



Operation Manual

Original Instructions

PRODUCT NAME

Refrigerated Air Dryer

MODEL / Series

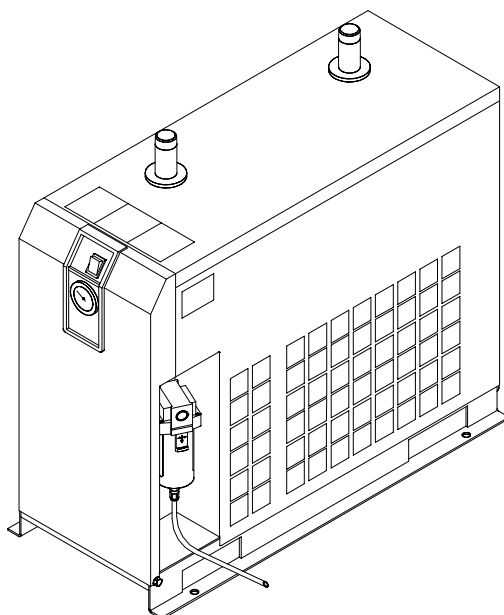
Refrigerated Air Dryer

IDFA22E-23-C,K,L,R,T,V

IDFA37E-23-C,K,L,R,T,V

IDFA55E-23-C,L,R,T,V

IDFA75E-23-C,L,R,T,V



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

To Customers

Thank you for selecting SMC Refrigerated Air Dryer.

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

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 product. 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.

Note: The contents of this operation manual are subjected to change without prior notice.

This product conforms with the following directive(s)

Directive	
Machinery Directive	2006/42/EC
EMC Directive	2004/108/EC

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Safety Instructions



Be sure to read and comprehend important cautionary notifications in this operation manual before use



Do not operate the product without the cover panel.

i-1 Warning: Before Using Air Dryer

In this chapter, the stated contents are especially about safety.

This Air Dryer is installed downstream of the air compressor to remove moisture. The manufacturer is not responsible for any misuses or misapplications.

This air dryer operates with high voltage and hot surfaces during operation. In addition, this air dryer has high speed rotating fan and motor, which can cause serious injury upon accidental contact. It is advised that you contact the factory or SMC authorized dealer for spare parts or other servicing needs.

We strongly recommend that any one who is working with this air dryer need to read and understand the instructions in this manual beforehand. Often, it's necessary for the people involved, to receive training in order to address the issues of safety and proper application.

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.

In this case, turn off the ON-OFF switch on dryer panel and wait 3 minutes. After this step, turn on the switch to restart. When the cover panel of this unit is open, the ON/OFF switch must be in the off position, because dryer may start itself when the power supply is recovered.

Connections to a power source where the product is exposed to transient stresses exceeding overvoltage category II (as defined in IEC60664-1).

Only connect to TN-S power distribution systems with N conductively connected to PE.

i-1-1 Hazard, Warning, and Caution Used in This Manual

This product is designed with the first priority on safety. However, there are some inherent risks that cannot be eliminated. This manual classifies these risks into the following three categories according to the severity: **DANGER**, **WARNING** and **CAUTION**. Read these statements carefully and thoroughly understand them before operating or performing maintenance on the unit.



DANGER

“DANGER” indicates that there is an imminent hazard that will cause serious injury or death if not avoided.



WARNING

“WARNING” indicates that there is a hazard that may cause serious injury or death if not avoided.




CAUTION

“CAUTION” indicates that there is a hazard that may cause minor injury.

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.

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

i-2-1 Danger Classifications

Specific danger classifications of this product are as follows.

Hazard of Electricity

Since this product 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 product and in this manual.



Hazard of Hot Surface

Since this product 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 product and in this manual.



Hazard of Rotating Object

Since this product 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 product and in this manual.



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

Inside of this product, there is a power-supplying section with high voltage separated by the cover panel. Do not operate the product with the cover panel off.

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

Since this product 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.

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

Since this product 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.

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

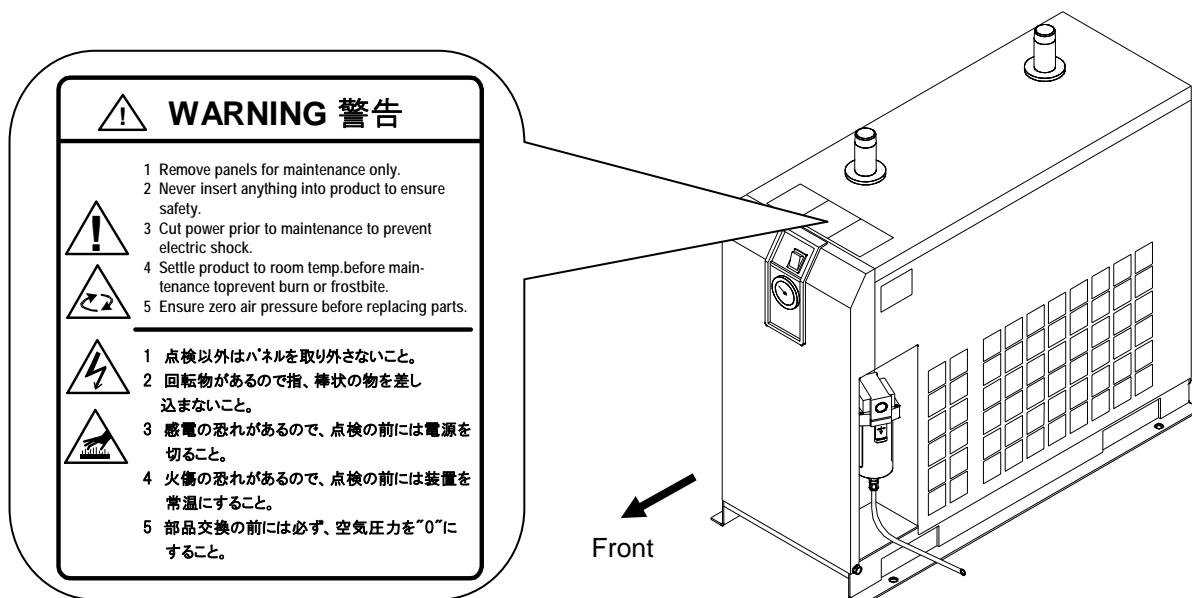
Before replacing or cleaning parts, be sure to relief the pressure remained inside of the product until the gauge indicates "0". High pressure can propel object at high velocity and cause injury.

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 modify danger warning labels.
- Confirm the positions of danger warning labels.

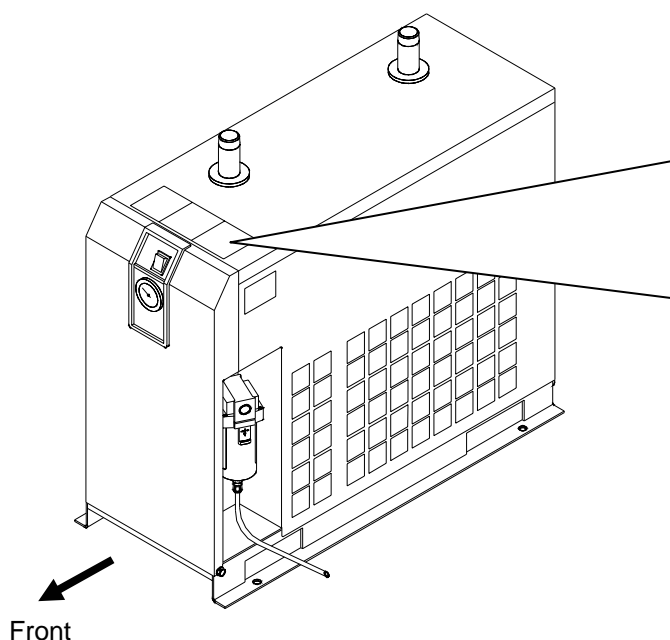


i-2-7 Hazard of Refrigerant



Caution

- This product 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 credentials are allowed to handle refrigerant.
- Only properly trained qualified personnel are allowed to remove the cover panel of the product.
- The quantity and the type of Fluorocarbon are mentioned on the specification label. See Page i - 6.



Fluorocarbon Collection and Destruction Law in Japan
フロン回収破壊法第一種特定製品

- This product uses
Fluorocarbon (HFC) as a refrigerant.
- 1 It is strictly forbidden to emit Fluorocarbon to the atmosphere.
 - 2 When disposing this product, Fluorocarbon must be collected in an appropriate manner.
 - 3 The kind of Fluorocarbon and the amount used in this product is printed on the name label.

