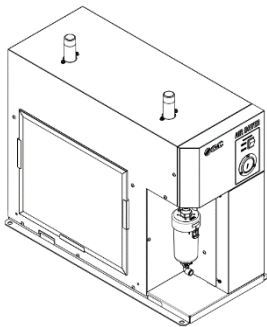




ORIGINAL INSTRUCTIONS

Instruction Manual
Refrigerated Air Dryer
IDFA60/70/80/90-F



The intended use of this product is part of an air preparation line. This product cools down pressurised air and removes condensed water. Pressurised air is reheated and exits the dryer through to the next step of air preparation or application.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “Caution,” “Warning” or “Danger.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)^(*), and other safety regulations.

^(*)ISO 4414: Pneumatic fluid power — General rules and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power — General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines. Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

1 Safety Instructions (Continued)

Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Warning

- Always ensure compliance with relevant safety laws and standards.**
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

2 Hazard Warnings

Caution

- Hazard of Fire:** This product uses a flammable refrigerant (R454C). Follow the contents of this combustible warning label and safety precautions and handling instructions.
- Hazard of Electricity:** Inside of this product, there is a power-supplying section with high voltage separated by the cover panel. Do not operate the product without the cover panel.
- Hazard of Hot Surface:** The product has surfaces that can reach high temperatures during operation. What is more, there is also the danger of burn injury due to remaining heat after the power supply is cut. Therefore, wait until the temperature of hot parts become 50°C and below.
- Hazard of Rotating Fan Motor:** 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.
- Hazard of Compressed Air Circuit:** Before replacing or cleaning parts, be sure to bleed compressed air remaining inside of the product until the gauge indicates “0”. If there is no relief to the pressure, high pressure can propel objects at high velocity when unscrewing parts and cause injury.

3 Specifications

3.1 Specifications

Models				IDFA60-23	IDFA70-23	IDFA80-23	IDFA90-23	
Operating range *1	Fluid			Compressed air				
	Inlet air temperature			°C				
	Inlet air pressure			MPa				
	Ambient temperature (humidity)			°C				
Rated conditions	Air flow capacity m³/h	Standard condition *3	Outlet air pressure dew point	3°C	204	312	552	810
			Outlet air pressure dew point	7°C	300	408	654	900
			Outlet air pressure dew point	10°C	360	480	720	960
		Compressor inlet condition *4	Outlet air pressure dew point	3°C	216	331	585	859
			Outlet air pressure dew point	7°C	318	432	693	954
			Outlet air pressure dew point	10°C	382	509	763	1018
	Inlet air pressure			MPa				
	Inlet air temperature			°C				
	Ambient temperature			°C				
	Max air flow capacity			Air flow calculated with correction factor (see the Chapter 7-2)				
Electric spec.	Power supply voltage (frequency)			Single phase 230 VAC (50Hz)				
				Allowable voltage fluctuation +/-10% *5				
	Power consumption *6		W	1140	1740	2180	2950	
	Operating current *7		A	7.1	10.0	10.6	13.5	
Applicable earth leakage breaker capacity (sensitivity current: 30mA) *7			A	15	15	20	30	
SCCR			kA	5				
Noise Level			dB(A)	70	71	77	77	
Cooling method				Air-cooled refrigeration				
Refrigerant				R454C GWP: 146				
Amount of refrigerant to be filled			g	350 ± 10	510 ± 10	840 ± 10	1090 ± 10	
Auto drain				Float type				
Drain tube O.D.			mm	12				
Piping port size				R1	R1 1/2	R2		
Weight			kg	51	73	112	121	
Accessories				Panel: White 1 / Base: Gray 2				

3 Specifications (Continued)

Notes:

- *1: The operating range does not guarantee use with normal air flow capacity.
- *2: The maximum operating pressure is 1.0MPa as standard, but it is possible to achieve 1.6MP when selecting Option L or Option V.
- *3: ANR indicates the following set of conditions: a temperature of 20°C, atmospheric pressure, and a relative humidity of 65%.
- *4: : Air flow capacity converted by the compressor intake condition [32°C, atmospheric pressure, and 75% relative humidity].
- *5: Do not use this product with continuous voltage fluctuations
- *6: These values are reference values under rated conditions and are not guaranteed. Do not use these values for the thermal set values, etc.
- *7: Products other than Option R are not equipped with an earth leakage breaker. Purchase an appropriate earth leakage breaker separately. Use an earth leakage breaker with a leak current sensitivity of 30mA.

3.2 Coefficient Factors

Inlet Air Temperature (°C)

5 to 25	30	35	40	45	50	55	60	65
1.42	1.15	1.00	0.71	0.62	0.50	0.40	0.33	0.21

Inlet Air Pressure (MPa)

0.3	0.4	0.5	0.6	0.7 to 1.6
0.71	0.75	0.82	0.89	1.00

Ambient Temperature (°C)

2 to 25	30	35	40	45
1.00	0.85	0.8	0.73	0.62

Calculation example: The air flow capacity when the dew point of IDFA60 is set to 10°C under the following conditions.
Coefficient Factor Example (10°C dew point, Inlet air temp 35°C, Inlet air pressure 0.6MPa, Ambient temp 35°C):

$360 \text{ m}^3/\text{h(ANR)} \times 1.00 \times 0.89 \times 0.80 = 256 \text{ m}^3/\text{h(ANR)}$

3 Specifications (Continued)

Warning

Special products (-X) might have specifications different from those shown in this section. Contact SMC for specific drawings.

3.3 Production Serial Number Code

The production serial number code printed on the label indicates the month and year of production as per the following table:

Year	2025	2026	....	2029	2030	2031	....
Month	D	E	....	H	i	J	....
Jan	o	Do	Eo	....	Ho	io	Jo
Feb	P	DP	EP	....	HP	iP	JP
Mar	Q	DQ	EQ	....	HQ	iQ	JQ
Apr	R	DR	ER	....	HR	iR	JR
May	S	DS	ES	....	HS	iS	JS
Jun	T	DT	ET	....	HT	iT	JT
Jul	U	DU	EU	....	HU	iU	JU
Aug	V	DV	EV	....	HV	iV	JV
Sep	W	DW	EW	....	HW	iW	JW
Oct	X	DX	EX	....	HX	iX	JX
Nov	y	Dy	Ey	....	Hy	iy	Jy
Dec	Z	DZ	EZ	....	HZ	iZ	JZ

4 Transportation

Warning

- When moving the product, lift with care from the base so that the product is not on its side with careful attention to tipping.
- Do not transport the product lying down on its side, or the product will be damaged.
- Do not suspend the product.
- Do not mount the air filter, etc. to the fitting for air inlet and outlet when transporting. If they must be mounted, support the part with a bracket to avoid vibration during transportation.
- Do not install the product unless the safety instructions have been read and understood.

