greenhouse gases.
2. See specification table for refrigerant used in the product.

**6-3 Dimensions**

## • IDFB22E / 37E

UNIT : inch [mm]

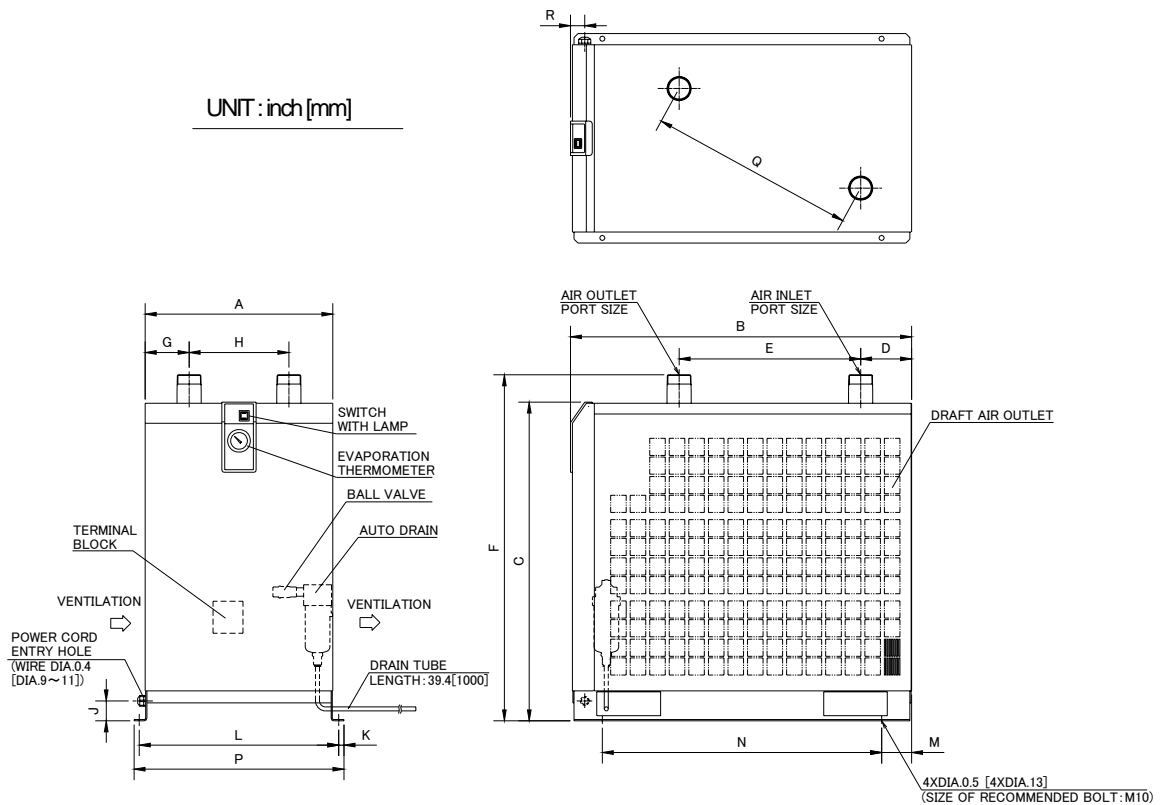


Model	Port Size	Dimensions (inch [mm] )													
		A	B	C	D	E	F	G	H	J	K	L	M	N	P
IDFB22E	1	11.4 [290]	30.5 [775]	24.5 [623]	5.3 [134]	15.9 [405]	27.5 [698]	3.7 [93]	1.8 [46]	1 [25]	0.5 [13]	12.4 [314]	3.3 [85]	23.6 [600]	13.4 [340]
IDFB37E	1/2		33.7 [855]											26.8 [680]	



## • IDFB55E / 75E

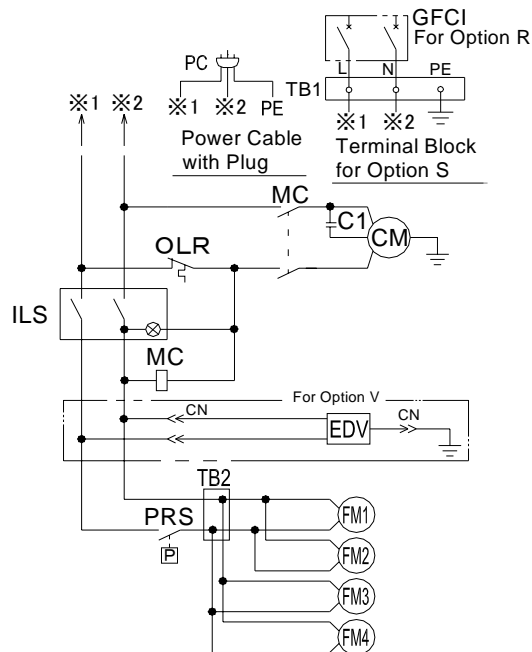
UNIT : inch [mm]



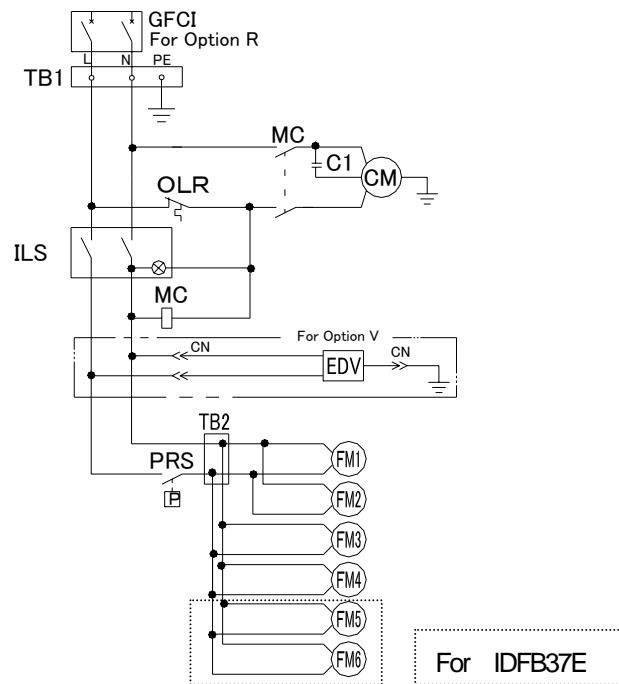
Model	Port Size	Dimensions (inch [mm])															
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
IDFB55E	2	18.5	33.7	31.5	5.0	17.9	34.2	4.3	9.8	2	0.5	19.7±0.1	3.0	27.6±0.04	20.7	20.4±0.2	1.4
		[470]	[855]	[800]	[128]	[455]	[868]	[110]	[250]	[50]	[13]	[500±2]	[75]	[700±1]	[526]	[519±5]	[36]
IDFB75E	2			35.4			38.1										
				[900]			[968]										

