4 Outline of air dryers

4.1 Summary of models

IDFB 8 E – 11 N – □

Symbol	Power
11	Signal phase AC115V 60Hz
23	Signal phase AC230V 60Hz
46	Signal phase AC460V 60Hz

Size	Capacity (*1) SCFM(m³/h)[ANR] Outlet air pressure dew point 37 °F (2.8℃)	45 °F (7.2℃)	50 °F (10℃)
3	10 (17)	11 (19)	12 (20)
4	15 (25)	16 (27)	17 (28)
6	25 (43)	26 (45)	28 (47)
8	41 (70)	43 (74)	45 (77)
11	59 (100)	62 (106)	65 (110)
15	71 (120)	80 (136)	86 (147)
22	107 (182)	120 (205)	130 (221)
37	161 (273)	173 (294)	181 (308)
55	226 (384)	258 (438)	297 (504)
75	300 (510)	353 (600)	406 (690)

Size	Option symbols (*2) No symbol Standard	A Compressed air cooler Rated air flow SCFM(m³/h) [ANR] (*3)	K For medium air pressure Auto drain bowl type: Metal case with level gauge	R With circuit breaker	T With terminal block for run and alarm signal	V With time-type solenoid valve
3	●	5 (8)	—	—	—	—
4	●	13 (23)	—	●	●	●
6	●	17 (29)	●	●	●	●
8	●	19 (32)	●	●	●	●
11	●	23 (39)	●	●	●	●
15	●	—	●	●	●	●
22	●	—	●	●	●	●
37	●	—	●	●	●	●
55	●	—	—	●	●	●
75	●	—	—	●	●	●

Note 1: This shows how much air is processed under rated conditions (inlet air temperature 95°F (35°C), ambient temperature 77°F (25°C), inlet air pressure 100psig (0.7MPa)).

Note 2: For combinations of 2 or more options, please show them in alphabetical order.
Note that K is both auto drains, so they cannot be combined.

Note 3: This shows how much air is processed under rated conditions (inlet air temperature 95°F (35°C), ambient temperature 77°F (25°C), inlet air pressure 100psig (0.7MPa), outlet air temperature 50°F (10°C)).

Note 4: The unit ANR represents conditions of 68°F (20°C), atmospheric pressure, relative humidity 65%RH.

Note 5: Please refer to the catalogues for details of option specifications.

4.2 Table of specifications

Item			Model	IDFB 3E	IDFB 4E	IDFB 6E	IDFB 8E	IDFB 11E	IDFB 15E	IDFB 22E	IDFB 37E	IDFB 55E	IDFB 75E
Capacity SCFM(m^3/h) [ANR] (注1)	Outlet Pressure dew point	37 °F (2.8℃)		10 (17)	15 (24)	25 (43)	41 (70)	59 (100)	71 (120)	107 (182)	161 (273)	226 (384)	300 (510)
		45 °F (7.2℃)		11 (19)	16 (27)	26 (45)	43 (74)	62 (106)	80 (136)	120 (205)	173 (294)	258 (438)	353 (600)
		50 °F (10℃)		12 (20)	17 (28)	28 (47)	45 (77)	65 (110)	86 (147)	130 (221)	181 (308)	297 (504)	406 (690)
Rated conditions 1) (注2)	Inlet air pressure	psig (Mpa)		100 (0.7)									
	Inret air temperature	°F (℃)		100 (37.8)									
	Ambient temperature	°F (℃)		100 (37.8)									
Operating conditions	Working fluid			Compressed air									
	Inret air temperature	°F (℃)		41 to122 (5 to 50)									
	Inret air temperature	psig (Mpa)		22 (0.15)									
	Ambient temperature	°F (℃)		36 to 104 (2 to 40) relative humidity 85% or less									
Electrical	Power source			Single phase AC115V[±10%]60Hz							Single phase AC230V [±10%]60Hz		Single phase AC460V[±10%] 60Hz
	Running current 2)	A		2.7	3.0		3.5	6.5	7.5	9.0	4.5	5.6	3.8
	Power consumption 2)	W		240	260		310	550	750	1000		1270	2400
	Applicable breaker Capacity 2)	A		15									10
Condenser				Plate fin tube with condenser fan									
Refrigerant				R134a (HFC)						R407C (HFC)			
Refrigerant quantity		g		150±5	200±5	230±5	270±5	290±5	470±5	420±5	730±5	430±5	590±5
Air inlet / outlet port size				NPT3/8 (famale)	NPT1/2 (famale)	NPT3/4 (famale)			NPT1 (famale)	NPT1 (male)	NPT1 1/2 (male)	NPT2 (male)	
Weight		lbs (kg)		40 (18)	55 (25)	57 (26)	64 (29)	73 (33)	110 (50)	119 (54)	137 (62)	258 (117)	271 (123)
Paint colour				Panels : Urban white 1									
				Base : Urban gray 2									
Standard				UL, CSA									

1) Capacity m^3/h(ANR) is referring to the conditions of 68°F (20℃), at 1atm & 65%RH.

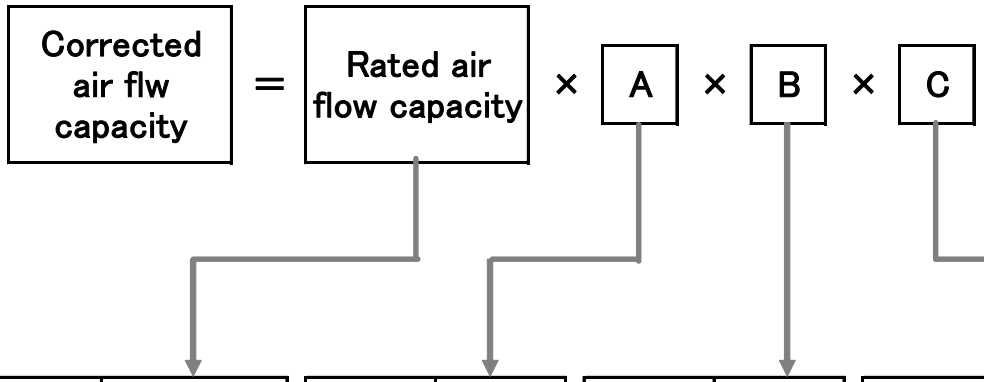
2) The value is under the rated conditions.
The rated condition for air : 100psig (0.7Mpa), and 95°F (35℃) saturated inlet air and 77°F (25℃) ambient temperature.

3) Install a ground for ciecuit interrupter that comes with sensitivity of 30mA.

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

4.3 Correction of air quantity

1) If the air dryer breaks down and stops during operation, the load on the air dryer may be too large. The quantity of air processed depends on the operating conditions – ambient temperature, input air pressure, input air temperature and so on. Please check that the air dryer's processing capacity is sufficient, using the correction factors below.
2) If drainage can be seen in the downstream flow of the air dryer, or there is doubt over the dehumidification capacity, please check that the air dryer's processing capacity is sufficient, using the correction factors below.
3) If it turns out that the capacity is not sufficient, take measures such as decreasing the temperature conditions, or consider installing more air dryers.
4) For reasons of drain separation, please use within the range where the total of the correction factors multiplied together does not exceed 1.5.



Model	Rated air flow capacity SCFM(ANR)
IDFB3E	10
IDFB4E	15
IDFB6E	25
IDFB8E	41
IDFB11E	59
IDFB15E	71
IDFB22E	107
IDFB37E	161
IDFB55E	226
IDFB75E	300

Inret air temp. (°F)	Correction factor
90	1.31
100	1.00
110	0.82
120	0.66

Ambient temp. (°F)	Correction factor
77	1.24
90	1.09
95	1.04
100	1.00
105	0.98
110	0.95

Inret air pressure (psig)	Correction factor
75	0.95
100	1.00
110	1.04
120	1.07
125	1.09
150	1.13
175	1.18
200	1.22
250	1.24

Example of “Correction of Processed Air Quantity”

Example: If using IDFB6E

Operating conditions

	Conditions	Correctuion factors
Model	IDFB6E	—
Air flow	14SCFM	—
A. Inret air temp.	110°F	0.82
B. Ambient temp.	105°F	0.98
C. Inret air pressure	75psig	0.95

Applying the conditions in the table above to the formula, we have:

Rated air quantity	x	A	x	B	x	C	= Corrected air quantity
25	x	0.82	x	0.98	x	0.95	= 19.08

So the corrected air flow rate is 19.08SCFM.

In this case, the model used is IDFB6E which can only process an air flow rate of around 19.08SCFM, so the user should take measures such as decreasing the temperature conditions, or consider installing more air dryers.

4.4 Explanation of operation

4.4.1 Explanation of operation of models IDFB3E

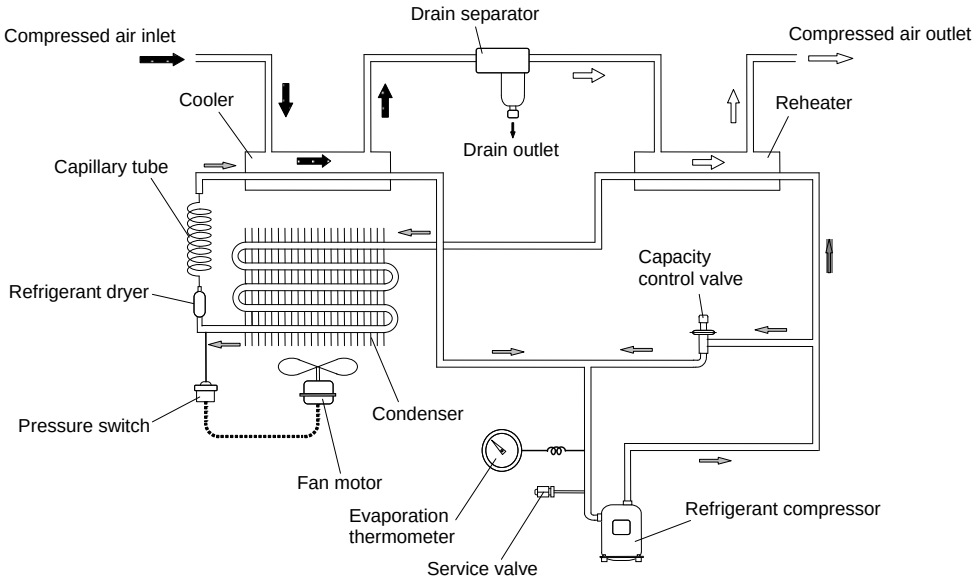
1) Compressed air circuit

Warm damp air that enters the air dryer is cooled by the cooler. The condensed moisture at that time is separated by a drain separator and automatically drained. The air which has had the moisture separated is returned to around ambient temperature by the re-heater, and supplied to the downstream side as dried air.