4 Transportation (Continued)

Warning

- Transportation, installation, and maintenance including dangerous work must be done by personnel who have require knowledge and experience about the product and system.
- This product is heavy. Follow above cautions to avoid risk during transportation. As the product weighs more than 50kg including package, move the product by a forklift. Moving by forklift should be done by personnel who have the licenses.

5 Installation

5.1 Environment

Warning

Do not use in the following environments, as it may lead to a breakdown. Potential malfunction or damage to the product may occur if these instructions are disregarded.

- Avoid locations where the air dryer will be in direct contact with wind or rain. (Avoid locations where relative humidity is 85% or more)
- Avoid locations where water, water vapor, salt water, or oil may splash on the product.
- Avoid locations where dust or other particles are present.
- Avoid locations where flammable or explosive gases are present.
- Avoid locations where corrosive gases, solvents or combustible gases are present.
- Avoid locations which receive direct sunlight or radiated heat.
- Avoid locations where the ambient temperature exceeds the limits as mentioned below. During operation: 2 to 45°C During storage: 0 to 50°C (when there is no drain water inside of the piping)
- Avoid locations where temperature substantially changes.
- Avoid locations where strong magnetic noise occurs. (Avoid locations where strong electric field, strong magnetic fields, or surge voltage occur).
- Avoid locations where static electricity occurs or conditions which make the product discharge static electricity.
- Avoid locations where high frequencies occur.
- Avoid locations where damage is likely to occur due to lightning.
- Avoid installation on machines used for transporting, such as vehicles, ships, etc.
- Avoid locations at altitudes of 2000 meters or higher.
- Avoid locations where strong impacts or vibrations occur.

5 Installation (Continued)

- Avoid locations where a massive force strong enough to deform the product is applied or the weight from a heavy object is applied.
- Avoid locations with insufficient space for maintenance. Necessary maintenance space Front: 600 mm Back: 600 mm Top: 600 mm Right side: 600 mm Left side: 600 mm
- Avoid locations where the ventilation grille is obstructed.
- Avoid locations where the air dryer will draw in high-temperature air discharged from an air compressor or other dryer.
- Avoid pneumatic circuits where rapid pressure fluctuations or flow speed changes are generated.

Warning

- Do not use or store the product in conditions of compressed air or an environment containing substances below. Otherwise, malfunction or parts damage may occur.
- Corrosive gas, organic solvents or chemicals.

5.2 Anchorage (refer to section 7.3 for anchor dimensions)

- The product should be installed on a vibration-free, stable, horizontal flat surface
- The anchor bolt sets sold separately as an accessory is (IDF-AB500)

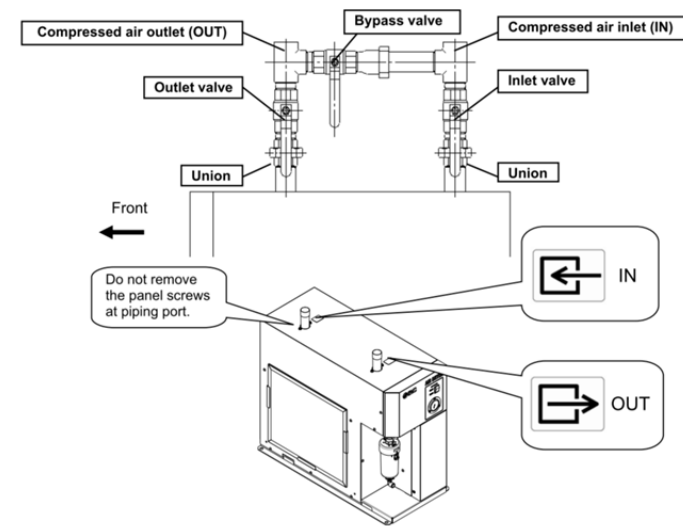
5.3 Piping

Caution

- Connection of the inlet and outlet of compressed air should be made removable by using union and so on.
- When an air fitting is connected with the body of the product, hold the pneumatic piping at the body with a pipe wrench and tighten.
- Avoid applying the piping weight directly to the dryer. When parts including air filter are mounted to the fitting of the inlet and outlet for compressed air, support the parts with the bracket to prevent force being applied to the product.
- Be careful not to let the vibration of the air compressor transmit.
- The piping surface temperature will be the same as the inlet temperature of the compressed air. Wrap the piping with insulator when the surface temperature exceeds 60°C.
- When the inlet temperature of the compressed air exceeds 65°C, install the aftercooler after the air compressor or decrease the temperature of the place to install the air compressor to keep the temperature at 65°C or lower.
- When the pressure of the air source fluctuates a lot, install an air tank.

