



Si30 - 813

R-410A

Service Manual

VRV-III[®]

RWEYQ 8-30PY1 (50Hz)

RWEYQ10-30PYL (60Hz)

RWEYQ10-30PTL (60Hz)

Water Cooled

—Heat Pump/Heat Recovery-50/60Hz—



VRV[®]-WIII Water Cooled Heat Pump / Heat Recovery 50/60Hz

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1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into “ **Warning**” and “ **Caution**”. The “ **Warning**” items are especially important since they can lead to death or serious injury if they are not followed closely. The “ **Caution**” items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms
 - △ This symbol indicates an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.
 - This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.
 - This symbol indicates an action that must be taken, or an instruction.
The instruction is shown inside or near the symbol.
- After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer.

1.1.1 Caution in Repair

 Warning	
<p>Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for a repair. Working on the equipment that is connected to a power supply can cause an electrical shock. If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.</p>	
<p>If the refrigerant gas discharges during the repair work, do not touch the discharging refrigerant gas. The refrigerant gas can cause frostbite.</p>	
<p>When disconnecting the suction or discharge pipe of the compressor at the welded section, release the refrigerant gas completely at a well-ventilated place first. If there is a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it can cause injury.</p>	
<p>The step-up capacitor supplies high-voltage electricity to the electrical components of the outside unit. Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor can cause an electrical shock.</p>	
<p>Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment can cause an electrical shock or fire.</p>	

 Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water can cause an electrical shock.	
Be sure to provide the grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment. The internal fan rotates at a high speed, and cause injury.	
Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.	
Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.	

1.1.2 Cautions Regarding Products after Repair

 Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	

 Warning	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	
When connecting the cable between the indoor and outside units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R-410A) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

 Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.1.3 Inspection after Repair

 Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires can cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it can cause an electrical shock, excessive heat generation or fire.	

 Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 Mohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using Icons

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

1.1.5 Using Icons List

Icon	Type of Information	Description
 Note:	Note	A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
 Caution	Caution	A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, lose data, get an unexpected result or has to restart (part of) a procedure.
 Warning	Warning	A “warning” is used when there is danger of personal injury.
	Reference	A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

1.2 PREFACE

Thank you for your continued patronage of Daikin products.

This is the new service manual for Daikin's water cooled VRV System.
Daikin offers a wide range of models to respond to building and office air conditioning needs.
We are confident that customers will be able to find the models that best suit their needs.

This service manual contains information regarding the servicing of water cooled VRV System.

November 2008

After Sales Service Division

Part 1

General Information

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1. Features

A water cooled intelligent individual air conditioning system suitable for tall multi-storeyed buildings.

This unique system can perform as heat pump or heat recovery to any suitable application.



What is water cooled VRV III?

Water cooled VRV III is an individual air conditioning system that utilises water as a heat source. In this unique system, water is piped from a cooling tower or boiler to the VRV-WIII (which is the equivalent of the outdoor unit of an air cooled conditioning system) and after heat exchange, refrigerant is piped from the VRV-WIII to each indoor unit.

What are its advantages?

Design flexibility

Easy installation

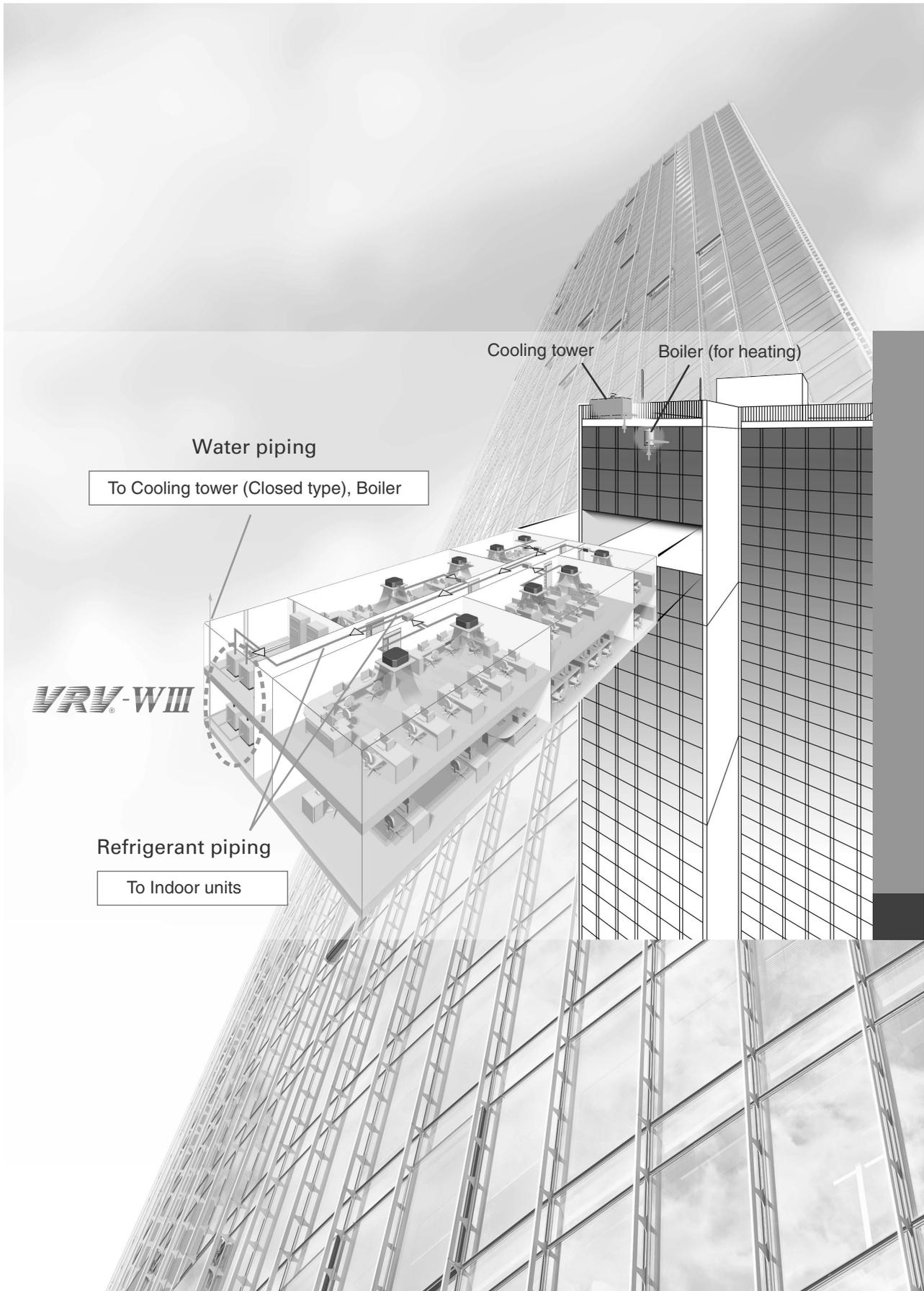
Energy saving

Enhanced usability

Cutting-edge technologies

The compact unit is packed with the latest technologies.





Water piping
To Cooling tower (Closed type), Boiler

Cooling tower Boiler (for heating)

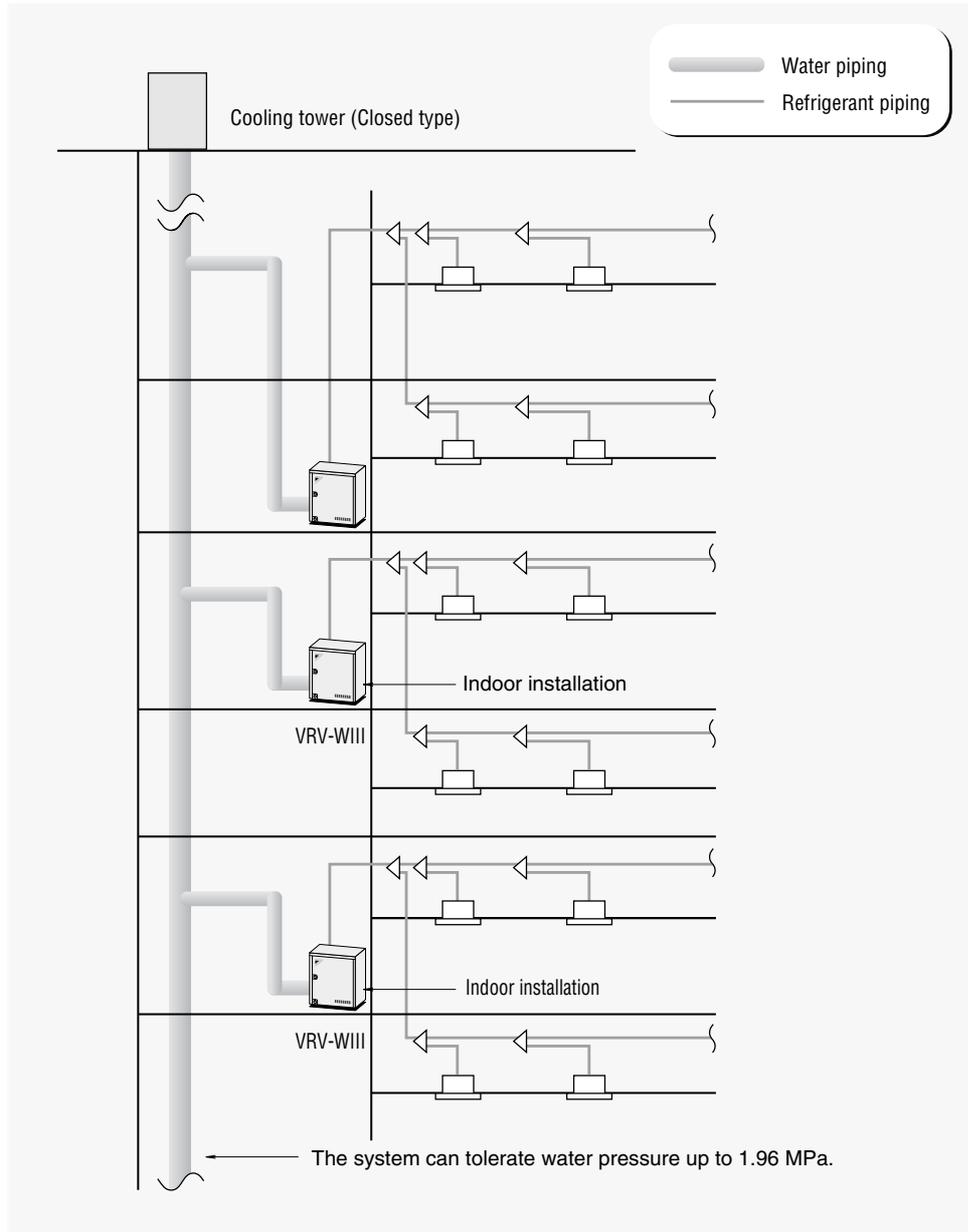
VRV-WIII

Refrigerant piping
To Indoor units

1.1 Design Flexibility

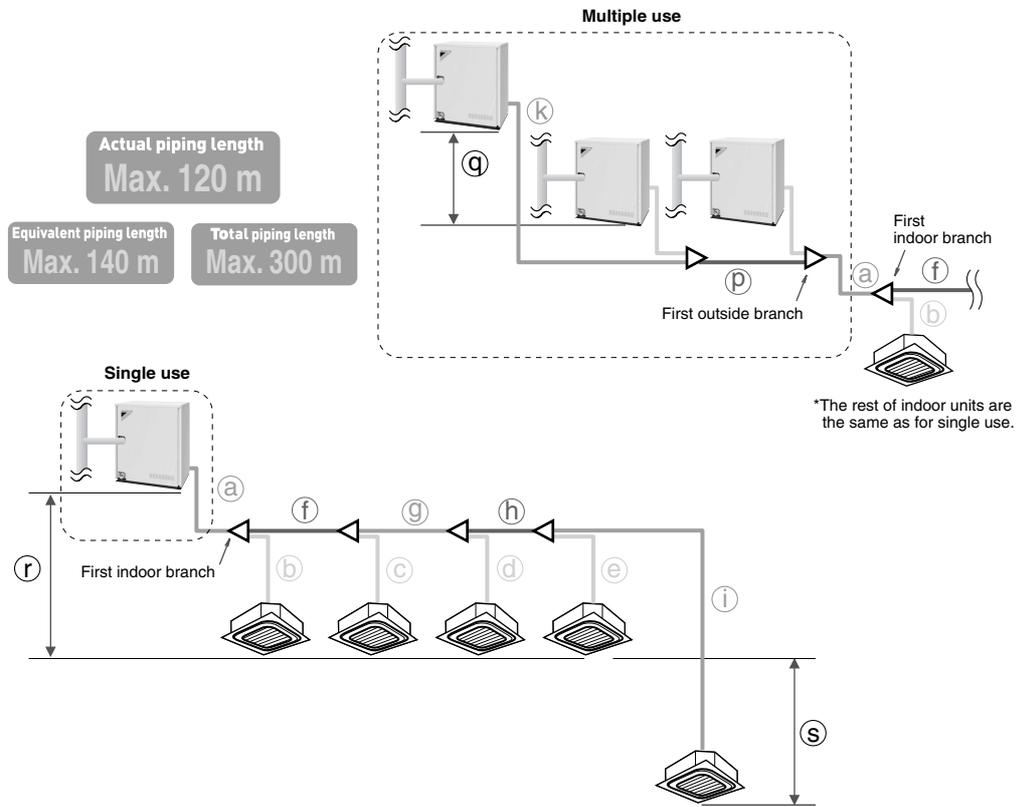
Enhanced design flexibility and cold climate capability

Water cooled VRV III uses water as its heat source, so it is optimal for large buildings, including tall, multi-storey buildings, because the system can tolerate water pressure of up to 1.96 MPa. Furthermore, if the currently installed heat source's water temperature is between 10°C and 45°C, it may be possible to use the existing water pipe work and heat source. This alone makes it an ideal system solution for building refurbishment projects. Because the system is water cooled, outdoor air temperature does not affect its heating capacity. In addition, water cooling means no defrost operation is required, and the resultant rapid start-up time assures quick and comfortable heating, even in cold environments.



Long refrigerant piping length

Within the refrigerant piping system, a maximum of 120 m of actual piping length and 50 m² of level difference between the VRV-WIII and indoor units are possible. Water piping does not enter occupied spaces, so there is no worry of water leaking.



* Colours in the diagram above are merely for identifying pipes referenced with symbols such as @.

		Actual piping length	Equivalent piping length	Example
Maximum allowable piping length	Refrigerant piping length	120 m or less	140 m or less	a+f+g+h+i
	Total extension length	300 m or less	—	a+b+c+d+e+f+g+h+i
	Between the first indoor branch and the farthest indoor unit	90 m or less ^{*1}	—	f+g+h+i
	Between the first outside branch and the last outside unit	10 m or less	13 m or less	k+p
Maximum allowable level difference	Between the outside units (multiple use)	2 m or less	—	q
	Between the indoor units	15 m or less	—	s
	Between the outside units and the indoor units	50 m or less ^{*2}	—	r

*1 Maximum allowable piping length between the first indoor branch and the farthest indoor unit can be 90 m, or less depending on conditions.

*2 Max. 40 m if the outside unit is below.

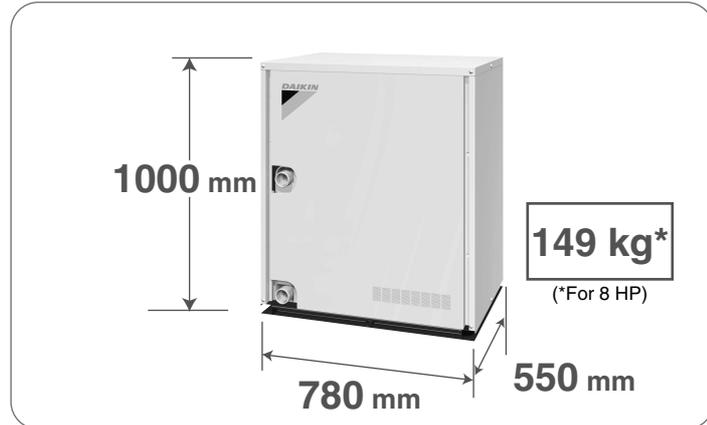
• Refer to the Engineering Data for details of other requirements.

1.2 Easy Installation

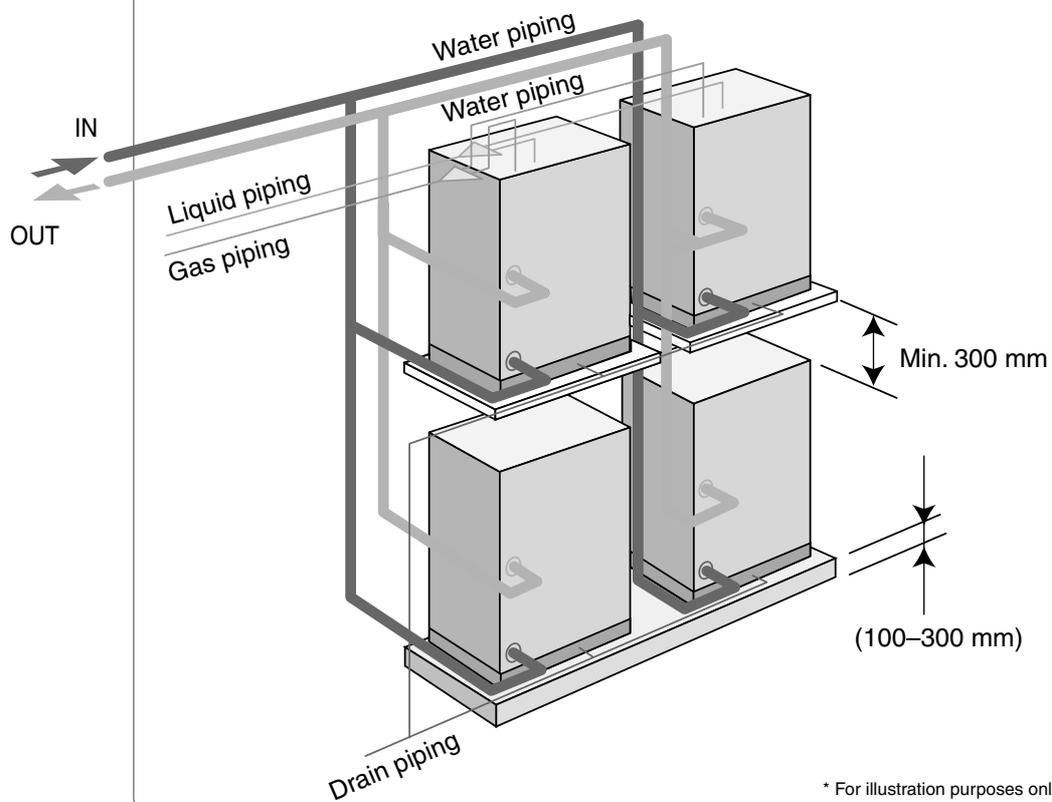
Compact and lightweight

Adoption of a water heat exchanger and optimisation of the refrigerant control circuit has resulted compact and lightweight equipment. A weight of 149 kg and height of 1,000 mm make installation possible in buildings with limited space, or where no space is available for outdoor units. This makes the system ideal for places that have no area outside—such as underground malls. Stacked configuration is also possible, further contributing to space savings.

* Unit is designed for indoor installation only.



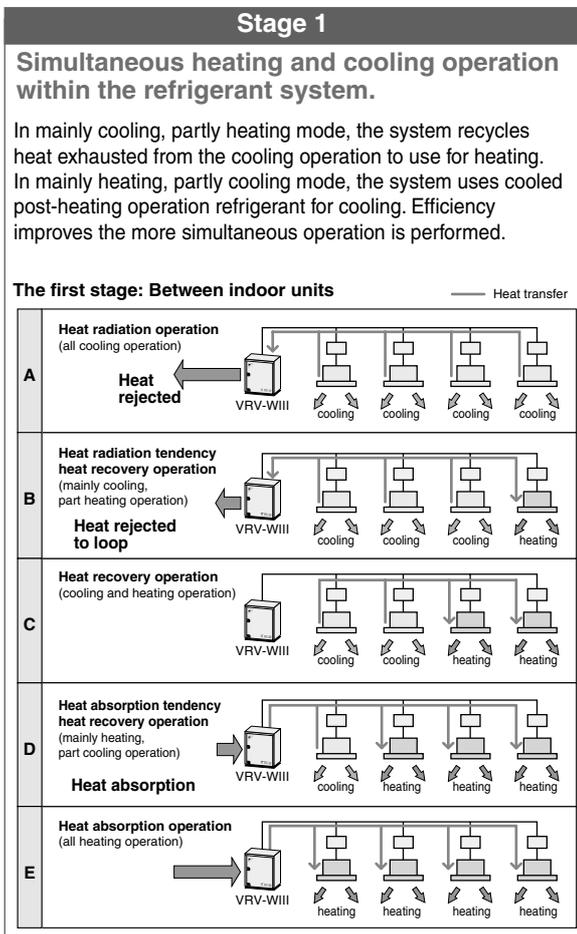
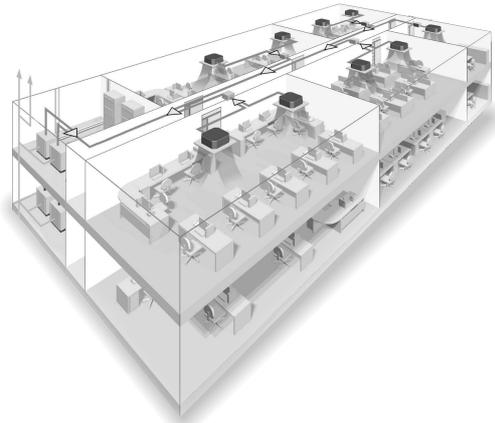
Stacked-configuration in indoor installation is possible.



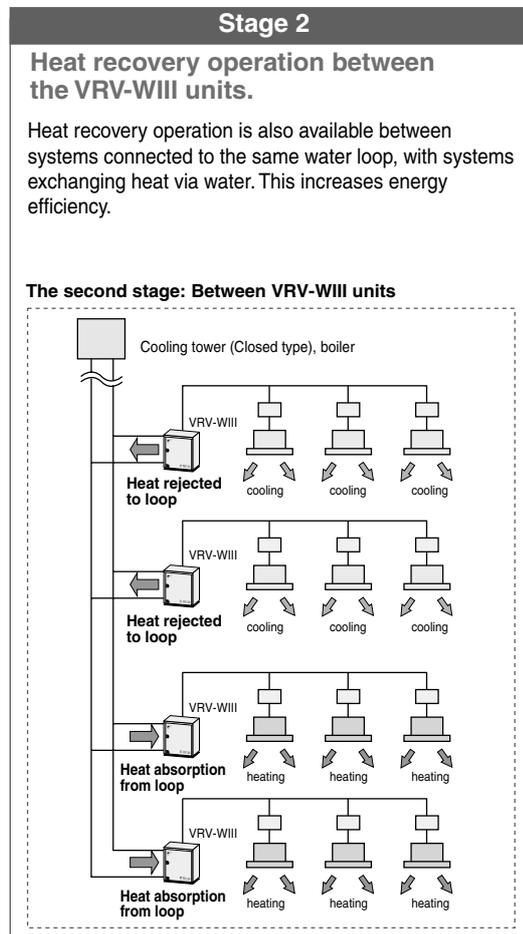
1.3 Energy Saving

Heat recovery

Daikin offers 2-stage heat recovery operation. The first stage of heat recovery operation is within the refrigerant system. By controlling the BS unit that switches cooling and heating, simultaneous cooling and heating operation is made possible, with heat recovery performed between indoor units. The second stage of heat recovery operation is within the water loop, where heat recovery is performed between the VRV-WiII units. This 2-stage heat recovery operation substantially improves energy efficiency and makes the system the ideal solution to the requirements of modern office buildings, where some areas may require cooling even in winter, depending on the amount of sunshine received and the number of people in the room.



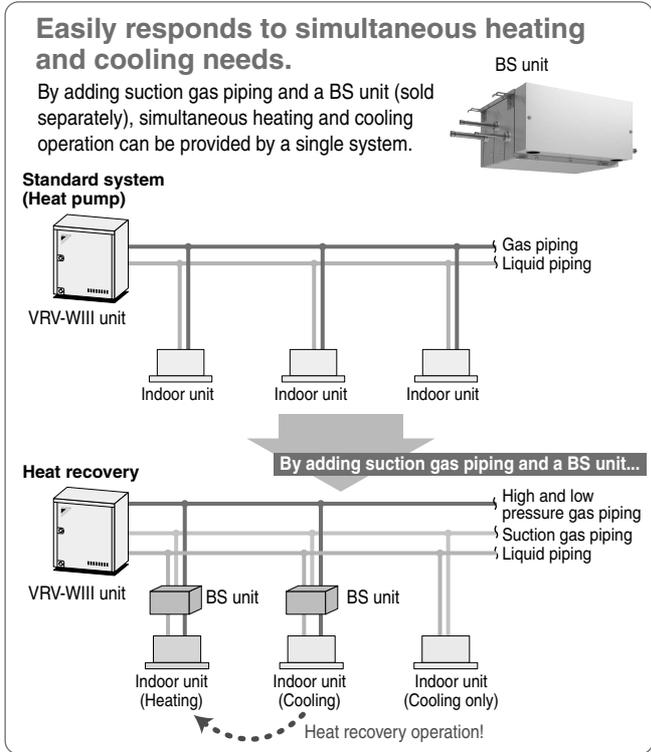
Note: • Above system configurations are for illustration purposes only.



1.4 Enhanced Usability

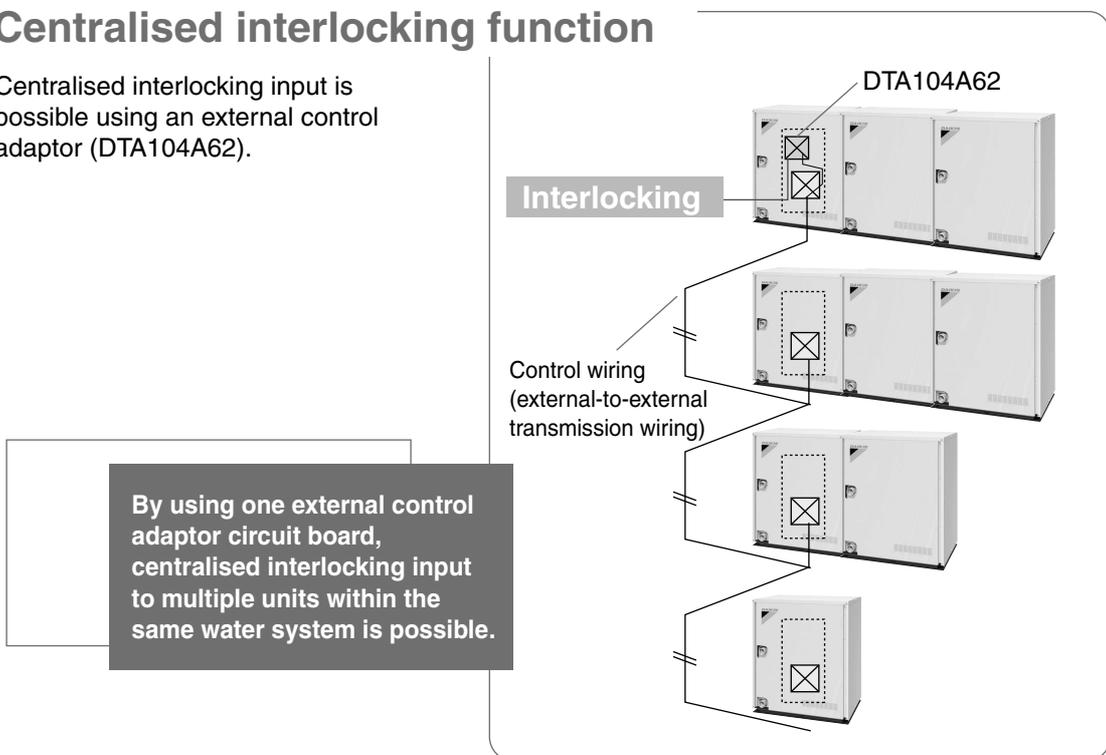
A variety of functions that realise easy installation and improve reliability

- Features a pump interlock function that controls the pump of the heat source simultaneously with the starting of the VRV-WIII unit. This significantly simplifies operation and management.
- Employs DIII-NET to enable the shared use of the wiring between the indoor units, the VRV-WIII unit and the central control wiring.
- Provides an auto address setting function and check function that detects connection errors in wiring and piping for easier installation.
- Water piping goes only to the VRV-WIII unit, with refrigerant piping run in occupied spaces, making the system ideal for installing in spaces such as OA rooms, with no worry of water leakage or corrosion.



Centralised interlocking function

Centralised interlocking input is possible using an external control adaptor (DTA104A62).



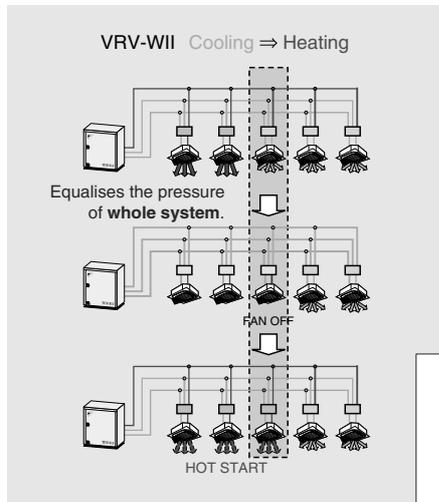
New BS unit for heat recovery can improve comfortability by switching between cooling and heating operation independently.

Originally, switching was performed by indoor units, which lowers the operation capacities of other indoor units. Now the switching can be conducted on this new BS unit, successfully reducing the effects to other indoor units when compared to the VRV-WII system.



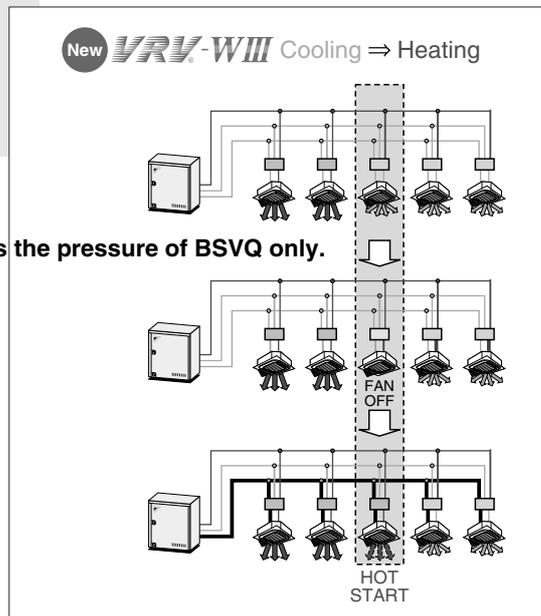
New 50Hz BSVQ100PV1 BSVQ160PV1 BSVQ250PV1 60Hz BSVQ36PVJU BSVQ60PVJU

Equalising the pressure of only the BSVQ can switch over the operation mode.



When switching from cooling to heating with the conventional BS unit, the other indoor units performing heating operations also had to be stopped until the changeover for the target indoor unit had been completed.

Equalises the pressure of BSVQ only.



With the new BS unit, the other indoor units can keep heating while the target indoor units are switched from cooling to heating.

2. Model Names of Indoor / Outside Units

Indoor Units

Type		Model Name												Power Supply
Ceiling Mounted Cassette Type (Round Flow)	FXFQ	—	25P	32P	40P	50P	63P	—	80P	100P	125P	—	—	VE
Ceiling Mounted Cassette Type (Double Flow)	FXCQ	20M	25M	32M	40M	50M	63M	—	80M	—	125M	—	—	
Ceiling Mounted Cassette Corner Type	FXKQ	—	25MA	32MA	40MA	—	63MA	—	—	—	—	—	—	
Slim Ceiling Mounted Duct Type	FXDQ-PBVE	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—	
	FXDQ-PBVET	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—	
	FXDQ-NBVE	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	
	FXDQ-NBVET	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—	
Ceiling Mounted Built-In Type	FXSQ	20M	25M	32M	40M	50M	63M	—	80M	100M	125M	—	—	
Ceiling Mounted Duct Type (Middle and high static pressure)	FXMQ	20P	25P	32P	40P	50P	63P	—	80P	100P	125P	—	—	
Ceiling Mounted Duct Type	FXMQ	—	—	—	—	—	—	—	—	—	—	200MA	250MA	
Ceiling Suspended Type	FXHQ	—	—	32MA	—	—	63MA	—	—	100MA	—	—	—	
Wall Mounted Type	FXAQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	
Floor Standing Type	FXLQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	
Concealed Floor Standing Type	FXNQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—	
Ceiling Suspended Cassette Type	FXUQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	V1
Connection Unit for FXUQ	BEVQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—	VE

Note : FXDQ has following 2 series, as show below.

FXDQ-PBVET, NBVET: without Drain Pump (For General, Asia: except for EU, China and Australia)

FXDQ-PBVE, NBVE: with Drain Pump

BEV unit is required for FXUQ only.

MA: RoHS Directive models; Specifications, dimensions and other functions are not changed compared with M type.

Power Supply:VE:1φ, 220V, 60Hz / 1φ, 220~240V, 50Hz V1:1φ, 220~240V, 50Hz

BS Units

Series		Model Name			Power Supply
Heat Recovery Series	BSVQ	100P		160P	V1
		36P		60P	VJU

Note : No compatibility between BSVQ-M.

Power Supply:V1:1φ, 220~240V, 50Hz

VJU:1φ, 208~230V, 60Hz

Outside Units

Series		Model Name					Power Supply
Heat Pump Heat Recovery	RWEYQ	8P	10P	16P	18P	20P	Y1
		24P	26P	28P	30P	—	
		—	10P	—	—	20P	YL, TL
		—	—	—	30P	—	

Power Supply:Y1 :3φ, 380~415V, 50Hz YL:3φ, 380V, 60Hz TL :3φ, 220V, 60Hz

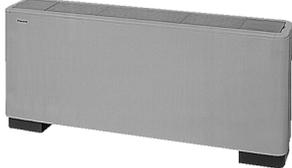
Combination of Outside Units (Heat Pump/Heat Recovery)

HP	8HP (50Hz)	10HP (50/60Hz)	16HP (50Hz)	18HP (50Hz)
Model name	RWEYQ8P	RWEYQ10P	RWEYQ16P	RWEYQ18P
Outside unit 1	—	—	RWEYQ8P	RWEYQ8P
Outside unit 2	—	—	RWEYQ8P	RWEYQ10P

HP	20HP(50/60Hz)	24HP (50Hz)	26HP (50Hz)	28HP (50Hz)	30HP(50/60Hz)
Model name	RWEYQ20P	RWEYQ24P	RWEYQ26P	RWEYQ28P	RWEYQ30P
Outside unit 1	RWEYQ10P	RWEYQ8P	RWEYQ8P	RWEYQ8P	RWEYQ10P
Outside unit 2	RWEYQ10P	RWEYQ8P	RWEYQ8P	RWEYQ10P	RWEYQ10P
Outside unit 3	—	RWEYQ8P	RWEYQ10P	RWEYQ10P	RWEYQ10P

3. External Appearance

3.1 Indoor Units

<p>Ceiling Mounted Cassette Type (Round Flow)</p> <p>FXFQ25P FXFQ32P FXFQ40P FXFQ50P FXFQ63P FXFQ80P FXFQ100P FXFQ125P</p> 	<p>Ceiling Suspended Type</p> <p>FXHQ32MA FXHQ63MA FXHQ100MA</p> 
<p>Ceiling Mounted Cassette Type (Double Flow)</p> <p>FXCQ20M FXCQ25M FXCQ32M FXCQ40M FXCQ50M FXCQ63M FXCQ80M FXCQ125M</p> 	<p>Wall Mounted Type</p> <p>FXAQ20MA FXAQ25MA FXAQ32MA FXAQ40MA FXAQ50MA FXAQ63MA</p> 
<p>Ceiling Mounted Cassette Corner Type</p> <p>FXKQ25MA FXKQ32MA FXKQ40MA FXKQ63MA</p> 	<p>Floor Standing Type</p> <p>FXLQ20MA FXLQ25MA FXLQ32MA FXLQ40MA FXLQ50MA FXLQ63MA</p> 
<p>Slim Ceiling Mounted Duct Type</p> <p>FXDQ20PB FXDQ25PB FXDQ32PB FXDQ40NB FXDQ50NB FXDQ63NB with Drain Pump (VE) without Drain Pump (VET)</p> 	<p>Concealed Floor Standing Type</p> <p>FXNQ20MA FXNQ25MA FXNQ32MA FXNQ40MA FXNQ50MA FXNQ63MA</p> 
<p>Ceiling Mounted Built-In Type</p> <p>FXSQ20M FXSQ25M FXSQ32M FXSQ40M FXSQ50M FXSQ63M FXSQ80M FXSQ100M FXSQ125M</p> 	<p>Ceiling Suspended Cassette Type</p> <p>50Hz FXUQ71MA + BEVQ71MA FXUQ100MA + BEVQ100MA FXUQ125MA + BEVQ125MA</p> <p>Connection Unit</p> 
<p>Ceiling Mounted Duct Type (Middle and high static pressure)</p> <p>FXMQ20P FXMQ25P FXMQ32P FXMQ40P FXMQ50P FXMQ63P FXMQ80P FXMQ100P FXMQ125P</p> 	<p>BS Units</p> <p>50Hz BSVQ100PV1 BSVQ160PV1 BSVQ250PV1</p> <p>60Hz BSVQ36PVJU BSVQ60PVJU</p> 
<p>Ceiling Mounted Duct Type</p> <p>FXMQ200MA FXMQ250MA</p> 	

3.2 Outside Units

RWEYQ8, 10P



8, 10 HP

RWEYQ16, 18, 20P



16, 18, 20 HP

RWEYQ24, 26, 28, 30P



24, 26, 28, 30 HP

4. Combination of Outside Units

50Hz

System Capacity	Number of units	Module		Outside Unit Multi Connection Piping Kit (Option)
		8	10	
8 HP	1	●		-
10 HP	1		●	
16 HP	2	● ●		Heat Pump: BHFP22MA56 Heat Recovery: BHFP26MA56
18 HP	2	●	●	
20 HP	2		● ●	
24 HP	3	● ● ●		Heat Pump: BHFP22MA84 Heat Recovery: BHFP26MA84
26 HP	3	● ●	●	
28 HP	3	●	● ●	
30 HP	3		● ● ●	

60Hz

System Capacity	Number of units	Module		Outside Unit Multi Connection Piping Kit (Option)
		10		
10 HP	1	●		-
20 HP	2	● ●		Heat Pump: BHFP22MA56 Heat Recovery: BHFP26MA56
30 HP	3	● ● ●		Heat Pump: BHFP22MA84 Heat Recovery: BHFP26MA84

★Note : For multiple connection of 16~30 HP system, an optional Daikin Outside Unit Multi Connection Piping Kit is required.

5. Capacity Range

Outside Units

50Hz

Capacity Range	8 HP	10 HP	16 HP	18 HP	20 HP	24 HP	26 HP	28 HP	30 HP
RWEYQ	8P	10P	16P	18P	20P	24P	26P	28P	30P
Max. Number of Connectable Indoor Units.	13	16	26	29	32	36	36	36	36
Total Capacity Index of Indoor Units to be Connected	100 ~ 260	125 ~ 325	200 ~ 520	225 ~ 585	250 ~ 650	300 ~ 780	325 ~ 845	350 ~ 910	375 ~ 975

60Hz

Capacity Range	10 HP	20 HP	30 HP
RWEYQ	10P	20P	30P
Max. Number of Connectable Indoor Units.	16	32	36
Total Capacity Index of Indoor Units to be Connected	125 ~ 325	250 ~ 650	375 ~ 975

Indoor Units

Capacity Range		0.8 HP	1 HP	1.25 HP	1.6 HP	2 HP	2.5 HP	3 HP	3.2 HP	4 HP	5 HP	8 HP	10 HP
Capacity Index		20	25	31.25	40	50	62.5	71	80	100	125	200	250
Ceiling Mounted Cassette Type (Round Flow)	FXFQ	—	25P	32P	40P	50P	63P	—	80P	100P	125P	—	—
Ceiling Mounted Cassette Type (Double Flow)	FXCQ	20M	25M	32M	40M	50M	63M	—	80M	—	125M	—	—
Ceiling Mounted Cassette Corner Type	FXKQ	—	25MA	32MA	40MA	—	63MA	—	—	—	—	—	—
Slim Ceiling Mounted Duct Type	FXDQ-PBVE	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—
	FXDQ-PBVET	20PB	25PB	32PB	—	—	—	—	—	—	—	—	—
	FXDQ-NBVE	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—
	FXDQ-NBVET	—	—	—	40NB	50NB	63NB	—	—	—	—	—	—
Ceiling Mounted Built-In Type	FXSQ	20M	25M	32M	40M	50M	63M	—	80M	100M	125M	—	—
Ceiling Mounted Duct Type (Middle and high static pressure)	FXMQ	20P	25P	32P	40P	50P	63P	—	80P	100P	125P	—	—
Ceiling Mounted Duct Type	FXMQ	—	—	—	—	—	—	—	—	—	—	200MA	250MA
Ceiling Suspended Type	FXHQ	—	—	32MA	—	—	63MA	—	—	100MA	—	—	—
Wall Mounted Type	FXAQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—
Floor Standing Type	FXLQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—
Concealed Floor Standing Type	FXNQ	20MA	25MA	32MA	40MA	50MA	63MA	—	—	—	—	—	—
Ceiling Suspended Cassette Type	FXUQ	—	—	—	—	—	—	71MA	—	100MA	125MA	—	—

Note : FXDQ has following 2 series, as show below.

FXDQ-PBVET, NBVET: without Drain Pump (For General, Asia: except for EU, China and Australia)

FXDQ-PBVE, NBVE: with Drain Pump

Part 2

Specifications

1. Specifications	16
1.1 50Hz	16
1.2 60Hz	19
1.3 BS Units	20
1.4 Indoor Units	21

1. Specifications

1.1 50Hz

Model Name (Combination Unit)		Y1	RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1
Model Name (Independent Unit)			—	—	RWEYQ8PY1+RWEYQ8PY1
★1 Cooling Capacity (19.5°CWB)	kcal / h		19,500	23,200	39,000
	Btu / h		77,500	92,100	155,000
	kW		22.7	27.0	45.4
★2 Cooling Capacity (19.0°CWB)	kW		22.4	26.7	44.8
★3 Heating Capacity	kcal / h		21,500	27,100	43,000
	Btu / h		85,300	107,000	171,000
	kW		25.0	31.5	50.0
Casing Color			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	1,000×780×550	1,000×780×550	(1,000×780×550)×2
Heat Exchanger	Type		Stainless Steel Plate Type	Stainless Steel Plate Type	Stainless Steel Plate Type
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Piston Displacement	m ³ /h	14.61	14.61	(14.61)×2
	Number of Revolutions	r.p.m	6,900	6,900	(6,900)×2
	Motor Output×Number of Units	kW	4.0	4.2	(4.0)×2
	Starting Method		Soft start	Soft start	Soft start
Refrigerant Connecting Pipes	Liquid Pipe	mm	φ9.5 (Flare)	φ9.5 (Flare)	φ12.7 (Flare)
	★4 Suction Gas Pipe	mm	φ19.1 (Brazing)	φ22.2 (Brazing)	φ28.6 (Brazing)
	HP/LP gas pipe	mm	★5 φ15.9, ★6 φ19.1 (Brazing)	★5 φ19.1, ★6 φ22.2 (Brazing)	★5 φ22.2, ★6 φ28.6 (Brazing)
Water Connecting Pipes	Water inlet		PT1 1/4B internal thread		
	Water outlet		PT1 1/4B internal thread		
	Drain outlet		PS 1/2B internal thread		
Machine Weight	kg	149	150	149+149	
Safety Devices		High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs	
Capacity Control	%	23~100	23~100	11~100	
Refrigerant	Refrigerant Name		R-410A	R-410A	R-410A
	Charge	kg	3.5	4.2	3.5+3.5
	Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil		Refer to the nameplate of compressor	Refer to the nameplate of compressor	Refer to the nameplate of compressor	
Standard Accessories		Connection Pipes, Clamps, Installation Manual, Operation Manual	Connection Pipes, Clamps, Installation Manual, Operation Manual	Connection Pipes, Clamps, Installation Manual, Operation Manual	
Drawing No.		C : 4D062175	C : 4D062176	C : 4D062177	

Notes:

- ★1 Indoor temp. : 27°CDB, 19.5°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.

★3 Indoor temp. : 20°CDB / inlet water temp.: 20°C / Equivalent piping length: 7.5m, level difference: 0m.

★4 In the case of heat pump system, suction gas pipe is not used.

★5 In the case of heat recovery system.

★6 In the case of heat pump system.
- This unit cannot be installed in the outdoors.
Install indoors (Machine room, etc).
- Hold ambient temperature at 0~40°C and humidity at 80%RH or less
Heat rejection from the casing
: RWEYQ8PY1 / 0.64kW
: RWEYQ10PY1 / 0.71kW

Conversion Formulae

$$\begin{aligned} \text{kcal/h} &= \text{kW} \times 860 \\ \text{Btu/h} &= \text{kW} \times 3412 \\ \text{cfm} &= \text{m}^3/\text{min} \times 35.3 \end{aligned}$$

Model Name (Combination Unit)		Y1	RWEYQ18PY1	RWEYQ20PY1	RWEYQ24PY1
Model Name (Independent Unit)			RWEYQ10PY1+RWEYQ8PY1	RWEYQ10PY1+RWEYQ10PY1	RWEYQ8PY1+RWEYQ8PY1+RWEYQ8PY1
★1 Cooling Capacity (19.5°CWB)	kcal / h		42,700	46,400	58,600
	Btu / h		170,000	184,000	232,000
	kW		49.7	54.0	68.1
★2 Cooling Capacity (19.0°CWB)	kW		49.1	53.4	67.2
★3 Heating Capacity	kcal / h		48,600	54,200	64,500
	Btu / h		193,000	215,000	256,000
	kW		56.5	63.0	75.0
Casing Color			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (HxWxD)		mm	(1,000x780x550)x2	(1,000x780x550)x2	(1,000x780x550)x3
Heat Exchanger	Type		Stainless Steel Plate Type	Stainless Steel Plate Type	Stainless Steel Plate Type
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Piston Displacement	m ³ /h	(14.61)x2	(14.61)x2	(14.61)x3
	Number of Revolutions	r.p.m	(6,900)x2	(6,900)x2	(6,900)x3
	Motor OutputxNumber of Units	kW	4.2+4.0	(4.2)x2	(4.0)x3
	Starting Method		Soft start	Soft start	Soft start
Refrigerant Connecting Pipes	Liquid Pipe	mm	φ15.9 (Flare)	φ15.9 (Flare)	φ15.9 (Flare)
	★4 Suction Gas Pipe	mm	φ28.6 (Brazing)	φ28.6 (Brazing)	φ34.9 (Brazing) ★7
	HP/LP gas pipe	mm	★5 φ22.2, ★6 φ28.6 (Brazing)	★5 φ22.2, ★6 φ28.6 (Brazing)	★5 φ28.6, ★6 φ34.9 (Brazing)
Water Connecting Pipes	Water inlet		PT1 1/4B internal thread		
	Water outlet		PT1 1/4B internal thread		
	Drain outlet		PS 1/2B internal thread		
Machine Weight	kg	150+149	150+150	149+149+149	
Safety Devices			High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs
Capacity Control	%		11~100	11~100	8~100
Refrigerant	Refrigerant Name		R-410A	R-410A	R-410A
	Charge	kg	4.2+3.5	4.2+4.2	3.5+3.5+3.5
	Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Connection Pipes, Clamps, Installation Manual, Operation Manual	Connection Pipes, Clamps, Installation Manual, Operation Manual	Connection Pipes, Clamps, Installation Manual, Operation Manual
Drawing No.			C : 4D062178	C : 4D062179	C : 4D062180

Notes:

- ★1 Indoor temp. : 27°CDB, 19.5°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.
★2 Indoor temp. : 27°CDB, 19.0°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.
★3 Indoor temp. : 20°CDB / inlet water temp.: 20°C / Equivalent piping length: 7.5m, level difference: 0m.
★4 In the case of heat pump system, suction gas pipe is not used.
★5 In the case of heat recovery system.
★6 In the case of heat pump system.
★7 Basically φ31.8, but use φ34.9 for availability of oversea market.
- This unit cannot be installed in the outdoors.
Install indoors (Machine room, etc).
- Hold ambient temperature at 0~40°C and humidity at 80%RH or less
Heat rejection from the casing
: RWEYQ8PY1 / 0.64kW
: RWEYQ10PY1 / 0.71kW

Conversion Formulae
kcal/h=kWx860
Btu/h=kWx3412
cfm=m ³ /minx35.3

Model Name (Combination Unit)		Y1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1
Model Name (Independent Unit)			RWEYQ10PY1+RWEYQ8PY1+RWEYQ8PY1	RWEYQ10PY1+RWEYQ10PY1+RWEYQ8PY1	RWEYQ10PY1+RWEYQ10PY1+RWEYQ10PY1
★1 Cooling Capacity (19.5°CWB)	kcal / h		62,300	66,000	69,700
	Btu / h		247,000	262,000	276,000
	kW		72.4	76.7	81.0
★2 Cooling Capacity (19.0°CWB)	kW		71.5	75.8	80.1
★3 Heating Capacity	kcal / h		70,100	75,700	81,300
	Btu / h		278,000	300,000	322,000
	kW		81.5	88.0	94.5
Casing Color			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (HxWxD)		mm	(1,000x780x550)x3	(1,000x780x550)x3	(1,000x780x550)x3
Heat Exchanger	Type		Stainless Steel Plate Type	Stainless Steel Plate Type	Stainless Steel Plate Type
	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
Comp.	Piston Displacement	m³/h	(14.61)x3	(14.61)x3	(14.61)x3
	Number of Revolutions	r.p.m	(6,900)x3	(6,900)x3	(6,900)x3
	Motor OutputxNumber of Units	kW	4.2+4.0+4.0	4.2+4.2+4.0	(4.2)x3
	Starting Method		Soft start	Soft start	Soft start
Refrigerant Connecting Pipes	Liquid Pipe	mm	φ19.1 (Flare)	φ19.1 (Flare)	φ19.1 (Flare)
	★4 Suction Gas Pipe	mm	φ34.9 (Brazing) ★7	φ34.9 (Brazing) ★7	φ34.9 (Brazing) ★7
	HP/LP gas pipe	mm	★5 φ28.6, ★6 φ34.9 (Brazing)	★5 φ28.6, ★6 φ34.9 (Brazing)	★5 φ28.6, ★6 φ34.9 (Brazing)
Water Connecting Pipes	Water inlet		PT1 1/4B internal thread		
	Water outlet		PT1 1/4B internal thread		
	Drain outlet		PS 1/2B internal thread		
Machine Weight	kg	150+149+149	150+150+149	150+150+150	
Safety Devices		High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs	
Capacity Control	%	8-100	8-100	8-100	
Refrigerant	Refrigerant Name		R-410A	R-410A	R-410A
	Charge	kg	4.2+3.5+3.5	4.2+4.2+3.5	4.2+4.2+4.2
	Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil		Refer to the nameplate of compressor	Refer to the nameplate of compressor	Refer to the nameplate of compressor	
Standard Accessories		Connection Pipes, Clamps, Installation Manual, Operation Manual	Connection Pipes, Clamps, Installation Manual, Operation Manual	Connection Pipes, Clamps, Installation Manual, Operation Manual	
Drawing No.		C : 4D062181	C : 4D062182	C : 4D062183	

Notes:

- ★1 Indoor temp. : 27°CDB, 19.5°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.
 ★2 Indoor temp. : 27°CDB, 19.0°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.
 ★3 Indoor temp. : 20°CDB / inlet water temp.: 20°C / Equivalent piping length: 7.5m, level difference: 0m.
 ★4 In the case of heat pump system, suction gas pipe is not used.
 ★5 In the case of heat recovery system.
 ★6 In the case of heat pump system.
 ★7 Basically φ31.8, but use φ34.9 for availability of oversea market.
- This unit cannot be installed in the outdoors.
 Install indoors (Machine room, etc).
- Hold ambient temperature at 0-40°C and humidity at 80%RH or less
 Heat rejection from the casing
 : RWEYQ8PY1 / 0.64kW
 : RWEYQ10PY1 / 0.71kW

Conversion Formulae
kcal/h=kWx860
Btu/h=kWx3412
cfm=m³/minx35.3

1.2 60Hz

Model Name (Combination Unit)		YL	RWEYQ10PYL	RWEYQ20PYL	RWEYQ30PYL
Model Name (Independent Unit)			—	RWEYQ10PYL+RWEYQ10PYL	RWEYQ10PYL+RWEYQ10PYL+RWEYQ10PYL
Model Name (Combination Unit)		TL	RWEYQ10PTL	RWEYQ20PTL	RWEYQ30PTL
Model Name (Independent Unit)			—	RWEYQ10PTL+RWEYQ10PTL	RWEYQ10PTL+RWEYQ10PTL+RWEYQ10PTL
★1 Cooling Capacity (19.5°CWB)	kcal / h		23,200	46,400	69,700
	Btu / h		92,100	184,000	276,000
	kW		27.0	54.0	81.0
★2 Cooling Capacity (19.0°CWB)	kW		26.7	53.4	80.1
★3 Heating Capacity	kcal / h		27,100	54,200	81,300
	Btu / h		107,000	215,000	322,000
	kW		31.5	63.0	94.5
Casing Color			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	1,000×780×550	(1,000×780×550)×2	(1,000×780×550)×3
Heat Exchanger	Type		Stainless Steel Plate Type	Stainless Steel Plate Type	Stainless Steel Plate Type
Comp.	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Piston Displacement	m ³ /h	14.61	(14.61)×2	(14.61)×3
	Number of Revolutions	r.p.m	6,900	(6,900)×2	(6,900)×3
	Motor Output×Number of Units	kW	4.2	(4.2)×2	(4.2)×3
	Starting Method		Soft start	Soft start	Soft start
Refrigerant Connecting Pipes	Liquid Pipe	mm	φ9.5 (Flare)	φ15.9 (Flare)	φ19.1 (Flare)
	★4 Suction Gas Pipe	mm	φ22.2 (Brazing)	φ28.6 (Brazing)	φ34.9 (Brazing) ★7
	HP/LP gas pipe	mm	★5 φ19.1, ★6 φ22.2 (Brazing)	★5 φ22.2, ★6 φ28.6 (Brazing)	★5 φ28.6, ★6 φ34.9 (Brazing)
Water Connecting Pipes	Water inlet		PT1 1/4B internal thread		
	Water outlet		PT1 1/4B internal thread		
	Drain outlet		PS 1/2B internal thread		
Machine Weight	kg	150	150+150	150+150+150	
Safety Devices			High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs	High Pressure Switch, Inverter Overload Protector, Fusible Plugs
Capacity Control	%		23~100	11~100	8~100
Refrigerant	Refrigerant Name		R-410A	R-410A	R-410A
	Charge	kg	4.2	4.2+4.2	4.2+4.2+4.2
	Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerator Oil			Refer to the nameplate of compressor	Refer to the nameplate of compressor	Refer to the nameplate of compressor
Standard Accessories			Connection Pipes, Clamps, Installation Manual, Operation Manual, Strainer	Connection Pipes, Clamps, Installation Manual, Operation Manual, Strainer	Connection Pipes, Clamps, Installation Manual, Operation Manual, Strainer
Drawing No.			C : 4D062118, 4D062121	C : 4D062119, 4D062122	C : 4D062120, 4D062123

Notes:

- ★1 Indoor temp. : 27°CDB, 19.5°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.

★2 Indoor temp. : 27°CDB, 19.0°CWB / inlet water temp.: 30°C / Equivalent piping length: 7.5m, level difference: 0m.

★3 Indoor temp. : 20°CDB / inlet water temp.: 20°C / Equivalent piping length: 7.5m, level difference: 0m.

★4 In the case of heat pump system, suction gas pipe is not used.