- この製品には冷媒として、
フロン類(HFC)が使われています。
- 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 フロン類の種類及び数量は、型式銘板に記載されています。

i-2-8 Cautions about Usage



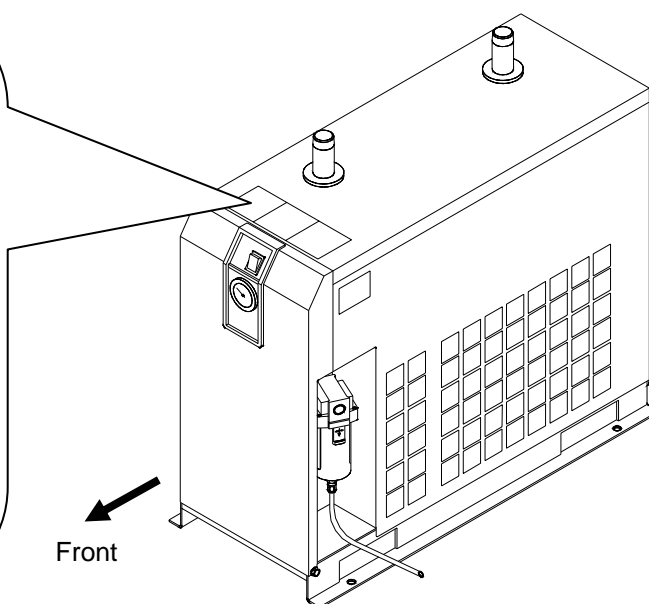
Warning

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

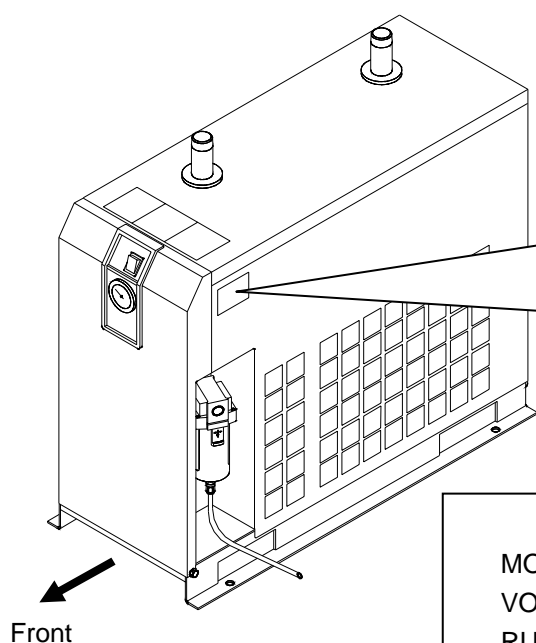
CAUTION 注意

- 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。



i-2-9 Other Label



AIR DRYER

MODEL

VOLTAGE

RUNNING CURRENT

REFRIGERANT

WEIGHT

SERIAL No.

MAKER

MAX.PRESS.

CE

MADE IN

Specification Label

Contents

MODEL: Model

VOLTAGE: Power supply voltage (frequency)

RUNNING CURRENT: Running current

REFRIGERANT: Type of refrigerant (amount)


WEIGHT : Weight MAX.PRESS: Maximum operating pressure


SERIAL No.: Serial No.

MAKER : Maker

i-3 Disposal

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

 Caution
<p>This product contains Fluorocarbon HFC.</p> <p>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 credentials are allowed to handle refrigerant.</p> <p>Only properly trained and qualified personnel are allowed to remove the cover panel of the product.</p> <p>The quantity and the type of Fluorocarbon are mentioned on the specification label. See Page i - 6.</p>

 Caution
<p>Dispose of the refrigerant and compressor oil according to the regulation of local government.</p> <p>Only personnel with proper credentials are allowed to collect refrigerant and compressor oil.</p> <p>Only properly trained and qualified personnel are allowed to remove the cover panel of the product.</p> <p>For any questions, please contact an SMC authorized dealers.</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.

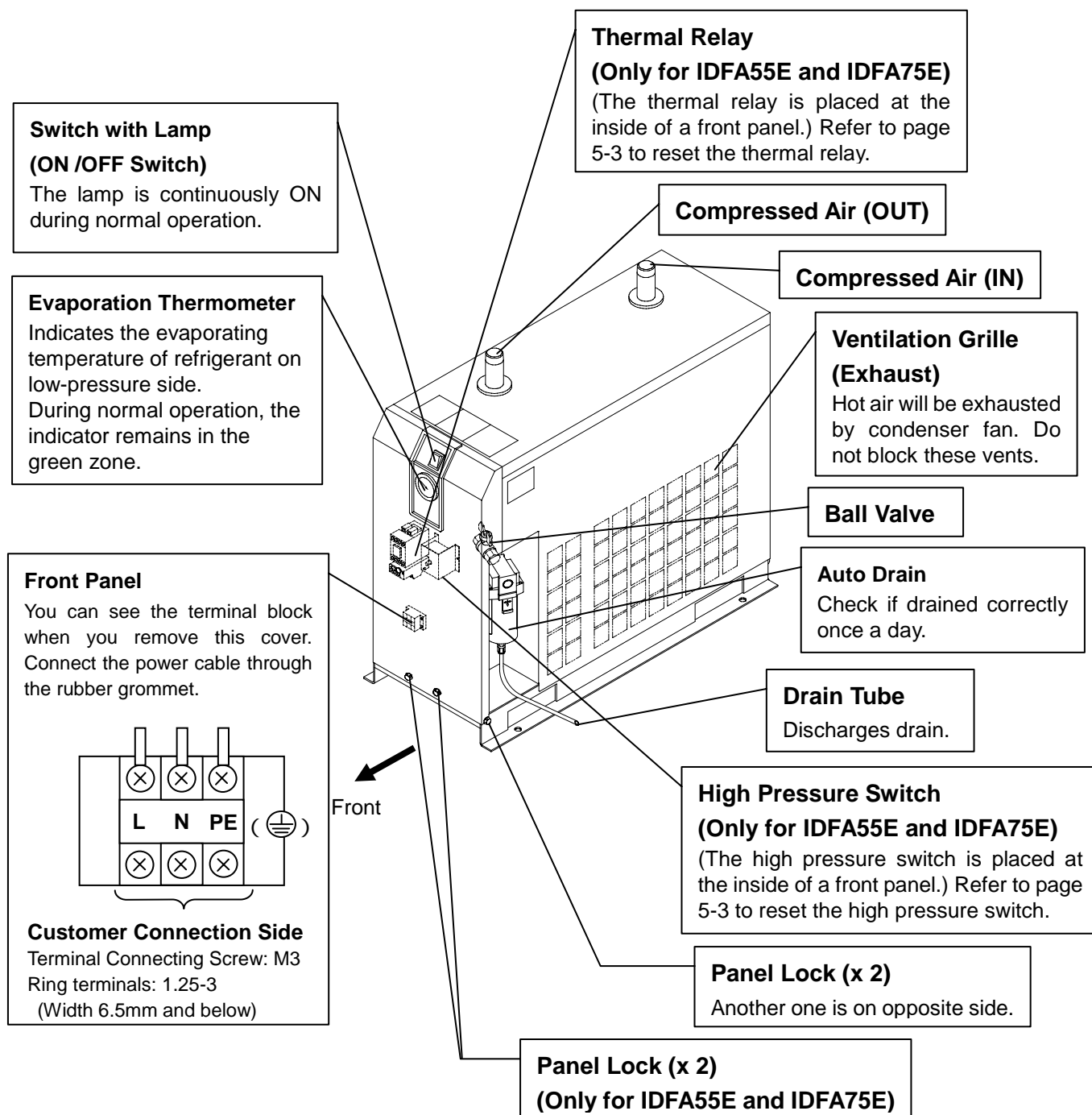
If anything is unclear, contact your nearest sales branch.

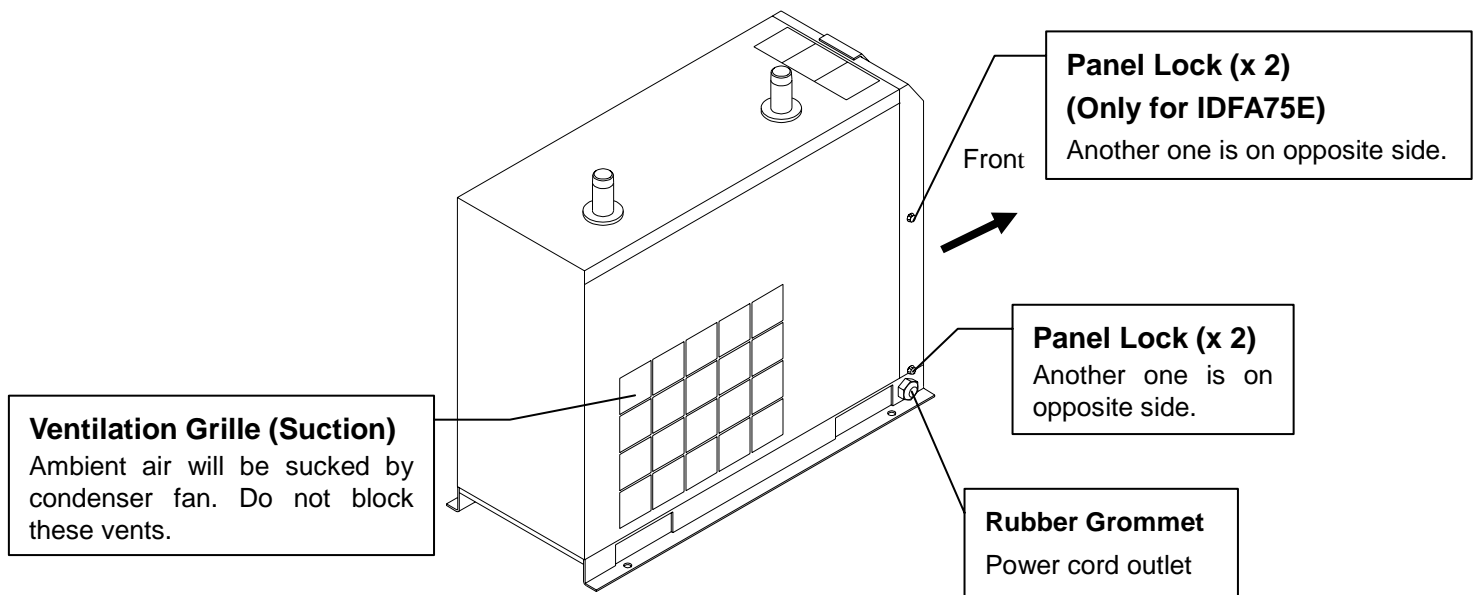
1

Parts Name and Functions

1-1 Parts Name and Functions

• IDFA22E,37E,55E,75E







Transportation/Installation



Warning

Use the product in the right way. During Installation, operation, maintenance, and check, you should be careful in keeping the safety of human body.



