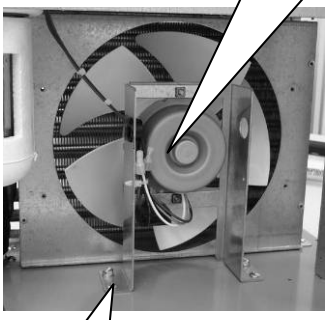
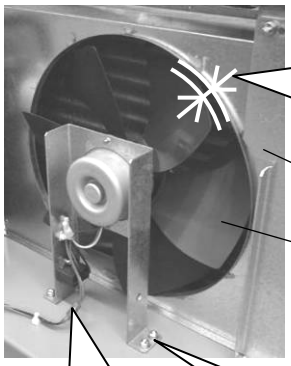
8.5.3 For models IDFB15E/22E/37E/55E

① Before starting work, close the air dryer compressed air inlet valve and switch off the power leakage breaker, or remove the power cord from the plug.
② Remove the front/side panel and replace the fan motor by the procedure shown below.

Example of IDFB15E

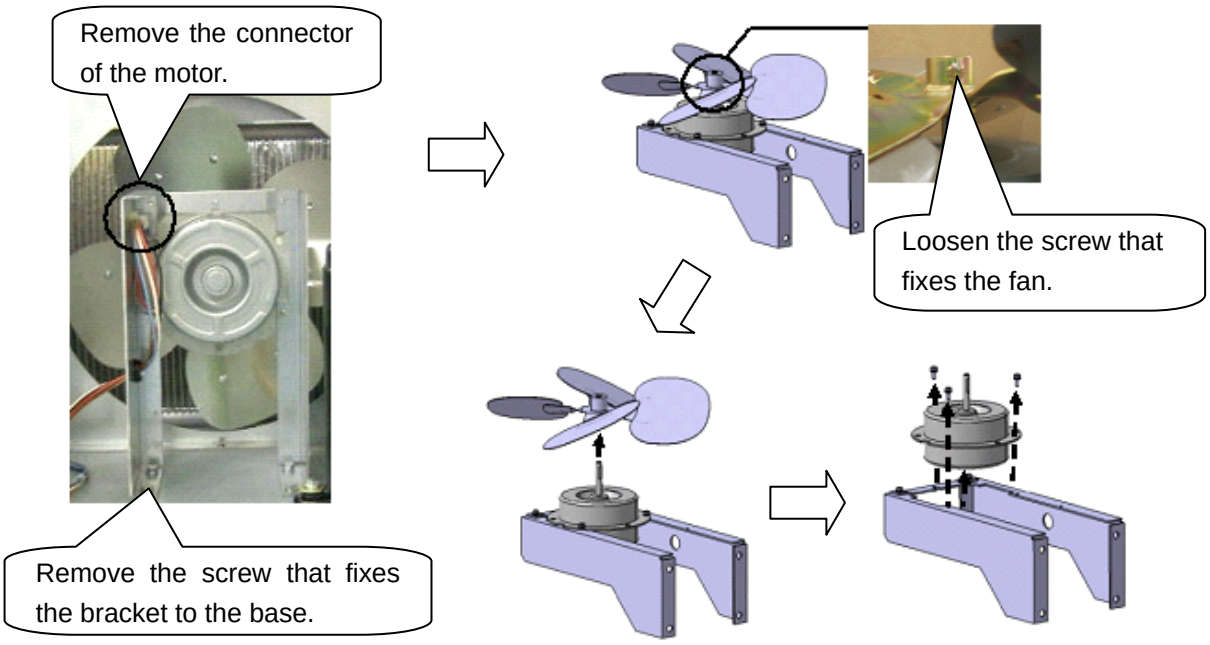


Example of IDFB37E



8.5.4 For models IDFB75E

① efore starting work, close the air dryer compressed air inlet valve and switch off the power leakage breaker, or remove the power cord from the plug.
② Remove the front/side panel and replace the fan motor by the procedure shown below.