## 6-4 Electrical Circuit

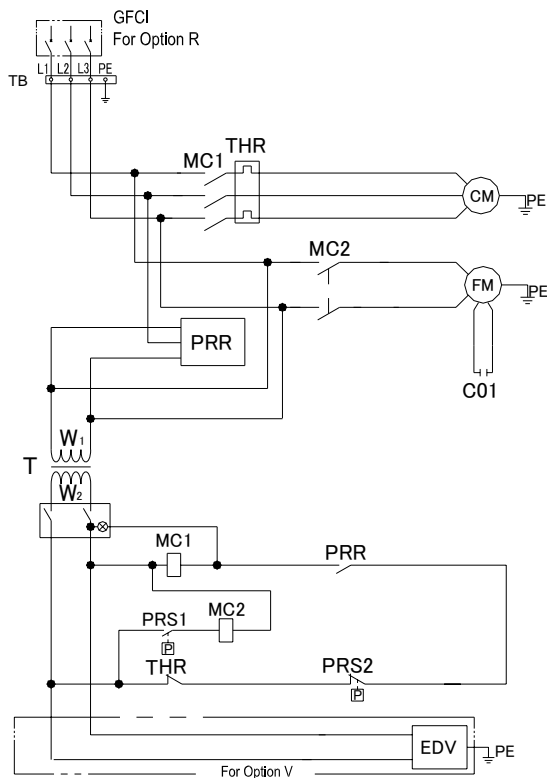
### • IDFB22E -11



### • IDFB22E/37E-23



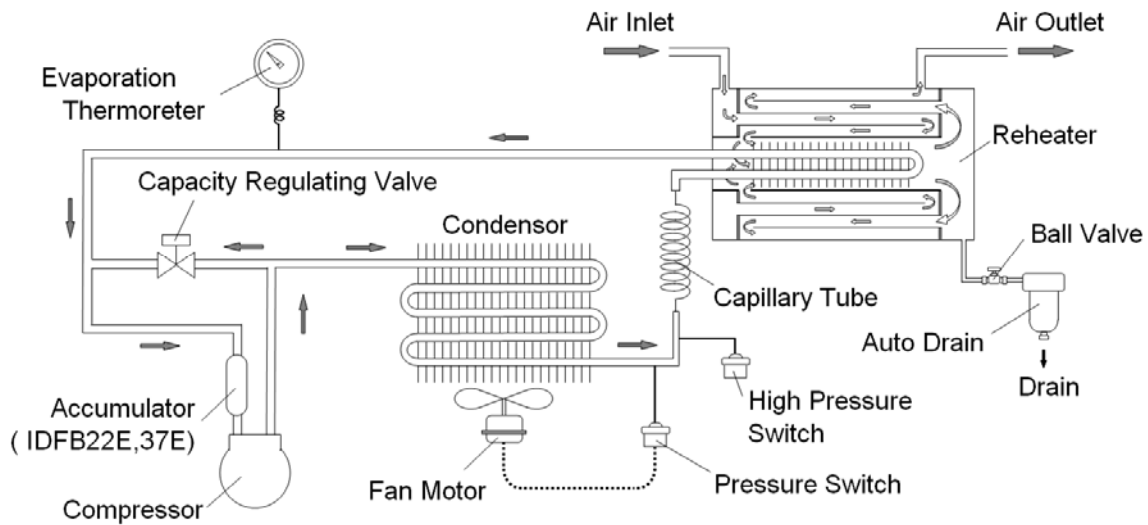
### • IDFB55E/75E-46



記号	名称
CM	Refrigerating Compressor
FM	Fan Motor
FM1~6	Fan Motor
OLR	Overload Relay
C1	Capacitor For Compressor Motor
C01	Capacitor For CM
ILS	Switch with Lamp
PRS	Pressure Switch
PRS1	Pressure Switch
PRS2	High Pressure Switch
TB	Terminal Block
TB1	Terminal Block
TB2	Terminal Block
MC	Magnetic Contactor
MC1	Magnetic Contactor
MC2	Magnetic Contactor
T	Transformer
THR	Thermal Relay
PRR	Phase Reversal Relay
GFCI	Ground Fault Circuit Interrupter
EDV	Electronic Drain Valve
PC	Power Cable

**6-5 Compressed Air and Refrigerant Circuit/Operation Principles**

IDFB22E / 37E / 55E / 75E

**Compressed Air Circuit**

Humid hot air entering air dryer is cooled in the cooler. At this time, the condensate is separated from the air by the drain separator and automatically discharged. The dry air is heated by the re-heater until it gets about the same temperature as that of ambient air. It is then discharged from air dryer outlet.

**Refrigerant Circuit**

The Fluorocarbon charged in the refrigerant circuit is compressed by the compressor and cooled by the condenser to become liquid. Then, going through the capillary tube, the refrigerant pressure and temperature (evaporating temperature) decreased rapidly. Passing through the cooler part, it draws heat from the hot compressed air and intensely boils. Finally, it is sucked into the compressor again. The hot gas bypass valve opens to prevent compressor from freezing when compressed air is too cold.



## Specification for Option A

### 7-1 Safety instructions

When handling the product, take care to the following precautions.



### Warning

**Shut off the power supply when removing the panel for maintenance work, etc. The product has a fan(s) and could cause serious danger to operators.**

### 7-2 Specifications

Cool outlet air (50°F(10°C)) can be supplied. The air flow with this option is smaller than that of the standard dryer.

### 7-3 Air piping

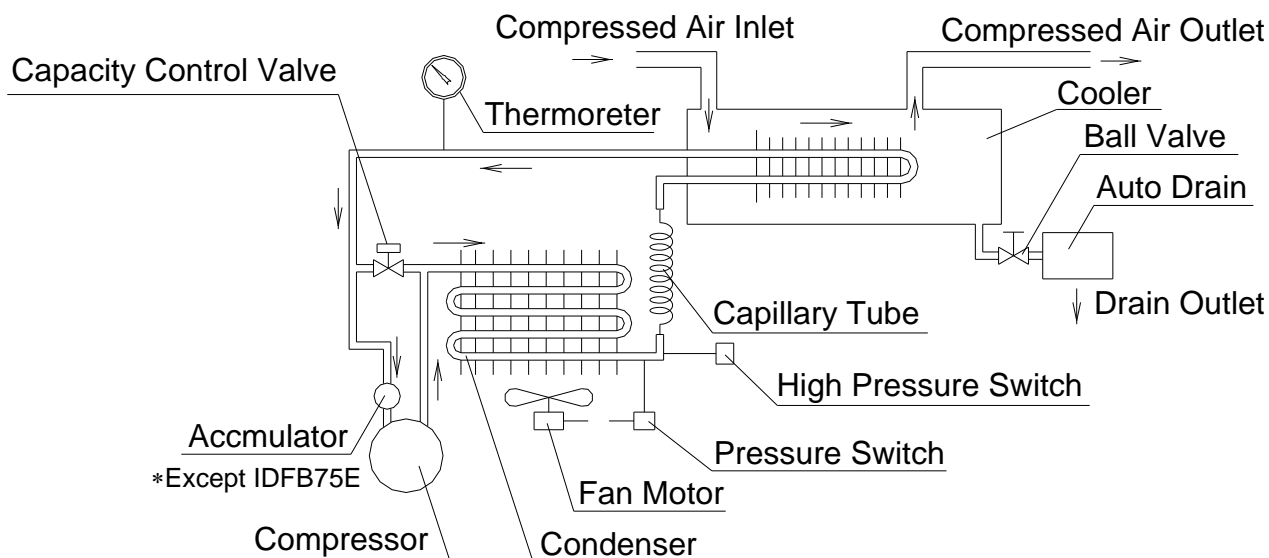
Since cool air comes out from an outlet of air dryers, carefully attach thermal insulation to the piping at air outlet and keep the piping length as short as possible in order to prevent condensation on the outlet piping and temperature increase on the outlet due to ambient temperature.