★5 In the case of heat recovery system.

★6 In the case of heat pump system.

★7 Basically φ31.8, but use φ34.9 for availability of oversea market.
- This unit cannot be installed in the outdoors.
Install indoors (Machine room, etc).
- Hold ambient temperature at 0~40°C and humidity at 80%RH or less
Heat rejection from the casing
: RWEYQ10PTL, PYL / 0.71kW

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

1.3 BS Units

Model		BSVQ100PV1		BSVQ160PV1		BSVQ250PV1	
Power Supply		1 Phase 50Hz 200-240V		1 Phase 50Hz 200-240V		1 Phase 50Hz 200-240V	
Total Capacity Index of Indoor Unit		20 to 100		More than 100 but 160 or less		More than 160 but 250 or less	
No. of Connectable Indoor Units		Max. 5		Max. 8		Max. 8	
Casing		Galvanized steel plate		Galvanized steel plate		Galvanized steel plate	
Dimensions: (HxWxD)		mm		207x388x326		207x388x326	
Sound Absorbing Thermal Insulation Material		Foamed polyurethane, Flame resistant needle felt		Foamed polyurethane, Flame resistant needle felt		Foamed polyurethane, Flame resistant needle felt	
Piping Connection	Indoor Unit	Liquid Pipes	9.5mm C1220T (brazing connection) ★1	9.5mm C1220T (brazing connection)	9.5mm C1220T (brazing connection)	9.5mm C1220T (brazing connection)	
		Gas Pipes	15.9mm C1220T (brazing connection) ★1	15.9mm C1220T (brazing connection) ★2	22.2mm C1220T (brazing connection) ★3	22.2mm C1220T (brazing connection) ★3	
	Outdoor Unit	Liquid Pipes	9.5mm C1220T (brazing connection)	9.5mm C1220T (brazing connection)	9.5mm C1220T (brazing connection)	9.5mm C1220T (brazing connection)	
		Suction Gas Pipes	15.9mm C1220T (brazing connection)	15.9mm C1220T (brazing connection) ★2	22.2mm C1220T (brazing connection) ★3	22.2mm C1220T (brazing connection) ★3	
		HP/LP Gas Pipes	12.7mm C1220T (brazing connection)	12.7mm C1220T (brazing connection) ★2	19.1mm C1220T (brazing connection) ★3	19.1mm C1220T (brazing connection) ★3	
Weight		kg		14		15	
Standard Accessories		Installation manual, Attached pipe Insulation pipe cover, Clamps		Installation manual, Attached pipe Insulation pipe cover, Clamps		Installation manual, Attached pipe Insulation pipe cover, Clamps	
Drawing No.		C: 4D057926		C: 4D057927		C: 4D057928	

- Notes:**
- ★1 When connecting with a 20 to 50 class indoor unit, connect to the attached pipe to the field pipe. (Braise the connection between the attached and field pipe.)
 - ★2 When connecting with an indoor unit of 150 or more and 160 or less, connect to the attached pipe to the field pipe. (Braise the connection between the attached and field pipe.)
 - ★3 When connecting with a 200 class, or more than 160 and less than 200 class indoor unit, connect to the attached pipe to the field pipe. (Braise the connection between the attached and field pipe.)

Model		BSVQ36PVJU		BSVQ60PVJU	
Power Supply		1 Phase 60Hz 208-230V		1 Phase 60Hz 208-230V	
Total Capacity Index of Connectable Indoor Unit		Less than 36		Less than 60	
No. of Connectable Indoor Units		Max. 5		Max. 8	
Casing		Galvanized Steel Plate		Galvanized Steel Plate	
Dimensions: (HxWxD)		in		8-1/8 x 15-1/4 x 12-13/16	
Sound Absorbing Thermal Insulation Material		Foamed Polyurethane, Frame Resisting Needle Felt		Foamed Polyurethane, Frame Resisting Needle Felt	
Piping Connection	Indoor Unit	Liquid Pipes	φ 3/8 C1220T (Brazing Connection) ★1	φ 3/8 C1220T (Brazing Connection)	φ 3/8 C1220T (Brazing Connection)
		Gas Pipes	φ 5/8 C1220T (Brazing Connection) ★1	φ 5/8 C1220T (Brazing Connection) ★2	φ 5/8 C1220T (Brazing Connection) ★2
	Outdoor Unit	Liquid Pipes	φ 3/8 C1220T (Brazing Connection)	φ 3/8 C1220T (Brazing Connection)	φ 3/8 C1220T (Brazing Connection)
		Suction Gas Pipes	φ 5/8 C1220T (Brazing Connection)	φ 5/8 C1220T (Brazing Connection) ★2	φ 5/8 C1220T (Brazing Connection) ★2
		Discharge Gas Pipes	φ 1/2 C1220T (Brazing Connection)	φ 1/2 C1220T (Brazing Connection) ★2	φ 1/2 C1220T (Brazing Connection) ★2
Mass		Lbs		26	
Standard Accessories		Installation Manual, Attached Pipe, Insulation Pipe Cover, Clamps		Installation Manual, Attached Pipe, Insulation Pipe Cover, Clamps	
Drawing No.		4D058233A		4D058234A	

- Notes:**
- ★1 In case of connecting with a 07-18 type indoor unit, match to the size of field pipe using the attached pipe. (Connection between the attached pipe and the field pipe must be brazed.)
 - ★2 In case of connecting with indoor unit capacity index 54 or more and 60 or less, match to the size of the field pipe using the attached pipe. (Connection between the attached pipe and the field pipe must be brazed.)

1.4 Indoor Units

Ceiling Mounted Cassette (Round Flow) Type

Model		FXFQ25PVE	FXFQ32PVE	FXFQ40PVE	FXFQ50PVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	2,500	3,200	4,000	5,000	
	Btu/h	9,900	12,600	16,000	19,800	
	kW	2.9	3.7	4.7	5.8	
*2 Cooling Capacity (19.0°CWB)	kW	2.8	3.6	4.5	5.6	
*3 Heating Capacity	kcal/h	2,800	3,400	4,300	5,400	
	Btu/h	10,900	13,600	17,100	21,500	
	kW	3.2	4.0	5.0	6.3	
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)		mm	246×840×840	246×840×840	246×840×840	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	2×6×1.2	2×6×1.2	2×6×1.2	
	Face Area	m ²	0.267	0.267	0.267	
Fan	Model		QTS48C15M	QTS48C15M	QTS48C15M	QTS48C15M
	Type		Turbo Fan	Turbo Fan	Turbo Fan	Turbo Fan
	Motor Output × Number of Units	W	56×1	56×1	56×1	56×1
	Air Flow Rate (HH/H/L)	m ³ /min	13/11.5/10	13/11.5/10	15/13/11	16/13.5/11
		cfm	459/406/353	459/406/353	530/459/388	565/477/388
Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material		Polyurethane Form	Polyurethane Form	Polyurethane Form	Polyurethane Form	
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)			
Mass (Weight)		kg	19.5	19.5	19.5	19.5
*5 Sound Level (HH/H/L) (220-240V)		dBA	30/28.5/27	30/28.5/27	31/29/27	32/29.5/27
Safety Devices			Fuse	Fuse	Fuse	Fuse
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Connectable Outdoor Unit			R-410A VRV P(A) Series			
Decoration Panels (Option)	Model		BYCP125K-W1	BYCP125K-W1	BYCP125K-W1	BYCP125K-W1
	Panel Color		Fresh White	Fresh White	Fresh White	Fresh White
	Dimensions: (H×W×D)	mm	50×950×950	50×950×950	50×950×950	50×950×950
	Air Filter		Resin Net (with Mold Resistant)			
	Weight	kg	5.5	5.5	5.5	5.5
Standard Accessories			Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.
Drawing No.			C : 3D060255			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit centre. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

$$\begin{aligned} \text{kcal/h} &= \text{kW} \times 860 \\ \text{Btu/h} &= \text{kW} \times 3412 \\ \text{cfm} &= \text{m}^3/\text{min} \times 35.3 \end{aligned}$$

Ceiling Mounted Cassette (Round Flow) Type

Model		FXFQ63PVE	FXFQ80PVE	FXFQ100PVE	FXFQ125PVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	6,300	8,000	10,000	12,500	
	Btu/h	24,900	31,700	39,600	49,500	
	kW	7.3	9.3	11.6	14.5	
*2 Cooling Capacity (19.0°CWB)	kW	7.1	9.0	11.2	14.0	
*3 Heating Capacity	kcal/h	6,900	8,600	10,800	13,800	
	Btu/h	27,300	34,100	42,700	54,600	
	kW	8.0	10.0	12.5	16.0	
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (HxWxD)		mm 246x840x840	246x840x840	288x840x840	288x840x840	
Coil (Cross Fin Coil)	RowsxStagesxFin Pitch	mm 2x10x1.2	2x10x1.2	2x12x1.2	2x12x1.2	
	Face Area	m ² 0.446	0.446	0.535	0.535	
Fan	Model	QTS48C15M	QTS48C15M	QTS48C15M	QTS48C15M	
	Type	Turbo Fan	Turbo Fan	Turbo Fan	Turbo Fan	
	Motor Output x Number of Units	W 56x1	56x1	120x1	120x1	
	Air Flow Rate (HH/H/L)	m ³ /min	19/16.5/13.5	21/18/15	32/26/20	33/28/22.5
		cfm	671/583/477	742/636/530	1,130/918/706	1,165/989/794
Drive	Direct Drive	Direct Drive	Direct Drive	Direct Drive		
Temperature Control		Microprocessor Thermostat for Cooling and Heating				
Sound Absorbing Thermal Insulation Material		Polyurethane Form	Polyurethane Form	Polyurethane Form	Polyurethane Form	
Piping Connections	Liquid Pipes	mm φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	
	Gas Pipes	mm φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	
	Drain Pipe	mm VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	
Mass (Weight)	kg	22	22	25	25	
*5 Sound Level (HH/H/L) (220-240V)	dBA	34/31/28	36/33.5/31	43/37.5/32	44/39/34	
Safety Devices		Fuse	Fuse	Fuse	Fuse	
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A VRV P(A) Series				
Decoration Panels (Option)	Model	BYCP125K-W1	BYCP125K-W1	BYCP125K-W1	BYCP125K-W1	
	Panel Color	Fresh White	Fresh White	Fresh White	Fresh White	
	Dimensions: (HxWxD)	mm 50x950x950	50x950x950	50x950x950	50x950x950	
	Air Filter	Resin Net (with Mold Resistant)				
	Weight	kg 5.5	5.5	5.5	5.5	
Standard Accessories		Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Washer Fixing Plate. Sealing Pads. Clamps. Screws. Washer for Hanging Bracket. Insulation for Fitting. Installation Guide.	
Drawing No.		C : 3D060255				

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit centre. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kWx860
Btu/h=kWx3412
cfm=m ³ /minx35.3

Ceiling Mounted Cassette Type (Double-Flow)

Model		FXCQ20MVE	FXCQ25MVE	FXCQ32MVE	FXCQ40MVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	2,000	2,500	3,200	4,000	
	Btu/h	7,800	9,900	12,600	16,000	
	kW	2.3	2.9	3.7	4.7	
*2 Cooling Capacity (19.0°CWB)	kW	2.2	2.8	3.6	4.5	
*3 Heating Capacity	kcal/h	2,200	2,800	3,400	4,300	
	Btu/h	8,500	10,900	13,600	17,100	
	kW	2.5	3.2	4.0	5.0	
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)		mm	305×775×600	305×775×600	305×775×600	305×990×600
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	2×10×1.5	2×10×1.5	2×10×1.5	2×10×1.5
	Face Area	m ²	2×0.100	2×0.100	2×0.100	2×0.145
Fan	Model		D17K2AA1	D17K2AB1	D17K2AB1	2D17K1AA1
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	10×1	15×1	15×1	20×1
	Air Flow Rate (H/L)	m ³ /min	7/5	9/6.5	9/6.5	12/9
		cfm	247/177	318/230	318/230	424/318
Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating				
Sound Absorbing Thermal Insulation Material		Glass Wool/Urethane Foam	Glass Wool/Urethane Foam	Glass Wool/Urethane Foam	Glass Wool/Urethane Foam	
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)
Machine Weight (Mass)		kg	26	26	26	31
*5 Sound Level (H/L) (220V)		dBA	32/27	34/28	34/28	34/29
Safety Devices		Fuse. Thermal Protector for Fan Motor.				
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Decoration Panels (Option)	Model		BYBC32G-W1	BYBC32G-W1	BYBC32G-W1	BYBC50G-W1
	Panel Color		White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)
	Dimensions: (H×W×D)	mm	53×1,030×680	53×1,030×680	53×1,030×680	53×1,245×680
	Air Filter		Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)
	Weight	kg	8	8	8	8.5
Standard Accessories		Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	
Drawing No.		C : 3D039413				

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit center. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

kcal/h=kW×860
Btu/h=kW×3412
cfm=m³/min×35.3

Ceiling Mounted Cassette Type (Double-Flow)

Model		FXCQ50MVE	FXCQ63MVE	FXCQ80MVE	FXCQ125MVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	5,000	6,300	8,000	12,500	
	Btu/h	19,800	24,900	31,700	49,500	
	kW	5.8	7.3	9.3	14.5	
*2 Cooling Capacity (19.0°CWB)	kW	5.6	7.1	9.0	14.0	
*3 Heating Capacity	kcal/h	5,400	6,900	8,600	13,800	
	Btu/h	21,500	27,300	34,100	54,600	
	kW	6.3	8.0	10.0	16.0	
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)		mm	305×990×600	305×1,175×600	305×1,665×600	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	2×10×1.5	2×10×1.5	2×10×1.5	
	Face Area	m ²	2×0.145	2×0.184	2×0.287	
Fan	Model		2D17K1AA1	2D17K2AA1VE	3D17K2AA1	3D17K2AB1
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	20×1	30×1	50×1	85×1
	Air Flow Rate (H/L)	m ³ /min	12/9	16.5/13	26/21	33/25
		cfm	424/318	582/459	918/741	1,165/883
Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating				
Sound Absorbing Thermal Insulation Material		Glass Wool/Urethane Foam	Glass Wool/Urethane Foam	Glass Wool/Urethane Foam	Glass Wool/Urethane Foam	
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)
Machine Weight (Mass)		kg	32	35	47	48
*5 Sound Level (H/L) (220V)		dBA	34/29	37/32	39/34	44/38
Safety Devices		Fuse. Thermal Protector for Fan Motor.				
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Decoration Panels (Option)	Model		BYBC50G-W1	BYBC63G-W1	BYBC125G-W1	BYBC125G-W1
	Panel Color		White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)
	Dimensions: (H×W×D)	mm	53×1,245×680	53×1,430×680	53×1,920×680	53×1,920×680
	Air Filter		Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)
	Weight	kg	8.5	9.5	12	12
Standard Accessories		Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Washer for Hanging Brackets. Clamp Metal. Drain Hose. Insulation for Fitting. Washer Fixing Plates. Sealing Pads. Clamps. Screws. Washers.	
Drawing No.		C : 3D039413				

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit center. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Ceiling Mounted Cassette Corner Type

Model		FXXQ25MAVE	FXXQ32MAVE	FXXQ40MAVE	FXXQ63MAVE		
*1 Cooling Capacity (19.5°CWB)	kcal/h	2,500	3,200	4,000	6,300		
	Btu/h	9,900	12,600	16,000	24,900		
	kW	2.9	3.7	4.7	7.3		
*2 Cooling Capacity (19.0°CWB)	kW	2.8	3.6	4.5	7.1		
*3 Heating Capacity	kcal/h	2,800	3,400	4,300	6,900		
	Btu/h	10,900	13,600	17,100	27,300		
	kW	3.2	4.0	5.0	8.0		
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate		
Dimensions: (HxWxD)		mm	215x1,110x710	215x1,110x710	215x1,110x710		
Coil (Cross Fin Coil)	RowsxStagesxFin Pitch	mm	2x11x1.75	2x11x1.75	3x11x1.75		
	Face Area	m ²	0.180	0.180	0.226		
Fan	Model		3D12H1AN1V1	3D12H1AN1V1	3D12H1AP1V1	4D12H1AJ1V1	
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	Sirocco Fan	
	Motor Output × Number of Units		W	15×1	15×1	20×1	45×1
	Air Flow Rate (H/L)	50 Hz	m ³ /min	11/9	11/9	13/10	18/15
			cfm	388/318	388/318	459/353	635/530
		60 Hz	m ³ /min	11/8.5	11/8.5	13/10	18/13
			cfm	388/300	388/300	459/353	635/459
Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive		
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating		
Sound Absorbing Thermal Insulation Material		Polyethylene Foam	Polyethylene Foam	Polyethylene Foam	Polyethylene Foam		
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ9.5 (Flare Connection)	
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ15.9 (Flare Connection)	
	Drain Pipe	mm	VP25 (External Dia. 32) (Internal Dia. 25)	VP25 (External Dia. 32) (Internal Dia. 25)	VP25 (External Dia. 32) (Internal Dia. 25)	VP25 (External Dia. 32) (Internal Dia. 25)	
Machine Weight (Mass)		kg	31	31	31	34	
*5 Sound Level (H/L) (220V)		dBA	38/33	38/33	40/34	42/37	
Safety Devices		Fuse. Thermal Fuse for Fan Motor.	Fuse. Thermal Fuse for Fan Motor.	Fuse. Thermal Fuse for Fan Motor.	Fuse. Thermal Fuse for Fan Motor.		
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve		
Connectable Outdoor Units		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series		
Decoration Panels (Option)	Model		BYK45FJW1	BYK45FJW1	BYK45FJW1	BYK71FJW1	
	Panel Color		White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	
	Dimensions: (HxWxD)		mm	70x1,240x800	70x1,240x800	70x1,240x800	
	Air Filter		Resin Net (with Mold Resistant)				
	Weight		kg	8.5	8.5	8.5	9.5
Standard Accessories		Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers. Positioning Jig for Installation. Insulation for Hanger Bracket. Air Outlet Blocking Pad.					
Drawing No.		C : 3D038813A					

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1 m in front of the unit and 1m downward. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Slim Ceiling Mounted Duct Type (VE: with Drain Pump, VET without Drain Pump)

Model		FXDQ20PBVE (T)	FXDQ25PBVE (T)	FXDQ32PBVE (T)
★1 Cooling Capacity (19.5°CWB)	kcal/h	2,000	2,500	3,200
	Btu/h	7,800	9,900	12,600
	kW	2.3	2.9	3.7
★2 Cooling Capacity (19.0°CWB)	kW	2.2	2.8	3.6
★3 Heating Capacity	kcal/h	2,200	2,800	3,400
	Btu/h	8,500	10,900	13,600
	kW	2.5	3.2	4.0
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)		mm 200×700×620	200×700×620	200×700×620
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 2×12×1.5	2×12×1.5	3×12×1.5
	Face Area	m ² 0.126	0.126	0.126
Fan	Model		—	—
	Type		Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	62×1	62×1
	Air Flow Rate (HH/H/L)	m ³ /min	8.0/7.2/6.4	8.0/7.2/6.4
	★5 External Static Pressure	Pa	30-10	30-10
	Drive		Direct Drive	Direct Drive
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material		Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
Air Filter		Removal / Washable / Mildew Proof	Removal / Washable / Mildew Proof	Removal / Washable / Mildew Proof
Piping Connections	Liquid Pipes	mm φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)
	Gas Pipes	mm φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)
	Drain Pipe	mm VP20 (External Dia. 26 Internal Dia. 20)	VP20 (External Dia. 26 Internal Dia. 20)	VP20 (External Dia. 26 Internal Dia. 20)
Machine Weight (Mass)		kg 23	23	23
★6 Sound Pressure Level (HH/H/L)		dBA 33/31/29	33/31/29	33/31/29
Safety Devices		Fuse, Thermal Protector for Fan Motor	Fuse, Thermal Protector for Fan Motor	Fuse, Thermal Protector for Fan Motor
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Standard Accessories		Operation Manual, Installation Manual, Drain Hose, Sealing Pads, Clamps, Washers, Insulation for Fitting, Clamp Metal, Washer Fixing Plate, Screws for Duct Flanges, Air Filter, (Product Quality Certificate ★7)	Operation Manual, Installation Manual, Drain Hose, Sealing Pads, Clamps, Washers, Insulation for Fitting, Clamp Metal, Washer Fixing Plate, Screws for Duct Flanges, Air Filter, (Product Quality Certificate ★7)	Operation Manual, Installation Manual, Drain Hose, Sealing Pads, Clamps, Washers, Insulation for Fitting, Clamp Metal, Washer Fixing Plate, Screws for Duct Flanges, Air Filter, (Product Quality Certificate ★7)
Drawing No.		3D060921A		

Notes:

- ★1 Indoor temp.: 27°CDB, 19.5°CWB / outdoor temp.: 35°CDB / Equivalent piping length: 7.5m, level difference: 0m.
- ★2 Indoor temp.: 27°CDB, 19.0°CWB / outdoor temp.: 35°CDB / Equivalent piping length: 7.5m, level difference: 0m.
- ★3 Indoor temp.: 20°CDB / outdoor temp.: 7°CDB, 6°CWB / Equivalent piping length: 7.5m, level difference: 0m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- ★5 External static pressure is changeable to set by the remote controller. This pressure means "High static pressure - Standard static pressure". (Factory setting is 10 Pa.)
- ★6 The operation sound levels are the conversion values in anechoic chamber. In practice, the sound tend to be larger than the specified values due to ambient noise or reflections.
When the place of suction is changed to the bottom suction, the sound level will increase by approx. 5dBA.
- ★7 FXDQ20 / 25 / 32PBVE only.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Slim Ceiling Mounted Duct Type (VE: with Drain Pump, VET without Drain Pump)

Model		FXDQ40NBVE(T)	FXDQ50NBVE(T)	FXDQ63NBVE(T)
★1 Cooling Capacity (19.5°CWB)	kcal/h	4,000	5,000	6,300
	Btu/h	16,000	19,800	24,900
	kW	4.7	5.8	7.3
★2 Cooling Capacity (19.0°CWB)	kW	4.5	5.6	7.1
★3 Heating Capacity	kcal/h	4,300	5,400	6,900
	Btu/h	17,100	21,500	27,300
	kW	5.0	6.3	8.0
Casing Color		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)		mm 200×900×620	200×900×620	200×1100×620
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 3×12×1.5	3×12×1.5	3×12×1.5
	Face Area	m ² 0.176	0.176	0.227
Fan	Model		—	—
	Type		Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	62×1	130×1
	Air Flow Rate (HH/H/L)	m ³ /min	10.5/9.5/8.5	12.5/11.0/10.0
	★5 External Static Pressure	Pa	44-15	44-15
	Drive		Direct Drive	Direct Drive
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material		Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
Air Filter		Removal / Washable / Mildew Proof	Removal / Washable / Mildew Proof	Removal / Washable / Mildew Proof
Piping Connections	Liquid Pipes	mm φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ9.5 (Flare Connection)
	Gas Pipes	mm φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ15.9 (Flare Connection)
	Drain Pipe	mm VP20 (External Dia. 26 Internal Dia. 20)	VP20 (External Dia. 26 Internal Dia. 20)	VP20 (External Dia. 26 Internal Dia. 20)
Machine Weight (Mass)		kg 27	28	31
★6 Sound Pressure Level (HH/H/L)		dBA 34/32/30	35/33/31	36/34/32
Safety Devices		Fuse, Thermal Protector for Fan Motor	Fuse, Thermal Protector for Fan Motor	Fuse, Thermal Protector for Fan Motor
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Standard Accessories		Operation Manual, Installation Manual, Drain Hose, Sealing Pads, Clamps, Washers, Insulation for Fitting, Clamp Metal, Washer Fixing Plate, Screws for Duct Flanges, Air Filter, (Product Quality Certificate ★7)	Operation Manual, Installation Manual, Drain Hose, Sealing Pads, Clamps, Washers, Insulation for Fitting, Clamp Metal, Washer Fixing Plate, Screws for Duct Flanges, Air Filter, (Product Quality Certificate ★7)	Operation Manual, Installation Manual, Drain Hose, Sealing Pads, Clamps, Washers, Insulation for Fitting, Clamp Metal, Washer Fixing Plate, Screws for Duct Flanges, Air Filter, (Product Quality Certificate ★7)
Drawing No.		3D060921A		

Notes:

- ★1 Indoor temp.: 27°CDB, 19.5°CWB / outdoor temp.: 35°CDB / Equivalent piping length: 7.5m, level difference: 0m.
- ★2 Indoor temp.: 27°CDB, 19.0°CWB / outdoor temp.: 35°CDB / Equivalent piping length: 7.5m, level difference: 0m.
- ★3 Indoor temp.: 20°CDB / outdoor temp.: 7°CDB, 6°CWB / Equivalent piping length: 7.5m, level difference: 0m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- ★5 External static pressure is changeable to set by the remote controller. This pressure means "High static pressure - Standard static pressure". (Factory setting is 15 Pa.)
- ★6 The operation sound levels are the conversion values in anechoic chamber. In practice, the sound tend to be larger than the specified values due to ambient noise or reflections.
When the place of suction is changed to the bottom suction, the sound level will increase by approx. 5dBA.
- ★7 FXDQ40 / 50 / 63NBVE only.

Conversion Formulae

kcal/h=kW×860
Btu/h=kW×3412
cfm=m³/min×35.3

Ceiling Mounted Built-In Type

Model			FXSQ20MVE	FXSQ25MVE	FXSQ32MVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h		2,000	2,500	3,200	
	Btu/h		7,800	9,900	12,600	
	kW		2.3	2.9	3.7	
*2 Cooling Capacity (19.0°CWB)	kW		2.2	2.8	3.6	
*3 Heating Capacity	kcal/h		2,200	2,800	3,400	
	Btu/h		8,500	10,900	13,600	
	kW		2.5	3.2	4.0	
Casing			Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)			mm 300×550×800	300×550×800	300×550×800	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×14×1.75	3×14×1.75	3×14×1.75	
	Face Area	m ²	0.088	0.088	0.088	
Fan	Model		D18H3A	D18H3A	D18H3A	
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	
	Motor Output × Number of Units		W 50×1	50×1	50×1	
	Air Flow Rate (H/L)	50 Hz	m ³ /min	9/6.5	9/6.5	9.5/7
			cfm	318/230	318/230	335/247
		60 Hz	m ³ /min	9/6.5	9/6.5	9.5/6.5
			cfm	318/230	318/230	335/230
	*4 External Static Pressure	50 Hz	Pa	88-39-20	88-39-20	64-39-15
		60 Hz	Pa	73-24-10	73-24-10	86-42-10
Drive			Direct Drive	Direct Drive	Direct Drive	
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material			Glass Fiber	Glass Fiber	Glass Fiber	
Air Filter			Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	
Machine Weight (Mass)			kg 30	30	30	
*6 Sound Level (H/L) (220V)			dBA 37/32	37/32	38/32	
Safety Devices			Fuse, Thermal Protector for Fan Motor.	Fuse, Thermal Protector for Fan Motor.	Fuse, Thermal Protector for Fan Motor.	
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Decoration Panel (Option)	Model		BYBS32DJW1	BYBS32DJW1	BYBS32DJW1	
	Panel Color		White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	
	Dimensions: (H×W×D)	mm	55×650×500	55×650×500	55×650×500	
	Weight	kg	3	3	3	
Standard Accessories			Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.	
Drawing No.			C : 3D039431			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable to change over the connectors inside electrical box, this pressure means "High static pressure-Standard -Low static pressure".
- *5 Capacities are net, including a deduction for cooling (an additional for heating) for indoor fan motor heat.
- *6 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit center. These values are normally somewhat higher during actual operation as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Ceiling Mounted Built-In Type

Model		FXSQ40MVE		FXSQ50MVE		FXSQ63MVE				
*1 Cooling Capacity (19.5°CWB)		kcal/h		4,000		5,000		6,300		
		Btu/h		16,000		19,800		24,900		
		kW		4.7		5.8		7.3		
*2 Cooling Capacity (19.0°CWB)		kW		4.5		5.6		7.1		
*3 Heating Capacity		kcal/h		4,300		5,400		6,900		
		Btu/h		17,100		21,500		27,300		
		kW		5.0		6.3		8.0		
Casing				Galvanized Steel Plate		Galvanized Steel Plate		Galvanized Steel Plate		
Dimensions: (H×W×D)		mm		300×700×800		300×700×800		300×1,000×800		
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm		3×14×1.75		3×14×1.75		3×14×1.75		
	Face Area	m ²		0.132		0.132		0.221		
Fan	Model		D18H2A		D18H2A		2D18H2A			
	Type		Sirocco Fan		Sirocco Fan		Sirocco Fan			
	Motor Output × Number of Units		W		65×1		85×1		125×1	
	Air Flow Rate (H/L)	50 Hz	m ³ /min	11.5/9		15/11		21/15.5		
			cfm	406/318		530/388		741/547		
		60 Hz	m ³ /min	11.5/9		15/11		21/14		
			cfm	406/318		530/388		741/494		
	*4 External Static Pressure	50 Hz	Pa	88-49-20		88-59-29		88-49-20		
		60 Hz	Pa	88-29-10		88-41-10		122-66-10		
Drive				Direct Drive		Direct Drive		Direct Drive		
Temperature Control				Microprocessor Thermostat for Cooling and Heating		Microprocessor Thermostat for Cooling and Heating		Microprocessor Thermostat for Cooling and Heating		
Sound Absorbing Thermal Insulation Material				Glass Fiber		Glass Fiber		Glass Fiber		
Air Filter				Resin Net (with Mold Resistant)		Resin Net (with Mold Resistant)		Resin Net (with Mold Resistant)		
Piping Connections	Liquid Pipes	mm		φ6.4 (Flare Connection)		φ6.4 (Flare Connection)		φ9.5 (Flare Connection)		
	Gas Pipes	mm		φ12.7 (Flare Connection)		φ12.7 (Flare Connection)		φ15.9 (Flare Connection)		
	Drain Pipe	mm		VP25 (External Dia. 32 Internal Dia. 25)		VP25 (External Dia. 32 Internal Dia. 25)		VP25 (External Dia. 32 Internal Dia. 25)		
Machine Weight (Mass)		kg		30		31		41		
*6 Sound Level (H/L) (220V)		dBA		38/32		41/36		42/35		
Safety Devices				Fuse. Thermal Protector for Fan Motor.		Fuse. Thermal Protector for Fan Motor.		Fuse. Thermal Protector for Fan Motor.		
Refrigerant Control				Electronic Expansion Valve		Electronic Expansion Valve		Electronic Expansion Valve		
Connectable Outdoor Unit				R-410A P(A) Series		R-410A P(A) Series		R-410A P(A) Series		
Decoration Panel (Option)	Model		BYBS45DJW1		BYBS45DJW1		BYBS71DJW1			
	Panel Color		White (10Y9/0.5)		White (10Y9/0.5)		White (10Y9/0.5)			
	Dimensions: (H×W×D)		mm		55×800×500		55×800×500		55×1,100×500	
	Weight		kg		3.5		3.5		4.5	
Standard Accessories				Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.		Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.		Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.		
Drawing No.						C : 3D039431				

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable to change over the connectors inside electrical box, this pressure means "High static pressure-Standard -Low static pressure".
- *5 Capacities are net, including a deduction for cooling (an additional for heating) for indoor fan motor heat.
- *6 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit center. These values are normally somewhat higher during actual operation as a result of ambient conditions.

Conversion Formulae

$$\begin{aligned} \text{kcal/h} &= \text{kW} \times 860 \\ \text{Btu/h} &= \text{kW} \times 3412 \\ \text{cfm} &= \text{m}^3/\text{min} \times 35.3 \end{aligned}$$

Ceiling Mounted Built-In Type

Model			FXSQ80MVE	FXSQ100MVE	FXSQ125MVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h		8,000	10,000	12,500	
	Btu/h		31,700	39,600	49,500	
	kW		9.3	11.6	14.5	
*2 Cooling Capacity (19.0°CWB)	kW		9.0	11.2	14.0	
*3 Heating Capacity	kcal/h		8,600	10,800	13,800	
	Btu/h		34,100	42,700	54,600	
	kW		10.0	12.5	16.0	
Casing			Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)			mm 300×1,400×800	300×1,400×800	300×1,400×800	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×14×1.75	3×14×1.75	3×14×1.75	
	Face Area	m ²	0.338	0.338	0.338	
Fan	Model		3D18H2A	3D18H2A	3D18H2A	
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	
	Motor Output × Number of Units		W 225×1	225×1	225×1	
	Air Flow Rate (H/L)	50 Hz	m ³ /min	27/21.5	28/22	38/28
			cfm	953/759	988/777	1,341/988
		60 Hz	m ³ /min	27/20.5	28/21	38/27
			cfm	953/724	988/741	1,341/953
	*4 External Static Pressure	50 Hz	Pa	113-82	107-75	78-39
		60 Hz	Pa	147-92	136-83	78-20
	Drive			Direct Drive	Direct Drive	Direct Drive
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material			Glass Fiber	Glass Fiber	Glass Fiber	
Air Filter			Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	
Piping Connections	Liquid Pipes	mm	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	
	Gas Pipes	mm	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	
Machine Weight (Mass)			kg 51	51	52	
*6 Sound Level (H/L) (220V)			dBA 43/37	43/37	46/41	
Safety Devices			Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Decoration Panel (Option)	Model		BYBS125DJW1	BYBS125DJW1	BYBS125DJW1	
	Panel Color		White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	
	Dimensions: (H×W×D)	mm	55×1,500×500	55×1,500×500	55×1,500×500	
	Weight	kg	6.5	6.5	6.5	
Standard Accessories			Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Screws. Washers.	
Drawing No.			C : 3D039431			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable to change over the connectors inside electrical box, this pressure means "High static pressure-Standard".
- *5 Capacities are net, including a deduction for cooling (an additional for heating) for indoor fan motor heat.
- *6 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit center. These values are normally somewhat higher during actual operation as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Ceiling Mounted Duct Type

Model			FXMQ20PVE	FXMQ25PVE	FXMQ32PVE
*1 Cooling Capacity (19.5°CWB)		kcal/h	2,000	2,500	3,200
		Btu/h	7,800	9,900	12,600
		kW	2.3	2.9	3.7
*2 Cooling Capacity (19.0°CWB)		kW	2.2	2.8	3.6
*3 Heating Capacity		kcal/h	2,200	2,800	3,400
		Btu/h	8,500	10,900	13,600
		kW	2.5	3.2	4.0
Casing			Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)		mm	300×550×700	300×550×700	300×550×700
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×16×1.75	3×16×1.75	3×16×1.75
	Face Area	m ²	0.098	0.098	0.098
Fan	Model		—	—	—
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	90×1	90×1	90×1
	Air Flow Rate (HH/H/L)	m ³ /min	9/7.5/6.5	9/7.5/6.5	9.5/8/7
		cfm	318/265/230	318/265/230	335/282/247
	External Static Pressure	Pa	Standard 50 (100-30 *4)	Standard 50 (100-30 *4)	Standard 50 (100-30 *4)
Drive			Direct Drive	Direct Drive	Direct Drive
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Air Filter			*5	*5	*5
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)
Mass (Weight)		kg	25	25	25
*7 Sound Level (HH/H/L)	dBA	220V	33/31/29	33/31/29	34/32/30
		240V	33/31/29	33/31/29	34/32/30
Safety Devices			Fuse. Fan Driver Overload Protector.	Fuse. Fan Driver Overload Protector.	Fuse. Fan Driver Overload Protector.
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series
Standard Accessories			Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.
Drawing No.			C : 3D060388A		

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable in 13 or 14 stages within the () range by remote controller.
- *5 Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.
- *6 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *7 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit centre. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Ceiling Mounted Duct Type

Model		FXMQ40PVE	FXMQ50PVE	FXMQ63PVE	FXMQ80PVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	4,000	5,000	6,300	8,000	
	Btu/h	16,000	19,800	24,900	31,700	
	kW	4.7	5.8	7.3	9.3	
*2 Cooling Capacity (19.0°CWB)	kW	4.5	5.6	7.1	9.0	
*3 Heating Capacity	kcal/h	4,300	5,400	6,900	8,600	
	Btu/h	17,100	21,500	27,300	34,100	
	kW	5.0	6.3	8.0	10.0	
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)		mm 300×700×700	300×1,000×700	300×1,000×700	300×1,000×700	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 3×16×1.75	3×16×1.75	3×16×1.75	3×16×1.75	
	Face Area	m ² 0.148	0.249	0.249	0.249	
Fan	Model		—	—	—	
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan	
	Motor Output × Number of Units	W	140×1	350×1	350×1	
	Air Flow Rate (HH/H/L)	m ³ /min	16/13/11	18/16.5/15	19.5/17.5/16	25/22.5/20
		cfm	565/459/388	635/582/530	688/618/565	883/794/706
	External Static Pressure	Pa	Standard 100 (160-30 *4)	Standard 100 (200-50 *4)	Standard 100 (200-50 *4)	Standard 100 (200-50 *4)
Drive		Direct Drive	Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating				
Air Filter		*5	*5	*5	*5	
Piping Connections	Liquid Pipes	mm φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	
	Gas Pipes	mm φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	
	Drain Pipe	mm VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)	
Mass (Weight)		kg 28	36	36	36	
*7 Sound Level (HH/H/L)	dBA	220V	39/37/35	41/39/37	42/40/38	
		240V	39/37/35	41/39/37	42/40/38	
Safety Devices		Fuse. Fan Driver Overload Protector.				
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Standard Accessories		Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	
Drawing No.		C : 3D060388A				

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable in 13 or 14 stages within the () range by remote controller.
- *5 Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.
- *6 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *7 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit centre. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3412 cfm=m ³ /min×35.3

Ceiling Mounted Duct Type

Model			FXMQ100PVE	FXMQ125PVE
*1 Cooling Capacity (19.5°CWB)	kcal/h		10,000	12,500
	Btu/h		39,600	49,500
	kW		11.6	14.5
*2 Cooling Capacity (19.0°CWB)	kW		11.2	14.0
*3 Heating Capacity	kcal/h		10,800	13,800
	Btu/h		42,700	54,600
	kW		12.5	16.0
Casing			Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)			mm 300×1,400×700	300×1,400×700
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×16×1.75	3×16×1.75
	Face Area	m ²	0.383	0.383
Fan	Model		—	—
	Type		Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	350×1	350×1
	Air Flow Rate (HH/H/L)	m ³ /min	32/27/23	39/33/28
		cfm	1,130/953/812	1,377/1,165/988
	External Static Pressure	Pa	Standard 100 (200-50 *4)	Standard 100 (200-50 *4)
Drive		Direct Drive	Direct Drive	
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Air Filter			*5	*5
Piping Connections	Liquid Pipes	mm	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)
	Gas Pipes	mm	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)
	Drain Pipe	mm	VP25 (External Dia. 32 Internal Dia. 25)	VP25 (External Dia. 32 Internal Dia. 25)
Mass (Weight)		kg	46	46
*7 Sound Level (HH/H/L)	dBA	220V	43/41/39	44/42/40
		240V	43/41/39	44/42/40
Safety Devices			Fuse. Fan Driver Overload Protector.	Fuse. Fan Driver Overload Protector.
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series
Standard Accessories			Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.	Operation Manual. Installation Manual. Drain Hose. Clamp Metal. Insulation for Fitting. Sealing Pads. Clamps. Washers. Screws. Air Discharge Flange. Air Suction Flange.
Drawing No.			C : 3D060388A	

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable in 13 or 14 stages within the () range by remote controller.
- *5 Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.
- *6 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *7 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit centre. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

$$\begin{aligned} \text{kcal/h} &= \text{kW} \times 860 \\ \text{Btu/h} &= \text{kW} \times 3412 \\ \text{cfm} &= \text{m}^3/\text{min} \times 35.3 \end{aligned}$$

Ceiling Mounted Duct Type

Model			FXMQ200MAVE	FXMQ250MAVE
*1 Cooling Capacity (19.5°CWB)	kcal/h		19,800	24,800
	Btu/h		78,500	98,300
	kW		23.0	28.8
*2 Cooling Capacity (19.0°CWB)	kW		22.4	28.0
*3 Heating Capacity	kcal/h		21,500	27,100
	Btu/h		85,300	107,500
	kW		25.0	31.5
Casing			Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)		mm	470×1,380×1,100	470×1,380×1,100
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×26×2.0	3×26×2.0
	Face Area	m ²	0.68	0.68
Fan	Model		D13/4G2DA1×2	D13/4G2DA1×2
	Type		Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	380×2	380×2
	Air Flow Rate (H/L)	m ³ /min	58/50	72/62
		cfm	2,047/1,765	2,542/2,189
	External Static Pressure 50Hz	Pa	221-132 *4	270-147 *4
Drive		Direct Drive	Direct Drive	
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material			Glass Fiber	Glass Fiber
Air Filter			*5	*5
Piping Connections	Liquid Pipes	mm	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)
	Gas Pipes	mm	φ19.1(Brazing Connection)	φ22.2 (Brazing Connection)
	Drain Pipe	mm	PS1B	PS1B
Machine Weight (Mass)		kg	137	137
*7 Sound Level (H/L) (220V)		dBA	48/45	48/45
Safety Devices			Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series
Standard Accessories			Operation Manual. Installation Manual. Sealing Pads. Connection Pipes. Screws. Clamps.	Operation Manual. Installation Manual. Sealing Pads. Connection Pipes. Screws. Clamps.
Drawing No.			C : 3D038814A	

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *4 External static pressure is changeable to change over the connectors inside electrical box, this pressure means "High static pressure-Standard".
- *5 Air filter is not standard accessory, but please mount it in the duct system of the suction side. Select its colorimetric method (gravity method) 50% or more.
- *6 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *7 Anechoic chamber conversion value, measured at a point 1.5 m downward from the unit center. These values are normally somewhat higher during actual operation as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Ceiling Suspended Type

Model		FXHQ32MAVE	FXHQ63MAVE	FXHQ100MAVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	3,200	6,300	10,000	
	Btu/h	12,600	24,900	39,600	
	kW	3.7	7.3	11.6	
*2 Cooling Capacity (19.0°CWB)	kW	3.6	7.1	11.2	
*3 Heating Capacity	kcal/h	3,400	6,900	10,800	
	Btu/h	13,600	27,300	42,700	
	kW	4.0	8.0	12.5	
Casing Color		White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)	
Dimensions: (H×W×D)		mm 195×960×680	mm 195×1,160×680	mm 195×1,400×680	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 2×12×1.75	mm 3×12×1.75	mm 3×12×1.75	
	Face Area	m ² 0.182	m ² 0.233	m ² 0.293	
Fan	Model		3D12K1AA1	4D12K1AA1	3D12K2AA1
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	62×1	62×1	130×1
	Air Flow Rate (H/L)	m ³ /min	12/10	17.5/14	25/19.5
		cfm	424/353	618/494	883/688
Drive		Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material		Glass Wool	Glass Wool	Glass Wool	
Air Filter		Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	
Piping Connections	Liquid Pipes	mm φ6.4 (Flare Connection)	mm φ9.5 (Flare Connection)	mm φ9.5 (Flare Connection)	
	Gas Pipes	mm φ12.7 (Flare Connection)	mm φ15.9 (Flare Connection)	mm φ15.9 (Flare Connection)	
	Drain Pipe	mm VP20 (External Dia. 26 Internal Dia. 20)	mm VP20 (External Dia. 26 Internal Dia. 20)	mm VP20 (External Dia. 26 Internal Dia. 20)	
Machine Weight (Mass)		kg 24	kg 28	kg 33	
*5 Sound Level (H/L) (220-240V)		dBA 36/31	dBA 39/34	dBA 45/37	
Safety Devices		Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Standard Accessories		Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Clamps. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Clamps. Washers.	Operation Manual. Installation Manual. Paper Pattern for Installation. Drain Hose. Clamp Metal. Insulation for Fitting. Clamps. Washers.	
Drawing No.		C : 3D038815A			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1 m in front of the unit and 1 m downward. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

$$\begin{aligned} \text{kcal/h} &= \text{kW} \times 860 \\ \text{Btu/h} &= \text{kW} \times 3412 \\ \text{cfm} &= \text{m}^3/\text{min} \times 35.3 \end{aligned}$$

Wall Mounted Type

Model		FXAQ20MAVE	FXAQ25MAVE	FXAQ32MAVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	2,000	2,500	3,200	
	Btu/h	7,800	9,900	12,600	
	kW	2.3	2.9	3.7	
*2 Cooling Capacity (19.0°CWB)	kW	2.2	2.8	3.6	
*3 Heating Capacity	kcal/h	2,200	2,800	3,400	
	Btu/h	8,500	10,900	13,600	
	kW	2.5	3.2	4.0	
Casing Color		White (3.0Y8.5/0.5)	White (3.0Y8.5/0.5)	White (3.0Y8.5/0.5)	
Dimensions: (H×W×D)		mm 290×795×230	290×795×230	290×795×230	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 2×14×1.4	2×14×1.4	2×14×1.4	
	Face Area	m ² 0.161	0.161	0.161	
Fan	Model		QCL9661M	QCL9661M	QCL9661M
	Type		Cross Flow Fan	Cross Flow Fan	Cross Flow Fan
	Motor Output × Number of Units	W	40×1	40×1	40×1
	Air Flow Rate (H/L)	m ³ /min	7.5/4.5	8/5	9/5.5
		cfm	265/159	282/177	318/194
Drive		Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material		Foamed Polystyrene / Foamed Polyethylene	Foamed Polystyrene / Foamed Polyethylene	Foamed Polystyrene / Foamed Polyethylene	
Air Filter		Resin Net (Washable)	Resin Net (Washable)	Resin Net (Washable)	
Piping Connections	Liquid Pipes	mm φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	
	Gas Pipes	mm φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	
	Drain Pipe	mm VP13 (External Dia. 18 Internal Dia. 13)	VP13 (External Dia. 18 Internal Dia. 13)	VP13 (External Dia. 18 Internal Dia. 13)	
Machine Weight (Mass)		kg 11	11	11	
*5 Sound Level (H/L) (220-240V)		dBA 35/29	36/29	37/29	
Safety Devices		Fuse	Fuse	Fuse	
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Standard Accessories		Operation Manual. Installation Manual. Installation Panel. Paper Pattern for Installation. Insulation Tape. Clamps. Screws.	Operation Manual. Installation Manual. Installation Panel. Paper Pattern for Installation. Insulation Tape. Clamps. Screws.	Operation Manual. Installation Manual. Installation Panel. Paper Pattern for Installation. Insulation Tape. Clamps. Screws.	
Drawing No.		C : 3D039370B			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1 m in front of the unit and 1 m downward. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Wall Mounted Type

Model			FXAQ40MAVE	FXAQ50MAVE	FXAQ63MAVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h		4,000	5,000	6,300	
	Btu/h		16,000	19,800	24,900	
	kW		4.7	5.8	7.3	
*2 Cooling Capacity (19.0°CWB)	kW		4.5	5.6	7.1	
*3 Heating Capacity	kcal/h		4,300	5,400	6,900	
	Btu/h		17,000	21,500	27,300	
	kW		5.0	6.3	8.0	
Casing Color			White (3.0Y8.5/0.5)	White (3.0Y8.5/0.5)	White (3.0Y8.5/0.5)	
Dimensions: (H×W×D)		mm	290×1,050×230	290×1,050×230	290×1,050×230	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	2×14×1.4	2×14×1.4	2×14×1.4	
	Face Area	m ²	0.213	0.213	0.213	
Fan	Model		QCL9686M	QCL9686M	QCL9686M	
	Type		Cross Flow Fan	Cross Flow Fan	Cross Flow Fan	
	Motor Output × Number of Units	W	43×1	43×1	43×1	
	Air Flow Rate (H/L)	m ³ /min		12/9	15/12	19/14
		cfm		424/318	530/424	671/494
Drive			Direct Drive	Direct Drive	Direct Drive	
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material			Foamed Polystyrene / Foamed Polyethylene	Foamed Polystyrene / Foamed Polyethylene	Foamed Polystyrene / Foamed Polyethylene	
Air Filter			Resin Net (Washable)	Resin Net (Washable)	Resin Net (Washable)	
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ9.5 (Flare Connection)	
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ15.9 (Flare Connection)	
	Drain Pipe	mm	VP13 (External Dia. 18 Internal Dia. 13)	VP13 (External Dia. 18 Internal Dia. 13)	VP13 (External Dia. 18 Internal Dia. 13)	
Machine Weight (Mass)		kg	14	14	14	
*5 Sound Level (H/L) (220-240V)		dBA	39/34	42/36	46/39	
Safety Devices			Fuse	Fuse	Fuse	
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Standard Accessories			Operation Manual. Installation Manual. Installation Panel. Paper Pattern for Installation. Insulation Tape. Clamps. Screws.	Operation Manual. Installation Manual. Installation Panel. Paper Pattern for Installation. Insulation Tape. Clamps. Screws.	Operation Manual. Installation Manual. Installation Panel. Paper Pattern for Installation. Insulation Tape. Clamps. Screws.	
Drawing No.			C : 3D039370B			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1 m in front of the unit and 1 m downward. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

$$\begin{aligned} \text{kcal/h} &= \text{kW} \times 860 \\ \text{Btu/h} &= \text{kW} \times 3412 \\ \text{cfm} &= \text{m}^3/\text{min} \times 35.3 \end{aligned}$$

Floor Standing Type

Model			FXLQ20MAVE	FXLQ25MAVE	FXLQ32MAVE
*1 Cooling Capacity (19.5°CWB)		kcal/h	2,000	2,500	3,200
		Btu/h	7,800	9,900	12,600
		kW	2.3	2.9	3.7
*2 Cooling Capacity (19.0°CWB)		kW	2.2	2.8	3.6
*3 Heating Capacity		kcal/h	2,200	2,800	3,400
		Btu/h	8,500	10,900	13,600
		kW	2.5	3.2	4.0
Casing Color			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H×W×D)		mm	600×1,000×222	600×1,000×222	600×1,140×222
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×14×1.5	3×14×1.5	3×14×1.5
	Face Area	m ²	0.159	0.159	0.200
Fan	Model		D14B20	D14B20	2D14B13
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	15×1	15×1	25×1
	Air Flow Rate (H/L)	m ³ /min	7/6	7/6	8/6
		cfm	247/212	247/212	282/212
Drive			Direct Drive	Direct Drive	Direct Drive
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material			Glass Fiber/ Urethane Foam	Glass Fiber/ Urethane Foam	Glass Fiber/ Urethane Foam
Air Filter			Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)
	Drain Pipe	mm	φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)
Machine Weight (Mass)		kg	25	25	30
*5 Sound Level (H/L) (220V)		dBA	35/32	35/32	35/32
Safety Devices			Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series
Standard Accessories			Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.
Drawing No.			C : 3D038816A		

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m in front of the unit at a height of 1.5 m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Floor Standing Type

Model		FXLQ40MAVE	FXLQ50MAVE	FXLQ63MAVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	4,000	5,000	6,300	
	Btu/h	16,000	19,800	24,900	
	kW	4.7	5.8	7.3	
*2 Cooling Capacity (19.0°CWB)	kW	4.5	5.6	7.1	
*3 Heating Capacity	kcal/h	4,300	5,400	6,900	
	Btu/h	17,100	21,500	27,300	
	kW	5.0	6.3	8.0	
Casing Color		Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)	
Dimensions: (H×W×D)		600×1,140×222	600×1,420×222	600×1,420×222	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×14×1.5	3×14×1.5	
	Face Area	m ²	0.200	0.282	
Fan	Model		2D14B13	2D14B20	
	Type		Sirocco Fan	Sirocco Fan	
	Motor Output × Number of Units	W	25×1	35×1	
	Air Flow Rate (H/L)	m ³ /min	11/8.5	14/11	16/12
		cfm	388/300	494/388	565/424
Drive		Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material		Glass Fiber/ Urethane Foam	Glass Fiber/ Urethane Foam	Glass Fiber/ Urethane Foam	
Air Filter		Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	
	Drain Pipe	mm	φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)	
Machine Weight (Mass)		kg	30	36	
*5 Sound Level (H/L) (220V)		dBA	38/33	40/35	
Safety Devices		Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Standard Accessories		Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	
Drawing No.		C : 3D038816A			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m in front of the unit at a height of 1.5 m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

kcal/h=kW×860
Btu/h=kW×3412
cfm=m³/min×35.3

Concealed Floor Standing Type

Model			FXNQ20MAVE	FXNQ25MAVE	FXNQ32MAVE
*1 Cooling Capacity (19.5°CWB)		kcal/h	2,000	2,500	3,200
		Btu/h	7,800	9,900	12,600
		kW	2.3	2.9	3.7
*2 Cooling Capacity (19.0°CWB)		kW	2.2	2.8	3.6
*3 Heating Capacity		kcal/h	2,200	2,800	3,400
		Btu/h	8,500	10,900	13,600
		kW	2.5	3.2	4.0
Casing Color			Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (H×W×D)		mm	610×930×220	610×930×220	610×1,070×220
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm	3×14×1.5	3×14×1.5	3×14×1.5
	Face Area	m ²	0.159	0.159	0.200
Fan	Model		D14B20	D14B20	2D14B13
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	15×1	15×1	25×1
	Air Flow Rate (H/L)	m ³ /min	7/6	7/6	8/6
		cfm	247/212	247/212	282/212
Drive		Direct Drive	Direct Drive	Direct Drive	
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material			Glass Fiber/ Urethane Foam	Glass Fiber/ Urethane Foam	Glass Fiber/ Urethane Foam
Air Filter			Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)
Piping Connections	Liquid Pipes	mm	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ6.4 (Flare Connection)
	Gas Pipes	mm	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ12.7 (Flare Connection)
	Drain Pipe	mm	φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)
Machine Weight (Mass)		kg	19	19	23
*5 Sound Level (H/L) (220V)		dBA	35/32	35/32	35/32
Safety Devices			Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.
Refrigerant Control			Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
Connectable Outdoor Unit			R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series
Standard Accessories			Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.
Drawing No.			C : 3D038817A		

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m in front of the unit at a height of 1.5 m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae
kcal/h=kW×860
Btu/h=kW×3412
cfm=m ³ /min×35.3

Concealed Floor Standing Type

Model		FXNQ40MAVE	FXNQ50MAVE	FXNQ63MAVE	
*1 Cooling Capacity (19.5°CWB)	kcal/h	4,000	5,000	6,300	
	Btu/h	16,000	19,800	24,900	
	kW	4.7	5.8	7.3	
*2 Cooling Capacity (19.0°CWB)	kW	4.5	5.6	7.1	
*3 Heating Capacity	kcal/h	4,300	5,400	6,900	
	Btu/h	17,100	21,500	27,300	
	kW	5.0	6.3	8.0	
Casing Color		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate	
Dimensions: (H×W×D)		mm 610×1,070×220	610×1,350×220	610×1,350×220	
Coil (Cross Fin Coil)	Rows×Stages×Fin Pitch	mm 3×14×1.5	3×14×1.5	3×14×1.5	
	Face Area	m ² 0.200	0.282	0.282	
Fan	Model		2D14B13	2D14B20	2D14B20
	Type		Sirocco Fan	Sirocco Fan	Sirocco Fan
	Motor Output × Number of Units	W	25×1	35×1	35×1
	Air Flow Rate (H/L)	m ³ /min	11/8.5	14/11	16/12
		cfm	388/300	494/388	565/424
Drive		Direct Drive	Direct Drive	Direct Drive	
Temperature Control		Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	
Sound Absorbing Thermal Insulation Material		Glass Fiber / Urethane Foam	Glass Fiber / Urethane Foam	Glass Fiber / Urethane Foam	
Air Filter		Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	Resin Net (with Mold Resistant)	
Piping Connections	Liquid Pipes	mm φ6.4 (Flare Connection)	φ6.4 (Flare Connection)	φ9.5 (Flare Connection)	
	Gas Pipes	mm φ12.7 (Flare Connection)	φ12.7 (Flare Connection)	φ15.9 (Flare Connection)	
	Drain Pipe	mm φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)	φ21 O.D (Vinyl Chloride)	
Machine Weight (Mass)		kg 23	27	27	
*5 Sound Level (H/L) (220V)		dBA 38/33	39/34	40/35	
Safety Devices		Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	Fuse. Thermal Protector for Fan Motor.	
Refrigerant Control		Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	
Connectable Outdoor Unit		R-410A P(A) Series	R-410A P(A) Series	R-410A P(A) Series	
Standard Accessories		Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	Operation Manual. Installation Manual. Insulation for Fitting. Drain Hose. Clamps. Screws. Washers. Level Adjustment Screw.	
Drawing No.		C : 3D038817A			

Notes:

- *1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5 m, level difference : 0 m.
- *3 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB, 6°CWB / Equivalent piping length : 7.5 m, level difference : 0 m.
- 4 Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
- *5 Anechoic chamber conversion value, measured at a point 1.5 m in front of the unit at a height of 1.5 m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.