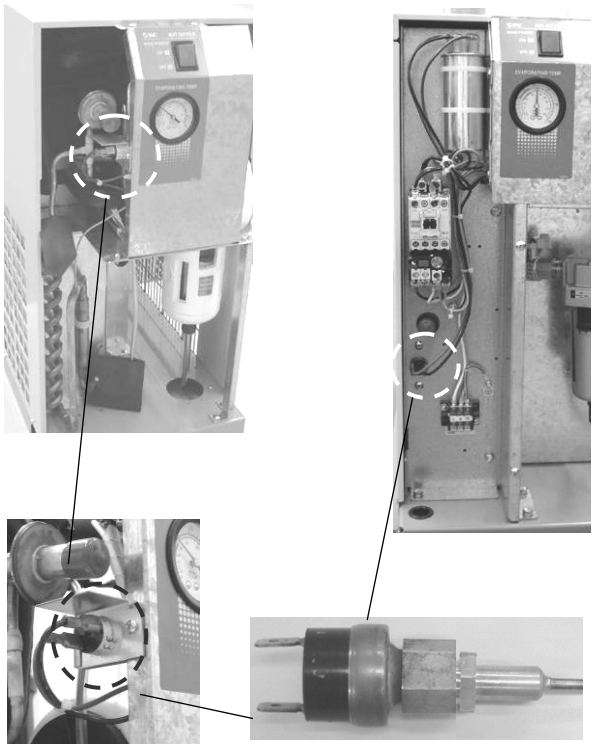


8.6 Inspection and replacement of pressure switch

The high pressure side of the refrigerant circuit is detected with the pressure switch, and condensing pressure is controlled by controlling the fan motor ON-OFF.

If the pressure switch breaks, the fan motor will either not operate, or will keep turning.
If the fan motor doesn't operate, the overload relay will be activated due to an overload and the air dryer will stop.
If the pressure switch fails, the fan motor will keep rotating. As a result of that, evaporation temperature will drop below 0 degree, and the drain in the heat exchanger will be frozen.

The diagram on the right shows an example of how the pressure switch is mounted.



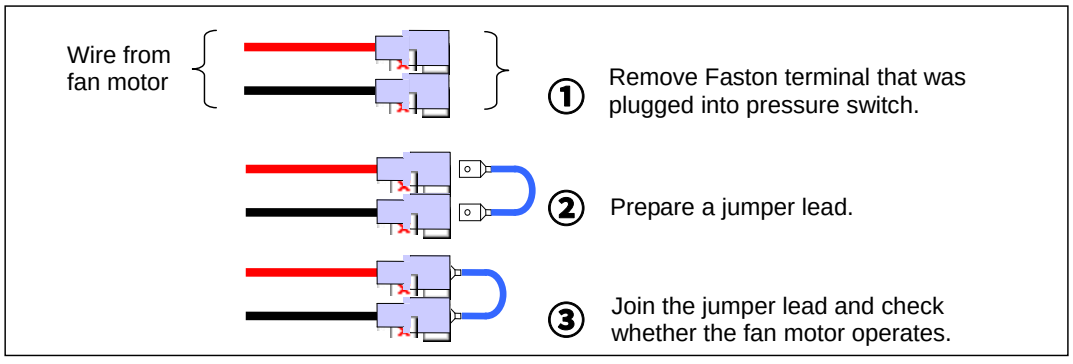
Pressure switch

8.6.1 Inspection of pressure switch

Method of inspection when fan motor is not operating

Check which is broken – the fan motor or the pressure switch.

① Before starting work, close the air dryer compressed air outlet/inlet valve, and switch off the power leakage breaker, or remove the power cord from the plug.
② Remove exterior panels – front or side panel, as necessary.
③ Shortcut the pressure switch circuit with a jump lead referring to the diagram below.



④ If the connection of the jumper wire ends, turns on power, and turn on illuminated switch.

☐ Fan motor turns……..Pressure switch is broken.
☐ Fan motor does not turn……Pressure switch is normal. Fan motor is broken.

Caution) If the fan motor doesn't rotate, the refrigerant may leak.

Method of inspection when fan motor keeps turning

Check that the pressure switch is not broken.

① Before starting work, close the air dryer compressed air outlet/inlet valve, and switch off the power leakage breaker, or remove the power cord from the plug.
② Remove exterior panels – front or side panel, as necessary.
③ Check the continuity of the pressure switch contacts. (When evaporating thermometer indicates 95°F (35℃) or below.) Remove wiring to the pressure switch, and check conduction between terminals using a tester.

☐ Conduction between pressure switch terminals…….Pressure switch is broken.
☐ No conduction between pressure switch terminals….. Pressure switch is normal.

④ Check the continuity of the pressure switch contacts. (When evaporating thermometer indicates 113°F (45℃) or above.) Remove wiring to the pressure switch, and check continuity between terminals using a tester.

☐ Conduction between pressure switch terminals…….Pressure switch is normal.
☐ No conduction between pressure switch terminals….. Pressure switch is broken.

8.6.2 Pressure switch setting values

Pressure switch setting values are shown in the table on the right.