Caution

Transportation, installation, and maintenance including dangerous work must be done by a personnel who has enough knowledge and experience about the product and the sysytem.

2-1 Transportation

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

- You should lift the product from the base surface with careful attention to prevent tipping over.
- Do not lay the product sideways, or you will damage the product.
- Do not suspend the product from the ceiling or hang from the wall.
- Do not transport the product with any part such as an air filter mounted on the fittings at the air inlet or outlet port of the product. If it is unavoidable to transport the product with such a part mounted, support the mounted part with a bracket to prevent the product from being affected by vibration during transportation.



Warning

This product is heavy.

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

2 - 2 Installation

2 - 2 - 1 Location

The product should not be used or stored in the circumstances as follows. Those circumstances will cause not only malfunction but also failures.

- Environment where the product is exposed to rainwater, moisture vapor, salty water, oil and so on.
- Locations where dust or particles are.
- Locations where inflammable or explosive gas are.
- Locations where corrosive gas, solvent, combustible gas are.
- Locations that receive direct sunlight or where radiant heat is generated.
- Locations where ambient temperature is beyond following range:
 On-stream: 2 ~ 40°C
 Storage: 0 ~ 50°C (when there is no drain water inside of the piping)
- Locations where temperature changes rapidly.
- Locations where strong electromagnetic noise is generated (locations where electromagnetic field, strong magnetic field, surge is generated)
- Circumstances where static electricity is produced or discharged through the body of the product.
- Locations where strong high frequency wave is generated.
- Locations where danger of thunder is apparent.
- Locations by loading on vehicles, marine vessels, and so on.
- Locations whose 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 product that causes it to deform.
- Circumstances where enough spaces cannot be taken to do maintenance (in the plant where the product is operated).
 Spaces needed for maintenance
 Front : 600 mm
 Rear : 600 mm
 Top : 600 mm
 Right : 600 mm
 Left : 600 mm
- Locations the ventilation grille of the product can be blocked.
- Place where rejection style air of air compressor or other driers (hot wind) is inhaled.

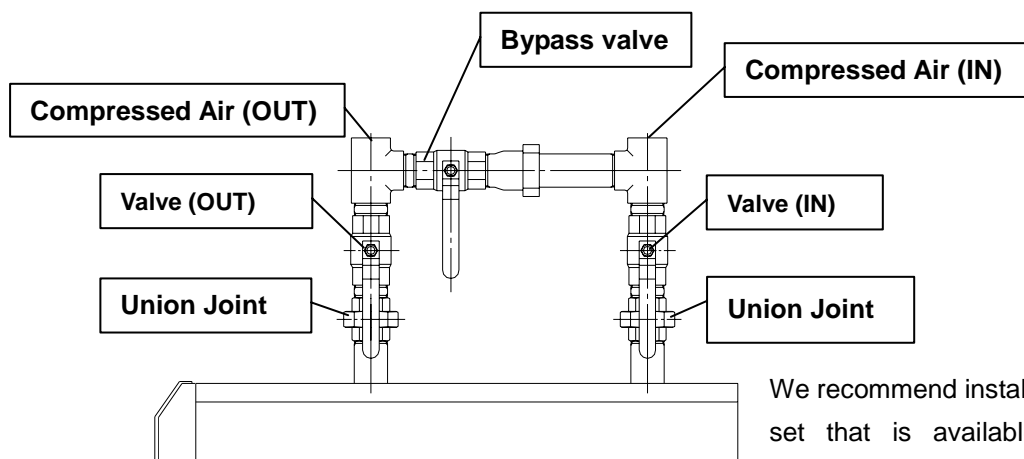
2 - 2 - 2 Anchorage

- The air dryer should be installed on a vibration-free, stable, horizontal flat surface.
- Refer to "Chapter6 6-2 Dimensions" for the dimensions.
- This model should be installed using anchor bolts (not included) to prevent shifting during a potential earthquake (Recommended size of anchor bolt: M12 x 20L 4pieces).

2 - 2 - 3 Air piping

- Connection to the inlet and outlet of compressed air should be made removable by using union and so on.
- Pressing the hexagonal fitting with screw wrench and so on, connect the air piping fittings to the body.
- When mounting any part such as an air filter on the fitting at the compressed air inlet or outlet port, support the part to prevent excessive force from being applied to the product.
- Be careful not to let the vibration of the air compressor transmit.
- If the temperature of compressed air on the inlet side is higher than 50°C, place an aftercooler after the air compressor. Or, make the temperature of the place where the air compressor is installed lower than 50°C.

- Flash the piping sufficiently in order to avoid any foreign substances such as dust, sealing tape, liquid gasket, etc. when piping before piping connection. Foreign substances in the piping can cause cooling failure or drainage failure.
- Use pipes and fittings that have enough endurance against the operating pressure and temperature. And connect it firmly to prevent air leakage.
- Provide bypass piping to make it possible to do maintenance without stopping the air compressor.



We recommend installing the bypass piping set that is available separately as an accessory. The part number of bypass piping is shown in the Catalogue.

2-2-4 Drain Tube

- A polyurethane tube (10mm) 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.
- Ensure that a Ground Fault Circuit Interrupter(GFCI) with appropriate capacity for earth leakage and load is used in the power supply of the product to prevent electrical shock and burnout of the compressor motor. See “6-1 List of specifications” for details.
- Supply power of the product should meet the specifications on page 6-1.
- The product must be grounded for safety.
- Do not connect ground wire to a water pipe, a gas pipe, or a lightening rod.
- Take care not to overload the power supply by connecting multiple units to one supply.
- 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.

Specification of power cable

- Prepare following power cable.

Power cable: 1.25mm²(16AWG), Three-cores (including the ground cable), External diameter: about 8 to 12mm.

Additional length of about 0.1m (4in) is needed to wire inside of the product.

Length of the power cable

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

Connecting to the power supply

- Connect the power cable and the ground to the terminal block. Make sure to use the ring terminals for M3 screws.
- Applicable crimped terminal: 1.25-3 (Width: 6.5mm and below)


Wiring procedure

- Remove the terminal block cover or the rear panel.
- Insert the cord through the rubber grommet and connect it to the terminal block (refer to the label on the terminal block). M3 screw tightening torque: 0.6 to 1Nm

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

- Re-attach the cover or rear panel after wiring is done.


2-3 Cautions for Reinstallation

	Caution
Only properly trained, qualified personnel are allowed to perform reinstallation.	


If the product is moved and reinstalled in another place after some trial operations, the following instructions must be followed as well as procedures in Chapter 2.

Removing the power cable

Disconnect the power source before removing the power cable.

	Warning
<ul style="list-style-type: none"> • Only properly trained, qualified personnel are allowed to perform wiring. • Disconnect the power source before wiring. Do not work under energized condition 	

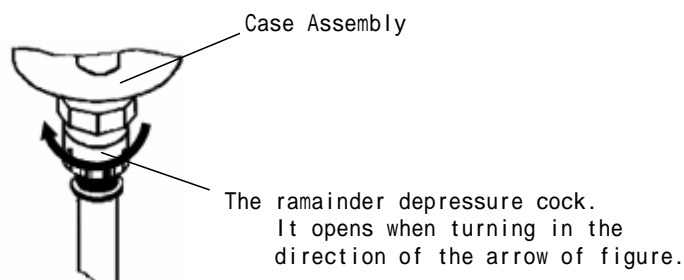
Disconnecting air pipes

	Warning
<ul style="list-style-type: none"> • Only properly trained, qualified personnel are allowed to perform piping works. • Separate the compressor from the product before disconnecting the air pipe. • Do not disconnect any piping when there is residual air pressure inside of the pipe. 	

- Remove the seal tape completely after removing the piping. Loose seal tape can clog up the system.

Releasing residual pressure

- Bypass valve should open even after the dryer has been removed.
- Close the compressed air inlet and outlet valve.
- Unscrew the front panel screws (in 2 places) and remove the front panel.
- Open the auto drain residual pressure release valve to release air pressure inside the product. Refer to the Figure of right.



3 Operation/Shutdown



Caution

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

3-1 Check points before operation

Before trial run, check the following points:

- **Installed Conditions:**
 By visual inspection check that the product is level.
 Make sure the product is fixed down with anchor bolts.
 Do not place heavy objects on the top of the product.
 Ensure the piping does not apply load to the unit.
- 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 product has a structure that closes the valve with air pressure higher than 0.15MPa. Therefore, until the pressure increase, air will be emitting from the drain outlet at the start of opening the "IN" valve. Keep in mind that sometimes the pressure cannot increase due to under-sized air compressor.

3-3 Shutdown

Turn off the ON/OFF switch.

The lamp will go out and then, the operation will stop.

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.
- 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 inside the compressed air piping and this air dryer.

4

MAINTENANCE

4-1 Daily Inspection

Check the 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 $\pm 8^{\circ}\text{C}$ of the ambient temperature
- When the unit is off and no compressed air is supplied.
- There is no abnormal odor or smoke coming from the product.
- It is recommended to keep a maintenance/service record. Please refer to "Chapter 13-1 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.

**Danger**

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) Operation condition: 12 hours/day, 300 days/year,
Pressure switch open-close frequency: 1 cycle/2 minutes
(The replacement period depends on the user's operating conditions.)