Conversion Formulae

kcal/h=kW×860
Btu/h=kW×3412
cfm=m³/min×35.3

Ceiling Suspended Cassette Type

Model	Indoor Unit		FXUQ71MAV1	FXUQ100MAV1	FXUQ125MAV1
	Connection	Unit	BEVQ71MAVE	BEVQ100MAVE	BEVQ125MAVE
★1 Cooling Capacity (19.5°CWB)		kcal/h	7,100	10,000	12,500
		Btu/h	28,300	39,600	49,500
		kW	8.3	11.6	14.5
★2 Cooling Capacity (19.0°CWB)		kW	8.0	11.2	14.0
★3 Heating Capacity (Max.)		kcal/h	7,700	10,800	12,000
		Btu/h	30,700	42,700	47,700
		kW	9.0	12.5	14.0
Casing Color			White (10Y9/0.5)	White (10Y9/0.5)	White (10Y9/0.5)
Dimensions: (HxWxD)		mm	165x895x895	230x895x895	230x895x895
Coil (Cross Fin Coil)	RowsxStagesxFin Pitch	mm	3x6x1.5	3x8x1.5	3x8x1.5
	Face Area	m ²	0.265	0.353	0.353
Fan	Model		QTS48A10M	QTS50B15M	QTS50B15M
	Type		Turbo Fan	Turbo Fan	Turbo Fan
	Motor Output x Number of Units	W	45x1	90x1	90x1
	Air Flow Rate (H/L)	m ³ /min	19/14	29/21	32/23
		cfm	671/494	1,024/741	1,130/812
Drive		Direct Drive	Direct Drive	Direct Drive	
Temperature Control			Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating	Microprocessor Thermostat for Cooling and Heating
Sound Absorbing Thermal Insulation Material			Heat Resistant Foamed Polyethylene, Regular Foamed Polyethylene	Heat Resistant Foamed Polyethylene, Regular Foamed Polyethylene	Heat Resistant Foamed Polyethylene, Regular Foamed Polyethylene
Piping Connections	Liquid Pipes	mm	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)	φ9.5 (Flare Connection)
	Gas Pipes	mm	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)	φ15.9 (Flare Connection)
	Drain Pipe	mm	VP20 (External Dia. 26 Internal Dia. 20)	VP20 (External Dia. 26 Internal Dia. 20)	VP20 (External Dia. 26 Internal Dia. 20)
Machine Weight		kg	25	31	31
★5 Sound Level (H/L) (230V)		dBA	40/35	43/38	44/39
Safety Devices			Thermal Protector for Fan Motor	Thermal Protector for Fan Motor	Thermal Protector for Fan Motor
Standard Accessories			Operation Manual, Installation Manual, Drain Hose, Clamp Metal, Insulation for Fitting, Sealing Pads, Clamps, Screws, Washers, Holding Plate.	Operation Manual, Installation Manual, Drain Hose, Clamp Metal, Insulation for Fitting, Sealing Pads, Clamps, Screws, Washers, Holding Plate.	Operation Manual, Installation Manual, Drain Hose, Clamp Metal, Insulation for Fitting, Sealing Pads, Clamps, Screws, Washers, Holding Plate.
Drawing No.			C : 4D045395A		

Notes:

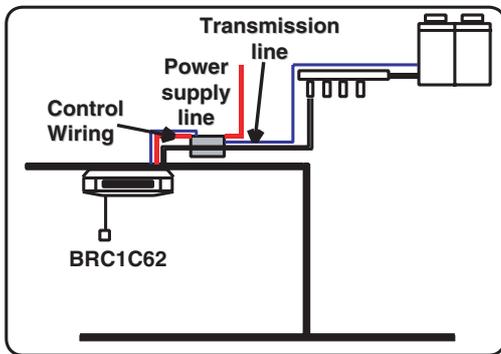
- ★1 Indoor temp. : 27°CDB, 19.5°CWB / outdoor temp.: 35°CDB / Equivalent piping length: 7.5m, level difference: 0m.
- ★2 Indoor temp. : 27°CDB, 19.0°CWB / outdoor temp.: 35°CDB / Equivalent piping length: 7.5m, level difference: 0m.
- ★3 Indoor temp. : 20°CDB / outdoor temp.: 7°CDB, 6°CWB / Equivalent piping length; 7.5m, level difference; 0m. (Heat pump only)
- 4 Capacities are net, including a deduction for cooling (an additional for heating) for indoor fan motor heat.
- ★5 Anechoic chamber conversion value, measured at a point 1.5m downward from the unit center. These values are normally somewhat higher during actual operation as a result of ambient conditions.

Conversion Formulae
kcal/h=kWx860
Btu/h=kWx3412
cfm=m ³ /minx35.3

BEV Units

Model		BEVQ71MAVE	BEVQ100MAVE	BEVQ125MAVE
Power Supply		1 Phase 50Hz 220-240V	1 Phase 50Hz 220-240V	1 Phase 50Hz 220-240V
Casing		Galvanized Steel Plate	Galvanized Steel Plate	Galvanized Steel Plate
Dimensions: (HxWxD)		mm	100x350x225	100x350x225
Sound Absorbing Thermal Insulation Material		Flame and Heat Resistant Foamed Polyethylene	Flame and Heat Resistant Foamed Polyethylene	Flame and Heat Resistant Foamed Polyethylene
Piping Connection	Indoor Unit	Liquid Pipes	9.5mm (Flare Connection)	9.5mm (Flare Connection)
		Gas Pipes	15.9mm (Flare Connection)	15.9mm (Flare Connection)
	Outdoor Unit	Liquid Pipes	9.5mm (Flare Connection)	9.5mm (Flare Connection)
		Suction Gas Pipes	15.9mm (Flare Connection)	15.9mm (Flare Connection)
Machine Weight (Mass)		kg	3.0	3.0
Standard Accessories		Installation manual, Gas piping connections, Insulation for fitting, Sealing material, Clamps	Installation manual, Gas piping connections, Insulation for fitting, Sealing material, Clamps	Installation manual, Gas piping connections, Insulation for fitting, Sealing material, Clamps
Drawing No.			4D045387A	4D045388A

Connection Example



1. Wiring Work

- The connecting line between SkyAir Indoor Unit – BEV Unit : 3 cores...like a Transmission Line
- BEV Unit's power supply line; Single phase 2 line...like a VRV Indoor unit
- BEV Unit – other VRV indoor unit or outdoor unit – : 2 cores...DIII network wiring (super wiring)

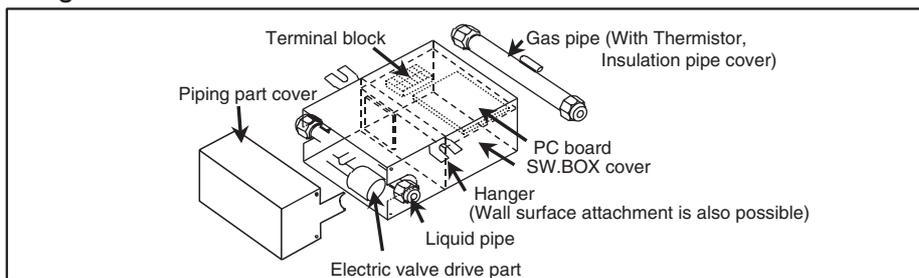
2. Piping work

SkyAir side, Outdoor Unit Side, They are both flare connection.

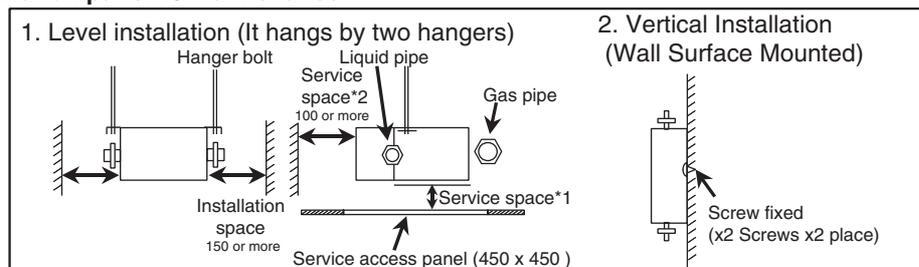
■ Consideration matter

- When connecting centralized-control device, it is necessary to **install an interface adaptor for SkyAir series in an indoor unit.**
- Distance between indoor unit and –BEV unit must be **within 5m.**

■ Outline figure



■ Installation pattern / maintenance



*1; Service space for switch box.
 (Service access panel is required for the bottom side. When there is nothing, 350 or more spaces are required.)
 *2; For electric valve drive part's maintenance. (a control box is removed)

Part 3

Refrigerant Circuit

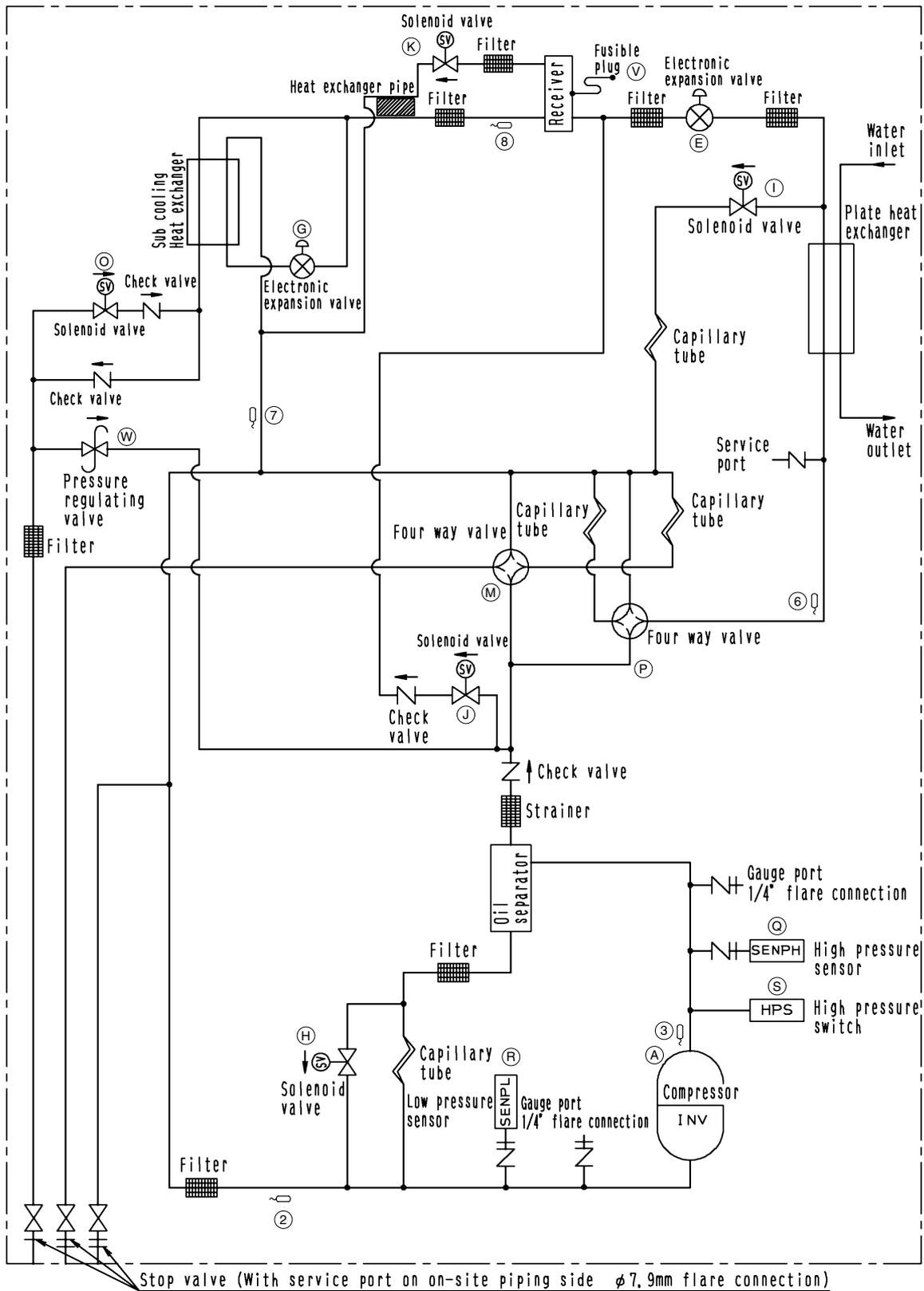
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1. Refrigerant Circuit

1.1 RWEYQ8P, 10P

No. in refrigerant system diagram	Symbol	Name	Major Function
A	M1C	Inverter compressor (INV)	Inverter compressor is operated on frequencies between 52 Hz and 230 Hz by using the inverter. The number of operating steps is as follows. RWEYQ8P, 10P: 22 steps
E	Y1E	Electronic expansion valve (Main: EV1)	In cooling operation: High pressure control In heating or simultaneous cooling/heating operation: When the heat exchanger is used as the evaporator : SH control When the heat exchanger is used as the condenser : High pressure control
G	Y3E	Electronic expansion valve (Subcool: EV3)	PI control is applied to keep the outlet superheated degree of sub-cooling heat exchanger constant.
H	Y1S	Solenoid valve (Hot gas: SVP)	Used to prevent the low pressure from transient falling.
I	Y2S	Solenoid valve (Oil return of water heat exchanger: SVE)	Used to collect the refrigerant oil from water heat exchanger.
J	Y3S	Solenoid valve (Receiver gas charging: SVL)	Used to maintain high pressure while in cooling operation at low water temperature. And also used to prevent the accumulation of refrigerant in non-operating outside units in the case of multiple-outside-unit system.
K	Y4S	Solenoid valve (Receiver gas discharging: SVG)	Used to collect refrigerant to receiver.
M	Y5S	4-way selector valve (Main: 20S1)	Changes the operation into cooling, heating or simultaneous cooling/heating operation.
O	Y6S	Solenoid valve (Non-operating unit liquid pipe closing: SVSL)	Used to prevent the accumulation of refrigerant in non-operating outside units in the case of multiple-outside-unit system.
P	Y7S	4-way selector valve (Sub: 20S2)	Changes the water heat exchanger into condenser or evaporator.
Q	S1NPH	High pressure sensor	Used to detect high pressure.
R	S2NPL	Low pressure sensor	Used to detect low pressure.
S	S1PH	HP pressure switch (For INV compressor)	In order to prevent the increase of high pressure when a malfunction occurs, this switch is activated at high pressure of 4.0 MPa or more to stop the compressor operation.
V	–	Fusible plug	In order to prevent the increase of pressure when abnormal heating is caused by fire or others, the fusible part of the plug is molten at a temperature of 70 to 75°C to release the pressure into the atmosphere.
W	–	Pressure regulating valve 1 (Liquid pipe to discharge pipe)	This valve opens at a pressure of 4.0 MPa or more for prevention of pressure increase, thus resulting in no damage of functional parts due to the increase of pressure in transportation or storage.
2	R2T	Thermistor (Suction pipe: Ts)	Used to detect suction pipe temperature, keep the suction superheated degree constant in heating operation, and others.
3	R3T	Thermistor (INV discharge pipe: Tdi)	Used to detect discharge pipe temperature, make the temperature protection control of compressor, and others.
6	R4T	Thermistor (Heat exchanger gas pipe: Tg)	Used to detect gas pipe temperature of water heat exchanger.
7	R5T	Thermistor (Sub-cooling heat exchanger outlet pipe: Tsh)	Used to detect gas pipe temperature on the evaporation side of sub-cooling heat exchanger, keep the superheated degree at the outlet of sub-cooling heat exchanger constant, and others.
8	R6T	Thermistor (Receiver outlet liquid pipe: TI)	Used to detect receiver outlet liquid pipe temperature, prevent the drift between outdoor units while in heating operation in the case of multiple-outside-unit system, and others.

RWEYQ8P, 10P



4D048290C

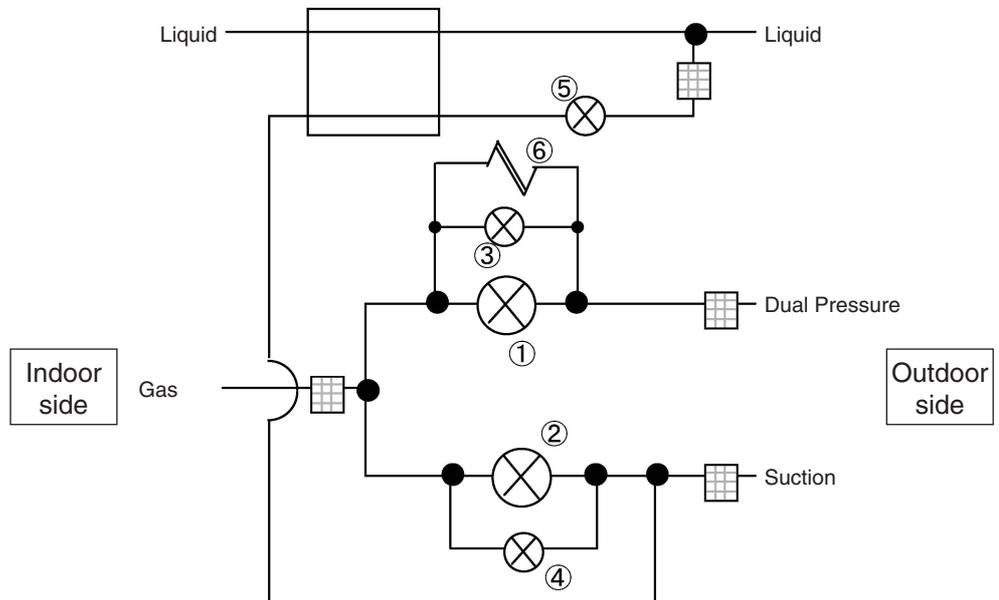
1.2 BS Unit Functional Parts

BSVQ100, 160, 250PV1

BSVQ36, 60PVJU

No.	Name	Symbol	Function
1	Electronic expansion valve (EVH)	Y4E	Opens while in heating operation or all indoor units are in cooling operation. (Max : 760pls)
2	Electronic expansion valve (EVL)	Y5E	Opens while in cooling operation. (Max : 760pls)
3	Electronic expansion valve (EVHS)	Y2E	Opens while in heating operation or all indoor units are in cooling operation. (Max : 480pls)
4	Electronic expansion valve (EVLS)	Y3E	Opens while in cooling operation. (Max : 480pls)
5	Electronic expansion valve (EVSC)	Y1E	In simultaneous cooling and heating operation, it is used to subcool liquid refrigerants when an indoor unit downstream of this BS unit is in heating operation.(Max : 480pls)
6	Capillary tube		Used to bypass high pressure gas to low pressure side to protect "Refrigerant accumulation" in high and low pressure gas pipes.

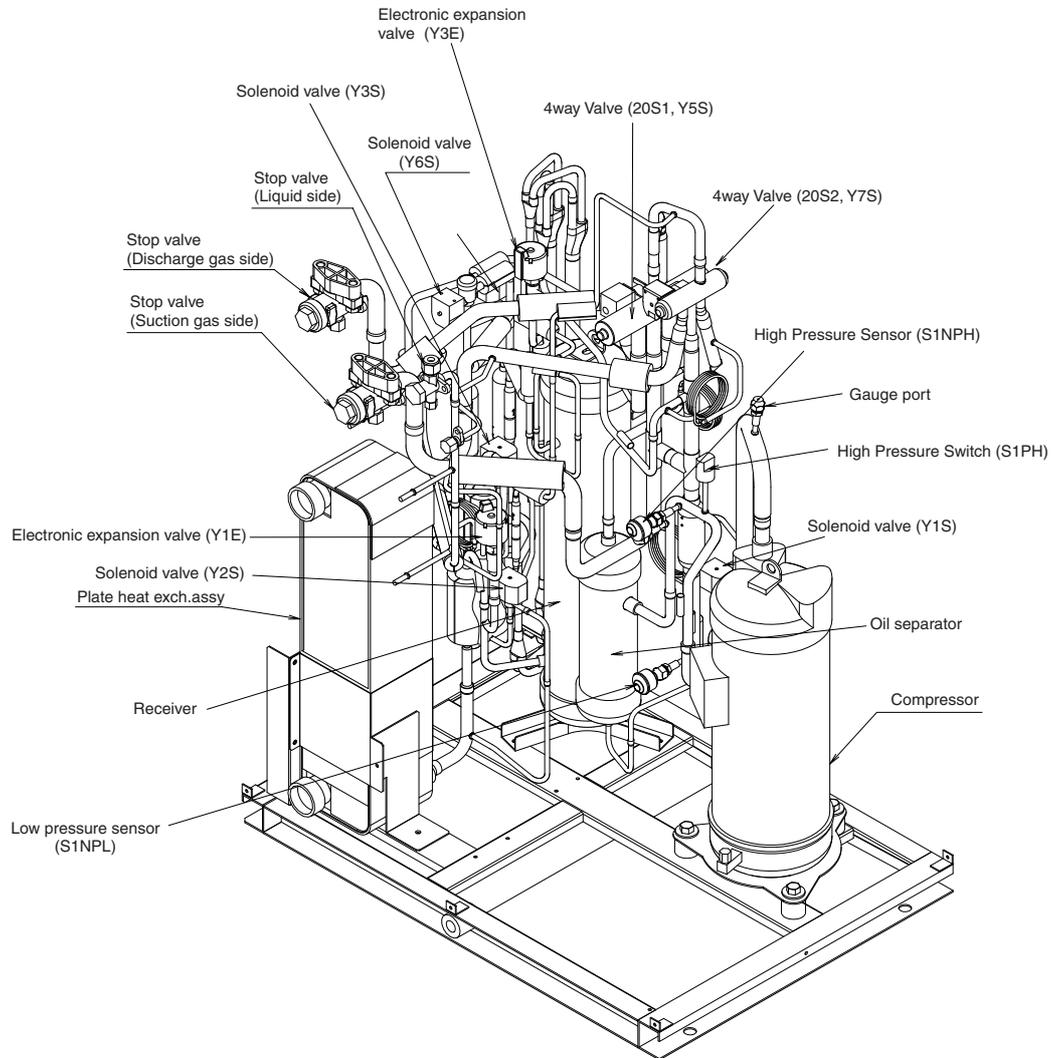
Note : Factory set of all EV opening : 60pls



2. Functional Parts Layout

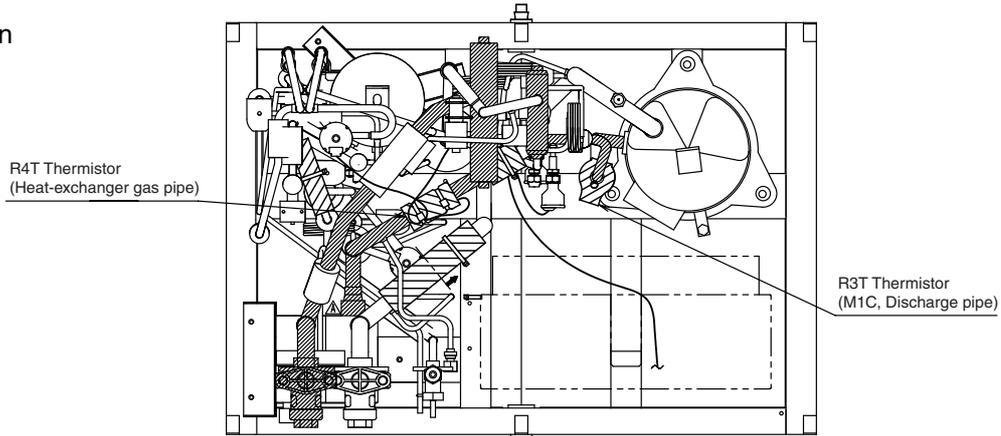
2.1 RWEYQ8P, 10P

2.1.1 Functional Parts Layout (Solenoid Valve etc.)

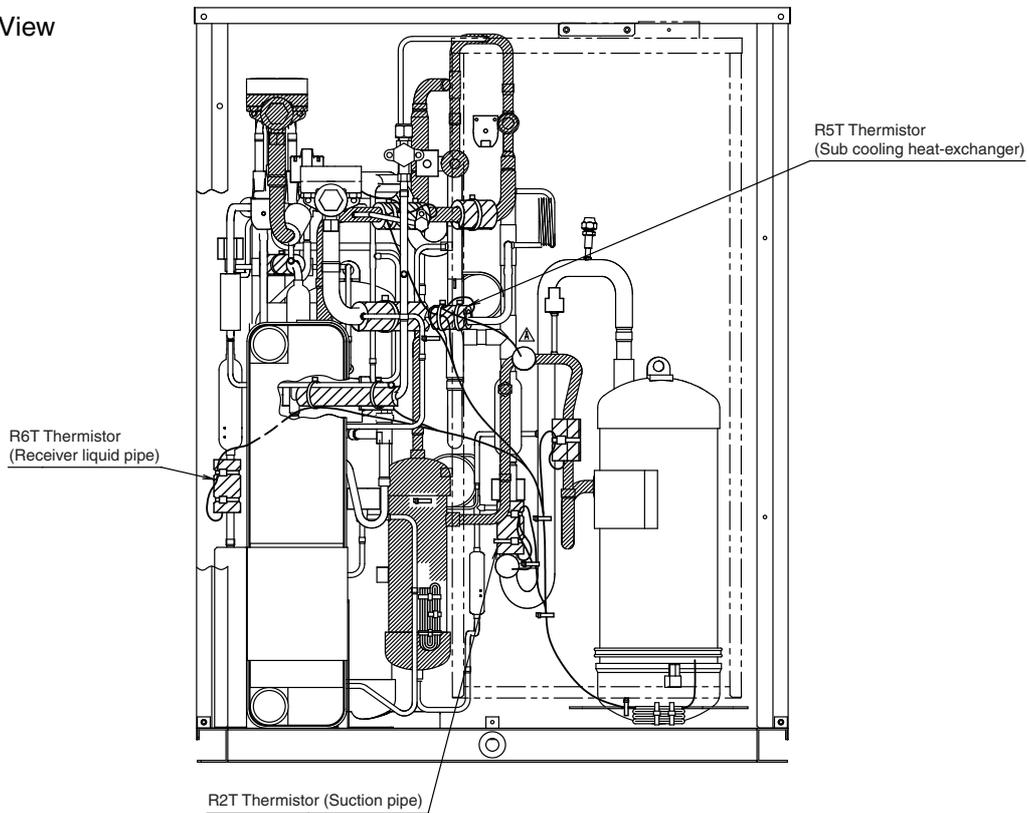


2.1.2 Sensors

Plan



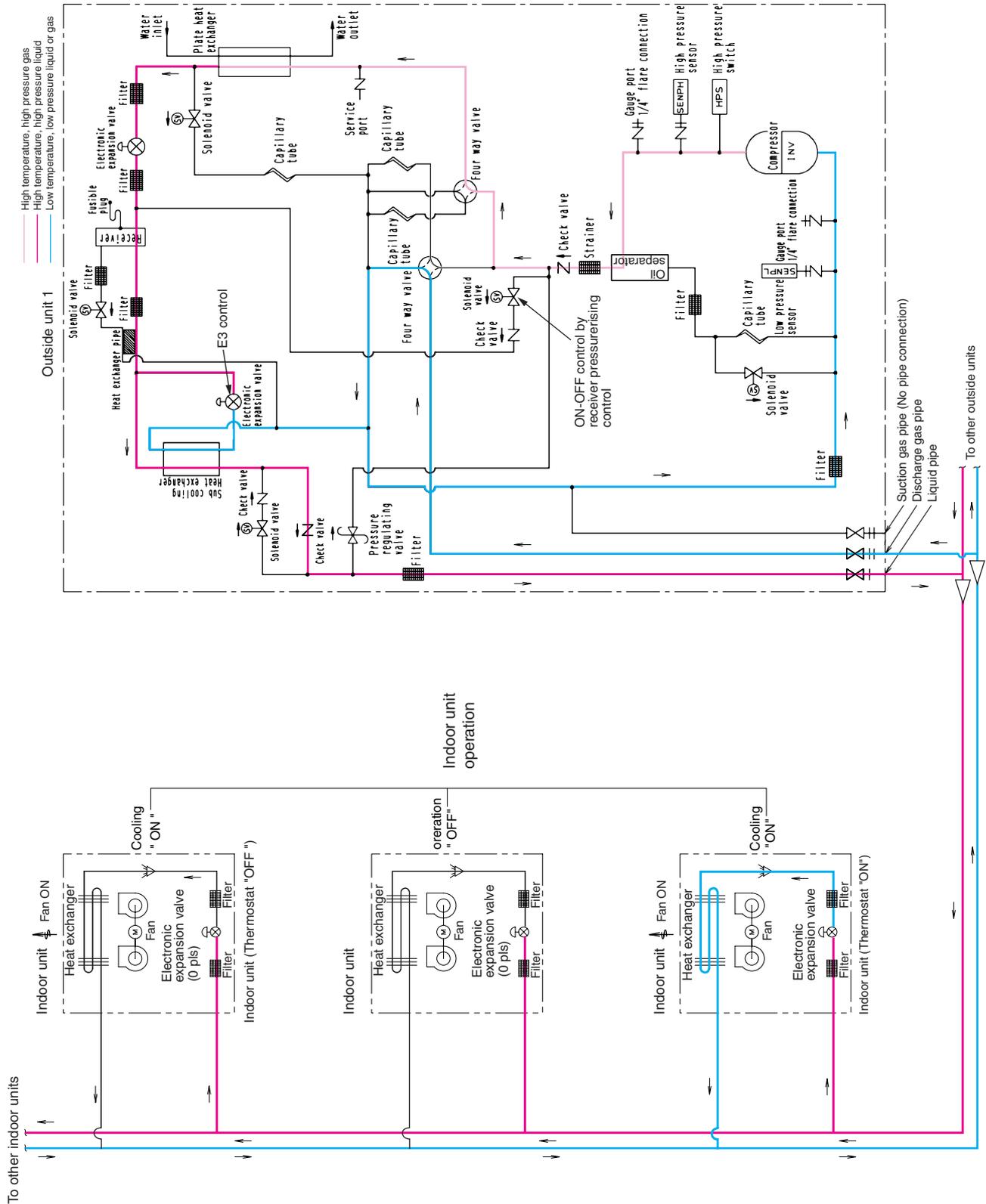
Front View



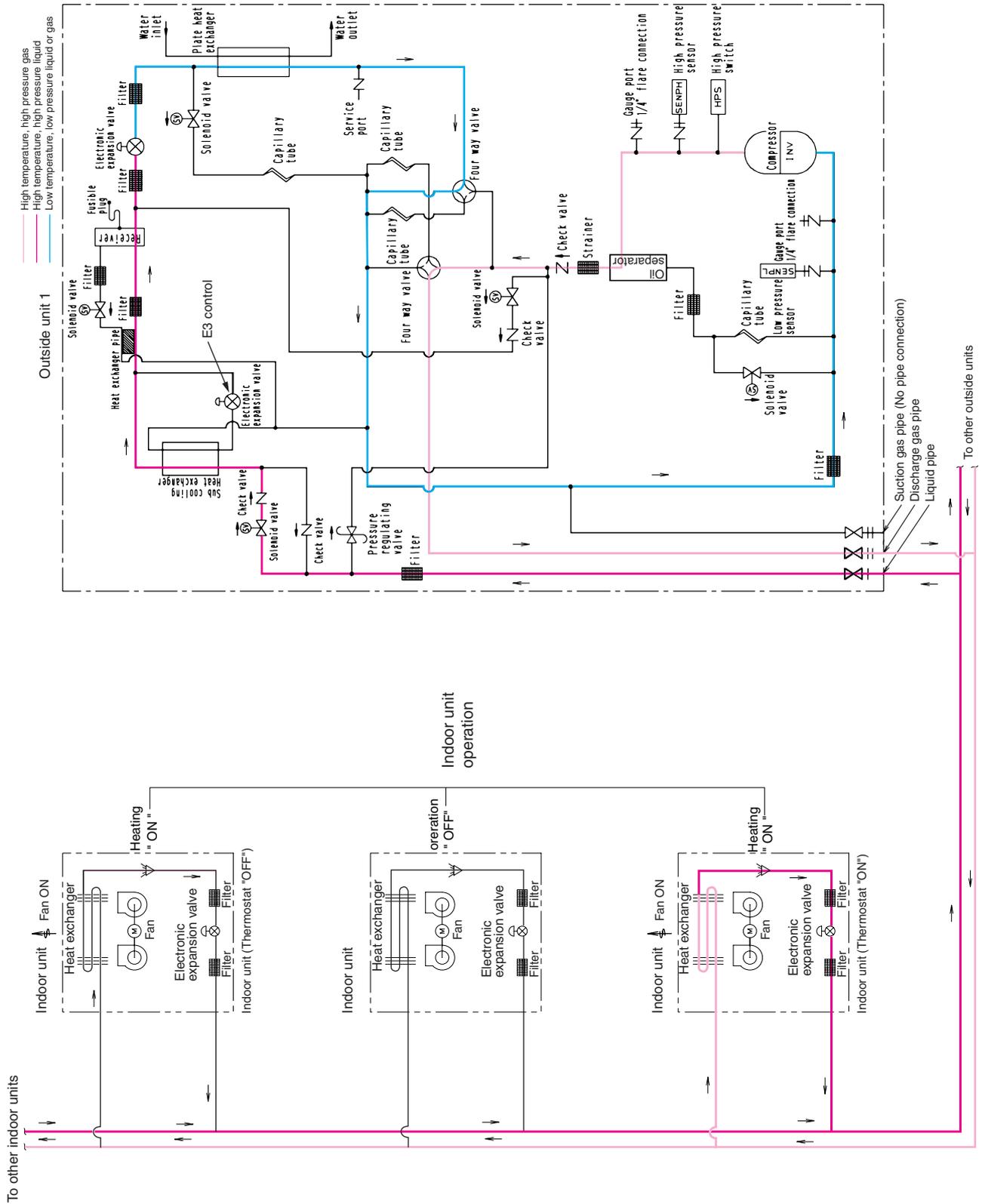
3. Refrigerant Flow for Each Operation Mode

3.1 In Case of Heat Pump Connection

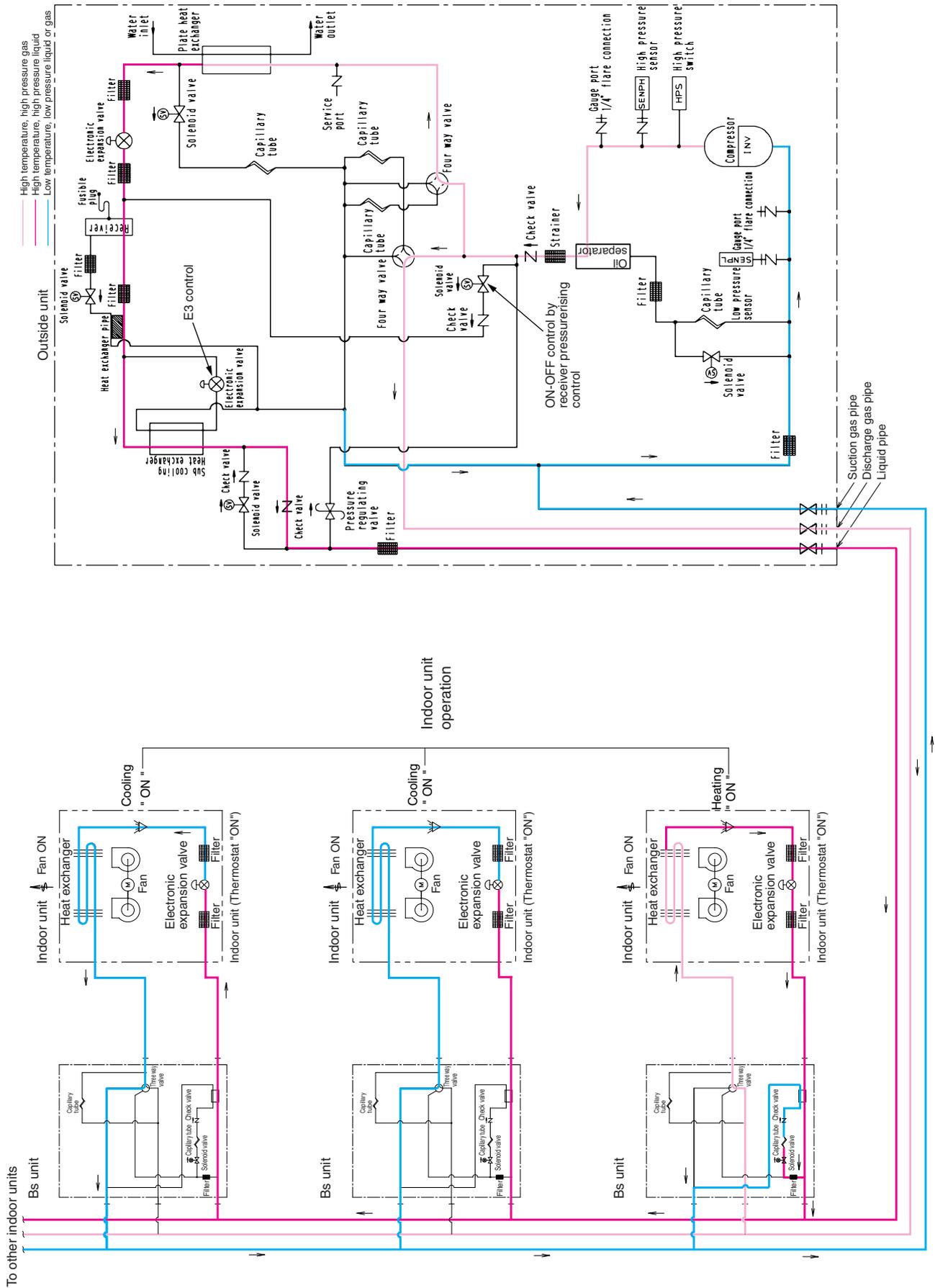
A. Cooling Operation



B. Heating Operation

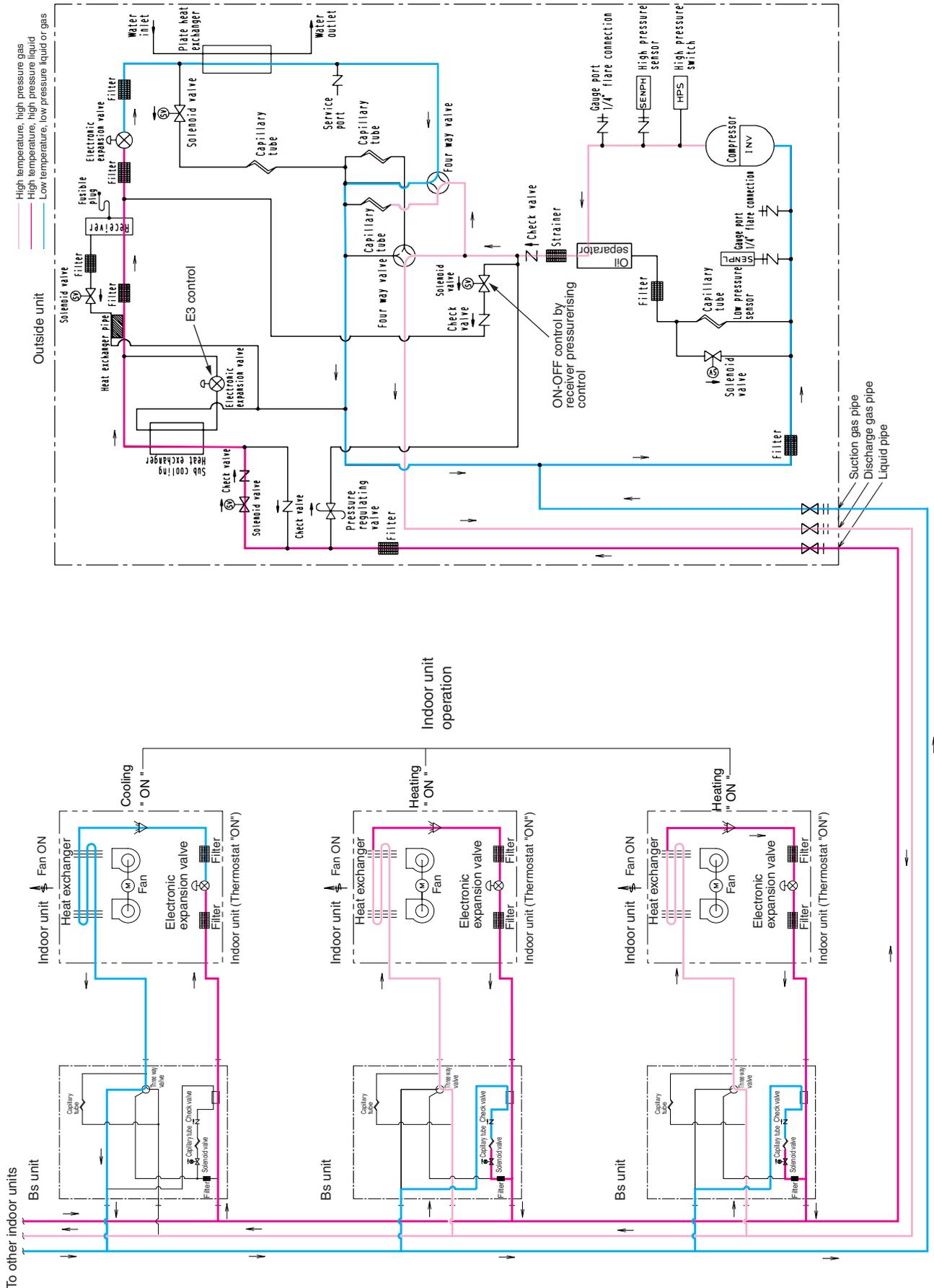


B. Heating and simultaneous cooling/heating operation (When the outdoor water cooled heat exchanger is used as condenser.)



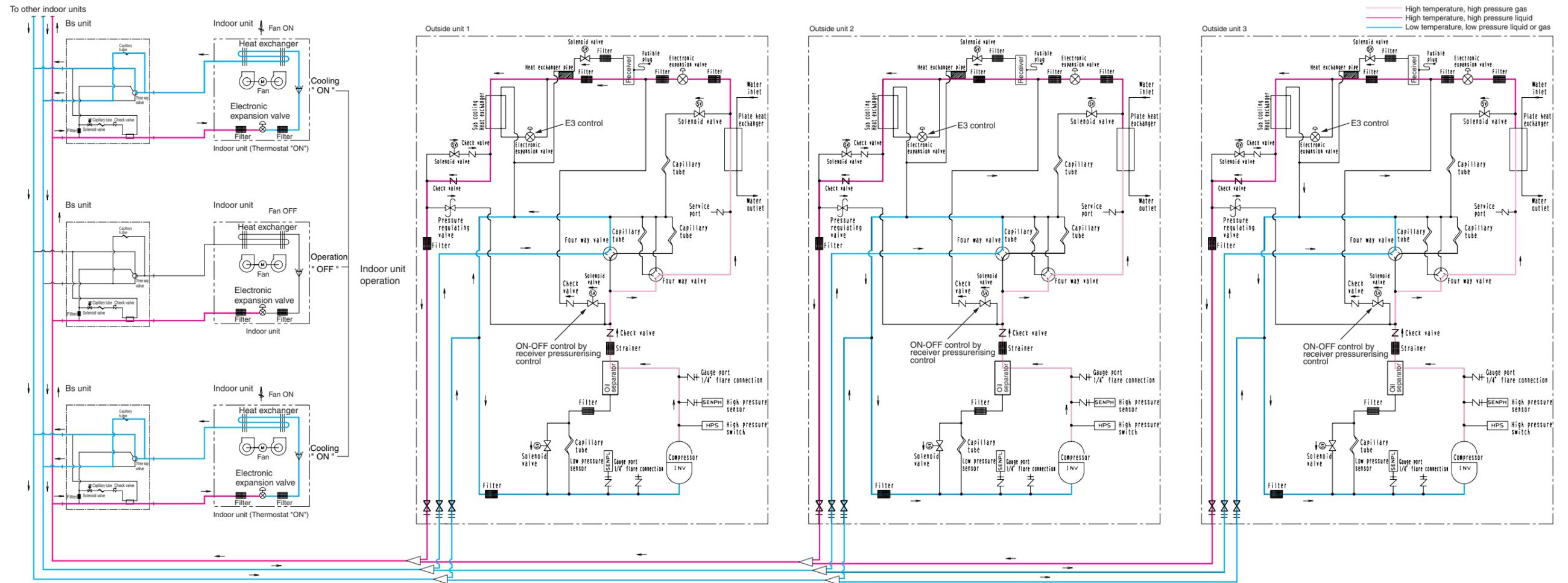
C. Heating and simultaneous cooling heating tube operation mode (When the outdoor water cooled heat exchanger is used as evaporator.)

(In case there are indoor units operating with cooling thermostat "ON".)

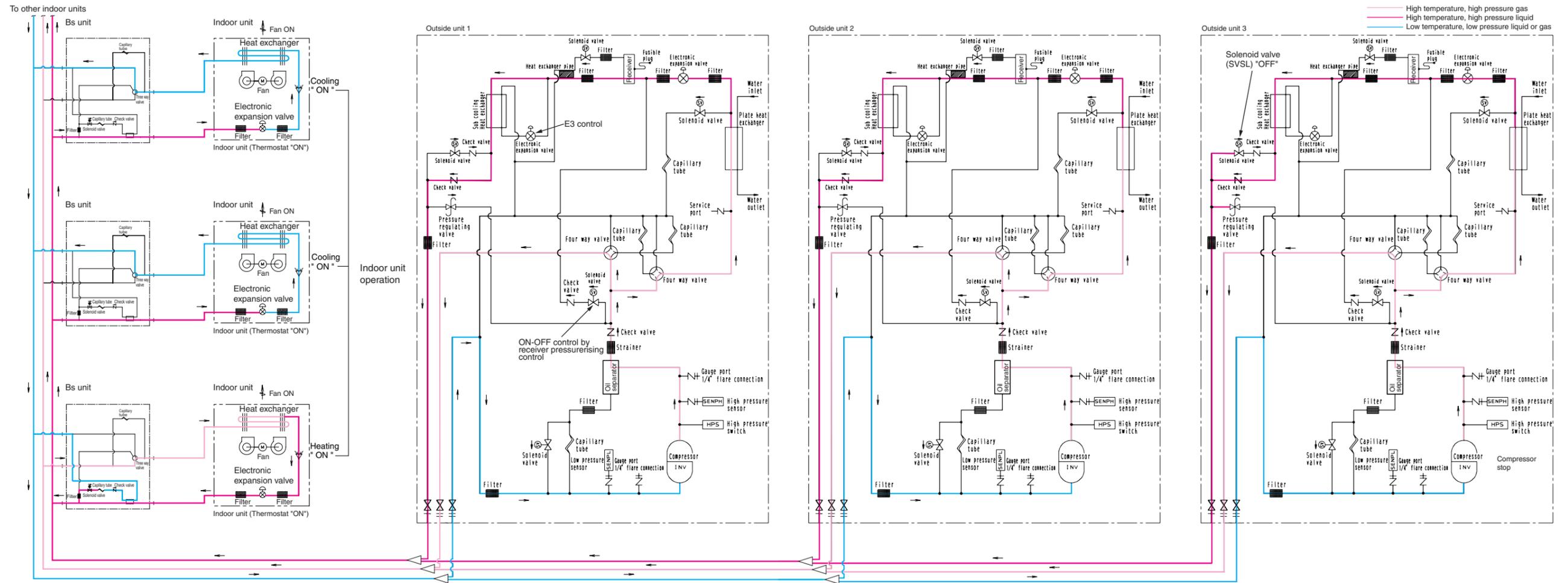


3.3 In Case of Heat Recovery Connection (3 Outside Units Connection)

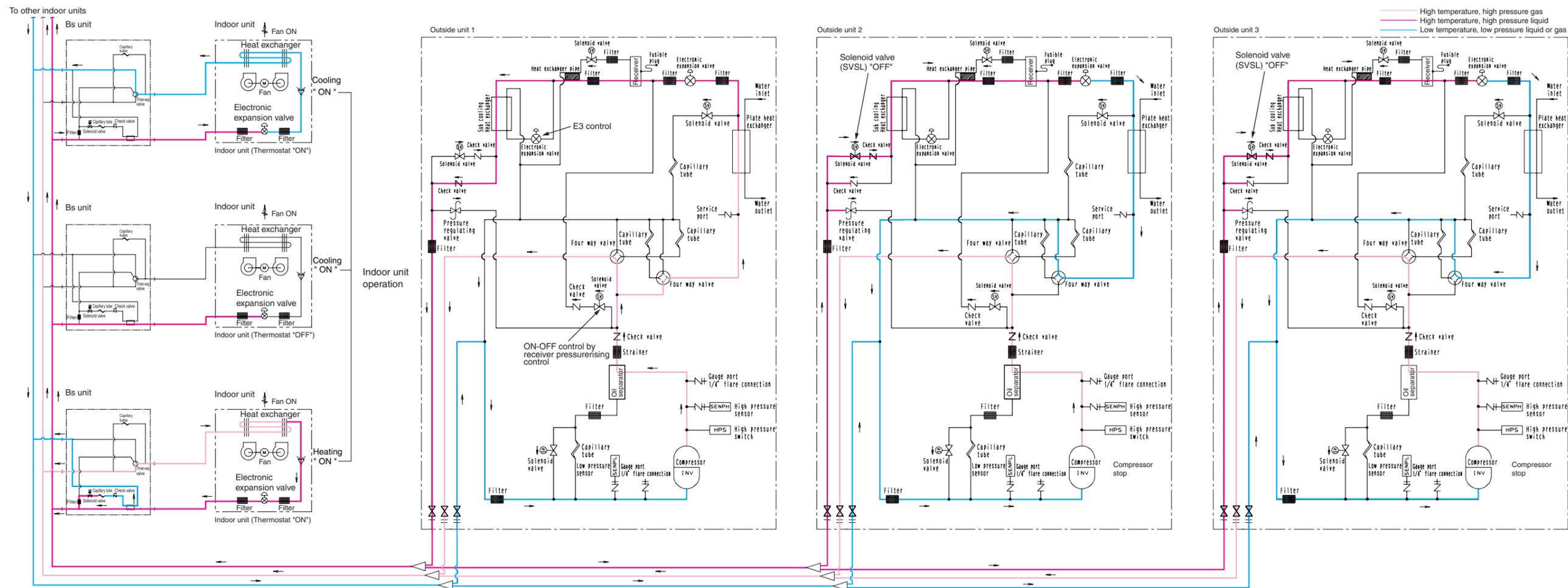
A. Cooling Operation



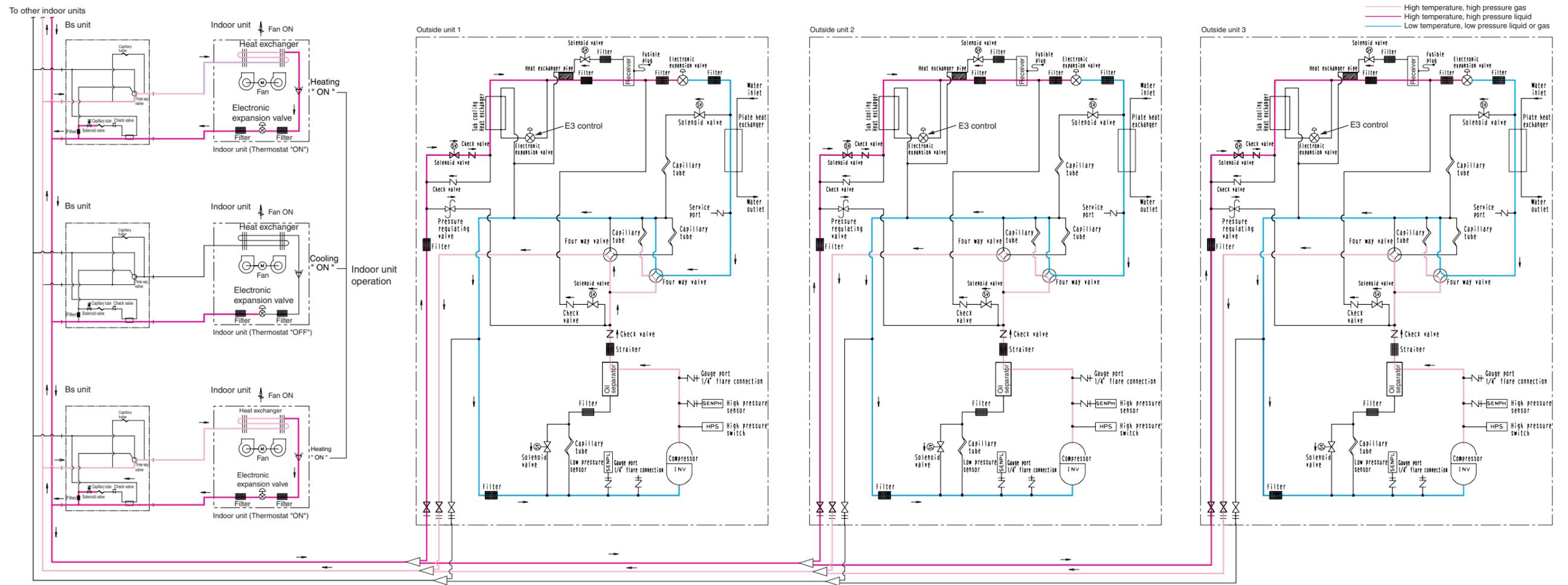
B: Heating and simultaneous cooling/heating operation mode (When the outdoor water cooled heat exchangers are used only as condenser.)



C: Heating and simultaneous cooling/heating operation mode (When the outdoor water cooled heat exchangers are used as condenser and evaporator mixed.)



D: Heating and simultaneous cooling/heating operation mode (When the outdoor water cooled heat exchangers are used only as evaporator.)