2) Refrigerant circuit

After being compressed by the refrigerating compressor, the refrigerant in the refrigerant circuit is cooled with the condenser and condensed. The refrigerant is decompressed and reaches a low temperature as it passes through the capillary tube. While it passes through the cooler part, heat is exchanged for compressed air, it evaporates, and it is inhaled into the refrigerating compressor as a refrigerant gas. The capacity control valve prevents the evaporating temperature of the refrigerant falling too much and and the the moisture condensed in the heat exchanger freezing when the load is low. It is a valve that bypasses discharged hot gas refrigerant from the refrigerating compressor to the heat exchanger outlet side.

IDFB3E



4.4.2 Explanation of operation of models IDFB4E/IDFB6E/IDFB8E/IDFB11E/IDFB15E

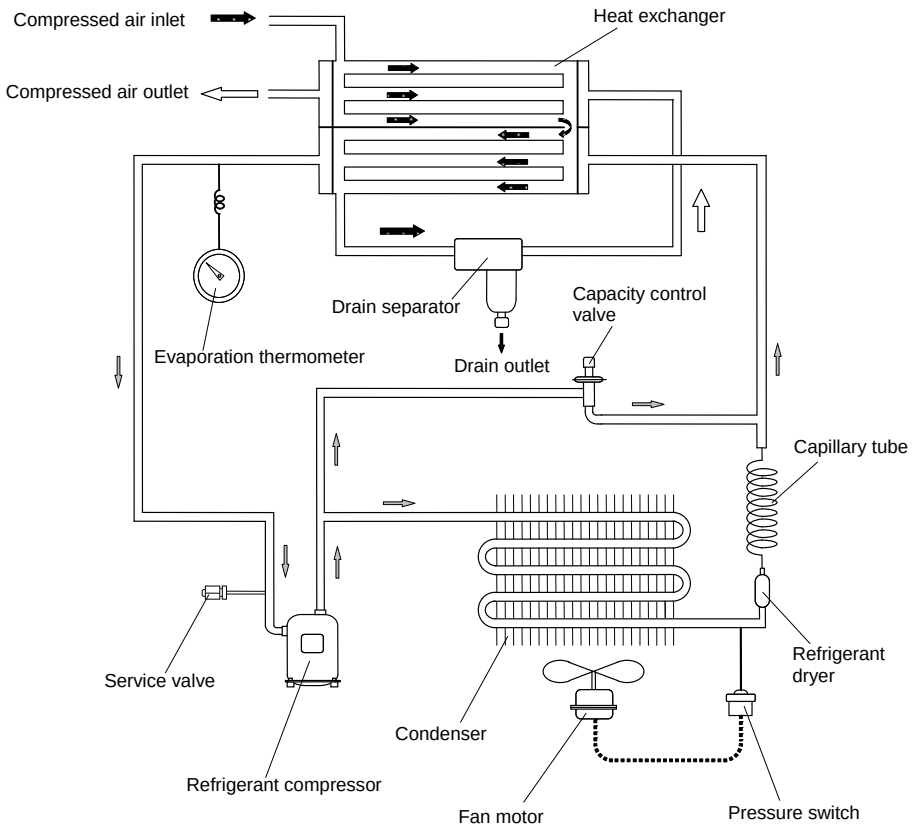
1) Compressed air circuit

Warm damp air that enters the air dryer is cooled by the stainless steel heat exchanger. The condensed moisture at that time is separated by a drain separator and automatically drained. The air which has had the moisture separated is returned to around ambient temperature by the re-heater, and supplied to the downstream side as dried air.

2) Refrigerant circuit

After being compressed by the refrigerating compressor, the refrigerant in the refrigerant circuit is cooled with the condenser and condensed. The refrigerant is decompressed and reaches a low temperature as it passes through the capillary tube. While it passes through the heat exchanger, heat is exchanged with the compressed air, it evaporates, and it is inhaled into the refrigerating compressor as a refrigerant gas. The capacity control valve prevents the evaporating temperature of the refrigerant falling too much and and the the moisture condensed in the heat exchanger freezing when the load is low. It is a valve that bypasses discharged hot gas refrigerant from the refrigerating compressor to the heat exchanger inlet side.

IDFB4E/IDFB6E/IDFB8E/IDFB11E/IDFB15E



4.4.3 Explanation of operation of models IDFB22E/IDFB37E/IDFB55E/IDFB75E

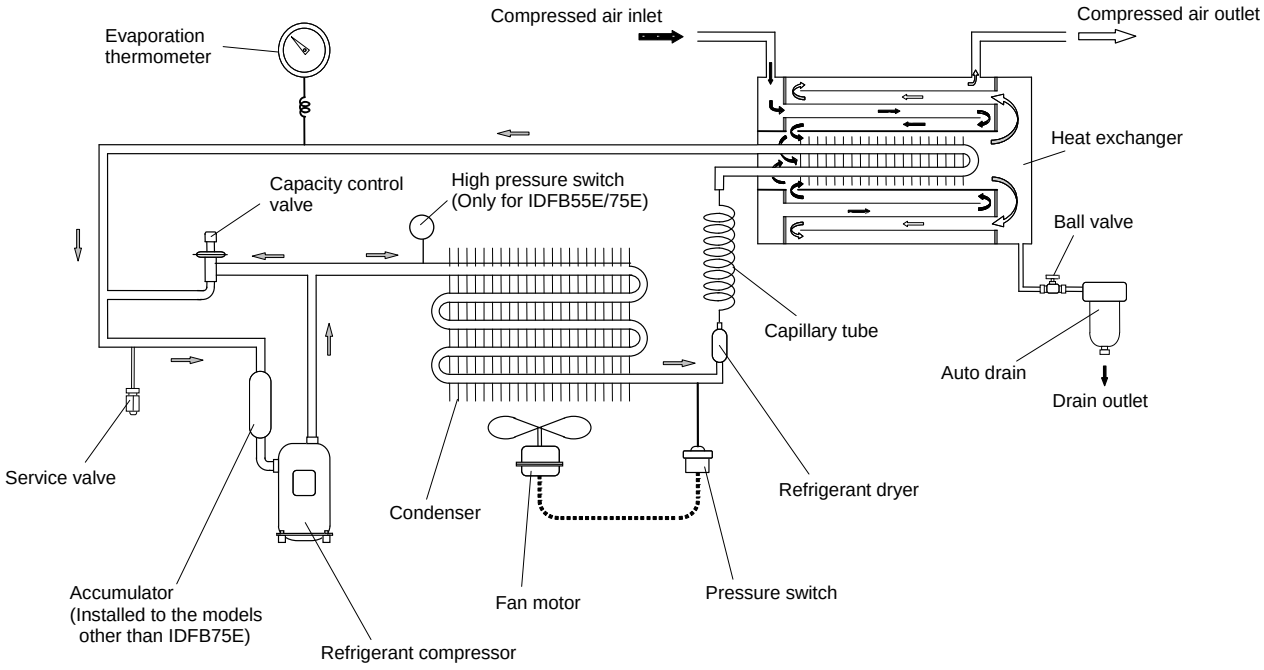
1) Compressed air circuit

Warm damp air that enters the air dryer first goes into the reheater part of the heat exchanger, and is pre-cooled by exchanging heat with the dehumidified cold air. Then it goes into the cooler part and loses heat to the cold refrigerant liquid, and is dehumidified further and moisture is separated. Finally in the reheater part it exchanges heat with the warm air that enters the air dryer, the temperature is increased, and it goes out of the air dryer in a dry warm state.

2) Refrigerant circuit

After being compressed by the refrigerating compressor, the refrigerant in the refrigerant circuit is cooled with the condenser and condensed. The refrigerant is decompressed and reaches a low temperature as it passes through the capillary tube. While it passes through the heat exchanger, heat is exchanged with the compressed air, it evaporates, and it is inhaled into the refrigerating compressor as a refrigerant gas. The capacity control valve prevents the evaporating temperature of the refrigerant falling too much and and the the moisture condensed in the heat exchanger freezing when the load is low. It is a valve that bypasses discharged hot gas refrigerant from the refrigerating compressor to the heat exchanger outlet side.