4-2-3 Cleaning of Auto Drain Strainer

Remove the dust deposited in the auto drain strainer every month. Use neutral detergent for cleaning. If they are too dirty, replace them and shorten the period of maintenance from next time.



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.



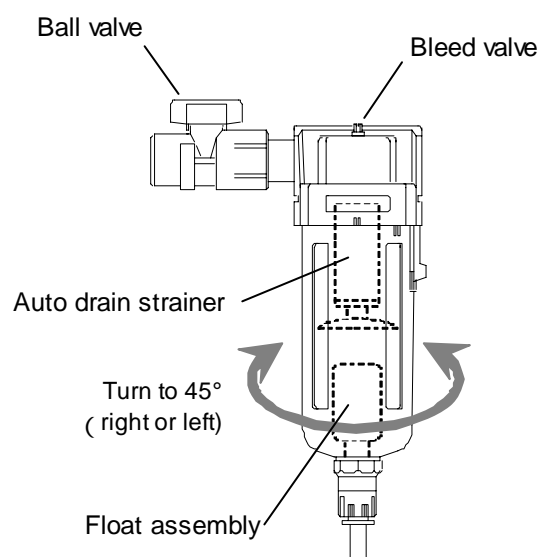
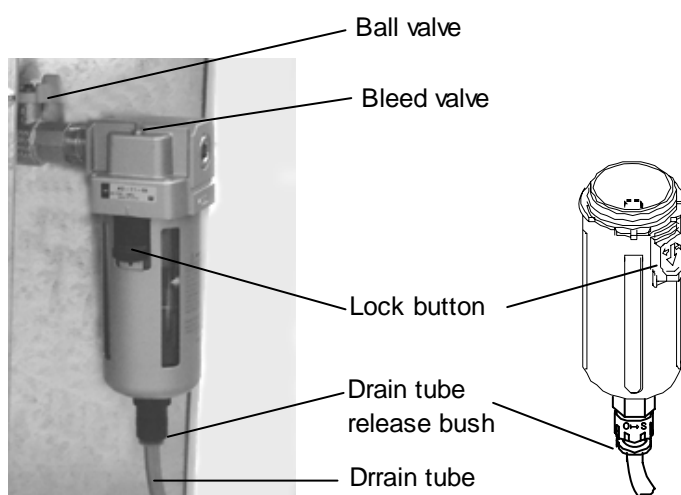
Danger

- 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.

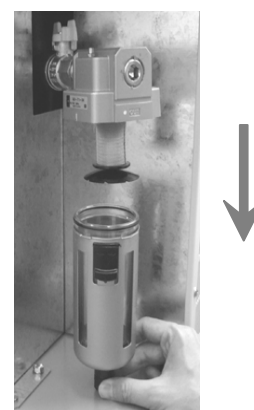
How to clean and replace the case assembly.

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

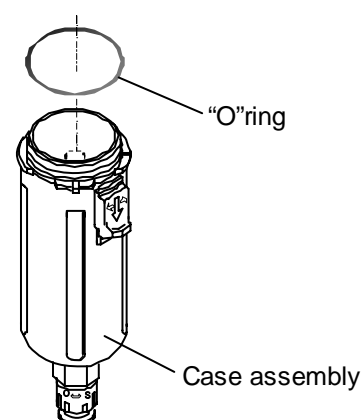
- Turn off the illuminated ON/OFF switch.
- Disconnect the earth leakage breaker at the power supply or unplug the power plug from the socket.
- Fully close the IN/OUT valves. Only open the bypass when compressed air is required during work.
- Only the point that is necessary for work please remove a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





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 an SMC authorized dealer for further instructions.

Problem	Probable Causes	Remedy
Air dryer does not operate and run lamp does not light up, when the switch is ON.	Power cord or plug is loose or not connected to the power source.	<ul style="list-style-type: none"> • Perform proper connection on the power cord and plug.
	Circuit breaker is OFF.	<ul style="list-style-type: none"> • Confirm whether the correct capacity of the circuit breaker is used. • It is not possible to restart the air dryer within 3 minutes after shutdown. Wait for 3 minutes before restarting. • Resume the operation after resetting the circuit breaker to ON. If the circuit breaker still trip to OFF, failure of electrical insulation may have occurred. Remove the power supply and contact the factory for further instructions.
During normal operation the Running lamp goes off and the compressor stops. After a period of time normal operation resumes.	Installation place is poorly ventilated. Ambient temperature is too high.	<ul style="list-style-type: none"> • Improve the ventilation around the unit to lower the ambient temperature. • Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch."
	The ventilation grilles are obstructed by wall or clogged with dust.	<ul style="list-style-type: none"> • Install the air dryer more than 0.6m away from the wall. • Clean the ventilation grilles once a month. • Reset the protective circuit referring to "5-2 How to reset the thermal relay and high pressure switch."
	Temperature of the Compressed air is too high.	<ul style="list-style-type: none"> • Improve the ventilation around the unit to lower the ambient temperature. • Reduce the temperature of the compressed air by installing an additional aftercooler before the air dryer. • Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch."
	Supply voltage is not correct.	<ul style="list-style-type: none"> • Ensure the correct voltage is supplied to the unit. • Reset the protective circuit by referring to "5-2 How to reset the thermal relay and high pressure switch."
Evaporation thermometer indicates higher than green zone.	Installation place is poorly ventilated. Ambient temperature is too high.	Improve the ventilation around the unit to lower the ambient temperature.
	The ventilation grilles are obstructed by wall or clogged with dust.	Install the air dryer more than 0.6m away from the wall. Clean the ventilation grilles once a month.
	Temperature of the compressed air is too high.	Improve the ventilation around the air compressor or make ambient temperature around the air compressor lower to reduce the temperature of discharge from compressor. Reduce the temperature of the compressed air by installing an additional after-cooler after the air dryer.
	Supply voltage is not correct.	Ensure the correct voltage is supplied to the unit
	Overload relay for the compressor is activated	It is not possible to restart the air dryer within 3 minutes after shutdown. Wait for 3 minutes before restarting.

Problem	Probable Causes	Remedy
Evaporation thermometer indicates higher than green zone without warm air exhausted from the ventilation grille.	Installation place is poorly ventilated. Ambient temperature is too high.	Improve the ventilation around the unit to lower the ambient temperature.
	The ventilation grilles are obstructed by wall or clogged with dust.	Install the air dryer more than 0.6m away from the wall. Clean the ventilation grilles once a month.
	Temperature of the compressed air is too high.	Improve the ventilation around the unit to lower the ambient temperature. Reduce the temperature of the compressed air by installing an additional after-cooler before the air dryer.
Moisture occurs downstream of the compressed air lines.	Bypass valve of air dryer is not fully closed.	Close the valve completely.
	Drain is not discharged from auto drain properly.	Check if the drainpipe has fluid trap. Check auto drain function. Check auto drain strainer.
	Moisture from separate air circuit that is without air dryer.	Install additional air dryer on the line that does not have one. Separate two lines not to converge.
Large pressure drop	IN/OUT valve on the air dryer side is not fully opened.	Open IN/OUT valve fully.
	Filter that is installed separately in compressed air line is clogged.	Replace the filter element. (Follow the instruction manual of each individual device.)

5-2 How to reset the thermal relay and high pressure switch

If light goes off during operation and refrigerating compressor stops, the thermal relay or high pressure switch (for only the IDFA55E and IDFA75E) 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 1-1.

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

Turn off the ON/OFF switch.

Take off the front panel. The thermal relay as shown on right figure can be found on the power supply terminal base.

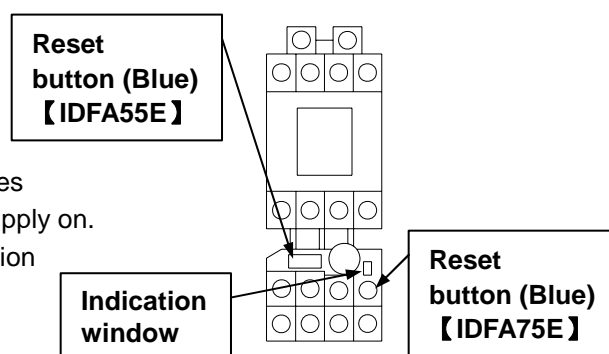
Confirm that a green indication does not appear in the indication window of thermal relay.

If the green indication appears, there are other possible causes and contact an SMC Authorized Dealer keeping the power supply on.

Press the blue reset button and confirm that the green indication comes to appear at the indication window.

Put back the front panel.

When the ON/OFF switch is turned on, the product will restart operation.



Thermal relay

How to reset a high pressure switch

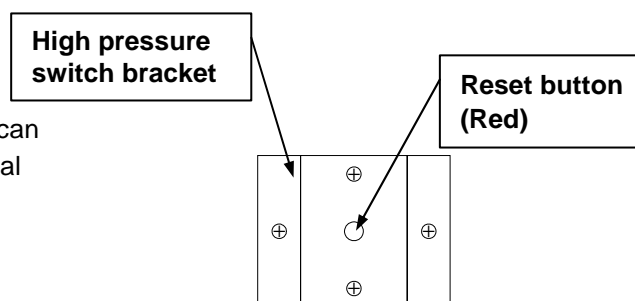
Turn off the ON/OFF switch.

Take off the front panel. The high pressure switch can be found at upper right part of power supply terminal base.

Press the red reset button.

Put back the front panel.

When the ON/OFF switch is turned on, the product will restart operation.