Part 4

Function

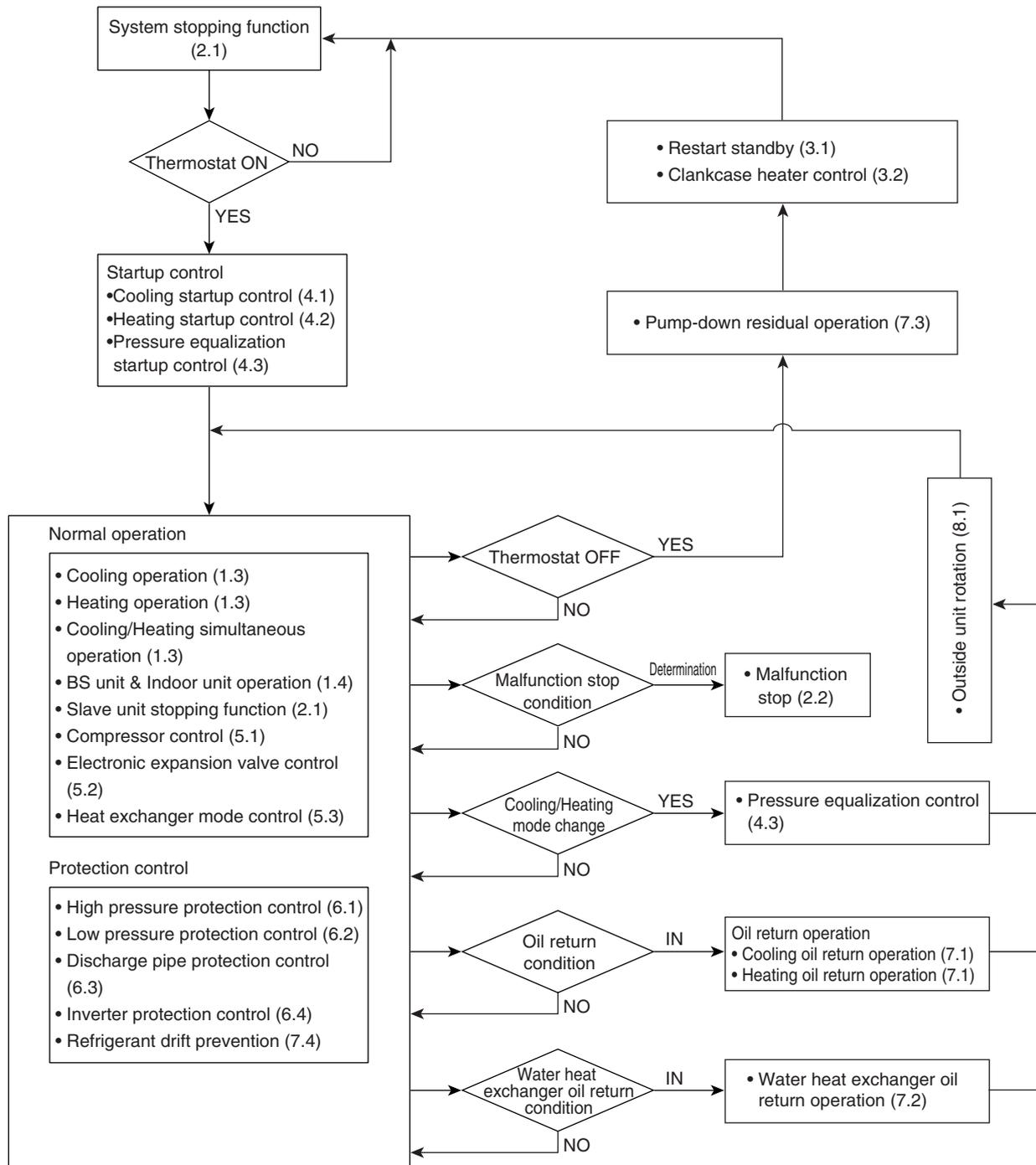
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1. Function General

1.1 Symbol

Symbol	Electric symbol	Description or function
20S1	Y5S	Four way valve (Main)
20S2	Y7S	Four way valve (For heat exchanger)
DSH	–	Discharge pipe superheat
DSHi	–	Discharge pipe superheat of inverter compressor
EV	(Y1E, Y3E)	Opening of electronic expansion valve
EV1	Y1E	Electronic expansion valve for water heat exchanger
EV3	Y3E	Electronic expansion valve for sub-cooling heat exchanger
HTDi	–	Value of INV compressor discharge pipe temperature (R3T) compensated with outdoor air temperature
Pc	S1NPH	Value detected by high pressure sensor
Pe	S1NPL	Value detected by low pressure sensor
SH	–	Evaporator outlet superheat
SHS	–	Target evaporator outlet superheat
SVG	Y4S	Solenoid valve for discharging gas from receiver
SVL	Y3S	Solenoid valve for gas charging to receiver
SVE	Y2S	Solenoid valve for oil collection from water heat exchanger
SVP	Y1S	Solenoid valve for hot gas bypass
SVSL	Y6S	Solenoid valve for non-operating unit liquid pipe closing
Tc	–	High pressure equivalent saturation temperature
TcS	–	Target temperature of Tc (Condensing temperature)
Te	–	Low pressure equivalent saturation temperature
TeS	–	Target temperature of Te (Evaporating temperature)
Tfin	R1T	Inverter fin temperature
Ts	R2T	Suction pipe temperature detected by R2T (Suction pipe)
Tsh	R5T	Temperature detected by R5T-gas pipe temperature of sub-cooling heat exchanger gas side (outlet temperature)
Tp	–	Calculated value of compressor port temperature
Tdi	R3T	Discharge temperature detected by thermistor located the inverter compressor discharge pipe
Tl	R6T	Liquid pipe temperature
Tg	R4T	The gas pipe temperature of water heat exchanger

1.2 Operation Mode



* Figures in the parentheses indicate the description Nos. of functional operation shown in the following pages.

1.3 Normal Operation

Parts name	Symbol	Electrical symbol	Actuator function	
			Normal cooling	Normal heating or normal cooling/heating simultaneous operation
Compressor	—	(M1C)	PI control, High pressure protection, Low pressure protection, Discharge pipe temperature protection control, Inverter protection control	PI control, High pressure protection, Low pressure protection, Discharge pipe temperature protection control, Inverter protection control
Inverter cooling fan	—	(M1,2F)	Inverter cooling fan control	Inverter cooling fan control
4 way valve (Main)	20S1	(Y5S)	OFF	ON
4 way valve (for heat exchanger)	20S2	(Y7S)	OFF	Heat exchanger mode control (In case of heating and simultaneous cooling/heating operation)
Main heat exchanger electronic exp. valve	EV1	(Y1E)	Heat exchanger mode control (In case of cooling operation)	Heat exchanger mode control (In case of heating and simultaneous cooling/heating operation)
Sub-cooling electronic exp. valve	EV3	(Y3E)	EV3 control	EV3 control
Hot gas bypass solenoid valve	SVP	(Y1S)	Protection control	Protection control
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF	Water heat exchanger oil return control
Receiver gas charging solenoid valve	SVL	(Y3S)	Receiver pressurising control	Receiver pressurising control and drift protection control
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	Drift protection control
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	ON	ON
Indoor unit fan	—	—	Refer to following page for detail. (BS unit & Indoor unit operation mode detail)	Refer to following page for detail. (BS unit & Indoor unit operation mode detail)
Indoor unit expansion valve	EV	—		
BS unit				

2. Stop

2.1 Stopping Operation

This operation is used to define the operation of the actuator while the system stops.

2.1.1 When System is in Stop Mode

Parts name	Symbol	Electrical symbol	Actuator function
Compressor	—	(M1C)	OFF
Inverter cooling fan	—	(M1,2F)	OFF
4 way valve 1	20S1	(Y5S)	Holding
4 way valve 2	20S2	(Y7S)	Holding
Main heat exchanger electronic exp. valve	EV1	(Y1E)	0 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	OFF
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	ON
Ending conditions	—	—	Indoor unit thermostat ON

2.1.2 Stopping Operation of Slave Units During Master Unit is in Operation with Multi-Outside-Unit System

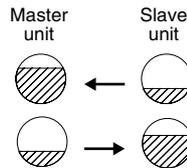
This operation is used to make adjustments of required refrigerant amount with non-operating slave units while the master unit is in operation.

In cooling operation : The system operates in mode A or mode B listed in the table below.

Parts name	Symbol	Electrical symbol	Mode A operation (*1)	Mode B operation (*1)
Compressor	—	(M1C)	OFF	OFF
Inverter cooling fan	—	(M1,2F)	OFF	OFF
4 way valve (Main)	20S1	(Y5S)	Holding	Holding
4 way valve (for heat exchanger)	20S2	(Y7S)	Holding	Holding
Main heat exchanger electronic exp. valve	EV1	(Y1E)	150 to 300 pulse	0 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	OFF	OFF
Water heat exch. oil return solenoid valve	SVE	(Y2S)	ON	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	OFF	ON
Mode transition conditions			To Mode B when No gas shortage signal is sent from indoor unit	To Mode A when gas shortage signal is sent from indoor unit
Ending conditions	Slave units are required to operate.			

*1 Mode A or B operation

- { Mode A : Master unit collects refrigerant.
- { Mode B : Slave unit storage refrigerant.



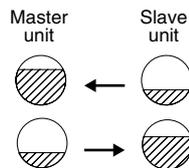
The changeover operation for mode A and B is performed for the reason that the required refrigerant amount varies depending on the indoor unit operation capacity.

In heating operation or simultaneously in cooling / heating operation :
The system operates in mode A or mode B listed in the table below.

Parts name	Symbol	Electrical symbol	Mode A operation	Mode B operation
Compressor	—	(M1C)	OFF	OFF
Inverter cooling fan	—	(M1,2F)	OFF	OFF
4 way valve (Main)	20S1	(Y5S)	Holding	Holding
4 way valve (for heat exchanger)	20S2	(Y7S)	Holding	Holding
Main heat exchanger electronic exp. valve	EV1	(Y1E)	0 pulse	0 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	OFF	OFF
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	ON	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	OFF	ON
Mode transition conditions			To Mode B when No gas shortage signal is sent from indoor unit	To Mode A when gas shortage signal is sent from indoor unit
Ending conditions	Slave units are required to operate.			

* Mode A or B operation

- { Mode A : Master unit collects refrigerant.
 { Mode B : Slave unit storage refrigerant.



The changeover operation for mode A and B is performed for the reason that the required refrigerant amount varies depending on the indoor unit operation capacity.

2.1.3 Abnormal Stop

In order to protect compressors, if any of the following items has an abnormal value, the system will make "stop with thermostat OFF" and the malfunction will be determined according to the number of retry times.

Item	Judgement value	Retry number	Malfunction code
1. Low pressure abnormal	0.07 MPa	3 times in 60 minutes	E4
2. High pressure abnormal	3.71MPa	2 times in 30 minutes	E3
3. Discharge temperature abnormal	135°C	2 times in 100 minutes	F3
4. Power supply abnormal	Reverse phase	No retry	U1
5. Inverter current abnormal	17A for 5 sec. (380V power supply) 25.1A for 260 sec. (220V power supply)	3 times in 60 minutes	L8
6. Radiation fin temperature abnormal	89°C	3 times in 60 minutes	L4

3. Standby

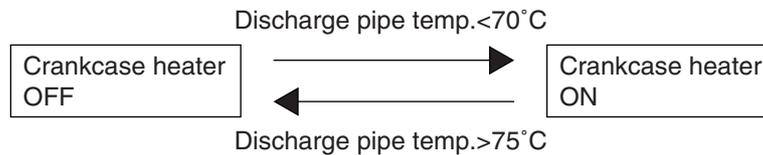
3.1 Restart Standby

Forced standby is performed to prevent frequent repetition of ON/OFF of the compressor, and to equalize pressure in the refrigerant system.

Parts name	Symbol	Electrical symbol	Actuator function
Compressor	—	(M1C)	0 Hz
Inverter cooling fan	—	(M1,2F)	OFF
4 way valve (Main)	20S1	(Y5S)	Holding
4 way valve (for heat exchanger)	20S2	(Y7S)	Holding
Main heat exchanger electronic exp. valve	EV1	(Y1E)	0 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	OFF
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	ON
Indoor cooling unit fan	—	(M1, 2F)	Remote controller setting
Indoor cooling unit expansion valve	EV	(Y1E)	All indoor EV 0 pulse
Indoor heating unit fan	—	(M1, 2F)	Indoor unit control
Indoor heating unit expansion valve	EV	(Y1E)	All indoor EV 0 pulse
BS unit			Holding
Ending condition			4 minutes

3.2 Crankcase Heater Control

In order to prevent the refrigerant from dwelling in the compressor in the stopped mode, this mode is used to control the crankcase heater.



4. Startup Control

This startup control is used to provide the following control to reduce the compressor load resulting from liquid return or else during compressor startup, and also determine the position of four way valves.

4.1 Cooling Start-up Control

Both master and slave units operate same time for changing 4 way valve position → Normal operation after completion.

Thermostat ON

Parts name	Symbol	Electrical symbol	Pressure equalization control before start-up	Starting control
Compressor	—	(M1C)	0 Hz	52Hz +2 steps/20 sec. (until Pc-Pe >0.49 MPa)
Inverter cooling fan	—	(M1,2F)	OFF	Inverter cooling fan control
4 way valve (Main)	20S1	(Y5S)	Holding	OFF
4 way valve (for heat exchanger)	20S2	(Y7S)	Holding	OFF
Main heat exchanger electronic exp. valve	EV1	(Y1E)	0 pulse	2000 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	OFF	ON
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	ON	ON
Indoor unit fan	—	(M1,2F)	Indoor unit control	Indoor unit control
Indoor unit expansion valve	EV	(Y1E)	0 pulse	0 pulse → Initial opening
Ending condition			1 minute	Max. 5 minutes

4.2 Heating Start-up Control

Both master and slave units operate same time for changing 4 way valve position → Normal operation after completion.

Thermostat ON

Parts name	Symbol	Electrical symbol	Pressure equalization control before start-up	Starting control
Compressor	—	(M1C)	0 Hz	52Hz +2 steps/20 sec. (till Pc-Pe >0.49 MPa)
Inverter cooling fan	—	(M1,2F)	OFF	Inverter cooling fan control
4 way valve (Main)	20S1	(Y5S)	Holding	ON
4 way valve (for heat exchanger)	20S2	(Y7S)	Holding	OFF
Main heat exchanger electronic exp. valve	EV1	(Y1E)	0 pulse	180 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	OFF	ON
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	ON	ON
Indoor unit fan	—	(M1,2F)	Indoor unit control	Indoor unit control
Indoor unit expansion valve	EV	(Y1E)	0 pulse	Indoor unit control
Ending condition			1 minute	Max. 6 minutes 40 sec.

5. Normal Control

5.1 Compressor Control

5.1.1 Compressor Control

Compressor PI Control

Carries out the compressor capacity PI control to maintain T_e at constant during cooling operation and T_c at constant during heating operation to ensure stable unit performance.

[Cooling operation]

Controls compressor capacity to adjust T_e to achieve target value (T_eS).

Te setting

L	M (Normal) (factory setting)	H				
3	6	7	8	9	10	11

T_e : Low pressure equivalent saturation temperature (°C)

T_eS : Target T_e value
(Varies depending on T_e setting, operating frequency, etc.)

[Heating operation]

Controls compressor capacity to adjust T_c to achieve target value (T_cS).

Tc setting

L	M (Normal) (factory setting)	H				
43	46	49				

T_c : High pressure equivalent saturation temperature (°C)

T_cS : Target T_c value
(Varies depending on T_c setting, operating frequency, etc.)

[Cooling/Heating simultaneous operation]

Controls compressor capacity to adjust T_e to achieve target value (T_eS) and T_c to achieve target value (T_cS) at the same time.

Te setting

L	M (Normal) (factory setting)	H				
3	6	7	8	9	10	11

T_e : Low pressure equivalent saturation temperature (°C)

T_eS : Target T_e value
(Varies depending on T_e setting, operating frequency, etc.)

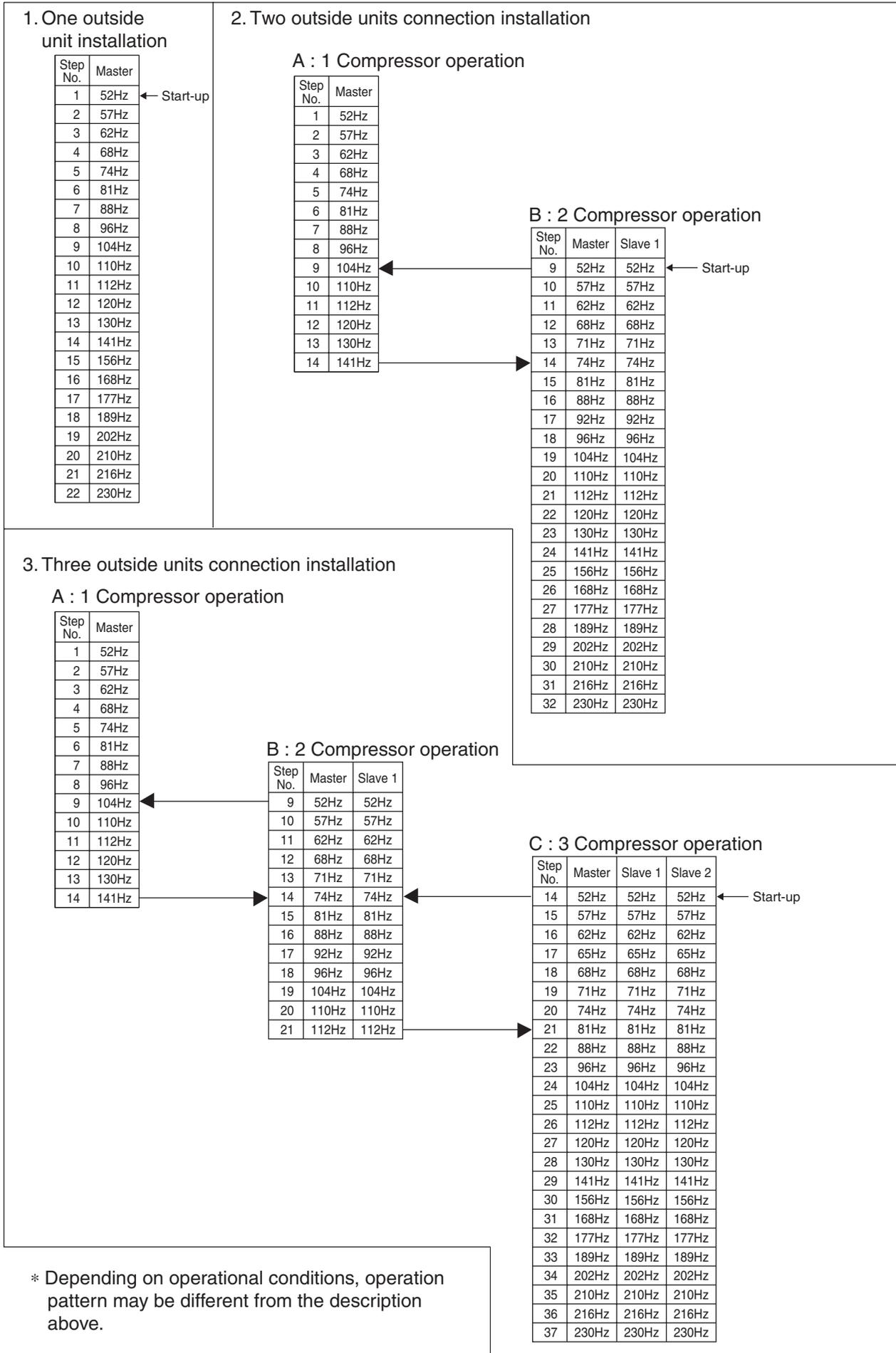
Tc setting

L	M (Normal) (factory setting)	H				
43	46	49				

T_c : High pressure equivalent saturation temperature (°C)

T_cS : Target T_c value
(Varies depending on T_c setting, operating frequency, etc.)

5.1.2 Compressor Operation Frequency Steps



* Depending on operational conditions, operation pattern may be different from the description above.

5.2 Electronic Expansion Valve Control

Main Electronic Expansion Valve EV1 Control

Carries out the electronic expansion valve (Y1E) PI control to maintain the evaporator outlet superheated degree (SH) at constant during heating operation to make maximum use of the outside unit heat exchanger (evaporator).

$$SH = Ts - Te$$

SH : Evaporator outlet superheated degree (°C)

Ts : Suction pipe temperature detected by thermistor R2T (°C)

Te : Low pressure equivalent saturation temperature (°C)

The optimum initial value of the evaporator outlet superheated degree is 5°C, but varies depending on the discharge pipe superheated degree of inverter compressor.

Sub-cooling Electronic Expansion Valve EV3 Control

[Cooling operation]

Makes PI control of the electronic expansion valve (Y3E) to keep the superheated degree of the outlet gas pipe on the evaporator side for the full use of the sub-cooling heat exchanger.

$$SH = Tsh - Te$$

SH : Outlet superheated degree of evaporator (°C)

Tsh : Suction pipe temperature detected with the thermistor R5T (°C)

Te : Low pressure equivalent saturation temperature (°C)

[Heating operation]

To lower the discharge temperature when the discharge temperature is over 95°C, makes PI control of the electronic expansion valve (Y3E) to keep the superheated degree of the outlet gas pipe on the evaporator side for the full use of the sub-cooling heat exchanger. (When the discharge temperature is lower than 95°C, EV3 opening is 0 pulse.)

$$SH = Tsh - Te$$

SH : Outlet superheated degree of evaporator (°C)

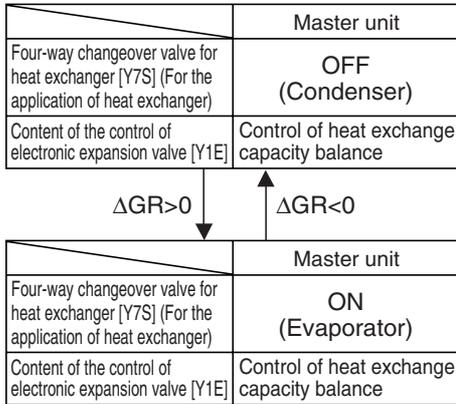
Tsh : Suction pipe temperature detected with the thermistor R5T (°C)

Te : Low pressure equivalent saturation temperature (°C)

5.3 Heat Exchange Mode in Heating Operation or Simultaneous Cooling / Heating Operation

In heating or simultaneous cooling / heating operation, a target condensing and evaporating temperature can be secured by switching the water heat exchanger of the outside unit into evaporator or condenser with load.

One outside unit installation



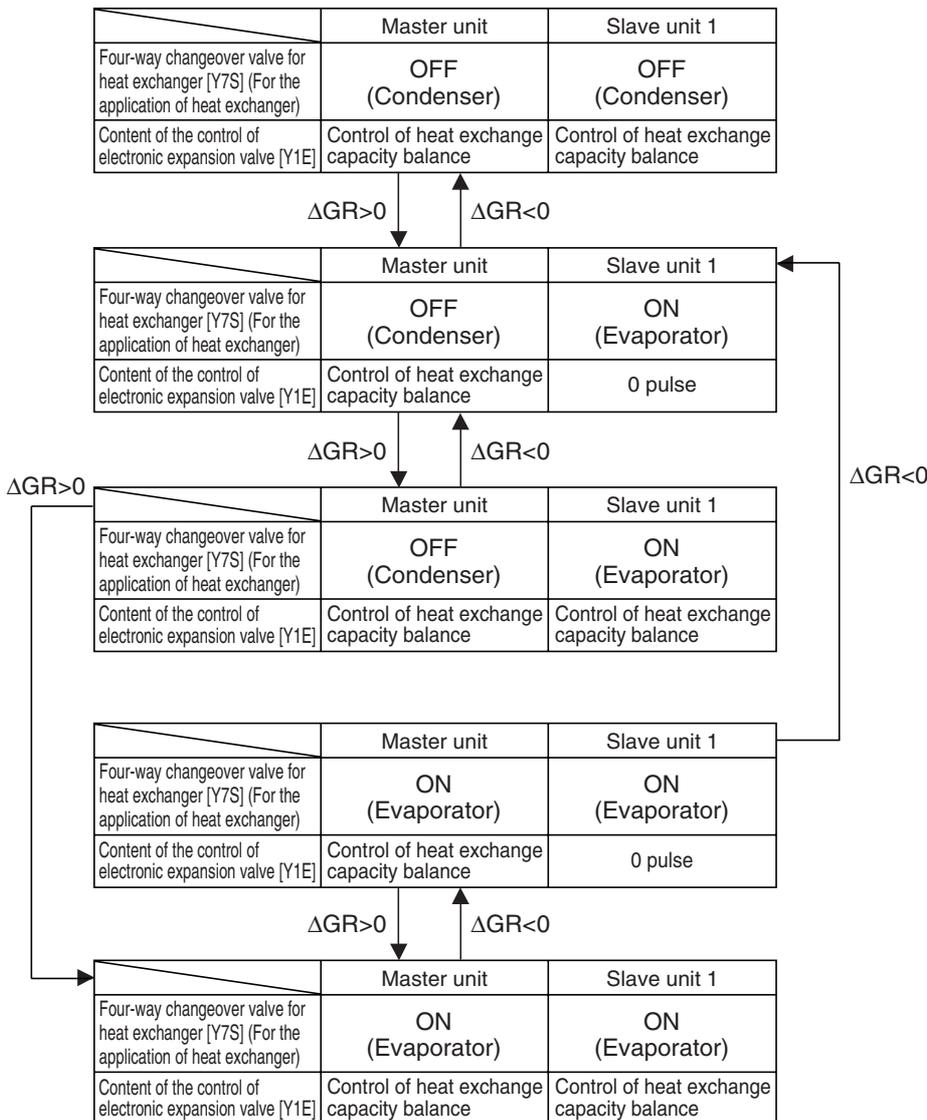
Note 1: $\Delta GR = \text{Target of heat exchange capacity balance} - \text{Actual measurement of heat balance}$

① $\Delta GR > 0$: Insufficient evaporation (Excessive condensation)

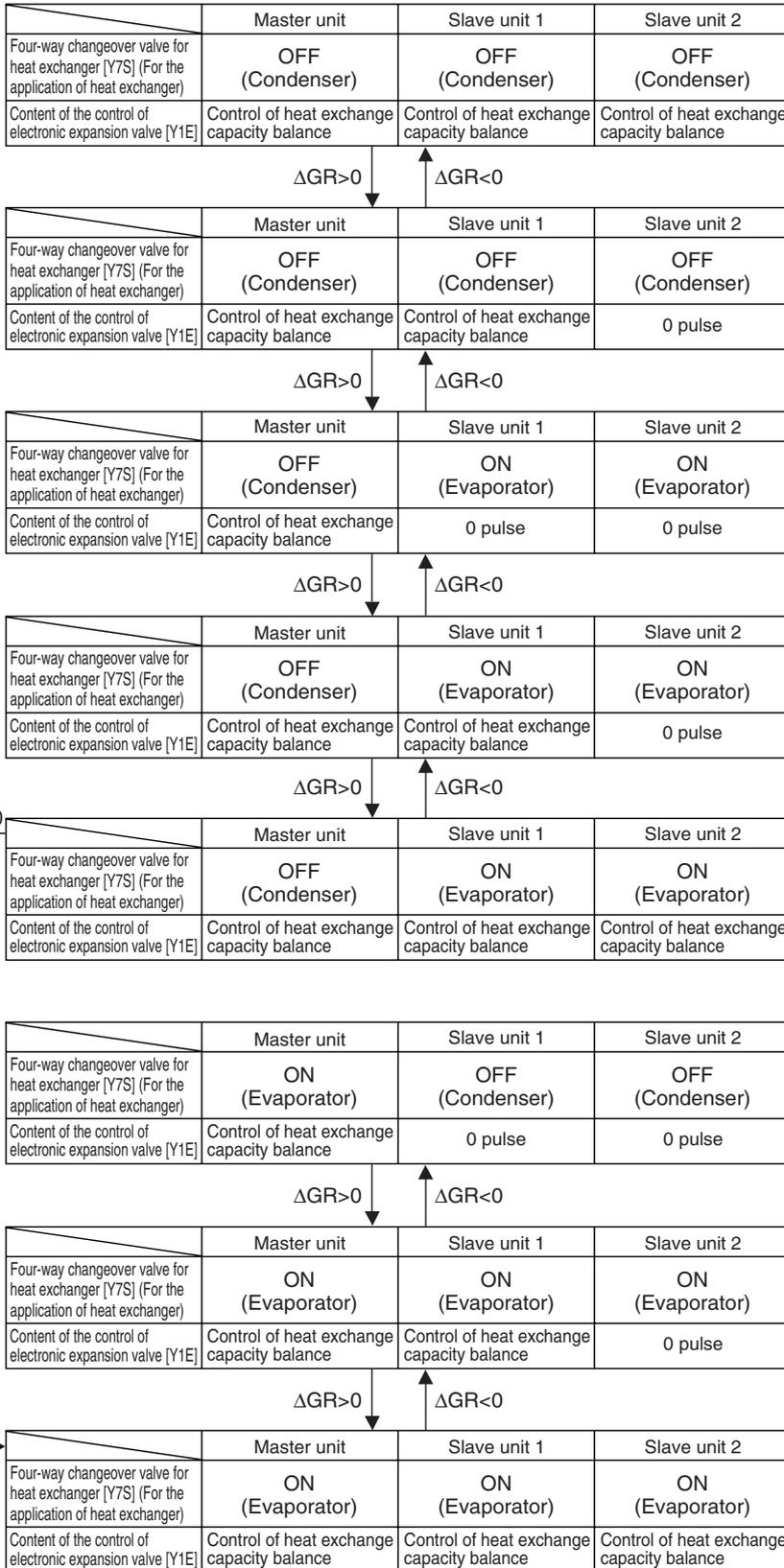
② $\Delta GR < 0$: Insufficient condensation (Excessive evaporation)

2: Control of heat exchange capacity balance
Control the electronic expansion valve so that T_e or T_c will obtain the target value.

Two outside units installation



Three outside units installation



Note 1: $\Delta GR = \text{Target of heat exchange capacity balance} - \text{Actual measurement of heat balance}$

① $\Delta GR > 0$: Insufficient evaporation (Excessive condensation)
 ② $\Delta GR < 0$: Insufficient condensation (Excessive evaporation)

2: Control of heat exchange capacity balance
 Control the electronic expansion valve so that T_e or T_c will obtain the target value.

$\Delta GR > 0$

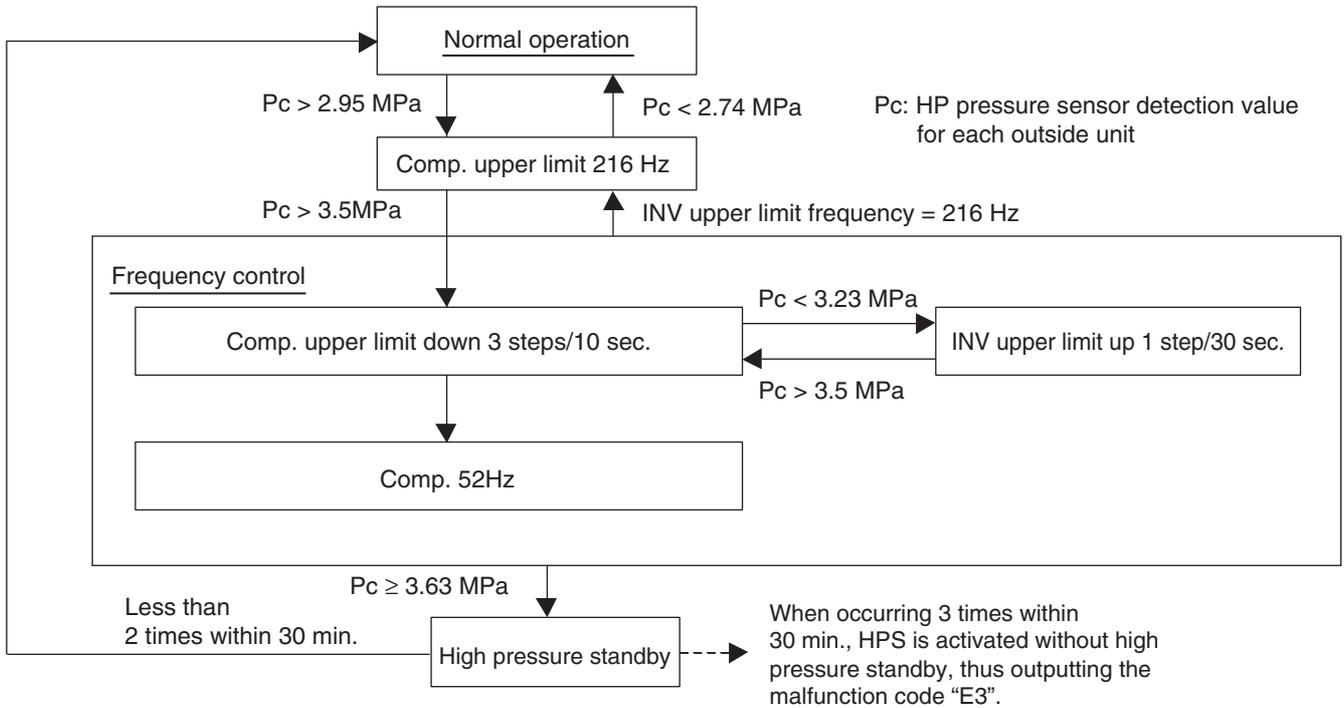
$\Delta GR < 0$

6. Protection Control

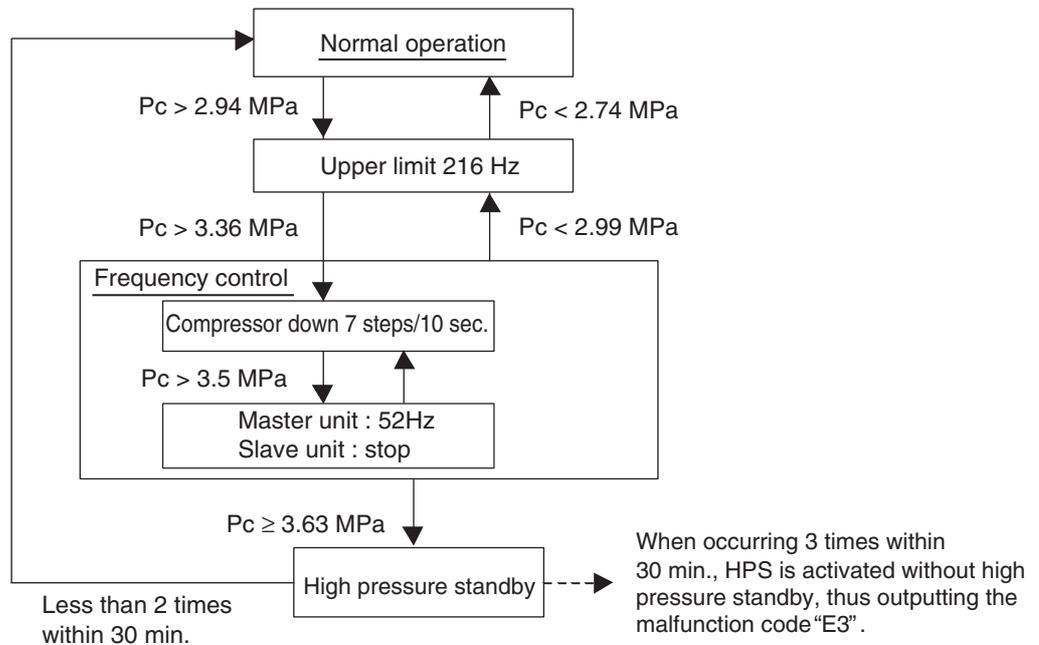
6.1 High Pressure Protection Control

This high pressure protection control is used to prevent the activation of protection devices due to abnormal increase of high pressure and to protect compressors against the transient increase of high pressure.

[In cooling operation]



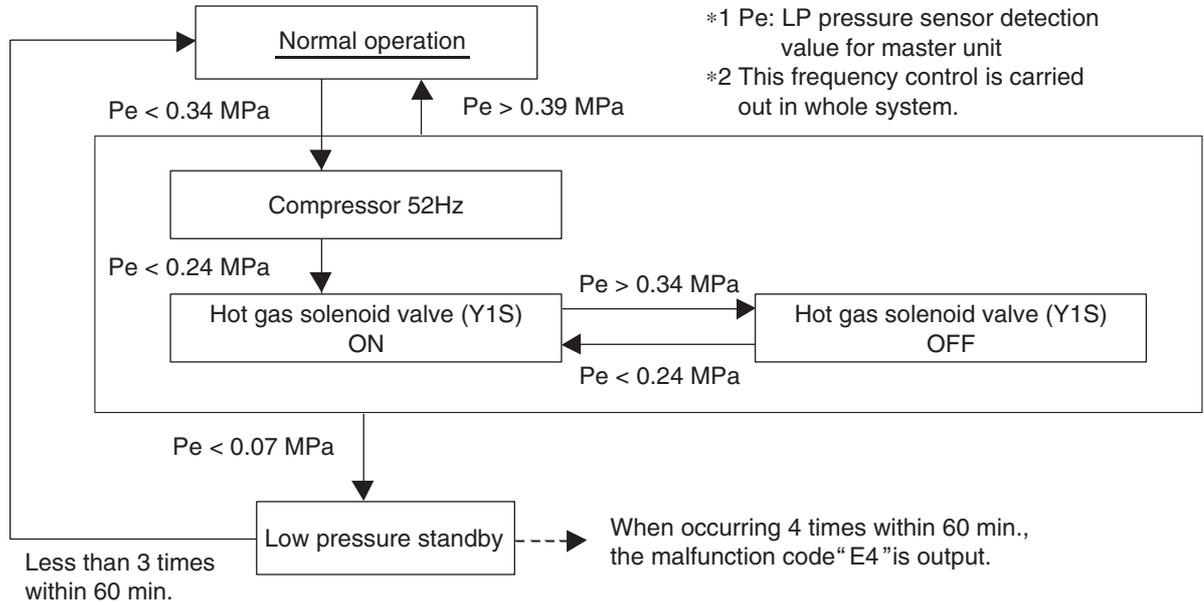
[In heating operation or simultaneous cooling/heating operation]



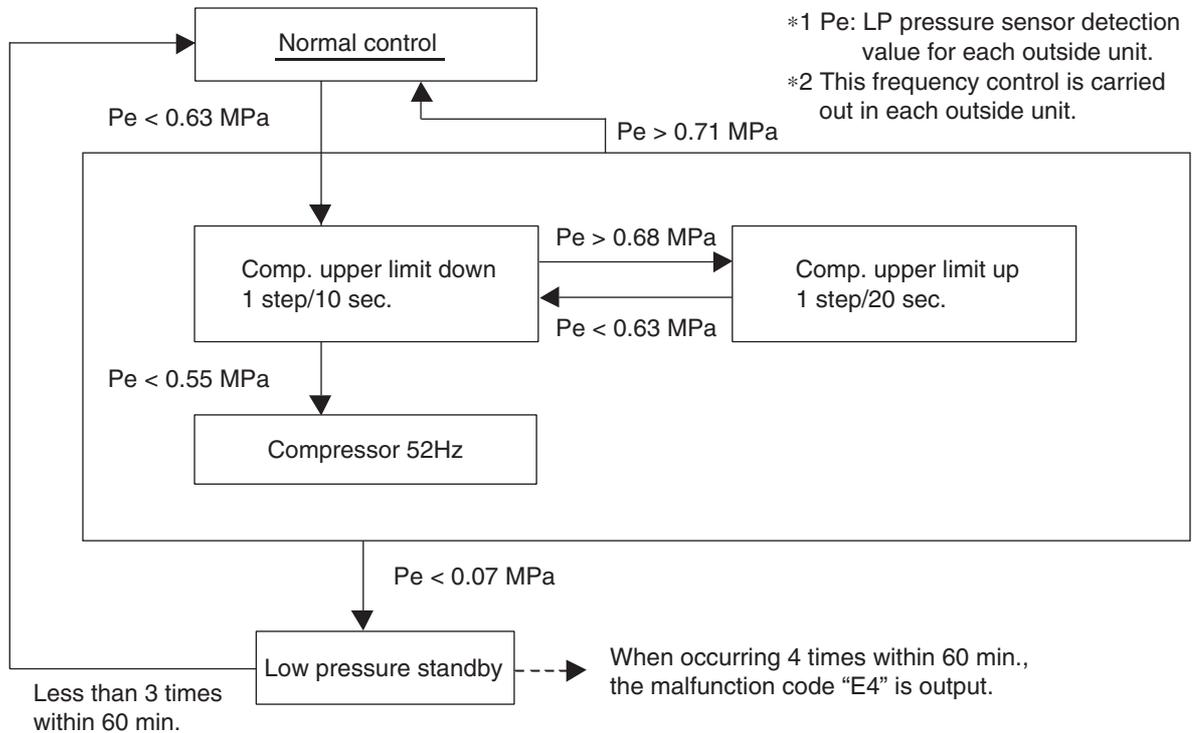
6.2 Low Pressure Protection Control

This low pressure protection control is used to protect compressors against the transient decrease of low pressure.

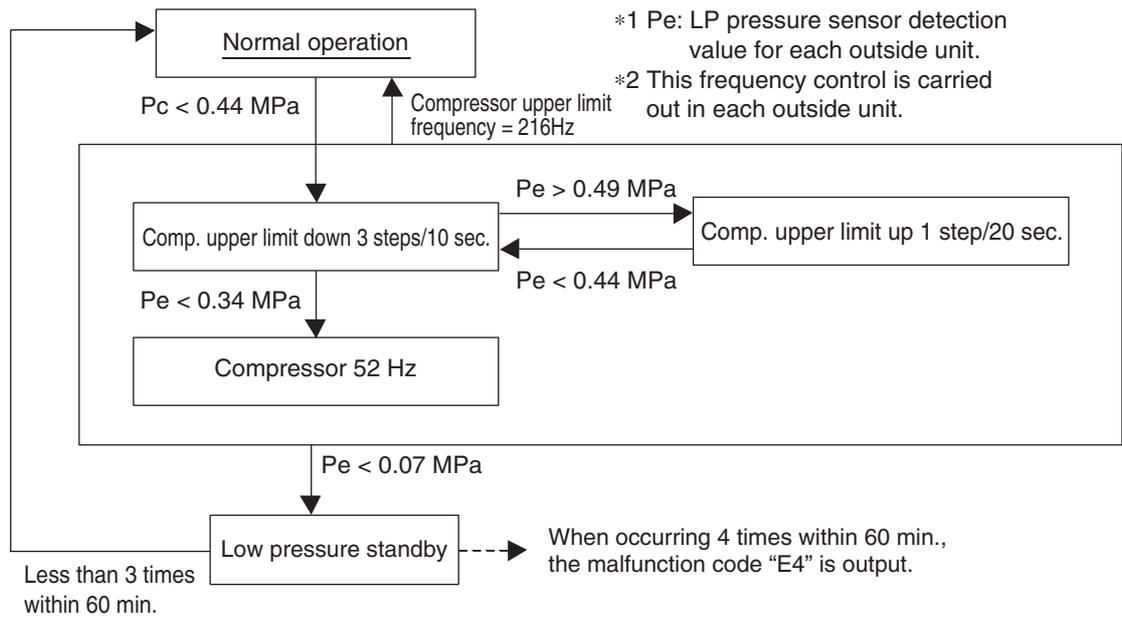
[In cooling operation]



[In heating or cooling/heating simultaneous operation] (When the outside unit heat exchanger is used as evaporator.)



[In heating or cooling/heating simultaneous operation] (When the outside unit heat exchanger is used as condenser.)

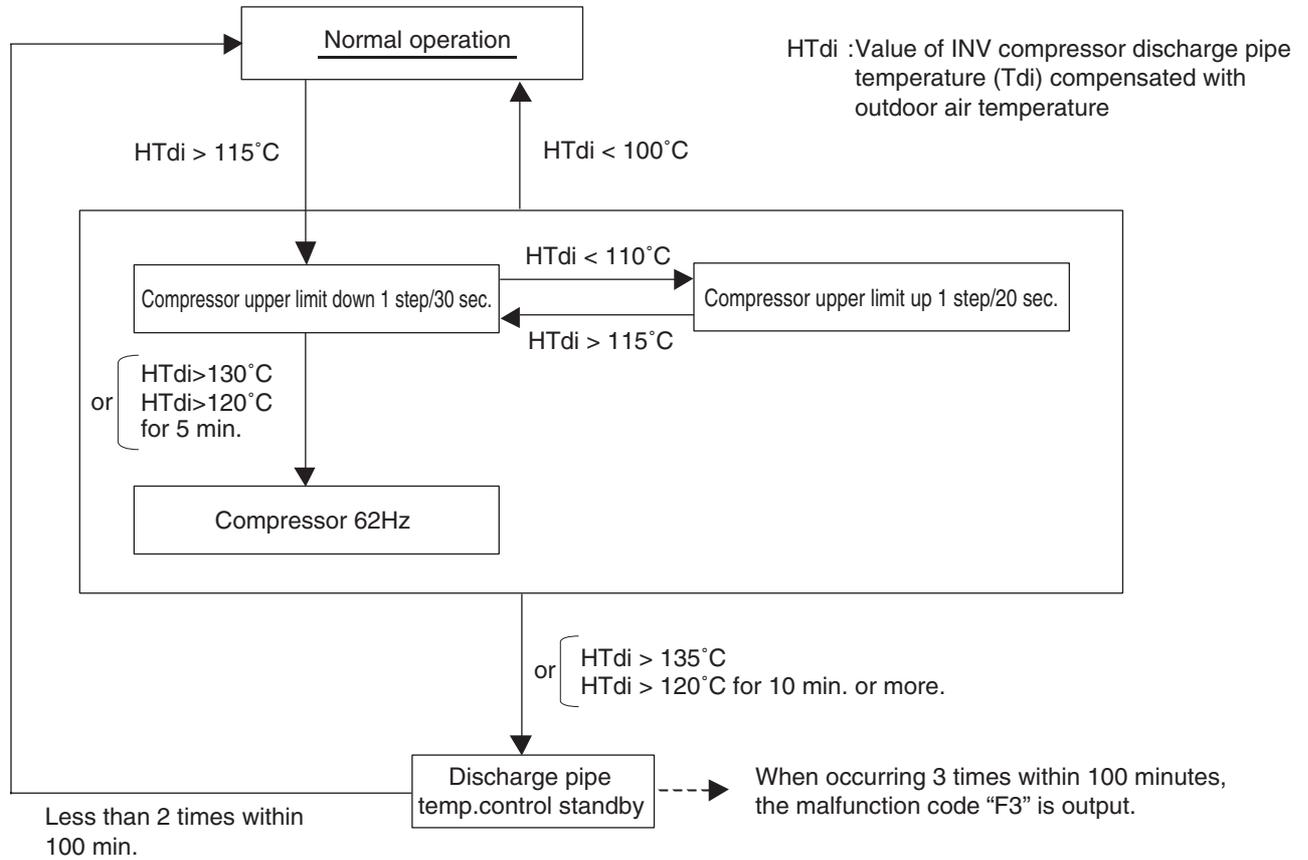


6.3 Discharge Pipe Protection Control

This discharge pipe protection control is used to protect the compressor internal temperature against a malfunction or transient increase of discharge pipe temperature.

*Discharge pipe protection control is carried out in each outside unit.

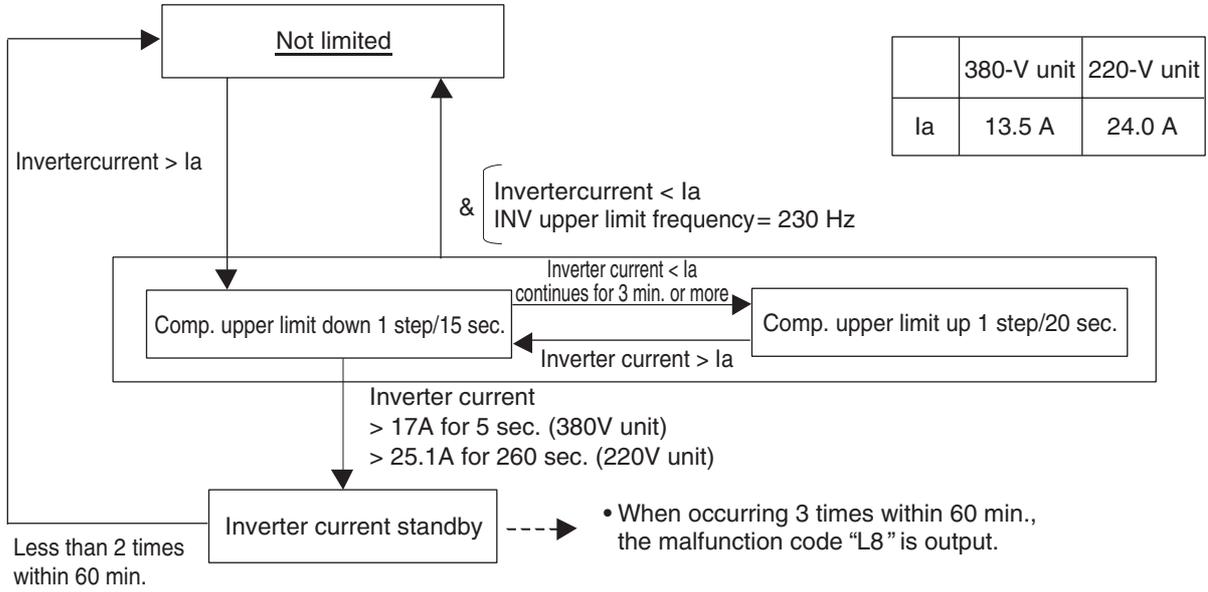
[INV compressor]



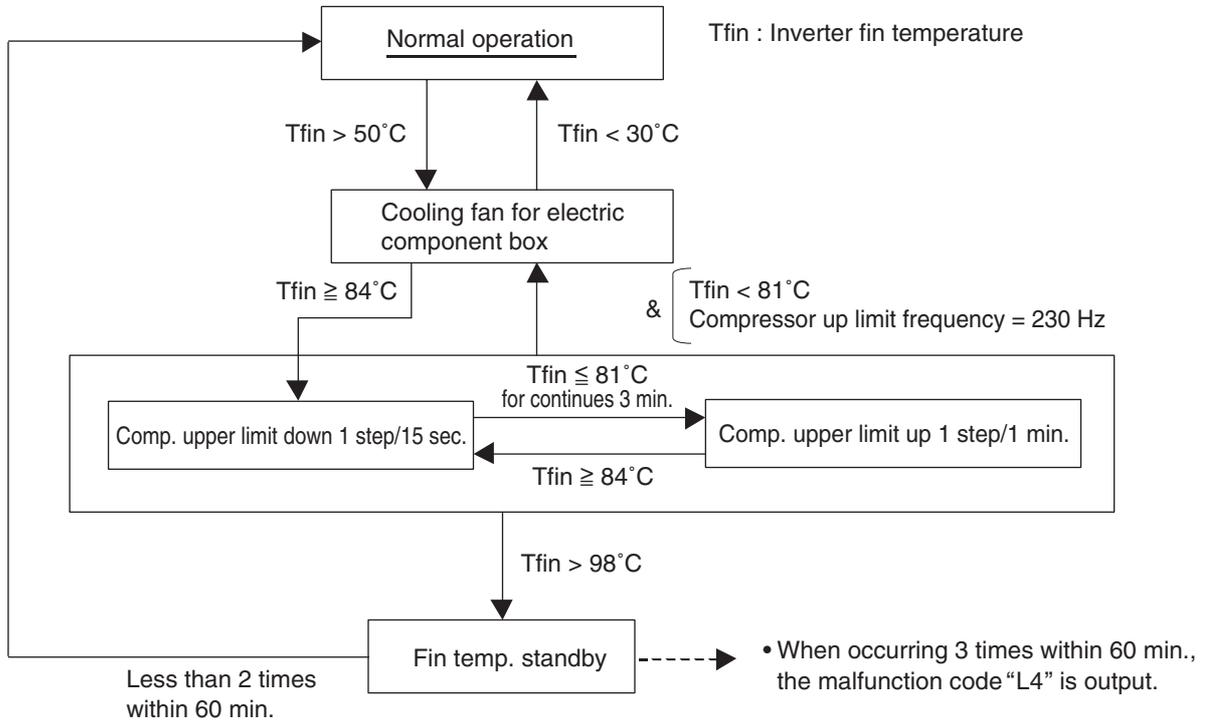
6.4 Inverter Protection Control

Inverter current protection control and inverter fin temperature control are performed to prevent tripping due to a malfunction, or transient inverter overcurrent, and fin temperature increase.
 *This control is carried out in each outside unit.

[Inverter overcurrent protection control]



[Inverter fin temperature control]

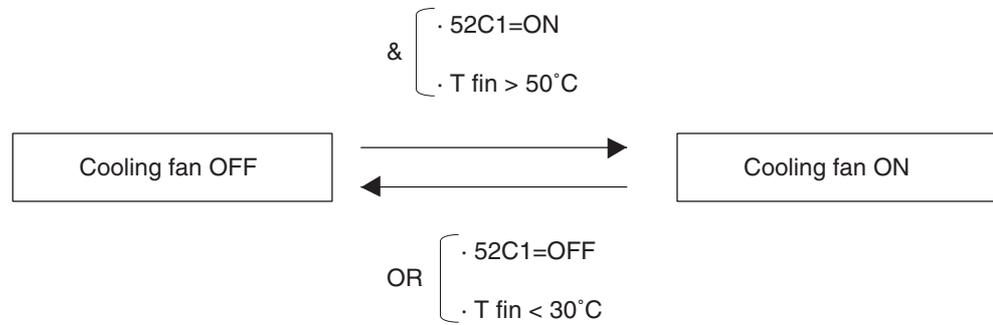


6.5 Cooling Fan Control

This function is used for ON-OFF control of the cooling fan to cool the inverter. This cooling fan operates only when the temperature of the inverter fan is high, in order to reduce the operating time of the fan.

[Details]

Control the cooling fan by each outside unit.



7. Special Operation

7.1 Oil Return Operation

In order to prevent the running-out of refrigerating machine oil in the compressor, the oil flowing out from the compressor to the system side is collected through the oil return operation.

7.1.1 Oil Return Operation in Cooling Operation

[Starting conditions]

Start oil return operation in cooling operation referring to the following conditions.

* Cumulative oil return amount

* Timer

Cumulative compressor operating time after power supply turns on exceeds 2 hours and the time after the completion of previous oil return operation exceeds 8 hours.

Furthermore, the cumulative oil return is calculated according to Tc, Te, and compressor load.

Cooling oil return

Parts name	Symbol	Electrical symbol	Preperation	During oil return operation	After oil return operation
Compressor	—	(M1C)	Same as normal cooling operation <div style="display: flex; align-items: center; justify-content: center; gap: 10px;"> ↑ ↓ </div>	104 Hz	52 Hz
4 way valve (Main)	20S1	(Y5S)		OFF	OFF
4 way valve (for heat exchanger)	20S2	(Y7S)		OFF	OFF
Main heat exchanger electronic expansion valve	EV1	(Y1E)		2000 pulse	2000 pulse
Sub-cooling electronic expansion valve	EV3	(Y3E)		0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)		ON	ON
Water heat exch. oil return solenoid valve	SVE	(Y2S)		OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)		OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)		OFF	OFF
Liquid pipe stop solenoid valve	SVSL	(Y6S)		ON	ON
Indoor cooling unit fan	—	(M1,2F)		Thermostat on/Stop : Indoor unit control Thermostat off : OFF	Normal control
Indoor cooling unit expansion valve	EV	(Y1E)		Stop/thermostat off: 200 pls Thermostat ON: Indoor unit control	Normal control
Indoor heating unit fan	—	(M1,2F)		—	—
Indoor heating unit expansion valve	EV	(Y1E)		—	—
Ending condition			20 sec.	Max.8 min.	Max. 3min.

7.1.2 Oil Return Operation in Heating or Cooling/Heating simultaneous Operation

[Starting conditions]

Start oil return operation in heating operation referring to the following conditions.

Cumulative compressor operating time after power supply turns on exceeds 2 hours and the time after the completion of previous oil return operation exceeds 8 hours. And cumulative oil return is calculated based on Tc, Te compressor load.

Heating & Cooling/heating simultaneous operation oil return

Parts name	Symbol	Electrical symbol	Preperation	During oil return operation	After oil return operation
Compressor	—	(M1C)	↑ Same as normal heating operation ↓	104 Hz	74 Hz
4 way valve 1	20S1	(Y5S)		OFF	ON
4 way valve 2	20S2	(Y7S)		OFF	Heat exchanger mode
Main heat exchanger electronic expansion valve	EV1	(Y1E)		2000 pulse	20S2=OFF : 2000 pulse 20S2=ON : 180 pulse
Sub-cooling electronic expansion valve	EV3	(Y3E)		0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)		ON	ON
Water heat exch. oil return solenoid valve	SVE	(Y2S)		OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)		OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)		OFF	OFF
Liquid pipe stop solenoid valve	SVSL	(Y6S)		ON	ON
Indoor cooling unit fan	—	(M1,2F)		Thermostat on/Stop : Indoor unit control Thermostat off : OFF	Normal control
Indoor cooling unit expansion valve	EV	(Y1E)		320 pulse	Normal control
Indoor heating unit fan	—	(M1,2F)		OFF	Indoor unit control
Indoor heating unit expansion valve	EV	(Y1E)		320 pulse	Normal control
Ending condition			2 min.	Max.8 min.	Max.3 min.

7.2 Oil Return Operation of Water Heat Exchanger

[Oil return operation of Water heat exchanger]

When the water heat exchanger is used as evaporator during heating or simultaneous cooling/heating operation, the operation that the oil accumulated in the water heat exchanger is returned to compressor is conducted.

[IN condition]

After a certain continuous period of time has passed under the following conditions, oil return operation starts.