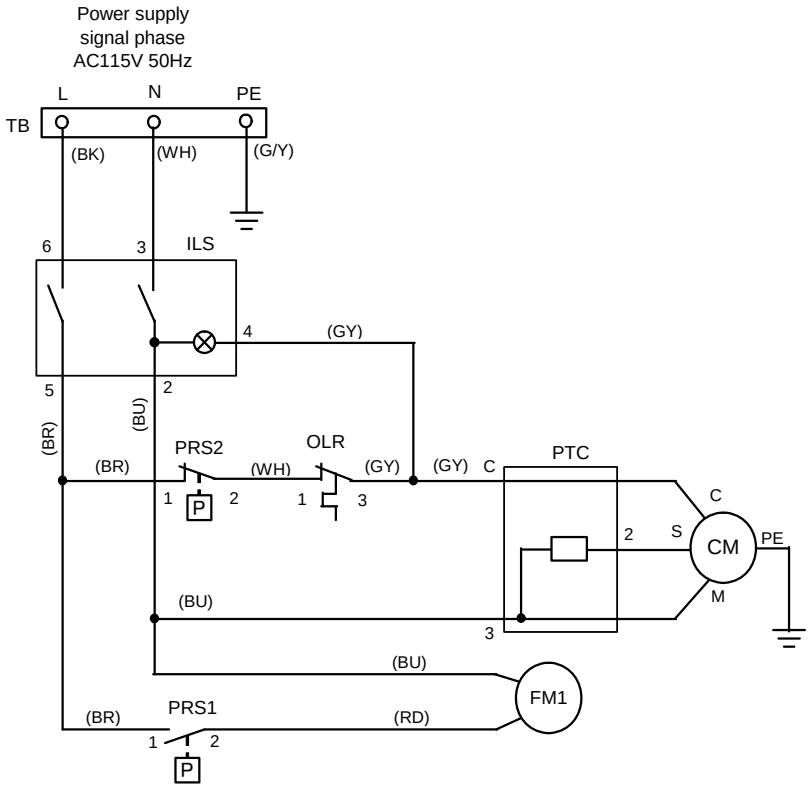
IDFB22E/IDFB37E/IDFB55E/IDFB75E



4.5 Electrical wiring diagrams

When carrying out maintenance, please refer to the “wiring diagram” affixed to the back of the front panel.

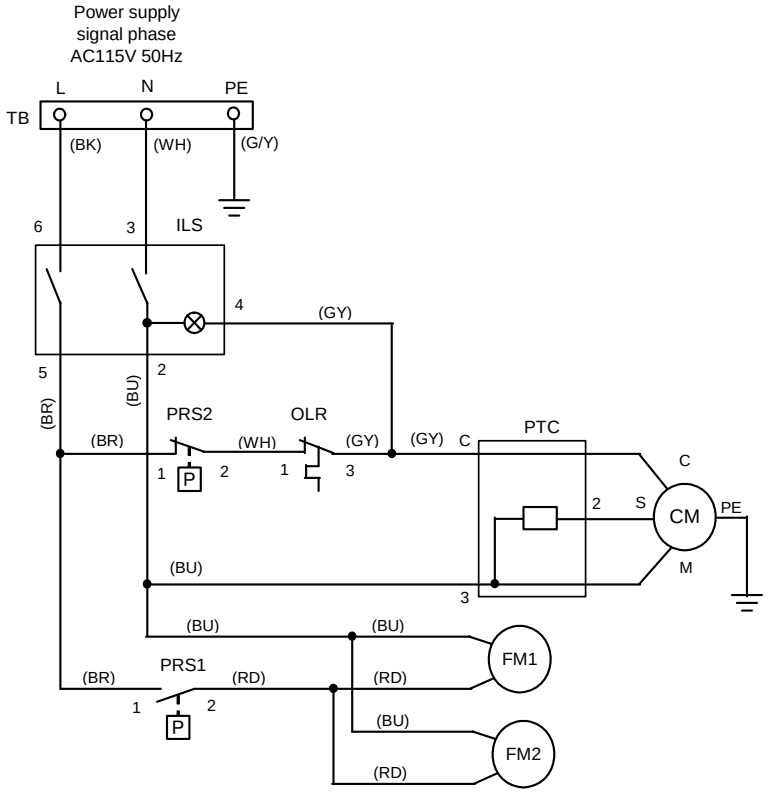
IDFB3E



SYMBOL	DESCRIPTION
CM	Compressor Motor
FM	Fan Motor
OLR	Overlord Relay
PTC	PTC Starter
ILS	Switch with Lamp
PRS	Pressure Switch
TB	Terminal Block

SYMBOL	WIRE COLOR
(BK)	Black
(WH)	White
(GY)	Gray
(RD)	Red
(BU)	Blue
(G/Y)	Green/Yellow
(BR)	Brown

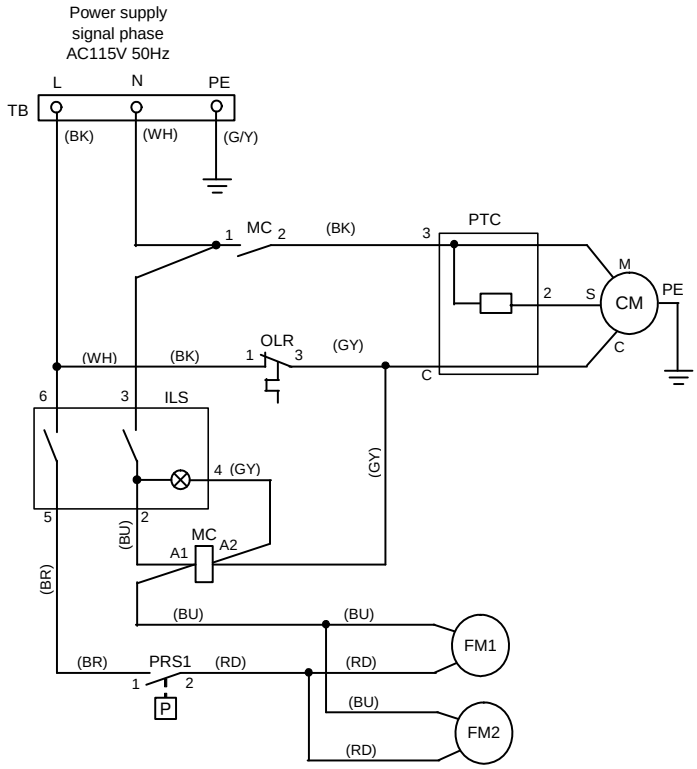
IDFB4 / IDFB6E / IDFB8E



SYMBOL	DESCRIPTION
CM	Compressor Motor
FM1～2	Fan Motor
OLR	Overlord Relay
PTC	PTC Starter
ILS	Switch with Lamp
PRS	Pressure Switch
TB	Terminal Block
GFC1	Ground Fault Circuit Interrupter
EDV	Electronic Drain Valve

SYMBOL	WIRE COLOR	SYMBOL	WIRE COLOR
(BK)	Black	(G/Y)	Green/Yellow
(WH)	White	(BR)	Brown
(GY)	Gray	(G)	Green
(RD)	Red		
(BU)	Blue		

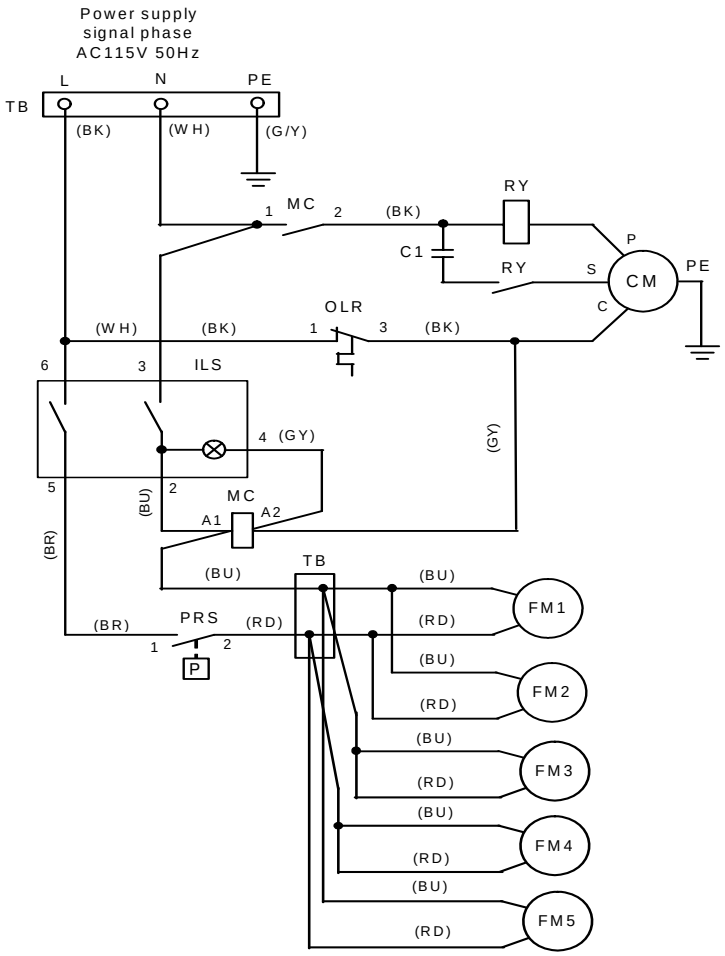
IDFB11E



SYMBOL	DESCRIPTION
CM	Compressor Motor
FM1～2	Fan Motor
OLR	Overlord Relay
PTC	PTC Starter
ILS	Switch with Lamp
PRS	Pressure Switch
TB	Terminal Block
MC	Magnetic Contactor
GFC1	Ground Fault Circuit Interrupter
EDV	Electronic Drain Valve

SYMBOL	WIRE COLOR	SYMBOL	WIRE COLOR
(BK)	Black	(G/Y)	Green/Yellow
(WH)	White	(BR)	Brown
(GY)	Gray	(G)	Green
(RD)	Red		
(BU)	Blue		