High pressure switch

6

References

6-1 Specifications

Specification		Model	IDFA22E	IDFA37E	IDFA55E	IDFA75E
Air FlowRate (ANR) (Note 1)		At Outlet Pressure Dew Point of 3	182 m³/h	273 m³/h	390 m³/h	660 m³/h
		At Outlet Pressure Dew Point of 7	231 m³/h	347 m³/h	432 m³/h	720 m³/h
		At Outlet Pressure Dew Point of 10	254 m³/h	382 m³/h	510 m³/h	822 m³/h
Rated Condition	Operating Pressure		0.7MPa			
	Inlet Air Temperature		35			
	Ambient Temperature		25			
	Voltage		230V 50Hz			
Operating Range	Working Fluid		Compressed Air			
	Inlet Air Temperature		5 ~ 50			
	MIN.Inlet Air Pressure		0.15MPa			
	MAX.Inlet Air Pressure		1.0MPa			
	Ambient Temperature		2 ~ 40 (Relative Humidity of 85% or less)			
Electrical Specification	Power Source		Single Phase AC230V ± 10% 50Hz (Note4)			
	Starting Current (Note2)		22A	33.5A	60A	
	Operating Current (Note2)		4.3A	5.4A	7.9A	
	Power Consumption (Note2)		760W	1130W	1700W	
	Circuit Breaker Capacity (Note3)		10A	20A		
Noize at 50Hz			50dB			67dB
Condenser			Plate fin tube type with forced air cooling			Corrugated fin tube type with forced air cooling
Refrigerant			R407C(HFC) (GWP:1653)			
Refrigerant Charge Quantity			420 ± 10g	730 ± 10g	930 ± 10g	670 ± 10g
Air IN/OUT Connection			R1	R1-1/2	R2	
Drain Connection (Outside Diameter of Tubing)			10mm			
Painting Finish			Melamine baking finish			
Colour			Munsell 10Y8/0.5 (Urbanwhite)			
Weight			54kg	62kg	100kg	116kg

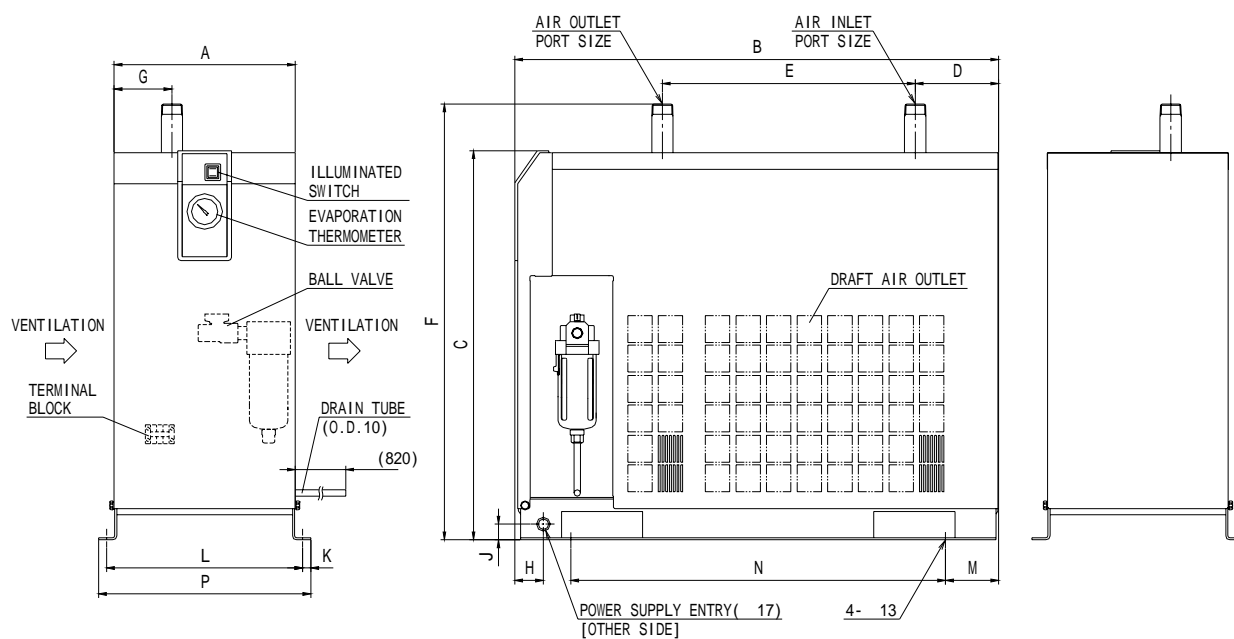
Note1: The data for m³/h (ANR) is referring to the conditions of 20°C, 1atm . pressure & relative humidity of 65%.

Note 2: The value is that of operation under rated 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 Dimensions

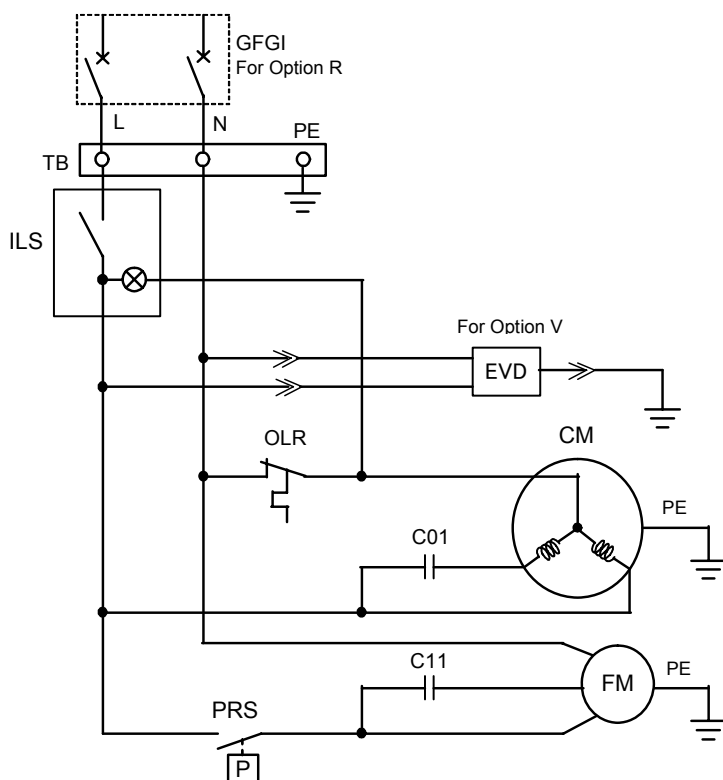


Measure : mm

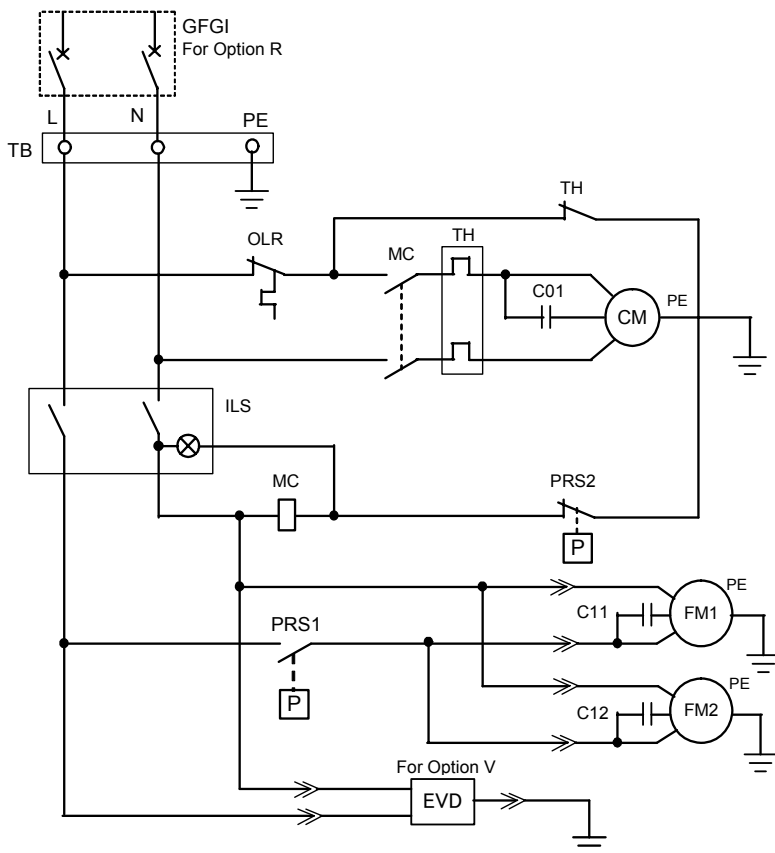
Model	Port Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P
IDFA22E	R 1	290	775	623	134	405	698	93	46	25	13	314	85	600	340
IDFA37E	R 1-1/2		855											680	
IDFA55E	R2	470	855	800	(128)	(455)	(868)	(110)	36	50	13	500	75	700 ± 1	526
IDFA75E				900			(968)								