- & {
- 20S2 = 1 (Water heat exchanger is an evaporator.)
 - $T_g - T_e > 10^\circ\text{C}$
 - Elapse of a certain period of time

Water heat exchanger oil return control

Parts name	Symbol	Electrical symbol	Water heat exchanger oil return control
Compressor	—	(M1C)	52 Hz
4 way valve (Main)	20S1	(Y5S)	ON
4 way valve (for heat exchanger)	20S2	(Y7S)	OFF
Main heat exchanger electronic expansion valve	EV1	(Y1E)	300 pulse
Sub-cooling electronic expansion valve	EV3	(Y3E)	180 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	ON
Water heat exch. oil return solenoid valve	SVE	(Y2S)	ON
Receiver gas charging solenoid	SVL	(Y3S)	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	ON
Indoor cooling unit fan	—	(M1,2F)	<p>Normal control</p>
Indoor cooling unit expansion valve	EV	(Y1E)	
Indoor heating unit fan	—	(M1,2F)	
Indoor heating unit expansion valve	EV	(Y1E)	Tharmostat on : Normal control Tharmostat off/Stop : 500 pulse
Ending condition			Max.90 sec.

7.3 Pump-down Residual Operation Control

If any liquid refrigerant remains in the heat exchanger during compressor startup, the liquid refrigerant will enter the compressor, resulting in the dilution of the refrigerating machine oil in the compressor and the degradation of lubricating capacity.

Therefore, before the compressor stops, pump-down operation is performed to collect the refrigerant in the heat exchanger.

7.3.1 Cooling Operation Mode

Parts name	Symbol	Electrical symbol	Master unit operation	Slave unit operation
Compressor	—	(M1C)	Current step	OFF
Inverter cooling fan	—	(M1,2F)	Inverter cooling fan control	Inverter cooling fan control
4 way valve (Main)	20S1	(Y5S)	OFF	OFF
4 way valve (for heat exchanger)	20S2	(Y7S)	OFF	OFF
Main heat exchanger electronic exp. valve	EV1	(Y1E)	2000 pulse	0 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pls	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	ON	OFF
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	OFF	ON
Indoor cooling unit fan	—	(M1,2F)	No instruction	
Indoor cooling unit expansion valve	EV	(Y1E)	All 0 pulse	
Ending condition			Max. 5 min.	

7.3.2 Heating & Simultaneous Cooling/Heating Mode

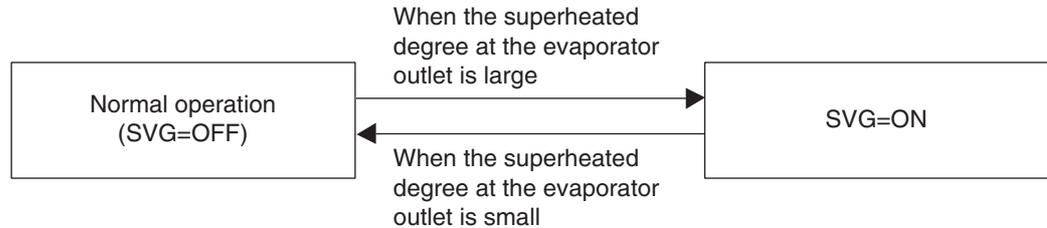
Parts name	Symbol	Electrical symbol	Master unit operation	Slave unit operation
Compressor	—	(M1C)	Current step	OFF
Inverter cooling fan	—	(M1,2F)	Inverter cooling fan control	Inverter cooling fan control
4 way valve 1	20S1	(Y5S)	ON	ON
4 way valve 2	20S2	(Y7S)	Holding	Holding
Main heat exchanger electronic exp. valve	EV1	(Y1E)	20S2=OFF: 2000 pulse 20S2=ON : 0 pulse	0 pulse
Sub-cooling electronic exp. valve	EV3	(Y3E)	0 pulse	0 pulse
Hot gas bypass solenoid valve	SVP	(Y1S)	ON	OFF
Water heat exch. oil return solenoid valve	SVE	(Y2S)	OFF	OFF
Receiver gas charging solenoid valve	SVL	(Y3S)	OFF	OFF
Receiver gas discharge solenoid valve	SVG	(Y4S)	OFF	OFF
Non-operation unit liquid pipe stop solenoid valve	SVSL	(Y6S)	OFF	ON
Indoor cooling unit fan	—	(M1,2F)	No instruction	X
Indoor cooling unit expansion valve	EV	(Y1E)	All 0 pulse	
Indoor heating unit fan	—	(M1,2F)	No instruction	
Indoor heating unit expansion valve	EV	(Y1E)	All 500 pulse	
Ending condition			Max. 5 min.	

7.4 Refrigerant Drift Prevention

“Refrigerant drift prevention control” is carried out, in order to prevent refrigerant drift among outside units during heating operation using outside multiple connection. Excessively charged refrigerant in outside units are collected and transferred to other outside units that are running out of gas by controlling the solenoid valve.

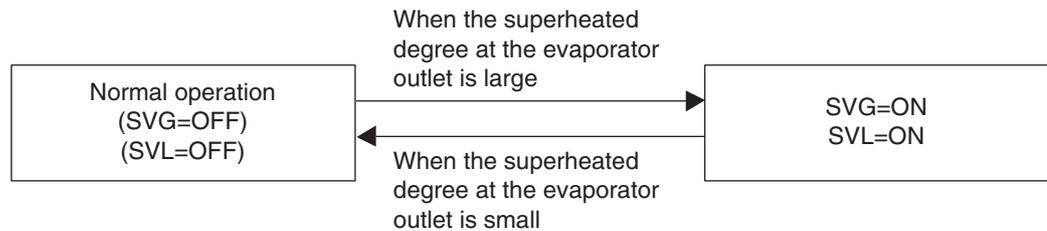
(1) In case of cooling/heating changeover connection

When the superheated at the evaporator outlet degree is large, open the solenoid valve (SVG) for venting receiver gas of the outside units that are running out of gas.



(2) In case of cooling/heating simultaneous connection

When the superheated degree at the evaporator outlet is large, open the solenoid valve (SVG) for venting receiver gas of the outside units that are running out of gas and the solenoid valve (SVL) for pressurizing the receiver of the excessively charged outside units.



8. Other Control

8.1 Outside Unit Rotation

In the case of multi-outside-unit system, this outside unit rotation is used to prevent the compressor from burning out due to unbalanced oil level between outside units.

[Details of outside unit rotation]

In the case of multi-outside-unit system, each outside unit is given an operating priority for the control.

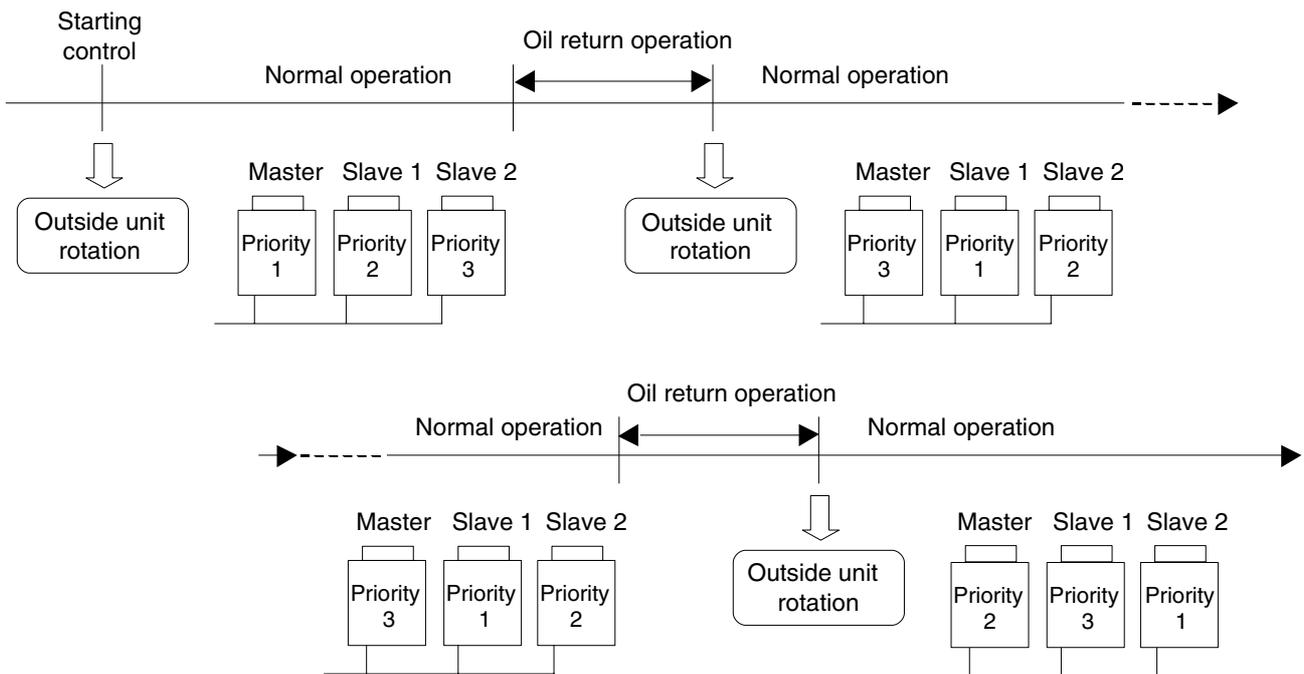
Outside unit rotation makes it possible to change the operating priority of outside units.

Thus, the system becomes free of compressors that stop over an extended period of time at the time of partial loading, preventing unbalanced oil level.

[Timing of outside unit rotation]

- After oil return operation
- At the beginning of the starting control

Example) The following diagram shows outside unit rotation in combination of 3 outside units.



* “Master unit”, “slave unit 1” and “slave unit 2” in this section are the names for installation. They are determined in installation work, and not changed thereafter. (These names are different from “master unit” and “slave unit” for control.)

The outside unit connected the control wires (F1 and F2) for the indoor unit should be designated as master unit

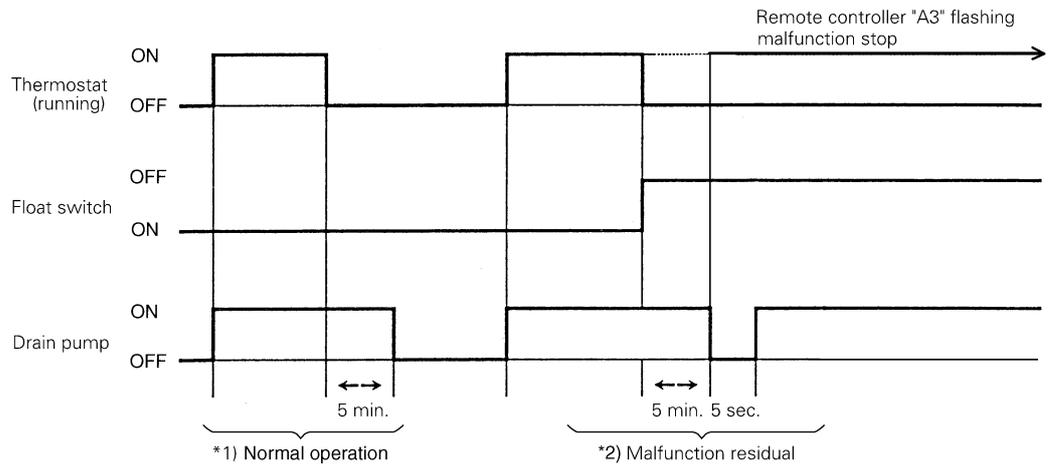
Consequently, The LED display on the main PC board for “master unit”, “slave unit 1” and “slave unit 2” do not change. (Refer to the page 101.)

9. Outline of Control (Indoor Unit)

9.1 Drain Pump Control

1. The drain pump is controlled by the ON/OFF buttons (4 button (1) - (4) given in the figure below).

9.1.1 When the Float Switch is Tripped While the Cooling Thermostat is ON:



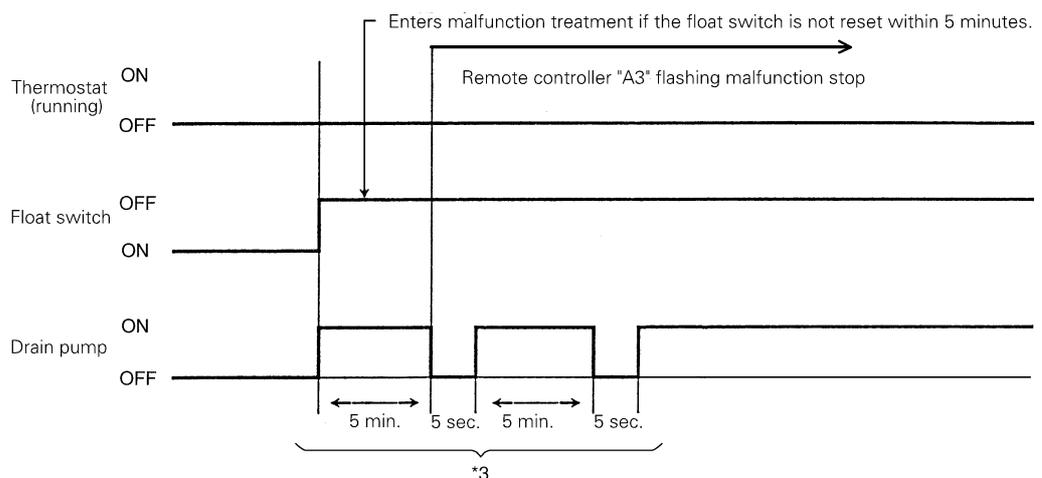
*1. (Normal operation):

The objective of residual operation is to completely drain any moisture adhering to the fin of the indoor unit heat exchanger when the thermostat goes off during cooling operation.

*2. (Malfunction residual):

The remote controller will display "A3" and the air conditioner will come to an abnormal stop in 5 minutes if the float switch is turned OFF while the cooling thermo is ON.

9.1.2 When the Float Switch is Tripped During Cooling OFF by Thermostat:

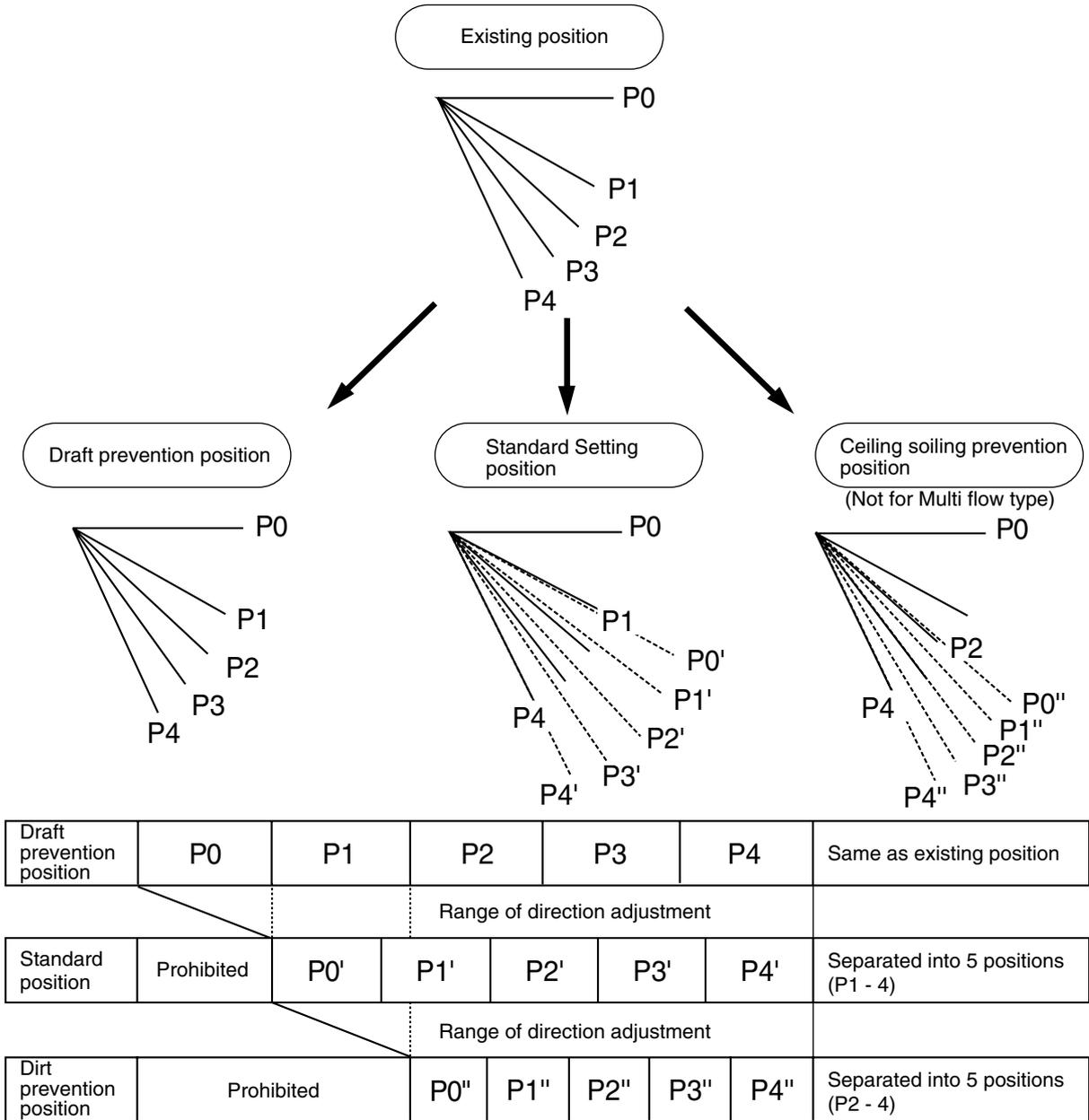


*3. (Malfunction residual):

The remote controller will display "A3" and the air conditioner will come to an abnormal stop if the float switch is turned OFF and not turned ON again within 5 minutes while the cooling thermo is OFF.

9.2 Louver Control for Preventing Ceiling Dirt

We have added a control feature that allows you to select the range of in which air direction can be adjusted in order to prevent the ceiling surrounding the air discharge outlet of ceiling mounted cassette type units from being soiled. (This feature is available on double flow, multi-flow and corner types.)



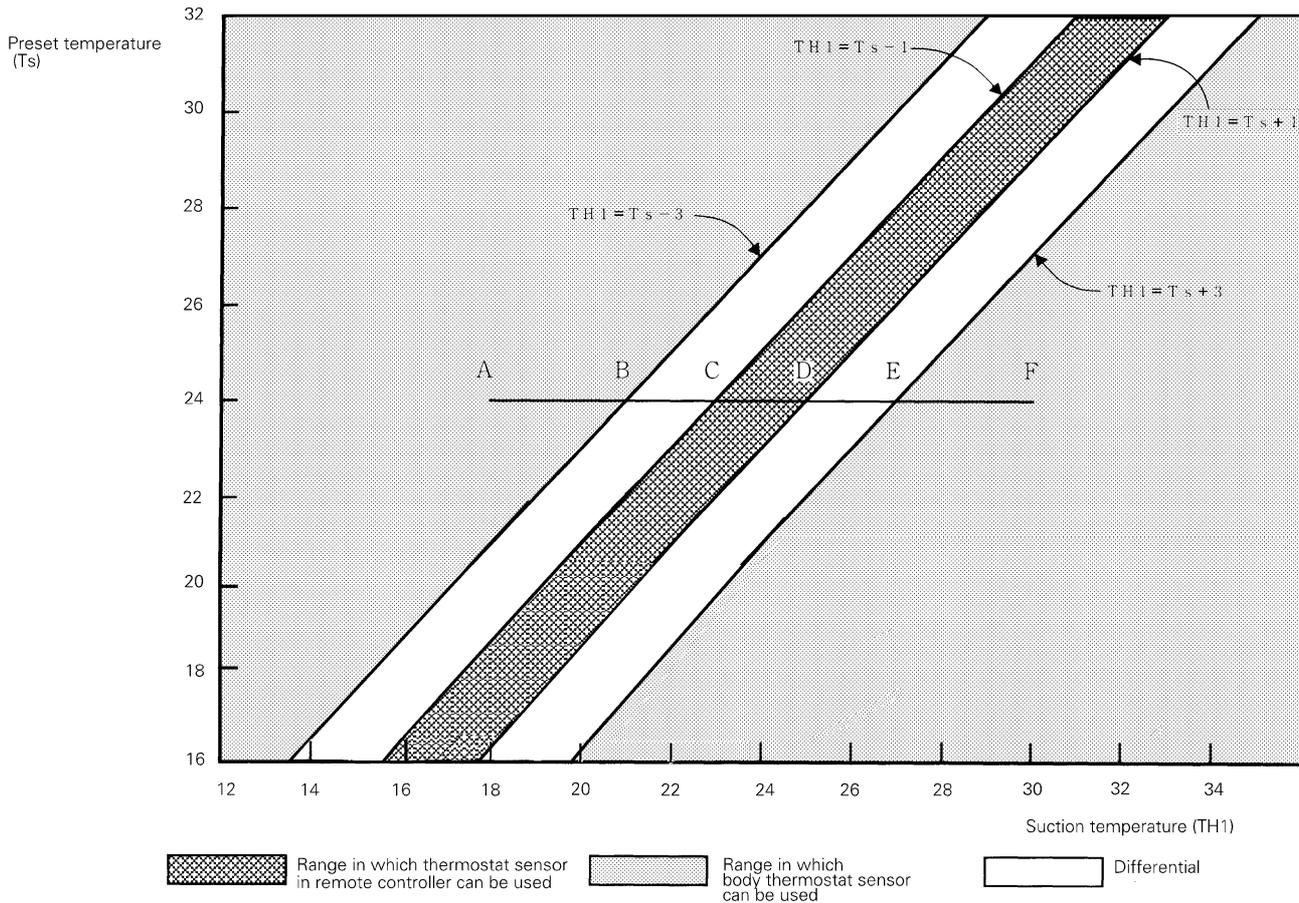
The factory set position is standard position.

9.3 Thermostat Sensor in Remote Controller

Temperature is controlled by both the thermostat sensor in remote controller and air suction thermostat in the indoor unit. (This is however limited to when the field setting for the thermostat sensor in remote controller is set to "Use.")

Cooling

If there is a significant difference in the preset temperature and the suction temperature, fine adjustment control is carried out using a body thermostat sensor, or using the sensor in the remote controller near the position of the user when the suction temperature is near the preset temperature.



■ **Ex: When cooling**

Assuming the preset temperature in the figure above is 24°C, and the suction temperature has changed from 18°C to 30°C

(This example also assumes there are several other air conditioners, the VRV system is off, and that temperature changes even when the thermostat sensor is off.)

Body thermostat sensor is used for temperatures from 18°C to 23°C (A → C).

Remote controller thermostat sensor is used for temperatures from 23°C to 27°C (C → E).

Body thermostat sensor is used for temperatures from 27°C to 30°C (E → F).

And, assuming suction temperature has changed from 30°C to 18°C (F → A):

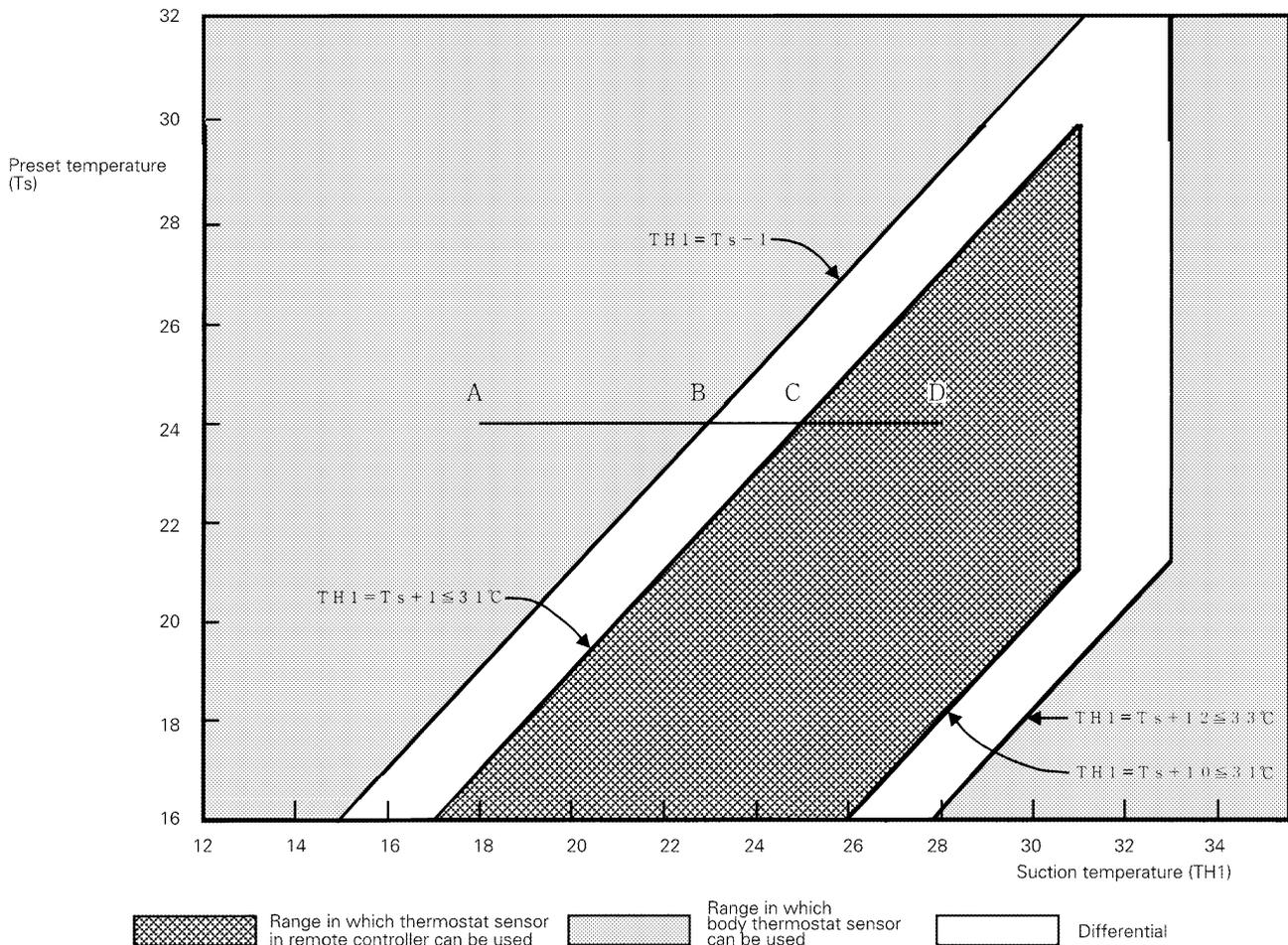
Body thermostat sensor is used for temperatures from 30°C to 25°C (F → D).

Remote controller thermostat sensor is used for temperatures from 25°C to 21°C (D → B).

Body thermostat sensor is used for temperatures from 21°C to 18°C (B → A).

Heating

When heating, the hot air rises to the top of the room, resulting in the temperature being lower near the floor where the occupants are. When controlling by body thermostat sensor only, the unit may therefore be turned off by the thermostat before the lower part of the room reaches the preset temperature. The temperature can be controlled so the lower part of the room where the occupants are doesn't become cold by widening the range in which thermostat sensor in remote controller can be used so that suction temperature is higher than the preset temperature.



■ Ex: When heating

Assuming the preset temperature in the figure above is 24°C, and the suction temperature has changed from 18°C to 28°C (A → D):

(This example also assumes there are several other air conditioners, the VRV system is off, and that temperature changes even when the thermostat sensor is off.)

Body thermostat sensor is used for temperatures from 18°C to 25°C (A → C).

Remote controller thermostat sensor is used for temperatures from 25°C to 28°C (C → D).

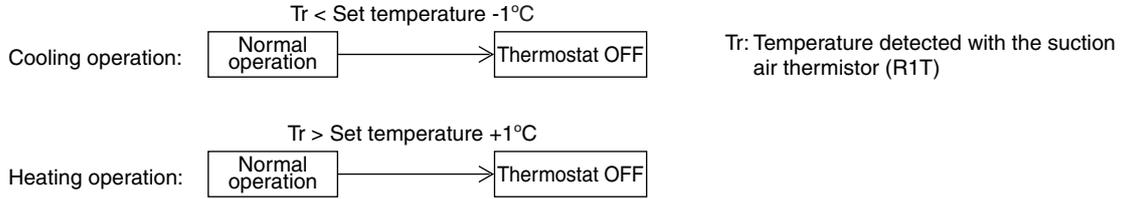
And, assuming suction temperature has changed from 28°C to 18°C (D → A):

Remote controller thermostat sensor is used for temperatures from 28°C to 23°C (D → B).

Body thermostat sensor is used for temperatures from 23°C to 18°C (B → A).

9.4 Thermostat Control While in Normal Operation

VRV multi systems are set at factory to thermostat control mode using the remote controller. While in normal thermostat differential control mode (i.e., factory set mode), the thermostat turns OFF when the system reaches a temperature of -1°C from the set temperature while in cooling operation or of $+1^{\circ}\text{C}$ from that while in heating operation.



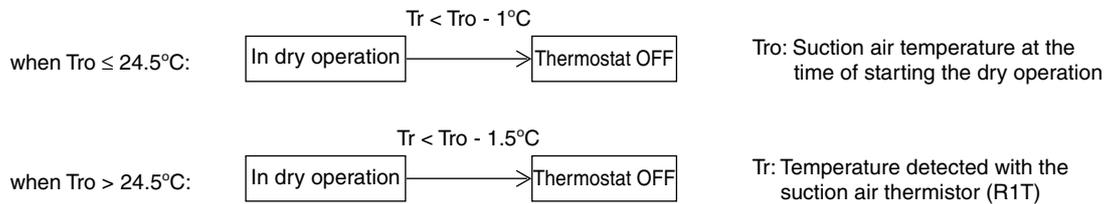
While in a single remote controller group control, the body thermostat is only used for this control.

Furthermore, while in heating operation, cassette-mounted indoor units conduct the thermostat control by a value compensated by -2°C for the value detected with the body thermostat. (Through field settings, the thermostat differential setting can be changed from 1°C to 0.5°C . For details on the changing procedure, refer to information on page onward.)

9.5 Thermostat Control in Dry Operation

While in dry operation, the thermostat control is conducted according to a suction temperature at the time of starting the dry operation.

Assuming that the suction air temperature at the time of starting the dry operation is Tr_0 and the suction air temperature in operation is Tr ,



Furthermore, while in dry operation mode, fans operate at L flow rate, stops for a period of six minutes while the thermostat is OFF, and then return to operation at L flow rate. (This control is used to prevent a rise in indoor temperature while in thermostat OFF mode.)

9.6 Electronic Expansion Valve Control

- Electronic expansion Valve Control

In cooling, to maximize the capacity of indoor unit heat exchanger (evaporator), operate the electronic expansion valve under PI control so that the evaporator outlet superheated degree (SH) will become constant.

In heating, to maximize the capacity of indoor unit heat exchanger (condenser), operate the electronic expansion valve under PI control so that the evaporator outlet superheated degree (Condenser outlet subcooled degree) will become constant.

Cooling $SH=TH_1-TH_2$
 (Heating $SC=TC-TH_1$)

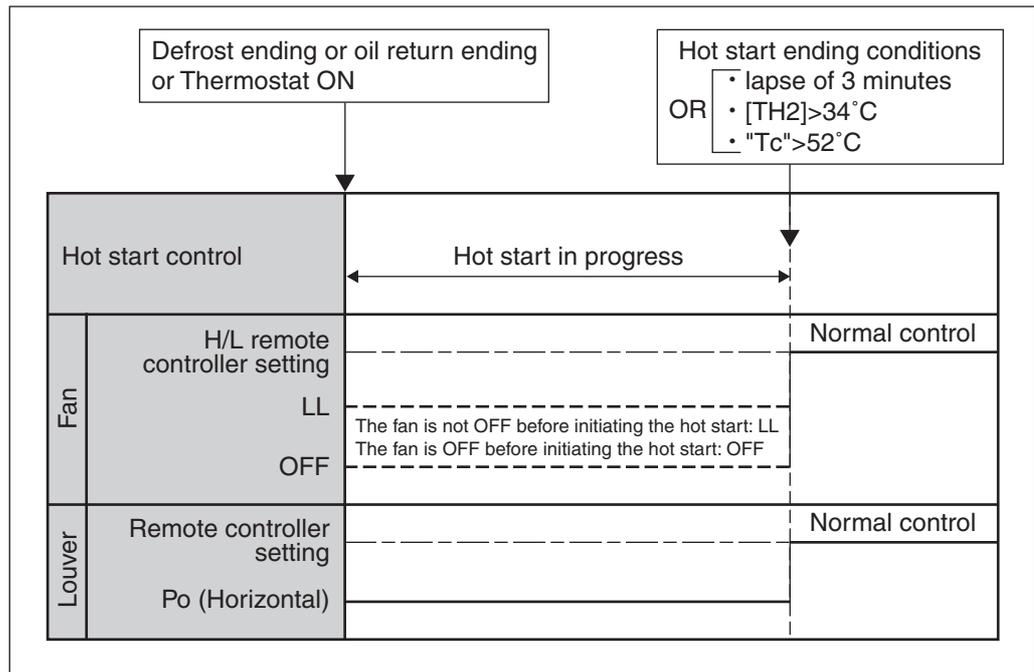
SH : Evaporator outlet superheated degree
 TH₁: Temperature (°C) detected with the liquid thermistor
 TH₂: Temperature (°C) detected with the gas thermistor
 SC : Condenser outlet subcooled degree
 TC : High pressure equivalent saturated temperature

Furthermore, the default value of the optimal evaporator outlet superheated degree (condenser outlet subcooled degree) is 5 deg. However, this default value varies with the operating performance.

9.7 Hot Start Control (In Heating Operation Only)

At startup with thermostat ON or after the completion of defrosting in heating operation, the indoor unit fan is controlled to prevent cold air from blasting out and ensure startup capacity.

[Detail of operation]



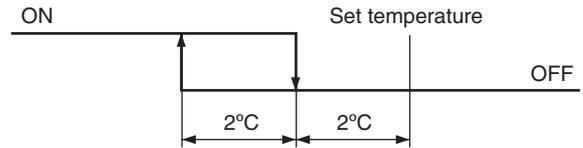
TH₂ : Temperature (°C) detected with the gas thermistor
 TC : High pressure equivalent saturated temperature

9.8 Heater Control

The heater control is conducted in the following manner.

[Normal control]

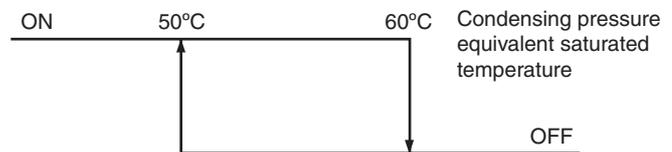
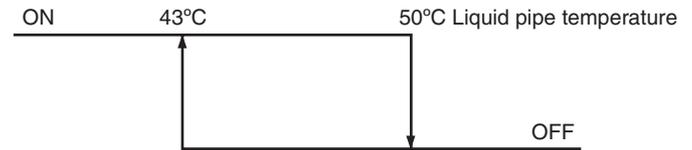
While in heating operation, the heater control (ON/OFF) is conducted as shown on the right.



[Overload control]

When the system is overloaded in heating operation, the heater will be turned OFF in the following two manners.

- (1) The heater control (ON/OFF) is conducted through the liquid pipe temperature (R2T) of the indoor unit.
- (2) The heater control (ON/OFF) is conducted by converting the heater temperature into the condensing pressure equivalent saturated temperature (Tc) according to the temperature detection through the high pressure sensor (SINPH) of the outside unit.



[Fan residual operation]

While the heater turns OFF, in order to prevent the activation of the thermal protector, the fan conducts residual operation for a given period of time after the heater turns OFF. (This operation is conducted regardless of with or without heater equipped.)

Residual operation time = 100 seconds on ceiling suspended type or 60 seconds on other types

9.9 List of Swing Flap Operations

Swing flaps operate as shown in table below.

			Fan	Flap		
				FXFQ	FXCQ FXHQ FXKQ	FXAQ
Heating	Hot start from defrosting operation	Swing	OFF	Horizontal	Horizontal	Horizontal
		Wind direction set	OFF	Horizontal	Horizontal	Horizontal
	Defrosting operation	Swing	OFF	Horizontal	Horizontal	Horizontal
		Wind direction set	OFF	Horizontal	Horizontal	Horizontal
	Thermostat OFF	Swing	LL	Horizontal	Horizontal	Horizontal
		Wind direction set	LL	Horizontal	Horizontal	Horizontal
	Hot start from thermostat OFF mode (for prevention of cold air)	Swing	LL	Horizontal	Horizontal	Horizontal
		Wind direction set	LL	Horizontal	Horizontal	Horizontal
	Stop	Swing	OFF	Horizontal	Horizontal	Totally closed
		Wind direction set	OFF	Horizontal	Horizontal	Totally closed
Cooling	Thermostat ON in dry operation using micro computer	Swing	L* ¹	Swing	Swing	Swing
		Wind direction set	L* ¹	Set	Set	Set
	Thermostat OFF in dry operation using micro computer	Swing	OFF or L	Swing	Swing	Swing
		Wind direction set		Set	Set	Set
	Thermostat OFF in cooling	Swing	Set	Swing	Swing	Swing
		Wind direction set	Set	Set	Set	Set
	Stop	Swing	OFF	Horizontal	Horizontal	Totally closed
		Wind direction set	OFF	Set	Horizontal	Totally closed
	Micro computer control (including cooling operation)	Swing	L	Swing	Swing	Swing
		Wind direction set	L	Set	Set	Set

*1. L or LL only on FXFQ models

9.10 Freeze Prevention

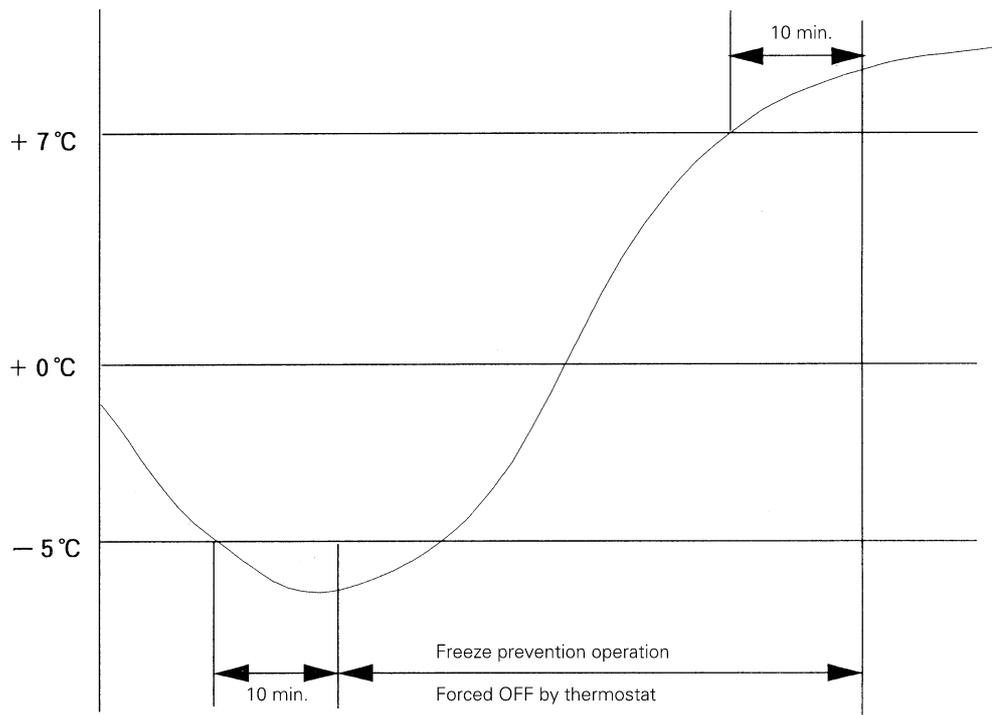
Freeze Prevention by Off Cycle (Indoor Unit)

When the temperature detected by liquid pipe temperature thermistor (R2T) of the indoor unit heat exchanger drops too low, the unit enters freeze prevention operation in accordance with the following conditions, and is also set in accordance with the conditions given below.

Conditions for starting freeze prevention: Temperature is -1°C or less for total of 40 min., or temperature is -5°C or less for total of 10 min.

Conditions for stopping freeze prevention: Temperature is $+7^{\circ}\text{C}$ or more for 10 min. continuously

Ex: Case where temperature is -5°C or less for total of 10 min.



Part 5

Test Operation

1. Test Operation	100
1.1 Procedure and Outline	100
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3. Field Setting	106
3.1 Field Setting from Remote Controller	106
3.2 Field Setting from Outside Unit	122

1. Test Operation

1.1 Procedure and Outline

Follow the following procedure to conduct the initial test operation after installation.

1.1.1 Check Work Prior to Turn Power Supply On

Check the below items.

- Power wiring
- Control transmission wiring between units
- Operation signal to heat source pump and interlock wiring from pump
- Interlock circuit
- Earth wire



Check on refrigerant piping, water piping and piping insulation



Check on air tight test and vaccume drying



Check on amount of additional refrigerant charge



Check on stop valves opening

- Is the wiring performed as specified?
- Are the designated wires used?
- Is the grounding work completed?
 - Use a 500V megger tester to measure the insulation.
 - Do not use a megger tester for other circuits than 200V (or 240V) circuit.
- Are the setscrews of wiring not loose?

- Is pipe size proper? (The design pressure of this product is 4.0MPa.)
- Are pipe insulation materials installed securely?
 - Liquid and gas pipes need to be insulated. (Otherwise causes water leak.)
- Is refrigerant piping carried out correctly as per installation manual?
 - (Special care is required for multi-outside unit installation.)

- Is the air tight test and vaccume drying carried out as per installation manual?

- Is refrigerant charged up to the specified amount?
 - If insufficient, charge the refrigerant from the service port of stop valve on the liquid side with outside unit in stop mode after turning power on.
- If the specified amount of refrigerant can not be charged in stop mode, charge the required refrigerant as per "Additional refrigerant charge mode" in operation. (Refer page 142)
- Has the amount of refrigerant charge been recorded on "Record Chart of Additional Refrigerant Charge Amount"?

- Check to make sure the all stop valves on outside units are open.

1.1.2 Turn Power On

Turn outside unit, indoor unit, BS unit and heat source water pump power on.



Confirm LED display on outside unit's PC board



Carry out field setting on outside unit PC board

- Be sure to turn the power on 6 hours before starting operation to protect compressors. (to power on clankcase heater)

- Make sure the display is normal.
 - Following table shows correct display.

- For field settings, refer to "Field Settings" on and after P122.
 - After the completion of field settings, set to "Setting mode 1".
 - In case of multi-outside unit connection, carry out the field settings on master unit. (The setting on slave unit is not effective.)

○ ON ● OFF ● Blink

LED display (Factory set)		Micro computer normal monitor	MODE	TEST	CH selection			Low noise	Demand	Multi
					IND	Master	Slave			
		HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
1 outside unit installation		●	●	●	○	●	●	●	●	●
outside unit multi installation(*)	master	●	●	●	○	●	●	●	●	○
	slave1	●	●	●	●	●	●	●	●	●
	slave2	●	●	●	●	●	●	●	●	●

* The outside unit connected the control wires (F1 and F2) for the indoor unit should be designated as master unit. The other outside unit not connected the control wires will be slave unit.

1. When Turning On Power First Time

The unit cannot be run for up to 12 minutes to automatically set the master power and address (indoor-outside unit address, etc.).

Status

Outside unit

Test lamp H2P Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pushed during operation described above, the "UH" malfunction indicator blinks. (Returns to normal when automatic setting is complete.)

2. When Turning On Power the Second Time and Subsequent

Tap the RESET button on the outside unit PC board. Operation becomes possible for about 2 minutes. If you do not push the RESET button, the unit cannot be run for up to 10 minutes to automatically set master power.

Status

Outside unit

Test lamp H2P Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pushed during operation described above, the operation lamp lights but the compressor does not operate. (Returns to normal when automatic setting is complete.)

3. When an Indoor Unit or Outside Unit Has Been Added, or Indoor or Outside Unit PC Board Has Been Changed

Be sure to push and hold the RESET button for 5 seconds. If not, the addition cannot be recognized. In this case, the unit cannot be run for up to 12 minutes to automatically set the address (indoor-outside unit address, etc.).

Status

Outside unit

Test lamp H2P Blinks

Can also be set during operation described above.

Indoor unit

If ON button is pushed during operation described above, the "UH" or "U4" malfunction indicator blinks. (Returns to normal when automatic setting is complete.)



Caution When the 400 volt power supply is applied to "N" phase by mistake, replace Inverter PC board (A2P) and control transformer (T1R, T2R) in switch box together.

1.1.3 Check Operation

(For the operation to be done for the first time after installation, you need to perform a checking operation according to this guideline without fail. Otherwise, Abnormal Code “U3” appears and normal operation cannot be carried out.)

(1) Check the connection of interlock circuit	The outside unit cannot be operated if the interlock circuit has not been connected.																																																											
(2) As necessary, configure the system settings onsite by using the dip switch (DS1) and push button switches (BS1 to 5) on the outside unit PC board (A1P). After this, close the cover of electrical box.	Always perform configuration after turning ON the power. To learn the setting method, refer to the [Service Precautions] label attached at the cover of electrical box shown in the figure 27. Remember, the actual settings you have made must be recorded on the [Service Precautions] label.																																																											
(3) Turn ON the power to the outside units and indoor units.	Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase by the electric heater.																																																											
(4) Start the heat source water pump and fill the heat source water in the outside unit.	The outside unit cannot be operated if the heat source water pump is not running.																																																											
(5) Make sure that the temperature of heat source water is kept within the operation range (10 - 45°C).	The outside unit cannot be operated at a temperature outside the operation range.																																																											
<p>(6) Check the LED on the PC board (A1P) in the outside unit to see if the data transmission is performed normally.</p> <table border="1"> <thead> <tr> <th rowspan="2">LED display (Default status before delivery)</th> <th rowspan="2">Microcomputer operation monitor</th> <th colspan="2">Page</th> <th rowspan="2">Ready/Error</th> <th colspan="3">Cooler/heater changeover</th> <th rowspan="2">Low noise</th> <th rowspan="2">Demand</th> <th rowspan="2">Multi</th> </tr> <tr> <th>HAP</th> <th>H1P</th> <th>H2P</th> <th>Individual</th> <th>Bulk (parent)</th> <th>Bulk (child)</th> </tr> </thead> <tbody> <tr> <td>One outside unit installed</td> <td>●</td> <td>●</td> <td>●</td> <td>○</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td rowspan="3">When multiple outside unit installed (*)</td> <td>Master station</td> <td>●</td> <td>●</td> <td>●</td> <td>○</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>○</td> </tr> <tr> <td>Sub station 1</td> <td>○</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> <tr> <td>Sub station 2</td> <td>○</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table> <p style="text-align: right;">LED display: ● OFF ○ ON ● Blinking</p> <p>(*) The master unit is the outside unit to which the transmission wiring for the indoor units is connected. The other outside units are sub units.</p>		LED display (Default status before delivery)	Microcomputer operation monitor	Page		Ready/Error	Cooler/heater changeover			Low noise	Demand	Multi	HAP	H1P	H2P	Individual	Bulk (parent)	Bulk (child)	One outside unit installed	●	●	●	○	●	●	●	●	●	●	When multiple outside unit installed (*)	Master station	●	●	●	○	●	●	●	●	○	Sub station 1	○	●	●	●	●	●	●	●	●	Sub station 2	○	●	●	●	●	●	●	●	●
LED display (Default status before delivery)	Microcomputer operation monitor			Page			Ready/Error	Cooler/heater changeover					Low noise	Demand	Multi																																													
		HAP	H1P	H2P	Individual	Bulk (parent)		Bulk (child)																																																				
One outside unit installed	●	●	●	○	●	●	●	●	●	●																																																		
When multiple outside unit installed (*)	Master station	●	●	●	○	●	●	●	●	○																																																		
	Sub station 1	○	●	●	●	●	●	●	●	●																																																		
	Sub station 2	○	●	●	●	●	●	●	●	●																																																		
(7) • Using the push button switches (BS1 - 5) on the P-panel (A1P) of outside unit, carry out a local setting, if necessary. • In case of an installation of multiple outside units, carry out the setting on the master unit. (Setting on the slave unit becomes invalid.)	Always carry out the setting only after the power supply has been applied. For the method of setting, refer to the label of “Points to be noted when providing services” attached to the cover of electrical box (shown in the figure 27) of the outside unit. (After setting, record the details of that setting to the label of “Points to be noted when providing services” without fail.)																																																											
(8) Check all shutoff valve is opened. If some shutoff valve is closed, open them. (Refer to “9-10 Shutoff valve operation procedure”.)	[CAUTION] Do not leave any shutoff valve closed. Otherwise the compressor will fail. For Heat recovery system of cooling and heating: Open all stop valves on the suction side, discharge gas side and liquid side. For cooling and heating switching operation system: Open the stop valves on discharge gas side and liquid side. (Keep the stop valve on suction side fully closed.)																																																											
(9) Perform the check operation following the instructions printed on the [Service Precautions] label.	If you push the test run button (BS4) on the P-panel (A1P) of the outside unit for 5 seconds, the test run starts. If you want to interrupt the test run, push the RETURN button (BS3) on P-panel (A1P) of the outside unit. The system continues residual operation for about 1 minute (maximum 10 minutes) and then stops. (During test run, you cannot stop it by a command from a remote controller.) You need to perform the above settings on the PC board by accessing the PC board through the inspection cover on the switch box cover.																																																											

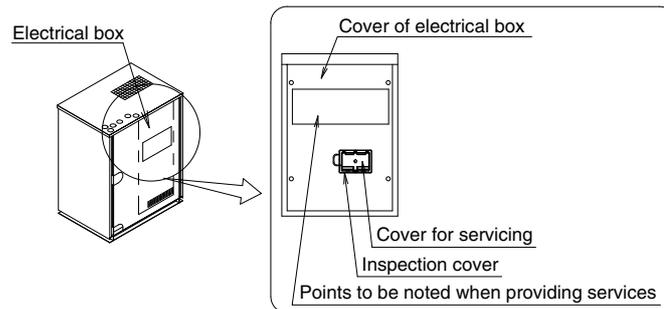


figure 27

<Cautions for check operation>

- If operated within about 12 minutes after power supply has been applied to the indoor unit and outside unit, H2P will turn ON but the compressor does not start running. Before start operation, make sure that the LED display is correct referring to the table (6) of “1.1.3 Check operation”.
- The system may require up to 10 minutes until it can start the compressor after an operation start. This is a normal operation to equalize the refrigerant distribution.
- The check operation does not provide any means of checking the indoor units individually. For that purpose, perform normal operation using the remote controller after the check operation.
- Check operation is not possible in other modes such as collection mode.
- If the setting of indoor remote controller is changed before the check operation, it may not be performed correctly and malfunction code “UF” may be displayed.

Remote controller displays malfunction code

Malfunction code	Installation error	Remedial action
E3 E4 F3 F6 UF U2	The shutoff valve of an outside unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outside units are reversed.	Exchange two of the three phases (L1, L2, L3) to make a positive phase connection.
U3	The check operation is not completed.	Complete the check operation.
U1 U2 U4	No power is supplied to an outdoor or indoor unit (including phase interruption).	Check if the power wiring for the outside units are connected correctly. (If the power wire is not connected to L2 phase, no malfunction display will appear and the compressor will not work.)
UF	Incorrect transmission between units	Check if the refrigerant piping line and the unit transmission wiring are consistent with each other.
E3 F6 UF U2	Refrigerant overcharge	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant	<ul style="list-style-type: none"> • Check if the additional refrigerant charge has been finished correctly. • Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
U7 UF	If an outdoor multi terminal is connected when there is one outside unit installed	Remove the line from the outdoor multi terminals (Q1 and Q2).
UF E4	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on all indoor unit remote controllers to “cooling.”
HJ	The heat source water is not circulating.	Make sure that the water pump is running.

1.1.4 Check of Normal Operation

After the check operation is completed, operate the unit normally.

(Heating is not possible if the outdoor temperature is 24°C or higher. Refer to the Operation manual.)

Check the below items.

- Make sure the indoor and outside units are operating normally (If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the heater for a sufficient length of time before restarting the operation.)
- Run each indoor unit one at a time and make sure the corresponding outside unit is also running.
- Check if cold (or hot) air is coming out of the indoor unit.
- Press the fan direction and fan strength buttons on the indoor unit to check if they operate properly.



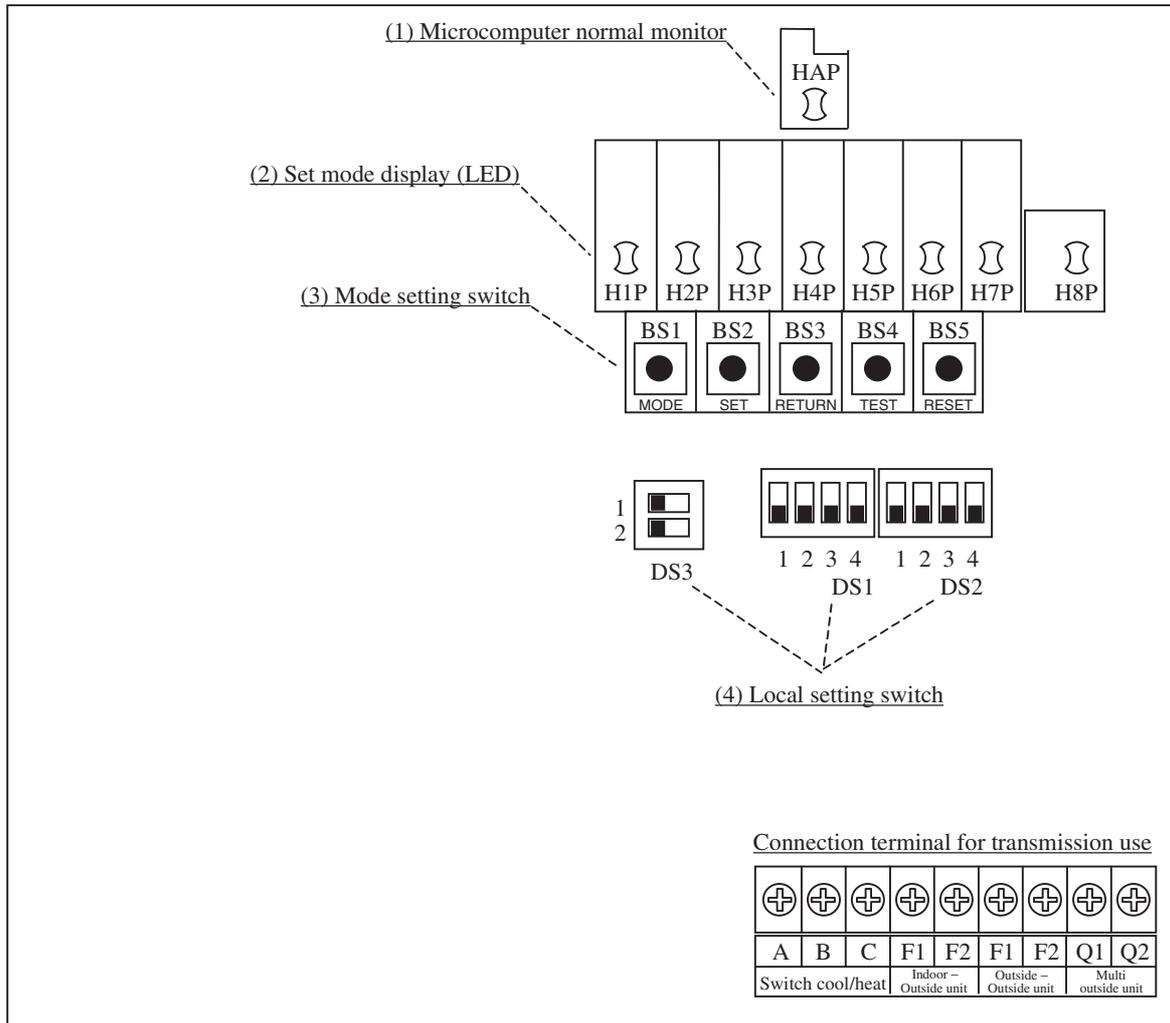
Caution

<Cautions for normal operation check>

- Once stopping, the compressor will not restart in about 5 minutes even if the **Run/Stop** button of an indoor unit in the same system is pressed.
- When the system operation is stopped by the remote controller, the outside units may continue operating for further 5 minutes at maximum.
- If the system has not undergone any check operation by the test operation button since it was first installed, an malfunction code “U3” is displayed. In this case, perform check operation referring to “**1.1.3 Check Operation**”.
- After the test run, when handing the unit over to the customer, make sure the EL. COMPO. BOX cover, the inspection door, and the unit casing are all attached.