Pressure switch setting table Units: MPa

Air dryer model	R134a (HFC)		R407C (HFC)	
	Contact open	Contact closed	Contact open	Contact closed
IDFB3E to IDFB15E	0.8±0.15	1.1±0.1	--	--
IDFB22E to IDFB37E	--	--	1.4±0.15	1.8±0.1

8.6.3 Pressure switch replacement

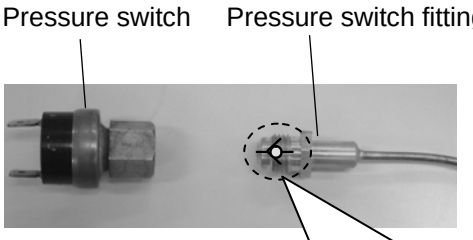
① Turn off the switch with light. Then, turn off the earth breaker of the power supply.
② Remove the front panel etc.
③ Remove the pressure switch according to the procedure shown below. There is a check valve built into this fitting so that the pressure switch can be replaced without loss of refrigerant gas.

Important

If the hexagonal part of the pressure switch is loosened, the refrigerant gas may leak out suddenly, so please turn the hexagonal part quickly and remove.

Once it is removed, the check valve built in to the pressure switch will prevent leakage of refrigerant gas.

④ Fit a new pressure switch to the pressure switch fitting. Fitting should also be done quickly.
⑤ Using soapy water, check for gas leakage from the screw. If there is any leakage, tighten it further.



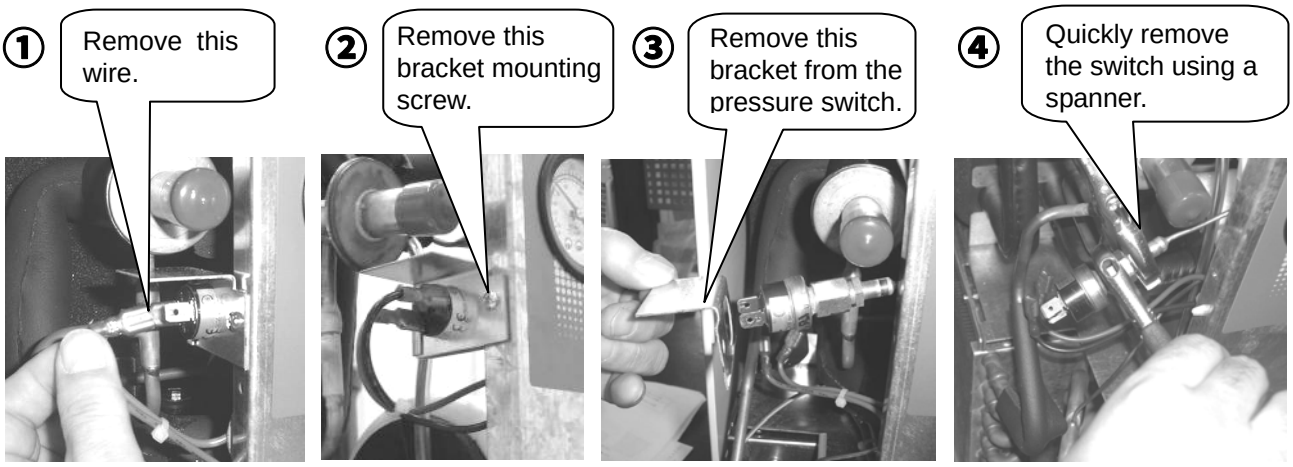
There is a check valve built into this fitting. When it is screwed into the pressure switch, this valve opens. When removing or attaching, if it is not done quickly, refrigerant gas may leak out.

⑥ Build the pressure switch into the bracket and fix the bracket with screw(s).

⑦ Firmly plug in the Faston terminal as far as it will go.

⑧ Re-mount the front panel etc., open the IN and OUT valves, switch on the power leak breaker, switch on the illuminated switch and re-start operation.

⑨ Check that the fan motor is operating correctly.



Example of procedure for IDFA11E

8.7 Replacement of evaporation thermometer

The evaporation thermometer is a main part for confirming the operation of the air dryer.
If the evaporation thermometer is removed, the refrigerant gas enclosed within the refrigerant piping will escape. If the evaporation thermometer breaks down, please promptly request maintenance by a refrigeration engineer, and replace the evaporation thermometer.

Replacement procedure

① Before starting work, close the compressed air outlet/inlet valves, and stop the air dryer.

② Switch the power supply leakage breaker OFF.

③ Remove the front panel.

④ Recover the refrigerant gas from the service valve.

Important

Discharge of refrigerant gas into the atmosphere is prohibited by law, so please ensure that refrigerant gas is fully recovered. Please request a refrigeration engineer to do this.