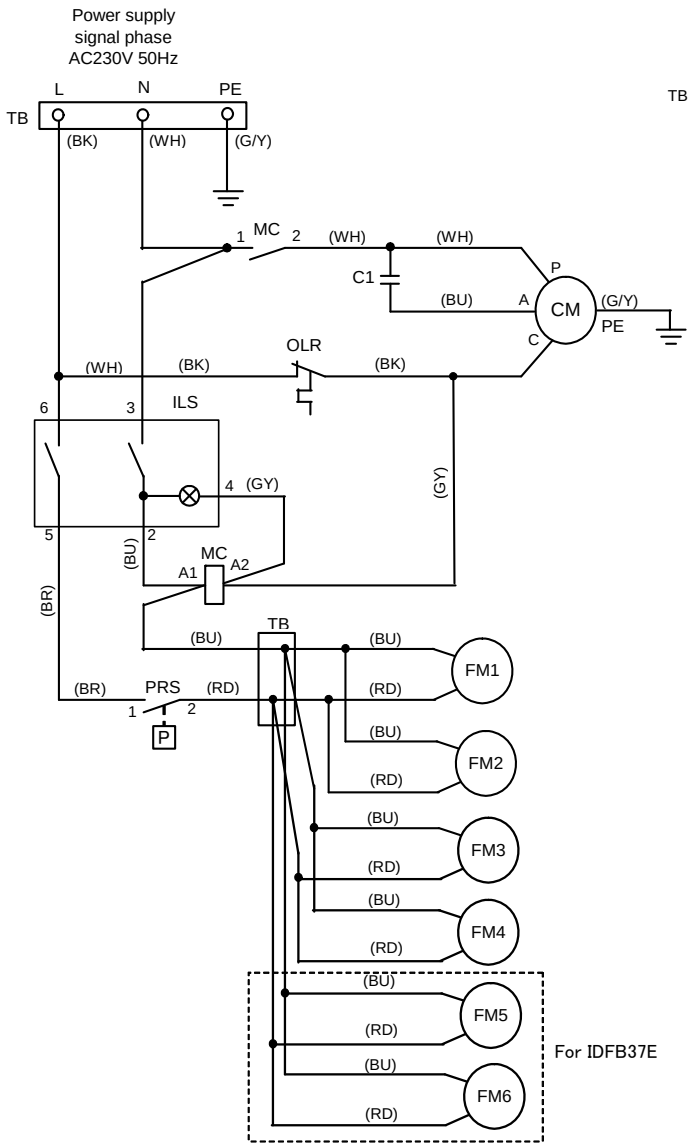
IDFB15E



SYMBOL	DESCRIPTION
CM	Compressor Motor
FM1～5	Fan Motor
OLR	Overlord Relay
C1	Capacitor For Refrigerating Compressor
ILS	Switch with Lamp
PRS	Pressure Switch
TB	Terminal Block
MC	Magnetic Contactor
RY	Starting Relay
GFC1	Ground Fault Circuit Interrupter
EDV	Electronic Drain Valve

SYMBOL	WIRE COLOR	SYMBOL	WIRE COLOR
(BK)	Black	(G/Y)	Green/Yellow
(WH)	White	(BR)	Brown
(GY)	Gray	(G)	Green
(RD)	Red		
(BU)	Blue		

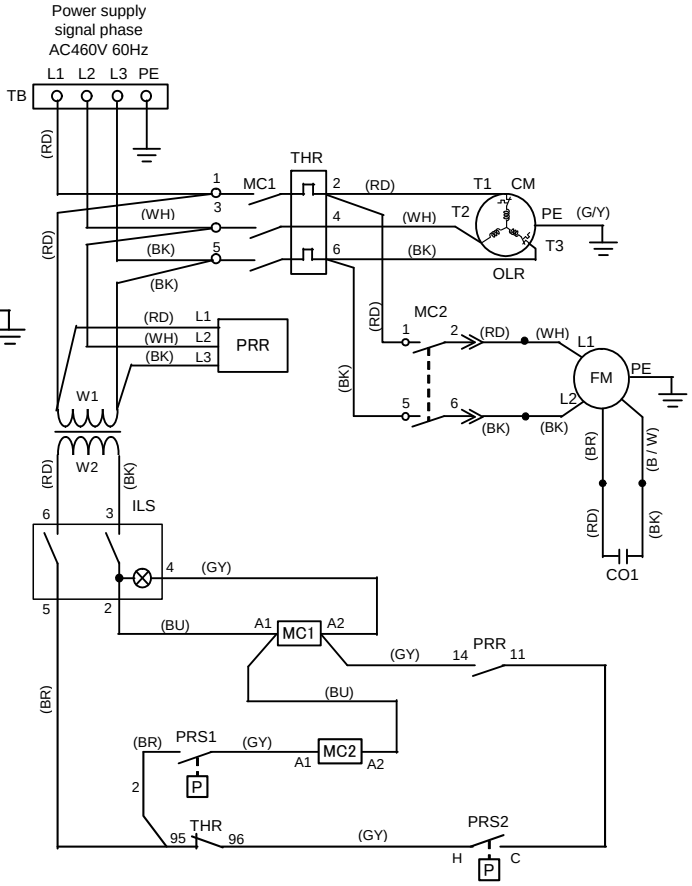
IDFB22E / IDFB37E



SYMBOL	DESCRIPTION
CM	Compressor Motor
FM1～6	Fan Motor
OLR	Overlord Relay
C1	Capacitor For Refrigerating Compressor
ILS	Switch with Lamp
PRS	Pressure Switch
TB	Terminal Block
MC	Magnetic Contactor
GFC1	Starting Relay
EDV	Ground Fault Circuit Interrupter

SYMBOL	WIRE COLOR	SYMBOL	WIRE COLOR
(BK)	Black	(G/Y)	Green/Yellow
(WH)	White	(BR)	Brown
(GY)	Gray	(G)	Green
(RD)	Red		
(BU)	Blue		

IDFB55E / IDFB75E



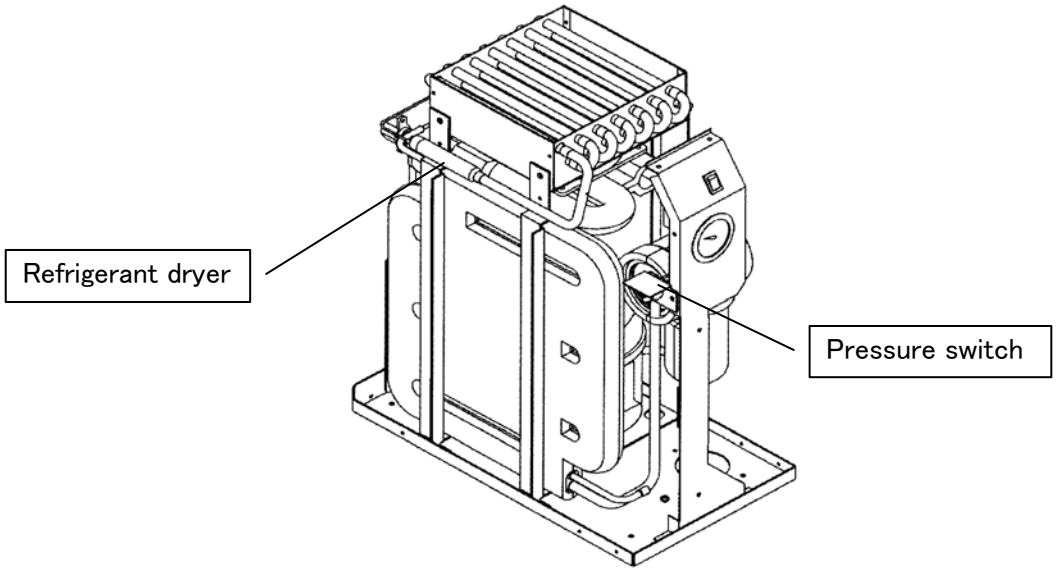
SYMBOL	DESCRIPTION
CM	Compressor Motor
OLR	Overlord Relay
FM	Fan Motor
MC1,2	Magnetic Contactor
C01	Capacitor For Fan Motor
ILS	Switch with Lamp
PRS1	Pressure Switch
PRS2	High Pressure Switch
TB	Terminal Block
T	Transformer
THR	Thermal Relay
PRR	Phase Reversal relay
PRS	Pressure Switch
GFC1	Ground Fault Circuit Interrupter

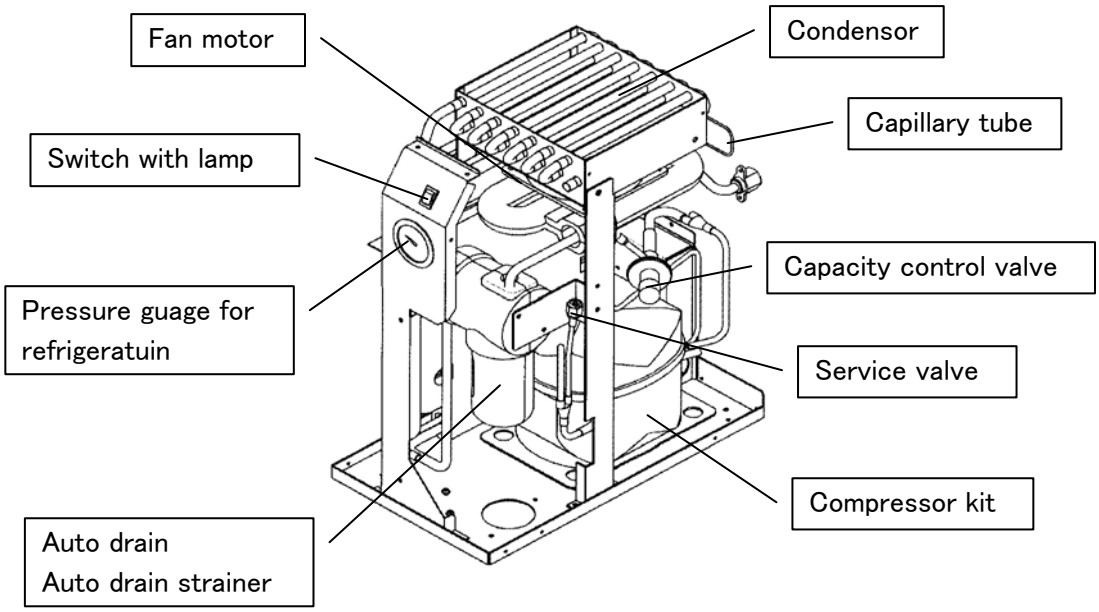
SYMBOL	WIRE COLOR	SYMBOL	WIRE COLOR
(BK)	Black	(G/Y)	Green/Yellow
(WH)	White	(BR)	Brown
(GY)	Gray	(G)	Green
(RD)	Red	(B/W)	Brown/White
(BU)	Blue		