5 Installation (Continued)

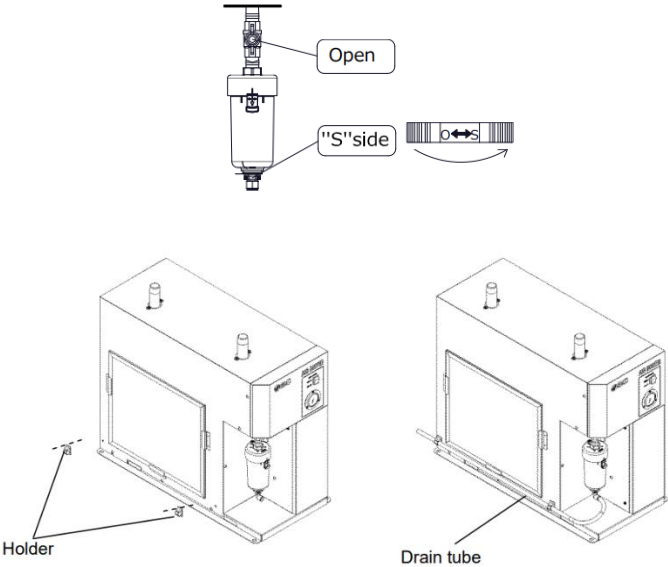
- Before piping, flush the inside of piping to eliminate foreign matter such as particles, seal tape or liquid gasket. Entry of the foreign matter may cause cooling failure or drain discharge failure.
- Use pipes and fittings that have enough endurance against the operating pressure and temperature. And connect it firmly to prevent air leakage.
- Provide bypass-piping to made it possible to do maintenance without stopping the air compressor.
- Metal flexible tube for air inlet and outlet piping may make noise. Please change the piping to steel tube.
- If rapid pressure fluctuation or flow change occurs, install a filter on the dryer outlet to prevent drain from splashing.
- Depending on the operating conditions, condensation might occur around the outlet piping surface. Wrap insulator around the piping to avoid condensation.



5 Installation (Continued)

5.4 Drain Tube

- A drain tube of 12mm O.D. is included as an accessory. The outlet end of the tube is released to atmosphere and lets the drain flow through the tube. (When customers prepare the drain tube, keep its length at 5m or less and the I.D. at 8mm or larger for correct operation of the auto drain)
- Using the pressure of the compressed air, the drain will be discharged periodically. Fix the outlet end of the tube so as not to swing during discharge.
- Prevent the drain tube from having a rise in its piping.
- Do not bend or crush the drain tube. When installing the product, take care not to place the product on the drain tube.
- For piping the drain tube to the back of the dryer, use the holder included as an accessory.



5 Installation (Continued)

Warning

- For handling the condensate drain, follow the safety guideline and wear protective goggles, apron and gloves.
- When oil is contained in the condensate drain, dangerous substances may be present. Handle it following the bylaw or regulation of local government.
- During the dryer operation, keep the ball valve open at all times. When the ball valve is closed, the condensate drain cannot be discharged.
- Keep the drain cock at “S” side. If the drain cock is at “O” side, compressed air continues to bleed

5.5 Electrical Wiring

Warning

- Only qualified personnel should do electrical wiring work.
- Cut off the power supply for safety before the wiring. Wiring with the product energized is strictly prohibited.
- Use a power supply suitable for the specifications of the product.
- Supply power from a stable place, which is free from the effects of any surge.
- Do not plug too many leads into a single socket. It can cause a fire. - Supply power from a system with an emergency stop equipped.
- To avoid electric shock and burnout of the compressor motor, select the earth leakage breaker with the correct sensitivity of leakage current and load capacity and mount to the supply power side referring to the 3.1 Specifications.
- Install the breaker correctly, so that all power can be shut off and easy access to the operation panel is realized.
- Install a breaker compliant with applicable local safety regulations and standards.
- The equipment should be grounded for safety.
- Add an allowance to the length of the grounding cable so that external force is not applied to it.
- Connect the grounding cable first before connecting other cables, and remove it last when removing cables.
- Do not connect the earth to a water pipe, a gas pipe, or lightning rod.
- Do not modify the internal electrical wiring of the product.
- For use in Europe, install a breaker compliant with applicable IEC standards to the power supply of the product.

5 Installation (Continued)

5.5.1 Power supply cable specification

- Prepare the power supply cables below.
- Approx. 0.2m of cable is necessary for wiring in the product.

IDFA60-23-F	IDFA70-23-F	IDFA80-23-F	IDFA90-23-F
16AWG (1.25mm ²)	12AWG (3.5mm ²)	10AWG (5.5mm ²)	
Cable O.D. Approx. 9 to 11mm		Cable O.D. Approx. 18 to 23mm	

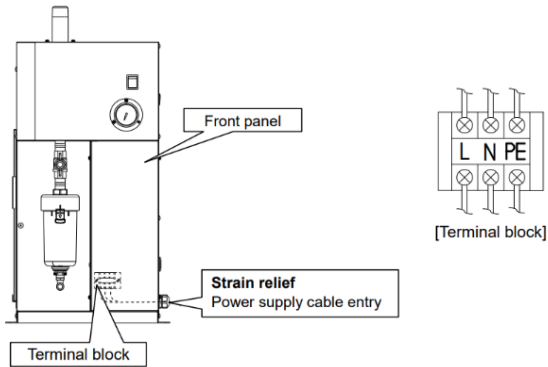
5.5.2 Power supply

- Connect the power cable and grounding cable to the terminal block. Use round crimp terminal for connection terminal.

	IDFA60-23-F	IDFA70-23-F	IDFA80-23-F	IDFA90-23-F
Terminal Screws	M3.5		M4.0	
Applicable crimp terminal	1.25 - 3.5		3.5 - 4	5.5 - 4
	(Terminal width 6.6mm or less)		(Terminal width 9.5mm or less)	

5.5.3 Wiring Procedure

1. Remove the front panel.
2. Pass the cable through the strain relief to connect to the terminal block. (refer to the label on the terminal block)
M3.5 Screw tightening torque: 1.0 to 1.3N·m
M4.0 Screw tightening torque: 1.4 to 1.8N·m
Do not touch any equipment other than the terminal block during wiring.
3. Mount the front panel back.



5 Installation (Continued)

5.6 Reinstallation

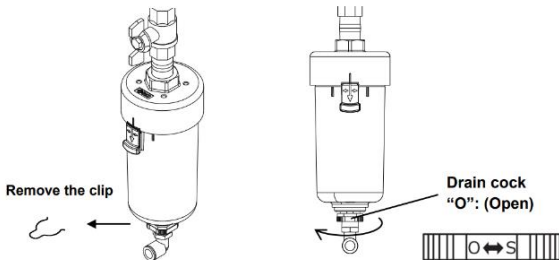
If you move the product and reinstall it into another place after some operations (including trial running), all installation instructions in chapter 5 should be followed as well as the following instructions.