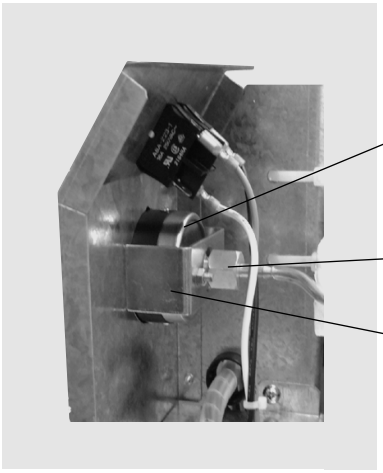
⑤ Remove the evaporation thermometer mounting nuts, and remove from the mounting bracket.

⑥ Use a spanner to hold the square part of the base of the refrigerant connection screw and remove the piping flare nut (brake pipe connection), then quickly mount the new evaporation thermometer.

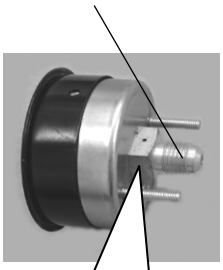
Important

Moisture or foreign matter from the atmosphere may get into the refrigerant piping while the evaporation thermometer is removed, so please carry out replacement as quickly as possible and create a sufficient vacuum before refilling the refrigerant gas.

⑦ Refill the refrigerant gas. Refer to the specifications label for type and amount of refrigerant gas.
⑧ After refilling the refrigerant gas, check for gas leaks in the tightened thread part using soapy water or a leak detector. If there is any leakage of gas, tighten it more.
⑨ Mount the evaporation thermometer onto the bracket and fix with mounting nuts.
⑩ Replace the front panel, open the IN and OUT valves, switch ON the power supply leakage breaker, and switch ON the illuminated switch to restart operation.
⑪ Check that the air dryer is operating correctly.



Evaporation thermometer



Use a spanner to hold the square part of the base of the refrigerant connection screw and remove the piping flare nut

8.8 Refrigerating compressor and related parts

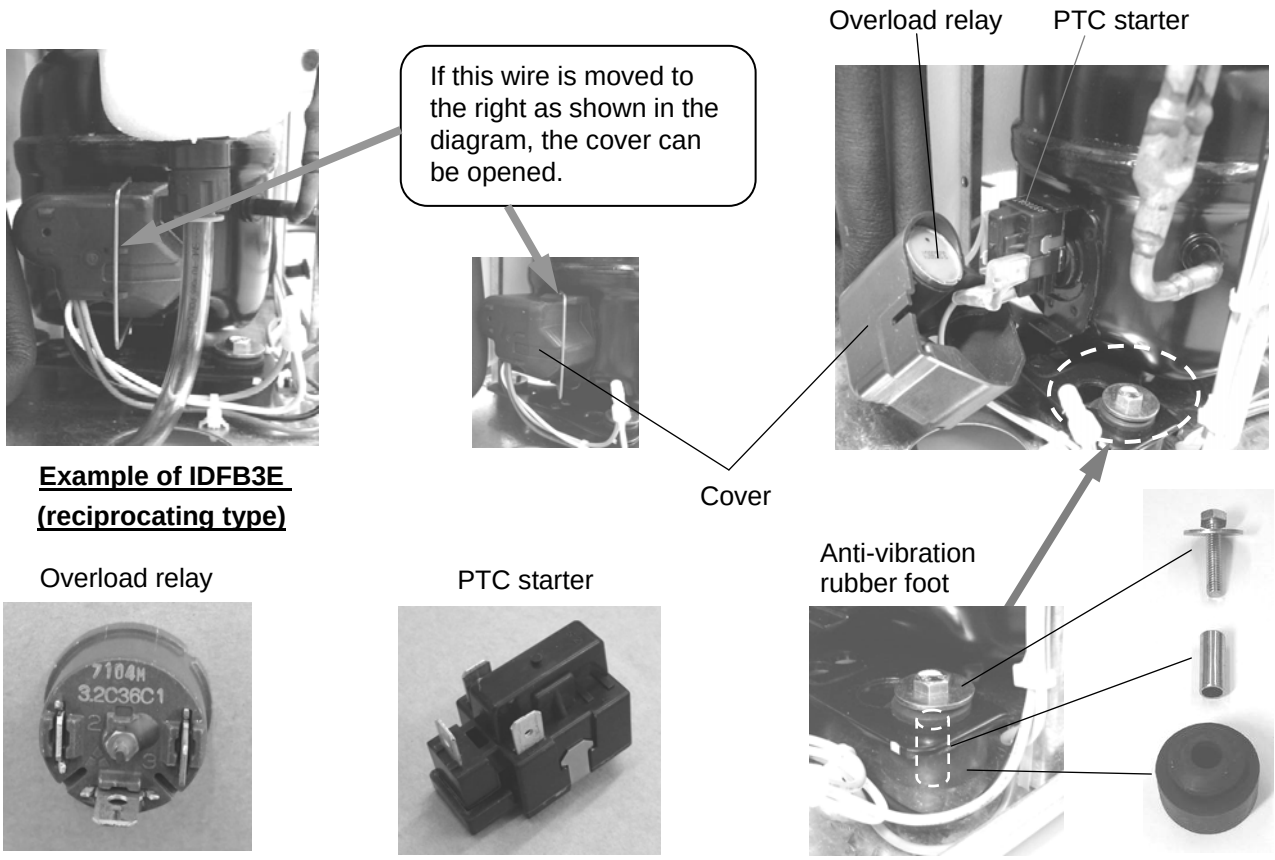
Reciprotating type, rotating type or scroll type refrigerated compressors are used depending on the air dryer models. Both types of refrigerating compressors are hermetic units, so they cannot be disassembled for maintenance. If the refrigerating compressor breaks down, it must be replaced with a new one.
Specialized techniques and tools are needed to replace the refrigerant compressor, so please get a refrigeration engineer to replace the refrigerant compressor.