5 Service parts

5.1 Names of parts

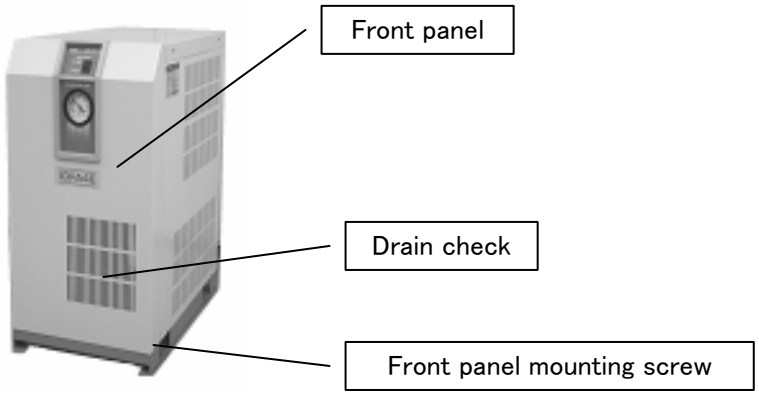
5.1.1 Models IDFB3E

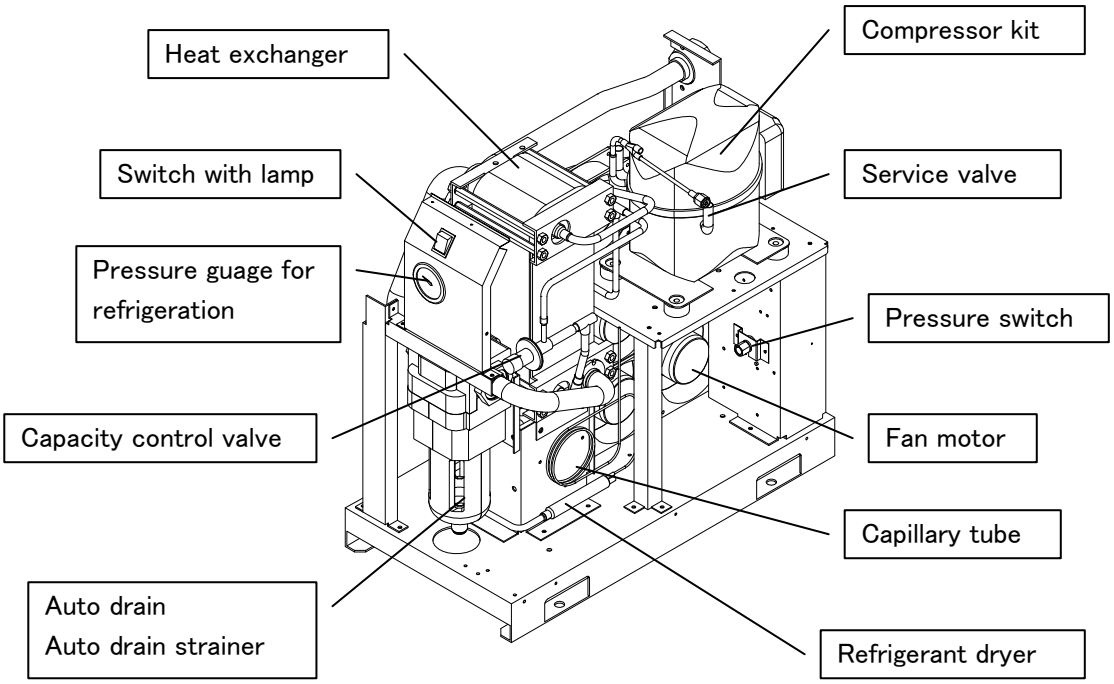




Example construction of IDFB3E

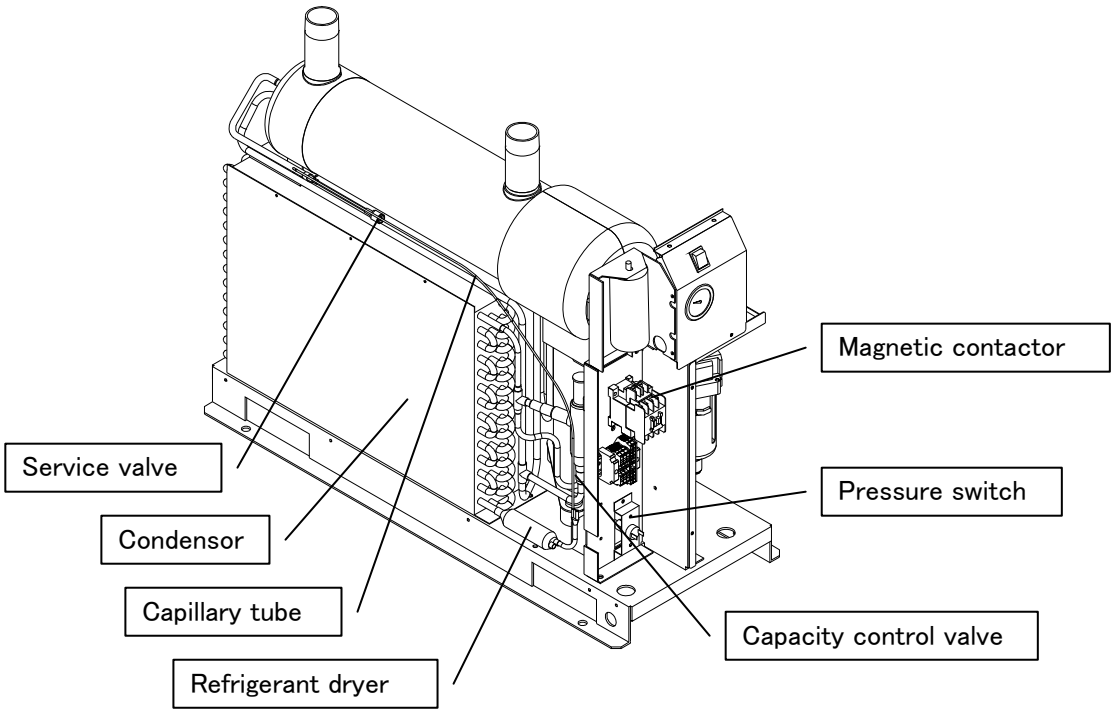
5.1.2 IDFB4E / IDFB6E / IDFB8E / IDFB11E / IDFB15E