### 7-4 Air flow capacity

Model		IDFB22E	IDFB37E	IDFB55E	IDFB75E
Air flow capacity (ANR) <sup>Note1)</sup>	60Hz	47SCFM (80m <sup>3</sup> /h)	80SCFM (136m <sup>3</sup> /h)	103SCFM (176m <sup>3</sup> /h)	150SCFM (205m <sup>3</sup> /h)
Outlet air temp.		50° F (10°C)			

Note1) The data for ANR is referring to the conditions of 68°F(20°C), 1atm. pressure & relative humidity of 65%.

Note2) The conditions are the same as the ones for standard models other than air flow capacity.

**7-5 Compressed Air and Refrigerant Circuit / Operation Principles****Compressed Air Circuit**

The heat of humid hot air entering to the air drier enters to the cooler and is cooled and dehumidified by cold fleon, separating the moisture.

The cold air is released from the air dryer.

**Refrigerant Circuit**

The Fluorocarbon charged in the refrigerant circuit is compressed by the compressor and cooled by the condenser to become liquid. Then, going through the capillary tube, it is decreased the pressure to reach a low temperature. Passing through the cooler part, it draws heat from compressed air and intensely boils. Finally it is inhaled into the compressor again. The capacity control valve opens to prevent dew drops from freezing when compressed air is cooled enough.



## 8 Specification for Option K

This product mounts the auto drain in Item 2 Specifications. When performing the installation and maintenance of the product, the following points must be understood and followed. Additionally, for replacement work, read 4-2 "Periodical Maintenance" of the Operation Manual of standard product and keep safety.

### 8-1 Safety instructions

When handling the product, take care to the following precautions.



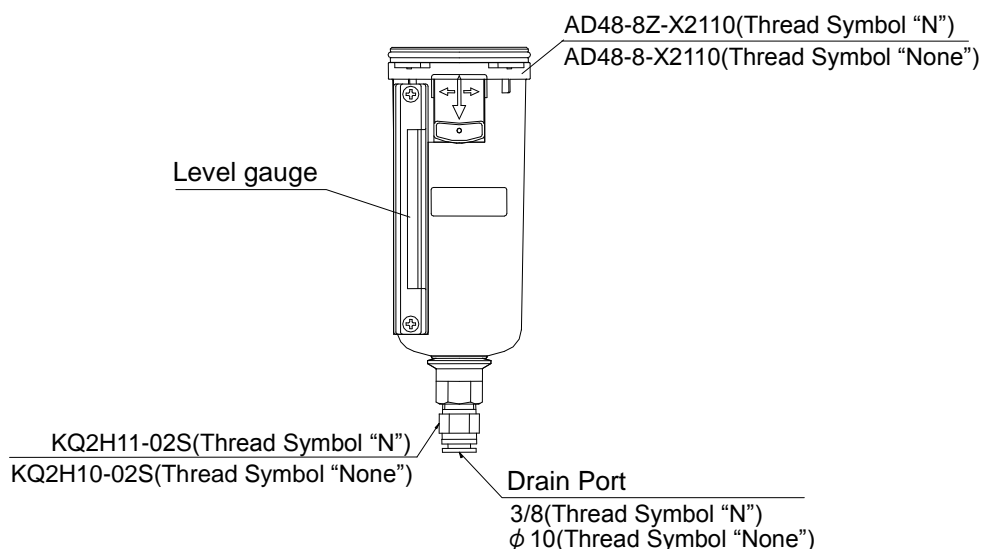
#### Warning

1. Do not remove the auto drain if air pressure remains of the product. When removing the auto drain, stop the supply of air to the primary side of the product, exhaust the air from the secondary side and ensure there is no residual pressure. If the air pressure is left at the inside of the product, parts could suddenly pop out and cause accident when loosened.
2. Put gloves to prevent injury when removing the auto drain.
3. Operator could touch the drain waste from repalced auto drain. Follow the procedures prepared by the customer to keep safety of operators. (Ex. Put protective goggles, apron and/or gloves to protect body from toucing the drain waste for replacement worken replacing the product.)

### 8-2 Specifications

The auto drain has a maximum operating pressure of 1.6MPa and uses the metal case with a fluid level indicator.

**IDFB22E, 37E**



Item \ Model	Thread Symbol "N"	Thread Symbol "None"
Auto drain	AD48-8Z-X2110	AD48-8-X2110
Max. operating pressure	240psig (1.6MPa)	
Auto drain type	Float type	
Auto drain valve type	N. O. (Normal Open: Open under non-energized status. )	
Operating pressure	15 to 240psig (0.1 to 1.6MPa)	
Operating fluid	Compressed air	



## Specification for Option L

### 9-1 Safety instructions

When handling the product, take care of the following precautions.



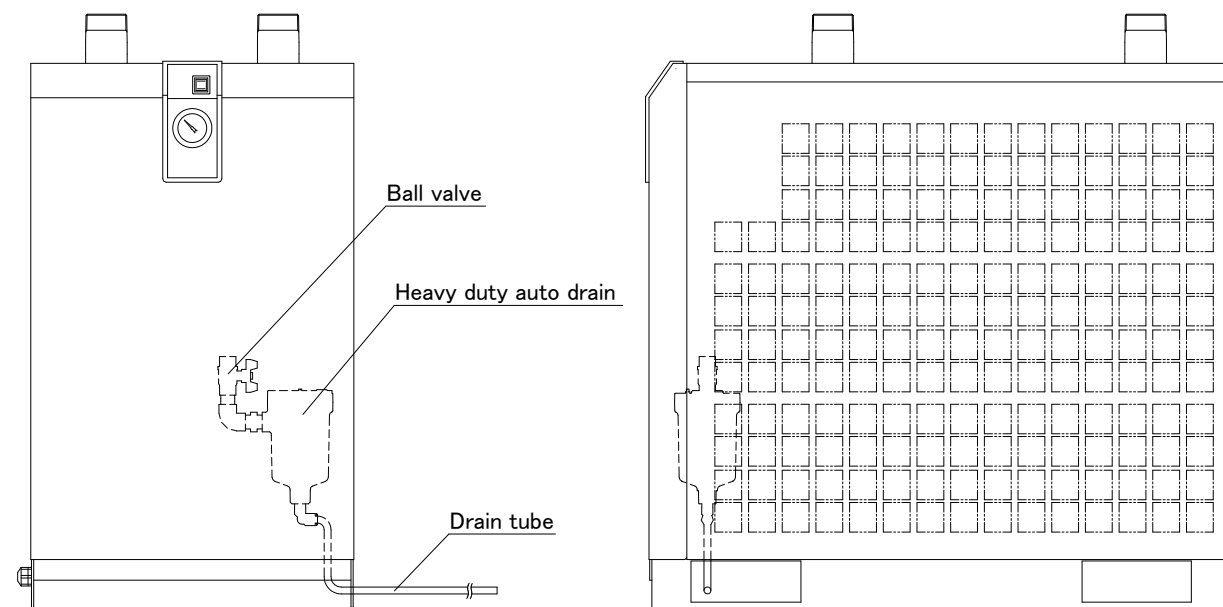
### Warning

1. Do not remove the auto drain if air pressure remains in the product. When removing the auto drain, stop the supply of air to the primary side of the product, exhaust the air from the secondary side and ensure there is no residual pressure. If the air pressure is left inside of the product, parts could suddenly pop out and cause accident when loosened.
2. Put gloves to prevent injury when removing the auto drain.
3. Operator could touch the drain waste from repalced auto drain. Follow the procedures prepared by the customer to ensure the safety of the operators. (Ex. Put protective goggles, apron and/or gloves to protect body from toucing the drain waste when performing maintance on the product.)