The parts necessary for the running of the refrigerant compressor, such as PTC starter, startup relay, overload relay, anti-vibration rubber, and plugging relay can be replaced by someone other than a refrigeration engineer.

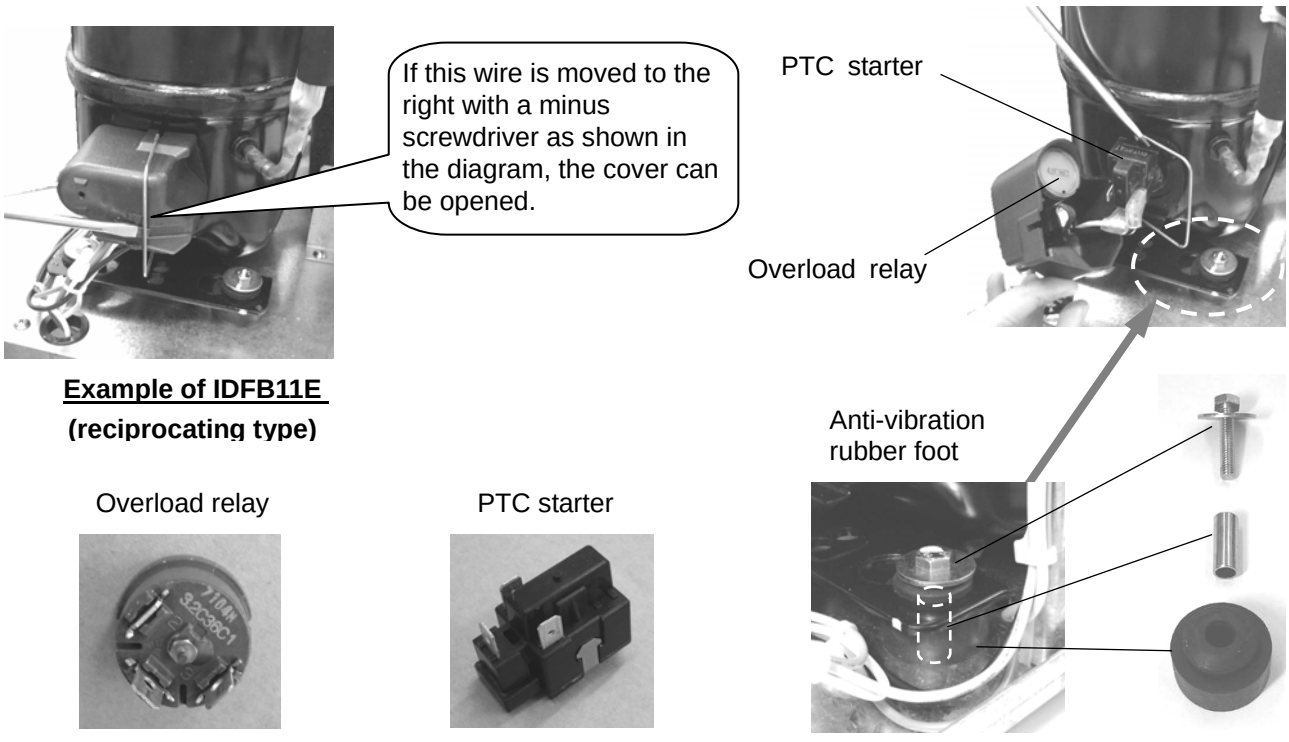
Procedure for replacing these parts

① Before starting work, close the air dryer compressed air inlet/outlet port and stop the air dryer running.
② Remove the power cord from the plug, or switch off the earth leakage breaker.
③ Remove the front panel etc.
④ Replace each of the parts that needs replacing.
⑤ when the parts have been replaced, replace the front panel etc to the original position.
⑥ Check that the air dryer is operating correctly.