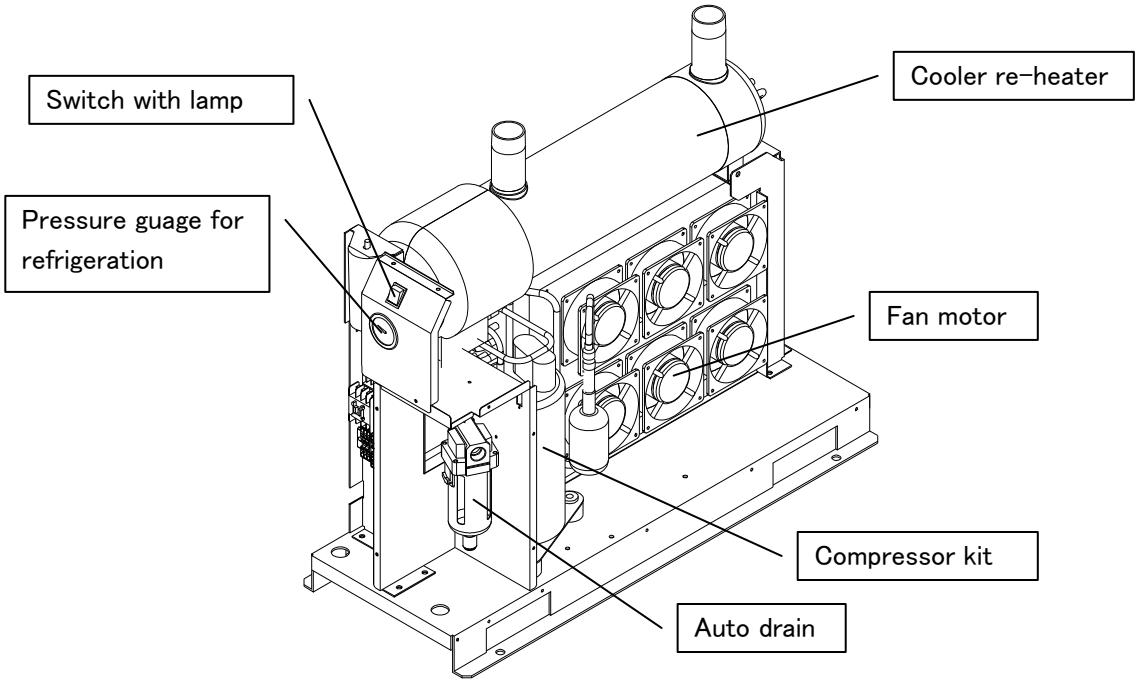




Example: construction of IDFB15E

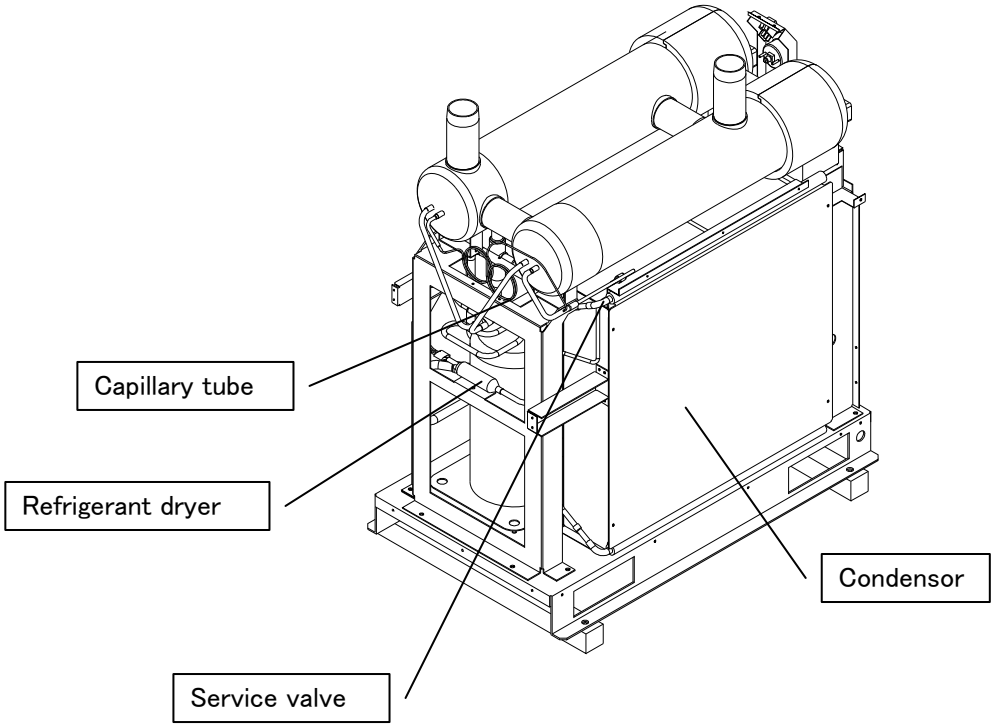
5.1.3 IDFB22E / IDFB37E

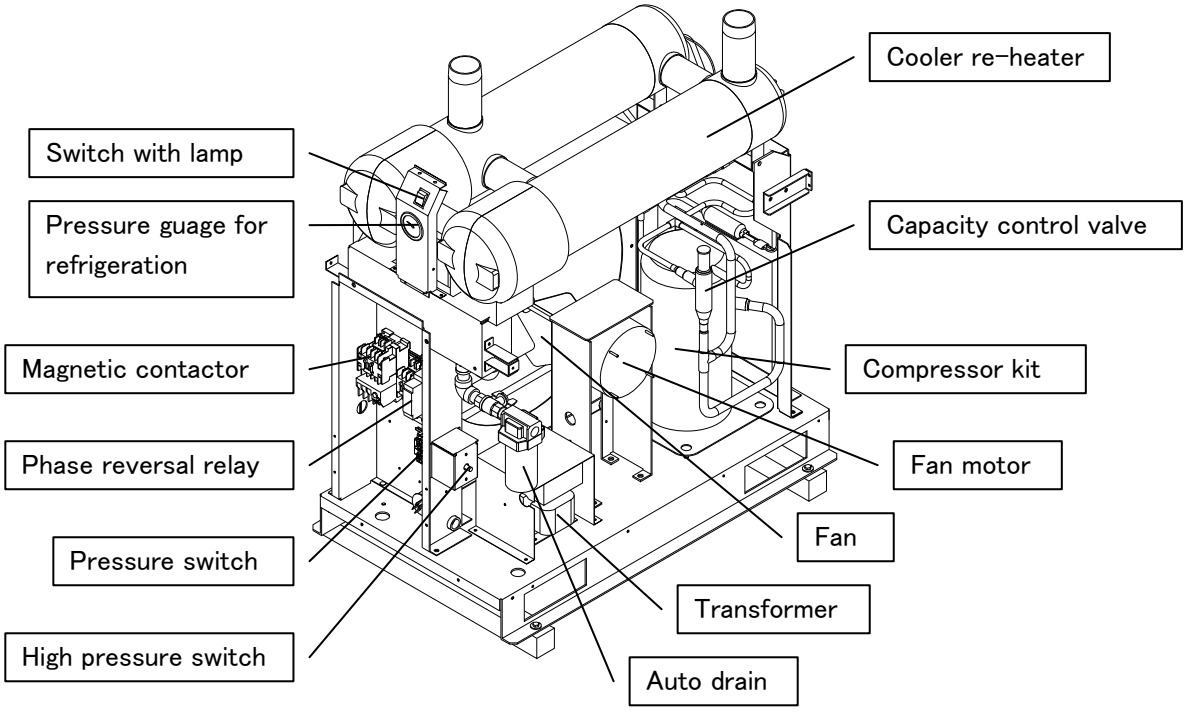




Example: construction of IDFB37E

5.1.4 IDFB55E / IDFB75E





5.2 Service parts list

5.2.1 Service parts list for IDFA

IDFB3E / IDFB4E / IDFB6E / IDFB8E

Service parts			Air dryer models			
No	Part name	Applicable part	IDFB3E-11(N)	IDFB4E-11(N)	IDFB6E-11(N)	IDFB8E-11(N)
1	Compressor kit	--	IDF-KFH0634-PA	IDF-KFH0739-PA		IDF-KFH1045-PA
--	Overload relay	With compressor kit	IDF-K3CYCT0208-G	IDF-K3.2C36C1		IDFK4.0C36C1
--	PTC starter	With compressor kit	IDF-K3CYCT0035-A	IDF-KP3TOSAT		IDF-KP5TOSAT
2	Fan motor	--	IDF-KSP101A -1123HBT			
3	Switch with lamp	--	IDF-LLK35-L3UL-CSA-TUV			
4	Terminal block	--	IDF-KBC1S-2.5Q			
5	Evaporation thermometer	--	IDF-KGK25-S24-08			
6	Pressure switch	--	IDF-KACB-2UA61			
7	Pressure switch fitting	--	IDF-KTCJ-2FQ			
8	Capacity control valve	--	IDF-KCGX-1823DM-Q4			
9	Capillary tube	--	IDF-4086056	IDF-4088080	IDF-4088166	IDF-4089029
10	Service valve	--	IDF-KTCJ-2F15			
11	Auto drain (Note2)	--	AD38(AD38N) (Note3)		AD48(AD48N) (Note3)	
12	Auto drain strainer	For auto drain	IDF-S0001		IDF-S0002	
13	Refrigerant dryer	--	IDF-KSD-30109			IDF-KSD-021106-00
14	Heat exchanger	--	—	IDF-KCD117 (Note1)	IDF-KCD125 (Note1)	IDF-KCD145 (Note1)
15	Condenser	--	IDF-4086021#1	IDF-4088192		IDF-4089127
16	Refrigerant quantity	--	6.3±0.2oz (180±5g)	7.1±0.2oz (200±5g)	8.1±0.2oz (230±5g)	9.5±0.2oz (270±5g)
17	Refrigerant type	--	R134a (HFC)			

Note1) It comes with insulation materials to be placed.

Note2) This service parts consists of lower body, bowl portion, and mechanical portion inside the bowl.
Not includes upper body.

Note3) "-N" or "N" are NPT fitting model.

IDFB11E / IDFB15E / IDFB22E / IDFB37E

Service parts			Air dryer models				
No	Part name	Applicable part	IDFB11E-11(N)	IDFB15E-11(N)	IDFB22E-11(N)	IDFB22E-23(N)	IDFB37E-23(N)
1	Compressor kit	--	IDF-KFH2075-PB	IDF-KCAE4440Y-A-SMC	IDF-KRK5480Y-A (Note1)	IDF-KRK5480Y-U (Note1)	IDF-KRK5512Y-U (Note1)
--	Overload relay	With compressor kit	IDF-K6.7C36C2	--	IDF-KT0786-89	IDF-KT0859-89	IDF-KT0850-89
--	PTC starter	With compressor kit	IDF-KP5TOSAT	--			
2	Fan motor	--	IDF-KSP101A-1123HBT			IDF-KDP201A-2123HBT	
3	Switch with lamp	--	IDF-KLLK35-L3UL-CSA-TUV			IDF-KLLK45-L3UL-CSA-TUV	
4	Terminal block	For power supply	IDF-KBC1S-4				
		For fan motor	--	IDF-KBC1S-2.5Q			
5	Evaporation thermometer	--	IDF-KGK25-S24-08		IDF-KGK25-S24-10		
6	Pressure switch	--	IDF-KACB-2UA61				
7	Pressure switch fitting	--	IDF-KTCJ-2FQ		IDF-KTCJ-2FQH		
8	Capacity control valve	--	IDF-KCGX-1823DM-Q4		IDF-KSPX-4540DH		IDF-KKVC12S
9	Capillary tube	--	IDF-4090113	IDF-4091220	IDF-4092135		IDF-4094099
10	Service valve	--	IDF-KTCJ-2F15				
11	Auto drain (Note2)	--	AD48 (AD48N) (Note3)				
12	Auto drain strainer	For auto drain	IDF-S0002		--		
13	Refrigerant dryer	--	IDF-KSD-021106-00				
14	Heat exchanger	--	IDF-KCD149 (Note1)	IDF-KCD242 (Note1)	--		
15	Cooler-reheater	--	--		IDF-4092012 (IDF-4092012-N) (Note1,3)		IDF-4093027 (IDF-4093027-N) (Note1,3)
16	Condenser	--	IDF-4090129	IDF-4091414	IDF-4092241		IDF-4093135
17	Refrigerant charging quantity	--	10.2±0.2oz (290±5g)	12.0±0.2oz (340±5g)	18.7±0.4oz (530±10g)		25.7±0.4oz (730±10g)
18	Refrigerant type	--	R134a (HFC)				

Note1) It comes with insulation materials to be placed.