Warning

- Only someone who has enough knowledge about the product and incidental devices should reinstall it in another place.
- Cut off the power source before you disassemble the power cable
- Only qualified personnel should do the wiring work.
- Cut off the power supply for safety before the wiring. Wiring with the product energized is strictly prohibited.
- Separate the compressed air source 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. Remaining tape could cause imperfect cooling or failure by entering the product.

5.7 Procedure to release residual compressed air

- Even while the dryer is removed, only open the bypass piping valve when compressed air is needed.
- Close the compressed air inlet and outlet valves.
- Ensure that the ball valve of the auto drain is opened.
- Remove the drain cock holding clip. Rotate the drain cock of the auto drain to "O" side, and exhaust the compressed air from the product.



6 Operation/Shutdown

Caution

Only someone who has enough knowledge and experience about the product and incidental devices should operate or shut down the product.

6.1 Check points before operation

- Check product is installed on level surface with anchor bolts.
- Do not place heavy objects on product or piping.
- Check if the power cable and ground cable are connected correctly.
- Drain tube should be connected correctly.
- Confirm that the piping to the compressed air is correctly connected. Check that the IN and OUT side of the product and bypass piping valves are completely closed.
- Ensure that the ball valve of the auto drain is opened.

6.2 Operation

1. Turn on the main power supply breaker. Turn on the switch with lamp.
2. The operation lamp turns on. After a moment, the cooling fan will rotate, and hot air will be exhausted from the ventilation outlet.
3. Open the IN and OUT side valves slowly. Ensure the bypass valve is completely closed. Confirm that there is no air leakage.
4. The fan keeps starting and stopping depending on the compressed air and ambient temperature conditions, but the compressor keeps operating continuously, and the evaporation thermometer stays within the green area. When the refrigerant pressure gauge indicator is in the area higher than the green area, refer to Chapter 8 Troubleshooting.
5. After supplying compressed air for a while, the drain will be discharged from the drain tube automatically.
6. Continue the operation.

Caution

- Frequently switching ON and OFF leads to malfunction.
- The auto drain is normally open and the valve closes when the air pressure is 0.1MPa or more. When the IN side valve starts to open, air bleeds from the drain outlet until the pressure reaches 0.1MPa. The pressure may not reach 0.1MPa when the air compressor discharge flow rate is small.
- Dehumidified drain may flow into the secondary piping if there is a sudden change of pressure or flow speed. Do not use the product where these conditions are present.

6 Operation/Shutdown (Continued)

6.3 Stop

1. Turn off the switch with lamp.
2. The lamp turns off and operation stops.

6.4 Cautions for re-start

- Allow at least 3 minutes before restarting the product. If the product is restarted within 3 minutes after being stopped, the protection circuit may be activated, and the dryer will not start.
- When operation does not start, restart it referring to Chapter 8 Troubleshooting.

6.5 Check points before restart

When starting operation, check the following points. Immediately stop operation if any abnormality occurs. Turn off the switch with lamp and shut off the breaker of the power supply.

- There should be no leakage of compressed air.
- Compressed air pressure, temperature, flow rate and ambient temperature are within the specifications of the product.
- Confirm that drain comes out of the drain tube. - The evaporation thermometer is in the green area.
- Drain should not be exhausted from the compressed air outlet of the air dryer.
- There should be no abnormality with noise or vibration or odour from the product

6.6 Cautions when the product is shut down for an extended period of time

- When the product is not used for longer than 24 hours, turn off the operation switch or power supply for safety and saving energy. It is recommended to discharge pressure from the compressed air piping.
- 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.

7 Maintenance

7.1 General maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly and safety checks are carried out as required to ensure compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

Warning

- Only people who have sufficient knowledge and experience about the product and its incidental devices are allowed to perform maintenance.
- Before maintenance, read and understand the important cautionary notifications in this operation manual.

Danger

- Cut off the power supply upstream when removing the panel.
- Before replacing or cleaning parts, be sure to bleed compressed air remaining inside of the product until the gauge indicates “0”. Do not remove the auto drain case assembly with any air pressure remaining internally. If there is residual pressure in the product, there would be great danger of an unexpected accident, such as shooting out of parts when they are being unscrewed.
- Power supply parts become hot and will be applied with high voltage during operation. Heat may cause burns, or electric shock can result due to high voltage. Even if the switch with lamp is turned off and the operation is stopped, electricity will be applied to the primary line. During the work for primary line, turn off the electrical leakage breaker of the user's equipment.

7 Maintenance (Continued)

- Even if the device operation stops, there is a danger of burns due to residual heat. Do not start working on the parts inside the product until the temperature has decreased to 50°C or less. Guideline: 10 to 15 minutes
- There is the possibility of contacting the condensate during the auto drain maintenance work. Follow the procedure that you define to keep the worker safe. (e.g. Put on protective glasses, apron, and gloves).
- Use an aqueous solution of neutral detergent for cleaning of the auto drain and do not use solvents.
- When removing the panels and auto drain case assembly, wear protective gloves to prevent injuries from sharp edges.

7.2 Daily Inspection

Before daily operation, check the following points. When any abnormality is found, stop operation immediately and refer to Chapter 8 Troubleshooting.

- There should be no leakage of compressed air.
- The lamp is on during operation.
- Confirm that condensate comes out of the drain tube.
- The evaporation thermometer is in the green area.
- There should be no abnormality with noise or vibration from the product.
- There should be no smell or smoke from the product.

7.3 Regular Maintenance

7.3.1 Clean the dustproof filter of the ventilation grille

Vacuum or air-blow the filter every month to remove dust and particles of the ventilation grille.

Caution

Wear protective goggles or mask during air blowing.

7.3.2 Auto drain maintenance

- Remove the dust accumulated in the auto drain element and bowl assembly every month. Use neutral detergent for cleaning.
- When cleaning does not improve the operation, replace the element and bowl assembly. From the next time, clean them with intervals shorter than a month.

7 Maintenance (Continued)

Warning

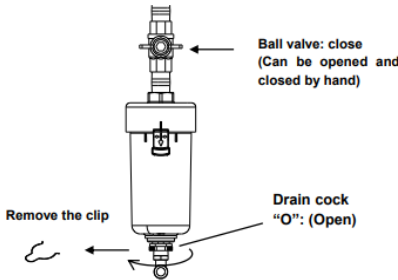
- Be sure to release the residual pressure of the auto drain before starting maintenance.
- When the bowl assembly is broken or very dirty, replace it with a new one.