6-3 Electrical Circuit

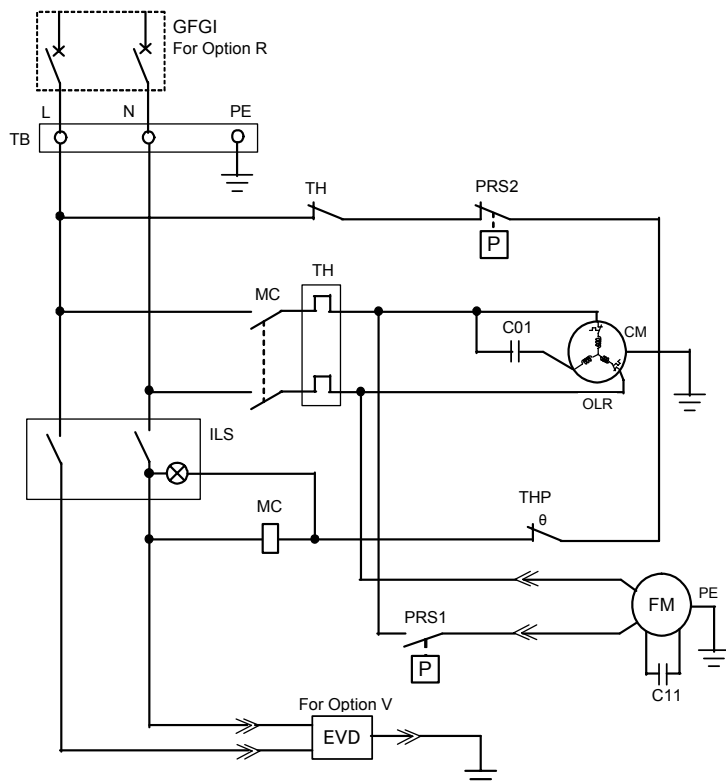
IDFA22E, 37E



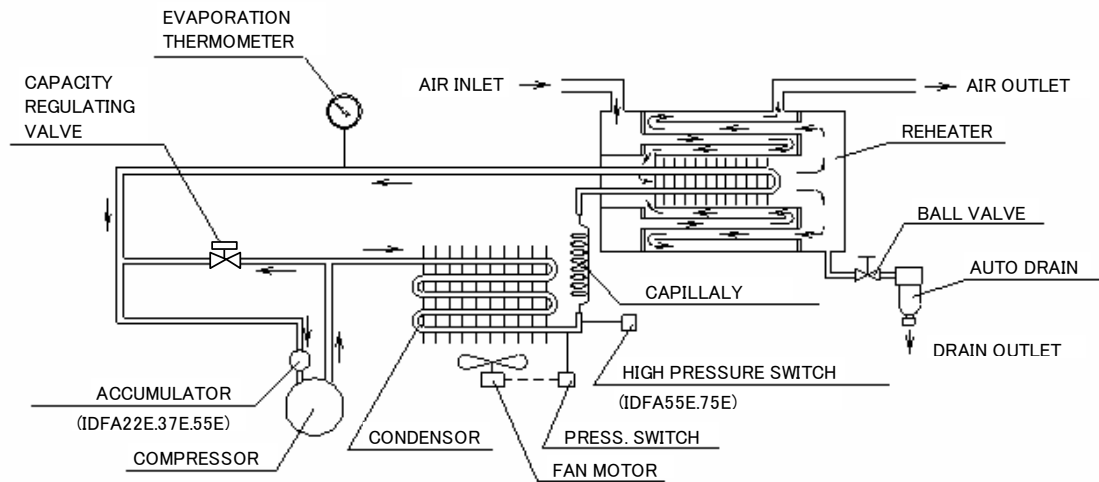
Symbol	Name
CM	Refrigerant compressor
OLR	Overload relay
FM	Fan motor
PRS	Pressure switch
ILS	Illuminated switch
C01	Capacitor for compressor
C11	Capacitor for fan motor
TB	Terminal block

IDFA55E

Symbol	Name
CM	Refrigerant compressor
OLR	Overload relay
FM1	Fan motor
FM2	Fan motor
MC	Magnetic contactor
ILS	Illuminated switch
C01	Capacitor for compressor
TB	Terminal block
C11	Capacitor for fan motor
C12	Capacitor for fan motor
PRS1	Pressure switch
PRS2	High pressure switch
TH	Thermal relay

IDFA75E

Symbol	Name
CM	Refrigerant compressor
OLR	Overload relay
FM	Fan motor
MC	Magnetic contactor
ILS	Illuminated switch
C01	Capacitor for compressor
TB	Terminal block
C11	Capacitor for fan motor
PRS1	Pressure switch
PRS2	High pressure switch
TH	Thermal relay
THP	Thermo protector (fan motor)

6-4**Compressed Air and Refrigerant Circuit/Operation Principles****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 freon gas 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.

6-5**SERVICE PARTS LIST**

Parts No.	Description	IDFA22E	IDFA37E	IDFA55E	IDFA75E
AD48	Auto Drain	1	1	1	1



Specification for Option C

When performing the installation and maintenance of the product, the following points must be understood and followed.

7-1 Safety instructions

When handling the product, take care of 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 Precautions for the installation and handling of the product

- 1) The surface of copper tube is painted with a special epoxy to improve the rust proof effect from corrosive gas, but it is not perfect rust proof. Therefore, avoid installing the product in the place exposed to corrosive gas as much as possible.
- 2) If any of the painted surfaces of copper tube is damaged, such as when the panels are removed for maintenance, the effect of its rust proofing painting is lost. Do not give damage any painted surfaces of copper tube.

7-3 Specifications

The surface of copper tube is painted with a special epoxy resin for the rust proofing. The parts covered with aluminum fins and insulations are not painted.



Specification for Option K

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".

8-1 Safety instructions

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



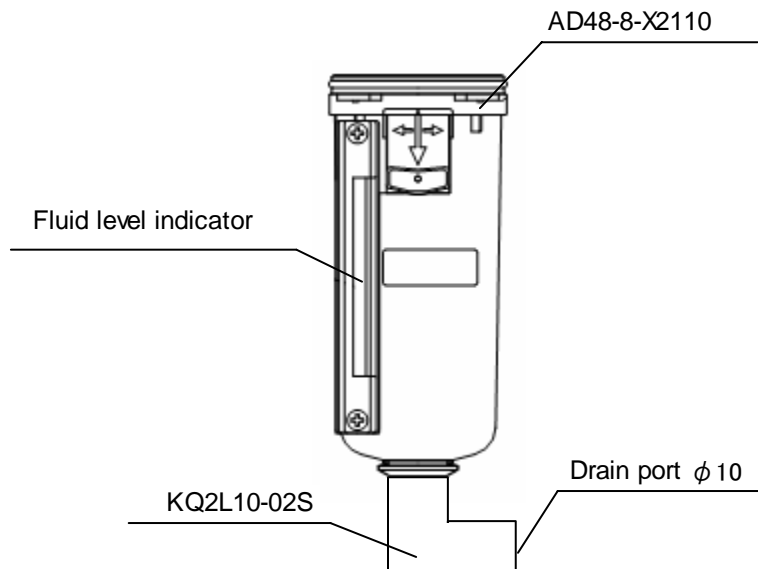
Warning

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.)

8-2 Specifications

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

IDFA22E, 37E



Item \ Model	IDFA22E,37E-23-K
Auto drain / Case Assembly	AD48-8-X2110
Max. operating pressure	1.6MPa
Auto drain type	Floating type
Auto drain valve type	N.O. (normally opened: Released without pressurization)
Working pressure	0.1 to 1.6MPa
Fluid	Compressed air

Note) The above part number does not include the auto drain strainer. If the strainer needs to be replaced, order it.

(Part number for the auto drain strainer: IDF-S0002)

9

Specification for Option L

9-1 Safety instructions

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

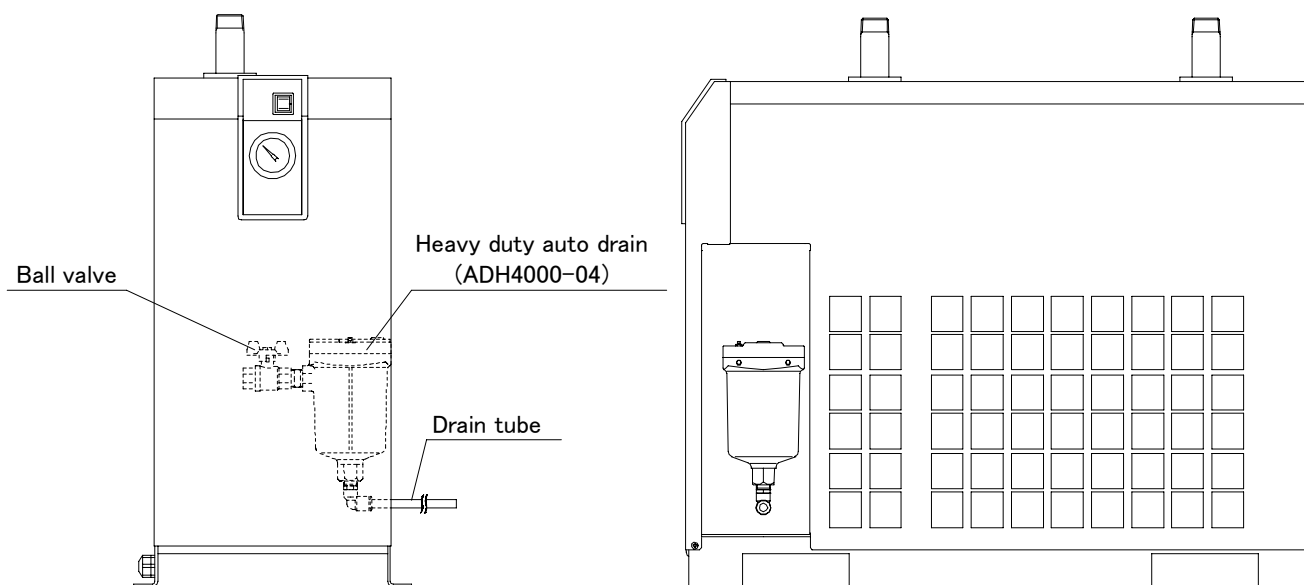
Warning

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 1.6MPa.