### 9-2 Specifications

The specification of this product is dryer with heavy duty auto drain.

And, the auto drain has a maximum operating pressure of 240psig (1.6MPa).



Heavy duty auto drain assembly

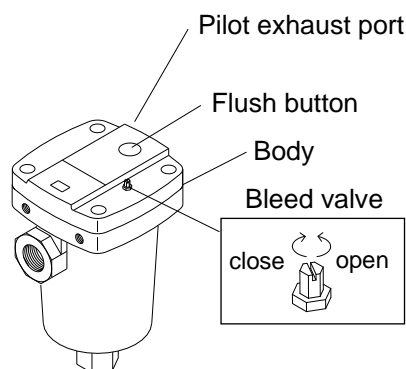
**9-3 Specification of heavy duty auto drain (ADH4000-04)**

Model	IDFB55E/75E-46□-L
Order number (service parts)	ADH-E400
Auto drain type	Floating type
Auto drain valve type	N.O(normally opened: Open in the case of pressure loss)
Max. operating pressure	240psig (1.6MPa)
Working pressure range	7.5 to 240psig (0.05 to 1.6MPa)
Working fluid	Compressed air
Max. drain discharge	0.014SCFM(Pressure 0.7MPa,the case of water)

Note) Use for air compressor with flow more than 1.77SCFM (ANR) [3 m<sup>3</sup>/h (ANR)].

**9-4 Maintenance**

1. Check drain condition periodically (more than once a day).  
Then push flushing button to open exhaust valve.
2. Pilot air is exhaust from the port indicated in the figure. Do not cover this exhaust port.  
Clean exhaust port so that port is not blocked by dust, etc.
3. Close the ball valve before removing the heavy duty auto drain and open the bleed valve or push the flushing button and confirm air pressure is released.







## Specification for Option R

This product mounts the Ground Fault Circuit Interrupter (GFCI) in Item 2. It will shut off the power supply in case the product should have over current or current leakage. Additionally, the power supply should be connected directly to the primary side of the GFCI. For the details of the GFCI such as the specifications and mounting position, refer to Item 2 or later.

### 10-1 Safety instructions

When handling the product, take care to the following precautions.



### Warning

**Only qualified person must perform wiring and observing the following points.**

1. Be sure to shut off the power supply before wiring. For safety, do not perform any work on the unit with the power supply on. The power supply cannot be completely shut off just by turning off the illuminated switch. Be sure to turn off all power lines connected to the product.
2. Supply the power from a stable source, free from surges.
3. Provide the power suitable for the product specifications.
4. Be sure to ground the product for the safety. Without grounding, the GFCI can not operate normally.
5. Do not ground to water pipe, gas tube or lightning rod line.
6. Do not connect too many wires to the same outlet, which could results in heat generation and fire.
7. Do not retrofit the wiring of the dryer and the power supply line.

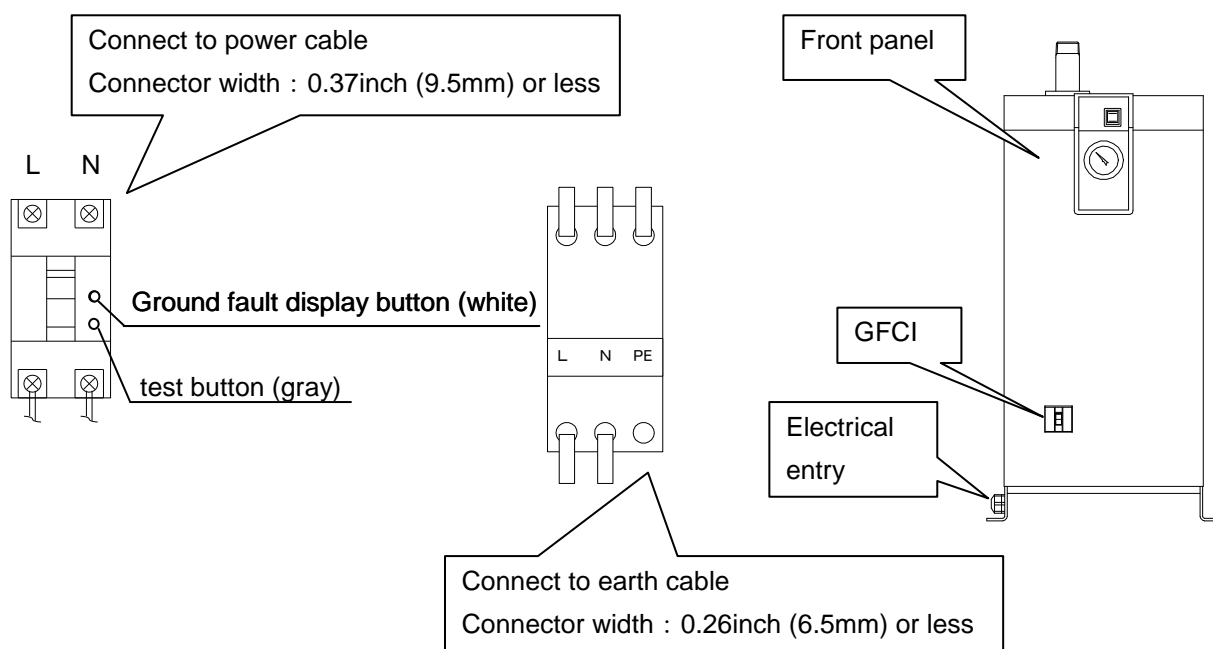
### 10-2 Specifications of the GFCI

Dryer model number	Specifications of GFCI
IDFB22E-11□-R	Rated current: 15A, Current sensitivity: 30mA
IDFB22E/37E-23□-R	
IDFB55E/75E-46□-R	Rated current: 10A, Current sensitivity: 30mA