7.3.3 Removal of the bowl assembly

1. Turn off the switch with lamp.
2. Shut off the earth leakage breaker of the power supply or remove the power supply plug from the socket.
3. Fully close the valve at the compressed air IN and OUT piping. (Open the bypass valve, only when compressed air is required during maintenance.)
4. Close the ball valve on the top of the auto drain.
5. Remove the drain tube.
6. Remove the clip and rotate the auto drain cock to the "O" side to release the residual air pressure in the auto drain.

Pull down the lock button of the bowl assembly with your thumb, and rotate the bowl assembly anticlockwise by 30 degrees to align the marks.

7. Remove the bowl assembly by pulling down on it.

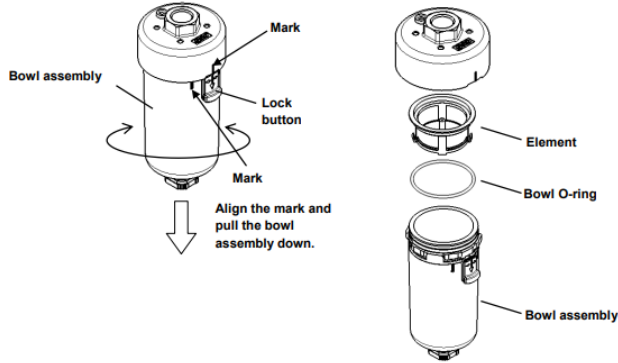


7.3.4 Mounting of the bowl assembly

1. Check that there are no scratches, twisting or adhesion of foreign matter on the bowl O-ring, then thinly apply grease and mount it to the groove of the bowl assembly. (The grease used recommends Krytox GPL 207 of Du Pont.)
2. Return the cleaned element to the bowl assembly.

7 Maintenance (Continued)

3. Mount the bowl assembly to the body of the auto drain. Rotate it until the lock button stops completely with a click. (Rotate the bowl assembly in the left and right direction lightly to ensure that it will not rotate. If it rotates, re-do this step.)
4. Rotate the drain cock to the "S" side and mount a clip. (Check that the drain cock will not rotate to the "O" side.)
5. Mount the drain tube as it was.
6. Open the ball valve.



For auto drain part numbers and service parts, please refer to Maintenance Manual.

Description	Recommended replacement period
Pressure Switch	Half a million switches
Fan Motor	20,000 hours
Electromagnetic switch, Magnetic contactor	One million times.

8 Troubleshooting

Problems	Possible causes	Action
Air dryer does not operate and the running lamp does not turn on, even when the switch is ON.	Power cord is loose or not connected.	- Connect the cord correctly.
	The earth leakage breaker is OFF.	- Please check the earth leakage breaker capacity. - Turn on the earth leakage breaker. If the breaker keeps turning off, please shut off the power supply and contact our service office. Air dryer insulation failure is possible.
	Remote operation signal is OFF. (For option T)	- Check the condition of remote operation signal.
The lamp goes off and the operation stops.	Poor ventilation in installation location. Ambient temperature is too high	- Keep the ambient temperature low by ventilation.
	Ventilation grille is obstructed by a wall or blocked with dust.	- Install so that the ventilation grill is 600mm or more away from the wall. - Clean the ventilation grille every month.
	Compressed air temperature is too high.	- Improve the ventilation condition of the air compressor or lower the ambient temperature to decrease the discharge air temperature of the air compressor. - Install an aftercooler after the air compressor to reduce the temperature.
	Large voltage fluctuation.	- Install the power transformer or revise the power supply for correct voltage. (Temporarily allowable fluctuation of the power supply voltage is within +/-10% of rated voltage)
(Protection circuit is activated. Reset the protection circuit by referring to "6.2 Reset the Thermal relay and High Pressure Switch" in the Operation Manual.).	Poor ventilation in installation location. Ambient temperature is too high	- Keep the ambient temperature low by ventilation.
	Ventilation grille is obstructed by a wall or blocked with dust.	- Install so that the ventilation grill is 600mm or more away from the wall. - Clean the ventilation grille every month.
	Compressed air temperature is too high.	- Improve the ventilation condition of the air compressor or lower the ambient temperature to decrease the discharge air temperature of the air compressor. - Install an aftercooler after the air compressor to reduce the temperature.
Large pressure drops	The valve in the inlet/ outlet of dryer piping is not fully opened.	- The valve in the inlet/ outlet of the dryer has to be fully opened.
	The air filter in the compressed air piping is blocked.	- Replace the filter element. - Refer to the operation manual for used equipment.
	Drain is not discharged even when rotating the drain cock to "O" side of the manual knob.	- Remove the clogging by cleaning the bowl assembly and blowing it with air. - Or replace the bowl assembly.

8 Troubleshooting (Continued)

Problem	Possible causes	Action
Evaporation thermometer indicates higher than green zone.	Compressed air temperature is too high.	- Improve the ventilation condition of the air compressor or lower the ambient temperature to decrease the discharge air temperature of the air compressor. - Install an aftercooler after the air compressor to reduce the temperature.
Moisture is generated downstream of the compressed air line.	The bypass valve is open.	- Be sure to use the dryer with the bypass valve fully closed.
	Drain is not discharged from the auto drain.	- Check that the drain tube is not trapped or bent. - Check the auto drain. - Ensure that the ball valve is opened. Keep the specified operating pressure range.
	Large pressure fluctuation.	- Install an air tank. Avoid intermittent operation.
Large pressure drops	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 with air to eliminate the residual drain after stopping or re-starting the operation.
	The piping converges with piping from a separate air line that does not have an air dryer.	- Install an air dryer in the line that does not have one. - Separate the two lines so they do not converge.
	The valve in the inlet/ outlet of dryer piping is not fully opened.	- The valve in the inlet/ outlet of the dryer has to be fully opened.
Drain is not discharged even when rotating the drain cock to "O" side of the manual knob.	The air filter in the compressed air piping is blocked.	- Replace the filter element. - Refer to the operation manual for used equipment.
	The drain cock exhaust outlet is clogged.	- Remove the clogging by cleaning the bowl assembly and blowing it with air. - Or replace the bowl assembly.