Note2) This service parts consits of lower body, bowl portion, and mechanical portion inside the bowl. Not includes upper body.

Note3) "-N" or "N" are NPT fitting model.

IDFB55E / IDFB75E

Service parts			Air dryer models	
No	Part name	Applicable part	IDFB55E-46(N)	IDFB75E-46(N)
1	Compressor kit	--	IDF-KZR24K3E-TFD-522 (Note 1)	
2	Phase revarsal relay	--	IDF−KK8AB−PH1−J	
3	Fan motor	--	IDF-K3736	
--	Capacitor	For fan motor	IDF-KRS37B705U0099A	
4	Fan	--	IDF-K6129410001	IDF-K6129420001
5	Magnetic contactor	--	IDF-KS-N10CX-AC230	
			IDF-4096012 (Note 5) (MSO-N35CXKP4.4A460VAC230)	
6	Switch with lamp	--	IDF-KLLK45-L3UL-CSA-TUV	
7	Terminal block	For power supply	IDF-KBC1S-4	
8	Evaporation thermometer	--	IDF-KGK25-S24-08	
9	Pressure switch	--	IDF-KACB-2UA61	
10	Higt Pressure switch	--	IDF-KFTB-1UC54	
11	Pressure switch fitting	--	IDF-KTCJ-2FQ	
12	Capacity control valve	--	IDF-KKVC12S	
13	Capillary tube	--	IDF-4094099	
14	Service valve	--	IDF-KTCJ-2F15	
15	Auto drain (Note2)	--	AD48 (AD48N) (Note 3)	
16	Refrigerant dryer	--	IDF-KSD-30110	
17	Cooler-reheater	--	IDF-4094042 (IDF-4094042-N) (Npte1,3)	
18	Condenser	--	IDF-KPC115 (Note 4)	IDF-KPC116 (Note 4)
19	Refrigerant charging quantity	--	15.2±0.4oz (430±10g)	20.8±0.4oz (590±10g)
20	Refrigerant type	--	R407C (HFC)	

Note 1) It comes with insulation materials to be placed.

Note 2) This service parts consits of lower body, bowl portion, and mechanical portion inside the bowl.
Not includes upper body.

Note 3) "-N" or "N" are NPT fitting model.

Note 4) It comes with piping set to be assembled IN and OUT ports.

Note 5) IDF-40***** is order part number. ( ) in the inside is maker part number.

6 Routine Inspection

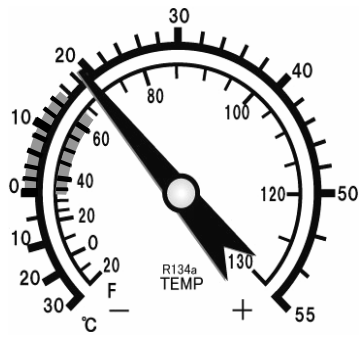
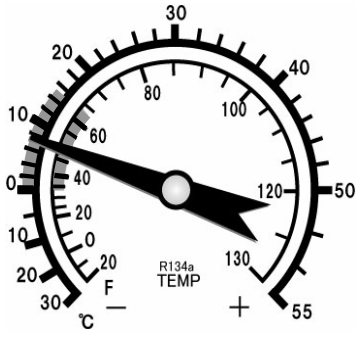
6.1 Routine inspection

Check the following points during normal operations. If you find problems, immediately stop the dryer and take necessary maintenance actions.

Symptom	Cause	Action
Even when power is switched on, the light does not illuminate and the unit does not operate.	The power cord or power plug are loosened or detached.	Connect firmly.
	The earth leakage breaker is OFF.	Check the capacity of the ground fault circuit interrupter.
		Check whether the unit was re-started less than 3 minutes after stopping.
		Switch the ground fault circuit interrupter ON and try operating. If the interrupter still goes OFF straight away, the air dryer may have an insulation failure. Switch off the power, identify the location of the electrical leak and remove the cause of the fault.
		Switch the ground fault circuit interrupter ON and try operating. If the interrupter still goes OFF after a few seconds, it could be a malfunction of the refrigerant compressor, compressor lock, PTC starter or startup relay, etc. Get maintenance done by an engineer.
While operating, the light goes off and the refrigerant compressor stops, but after a short while, the light comes back on and it starts operating.	Poor ventilation in the location.	Improve the ventilation and decrease the ambient temperature to 104°F (40°C) or below.
	High ambient temperature.	
	Ventilation hole is blocked by a wall or with dust.	Set up with ventilation hole at least 16inch (400mm) away from surrounding walls.
		Clean the ventilation hole once a month.
	The temperature of the compress air is too high.	Reduce the discharge temperature of the air compressor, by improving ventilation or reducing ambient temperature.
		Install an after cooler after the air compressor to reduce the temperature.
	Large variation in power voltage.	Adjust the voltage app ropriately by installing a power transformer or re-investigating the power source.
		The range of variation is within 10% of the rated voltage.
	The lead wire from the power source is too long or too thin.	There is a large voltage drop in the wiring. Increase the size of the wiring.
	The pressure switch is broken and the fan is not operating.	The freezing compressor has been overloaded due to condensation malfunction. Replace the pressure switch.
	Malfunction in the refrigerant compressor.	The temperature of the air compressor has risen due to compressor malfunction, causing the overload relay to activate. Get a maintenance engineer to replace the refrigerant compressor.

6.2 Indication of the evaporation thermometer

If the pointer of the evaporation thermometer indicates temperature outside the green zone shown in the figure below when the air dryer is stopped or operated, please refer to “Chapter 7 Troubleshooting” and take necessary actions.

<table>
<tr><th>When air dryer is stopped.</th><th colspan="2">When air dryer is operated.</th></tr>
<tr><td> 
</td><td colspan="2"> 
</td></tr>
<tr><td>Pointer indicates temperature higher than ambient temperature less 50°F (10℃)</td><td>Indication when there is no load: 32 to 45°F (0 to 7℃)</td><td>Indication when there is load: 32 to 45°F (0 to 15℃) (within green zone)</td></tr>
</table>

6.3 Parts list for regular replacement

The table below shows guidelines for the regular replacement of parts. If these parts are used in general operating conditions and proper maintenance is performed, they can be replaced based on the replacement period in the following table. However, the actual replacement period depends on the installation environment and operating conditions of the product.

Please refer to [5.2 Service parts list] for the applicable replacement part numbers for each refrigerated air dryer.

No.	Part name	Guideline replacement (Operating period)
1	Auto drain	1 year
2	Pressure switch	3 years
3	Fan motor	6 years
4	Solenoid conector	3 years
5	Solenoid switch	6 years
6	Switch with light	6 years

Note 1) The air dryer is operated for 12 hours/day and 250days/year without frequent ON and OFF operation
Note 2) The pressure switch contact opens and closes 2 times/minute
Note 3) Note that the above-mentioned guidelines for replacement do not mean the guarantee period.

7 Troubleshooting

⚠ Warning

① Maintenance of the air dryer should only be carried out by someone with sufficient knowledge and experience of air dryers and related equipment.

② Before carrying out maintenance, the important warnings in this manual must be thoroughly read and understood.

IDFB3E to IDFB37E

If the air dryer malfunctions, please investigate according to the table below.

Symptom	Cause	Action
Even when power is switched on, the light does not illuminate and the unit does not operate.	The power cord or power plug are loosened or detached.	Connect firmly.
	The earth leakage breaker is OFF.	Check the capacity of the ground fault circuit interrupter.
		Check whether the unit was re-started less than 3 minutes after stopping.
		Switch the ground fault circuit interrupter ON and try operating. If the interrupter still goes OFF straight away, the air dryer may have an insulation failure. Switch off the power, identify the location of the electrical leak and remove the cause of the fault.
		Switch the ground fault circuit interrupter ON and try operating. If the interrupter still goes OFF after a few seconds, it could be a malfunction of the refrigerant compressor, compressor lock, PTC starter or startup relay, etc. Get maintenance done by an engineer.
While operating, the light goes off and the refrigerant compressor stops, but after a short while, the light comes back on and it starts operating.	Poor ventilation in the location.	Improve the ventilation and decrease the ambient temperature to 104°F (40°C) or below.
	High ambient temperature.	Reset the protection circuit referring to [How to set and reset the rmal relay and high pressure switch].
	Ventilation hole is blocked by a wall or with dust.	Set up with ventilation hole at least 16inch (400mm) away from surrounding walls.
		Clean the ventilation hole once a month.
	The temperature of the compress air is too high.	Reduce the discharge temperature of the air compressor, by improving ventilation or reducing ambient temperature.
		Install an after cooler after the air compressor to reduce the temperature.
	Large variation in power voltage.	Adjust the voltage app ropriately by installing a power transformer or re-investigating the power source.
		The range of variation is within 10% of the rated voltage.
	The lead wire from the power source is too long or too thin.	There is a large voltage drop in the wiring. Increase the size of the wiring.
	The pressure switch is broken and the fan is not operating.	The freezing compressor has been overloaded due to condensation malfunction. Replace the pressure switch.
	Malfunction in the refrigerant compressor.	The temperature of the air compressor has risen due to compressor malfunction, causing the overload relay to activate. Get a maintenance engineer to replace the refrigerant compressor.