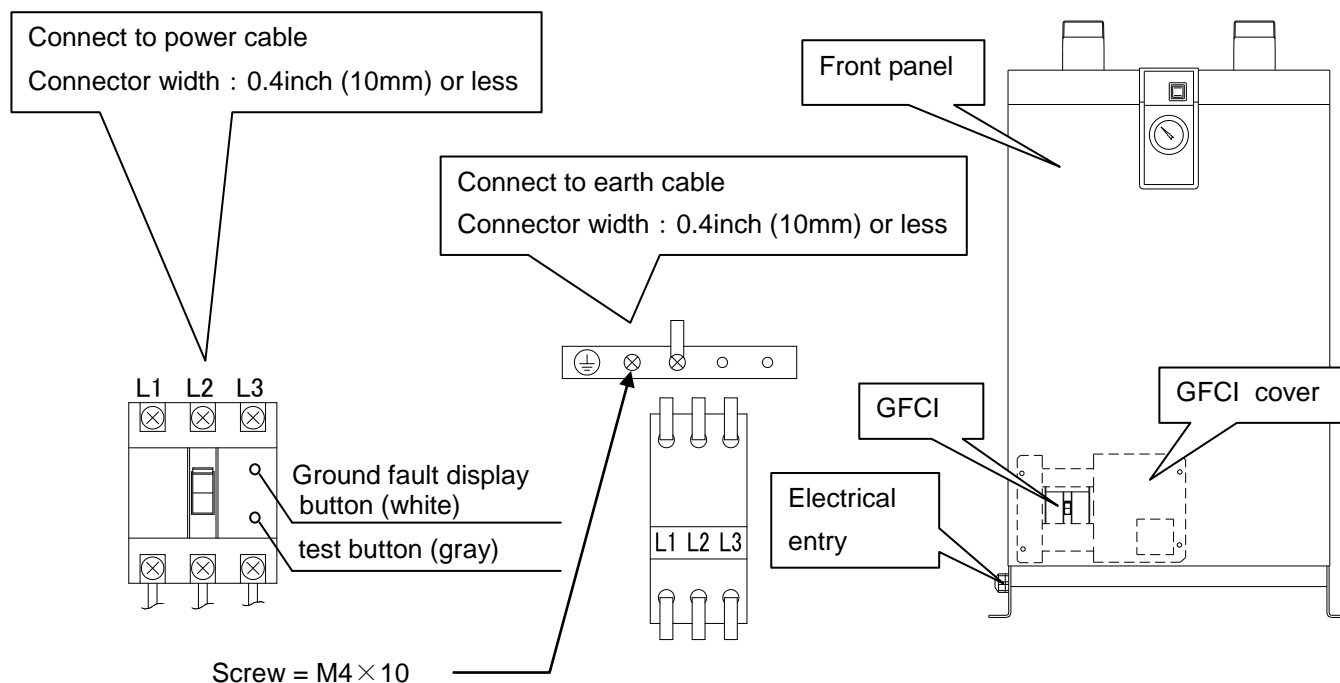
### 10-3 How to connect the power supply

- 1) Take off the front panel.
- 2) Take off the GFCI cover. (Only IDFB55E, 75E)
- 3) Insert the power cable prepared by the customer into the power code fixture and bring the power cable near the terminal base through the base hole.
- 4) Connect the power cable to the terminal of the GFCI.
- 5) Put back the GFCI cover. (Only IDFB55E, 75E)
- 6) Put back the front panel.

## IDFB22E, 37E



## IDFB55E, 75E



**10-4 Cautions for handling the GFCI**

- 1) When the breaker is tripped, cut off the power supply and contact the nearest sales distributor or SMC sales.
  - With the Ground fault display button (white) released → Current leakage
  - With the Ground fault display button (white) pressed → Over current
- 2) Check the operation once a month by pressing the test button (gray) with the breaker on and Switch with Lamp off.

**10-5 Electric circuit**

For electric circuit, refer to "6-4 Electric circuit".

Please refer to "12-6 Electric circuit" when option T is included.



## Specification for Option S

### 11-1 Safety instructions

When handling the product, take care to the following precautions.



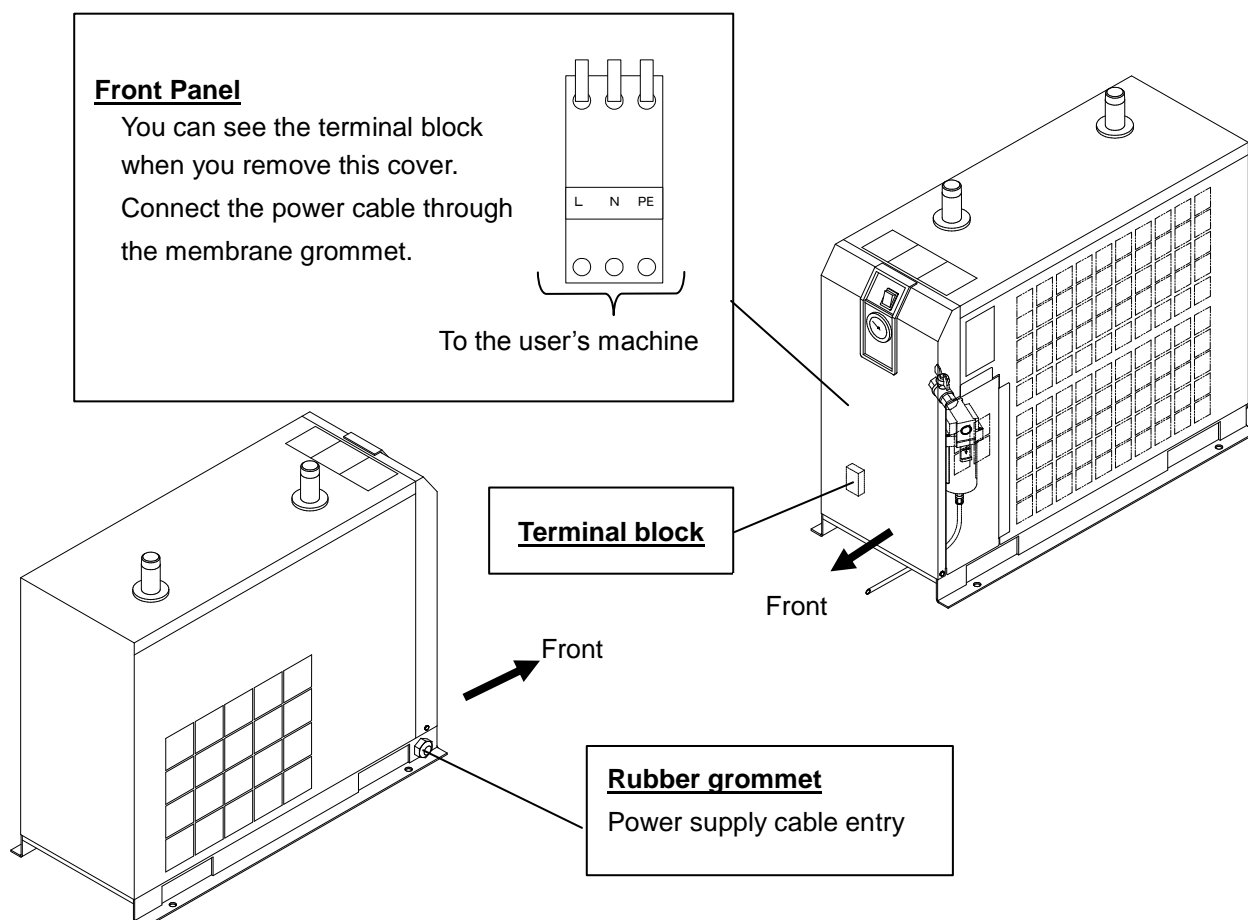
### Warning

**Only qualified persons are allowed to wire the product.**

1. Before wiring, be sure to shut off the power supply. Never perform wiring work while the product is energized.
2. Ensure a stable power supply with no voltage surges.
3. Use a power supply suitable for the specifications of the product.
4. Be sure to connect the ground connection.
5. Grounding should never be connected to a water line, gas line or lightning rod.
6. Multiple wiring is dangerous because it may lead to heat generation and cause a fire.
7. Do not modify the electrical wiring of the power supply.