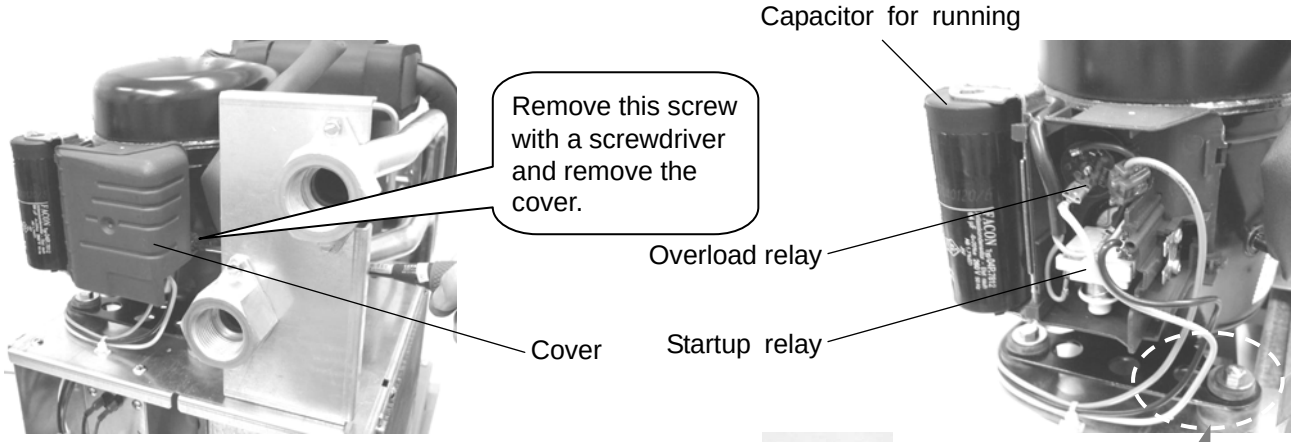
8.8.1 For IDFB3E



8.8.2 For IDFB4E to IDFB11E

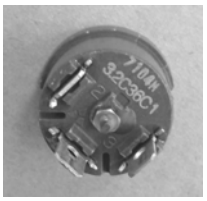


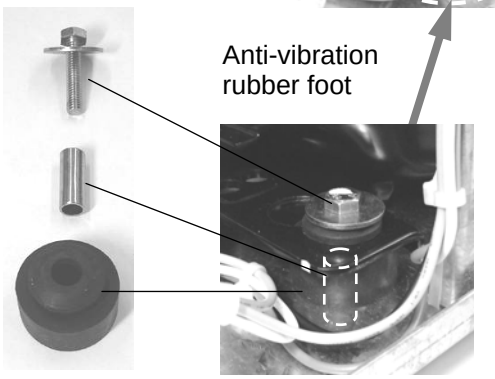
8.8.3 For IDFB15E



Example of IDFB15E (reciprocating type)