Heavy duty auto drain assembly

Model	IDFA22E to 75E-23-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	1.6MPa
Working pressure range	0.05 to 1.6MPa
Working fluid	Compressed air
Max. drain discharge	0.024m ³ /h (Pressure 0.7MPa,the case of water)

Note) Use for air compressor with flow more than 3m³/h (ANR).

9-3 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

Option R installs a Ground Fault Circuit Interrupter (GFCI), 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, see 10-2 and 10-3.

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 safety. Without grounding, the GFCI can not operate normally.
5. Do not ground to water pipe, gas tube or lightening 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.

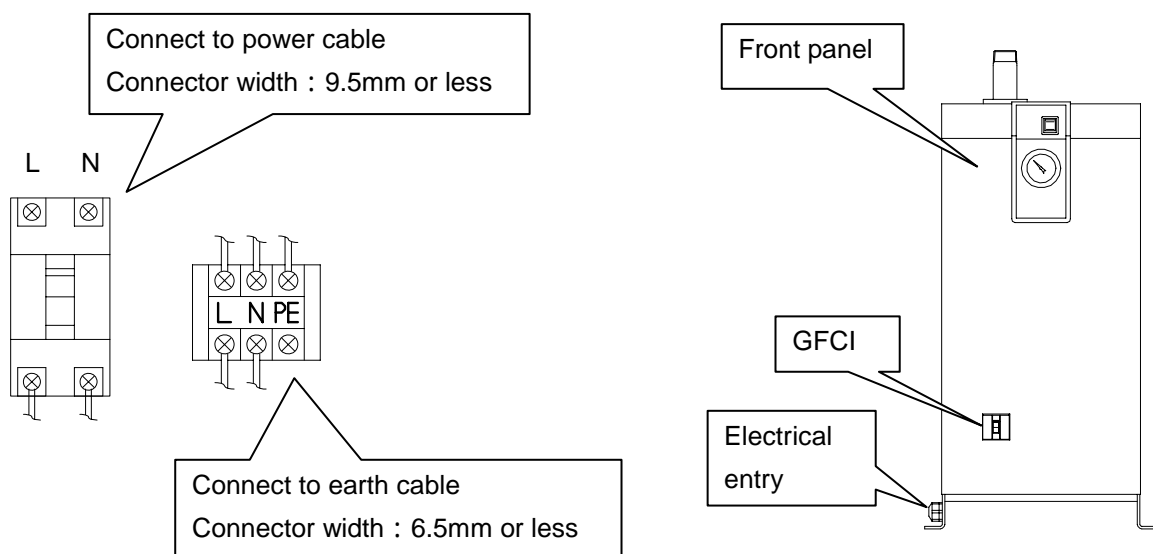
10-2 Specifications of the GFCI

Dryer model number	Specifications of GFCI
IDFA22E/37E/55E-23-R	Rated current: 10A, Current sensitivity: 30mA
IDFA75E-23-R	Rated current: 20A, Current sensitivity: 30mA

10-3 How to connect the power supply

Connect the power cables in the following procedure.

- 1) Take off the front panel.
- 2) 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.
- 3) Connect the power cable to the terminal of the GFCI.
- 4) Put back the front panel.





Specification for Option T

This option installs a terminal block that has outputs for the operation and failure signals. The signals are non voltage contact style. For details, refer to 11-2, 11-3 and 11-4.

11-1 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 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.

11-2 Specifications

This option installs a terminal block that has outputs for the operation and failure signals.

- The operation and failure signals are non voltage contact style.
 - Operation • • • • • When the product is operating; Close
 - Failure • • • • • When the product stops due to failure; Close
- Contact capacity
 - AC230V,4A DC24V,5A
 - Minimum current for signal 20V,5mA(AC/DC)

11-3 Remote operation

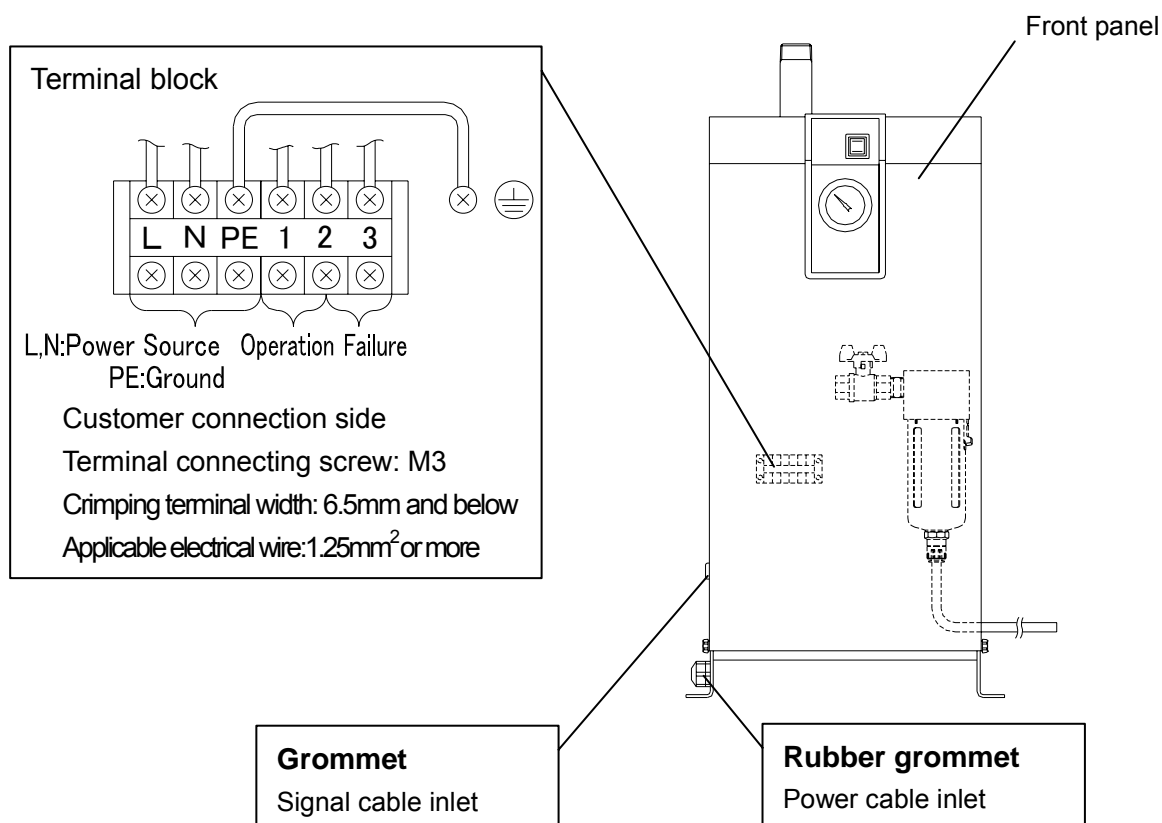
- For the remote operation, turn on and off the power supply side under the condition of the Switch with Lamp ON.
- Ensure at least 3 minutes is left after the unit is stopped before restarting it, even for the remote operation. If the product is restarted within less than 3 minutes, protective equipment (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).

11-4 How to connect the power supply and signal cable

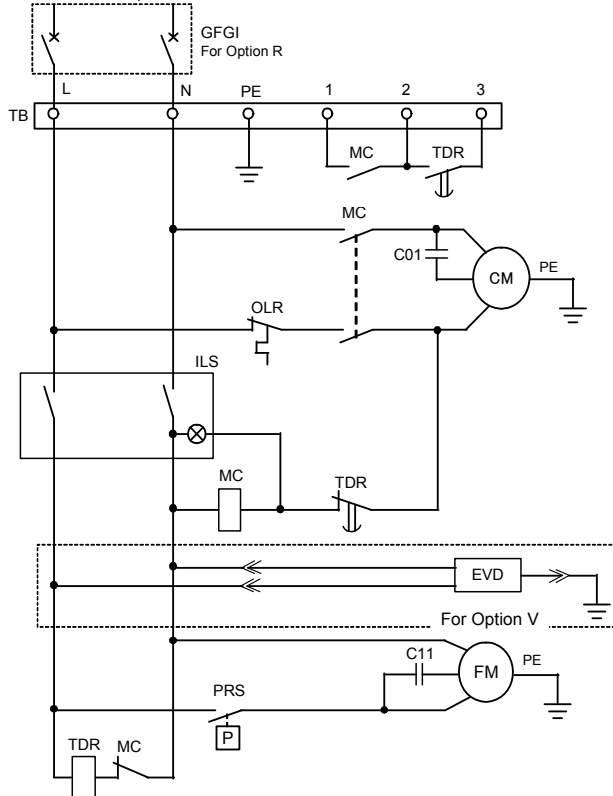
Connect the power cable and signal cable in the following procedures.

- 1) Take off the front panel.
- 2) Insert the power cable prepared by the customer into the power cable 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 cable 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.