8 Troubleshooting (Continued)

Problems	Possible causes	Action
Operation stops after a while. Operation lamp is ON.	Poor ventilation in installation location. Ambient temperature is too high.	- Keep the ambient temperature low by ventilation.
	Ventilation grille is obstructed by a wall or blocked with dust.	- Install so that the ventilation grill are 600mm or more away from the wall. - Clean the ventilation grille every month.
	Compressed air temperature is too high.	- Improve the ventilation condition of the air compressor or lower the ambient temperature to decrease the discharge air temperature of the air compressor. - Install an aftercooler after the air compressor to reduce the temperature.
	Large voltage fluctuation.	- Install the power transformer or revise the power supply for correct voltage. (Temporarily allowable fluctuation of the power supply voltage is within +/-10% of rated voltage)
	Restarted operation within 3 minutes after operation stopped.	- Restart operation after 3 minutes passed.
(Overload relay of the compressor for refrigeration was activated. Turn of the switch with lamp and wait until the overload relay is automatically recovered).	Poor ventilation in installation location. Ambient temperature is too high.	- Keep the ambient temperature low by ventilation.
	Ventilation grille is obstructed by a wall or blocked with dust.	- Install so that the ventilation grill is 600mm or more away from the wall. - Clean the ventilation grill every month.

8 Troubleshooting (Continued)

Problem	Possible causes	Countermeasures
Air leakage from the auto drain	Air leaks out from the gap between the bowl and body.	- Replace the bowl O-ring with a new one. When assembling the bowl O-ring, add grease. (Note)
	Air is leaking out of the bowl.	- Replace the bowl assembly. Or replace with a metal bowl assembly.
	Air leaks out from the gap between the bowl and internal assembly.	- Replace the bowl assembly.
	Air leaks out from the gap between the internal assembly and drain cock.	- Replace the bowl assembly.
	Drainage or air continues blowing out of the drain exhaust.	- Drain piping length is long or piping I.D. is small and restricting. (Back pressure is applied.) - When connecting the drain piping, use the piping with I.D of ø 8 mm or more and the length should be within 5 m. Riser pipework should be avoided.
Drain does not enter.	Drain cock is loosened.	- Tighten the drain cock to "S" side of the manual knob.
	Element is clogged.	- Remove the clogging by cleaning the element and blowing it with air. Or, replace the element.

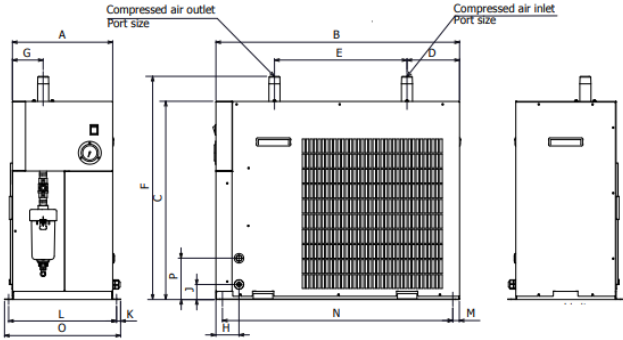
9 Documents

9.1 Refrigerant and GWP Value

Refrigerant	Global Warming Potential (GWP)	
	Regulation (EU) No 2024/573 (Based on the IPCC AR6)	AIM Act 40 CFR Part 86
R454C	146	

Note 1: This product is hermetically sealed and contains fluorinated greenhouse gases (HFC).

9.2 Dimensions



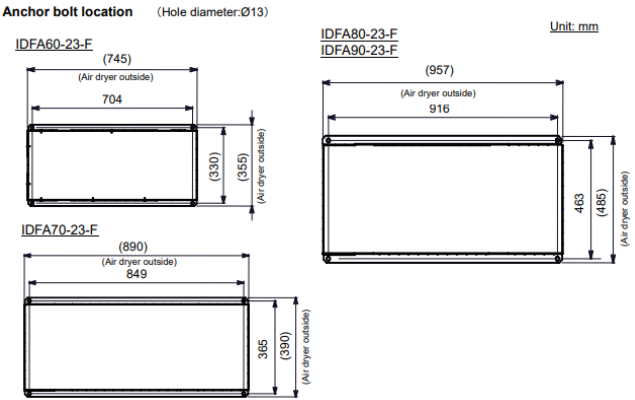
Model	Port Size	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
IDFA60	R1	307	745	605	161	405	681	94	71	46	12.5	330	365	704	355	126
IDFA70	R1 1/2	342	890	825	176	480	905	94	68	46	12.5	365	400	849	390	81
IDFA80	R2	438	957	863	169	480	958	219	78	100	11.0	463	20	916	485	170
IDFA90																

9.3 Electrical circuit

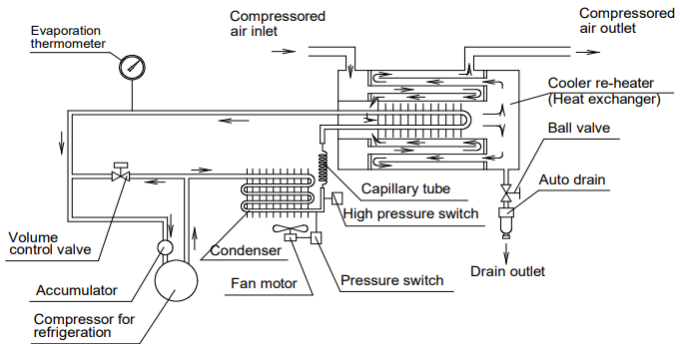
For details of the electric circuit, refer to the label on the back of the front panel of this product (Refer to Operation Manual '7.5 Electric circuit').

9 Documents (Continued)

9.4 Anchorage Dimensions



9.5 Air/Refrigeration circuit



10 Option A

10.1 Safety instructions for use

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.

10.2 Specifications

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

10.3 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 to prevent condensation on the outlet piping and temperature increase on the outlet due to ambient temperature.