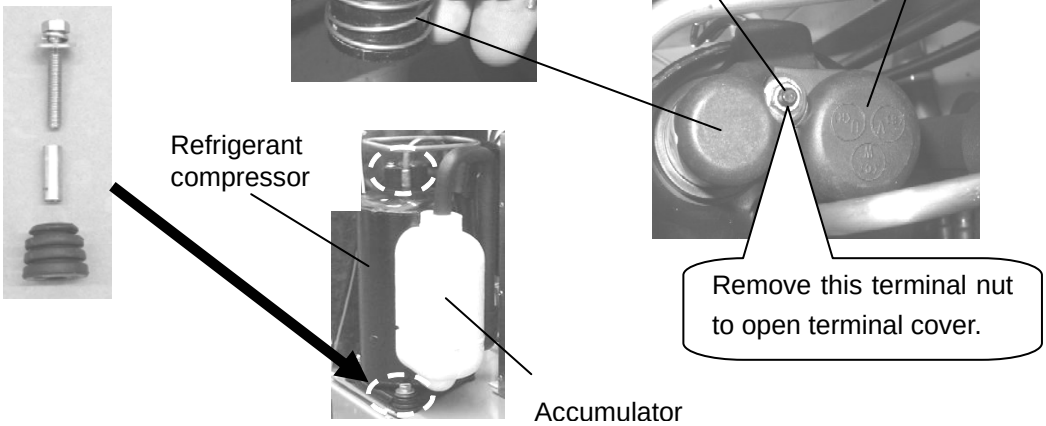
Overload relay



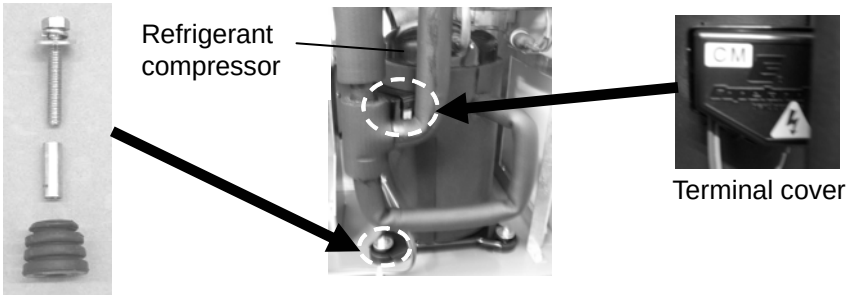


8.8.4 For IDFB22E to IDFB55E

Example of IDFB37E (Rotating type)



8.8.5 For IDFB75E (Reciprotating type)

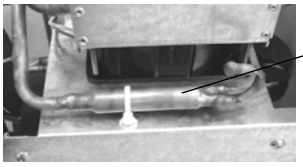


8.9 Other refrigerant circuit parts

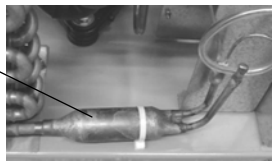
A refrigerant dryer, capillary tube and service valve are used in the refrigerant circuit. Replacement of these parts involves the recovery of refrigerant gas and resealing. This requires refrigeration technology and special tools, so please get a refrigeration engineer to carry out this work.

8.9.1 Refrigerant dryer

If moisture gets into the refrigerant circuit, it could cause decrease in insulation of the refrigerating compressor coil, corrosion of parts, and blockage of the capillary tubes due to sludge or freezing, leading to malfunction. The refrigerant dryer is an important part that protects the refrigerant circuit from this moisture.

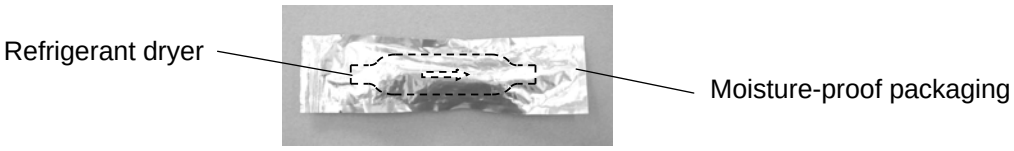


Example of IDFB3E



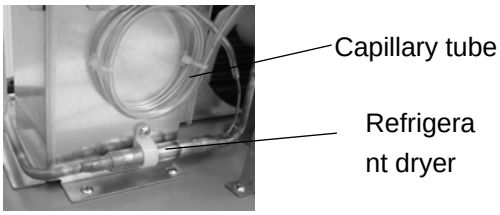
Example of IDFB37E

The refrigerant dryer is packaged in moisture-proof packaging. If it is left unsealed, it will absorb moisture from the atmosphere and become unusable. After opening the packaging, mount it quickly (within a few minutes.)



8.9.2 Capillary tube

The capillary tube controls the quantity of refrigerant circulating in the refrigerant circuit. Be careful not to bend or crush it when carrying out maintenance. If it is used after being bent or crushed, the quantity of refrigerant circulating will decrease, and the air dryer will not perform fully.



Example of IDFB15E

8.9.3 Service valve

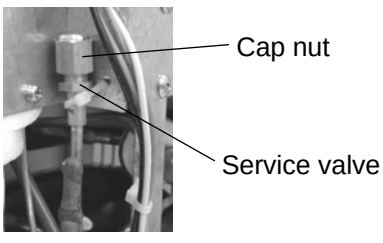
This is used when carrying out maintenance of the refrigerant circuit. It has a built-in check valve, so refrigerant gas will not leak out when the cap nut is removed. When maintenance is finished, tighten the cap nut firmly to prevent slight leakage from the check valve.

Important

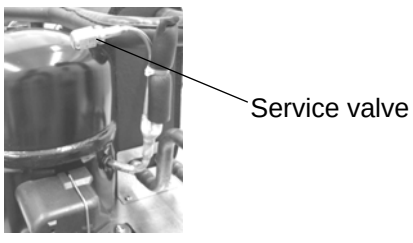
The service valve uses

7/16-20UNF

connection screws.
Please note that these are NOT M10 screws.



Example of IDFB3E



Example of IDFB11E

8.10 Other electrical parts

8.10.1 Switch with lamp

Important

If the light of the switch with lamp fails to come on, please replace the switch with lamp quickly. It is important to be able to tell that the air dryer is running, and to ensure safety during maintenance.

Replacement procedure

① Remove the power cord from the plug, or switch off the earth leakage breaker.