### 11-2 Specifications

The option allows the connection of a power cable to a terminal block.





## 12 Specification for Option T

This product mounts the terminal block which can transfer the operation and failure signals to Item 2 Specifications. The signals are a no voltage contact style. For details, refer to Item 2 or later.

### 12-1 Safety instructions

When handling the product, take care to the following precautions.



### Warning

**Only qualified person must perform wiring and observing the following points.**

1. Be sure to shut off the power supply before wiring. For safety, do not perform any work on the unit with the power supply on. The power supply cannot be completely shut off just by turning off the illuminated switch. Be sure to turn off all power lines connected to the product.
2. Supply the power from a stable source, free from surges.
3. Be sure to mount the Ground Fault Circuit Interrupter (GFCI) with adequate sensitivity and load capacity to prevent electrical shock and protect the refrigerating compressor motor from burning out.
4. Provide the power suitable for the product specifications.
5. Be sure to ground the product for the safety. Without grounding, the GFCI can not operate normally.
6. Do not ground to water pipe, gas tube or lightening rod line.
7. Do not connect too many wires to the same outlet, which could results in heat generation and fire.
8. Do not retrofit the wiring of the dryer and the power supply line.
9. For the use of the product in Europe, mount the breaker compatible to IEC standard to the power supply for the product.

### 12-2 Specifications

The product mounts the terminal block which can transfer the operation and failure signals on the standard product.

- The operation and failure signals are no voltage contact style.  
 Operation • • • • When the product is operating; Close  
 Failure • • • When the product stops due to failure; Close
- Contact capacity  
 AC200V/2A  
 DC24V/2A  
 (Minimum applicable load: 20V / 3mA)

**12-3 Remote operation**

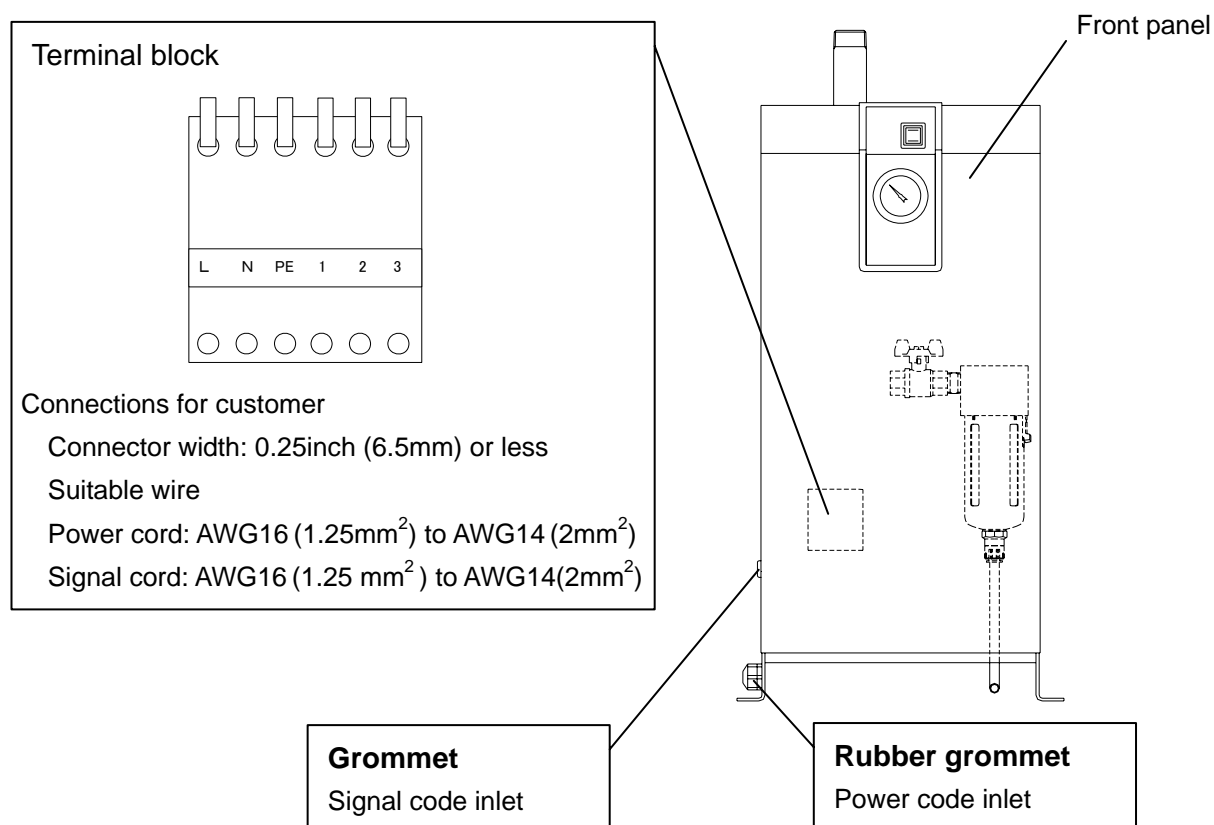
- For the remote operation, turn on and off the power supply side under the condition of the Switch with Lamp ON.
- Keep 3 min. at minimum after stopping the product to restart even for the remote operation. If the product is restarted within less than 3 min., protective equipment (overload relay) may activate and prevent the product from restarting.