10.4 Air flow Capacity

Items	Models	IDFA60-23-AF	IDFA70-23-AF	IDFA80-23-AF	IDFA90-23-AF
Outlet air pressure dew point °C		10			
Air flow capacity m³ /h(ANR)		186	300	462	576
Outlet air Temp °C		10			

Note1) The data for ANR is referring to the conditions of 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

11 Option C

11.1 Specifications

- Special epoxy resin is coated on the copper tube surface to improve the corrosion resistance the special epoxy resin is only applied where the copper tubes are not protected or insulated.

11.2 Precautions for installation and handling

- The epoxy resin minimizes the corrosion of the coated copper tubes against corrosive gas. The corrosive cannot be completed prevented. Therefore, avoid using the product in environment where corrosive gases are present as much as possible.
- Do not scratch the coated surface of the copper tube when removing the panels for maintenance. As the corrosion resistance can be deteriorated from the scratch position.

12 Option G

Outside panel has Chinese name plate and Chinese operation manual.

13 Option L

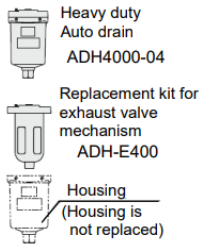
13.1 Safety instructions for use

Warning

- Before replacing the auto drain on the compressed air side confirm that the pressure gauge indicates zero.
- Removing the auto drain with any air pressure remains could arise to unexpected accident, such as parts been expelled when being unscrewed.
- There is the possibility of damaging the condenser during the auto drain maintenance. Follow end user procedures ensure safety of operator. (example: Put on protective glass, apron, and gloves)

13.2 Specifications

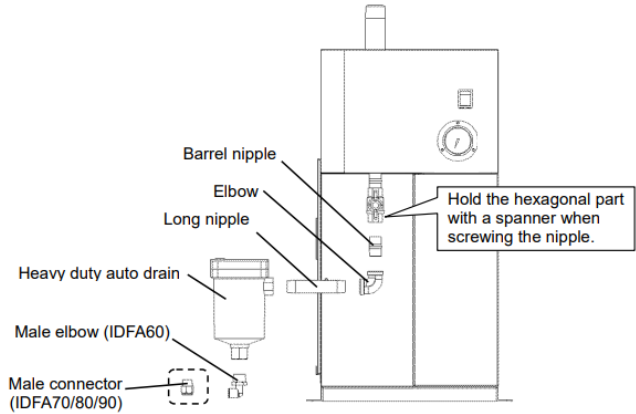
Part number (service parts)	Heavy duty auto drain	ADH4000-04
	Replacement kit for exhaust valve mechanism	ADH-E400
Auto drain type		Float type
Auto drain valve type		N.O (normally
Maximum specification pressure		1.6 MPa
Operating pressure range		0.5 - 1.6 MPa
Maximum condensate discharge		0.024m³/h (0.7 MPa, water)



13.3 Mount the heavy duty auto drain

- Hold the hexagonal part (width across flats: 25) at the connection port (ball valve Rc1/2) of the product with a spanner and screw-in the barrel nipple and elbow in order.
- Screw-in the long nipple and heavy duty auto drain (width across flats of drain inlet port: 30) completely. Mount the heavy duty auto drain vertically while facing the drain port downwards. (Allowable inclination difference in the vertical direction is 5°)
- For IDFA60, mount male elbow (width across flats: 22) to the drain outlet port (width across flats: 27). For IDFA70, IDFA80 and IDFA90, mount male connector (width across flats: 22) to the drain outlet port (width across flats: 22) and mount the drain tube.

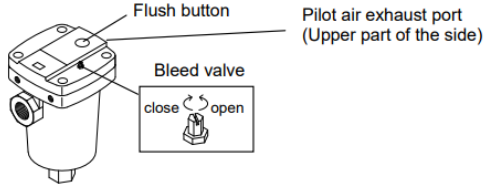
13 Option L (Continued)



Note 1) Apply sealant tape or sealant to fit the nipple. Tightening torque: 28 to 30N·m

Note 2) If the amount of drainage flowing into the heavy duty auto drain is small, open the bleed valve gradually to adjust so that the drainage can flow into the auto drain smoothly.

- Check the auto drain condition at least once a day. Press the flush button
- The pilot air of the heavy duty auto drain is exhausted from the position in the drawing. Do not block the exhaust port. Do not obstruct the exhaust port with airborne particles, etc.
- Before removing the heavy duty auto drain, close the ball valve, and open the bleed valve or press the flush button and confirm that there is no air pressure.



14 Option R

14.1 Safety instructions for use

Warning

- All electrical work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- Be sure to shut off the user's power supply. Wiring with the product energized is strictly prohibited. Ensure a stable power supply with no surge.
- Use a power supply suitable for the specifications of the product.
- The equipment should be grounded for safety. Earth leakage breaker does not operate correctly without grounding.
- Do not connect the earth to a water pipe, a gas pipe, or a lightning rod.
- Do not plug too many leads into a single socket. That causes exothermic heat or fire.
- Do not modify the internal electrical wiring of the product.

14.2 Earth leakage breaker specification

Models	IDFA60-23-FR	IDFA70-23-FR	IDFA80-23-FR	IDFA90-23-FR
Item				
Rated current (A)	15	15	20	30
Sensitivity current (mA)	30			

14.3 Connection of power supply

Please refer to section 5.5.3 for connection of the power supply.

15 Option T

For details of the electric circuit, refer to the label on the back of the front panel of this product (see Operation Manual '13.5 Electric circuit').

15.1 Safety instructions for use

Warning

- All electrical work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.
- Be sure to shut off the user's power supply. Wiring with the product energized is strictly prohibited.
- Ensure a stable power supply with no surge.
- Mount the correct electric leakage breaker of the specified leakage capacity and load capacity to prevent electric shock and burning of the compressor motor.

15 Option T (Continued)

- Use a power supply suitable for the specifications of the product.
- The equipment should be grounded for safety. Earth leakage breaker does not operate correctly without grounding.
- Do not modify the internal electrical wiring of the product.

15.2 Specifications

- Option T has terminal block for the output of operation and error signals and remote control.