② Remove the front panel.

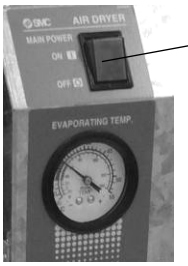
③ Remove the switch from the bracket after pulling out the wiring terminal. If tab terminals are connected to the blank terminals, remove them too.

④ Mount the new switch onto the bracket.
- IDFB3E to 8E: Install with the side of the switch marked “ON” upwards.
- IDFB11E to 37E: Install with the side marked with the number on the right, seen from the green cover.

⑤ Mount tab terminals based on the wiring diagram attached to the back of the front panel. If there are empty terminals after replacing the switch, reconnect the tab terminals that were connected to the empty terminals of the switch to the same empty terminals after replacement. This is important to prevent electric shock. Refer to [Replacement procedure 5] below.

⑥ After replacement, replace the front panel.

⑦ Check that the air dryer operates correctly.



Switch with lamp

Example of IDFB4E

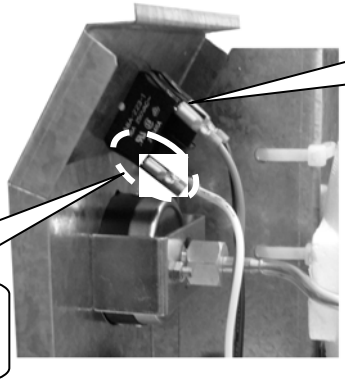
Switch with lamp
(Example of IDFB11E to IDFB37E)

Mount the switch with a light so that it will face to the right side when viewing it from the front.

Example of IDFB37E

Replacement procedure 3

Remove this terminal



Replacement procedure 3

Remove this terminal

Replacement procedure 5

Mount the tab terminal to the blank terminal (No.3) of a switch.

Refrigerated Air Dryer Checklist

Applicable models: IDFB3 **E** to 75E

Check date:

Checked by:

Customer name		Position		Person in charge	
Address					

Product model		Serial number		Used for	Years	Months

No.	Check item	Check location	Check criteria	Result	Decision
1	Installation	Compressor room	Sufficient ventilation	pass / fail	OK / NO
		Inside room	Sufficient ventilation	pass / fail	OK / NO
		Shelter	・Not exposed to rain ・Not directly exposed to draught	pass / fail	OK / NO
2	Installation condition	Distance between dryer and walls	24inch (600mm) or more	inch	OK / NO
3	Voltage	Dryer power supply	See instruction manual	V	OK / NO
4	Current	Dryer power supply	See instruction manual	A	OK / NO
5	Breaker capacity	Breaker	See instruction manual	A	OK / NO
6	Air pressure	Pressure gauge on dryer inlet side filter	22 to 145psig (0.15 to 1.0MPa)	psig	OK / NO
7	Evaporating temp.	Evaporating thermometer	32 to 59°F (0 to 15°C)	°F	OK / NO
8	Ambient temp.	Temperature in room	35 to 104°F (2 to 40°C)	°F	OK / NO
9	Inlet air temp.	Inlet air piping surface	IDF series：41 to 122°F (5 to 50°C)	°F	OK / NO
10	Running	Running lamp	lamp lit	Lit / not lit	OK / NO
11	Auto drain operation	Auto drain	Drain discharges regularly (when air flows)	pass / fail	OK / NO
12	Pressure switch	Pressure switch	Fan motor goes ON/OFF when no load	pass / fail	OK / NO
13	Fan motor operation	Fan motor	・No unusual noise when turning ・Blades not bent or loose	pass / fail	OK / NO
14	Refrigerant compressor	Insulation	10MΩ or more	MΩ	OK / NO
15	Condenser blockage	Condenser	No rubbish stuck to condenser fin	Yes / no	OK / NO
16	Refrigerant dryer blockage	refrigerant dryer	No temperature difference between refrigerant dryer inlet/outlet ports (41°F (5°C) or less)	°F	OK / NO
17	Refrigerant leakage	Evaporating thermometer	When stopped: (room temp- 50°F (10°C)) or more	°F	OK / NO
		Copper tube	Soldered part not wet with oil	Yes / no	OK / NO
18	Water from dryer secondary side	Air line bypass valve	Normally "closed"	Open / shut	OK / NO
		Drain valve	Normally "open"	Open / shut	OK / NO
19	Air pressure drop	Pressure drop in the air dryer (flow rate)	5psig (0.035MPa) or less	Yes / no	OK / NO
		Evaporating thermometer (freezing in cooler)	When running: 32°F (0°C) or more	°F	OK / NO
20	Copper tube corrosion	Copper tube	Copper tube discolored (black)	Yes / no	OK / NO

Notes