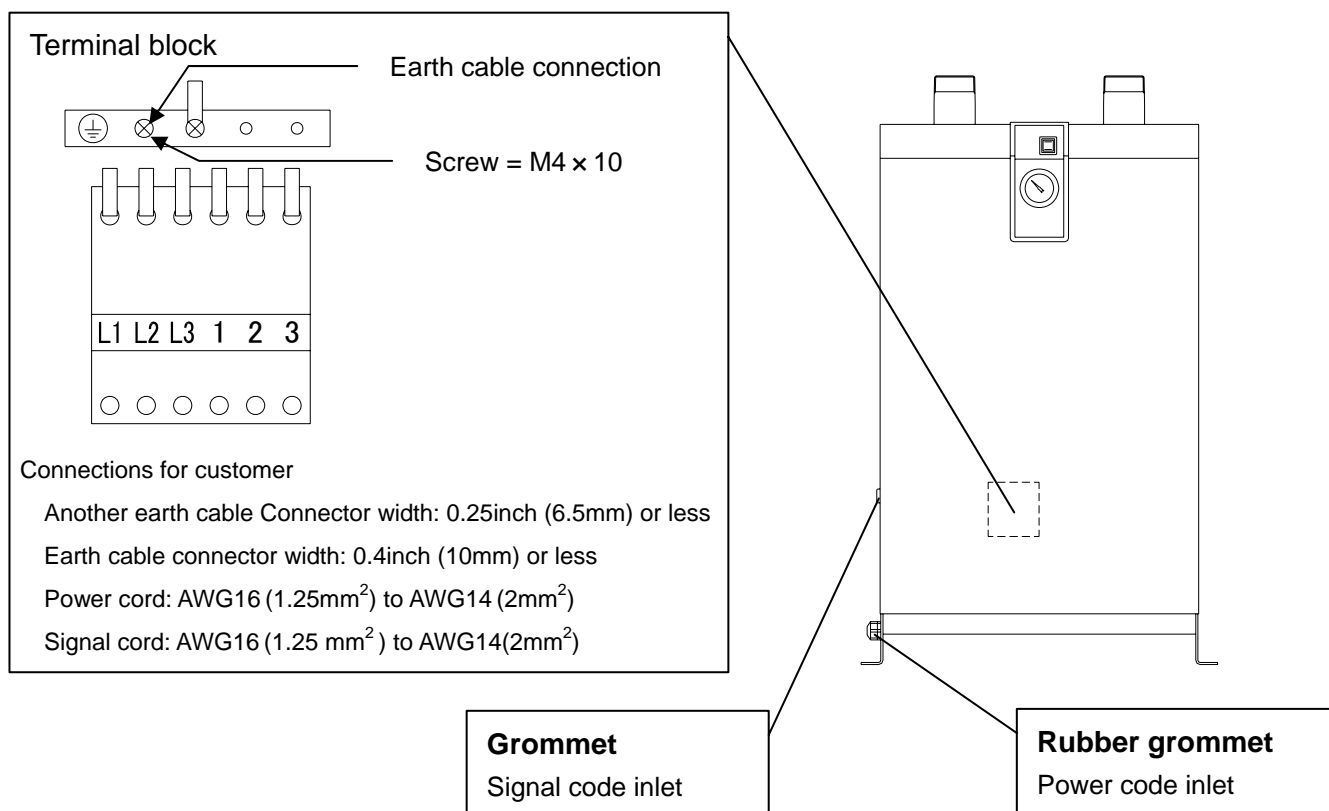
Additionally, the frequency to start and stop the operation must be restricted to 5 times per hour (to prevent breakage of the motor).

**12-4 How to connect the power supply and signal cable**

Connect the power cable and signal cable in the following procedures.

- 1) Take off the front panel.
- 2) Insert the power cable prepared by the customer into the power code inlet (with rubber grommet) and bring the power cable near the terminal block through the base hole.
- 3) Connect the power cable to the terminal.
- 4) Insert the signal cable prepared by the customer into the signal code inlet (with rubber grommet) and bring the signal cable near the terminal block.
- 5) Connect the signal cable to the each terminal.
- 6) Put back the front panel.

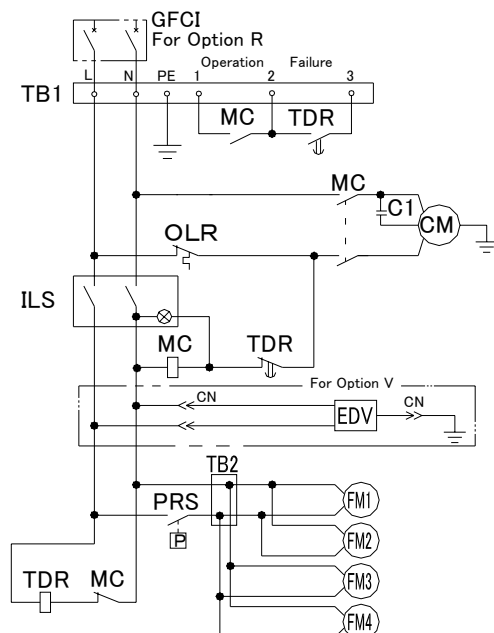
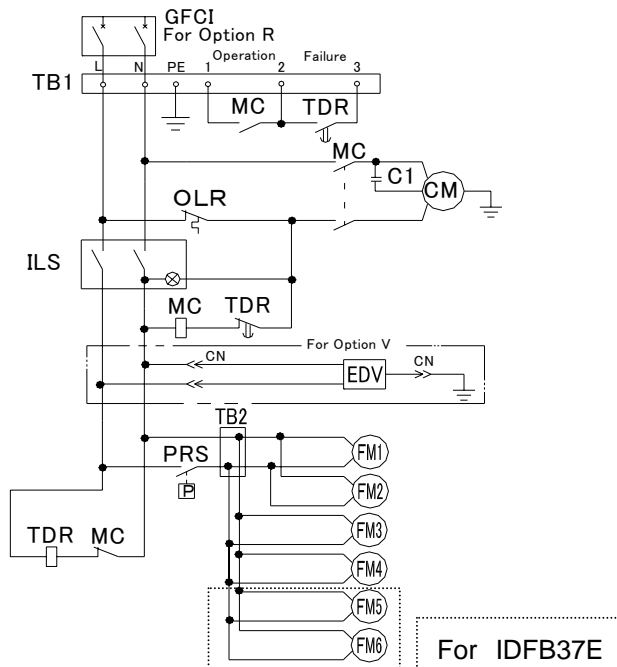
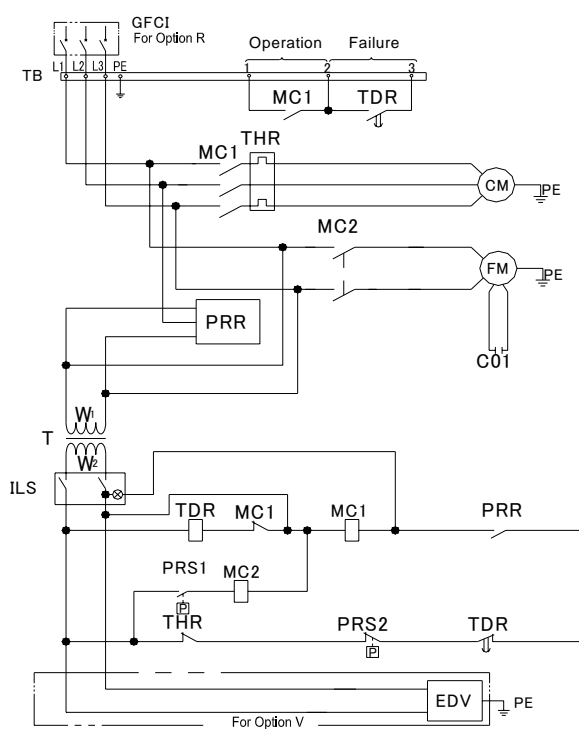
**IDFB22E, 37E**

**IDFB55E, 75E****12-5 How to re-start the operation**

The output of the abnormal signal can be stopped by turning off the switch with light. Remove the cause of abnormal operation and leave it for 3 minutes or longer after the stopping the operation, and turn on the switch with light to re-start.