2. Outside Unit PC Board Layout

Outside unit PC board



- (1) Microcomputer normal monitor
This monitor blinks while in normal operation, and turns on or off when a malfunction occurs.
- (2) Set mode display (LED)
LEDs display mode according to the setting.
- (3) Mode setting switch
Used to change mode.
- (4) Local setting switch
Used to make local settings.

3. Field Setting

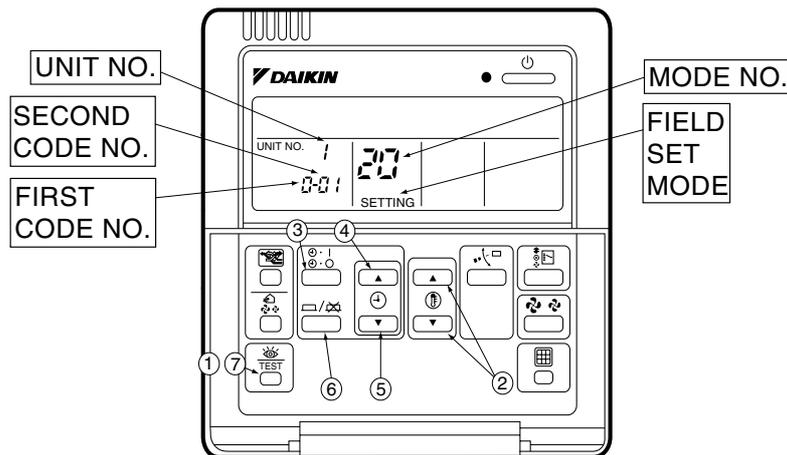
3.1 Field Setting from Remote Controller

Individual function of indoor unit can be changed from the remote controller. At the time of installation or after service inspection / repair, make the local setting in accordance with the following description.

Wrong setting may cause malfunction.

(When optional accessory is mounted on the indoor unit, setting for the indoor unit may be required to change. Refer to information in the option handbook.)

3.1.1 Wired Remote Controller <BRC1C61, 62>



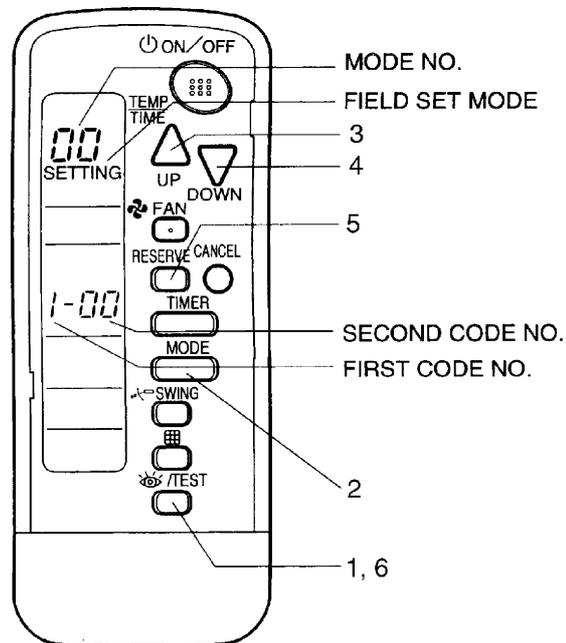
1. When in the normal mode, press the “” button for a minimum of four seconds, and the FIELD SET MODE is entered.
2. Select the desired MODE NO. with the “” button (②).
3. During group control, when setting by each indoor unit (mode No. 20, 22 and 23 have been selected), push the “” button (③) and select the INDOOR UNIT NO to be set. (This operation is unnecessary when setting by group.)
4. Push the “” upper button (④) and select FIRST CODE NO.
5. Push the “” lower button (⑤) and select the SECOND CODE NO.
6. Push the “” button (⑥) once and the present settings are SET.
7. Push the “” button (⑦) to return to the NORMAL MODE.

(Example)

If during group setting and the time to clean air filter is set to FILTER CONTAMINATION, HEAVY, SET MODE NO. to “10” FIRST CODE NO. to “0”, and SECOND CODE NO. to “02”.

3.1.2 Wireless Remote Controller - Indoor Unit

BRC7C type
BRC7E type
BRC4C type



1. When in the normal mode, push the  button for 4 seconds or more, and operation then enters the "field set mode."
2. Select the desired "mode No." with the  button.
3. Pushing the  button, select the first code No.
4. Pushing the  button, select the second code No.
5. Push the timer  button and check the settings.
6. Push the  button to return to the normal mode.

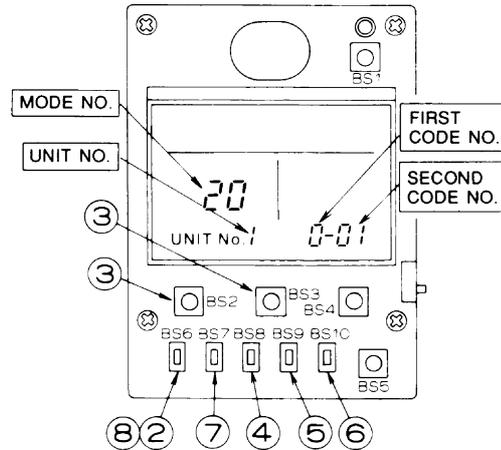
(Example)

When setting the filter sign time to "Filter Dirtiness-High" in all group unit setting, set the Mode No. to "10", Mode setting No. to "0" and setting position No. to "02".

3.1.3 Simplified Remote Controller

BRC2A51

BRC2C51



1. Remove the upper part of remote controller.
2. When in the normal mode, press the [BS6] BUTTON (2) (field set), and the FIELD SET MODE is entered.
3. Select the desired MODE No. with the [BS2] BUTTON (3) (temperature setting ▲) and the [BS3] BUTTON (3) (temperature setting ▼).
4. During group control, when setting by each indoor unit (mode No. 20, 22, and 23 have been selected), push the [BS8] (4) BUTTON (unit No.) and select the INDOOR UNIT NO. to be set. (This operation is unnecessary when setting by group.)
5. Push the [BS9] BUTTON (5) (set A) and select FIRST CODE NO.
6. Push the [BS10] BUTTON (6) (set B) and select SECOND CODE NO.
7. Push the [BS7] BUTTON (7) (set/cancel) once and the present settings are SET.
8. Push the [BS6] BUTTON (8) (field set) to return to the NORMAL MODE.
9. (Example) If during group setting and the time to clean air filter is set to FILTER CONTAMINATION - HEAVY, SET MODE NO. to "10", FIRST CODE NO. to "0", and SECOND CODE NO. to "02".

3.1.4 Setting Contents and Code No. – VRV Indoor Unit

Mode No. Note 2	Setting Switch No.	Setting Contents		Second Code No.(Note 3)								Details No.
				01		02		03		04		
10 (20)	0	Filter contamination heavy/light (Setting for display time to clean air filter) (Sets display time to clean air filter to half when there is heavy filter contamination.)	Super long life filter	Light	Approx. 10,000 hrs.	Heavy	Approx. 5,000 hrs.	—	—	—	—	(1)
			Long life filter		Approx. 2,500 hrs.		Approx. 1,250 hrs.					
			Standard filter		Approx. 200 hrs.		Approx. 100 hrs.					
	1	Long life filter type	Long life filter		Super long life filter		—		—		(2)	
2	Thermostat sensor in remote controller	Use		No use		—		—		(3)		
3	Display time to clean air filter calculation (Set when filter sign is not to be displayed.)	Display		No display		—		—		(4)		
11 (21)	7	Airflow adjustment	OFF		Completion of airflow adjustment		Start of airflow adjustment		—		(5)	
12 (22)	0	Optional accessories output selection (field selection of output for adaptor for wiring)	Indoor unit turned ON by thermostat		—		Operation output		Malfunction output		(6)	
	1	ON/OFF input from outside (Set when ON/OFF is to be controlled from outside.)	Forced OFF		ON/OFF control		External protection device input		—		(7)	
	2	Thermostat differential changeover (Set when remote sensor is to be used.)	1°C		0.5°C		—		—		(8)	
	3	OFF by thermostat fan speed	LL		Set fan speed		—		—		(9)	
	4	Automatic mode differential (automatic temperature differential setting for VRV system heat recovery series cool/heat)	01:0	02:1	03:2	04:3	05:4	06:5	07:6	08:7	(10)	
	5	Power failure automatic reset	Not equipped		Equipped		—		—		(11)	
	6	Airflow When Cooling Thermostat is OFF	LL airflow		Preset airflow		—		—		(12)	
13 (23)	0	High air outlet velocity (Set when installed in place with ceiling higher than 2.7 m.)	N		H		S		—		(13)	
	1	Selection of airflow direction (Set when a blocking pad kit has been installed.)	F (4 directions)		T (3 directions)		W (2 directions)		—		(14)	
	3	Airflow direction adjustment (Set at installation of decoration panel.)	Equipped		Not equipped		—		—		(15)	
	4	Field set airflow position setting	Draft prevention		Standard		Ceiling Soiling prevention		—		(16)	
	5	Setting of the Static Pressure Selection	Standard		High static pressure		—		—		(17)	
	6	External Static Pressure Settings	01:30	02:50	03:60	04:70	05:80	06:90	07:100	08:110	(18)	
15 (25)	1	Thermostat OFF excess humidity	Not equipped		Equipped		—		—		(19)	
	2	Direct duct connection (when the indoor unit and heat reclaim ventilation unit are connected by duct directly.) *Note 6	Not equipped		Equipped		—		—		(20)	
	3	Drain pump humidifier interlock selection	Not equipped		Equipped		—		—		(21)	
	5	Field set selection for individual ventilation setting by remote controller	Not equipped		Equipped		—		—		(22)	



Notes :

- Settings are made simultaneously for the entire group, however, if you select the mode No. inside parentheses, you can also set by each individual unit. Setting changes however cannot be checked except in the individual mode for those in parentheses.
- The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.
- Marked are factory set.
- Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
- “88” may be displayed to indicate the remote controller is resetting when returning to the normal mode.
- If the setting mode to “Equipped”, heat reclaim ventilation fan conducts the fan residual operation by linking to indoor unit.
- The FXMQ50-63-80-100-125PVE cannot be set to 30Pa.
 - The FXMQ40PVE cannot be set to 180 or 200Pa.

3.1.5 Applicable range of Field setting

	Ceiling mounted cassette type			Slim Ceiling mounted duct type	Ceiling mounted built-in type	Ceiling Mounted duct type (Middle and high static pressure)	Ceiling mounted duct type	Ceiling suspended type	Wall mounted type	Floor standing type	Concealed Floor standing type	New Ceiling suspended cassette type	Details No.
	Round flow	Double flow	Corner type										
	FXFQ	FXCQ	FXKQ										
Filter sign	○	○	○	○	○	○	○	○	○	○	○	○	(1)
Ultra long life filter sign	○	○	—	—	—	—	—	—	—	—	—	—	(2)
Remote controller thermostat sensor	○	○	○	○	○	○	○	○	○	○	○	○	(3)
Set fan speed when thermostat OFF	○	○	○	○	○	○	○	○	○	○	○	○	(9) (12)
Airflow auto adjustment	—	—	—	—	—	○	—	—	—	—	—	—	(5)
Airflow adjustment Ceiling height	○	—	—	—	—	—	—	○	—	—	—	○	(13)
Airflow direction	○	—	—	—	—	—	—	—	—	—	—	○	(14)
Airflow direction adjustment (Down flow operation)	—	—	○	—	—	—	—	—	—	—	—	—	(15)
Airflow direction adjustment range	○	○	○	—	—	—	—	—	—	—	—	—	(16)
Field set fan speed selection	○	—	—	○*1	—	○*1	—	○	—	—	—	—	(17) (18)

*1 Static pressure selection

3.1.6 Detailed Explanation of Setting Modes

(1) Filter Sign Setting

If switching the filter sign ON time, set as given in the table below.

Set Time

Setting	Filter Specs.	Standard	Long Life	Ultra Long Life Filter
Contamination Light		200 hrs.	2,500 hrs.	10,000 hrs.
Contamination Heavy		100 hrs.	1,250 hrs.	5,000 hrs.

(2) Ultra-Long-Life Filter Sign Setting

When a Ultra-long-life filter is installed, the filter sign timer setting must be changed.

Setting Table

Mode No.	Setting Switch No.	Setting Position No.	Setting
10 (20)	1	01	Long-Life Filter
		02	Ultra-Long-Life Filter (1)
		03	—

(3) Selection of Thermistor

Select the thermistor to control room temperature.

Mode No.	First Code No.	Second Code No.	Thermistor that controls room temperature
10 (20)	2	01	Indoor air thermistor for remote controller and suction air thermistor for indoor unit
		02	Suction air thermistor for indoor unit
		03	Thermistor for remote controller

The factory setting for the Second Code No. is "01" and room temperature is controlled by the indoor unit suction air thermistor and remote controller thermistor.

When the Second Code No. is set to "02", room temperature is controlled by the suction air thermistor.

When the Second Code No. is set to "03", room temperature is controlled by the remote controller thermistor.

(4) "Filter Cleaning" Displayed or Not Displayed

Whether or not to display "Filter Cleaning" after operation of certain duration can be selected.

Mode No.	First Code No.	Second Code No.	"Filter Cleaning" display
10 (20)	3	01	Display
		02	No display

(5) Airflow Adjustment (AUTO)**External Static Pressure Settings**

Make settings in either method (a) or method (b) as explained below.

(a) Use the airflow auto adjustment function to make settings.

Airflow auto adjustment: The volume of blow-off air is automatically adjusted to the rated quantity.

(b) Select External Static Pressure with Remote Controller Check that 01 (OFF) is set for the "SECOND CODE NO." in "MODE NO. 21" for airflow adjustment on an indoor unit basis in Table 4. The "SECOND CODE NO." is set to 01 (OFF) at factory set. Change the "SECOND CODE NO." as shown in Table according to the external static pressure of the duct to be connected.

Mode No.	First Code No.	Second Code No.	Airflow adjustment
11 (21)	7	01	OFF
		02	Completion of airflow adjustment
		03	Start of airflow adjustment

(6) Optional Output Switching

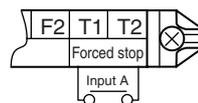
Using this setting, "operation output signal" and "abnormal output signal" can be provided.

Output signal is output between terminals K1 and K2 of "customized wiring adaptor," an optional accessory.

Mode No.	First Code No.	Second Code No.	Remarks
12 (22)	0	01	Indoor unit thermostat ON/OFF signal is provided.
		03	Output linked with "Start/Stop" of remote controller is provided.
		04	In case of "Malfunction Display" appears on the remote controller, output is provided.

(7) External ON/OFF Input

This input is used for "ON / OFF operation" and "Protection device input" from the outside. The input is performed from the T1-T1 terminal of the operation terminal block (X1A) in the electric component box.

**Setting Table**

Mode No.	Setting Switch No.	Setting Position No.	Operation by input of the signal A
12 (22)	1	01	ON: Forced stop (prohibition of using the remote controller) OFF: Permission of using the remote controller
		02	OFF → ON: Permission of operation ON → OFF: Stop
		03	ON: Operation OFF: The system stops, then the applicable unit indicates "A0". The other indoor units indicate "U9".

(8) Thermostat Switching

Differential value during thermostat ON/OFF control can be changed. (For details, refer to "9.4 Thermostat Control while in Normal Operation" on page 94.)

Mode No.	First Code No.	Second Code No.	Differential value
12(22)	2	01	1°C
		02	0.5°C

(9) Airflow Setting When Heating Thermostat is OFF

This setting is used to set airflow when heating thermostat is OFF.

- * When thermostat OFF airflow volume up mode is used, careful consideration is required before deciding installation location. During heating operation, this setting takes precedence over "(7) Fan Stop When Thermostat is OFF."

Mode No.	First Code No.	Second Code No.	Contents
12 (22)	3	01	LL airflow
		02	Preset airflow

(10) Setting of Operation Mode to "AUTO"

This setting makes it possible to change differential values for mode selection while in automatic operation mode.

Mode No.	Setting switch No.	Setting position No.							
		01	02	03	04	05	06	07	08
12 (22)	4	0°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C

The automatic operation mode setting is made by the use of the "Operation Mode Selector" button.

(11) Auto Restart after Power Failure Reset

For the air conditioners with no setting for the function (same as factory setting), the units will be left in the stop condition when the power supply is reset automatically after power failure reset or the main power supply is turned on again after once turned off. However, for the air conditioners with the setting, the units may start automatically after power failure reset or the main power supply turned on again (return to the same operation condition as that of before power failure).

For the above reasons, when the unit is set enabling to utilize "Auto restart function after power failure reset", utmost care should be paid for the occurrence of the following situation.



- Caution**
1. The air conditioner starts operation suddenly after power failure reset or the main power supply turned on again. Consequently, the user might be surprised (with question for the reason why).
 2. In the service work, for example, turning off the main power switch during the unit is in operation, and turning on the switch again after the work is completed start the unit operation (the fan rotates).

(12) Airflow When Cooling Thermostat is OFF

This is used to set airflow to "LL airflow" when cooling thermostat is OFF.

Mode No.	First Code No.	Second Code No.	Contents
12 (22)	6	01	LL airflow
		02	Preset airflow

(13) Setting of Normal Airflow

Make the following setting according to the ceiling height. The setting position No. is set to "01" at the factory.

■ In the Case of FXAQ

Mode No.	Setting Switch No.	Setting Position No.	Setting
13(23)	0	01	Wall-mounted type: Standard
		02	Wall-mounted type: Slight increase
		03	Wall-mounted type: Normal increase

■ In the Case of FXHQ

Mode No.	First code No.	Second code No.	Ceiling height (m)
13(23)	0	01	2.7 or less
		02	2.7-3.5

■ In the Case of FXFQ25~80 (All round outlet)

Mode No.	First code No.	Second code No.	Setting	Ceiling height (m)
13 (23)	0	01	Standard • All round outlet	≤2.7
		02	High Ceiling (1)	2.7-3
		03	Higher Ceiling (2)	3-3.5

■ In the Case of FXFQ100~125 (All round outlet)

Mode No.	First code No.	Second code No.	Setting	Ceiling height (m)
13 (23)	0	01	Standard • All round outlet	≤3.2
		02	High Ceiling (1)	3.2-3.6
		03	Higher Ceiling (2)	3.6-4.2

■ In the Case of FXFQ25~80 (*24-Way, 3-Way, 2-Way Outlets)

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 3.1 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.4 m	Lower than 3.3 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 4.0 m	Lower than 3.5 m	—

■ In the Case of FXFQ100~125 (*24-Way, 3-Way, 2-Way Outlets)

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 3.4 m	Lower than 3.6 m	Lower than 4.2 m
		02	High Ceiling (H)	Lower than 3.9 m	Lower than 4.0 m	Lower than 4.2 m
		03	Higher Ceiling (S)	Lower than 4.5 m	Lower than 4.2 m	—

*1 "Mode No." setting is done in a batch for the group. To make or confirm settings for an individual unit, set the internal mode number in parentheses.

*2 The figure of the ceiling height is for the all round outlet. For the settings for four-direction (part of corner closed off), three-direction and two-direction outlets, see the installation manual and technical guide supplied with the separately sold closure material kit.

■ In the Case of FXUQ71~125

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 2.7 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.0 m	Lower than 3.5 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 3.5 m	Lower than 3.8 m	—

(14) Airflow Direction Setting

Set the airflow direction of indoor units as given in the table below. (Set when optional air outlet blocking pad has been installed.) The second code No. is factory set to "01."

Setting Table

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	1	01	F : 4-direction airflow
		02	T : 3-direction airflow
		03	W : 2-direction airflow

(15) Operation of Downward Flow Flap: Yes/No

Only the model FXKQ has the function.

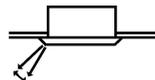
When only the front-flow is used, sets yes/no of the swing flap operation of down-flow.

Setting Table

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	3	01	Down-flow operation: Yes
		02	Down-flow operation: No

(16) Setting of Airflow Direction Adjustment Range

Make the following airflow direction setting according to the respective purpose.



Setting Table

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	4	01	Upward (Draft prevention)
		02	Standard
		03	Downward (Ceiling soiling prevention)

* Some indoor unit models are not equipped with draft prevention (upward) function.

(17) Setting of the Static Pressure Selection

■ In the Case of FXDQ20~32PB, FXDQ40~63NB

Model No.	First Code No.	Second Code No.	External static pressure
13 (23)	5	01	Standard (10Pa)
		02	High static pressure (30Pa)

(18) External Static Pressure Settings (for FXMQ-P model)

MODE NO.	FIRST CODE NO.	SECOND CODE NO.	External Static Pressure
13 (23)	06	01	30Pa (*1)
		02	50Pa
		03	60Pa
		04	70Pa
		05	80Pa
		06	90Pa
		07	100Pa
		08	110Pa
		09	120Pa
		10	130Pa
		11	140Pa
		12	150Pa
		13	160Pa
		14	180Pa (*2)
		15	200Pa (*2)

The "SECOND CODE NO." is set to 07 (an external static pressure of 100 Pa) at factory set.

*1 The FXMQ50 · 63 · 80 · 100 · 125PVE cannot be set to 30 Pa.

*2 The FXMQ40PVE cannot be set to 180 or 200 Pa.

(19) Humidification When Heating Thermostat is OFF

Setting to "Humidification Setting" turns ON the humidifier if suction temperature is 20°C or above and turns OFF the humidifier if suction temperature is 18°C or below when the heating thermostat is OFF.

Mode No.	First Code No.	Second Code No.	Setting
15 (25)	1	01	—
		02	Setting of humidifier

(20) Setting of Direct Duct Connection

This is used when "fresh air intake kit equipped with fan" is connected. The indoor fan carries out residual operation for one minute after the thermostat is stopped. (For the purpose of preventing dust on the air filter from falling off.)

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	2	01	Without direct duct connection
		02	With direct duct connection equipped with fan

(21) Interlocked Operation between Humidifier and Drain Pump

This is used to interlock the humidifier with the drain pump. When water is drained out of the unit, this setting is unnecessary.

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	3	01	Individual operation of humidifier
		02	Interlocked operation between humidifier and drain pump

(22) Individual Setting of Ventilation

This is set to perform individual operation of heat reclaim ventilation using the remote controller/ central unit when heat reclaim ventilation is built in.

(Switch only when heat reclaim ventilation is built in.)

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	5	01	—
		02	Individual operation of ventilation

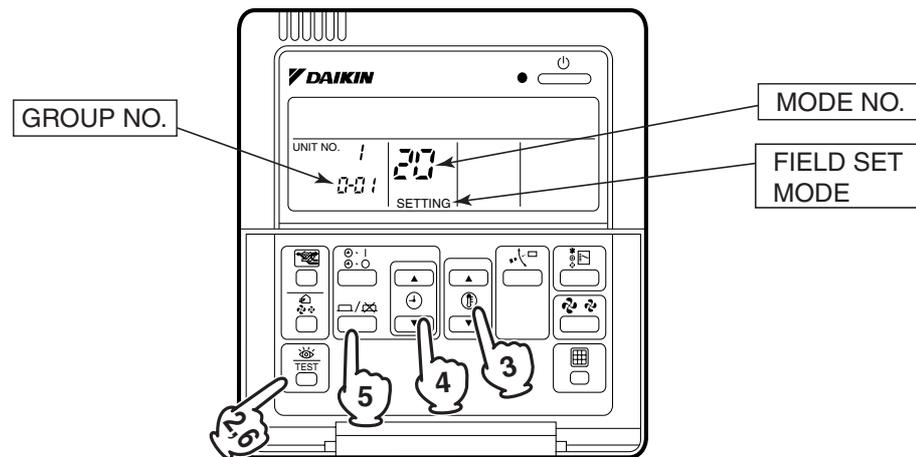
3.1.7 Centralized Control Group No. Setting

BRC1C Type

In order to conduct the central remote control using the central remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.

Make Group No. settings for central remote control using the operating remote controller.

1. While in normal mode, press and hold the  switch for a period of four seconds or more to set the system to "Field Setting Mode".
2. Select the MODE No. "00" with the " " button.
3. Use the " " button to select the group No. for each group.
(Group numbers increase in the order of 1-00, 1-01, ... 1-15, 2-00, ... 4-15.)
4. Press " " to set the selected group No.
5. Press " " to return to the NORMAL MODE.



Note:

- For simplified remote controller, see the following.
- For setting group No. of HRV and wiring adaptor for other air conditioners, etc., refer to the instruction manual attached.

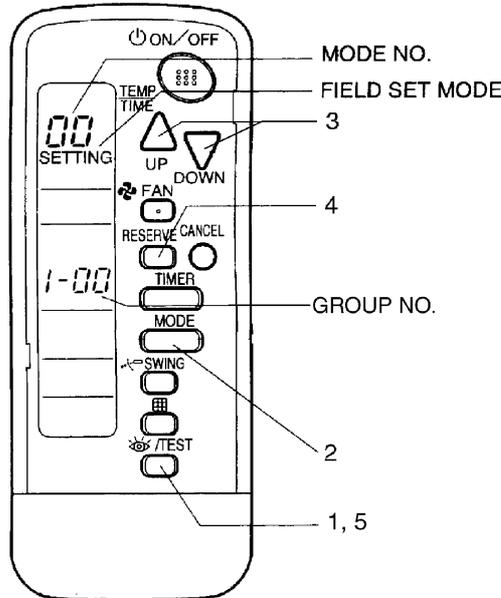
NOTICE

Enter the group No. and installation place of the indoor unit into the attached installation table. Be sure to keep the installation table with the operation manual for maintenance.

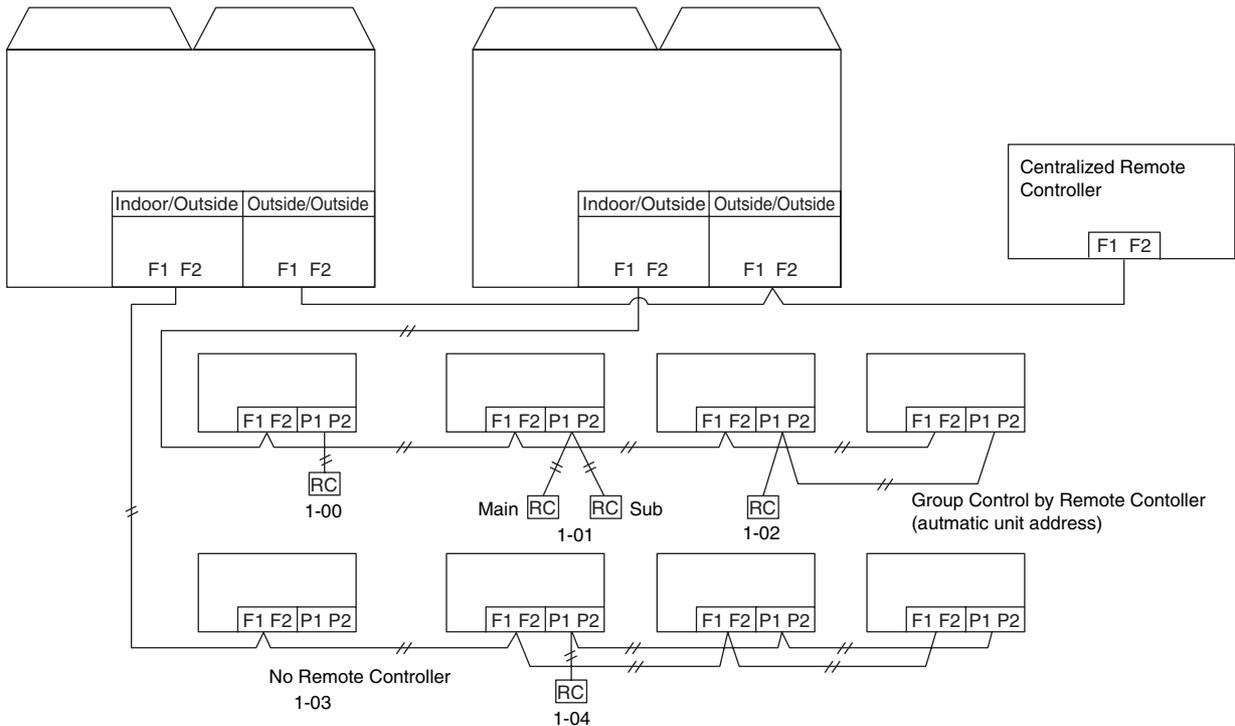
BRC7C Type

- Group No. setting by wireless remote controller for centralized control
- 1. When in the normal mode, push  button for 4 seconds or more, and operation then enters the "field set mode."
- 2. Set mode No. "00" with  button.
- 3. Set the group No. for each group with   button (advance/backward).
- 4. Enter the selected group numbers by pushing  button.
- 5. Push  button and return to the normal mode.

BRC7C Type



Group No. Setting Example



Caution When turning the power supply on, the unit may often not accept any operation while "88" is displaying after all indications were displayed once for about 1 minute on the liquid crystal display. This is not an operative fault.

3.1.8 Setting of Operation Control Mode from Remote Controller (Local Setting)

The operation control mode is compatible with a variety of controls and operations by limiting the functions of the operation remote controller. Furthermore, operations such as remote controller ON/OFF can be limited in accordance with the combination conditions. (Refer to information in the table below.)

Centralized controller is normally available for operations. (Except when centralized monitor is connected)

3.1.9 Contents of Control Modes

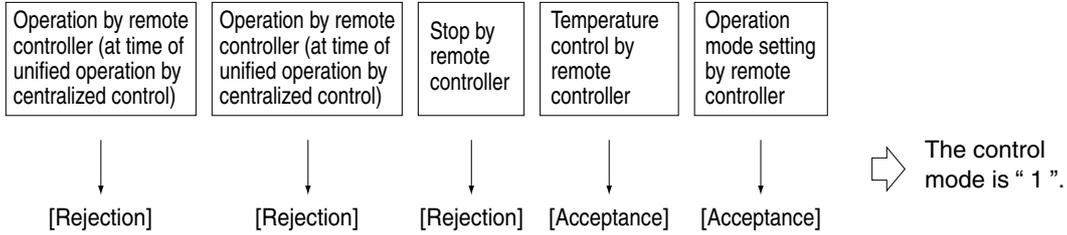
Twenty modes consisting of combinations of the following five operation modes with temperature and operation mode setting by remote controller can be set and displayed by operation modes 0 through 19.

- ◆ ON/OFF control impossible by remote controller
Used when you want to turn on/off by central remote controller only.
(Cannot be turned on/off by remote controller.)
- ◆ OFF control only possible by remote controller
Used when you want to turn on by central remote controller only, and off by remote controller only.
- ◆ Centralized
Used when you want to turn on by central remote controller only, and turn on/off freely by remote controller during set time.
- ◆ Individual
Used when you want to turn on/off by both central remote controller and remote controller.
- ◆ Timer operation possible by remote controller
Used when you want to turn on/off by remote controller during set time and you do not want to start operation by central remote controller when time of system start is programmed.

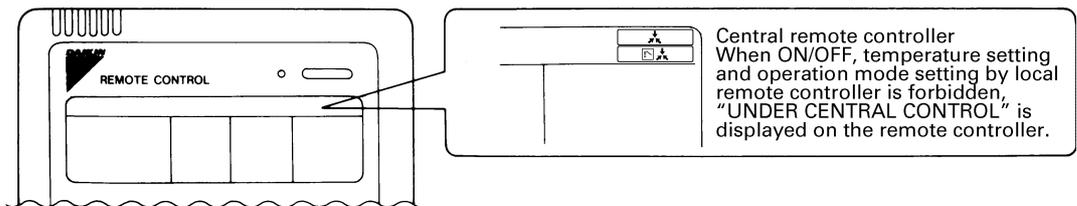
Selection of Control Mode No.

Select whether to accept or to reject the operation from the remote controller regarding the operation, stop, temperature setting and operation mode setting, respectively, and determine the particular control mode from the rightmost column of the table below.

(Example)



Operation mode	Control by remote controller					Control mode	
	Operation		Stop	Temperature control	Operation mode setting		
	Unified operation, individual operation by central remote controller, or operation controlled by timer	Unified stop, individual stop by central remote controller, or timer stop					
ON/OFF control impossible by remote controller	Rejection (Example)		Rejection (Example)	Rejection	Acceptance	0	
Only OFF control possible by remote controller				Acceptance (Example)	Acceptance (Example)	1 (Example)	
				Rejection	Rejection	2	
					Acceptance	3	
Centralized	Acceptance		Acceptance	Rejection	4		
				Acceptance	5		
Individual				Rejection	6		
				Acceptance	7		
Timer operation possible by remote controller				Acceptance (During timer at ON position only)	Rejection (During timer at OFF position)	Rejection	8
						Acceptance	9
						Rejection	10
						Acceptance	11



3.2 Field Setting from Outside Unit

3.2.1 Field Setting from Outside Unit

■ **Setting by dip switches**

The following field settings are made by dip switches on PC board.

Dipswitch		Setting item	Description
No.	Setting		
DS1-1	ON	Cool/Heat select	Used to set cool/heat select by remote controller equipped with outside unit.
	OFF (Factory set)		
DS1-2 ~DS1-4	ON	Not used	Do not change the factory settings.
	OFF (Factory set)		
DS2-1 ~4	ON	Not used	Do not change the factory settings.
	OFF (Factory set)		
DS3-1, 2	ON	Not used	Do not change the factory settings.
	OFF (Factory set)		



Caution

DIP switch Setting after changing the main PC board (A1P) to spare parts PC board

When you change the main PC board (A1P) to spare parts PC board, please carry out the following setting.



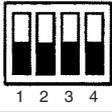
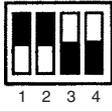
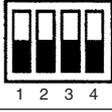
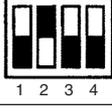
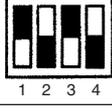
DIP Switch Detail

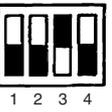
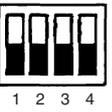
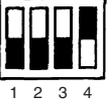
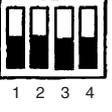
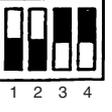
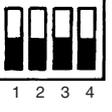
DS No.	Item	Contents													
DS1-1	—	—													
DS1-2	Domestic/Overseas setting	ON	Domestic Japan 200V (Mainly for domestic Japan)												
		OFF	Overseas 400V (Mainly for overseas)												
DS1-3	—	—													
DS1-4	—	—													
DS2-1	Domestic/Overseas setting	ON	Overseas												
		OFF	Domestic Japan												
DS2-2	HP setting (Horse power)	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">8</td> <td style="text-align: center;">10</td> </tr> <tr> <td>DS2-2</td> <td style="text-align: center;">ON</td> <td style="text-align: center;">OFF</td> </tr> <tr> <td>DS2-3</td> <td style="text-align: center;">OFF</td> <td style="text-align: center;">ON</td> </tr> <tr> <td>DS2-4</td> <td style="text-align: center;">OFF</td> <td style="text-align: center;">OFF</td> </tr> </table>			8	10	DS2-2	ON	OFF	DS2-3	OFF	ON	DS2-4	OFF	OFF
		8	10												
DS2-2		ON	OFF												
DS2-3	OFF	ON													
DS2-4	OFF	OFF													
DS2-3															
DS2-4															



Refer “DS1-1~4, DS2-1~4 setting detail” on next page.

“Detail of DS1-1~4, DS2-1~4 setting” (for Overseas general)

Unit	Setting method (■ represents the position of switches)	
Heat Pump / Recovery (8HP) RWEYQ8PY1	ON  OFF 	Set DS2-1 and DS2-2 to ON.
Heat Pump / Recovery (10HP) RWEYQ10PY1 RWEYQ10PYL	ON  OFF 	Set DS2-1 and DS2-3 to ON.
Heat Pump / Recovery (10HP) RWEYQ10PTL	ON  OFF 	Set DS1-2, DS2-1 and DS2-3 to ON.

Unit	Setting method (■ represents the position of switches)	
BSVQ100PV1 BSVQ100PV13 BSVQ100PV18(A)(B) BSVQ100PV19 BSVQ36PVJU	ON  OFF 	Set DS1-3 to ON.
BSVQ160PV1 BSVQ160PV13 BSVQ160PV18(A)(B) BSVQ160PV19 BSVQ60PVJU	ON  OFF 	Set DS1-4 to ON.
BSVQ250PV1 BSVQ250PV13 BSVQ250PV18(A)(B) BSVQ250PV19	ON  OFF 	Set DS1-3 and DS1-4 to ON.

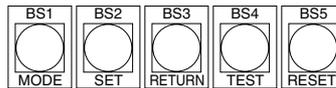
■ **Setting by push button switches**

The following settings are made by push button switches on PC board.
 In case of multi-outside unit system, various items should be set with the master unit.
 (Setting with the slave unit is disabled.)

The master unit and slave unit can be discriminated with the LED indication as shown below.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H8P
Master unit	●	●	○	●	●	●	●	○
Slave unit 1	●	●	●	●	●	●	●	◐
Slave unit 2	●	●	●	●	●	●	●	●

(Factory setting)



There are the following three setting modes.

① **Setting mode 1 (H1P off)**

Initial status (when normal) : Used to select the cool/heat setting. Also indicates during “abnormal”, “low noise control” and “demand control”.

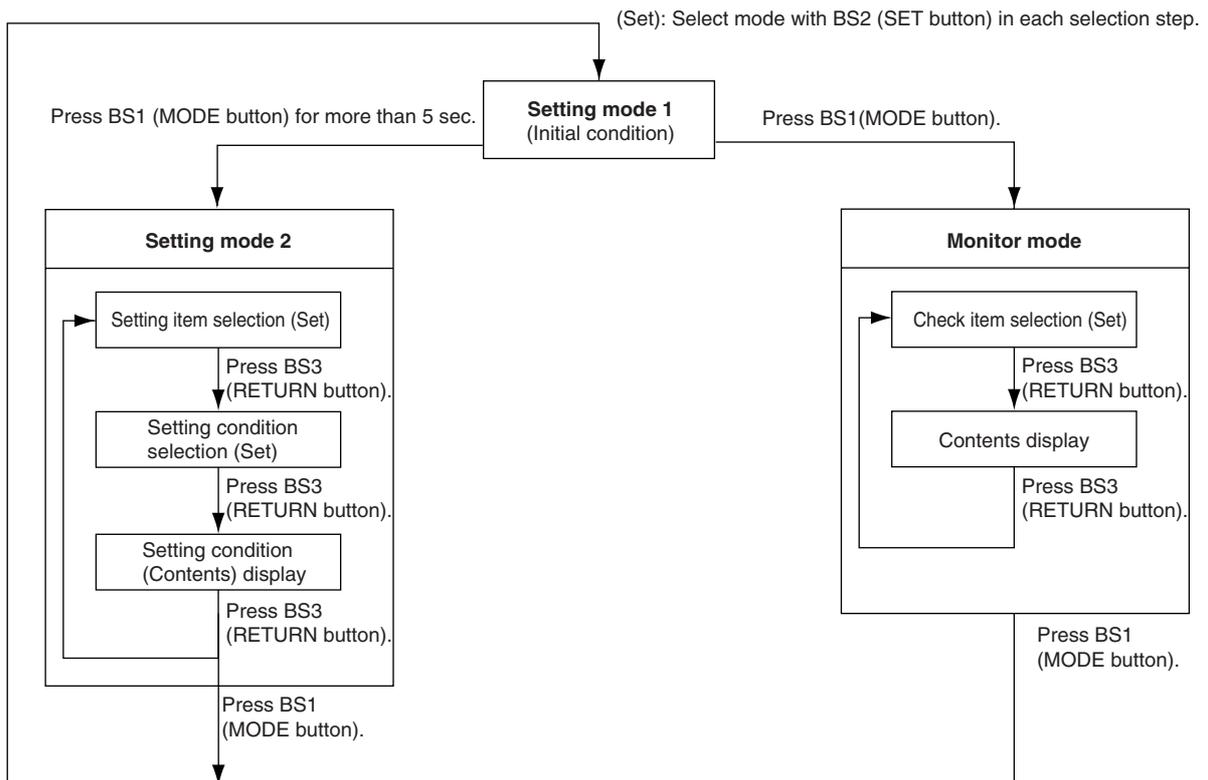
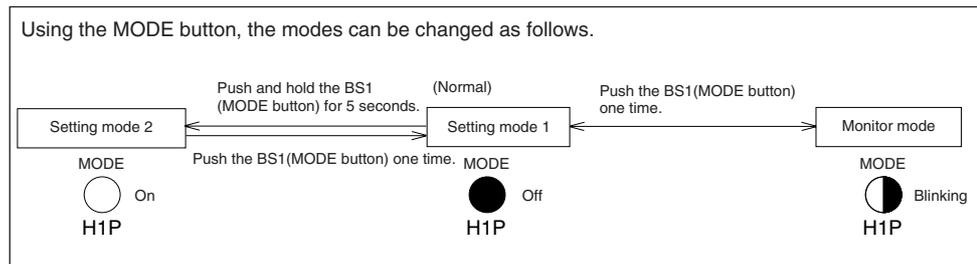
② **Setting mode 2 (H1P on)**

Used to modify the operating status and to set program addresses, etc. Usually used in servicing the system.

③ **Monitor mode (H1P blinks)**

Used to check the program made in Setting mode 2.

■ **Mode changing procedure**



a. "Setting mode 1"

"Normally, "Setting mode 1" is set. In case of other status, push MODE button (BS1) one time and set to "Setting mode 1".

<Selection of setting items>

Push the SET button (BS2) and set LED display to a setting item you want.

- Regarding setting item No. 1,5 only the present status is displayed. For the respective description, refer to the table shown on lower right.
- The cool/heat selection setting can be changed on setting item 2, 3, 4. → After setting, push the RETURN button (BS3) and decide the item.

When the RETURN button (BS3) is pushed, the status becomes the initial status of "Setting mode 1".

No.	Setting (displaying) item	LED display example						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
1	Display for malfunction / preparing / test run *	●	●	○	●	●	●	●
2	C/H selector (individual)	●	●	○	●	●	●	●
3	C/H selector (Master)	●	●	●	○	●	●	●
4	C/H selector (Slave)	●	●	●	●	○	●	●
5	Demand operation *	●	●	○	●	●	●	●

* Setting No. 1, 5, 6 are the present status display only.

Display for malfunction/preparing/test-run

Normal	●	●	○	●	●	●	●
Malfunction	●	○	○	●	●	●	●
Preparing/Test-run	●	◐	○	●	●	●	●

Display during demand operation

Normal	●	●	○	●	●	●	●
During demand operation	●	●	○	●	●	●	○

H3P to H5P LED display changes depending on setting No. 2, 3, 4.

○ : ON
● : OFF
◐ : Blinking

b. “Setting mode 2”

Push and hold the MODE button (BS1) for 5 seconds and set to “Setting mode 2”.

<Selection of setting items>

Push the SET button (BS2) and set the LED display to a setting item shown in the table on the right.
 ↓
 Push the RETURN button (BS3) and decide the item. (The present setting condition is blinked.)

<Selection of setting conditions>

Push the SET button (BS2) and set to the setting condition you want.
 ↓
 Push the RETURN button (BS3) and decide the condition.

Push the RETURN button (BS3) and set to the initial status of “Setting mode 2”.

No.	Setting item	Description
1	Cool/heat unified address	Sets address for cool/heat unified operation.
2	demand address	Address for demand operation
4	Number of units for sequential starting	Sets the number of units for sequential starting.
5	Indoor unit forced fan H	Allows forced operation of indoor unit fan while unit is stopped. (H tap)
6	Indoor unit forced operation	Allows forced operation of indoor unit.
8	Te setting	Target evaporation temperature for cooling
9	Tc setting	Target condensation temperature for heating
12	External low noise setting / Demand setting	Reception of external low noise or demand signal
13	AIRNET address	Set address for AIRNET.
20	Additional refrigerant charge operation setting	Carries out additional refrigerant charge operation.
21	Refrigerant collection mode setting	Sets to refrigerant collection mode.
26	Interlock abnormal display setting	
28	Power transistor check mode *Check after disconnection of compressor wires	Used for trouble diagnosis of DC compressor. Since the waveform of inverter is output without wiring to the compressor, it is convenient to probe whether the trouble comes from the compressor or PC board.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is input.
32	Normal demand setting	Normally enables demand control 1 without external input. (Effective to prevent a problem that circuit breaker of small capacity is shut down due to large load.)

* If you become unsure of how to proceed, push the MODE button (BS1) and return to setting mode 1.

No.	Setting item	Description
38	Emergency operation (Setting for the master unit operation prohibition in multi-outside-unit system)	Used to temporarily prohibit the applicable outside unit from operating should there be any faulty part in multi-outside-unit system. Since the comfortable environment is extremely impaired, prompt replacement of the part is required.
39	Emergency operation (Setting for the slave unit 1 operation prohibition in multi-outside-unit system)	
40	Emergency operation (Setting for the slave unit 2 operation prohibition in multi-outside-unit system)	

No.	Setting item display								Setting condition display		
	Setting item	MODE H1P	TEST H2P	C/H selection			Low noise H6P	Demand H7P			* Factory set
				IND H3P	Master H4P	Slave H5P					
1	Cool / Heat Unified address	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●*				
									Binary number	1	<input type="radio"/> ●●●●●●●●
									(6 digits)	~	
										31	<input type="radio"/> ●○○○○○○○
2	Low noise/demand address	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●*
									Binary number	1	<input type="radio"/> ●●●●●●●●
									(6 digits)	~	
										31	<input type="radio"/> ●○○○○○○○
4	Number of units for sequential starting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	1 unit		<input type="radio"/> ●●●●●●●●
									2 units		<input type="radio"/> ●●●●●●●●
									3 units		<input type="radio"/> ●●●●●●●●
5	Indoor forced fan H	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Normal operation		<input type="radio"/> ●●●●●●●●*
									Indoor forced fan H		<input type="radio"/> ●●●●●●●●
6	Indoor forced operation	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Normal operation		<input type="radio"/> ●●●●●●●●*
									Indoor forced operation		<input type="radio"/> ●●●●●●●●
8	Te setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Low (Level L)		<input type="radio"/> ●●●●●●●●
									Normal (Level M)		<input type="radio"/> ●●●●●●●●*
									High ①	} (Level H)	<input type="radio"/> ●●●●●●●●
									High ②		<input type="radio"/> ●●●●●●●●
									High ③		<input type="radio"/> ●●●●●●●●
									High ④		<input type="radio"/> ●●●●●●●●
									High ⑤		<input type="radio"/> ●●●●●●●●
9	Tc setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Low		<input type="radio"/> ●●●●●●●●
									Normal (factory setting)		<input type="radio"/> ●●●●●●●●*
									High		<input type="radio"/> ●●●●●●●●
12	External low noise/demand setting	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	External low noise/demand: NO		<input type="radio"/> ●●●●●●●●*
									External low noise/demand: YES		<input type="radio"/> ●●●●●●●●
13	Airnet address	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Address	0	<input type="radio"/> ●●●●●●●●*
									Binary number	1	<input type="radio"/> ●●●●●●●●
									(6 digits)	~	
										63	<input type="radio"/> ●○○○○○○○
20	Additional refrigerant operation setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Refrigerant charging: OFF		<input type="radio"/> ●●●●●●●●*
									Refrigerant charging: ON		<input type="radio"/> ●●●●●●●●
21	Refrigerant recovery mode setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Refrigerant recovery: OFF		<input type="radio"/> ●●●●●●●●*
									Refrigerant recovery: ON		<input type="radio"/> ●●●●●●●●
26	Interlock abnormal display setting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	OFF		<input type="radio"/> ●●●●●●●●*
									ON		<input type="radio"/> ●●●●●●●●

No.	Setting item display								Setting condition display	
	Setting item	MODE H1P	TEST H2P	C/H selection			Low noise H6P	Demand H7P		
				IND H3P	Master H4P	Slave H5P				
28	Power transistor check mode	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	OFF	<input type="radio"/> ●●●●●●●●●●*
									ON	<input type="radio"/> ●●●●●●●●●●
30	Demand setting 1	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	60 % demand	<input type="radio"/> ●●●●●●●●●●
									70 % demand	<input type="radio"/> ●●●●●●●●●●*
									80 % demand	<input type="radio"/> ●●●●●●●●●●
32	Continuous demand setting	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	OFF	<input type="radio"/> ●●●●●●●●●●*
									ON	<input type="radio"/> ●●●●●●●●●●
38	Emergency operation (Master unit with multi-outside-unit system is inhibited to operate.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	OFF	<input type="radio"/> ●●●●●●●●●●*
									Master unit operation: Inhibited	<input type="radio"/> ●●●●●●●●●●
39	Emergency operation (Slave unit 1 with multi-outside-unit system is inhibited to operate.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	OFF	<input type="radio"/> ●●●●●●●●●●*
									Slave unit 1 operation: Inhibited	<input type="radio"/> ●●●●●●●●●●
40	Emergency operation (Slave unit 2 with multi-outside-unit system is inhibited to operate.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	OFF	<input type="radio"/> ●●●●●●●●●●*
									Slave unit 2 operation: Inhibited	<input type="radio"/> ●●●●●●●●●●

* Factory set

c. Monitor mode

To enter the monitor mode, push the MODE button (BS1) when in "Setting mode 1".

<Selection of setting item>

Push the SET button (BS2) and set the LED display to a setting item.

<Confirmation on setting contents>

Push the RETURN button (BS3) to display different data of set items.

Push the RETURN button (BS3) and switches to the initial status of "Monitor mode".

* Push the MODE button (BS1) and returns to "Setting mode 1".

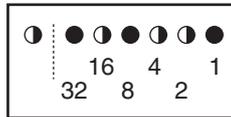
No.	Setting item	LED display							Data display
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	
0	Operation/backup operation setting	●	●	●	●	●	●	●	See below
1	C/H unified address	●	●	●	●	●	○	○	Lower 6 digits
2	Low noise/demand address	●	●	●	●	●	○	●	
4	Airnet address	●	●	●	●	○	●	●	
5	Number of connected indoor units	●	●	●	●	○	●	○	
6	Number of connected BS units	●	●	●	●	○	○	●	
7	Number of connected zone units (excluding outdoor and BS unit)	●	●	●	●	○	○	○	
8	Number of outside units	●	●	●	○	●	●	●	Lower 4 digits: upper
9	Number of connected BS units	●	●	●	○	●	●	○	
10	Number of connected BS units	●	●	●	○	●	○	●	Lower 4 digits: lower
11	Number of zone units (excluding outdoor and BS unit)	●	●	●	○	●	○	○	Lower 6 digits
12	Number of terminal blocks	●	●	●	○	○	●	●	Lower 4 digits: upper
13	Number of terminal blocks	●	●	●	○	○	●	○	Lower 4 digits: lower
14	Contents of malfunction (the latest)	●	●	●	○	○	○	●	Malfunction code table Refer page 166.
15	Contents of malfunction (1 cycle before)	●	●	●	○	○	○	○	
16	Contents of malfunction (2 cycle before)	●	●	○	●	●	●	●	
20	Contents of retry (the latest)	●	●	○	●	○	●	●	
21	Contents of retry (1 cycle before)	●	●	○	●	○	●	○	
22	Contents of retry (2 cycle before)	●	●	○	●	○	○	●	

Setting item 0 Display contents of "Operation/backup operation setting, and others"

Operation /backup operation setting	ON	●	●	●	○	●	●	●
	OFF	●	●	●	●	●	●	●
Te setting	L	●	●	●	●	●	●	●
	M	●	●	●	●	●	○	●
	H ①~⑤	●	●	●	●	●	○	●
Tc setting	L	●	●	●	●	●	●	●
	M	●	●	●	●	●	●	○
	H	●	●	●	●	●	●	○

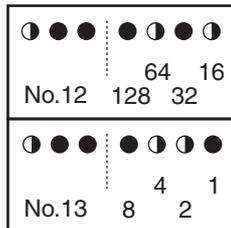
Push the SET button and match with the LEDs No. 1 - 15, push the RETURN button, and enter the data for each setting.

★ Data such as addresses and number of units is expressed as binary numbers; the two ways of expressing are as follows:



The No. 1 cool/heat unified address is expressed as a binary number consisting of the lower 6 digits. (0 - 63)

In ① the address is 010110 (binary number), which translates to $16 + 4 + 2 = 22$ (base 10 number). In other words, the address is 22.



The number of terminal blocks for No. 12 and 13 is expressed as an 8-digit binary number, which is the combination of four upper, and four lower digits for No. 12 and 13 respectively. (0 - 128)

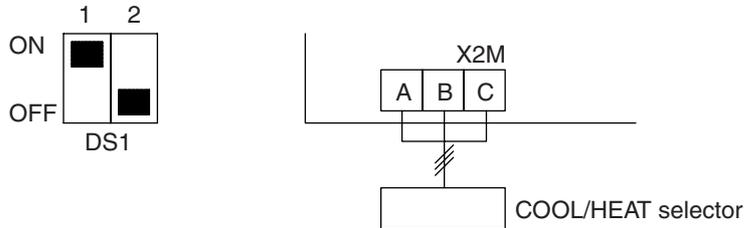
In ② the address for No. 12 is 0101, the address for No. 13 is 0110, and the combination of the two is 01010110 (binary number), which translates to $64 + 16 + 4 + 2 = 86$ (base 10 number). In other words, the number of terminal block is 86.

★ See the preceding page for a list of data, etc. for No. 0 - 22.

3.2.2 Cool / Heat Mode Switching (In case of heating and simultaneous cooling / heating) operation connection

Set Cool/Heat Separately for Each BS Unit by Cool/Heat Selector.

- (1) Before turning on the power of the BS unit, set the DIP switch (DS1-1) on the BS unit PC board as following.
- (2) Then, connect the COOL/HEAT selector to the terminal A, B and C of the terminal block X2M on the BS unit PC board.



<Note>

- This setting is read into the micro controller when turning on the power supply.
- Be sure to make the setting before turning on the power supply.
- Moreover, be sure to close the lid of the switch box after setting.

EXAMPLE OF TRANSMISSION LINE CONNECTION

- Example of connecting transmission wiring.
Connect the transmission wirings as shown in the Fig. 1.