Symptom	Cause	Action
The indication on the evaporation thermometer is above the green zone.	Bad ventilation in the location.	Improve the ventilation to reduce the ambient temperature as low as possible.
	Ambient temperature is too high.	
	The ventilation hole is blocked by wall or with dust.	Set up with ventilation hole at least 16inch (400mm) away from surrounding walls.
		Clean the ventilation hole once a month.
	Compress air temperature is too high.	Reduce the temperature of the air discharge by the compressor, by improving the ventilation area of the compressor or reducing ambient temperature.
		Install an after cooler after the air compressor to reduce the temperature.
	Compressed air flow rate is too high.	Investigate whether the consumption of compressed air has increased recently. If necessary, consider installing more dryers.
The indication on the evaporation thermometer is below the green zone.	Ambient temperature is too low.	Set up in a place where the ambient temperature is at least 36°F (2°C).
	Compressed air temperature is too	Make the inlet air temperature at least 41°F (5°C).
	Too much ventilation in the location.	Make sure that there is no draft blowing into the ventilation
	Capacity control valve is broken.	Get a maintenance engineer to replace the broken part.
	The pressure switch is broken and the fan is continuously working.	
	Evaporating thermometer is broken.	
	Refrigerant circuit (refrigerant dryer) is blocked.	The refrigerant dryer outlet side could be getting cold, and condensing. Get a maintenance engineer to replace the refrigerant dryer.
	leakage of refrigerant.	Get a maintenance engineer to eliminate the cause of the leakage and re-charge with refrigerant.
Moisture is generated downstream of the compress air line.	Bypass valve is open.	Ensure that the bypass valve is fully closed.
	Drainage is not being discharged from the auto drain.	Check that the drainage piping is not bent or sticking up.
		For IDFB22E and 37E type, check whether the ball valve of the upstream of an auto drain in the air dryer is open.
		Inspect the auto drain.
		Inspect the auto drain strainer.
	The piping after the air dryer is joined another pipe line that does not have an air dryer installed.	Install another air dryer between the line without an air dryer.
		Separate the two lines so that they do not join up.
	The evaporating temperature is above the green zone.	See column about what to do if "the indication on the evaporation thermometer is above the green zone."
	There is a build-up of drainage in the upstream piping, causing a rush-in of drainage all at once, causing carry over of drainage in the dryer.	Make the piping such that drainage does not build up. For example by making it sloping.
		Install an auto drain to the part where drainage builds up.
Large pressure drop of compressed air.	The IN/OUT side valve of the dryer piping is not fully open.	Make sure the IN/OUT side valve of the dryer piping is fully open.
	The air filter installed in the air piping is blocked.	Replace the air filter element. (Please follow the instruction manual of the individual air filter.)

IDFB55E / IDFB75E

If the air dryer malfunctions, please investigate according to the table below.

Symptom	Cause	Action
Even when power is switched on, the light does not illuminate and the unit does not operate.	The power cord or power plug are loosened or detached.	Connect firmly.
	The earth leakage breaker is OFF.	Check the capacity of the ground fault circuit interrupter.
		Check whether the unit was re-started less than 3 minutes
		Switch the ground fault circuit interrupter ON and try operating. If the interrupter still goes OFF straight away, the air dryer may have an insulation failure. Switch off the power, identify the location of the electrical leak and remove the cause of th
		Switch the ground fault circuit interrupter ON and try operating. If the interrupter still goes OFF after a few seconds, it could be a malfunction of the refrigerant compressor, compressor lock, PTC starter or startup relay, etc. Get maintenance done by
While operating, the light goes off and the refrigerant compressor stops, but after a short while, the light comes back on and it starts operating.	Poor ventilation in the location.	Improve the ventilation and decrease the ambient temperature to 104°F (40°C) or below.
	High ambient temperature.	Reset the protection circuit referring to [How to set and reset the thermal reray and high pressure switch].
	Ventilation hole is blocked by a wall or with dust.	Set up with ventilation hole at least 16inch (400mm) away from surrounding walls.
		Clean the ventilation hole once a month.
	The temperature of the compress air is too high.	Reduce the discharge temperature of the air compressor, by improving ventilation or reducing ambient temperature.
		Install an after cooler after the air compressor to reduce the temperature.
	Large variation in power voltage.	Adjust the voltage app ropriately by installing a power transformer or re-investigating the power source.
		The range of variation is within 10% of the rated voltage.
	The lead wire from the power source is too long or too thin.	There is a large voltage drop in the wiring. Increase the size of the wiring.
	The pressure switch is broken and the fan is not operating.	The freezing compressor has been overloaded due to condensation malfunction. Replace the pressure switch.
	Malfunction in the refrigerant compressor.	The temperature of the air compressor has risen due to compressor malfunction, causing the overload relay to activate. Get a maintenance engineer to replace the
The indication on the evaporation thermometer is above the green zone.	Bad ventilation in the location.	Improve the ventilation to reduce the ambient temperature as low as possible.
	Ambient temperature is too low.	
	The ventilation hole is blocked by wall or with dust.	Set up with ventilation hole at least 24inch (600mm) away from surrounding walls.
		Clean the ventilation hole once a month.
	Compressed air temperature is too high.	Reduce the temperature of the air discharge by the compressor, by improving the ventilation area of the compressor or reducing ambient temperature.
		Install an after cooler after the air compressor to reduce the temperature.
	Compressed air flow rate is too high.	Investigate whether the consumption of compressed air has increased recently. If necessary, consider installing more

Symptom	Cause	Action
The indication on the evaporation thermometer is above the green zone.	Ambient temperature is too low.	Set up in aplace where the ambient temperature is at least 36°F (2°C).
	Compressed air temperature is too .	Make the inlet air temperature at least 41°F (5°C).
	Too much ventilation in the location.	Make sure that there is no draft blowing into the ventilation
	Capacity control valve is broken.	Get a maintenance engineer to replace the broken part.
	The pressure switch is broken and the fan is continuously working.	
	Evaporating thermometer is broken.	
	Refrigerant circuit (refrigerant dryer) is blocked.	The refrigerant dryer outlet side could be getting cold, and condensing. Get a maintenance engineer to replace the refrigerant dryer.
	leakage of refrigerant.	Get a maintenance engineer to eliminate the cause of the leakage and re-charge with refrigerant.
Moisture is generated downstream of the compress air line.	Bypass valve is open.	Ensure that the bypass valve is fully closed.
	Drainage is not being discharged from the auto drain.	Check that the drainage piping is not bent or sticking up.
		For IDFB22E and 37E type, check whether the ball valve of the upstream of an auto drain in the air dryer is open.
		Inspect the auto drain.
		Inspect the auto drain strainer.
	The piping after the air dryer is joined another pipe line that does not have an air dryer installed.	Install another air dryer between the line without an air dryer.
		Separate the two lines so that they do not join up.
	The evaporating temperature is above the green zone.	See column about what to do if "the indication on the evaporation thermometer is above the green zone."
	There is a build-up of drainage in the upstream piping, causing a rush-in of drainage all at once, causing carry over	Make the piping such that drainage does not build up. For example by making it sloping.
		Install an auto drain to the part where drainage builds up.
Large pressure drop of compressed air.	The IN/OUT side valve of the dryer piping is not fully open.	Make sure the IN/OUT side valve of the dryer piping is fully open.
	The air filter installed in the air piping is blocked.	Replace the air filter element. (Please follow the instruction manual
Moisture is generated downstream of the compress air line.	Bypass valve is open.	Ensure that the bypass valve is fully closed.
	Drainage is not being discharged from the auto drain.	Check that the drainage piping is not bent or sticking up.
		For IDFB22E and 37E type, check whether the ball valve of the upstream of an auto drain in the air dryer is open.
		Inspect the auto drain.
		Inspect the auto drain strainer.
	The piping after the air dryer is joined another pipe line that does not have an air dryer installed.	Install another air dryer between the line without an air dryer.
		Separate the two lines so that they do not join up.
	The evaporating temperature is above the green zone.	See column about what to do if "the indication on the evaporation thermometer is above the green zone."
	There is a build-up of drainage in the upstream piping, causing a rush-in of drainage all at once, causing carry over of drainage in the dryer.	Make the piping such that drainage does not build up. For example by making it sloping. Install an auto drain to the part where drainage builds up.
Large pressure drop of compressed air.	The IN/OUT side valve of the dryer piping is not fully open.	Make sure the IN/OUT side valve of the dryer piping is fully open.
	The air filter installed in the air piping is blocked.	Replace the air filter element. (Please follow the instruction manual of the individual air filter.)

Symptom	Cause	Action
Moisture is generated downstream of the compress air line.	Bypass valve is open.	Ensure that the bypass valve is fully closed.
	Drainage is not being discharged from the auto drain.	Check that the drainage piping is not bent or sticking up.
		For IDFB22E and 37E type, check whether the ball valve of the upstream of an auto drain in the air dryer is open.
		Inspect the auto drain.
		Inspect the auto drain strainer.
	The piping after the air dryer is joined another pipe line that does not have an air dryer installed.	Install another air dryer between the line without an air dryer.
		Separate the two lines so that they do not join up.
	The evaporating temperature is above the green zone.	See column about what to do if "the indication on the evaporation thermometer is above the green zone."
	There is a build-up of drainage in the upstream piping, causing a rush-in of drainage all at once, causing carry over of drainage in the dryer.	Make the piping such that drainage does not build up. For example by making it sloping. Install an auto drain to the part where drainage builds up.
Large pressure drop of compressed air.	The IN/OUT side valve of the dryer piping is not fully open.	Make sure the IN/OUT side valve of the dryer piping is fully open.
	The air filter installed in the air piping is blocked.	Replace the air filter element. (Please follow the instruction manual of the individual air filter.)