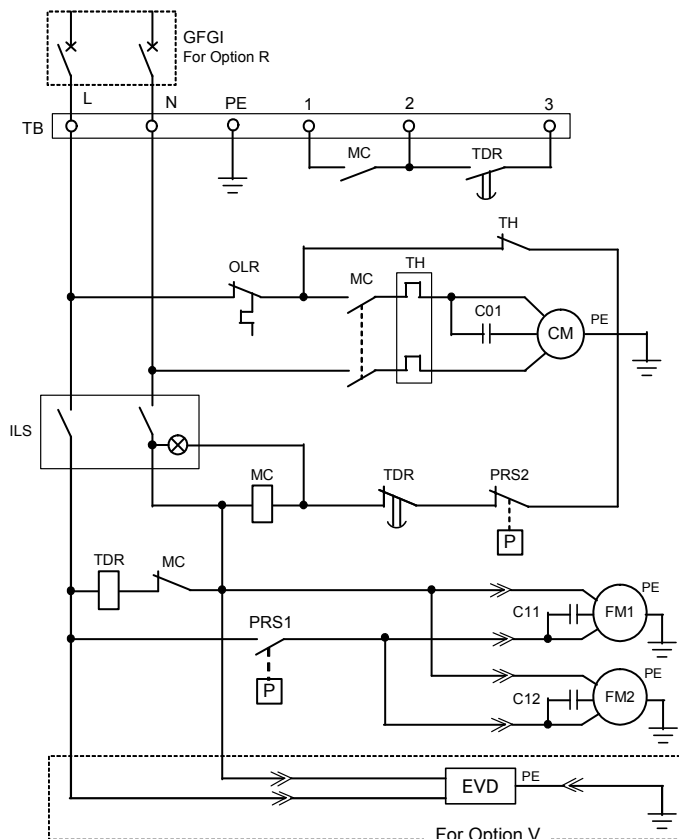
11-5 Electric circuit

IDFA22E, 37E-23-T



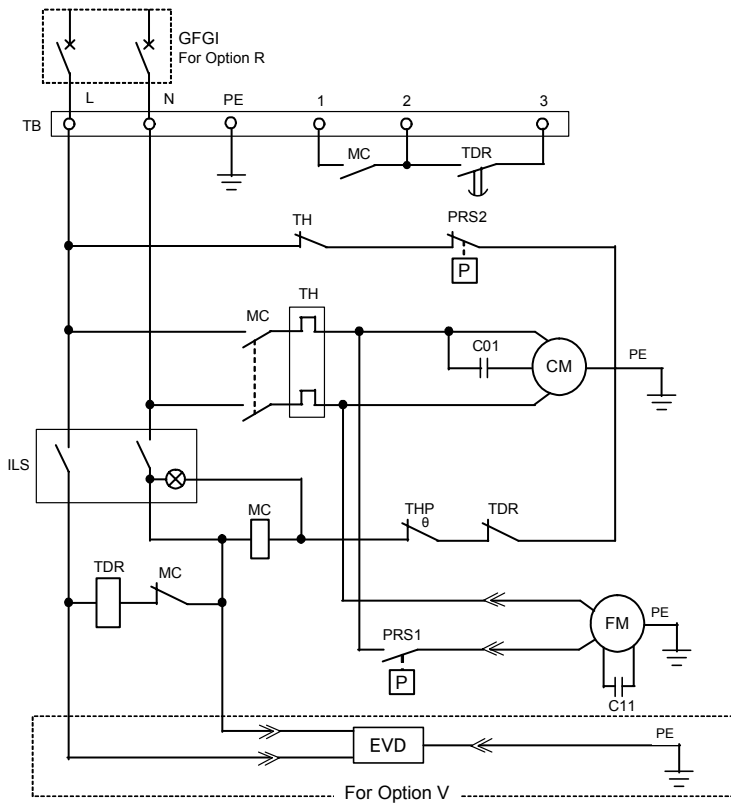
Symbol	Name
CM	Refrigerant compressor
OLR	Overload relay
FM	Fan motor
PRS	Pressure switch
ILS	Illuminated switch
C01	Capacitor for compressor
C11	Capacitor for fan motor
TB	Terminal block
GFCI	Ground Fault Circuit Interrupter
EVD	Electronic Drain Valve

IDFA55E-23-T



Symbol	Name
CM	Refrigerant compressor
OLR	Overload relay
FM1	Fan motor
FM2	Fan motor
MC	Magnetic contactor
ILS	Illuminated switch
C01	Capacitor for compressor
TB	Terminal block
C11	Capacitor for fan motor
C12	Capacitor for fan motor
PRS1	Pressure switch
PRS2	High pressure switch
TH	Thermal relay
GFCI	Ground Fault Circuit Interrupter
EVD	Electronic Drain Valve

IDFA75E-23-T



Symbol	Name
CM	Refrigerant compressor
OLR	Overload relay
FM	Fan motor
MC	Magnetic contactor
ILS	Illuminated switch
C01	Capacitor for compressor
TB	Terminal block
C11	Capacitor for fan motor
PRS1	Pressure switch
PRS2	High pressure switch
TH	Thermal relay
THP	Thermo protector (fan motor)
GFCI	Ground Fault Circuit Interrupter
EVD	Electronic Drain Valve



Specification for Option V

This option installs the timer operated auto drain. When performing the installation and maintenance work for the product, the following points must be understood and followed. Additionally, read 12-3 for maintenance work.

12-1 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 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 when repalcing the 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 maintenance on the unit.)



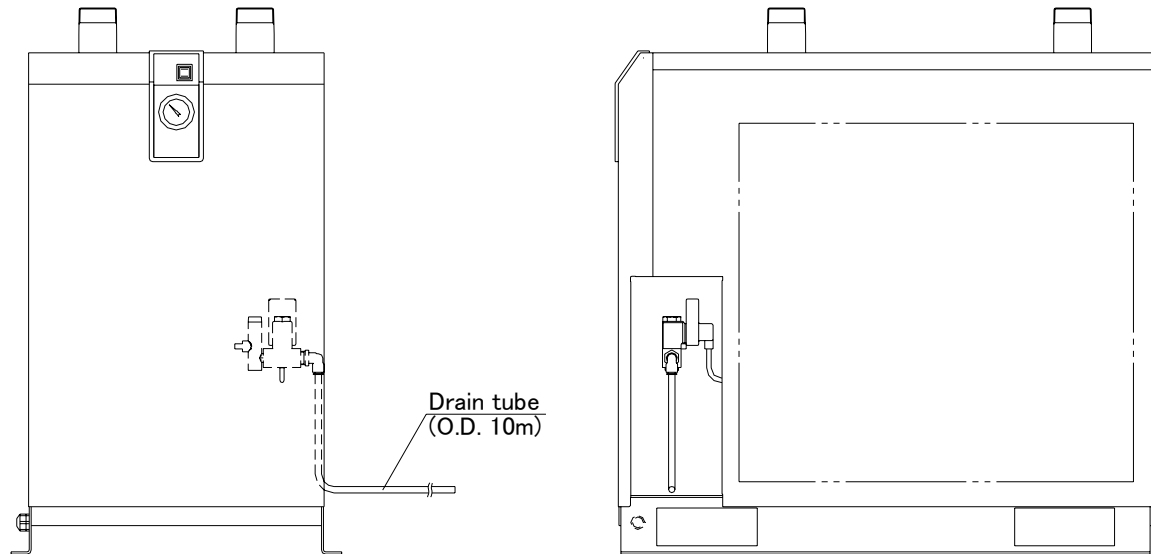
Warning

Only qualified people must perform wiring.

1. Provide the power suitable for the product specifications.
2. Be sure to ground the product for 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.

12-2 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.

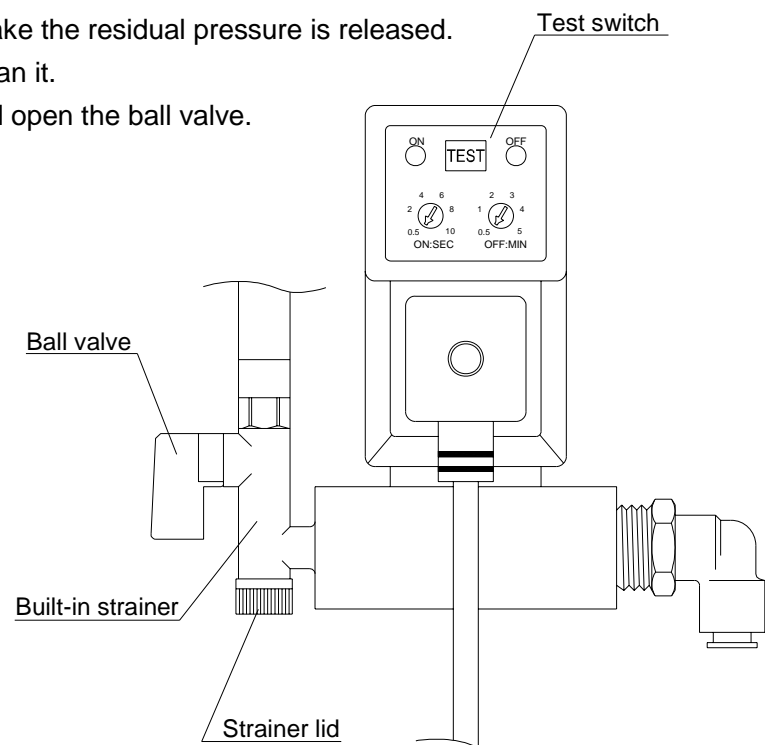


Power supply voltage of dryer	AC230V
Order number (service parts)	IDF-S0198
Max. operating pressure	1.6MPa
Fluid	Drain
Power supply voltage of drain timer	AC230V \pm 10% (50Hz)
ON time	0.5sec
OFF time	0.5min

12-3 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 is released.
- 3) Remove the strainer and clean it.
- 4) Reassemble the strainer and open the ball valve.





Service Record

13-1 Service Record

It is recommended to keep a maintenance/service record.

Parts No.	Description	Maintenance/Service Work Description	Date