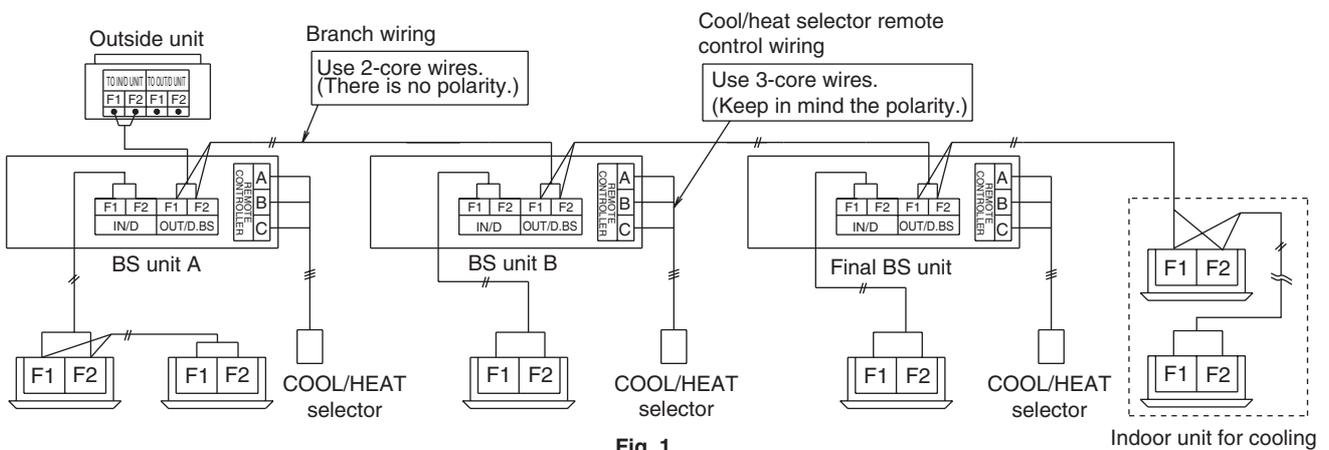
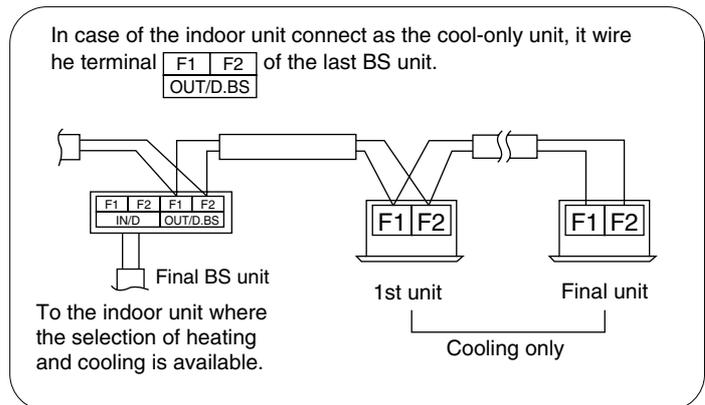


Fig. 1

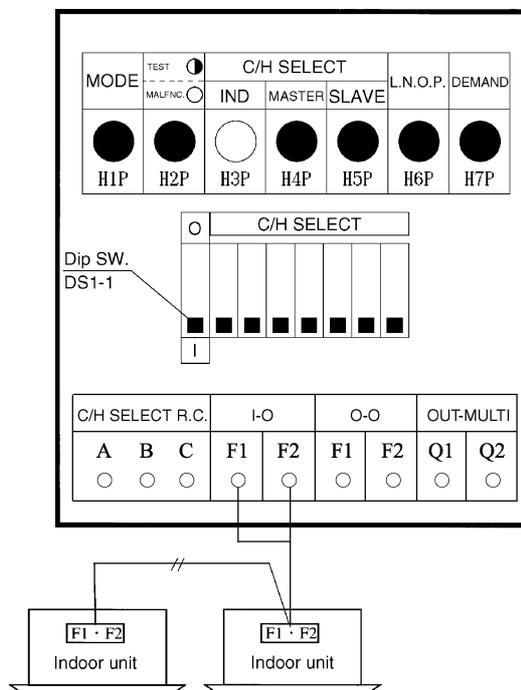
3.2.3 Cool / Heat Mode Switching (In case of heat pump connection)

There are the following 5 cool/heat switching modes.

- ① Set cool/heat separately for each outside unit system by indoor unit remote controller.
- ② Set cool/heat separately for each outside unit system by cool/heat switching remote controller.
- ③ Set cool/heat for more than one outside unit system simultaneously in accordance with unified master outside unit by indoor unit remote controller.
- ④ Set cool/heat for more than one outside unit system simultaneously in accordance with unified master outside unit by cool/heat switching remote controller.

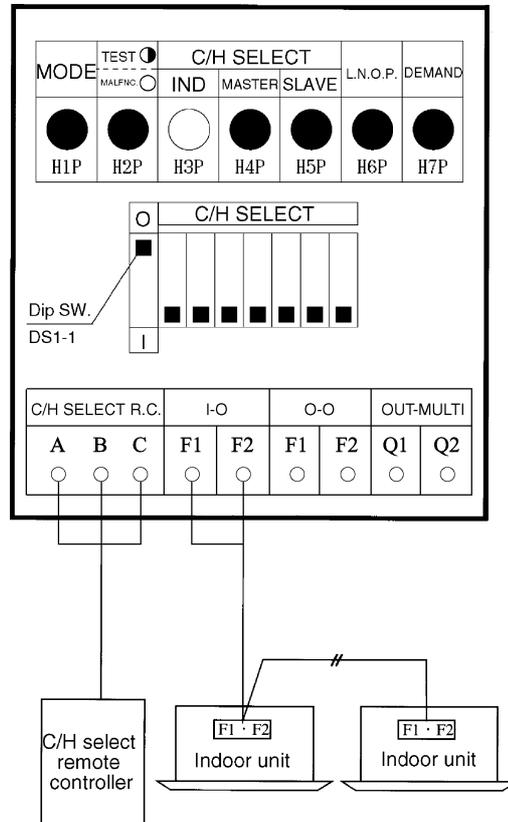
① Set Cool/Heat Separately for Each Outside System by Indoor Unit Remote Controller

- ◆ It does not matter whether or not there is outside - outside unit wiring.
- ◆ Set outside unit PC board DS1-1 to "indoor" (factory set).
- ◆ Set cool/heat switching to "individual" for "Setting mode 1" (factory set).



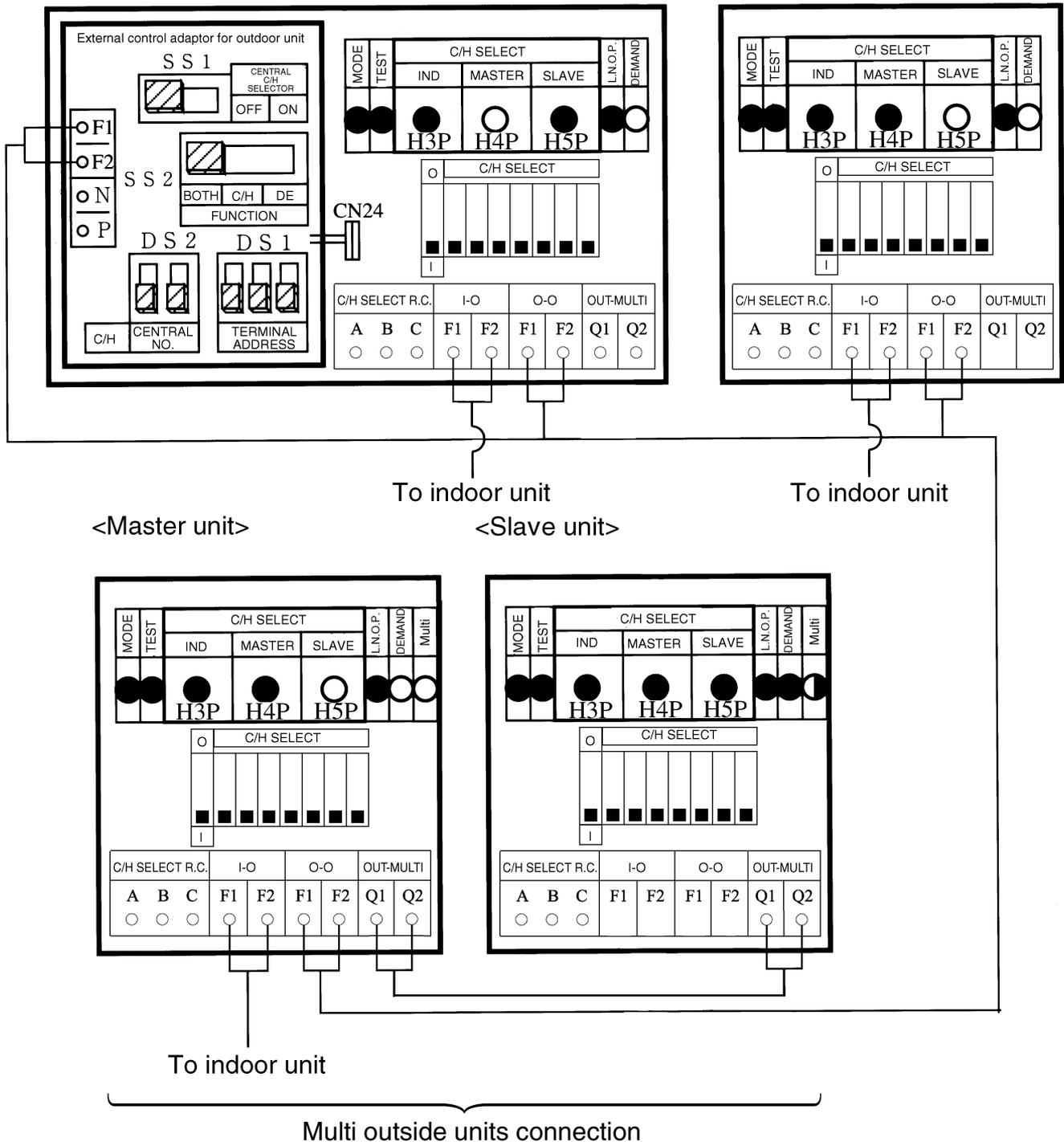
② Set Cool / Heat Separately for Each Outside Unit System by Cool/Heat Switching Remote Controller

- ◆ It does not matter whether or not there is outside - outside unit wiring.
- ◆ Set outside unit PC board DS1-1 to “outside” (factory set).
- ◆ Set cool/heat switching to “individual” for “Setting mode 1” (factory set).



③ Set Cool / Heat for More Than One Outside Unit System Simultaneously in Accordance with Unified Master Outside Unit by Indoor Unit Remote Controller

- ◆ Install the outside unit external control adaptor on either the outside unit-outside unit, indoor-outside, or transmission line.
- ◆ Set outside unit PC board DS1-1 to “Indoor” (factory set).
- ◆ In setting mode 1, set the outside unit you want to give cool/heat selection permission to as the group master, and set the other outside units as group slave units.
- ◆ Set the outside unit external control adaptor SS1 to Unified (factory set) or Cool, and SS2 to No (factory set).

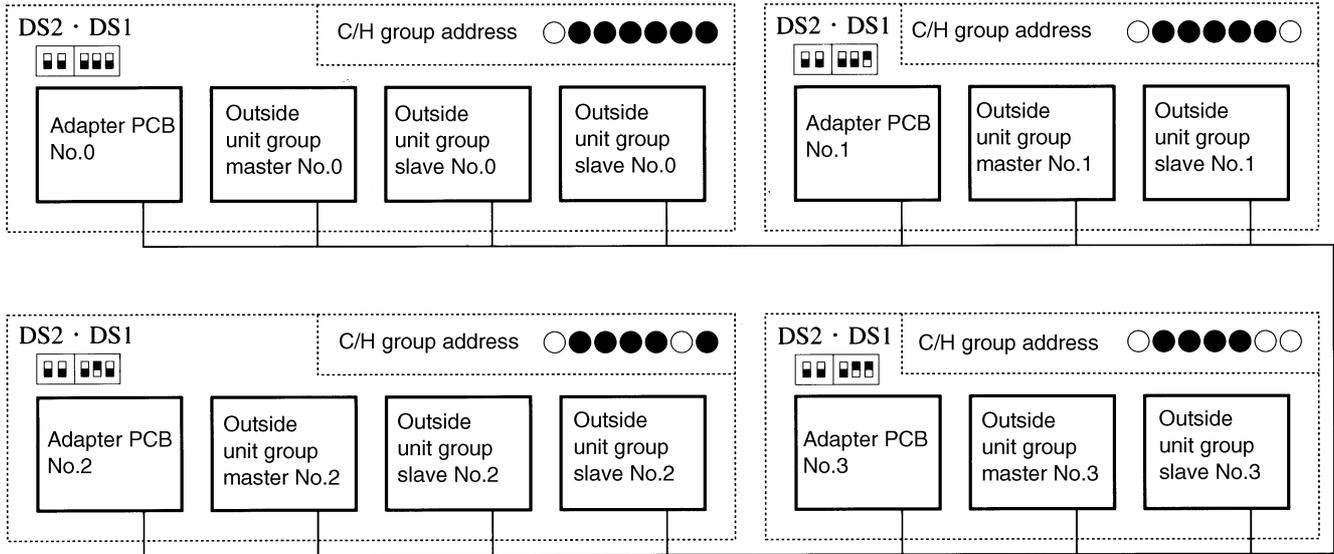


④ Set Cool / Heat for More Than One Outside Unit System Simultaneously in Accordance with Unified Master Outside Unit by Cool/Heat Switching Remote Controller

- ◆ Add and change the following items to ③.
- ★ Install cool/heat switching remote controller on the group master outside unit.
- ★ Set SS1 on the group master outside unit PC board.

Supplementation on ③ and ④.

When switching cool/heat for each adaptor PC board with the use of more than one adaptor PC board, set the address of the adaptor PC board DS1 and DS2 so that it matches the unified cool/heat address of outside unit PC board.



Address setting for ③ and ④ (Set lower 5 digits with binary number.) [No.0 to No.31]

Address No.	Outside unit PC board LED Set with setting mode 2		Adaptor PC board				
			DS2		DS1		
No 0	○ ●	● ● ● ● ● 0					 0
No 1	○ ●	● ● ● ● ○ 1					 1
No 2	○ ●	● ● ● ○ ● 2					 2
No 3	○ ●	● ● ● ○ ○ 3					 3
No 4	○ ●	● ● ○ ● ● 4					 4
}		}					}
No 30	○ ●	○ ○ ○ ○ ● 30					 30
No 31	○ ●	○ ○ ○ ○ ○ 31					 31

○ ON ● OFF Upper position (ON) Lower position (OFF)
(The shaded part shows knob)

3.2.4 Setting of Demand Operation

In order to save the power consumption, the capacity of outside unit is saved with control forcibly by using "Demand 1 Setting" or "Demand 2 Setting".

To operate the unit with this mode, additional setting of "Normal Demand Setting" or external input by external control adaptor is required.

[Demand 1 setting]

Setting	Standard for upper limit of power consumption
Demand 1 setting 1	Approx. 60%
Demand 1 setting 2 (factory setting)	Approx. 70%
Demand 1 setting 3	Approx. 80%

[Demand 2 setting]

Setting	Standard for upper limit of power consumption
Demand 2 setting 2 (factory setting)	Approx. 40%

★ Other protection control functions have precedence over the above operation.

Setting of Demand Operation

By connecting the external contact input to the demand input of the outside unit external control adaptor (optional), the power consumption of unit operation can be saved suppressing the compressor operating condition.

A. When the demand operation is carried out by external instructions (with the use of the external control adaptor for outside unit).

1. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of external low noise/demand operation) to "YES".
2. If necessary, while in "Setting mode 2", select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

B. When the normal demand operation is carried out. (Use of the external control adaptor for outside unit is not required.)

1. While in "Setting mode 2", make setting of the set item No. 32 (Setting of normal demand) to "ON".
2. While in "Setting mode 2", select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

Image of operation in the case of A

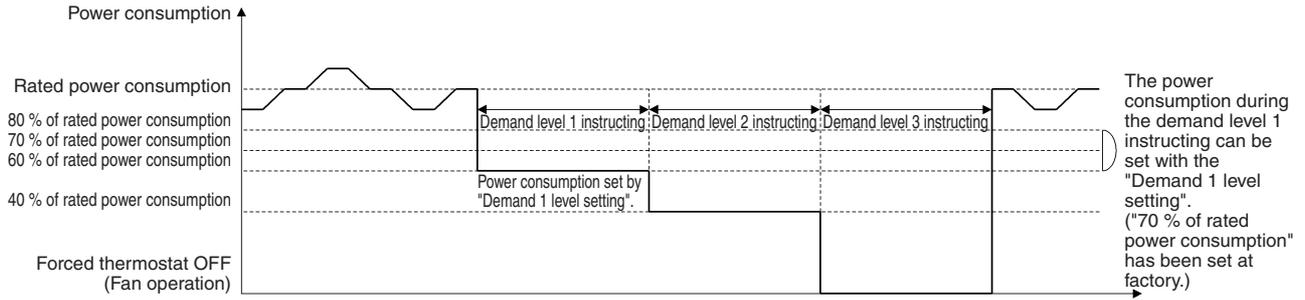


Image of operation in the case of B

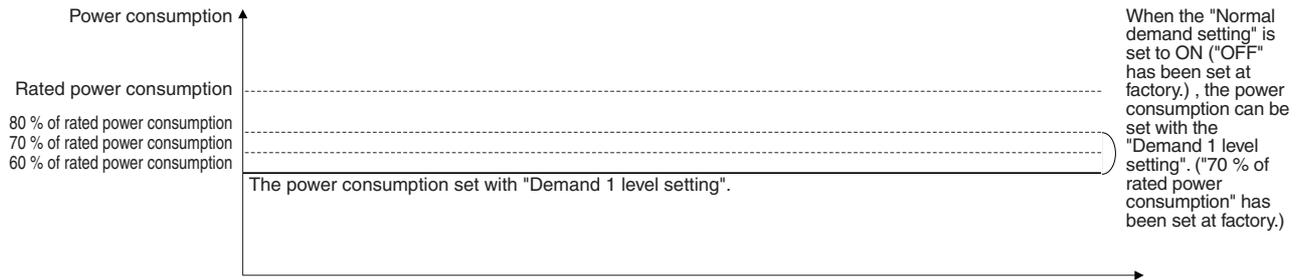
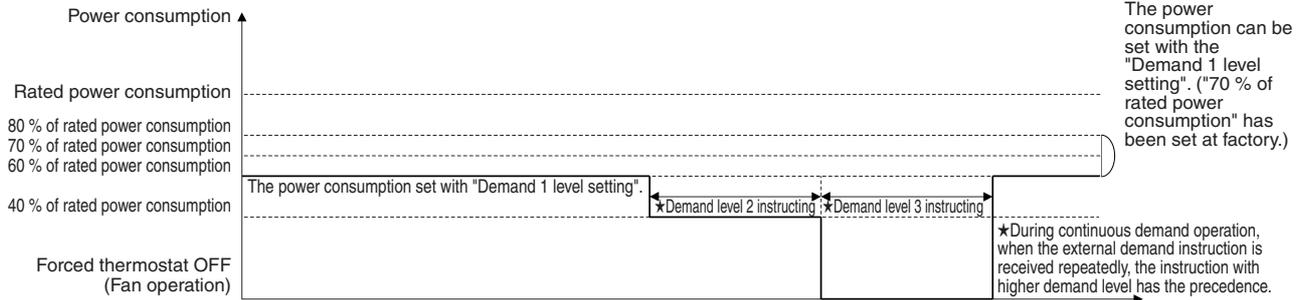


Image of operation in the case of A and B



Detailed Setting Procedure and Demand Control

1. Setting mode 1 (H1P off)

- ① In setting mode 2, push the BS1 (MODE button) one time. → Setting mode 1 is entered and H1P lights off.
During the setting mode 1 is displayed, “In low noise operation” and “In demand control” are displayed.

2. Setting mode 2 (H1P on)

- ① In setting 1, push and hold the BS1 (MODE button) for more than 5 seconds. → Setting mode 2 is entered and H1P lights.
- ② Push the BS2 (SET button) several times and match the LED display with the Setting No. you want.
- ③ Push the BS3 (RETURN button) one time, and the present setting content is displayed.
→ Push the BS2 (SET button) several times and match the LED display with the setting content (as shown below) you want.
- ④ Push the BS3 (RETURN button) two times. → Returns to ①.
- ⑤ Push the BS1 (MODE button) one time. → Returns to the setting mode 1 and turns H1P off.

Setting No.	Setting contents	① Setting No. indication							② Setting No. indication							Setting contents	③ Setting contents indication (Initial setting)						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P		H1P	H2P	H3P	H4P	H5P	H6P	H7P
12	External low noise / Demand setting															NO (Factory set)	○	●	●	●	●	●	●
																YES	○	●	●	●	●	●	●
30	Demand setting 1															60 % of rated power consumption	○	●	●	●	●	●	●
																70 % of rated power consumption (Factory setting)	○	●	●	●	●	●	●
																80 % of rated power consumption	○	●	●	●	●	●	●
32	Normal demand setting															OFF (Factory setting)	○	●	●	●	●	●	●
																Continuous demand 1 fixed	○	●	●	●	●	●	●

Setting mode indication section

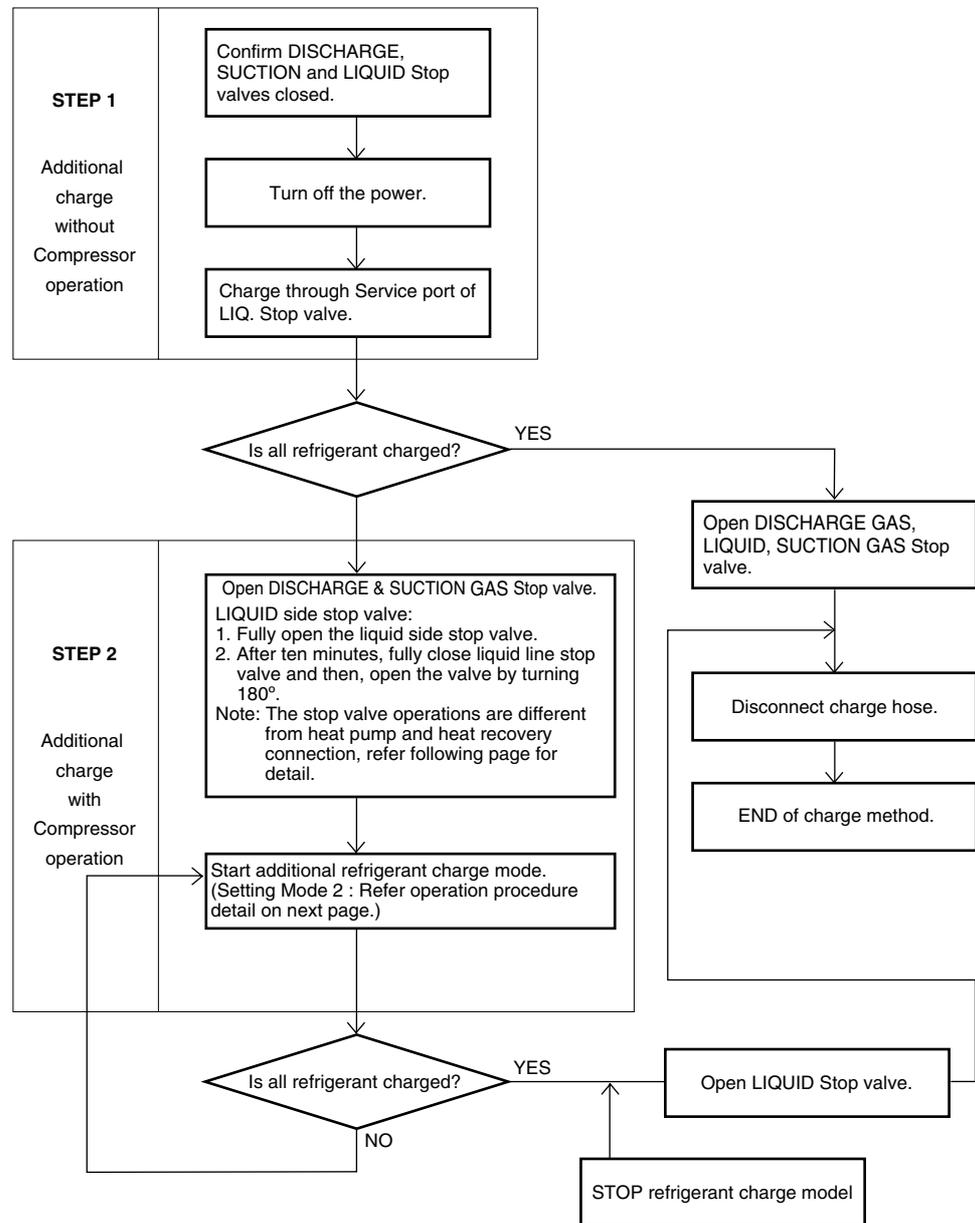
Setting No. indication section

Set contents indication section

3.2.5 Setting of Refrigerant Additional Charging Operation

When additional refrigerant is not charged all with outside unit in stop mode, operate the outside unit and charge the liquid refrigerant from the service port of liquid stop valve. The additional charging operation is activated by pushbutton switch on the outside unit PC board.

[Additional refrigerant charge total flow]



**Caution**

Refrigerant cannot be charged until field wiring has been completed.
 Refrigerant may only be charged after performing the leak test and the vacuum drying.
 When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
 Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant (R-410A) is charged.
 Refrigerant containers shall be opened slowly.
 Always use protective gloves and protect your eyes when charging refrigerant.

- This outside unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Determine the amount of refrigerant to be added by referring to the table, write it down on the included "Added Refrigerant" plate and attach it to the rear side of the front cover.
 Note: refer to the example of connection for the amount to be added.

Additional refrigerant charge procedure (1)-normally

- Charge the refrigerant to the liquid pipe in its liquid state. Since R-410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
 - Make sure to use installation tools you exclusively use on R-410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
1. Before charging, check whether the tank has a siphon attached or not.

How to charge with a siphon attached tank.

Charge with the tank upright.
 (There is a siphon tube inside, so there is no need to turn the tank upside-down.)

**How to charge with other tank.**

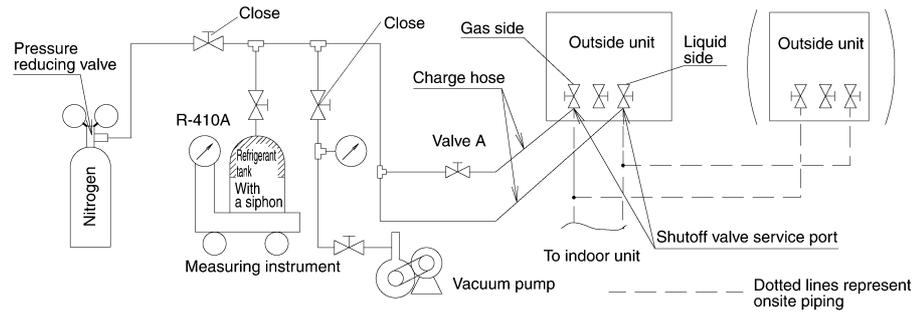
Charge with the tank upside-down.



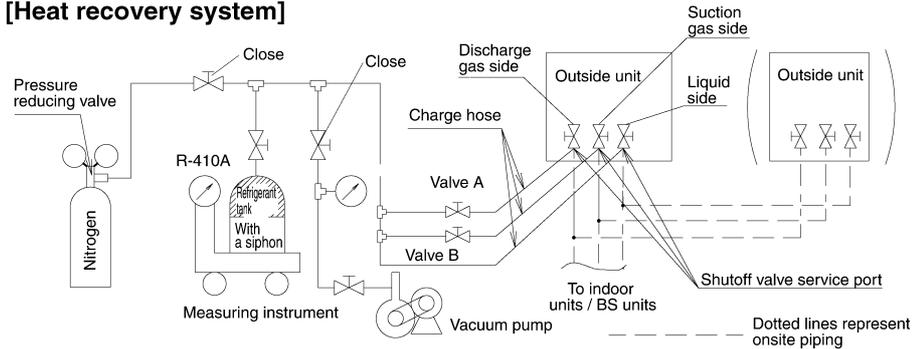
2. After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid shutoff valve service port.
 Taking into account following instructions:
 - Check that gas and liquid shutoff valves are closed.
 - Stop the compressor and charge the specified weight of refrigerant.
 (If the outside unit is not in operation and the total amount cannot be charged, follow the Additional refrigerant charge procedure (2) shown next page.)

■ Procedures for charging additional refrigerant.

[Heat pump system]



[Heat recovery system]



Additional refrigerant charge procedure (2)-by Additional refrigerant charge operation

About the system settings for additional refrigerant charge operation, refer to the [Service Precaution] label attached on the electric box cover in the outside unit.

1. Fully open all shutoff valves (valve A and valve B must be left fully closed).
2. After ten minutes, fully close liquid line shutoff valve and then, open the valve by turning 180°. Start the additional refrigerant charge operation.

See [Service precautions] Label for detail.

If it is difficult to charge the refrigerant additionally, decrease the water temperature or warm the refrigerant tank.

(Warm the refrigerant tank with a stupe or a warm hot water of 40 degrees or less.)

3. After the system is charged with a specified amount of refrigerant, press the RETURN button (BS3) on the PC board (A1P) in the outside unit to stop the additional refrigerant charge operation.
4. Immediately open both liquid-side and gas-side shutoff valve.
(If do not open the shutoff valve immediately, liquid seal may cause the pipe to burst.)



Caution

Shutoff valve operation procedure

Do not open the shutoff valve until checking of device and installation conditions are completed. If the shutoff valve is left open without turning on power, it may cause refrigerant to buildup in the compressor, leading to insulation degradation.

Opening shutoff valve

1. Remove the cap and turn the valve counterclockwise with the hexagon wrench (JISB4648).
2. Turn it until the shaft stops.
Do not apply excessive force to the shutoff valve. Doing so may break the valve body, as the valve is not a backseat type. Always use the hexagon wrench.
3. Make sure to tighten the cap securely.

Closing shutoff valve

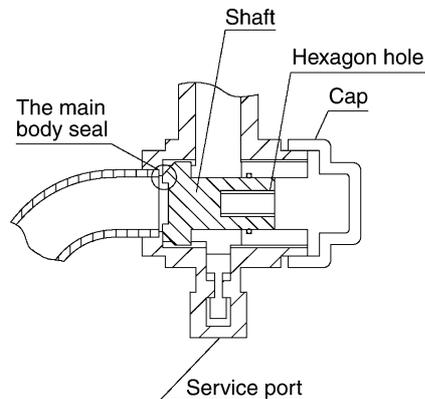
1. Remove the cap and turn the valve clockwise with the hexagon wrench (JISB4648).
2. Securely tighten the valve until the shaft contacts the main body seal.
3. Make sure to tighten the cap securely.

* For the tightening torque, refer to the table on the next page.

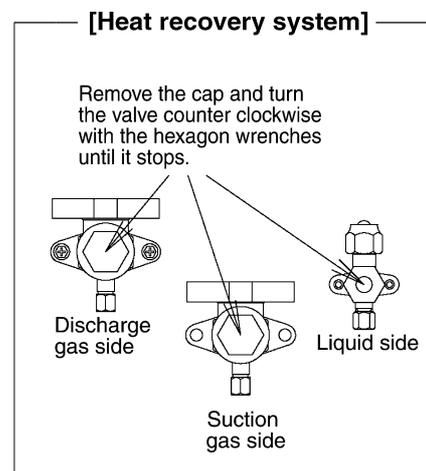
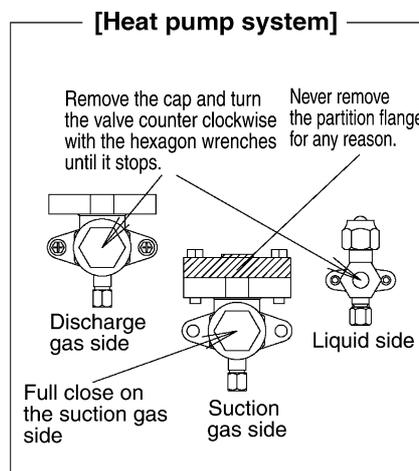
Tightening torque

Shutoff valve size	Tightening torque N-m (Turn clockwise to close)					
	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Gas side accessory pipe (1)
Liquid side	5.4-6.6	Hexagonal wrench 4 mm	13.5-16.5	11.5-13.9	32.7-39.9	—
Gas side	27-33	Hexagonal wrench 10 mm	36-44	11.5-13.9	—	22-28

(Refer to figure below)

**Caution**

- Do not damage the cap sealing.
- Always use a charge hose for service port connection.
- After tightening the cap, check that no refrigerant leaks are present.
- After working, securely tighten the cover of service port without fail by specified torque.
- When loosening a flare nut, always use two wrenches in combination. When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.
- When connecting a flare nut, coat the flare (inner and outer faces) with ether oil or ester oil and hand-tighten the nut 3 to 4 turns as the initial tightening.
- Do not forget to open the stop valve before starting operation.

**[Operation state]**

- Compressor frequency : Normal cooling PI control, upper limit 177Hz
- Y5S, Y7S, 4 way valve: OFF Y1E, electronic expansion valve : Normal cooling control
- Indoor unit expansion valve (All unit) : 1024 pulse Y3E: 0 pls
- Indoor unit fan : H tap

3.2.6 Setting of Refrigerant Recovery Mode

When carrying out the refrigerant collection on site, fully open the respective expansion valve of indoor and outside units

[Operation procedure]

- ① In **setting mode 2** with units in stop mode, set “B Refrigerant Recovery / Vacuuming mode” to ON. The respective expansion valve of indoor and outside units are fully opened. (H2P turns to display “TEST OPERATION” (blinks), “TEST OPERATION” and “IN CENTRALIZED CONTROL” are displayed on the remote controller, and the operation is prohibited.
- ② Collect the refrigerant using a refrigerant recovery unit. (See the instruction attached to the refrigerant recovery unit for more detail.)
- ③ Press Mode button “BS1” once and reset “Setting Mode 2”.

3.2.7 Setting of Vacuuming Mode

In order to perform vacuuming operation at site, fully open the expansion valves of indoor and outside units to turn on some solenoid valves.

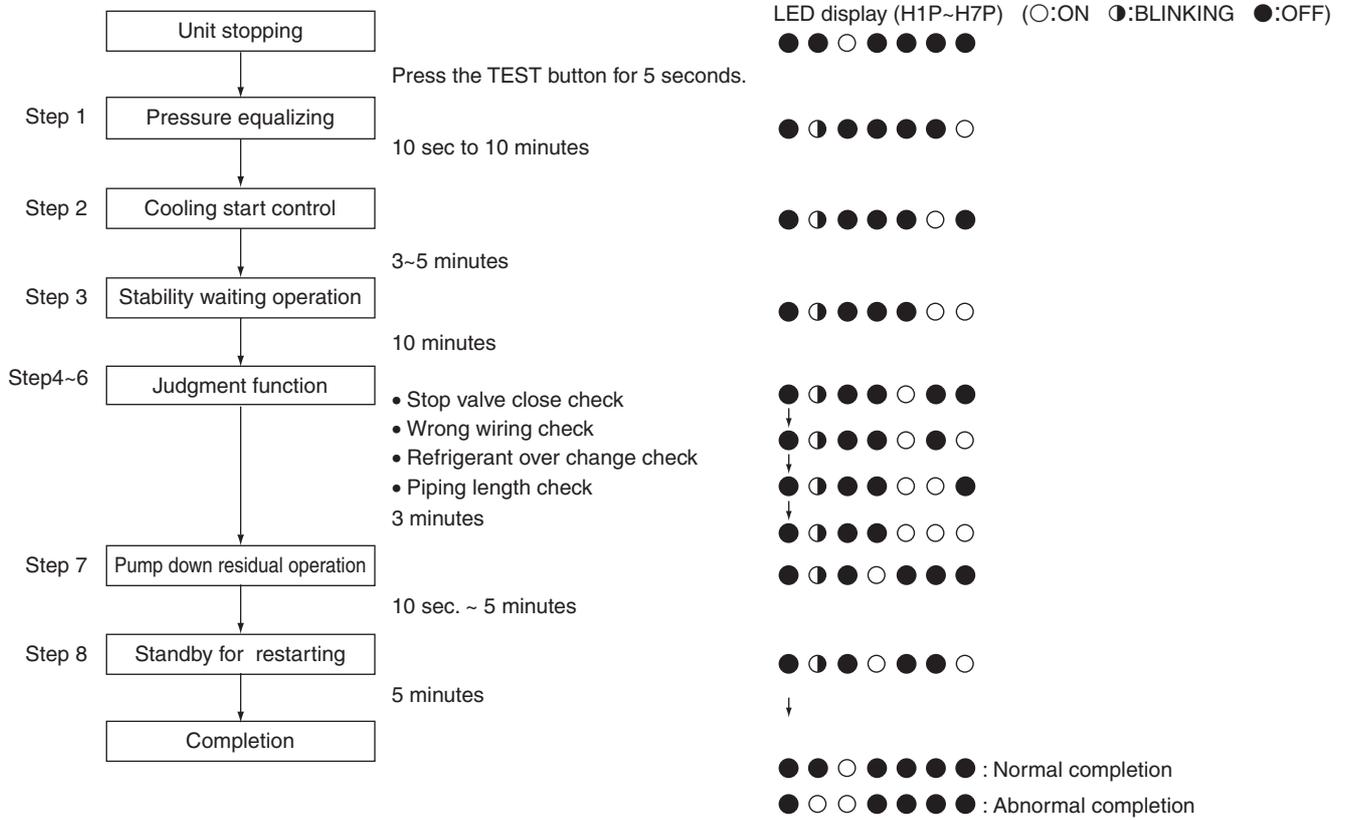
[Operating procedure]

- ① With **Setting Mode 2** while the unit stops, set (B) Refrigerant recovery / Vacuuming mode to ON. The expansion valves of indoor and outside units fully open and some of solenoid valves open.
(H2P blinks to indicate the test operation, and the remote controller displays "Test Operation" and "In Centralized control", thus prohibiting operation.)
After setting, do not cancel “Setting Mode 2” until completion of Vacuuming operation.
- ② Use the vacuum pump to perform vacuuming operation.
- ③ Press Mode button “BS1” once and reset “Setting Mode 2”.

3.2.8 Check Operation

To prevent any trouble in the period of installation at site, the system is provided with a test operation mode enabling check for incorrect wiring, stop valve left in closed, coming out (or misplacing with suction pipe thermistor) of discharge pipe thermistor and judgment of piping length, refrigerant overcharging, and learning for the minimum opening degree of motorized valve.

CHECK OPERATION FUNCTION



3.2.9 Power Transistor Check Operation

When the inverter system malfunctions (malfunction of inverter, INV compressor), to locate where the malfunction occurs, switching to the power transistor check mode of inverter in the service mode setting enables not to judge the position detection signal malfunction but to output waveform only during inverter operation. (The waveform can be checked by disconnecting the wiring of compressor.)

After the completion of checks, return the system to the previous mode and wait for 30 seconds or more until the discharge of capacitor is completed. Then, conduct a subsequent work.



Notes: Be sure to disconnect the compressor wiring when conducting the check operation mentioned above.

When the output voltage is approx. 100~200 V (10 Hz) and the voltage balance between phases U-V, V-W, W-U is within $\pm 5\%$, the inverter PC board is normal.



Refer the detail power transistor check to page 313.

3.2.10 Emergency Operation

If the compressor cannot operate, this control inhibits any applicable compressor or outside unit from operating to perform emergency operation only with the operative compressor or outside unit.



Caution

"For making a compressor unable to operate due to malfunction, etc., be sure to conduct the work with emergency operation setting.

Never execute work such as disconnection of the power cable from magnet contactor. (Otherwise, other normal compressors may malfunction.)

*** Because the units will be operated in the combination with which oil pressure equalization between compressors cannot be performed.**

3.2.11 Restrictions for Emergency Operation

- If the emergency operation is set while the outside unit is in operation, the outside unit stops once after pump-down residual operation (a maximum of 5 minutes elapsed).

3.2.12 In the Case of Multi-Outside-Unit System

Automatic backup operation

With multi-outside-unit system, if a certain outside unit system malfunctions (i.e., the system stops and indoor unit remote controller displays the malfunction), by resetting the system with the indoor unit remote controller, the applicable outdoor unit is inhibited from operating for 8 hours, thus making it possible to perform emergency operation automatically.

However, in the event any of the following malfunctions occurs, automatic backup operation can be performed.

Malfunctions under which automatic backup operation can be performed:

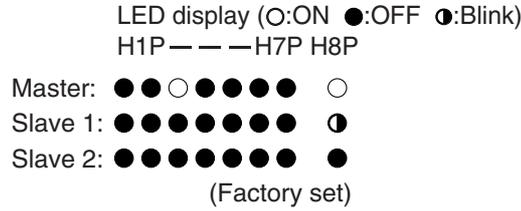
- E3, E4, E5, E7
- F3
- J3, J5, J6, J7, J9, JA, JC
- L4, L5, L8, L9, LC
- U2, UJ

Emergency operation with settings in service mode

* "Inhibition of operation" is set with each outside unit.

Make the following settings with the master unit. (Setting with the slave unit becomes disabled.)

* Discriminate the operating status of the master unit/slave units through the following LED display.

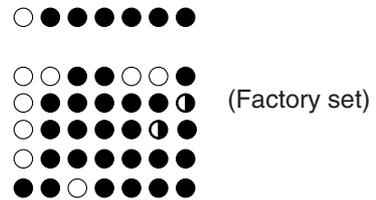


• To inhibit the master unit from operating → Set setting mode 2 from No. 38 to No. 2.

(Procedure)

- (1) Press and hold the MODE button (BS1) for 5 sec. or more.
- (2) Press the SET button (BS2) 38 times.
- (3) Press the RETURN button (BS3) once.
- (4) Press the SET button (BS2) once.
- (5) Press the RETURN button (BS3) twice.
- (6) Press the MODE button (BS1) once.

LED display (○:ON ●:OFF ◐:Blink)
 H1P — — — H7P

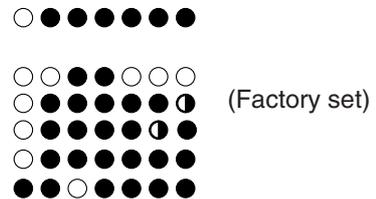


• To inhibit the slave unit 1 from operating → Set setting mode 2 from No. 39 to No. 2.

(Procedure)

- (1) Press and hold the MODE button (BS1) for 5 sec. or more.
- (2) Press the SET button (BS2) 39 times.
- (3) Press the RETURN button (BS3) once.
- (4) Press the SET button (BS2) once.
- (5) Press the RETURN button (BS3) twice.
- (6) Press the MODE button (BS1) once.

LED display (○:ON ●:OFF ◐:Blink)
 H1P — — — H7P

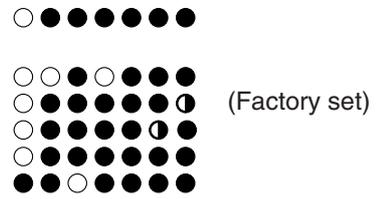


• To inhibit the slave unit 2 from operating → Set setting mode 2 from No. 40 to No. 2.

(Procedure)

- (1) Press and hold the MODE button (BS1) for 5 sec. or more.
- (2) Press the SET button (BS2) 40 times.
- (3) Press the RETURN button (BS3) once.
- (4) Press the SET button (BS2) once.
- (5) Press the RETURN button (BS3) twice.
- (6) Press the MODE button (BS1) once.

LED display (○:ON ●:OFF ◐:Blink)
 H1P — — — H7P



• In the case of multi-outside-unit system, when the above "Inhibition of operation" is set, outside unit rotation is not functional.



Notes : Reset the power supply during the outside unit is stopping to cancel the automatic backup operation forcibly.

Part 6

Troubleshooting

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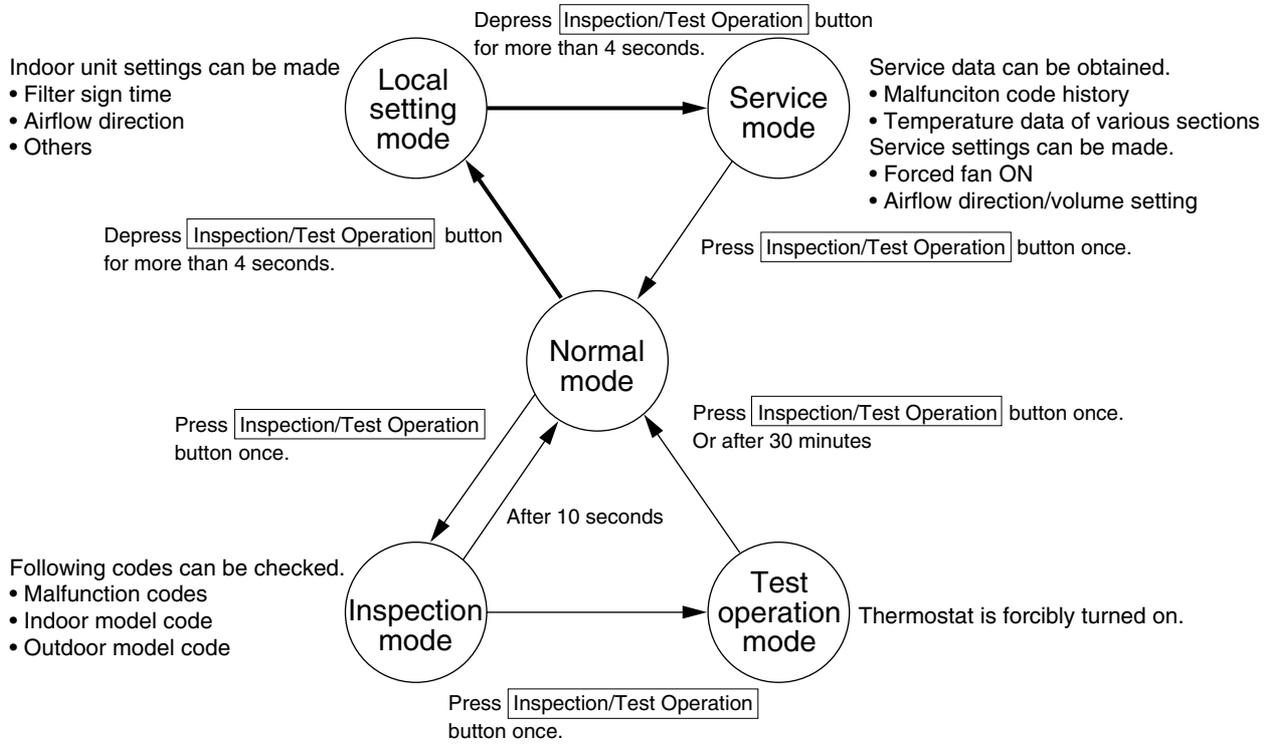
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1. Troubleshooting by Remote Controller

1.1 The INSPECTION / TEST Button

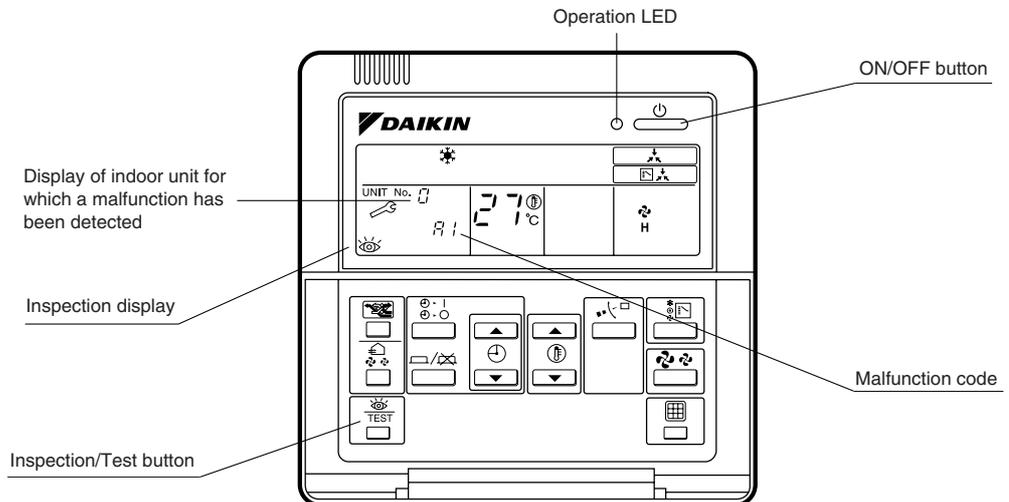
The following modes can be selected by using the [Inspection/Test Operation] button on the remote control.



1.2 Self-diagnosis by Wired Remote Controller

Explanation

If operation stops due to malfunction, the remote controller's operation LED blinks, and malfunction code is displayed. (Even if stop operation is carried out, malfunction contents are displayed when the inspection mode is entered.) The malfunction code enables you to tell what kind of malfunction caused operation to stop. See page 163 for malfunction code and malfunction contents.



Note:

1. Pressing the INSPECTION/TEST button will blink the check indication.
2. While in check mode, pressing and holding the ON/OFF button for a period of five seconds or more will clear the failure history indication shown above. In this case, on the codes display, the malfunction code will blink twice and then change to "00" (=Normal), the Unit No. will change to "0", and the operation mode will automatically switch from check mode to normal mode (displaying the set temperature).

1.3 Self-diagnosis by Wireless Remote Controller

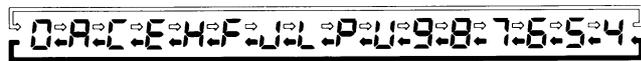
In the Case of BRC7C ~ Type

If equipment stops due to a malfunction, the operation indicating LED on the light reception section flashes.

The malfunction code can be determined by following the procedure described below. (The malfunction code is displayed when an operation error has occurred. In normal condition, the malfunction code of the last problem is displayed.)

1. Press the INSPECTION/TEST button to select "Inspection."
The equipment enters the inspection mode. The "Unit" indication lights and the Unit No. display shows flashing "0" indication.
2. Set the Unit No.
Press the UP or DOWN button and change the Unit No. display until the buzzer (*1) is generated from the indoor unit.
*1 Number of beeps
3 short beeps : Conduct all of the following operations.
1 short beep : Conduct steps 3 and 4.
Continue the operation in step 4 until a buzzer remains ON. The continuous buzzer indicates that the malfunction code is confirmed.
Continuous beep : No abnormality.
3. Press the MODE selector button.
The left "0" (upper digit) indication of the malfunction code flashes.
4. Malfunction code upper digit diagnosis
Press the UP or DOWN button and change the malfunction code upper digit until the malfunction code matching buzzer (*2) is generated.

- The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.



⇒ "Advance" button ← "Backward" button

*2 Number of beeps

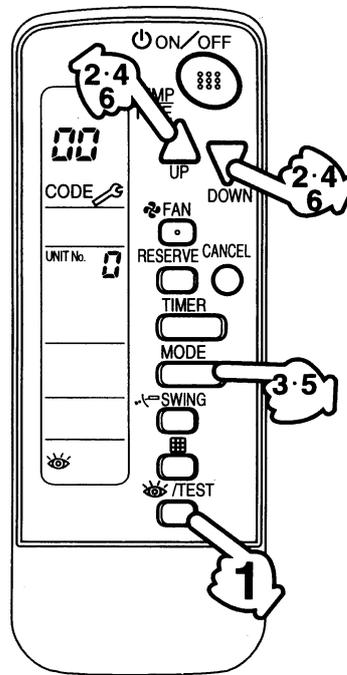
Continuous beep : Both upper and lower digits matched. (Malfunction code confirmed)

2 short beeps : Upper digit matched.

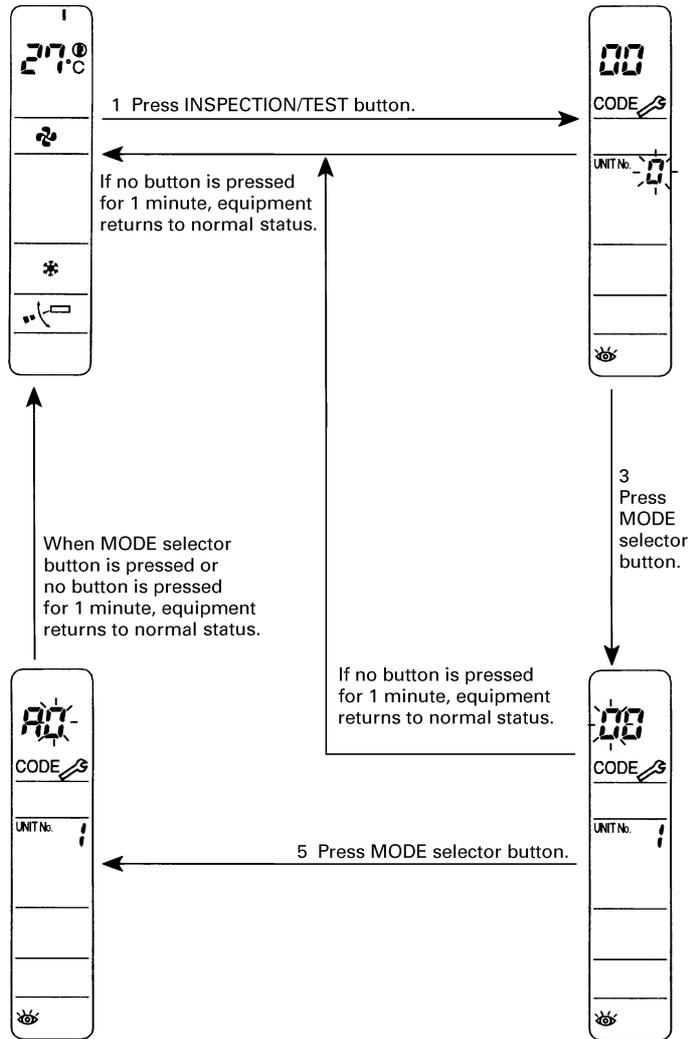
1 short beep : Lower digit matched.

5. Press the MODE selector button.
The right "0" (lower digit) indication of the malfunction code flashes.
6. Malfunction code lower digit diagnosis
Press the UP or DOWN button and change the malfunction code lower digit until the continuous malfunction code matching buzzer (*2) is generated.

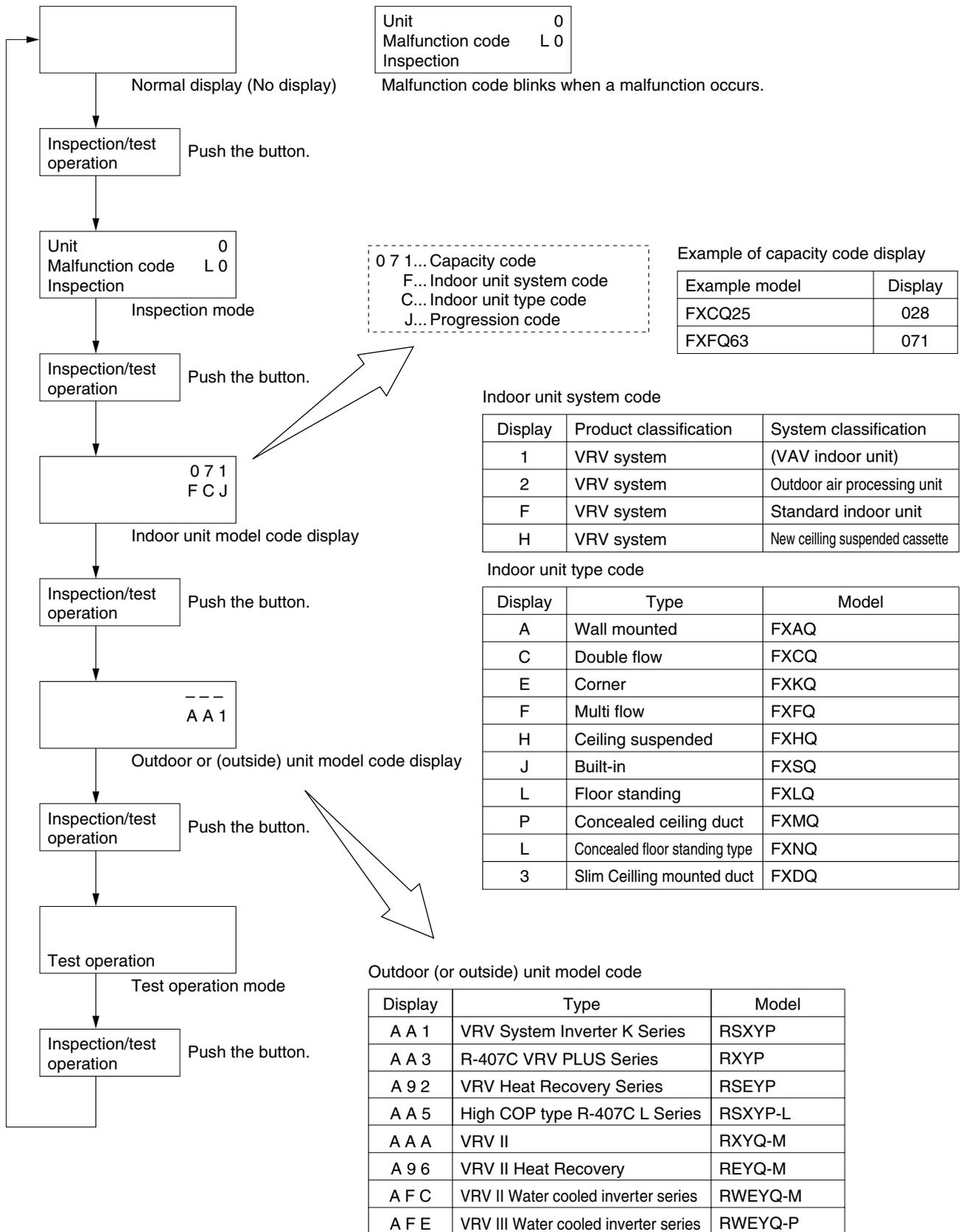
- The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.