The thermal relay is still in operation if the output of the abnormal signal is not stopped even after the switch with light is turned off. Refer to "5-2. How to reset the thermal relay and high pressure switch" in the operation manual, and reset it.

Note) The high pressure switch can also be in operation for IDFB55E-46 and IDFB75E-46.

**12-6 Electric wiring diagram****IDFB22E-11****IDFB22E/37E-23****IDFB55E/75E-46**

記号	名称
CM	Refrigerating Compressor
FM	Fan Motor
FM1~6	Fan Motor
OLR	Overload Relay
C1	Capacitor For Compressor Motor
C01	Capacitor For CM
ILS	Switch with Lamp
PRR	Phase Reversal Relay
PRS	Pressure Switch
PRS1	Pressure Switch
PRS2	High Pressure Switch
TB	Terminal Block
TB1	Terminal Block
TB2	Terminal Block
MC	Magnetic Contactor
MC1	Magnetic Contactor
MC2	Magnetic Contactor
T	Transformer
THR	Thermal Relay
TDR	Time Delay Relay
PRR	Phase Reversal Relay
GFCI	Ground Fault Circuit Interrupter
EDV	Electronic Drain Valve





## Specification for Option V

This product mounts the timer operated auto drain in Item 2 Specifications. When performing the installation and maintenance work for the product, the following points must be understood and followed. Additionally, read Item 3 for replacement work.

### **13-1 Safety instructions**

When handling the product, take care to the following precautions.



#### **Warning**

1. Do not remove the auto drain if air pressure remains of the product. When removing the auto drain, stop the supply of air to the primary side of the product, exhaust the air from the secondary side and ensure there is no residual pressure. If the air pressure is left at the inside of the product, parts could suddenly pop out and cause accident when loosened.
2. Put gloves to prevent injury when removing the auto drain.
3. Operator could touch the drain waste from repalced auto drain. Follow the procedures prepared by the customer to keep safety of operators. (Ex. Put protective goggles, apron and/or gloves to protect body from toucing the drain waste for replacement worken replacing the product.)



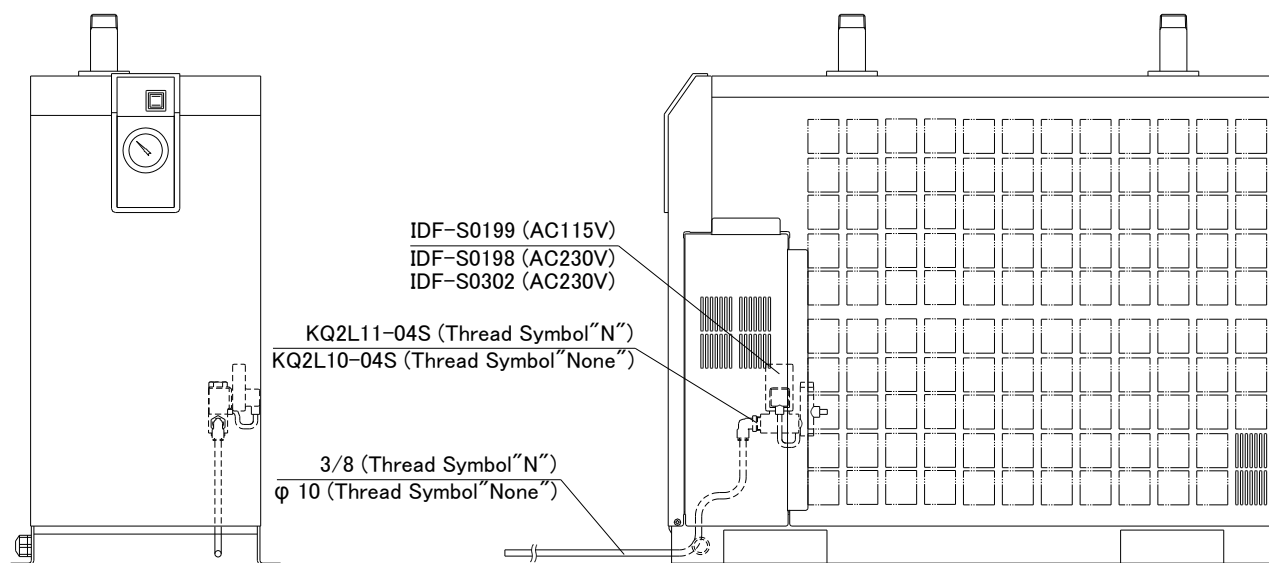
#### **Warning**

**Only qualified person must perform wiring.**

1. Provide the power suitable for the product specifications.
2. Be suer to ground the product for the safety. Do not ground to water pipe, gas tube or lightening rod line.
3. Do not connect too many wires to the same outlet, which could results in heat generation and fire.
4. Do not retrofit the wiring of the dryer and the power supply line.

### **13-2 Specifications**

The timer is set to have ON time of 0.5sec and OFF time of 0.5min. at the time of shipment from the factory. Do not change this timer setting. If it is changed, water could be discharged from the outlet line of the dryer. Service parts number will change depending on the power supply voltage of the dryer.

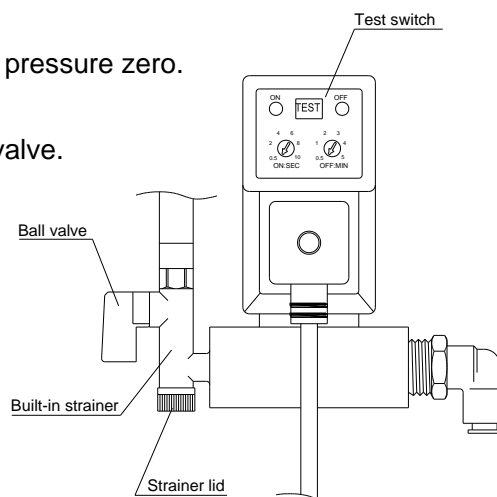


Power supply voltage of dryer	AC115V	AC230V	AC460V
Order number (service parts)	IDF-S0199	IDF-S0198	IDF-S0302
Max. operating pressure	240psig (1.6MPa)		
Fluid	Drain		
Power supply voltage of drain timer	AC115V±10% (60Hz)	AC230V±10% (60Hz)	AC230V±10% (60Hz)
ON time	0.5sec		
OFF time	0.5min		

### 13-3 How to perform maintenance

The product needs to be maintained. Clean it in the following procedure periodically.

- 1) Close the ball valve.
- 2) Press the test switch and make the residual pressure zero.
- 3) Remove the strainer and clean it.
- 4) Reassemble the strainer and open the ball valve.



### 13-4 Electric circuit

For electric circuit, refer to "6-4 Electric circuit".

Please refer to "12-6 Electric circuit" when option T is included.

# 14 Service Record

## 14-1    Service Record

It is recommended to keep a maintenance/service record.

Parts No.	Description	Maintenance/Service Work Description	Date

# SMC Corporation

Akihabara UDX 15F,  
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN

Tel: +81 3 5207 8249 Fax: +81 3 5298 5362

URL: <http://www.smcworld.com>

Specifications are subject to change without prior notice and any obligation the part of the manufacturer.

©2017 SMC Corporation All Rights Reserved