15.3 Operation / Error signal output

- Operation mode signal (Contact output)
 - Operation signal - - - During operation: contact "close"
 - Error signal - - - During error: contact "close"
- Contact capacity
 - Rated load voltage 240 VAC or less / 24 VDC or less
 - Maximum load current 5A (resistance load) / 2A (inductive load)
 - Minimum applicable load 20 VDC 3mA

15.4 Remote operation

- 230 VAC is applied to the terminal for remote operation. Select the appropriate switch.
- For remote operation, customer operates the switch which is connected by customer with the switch with lamp ON.
- Position holding switch (alternate type switch). Keep the jumper wire (terminal No. 4-5) connected for the remote terminal A. Disconnect the jumper wire from the remote terminal B (terminal number 6-7) and connect the switch
- Automatic return switch (momentary switch). Disconnect the jumper wire from the remote terminal A (terminal number 4-5) and connect the switch (A contact: operation signal), and then disconnect the jumper wire from the remote terminal B (terminal number 6-7) and connect the switch (B contact: stop signal).
- Allow at least 3 minutes before restarting the dryer. If the air dryer is restarted within 3 minutes after been stopped, the protection circuit will be activated. In order to avoid motor failure, start-stop frequency of the product must be 5 times/ hour or less.

【Restart the operation】

- Error signal output is released by turning off the switch with lamp or giving an operation stop signal remotely. Eliminate the cause of error. Restart operation after 3 minutes passed.
- When the error signal is not released even by turning off the switch with lamp, the thermal relay or high pressure switch is activated. Reset the thermal relay or high pressure switch referring to 6.2 Reset the Thermal relay and High Pressure Switch.

15.5 Connect the power cable and signal cable

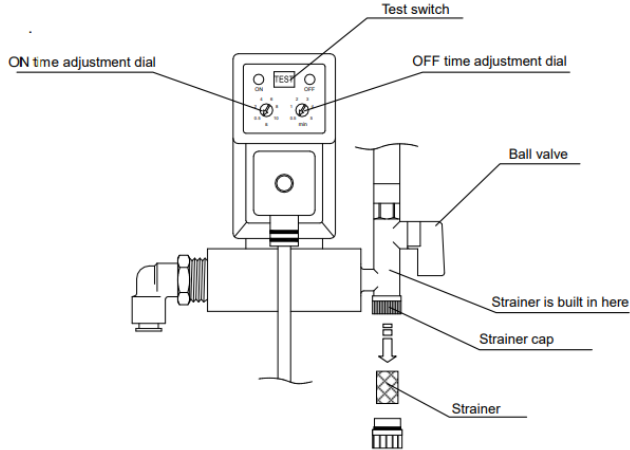
Please refer to Operation Manual section 13.4 for instructions on connecting the power cable and signal cable.

16 Option V

16.1 Safety instructions for use

Warning

- Before replacing the auto drain on the compressed air side confirm that the pressure gauge indicates zero ". Removing the auto drain with any air pressure remains could arise to unexpected accident, such as parts been expelled when being unscrewed.
- There is the possibility of damaging the condenser during the auto drain maintenance. - Follow end-user procedures to ensure safety of operator. (example: Put on protective glass, apron, and gloves).



16.2 Specifications

Part number (Service parts)		IDF-S0534
Max. operating pressure		1.6MPa
On time	Setting range	Approx. 0.5 to 10 sec.
OFF time	Setting range	Approx.0.5 to 5 min.

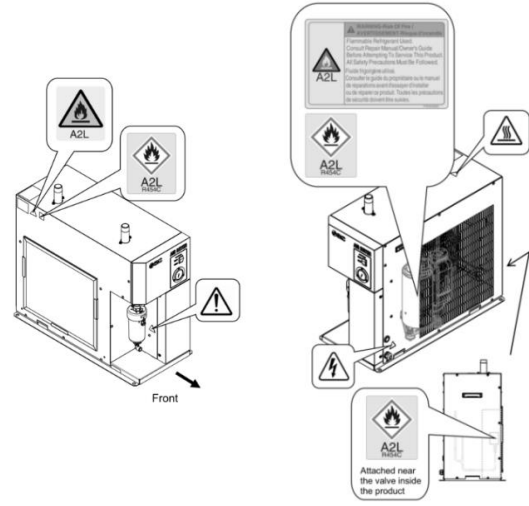
16 Option V (Continued)

16.3 Maintenance

Be sure to perform regular maintenance of the strainer. Follow the following steps to perform maintenance.

- Close the ball valve.
- Press the test switch to release the residual pressure.
- Remove the strainer and clean it.
- Mount the strainer and open the ball valve.

17 Location of Hazard Warning Labels



18 imitations of Use

18.1 Limited warranty and disclaimer/compliance requirements

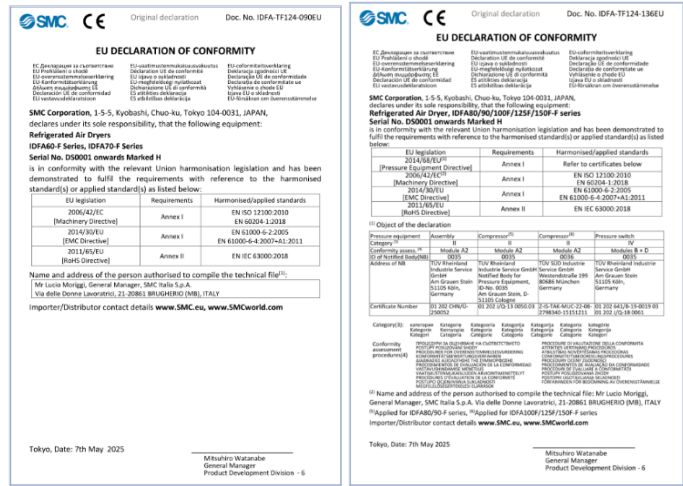
Refer to Handling Precautions for SMC Products.

19 Product Disposal

This product shall not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

20 Declaration of Conformity

Below is a sample Declaration of Conformity (DoC) used in this product.



21 Contacts

Refer to www.smcworld.com or www.smc.eu for your local distributor/importer.

SMC Corporation

URL : [https:// www.smcworld.com](https://www.smcworld.com) (Global) <https:// www.smc.eu> (Europe)
SMC Corporation, 1-5-5, Kyobashi, Chuo-ku, Tokyo 104-0031, JAPAN
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