Normal status
 Enters inspection mode from normal status when the INSPECTION/TEST button is pressed.

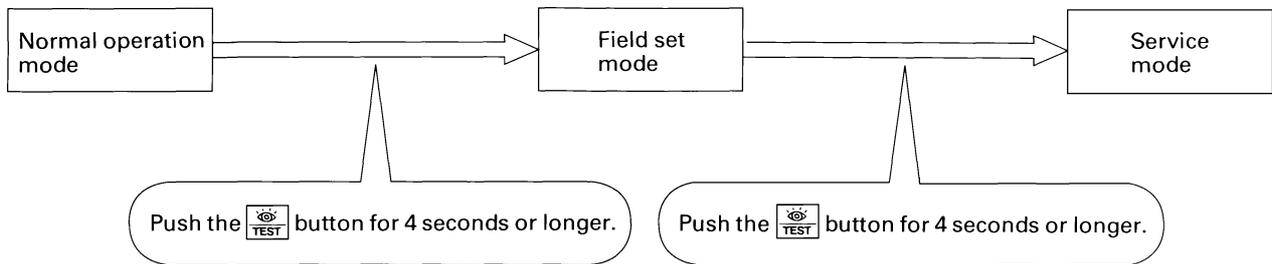


1.4 Operation of the Remote Controller's Inspection / Test Operation Button



1.5 Remote Controller Service Mode

How to Enter the Service Mode



Service Mode Operation Method

1. Select the mode No.

Set the desired mode No. with the button.
 (For wireless remote controller, Mode 43 only can be set.)

2. Select the unit No. (For group control only)

Select the indoor unit No. to be set with the time mode . (For wireless remote controller, button.)

3. Make the settings required for each mode. (Modes 41, 44, 45)

In case of Mode 44, 45, push button to be able to change setting before setting work. (LCD “code” blinks.)

For details, refer to the table in next page.

4. Define the setting contents. (Modes 44, 45)

Define by pushing the timer button.
 After defining, LCD “code” changes blinking to ON.

5. Return to the normal operation mode.

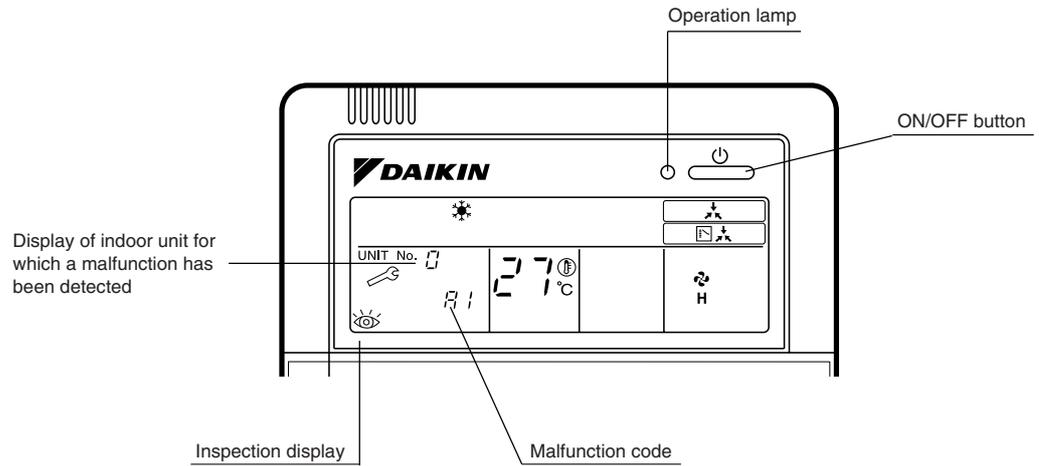
Push the button one time.

Mode No	Function	Contents and operation method	Remote controller display example
40	Malfunction hysteresis display	<p>Display malfunction hysteresis.</p> <p>The history No. can be changed with the  button.</p>	<p>Unit 1 Malfunction code 40</p> <p>2-U4 Malfunction code</p> <p>History No: 1 - 9 1: Latest</p>
41	Display of sensor and address data	<p>Display various types of data.</p> <p>Select the data to be displayed with the  button. Sensor data</p> <p>0: Thermostat sensor in remote controller. 1: Suction 2: Liquid pipe 3: Gas pipe</p> <p>Address data 4: Indoor unit address 5: Outside unit address 6: BS unit address 7: Zone control address 8: Cool/heat group address 9: Demand / low noise address</p>	<p>Sensor data display</p> <p>Unit No. Sensor type</p> <p>1 1 41 2 7 Temperature °C</p> <p>Address display</p> <p>Unit No. Address type</p> <p>1 8 41 1 Address</p>
43	Forced fan ON	<p>Manually turn the fan ON by each unit. (When you want to search for the unit No.)</p> <p>By selecting the unit No. with the  button, you can turn the fan of each indoor unit on (forced ON) individually.</p>	<p>Unit 1</p> <p>43</p>
44	Individual setting	<p>Set the fan speed and airflow direction by each unit</p> <p>Select the unit No. with the time mode  button. Set the fan speed with the  button.</p> <p>Set the airflow direction with the  button.</p>	<p>Unit 1 Code 44</p> <p>1 3 Fan speed 1: low 3: High Airflow direction P0 - P4</p>
45	Unit No. transfer	<p>Transfer unit No.</p> <p>Select the unit No. with the  button. Set the unit No. after transfer with the  button.</p>	<p>Present unit No.</p> <p>Unit 1 Code 45</p> <p>0 2 Unit No. after transfer</p>
46	This function is not used by VRV III R-410A Heat Pump 50 / 60Hz.		
47			

1.6 Remote Controller Self-Diagnosis Function

The remote controller switches are equipped with a self diagnosis function so that more appropriate maintenance can be carried out. If a malfunction occurs during operation, the operation lamp, malfunction code and display of malfunctioning unit No. let you know the contents and location of the malfunction.

When there is a stop due to malfunction, the contents of the malfunction given below can be diagnosed by a combination of operation lamp, INSPECTION display of the liquid crystal display and display of malfunction code. It also lets you know the unit No. during group control.



	Malfunction code	Operation lamp	Malfunction contents	Page Referred
Indoor Unit	A0	●	Error of external protection device	168
	A1	●	PC board defect, E ² PROM defect	169
	A3	●	Malfunction of drain level control system (S1L)	170
	A6	●	Fan motor (M1F) lock, overload Abnormal indoor fan motor	172 173
	A7	○	Malfunction of swing flap motor (MA)	179
	A8	●	Abnormal power supply voltage	181
	A9	●	Malfunction of moving part of electronic expansion valve (20E)	182
	AF	○	Drain level above limit	184
	AH	○	Malfunction of air filter maintenance	—
	AJ	●	Malfunction of capacity determination device	185
	C1	●	Failure of transmission (between indoor unit PC board and fan PC board)	186
	C4	●	Malfunction of thermistor (R2T) for heat exchanger (loose connection, disconnection, short circuit, failure)	188
	C5	●	Malfunction of thermistor (R3T) for gas pipes (loose connection, disconnection, short circuit, failure)	189
	C6	●	Failure of combination (between indoor unit PC board and fan PC board)	190
	C9	●	Malfunction of thermistor (R1T) for suction air (loose connection, disconnection, short circuit, failure)	191
	CC	○	Malfunction of humidity sensor system	192
	CJ	○	Malfunction of thermostat sensor in remote controller	193
Outside Unit	E1	●	PC board defect	194
	E3	●	Actuation of high pressure switch	195
	E4	●	Actuation of low pressure sensor	197
	E5	●	Compressor motor lock	199
	E9	●	Malfunction of moving part of electronic expansion valve (Y1E, Y3E)	201
	F3	●	Abnormal discharge pipe temperature	203
	F6	●	Refrigerant overcharged	204
	HJ	●	Malfunction of water system	206
	J3	●	Malfunction of discharge pipe thermistor (R3T) (loose connection, disconnection, short circuit, failure)	208
	J4	●	Malfunction of heat exchanger gas pipe thermistor (R4T)	209
	J5	●	Malfunction of thermistor (R2T) for suction pipe (loose connection, disconnection, short circuit, failure)	210
	J7	●	Malfunction of liquid pipe thermistor (R6T)	211
	J9	●	Malfunction of subcooling heat exchanger outlet thermistor (R5T)	212
	JA	●	Malfunction of discharge pipe pressure sensor	213
	JC	●	Malfunction of suction pipe pressure sensor	214
	L0	●	Inverter system error	—
	L4	●	Malfunction of inverter radiating fin temperature rise	215
	L5	●	Inverter compressor abnormal	216
	L6	●	Compressor motor coil grounding or short circuit	—
	L8	●	Inverter current abnormal	217
	L9	●	Inverter start up error	218
	LA	●	Malfunction of power unit	—
	LC	●	Malfunction of transmission between inverter and control PC board	219
Outside Unit	P1	●	Inverter over-ripple protection	221
	P4	●	Malfunction of inverter radiating fin temperature sensor	222

	Malfunction code	Operation lamp	Malfunction contents	Page Referred
System	U0	○	Low pressure drop due to refrigerant shortage or electronic expansion valve failure	223
	U1	●	Reverse phase, open phase	225
	U2	●	Power supply insufficient or instantaneous failure	226
	U3	●	Check operation not executed	228
	U4	●	Malfunction of transmission between indoor units	229
	U5	●	Malfunction of transmission between remote controller and indoor unit	231
	U5	●	Failure of remote controller PC board or setting during control by remote controller	231
	U7	●	Malfunction of transmission between outside units	232
	U8	●	Malfunction of transmission between master and slave remote controllers (malfunction of slave remote controller)	234
	U9	●	Malfunction of transmission between indoor and outside units in the same system	235
	UA	●	Indoor & outside units and remote controller combination failure	237
	UC	○	Address duplication of centralized controller	238
	UE	●	Malfunction of transmission between centralized controller and indoor unit	239 248
	UF	●	Refrigerant system not set, incompatible wiring / piping	241
UH	●	Malfunction of system, refrigerant system address undefined	242	
Centralized Control and Schedule Timer	M1	○ or ●	PC board defect	243 250
	M8	○ or ●	Malfunction of transmission between optional controllers for centralized control	244 251
	MA	○ or ●	Improper combination of optional controllers for centralized control	245 252
	MC	○ or ●	Address duplication, improper setting	247 254
Heat Reclaim Ventilation	64	○	Indoor unit's air thermistor error	—
	65	○	Outside air thermistor error	—
	68	○		—
	6A	○	Damper system alarm	—
	6A	●	Damper system + thermistor error	—
	6F	○	Malfunction of simple remote controller	—
	6H	○	Malfunction of door switch or connector	—
	94	●	Internal transmission error	—

 The system operates for malfunction codes indicated in black squares, however, be sure to check and repair.

Malfunction code indication by outdoor unit PC board

To enter the monitor mode, push the MODE button (BS1) when in "Setting mode 1".

* Refer to P.130 for Monitor mode.

<Selection of setting item>

Push the SET button (BS2) and set the LED display to a setting item.

* Refer to P.130 for Monitor mode.

<Confirmation of malfunction 1>

Push the RETURN button (BS3) once to display "First digit" of malfunction code.

<Confirmation of malfunction 2>

Push the SET button (BS2) once to display "Second digit" of malfunction code.

<Confirmation of malfunction 3>

Push the SET button (BS2) once to display "master or slave1 or slave2" and "malfunction location".

Push the RETURN button (BS3) and switches to the initial status of "Monitor mode".

* Push the MODE button (BS1) and returns to "Setting mode 1".

Detail description on next page.

Contents of malfunction		Malfunction code	
Abnormal discharge pressure	HPS activated	E3	
Abnormal suction pressure	Abnormal Pe	E4	
Compressor lock	Detection of INV compressor lock	E5	
Over load, over current, abnormal lock of outdoor unit fan motor	Instantaneous over current of DC fan motor	E7	
	Detection of DC fan motor lock		
Malfunction of electronic expansion valve	EV1	E9	
	EV3		
Abnormal position signal of outside unit fan motor	Abnormal position signal of DC fan motor	H7	
Faulty sensor of outside air temperature	Faulty Ta sensor	H9	
Abnormality in water system		HJ	
Abnormal discharge pipe temperature	Abnormal Td	F3	
Abnormal heat exchanger temperature	Refrigerant over charge	F6	
Faulty sensor of discharge pipe temperature	Faulty Tdi sensor	J3	
Faulty sensor of heat exchanger gas pipe thermistor	Faulty Tg sensor	J4	
Faulty sensor of suction pipe temperature	Faulty Ts sensor	J5	
Faulty sensor of receiver temperature	Faulty Tl sensor	J7	
Faulty sensor of subcool heat exchanger temperature	Faulty Tsh sensor	J9	
Faulty sensor of discharge pressure	Faulty Pc sensor	JA	
	Faulty sensor of suction pressure	Faulty Pe sensor	JC
	Inverter radiation fin temperature rising	Over heating of inverter radiation fin temperature	L4
	DC output over current	Inverter instantaneous over current	L5
	Electronic thermal switch	Electronic thermal switch 1	L8
Electronic thermal switch 2			
Out-of-step			
Speed down after startup			
Lightening detection			
Stall prevention (Limit time)	Stall prevention (Current increasing)	L9	
	Stall prevention (Faulty startup)		
	Abnormal wave form in startup		
	Out-of-step		
Transmission error between inverter and outdoor unit	Inverter transmission error	LC	
Open phase/Power supply imbalance	Imbalance of inverter power supply voltage	P1	
Faulty temperature sensor inside switch box	Faulty thermistor of inverter box	P3	
Faulty temperature sensor of inverter radiation fin	Faulty thermistor of inverter fin	P4	
Incorrect combination of inverter and fan driver	Incorrect combination of inverter and fan driver	PJ	
Gas shortage	Gas shortage alarm	U0	
Reverse phase	Reverse phase error	U1	
Abnormal power supply voltage	Insufficient inverter voltage	U2	
	Inverter open phase (phase T)		
	Charging error of capacitor in inverter main circuit		
No implementation of test-run		U3	
Transmission error between indoor and outdoor unit	I/O transmission error	U4	
Transmission error between outdoor units, transmission error between thermal storage units, duplication of IC address	O/O transmission error	U7	
Transmission error of other system	Indoor unit system malfunction in other system or other unit of own system	U9	
Erroneous on-site setting	Abnormal connection with excessive number of indoor units	UA	
	Conflict of refrigerant type in indoor units		
Faulty system function	Incorrect wiring (Auto address error)	UH	
Transmission error in accessory devices, conflict in wiring and piping, no setting for system	Malfunction of multi level converter, abnormality in conflict check	UJ	
		UF	

Malfunction code	Confirmation of malfunction 1							Confirmation of malfunction 2							Confirmation of malfunction 3						
	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED1	LED2	LED3	LED4	LED5	LED6	LED7
E3	●	●	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○			●	●
E4								●	○	●	●	●	●	●	●	○	○			●	●
E5								●	○	●	●	●	●	●	●	○	○			●	●
E7								●	○	●	●	●	●	●	●	○	○			●	●
E9								●	○	●	●	●	●	●	●	○	○			●	●
H7	●	●	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○			●	●
H9								●	○	●	●	●	●	●	●	○	○			●	●
HJ								●	○	●	●	●	●	●	●	○	○			●	●
F3	●	●	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○			●	●
F6								●	○	●	●	●	●	●	●	○	○			●	●
J3	●	●	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○			●	●
J4								●	○	●	●	○	●	●	●	○	○			●	●
J5								●	○	●	●	●	●	●	●	○	○			●	●
J7								●	○	●	●	●	●	●	●	○	○			●	●
J9								●	○	●	●	●	●	●	●	○	○			●	●
JA								●	○	●	●	●	●	●	●	○	○			●	●
JC								●	○	●	●	●	●	●	●	○	○			●	●
L4								●	○	●	●	●	●	●	●	○	○			●	●
L5								●	○	●	●	●	●	●	●	○	○			●	●
L8								●	○	●	●	●	●	●	●	○	○			●	●
L9								●	○	●	●	●	●	●	●	○	○			●	●
LC								●	○	●	●	●	●	●	●	○	○			●	●
P1	●	●	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○			●	●
P3								●	○	●	●	●	●	●	●	○	○			●	●
P4								●	○	●	●	●	●	●	●	○	○			●	●
PJ								●	○	●	●	●	●	●	●	○	○			●	●
U0	●	●	○	●	●	●	●	●	○	●	●	●	●	●	●	○	○			●	●
U1								●	○	●	●	●	●	●	●	○	○			●	●
U2								●	○	●	●	●	●	●	●	○	○			●	●
U3								●	○	●	●	●	●	●	●	○	○			●	●
U4								●	○	●	●	●	●	●	●	○	○			●	●
U7								●	○	●	●	●	●	●	●	○	○			●	●
U9								●	○	●	●	●	●	●	●	○	○			●	●
UA								●	○	●	●	●	●	●	●	○	○			●	●
UH								●	○	●	●	●	●	●	●	○	○			●	●
UJ								●	○	●	●	●	●	●	●	○	○			●	●
UF								●	○	●	●	●	●	●	●	○	○			●	●

○ : ON
 ◐ : Blink
 ● : OFF

Malfunction code 1st digit display section

○ : ON
 ◐ : Blink
 ● : OFF

Malfunction code 2nd digit display section

Master ● ● Malfunction location
 Slave 1 ● ◐
 Slave 2 ◐ ●

2. Troubleshooting by Indication on the Remote Controller

2.1 "80" Indoor Unit: Error of External Protection Device

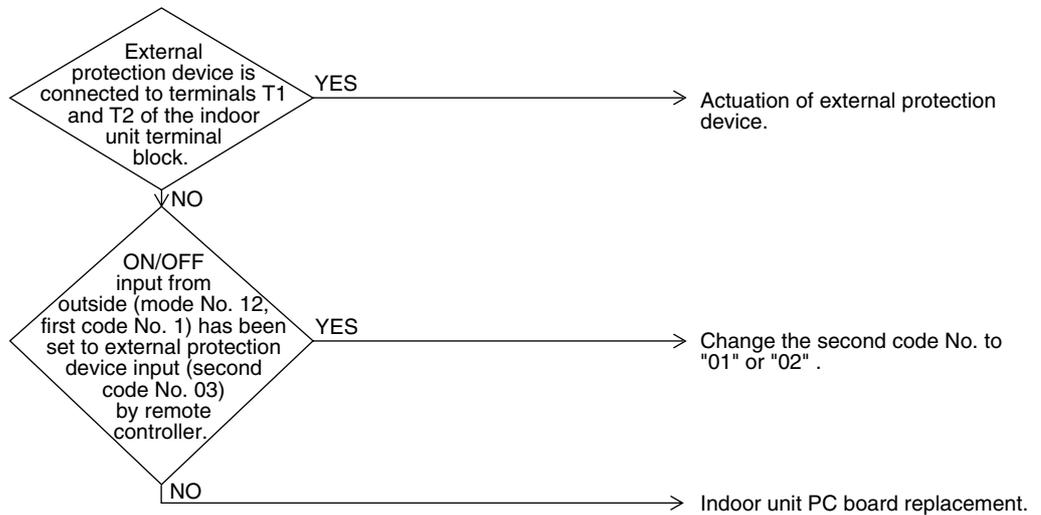
Remote Controller Display	80
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
Method of Malfunction Detection	Detect open or short circuit between external input terminals in indoor unit.
Malfunction Decision Conditions	When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF terminal".
Supposed Causes	<ul style="list-style-type: none"> ■ Actuation of external protection device ■ Improper field set ■ Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

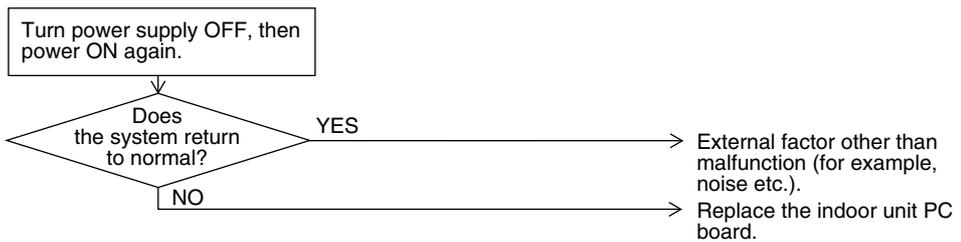


2.2 “E1” Indoor Unit: PC Board Defect

Remote Controller Display	E1
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
Method of Malfunction Detection	Check data from E ² PROM.
Malfunction Decision Conditions	When data could not be correctly received from the E ² PROM E ² PROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.
Supposed Causes	<ul style="list-style-type: none"> ■ Defect of indoor unit PC board
Troubleshooting	<pre> graph TD Start[Turn power supply OFF, then power ON again.] --> Decision{Does the system return to normal?} Decision -- YES --> YesOut[External factor other than malfunction (for example, noise etc.).] Decision -- NO --> NoOut[Replace the indoor unit PC board.] </pre>


Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



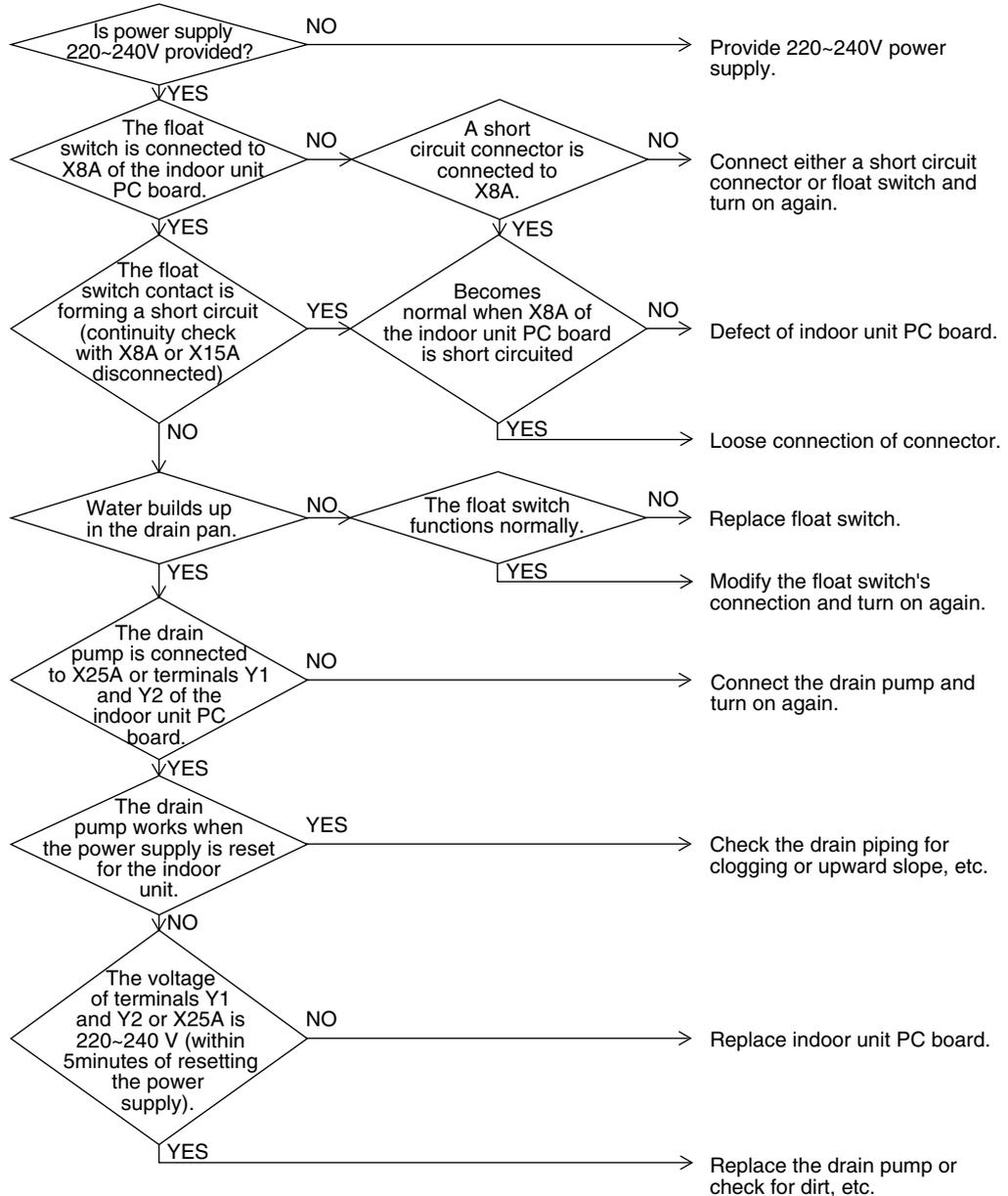
2.3 “E3” Indoor Unit: Malfunction of Drain Level Control System (S1L)

Remote Controller Display	E3
Applicable Models	Indoor unit FXFQ, FXCQ, FXSQ, FXKQ, FXDQ, FXMQ, FXUQ, FXHQ (Option), FXMQ200-250M (Option), FXAQ (Option)
Method of Malfunction Detection	By float switch OFF detection
Malfunction Decision Conditions	When rise of water level is not a condition and the float switch goes OFF.
Supposed Causes	<ul style="list-style-type: none"> ■ 220~240V power supply is not provided ■ Defect of float switch or short circuit connector ■ Defect of drain pump ■ Drain clogging, upward slope, etc. ■ Defect of indoor unit PC board ■ Loose connection of connector

Troubleshooting

**Caution**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.4 “88” Indoor Unit: Fan Motor (M1F) Lock, Overload

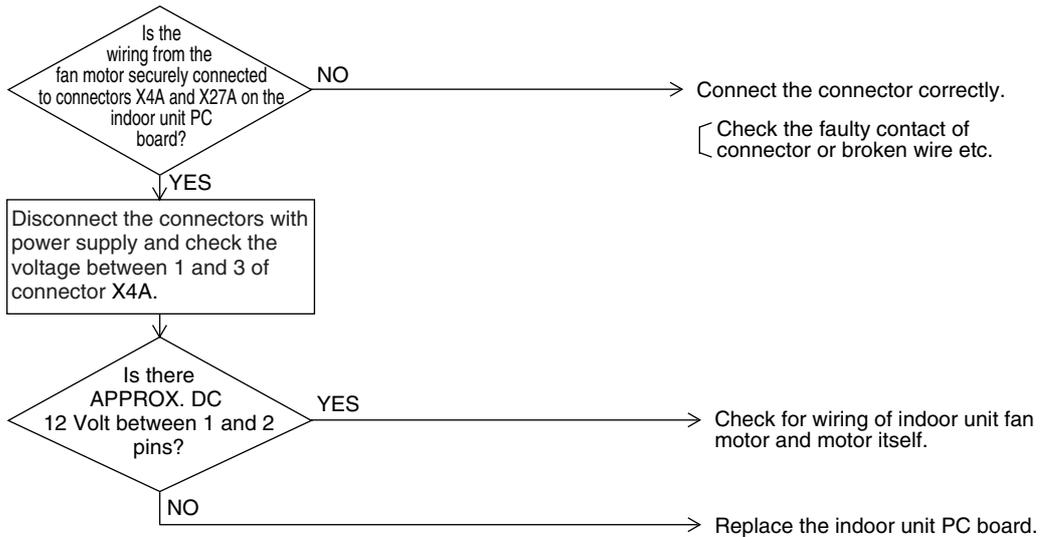
Remote Controller Display	88
Applicable Models	Indoor unit FXDQ, FXHQ
Method of Malfunction Detection	Detection by failure of signal for detecting number of turns to come from the fan motor
Malfunction Decision Conditions	When number of turns can't be detected even when output voltage to the fan is maximum
Supposed Causes	<ul style="list-style-type: none"> ■ Fan motor lock ■ Disconnected or faulty contact between fan motor and PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



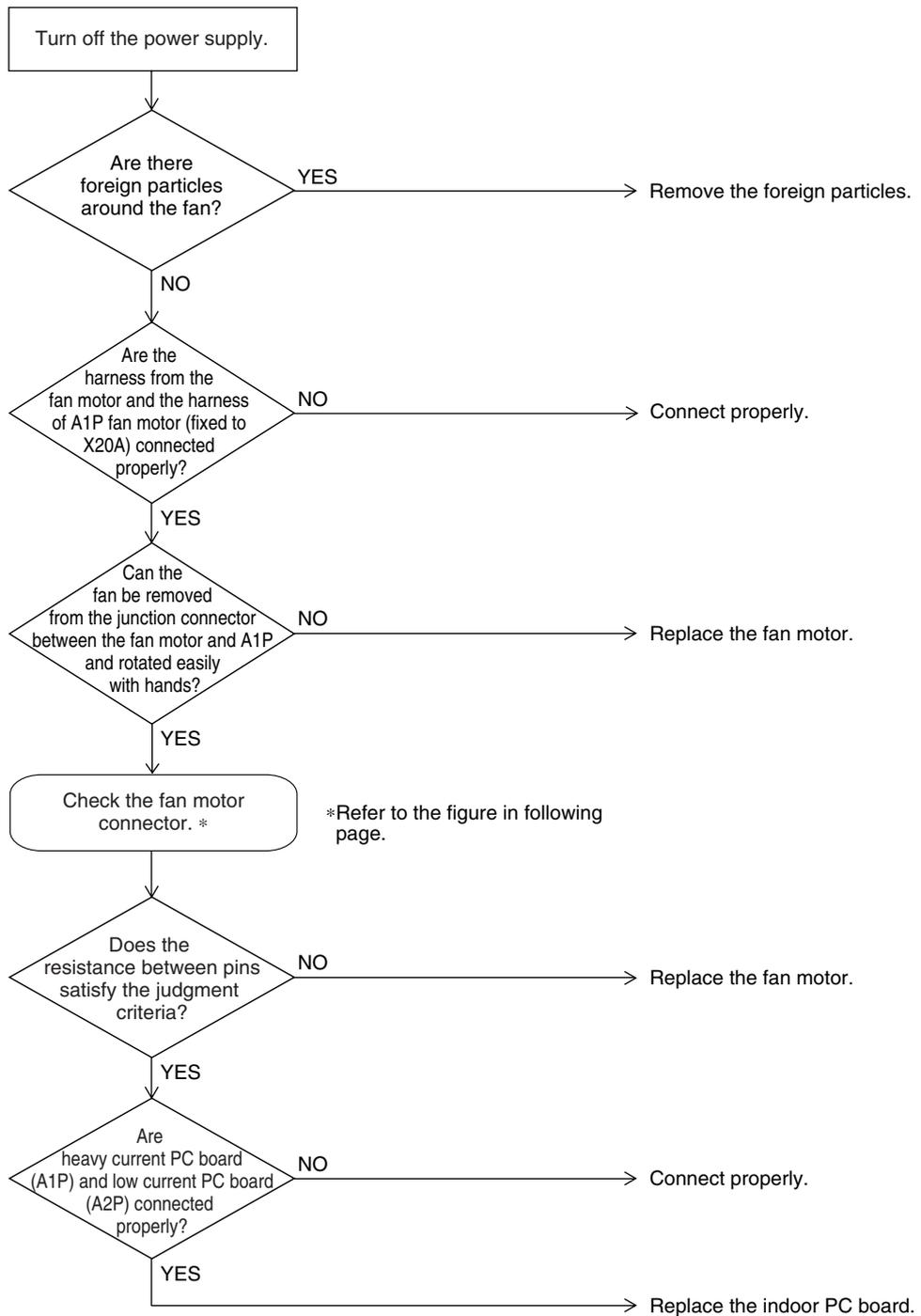
“FE” Abnormal Indoor Fan Motor

Remote Controller Display	FE
Applicable Models	Indoor unit FXFQ, FXAQ
Method of Malfunction Detection	Detect abnormal fan rotation with the signal from the fan motor
Malfunction Decision Conditions	When fan rotation does not increase
Supposed Causes	<ul style="list-style-type: none"> ■ Disconnected/short-circuited fan motor harnesses or disconnected connectors ■ Faulty fan motor (Disconnection and insulation failure) ■ Abnormal signal from the fan motor (Circuit breakdown) ■ Faulty PC board ■ Instantaneous disturbance of power supply voltage ■ Fan motor lock (Caused by the motor or external factors) ■ Fan does not rotate because foreign particles are trapped in it. ■ Disconnected connector between PC board A1P and A2P

Troubleshooting



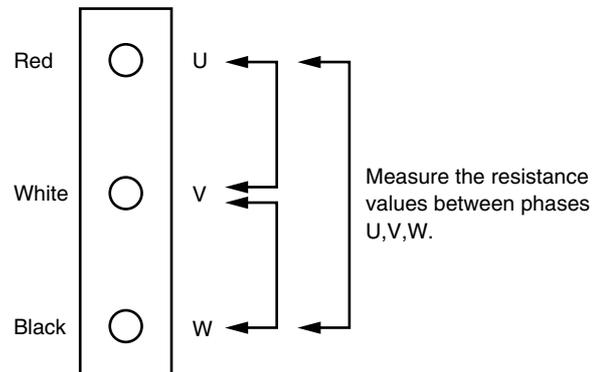
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



[Check on connector of fan motor (Power supply cable)]

(1) Turn off the power supply.

Measure the resistance between phases of U,V,W at the motor side connectors (three-core wire) to check that the values are balanced and there is no short circuiting, while connector or relay connector is disconnected.

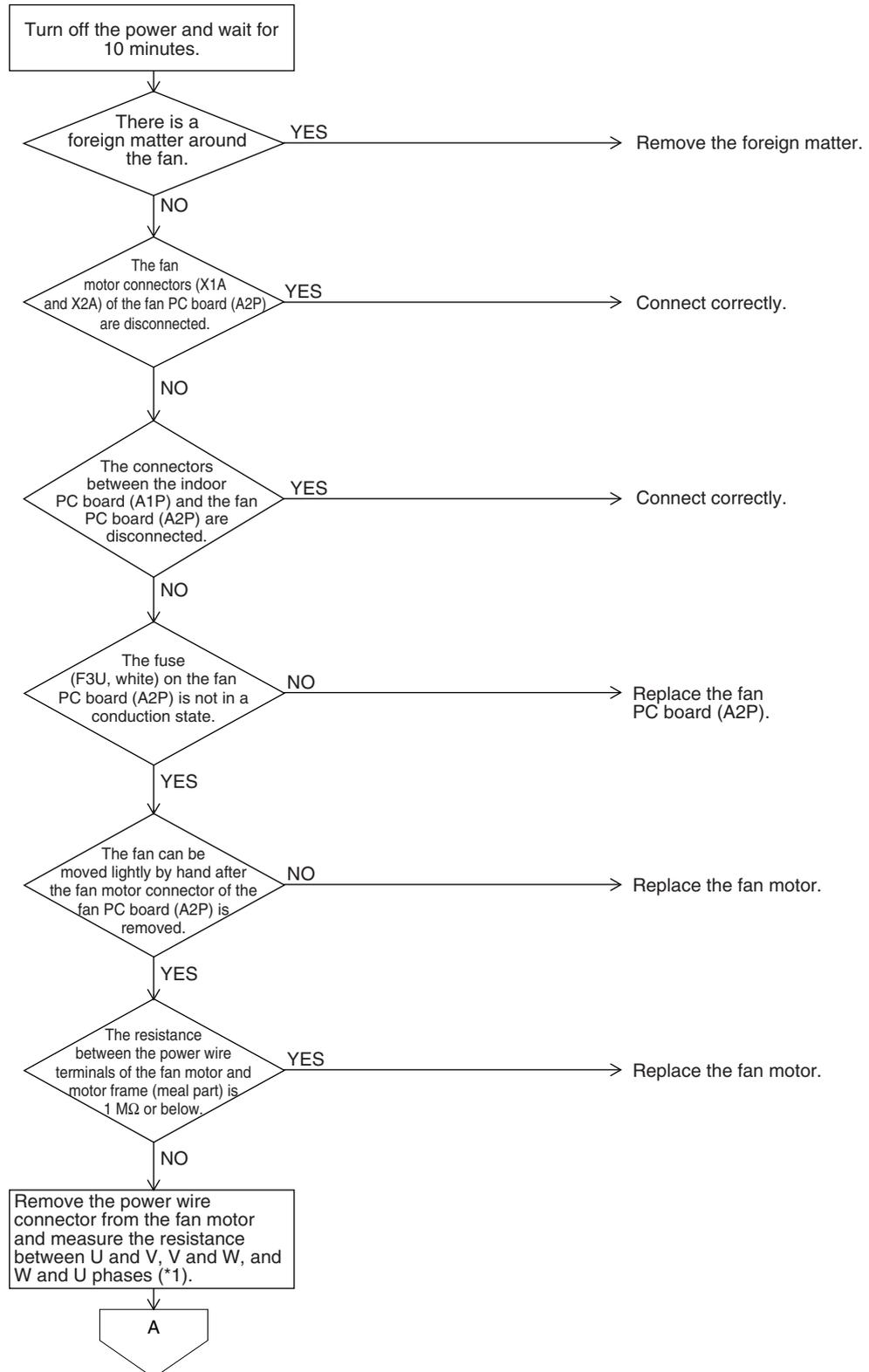


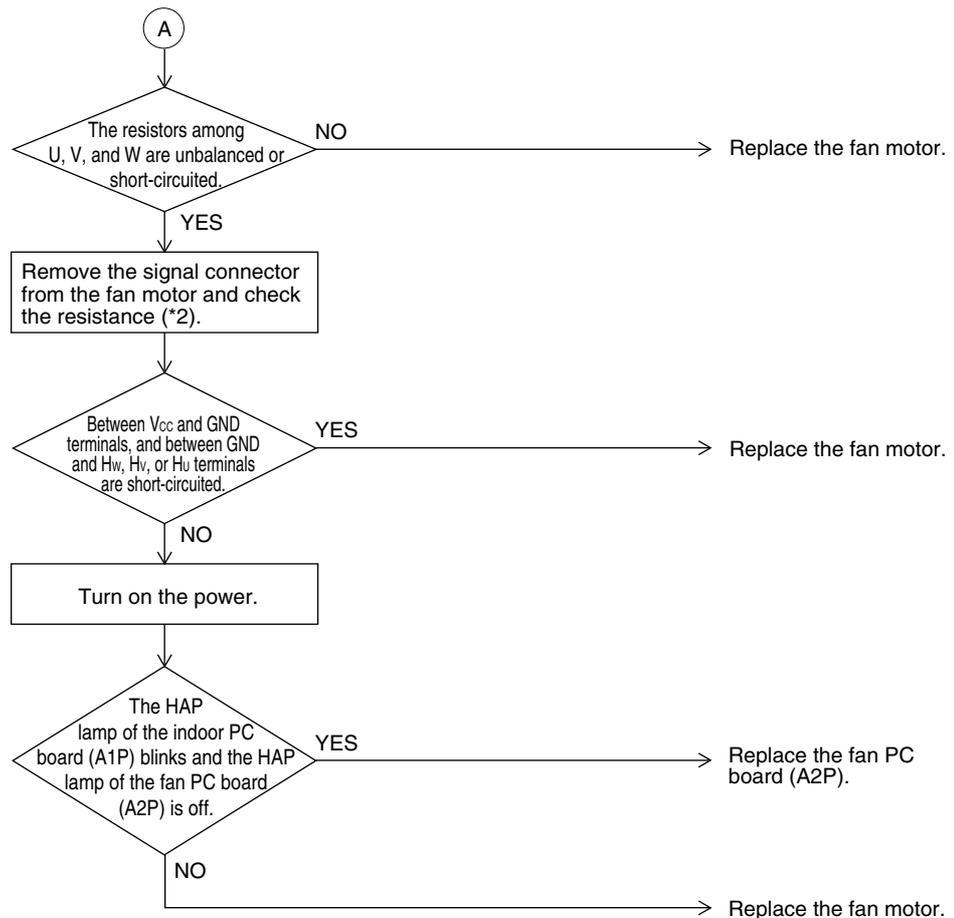
<p>Remote Controller Display</p>	<p style="text-align: center;">85</p>
<p>Applicable Models</p>	<p>Indoor unit FXMQ50~125P</p>
<p>Method of Malfunction Detection</p>	<p>Detection from the current flow on the fan PC board. Detection from the RPM of the fan motor in operation. Detection from the position signal of the fan motor. Detection from the current flow on the fan PC board when the fan motor starting operation.</p>
<p>Malfunction Decision Conditions</p>	<ul style="list-style-type: none"> ■ An overcurrent flows. ■ The RPM is less than a certain level for 6 seconds. ■ A position error in the fan rotor continues for 5 seconds or more. ■ An overcurrent flows.
<p>Supposed Causes</p>	<ul style="list-style-type: none"> ■ The clogging of a foreign matter. ■ The disconnection of the fan motor connectors (X1A and X2A). ■ The disconnection of the connectors between the indoor PC board (A1P) and fan PC board (A2P). ■ A failure in fan PC board (A2P). ■ A failure in the fan motor.

Troubleshooting

**Caution**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.





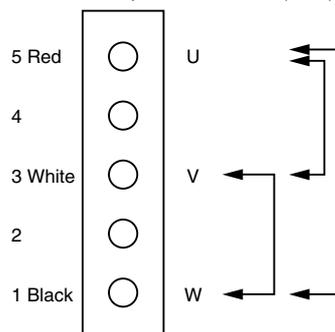
*1. Measurement of power wire connector.

Remove the X1A connector from the fan PC board (A2P) and measure the resistance between the U and V, V and W, and W and U phases of the motor connector (with five conductors) and check that each phase are balanced (within a permissible dispersion range of $\pm 20\%$).

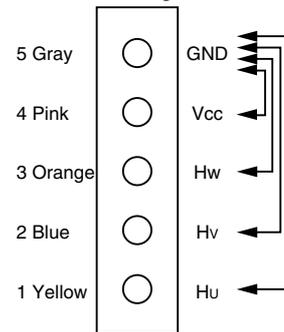
*2. Measurement of signal wire connector.

Remove the X2A connector and measure the resistance between GND and V_{cc}, H_w, H_v, or H_u terminals of the motor connector (with five conductors).

Connector power wire use (X1A)



Connector signal wire use (X2A)



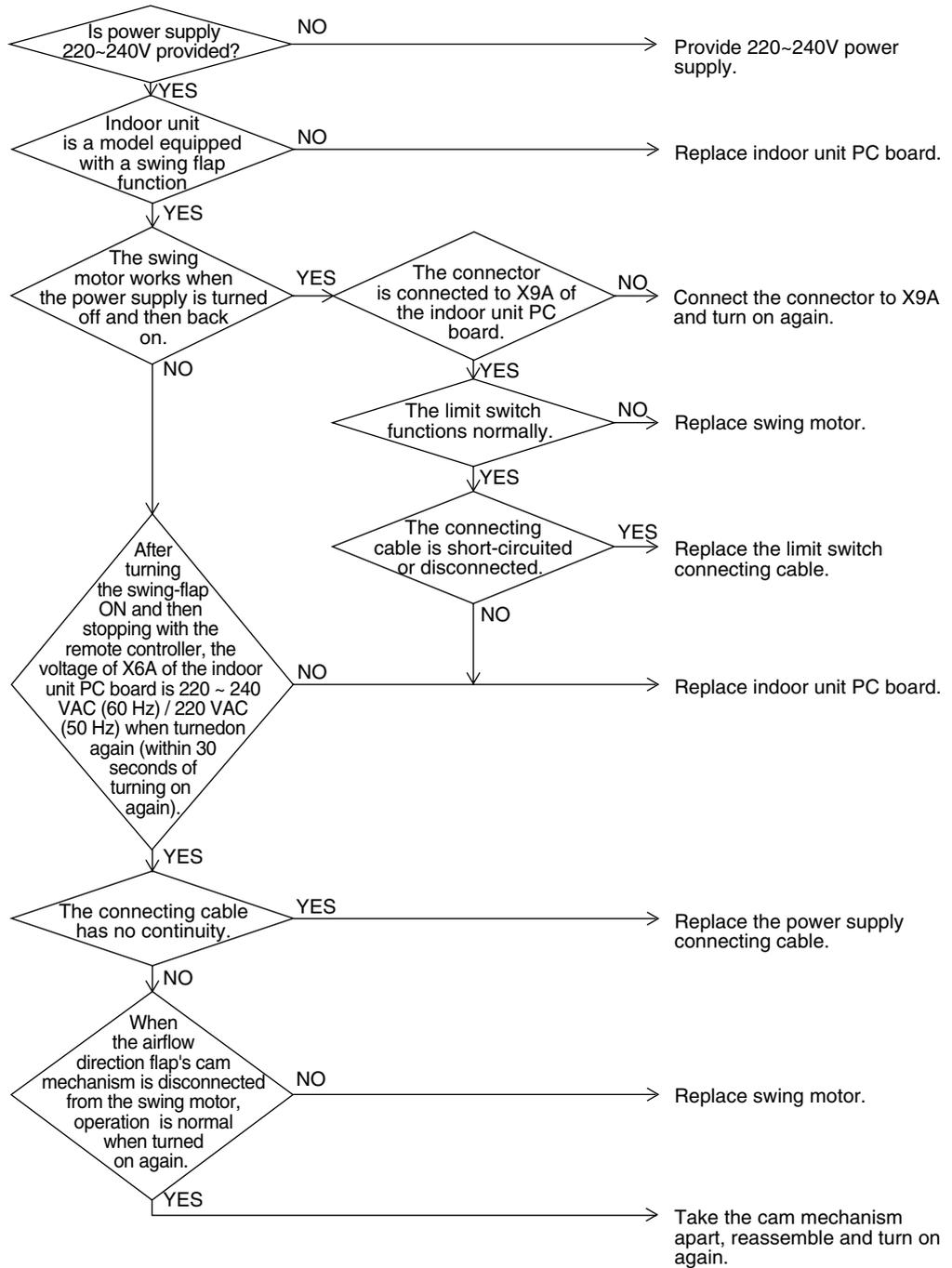
2.5 “E7” Indoor Unit: Malfunction of Swing Flap Motor (MA)

Remote Controller Display	E7
Applicable Models	Indoor unit FXCQ, FXHQ, FXKQ
Method of Malfunction Detection	Utilizes ON/OFF of the limit switch when the motor turns.
Malfunction Decision Conditions	When ON/OFF of the microswitch for positioning cannot be reversed even though the swing flap motor is energized for a specified amount of time (about 30 seconds).
Supposed Causes	<ul style="list-style-type: none"> ■ Defect of swing motor ■ Defect of connection cable (power supply and limit switch) ■ Defect of airflow direction adjusting flap-cam ■ Defect of indoor unit PC board

Troubleshooting



Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



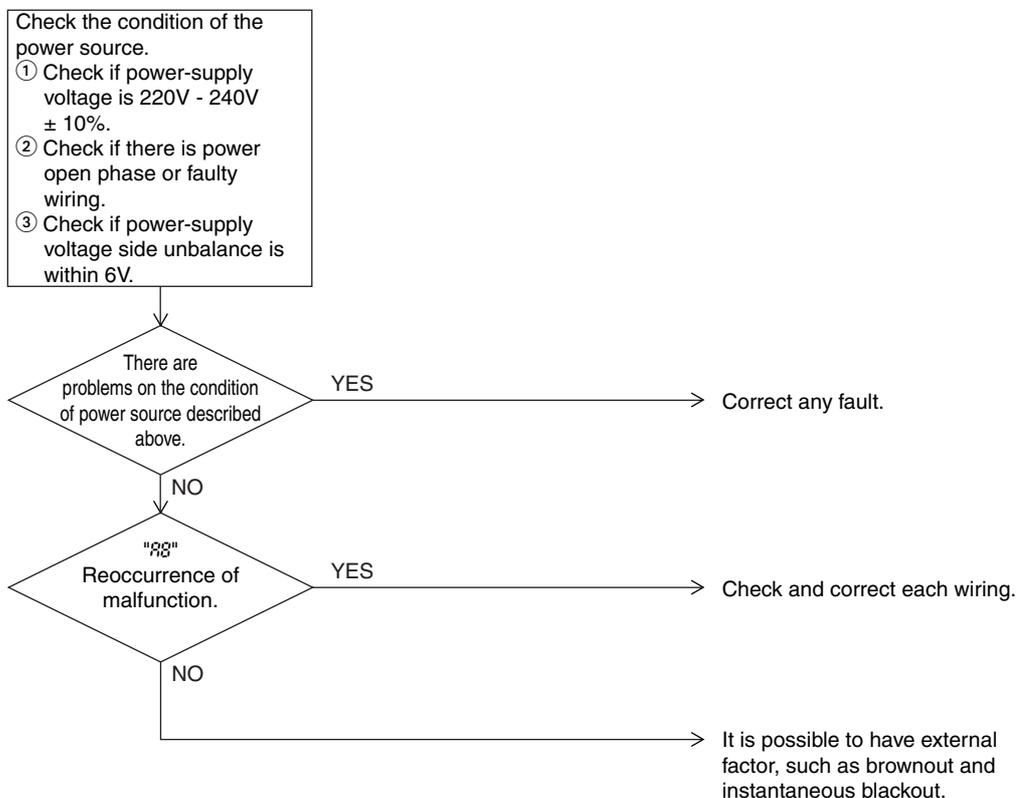
2.6 Abnormal Power Supply Voltage

Remote Controller Display	
Applicable Models	Indoor unit FXMQ40~125P
Method of Malfunction Detection	Detect malfunction checking the input voltage of fan motor.
Malfunction Decision Conditions	When the input voltage of fan motor is 150V and below, or 386V and above.
Supposed Causes	The possible causes are: <ul style="list-style-type: none"> ■ Power-supply voltage malfunction. ■ Connection defect on signal line. ■ Wiring defect. ■ Instantaneous blackout, others.

Troubleshooting


Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.7 “89” Indoor Unit: Malfunction of Moving Part of Electronic Expansion Valve (20E)

Remote Controller Display

89

Applicable Models

Indoor unit
FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of Malfunction Detection

Detection by failure of signal for detecting number of turns to come from the fan motor

Malfunction Decision Conditions

When number of turns can't be detected even when output voltage to the fan is maximum

Supposed Causes

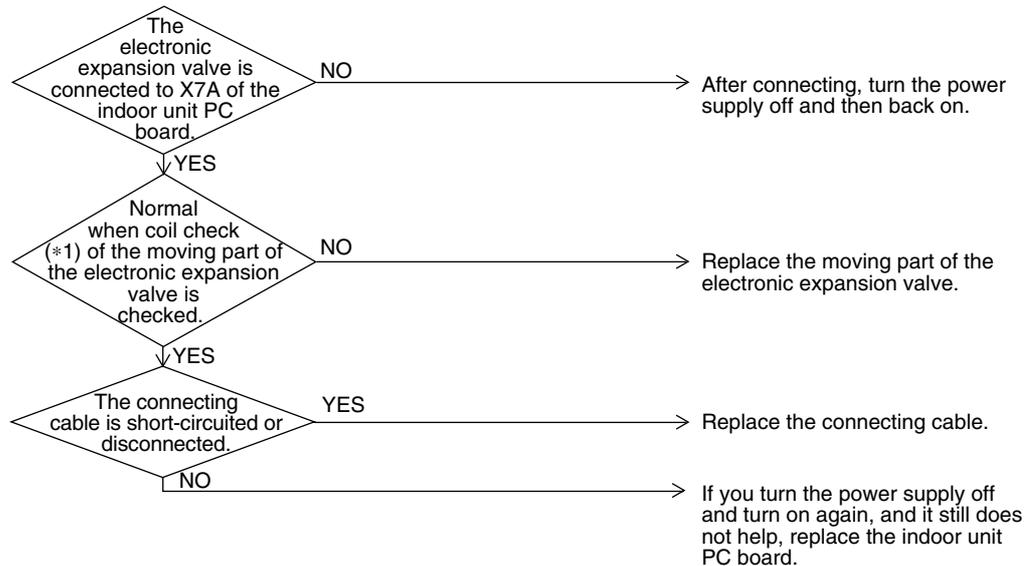
- Malfunction of moving part of electronic expansion valve
- Defect of indoor unit PC board
- Defect of connecting cable

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



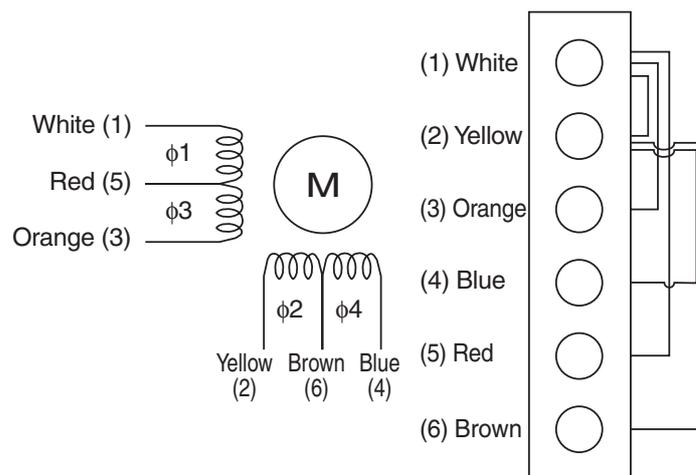
*1: Coil check method for the moving part of the electronic expansion valve
Discount the electronic expansion valve from the PC board and check the continuity between the connector pins.

(Normal)

Pin No.	1. White	2. Yellow	3. Orange	4. Blue	5. Red	6. Brown
1. White		×	○ Approx. 300Ω	×	○ Approx. 150Ω	×
2. Yellow			×	○ Approx. 300Ω	×	○ Approx. 150Ω
3. Orange				×	○ Approx. 150Ω	×
4. Blue					×	○ Approx. 150Ω
5. Red						×
6. Brown						

○: Continuity

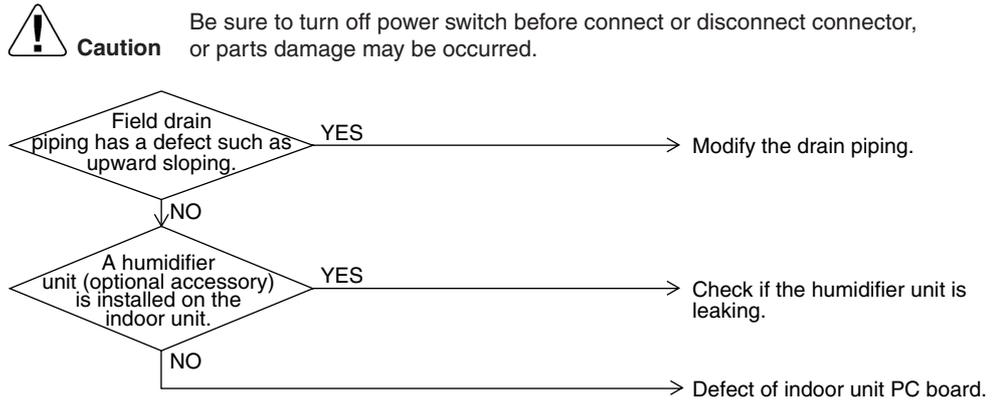
×: No continuity



2.8 “FF” Indoor Unit: Drain Level above Limit

Remote Controller Display	
Applicable Models	Indoor unit FXFQ, FXCQ, FXSQ, FXKQ, FXMQ, FXDQ
Method of Malfunction Detection	Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.
Malfunction Decision Conditions	When the float switch changes from ON to OFF while the compressor is in non-operation.
Supposed Causes	<ul style="list-style-type: none"> ■ Humidifier unit (optional accessory) leaking ■ Defect of drain pipe (upward slope, etc.) ■ Defect of indoor unit PC board

Troubleshooting



2.9 “RU” Indoor Unit: Malfunction of Capacity Determination Device

Remote
Controller
Display

RU

Applicable
Models

Indoor unit
FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of
Malfunction
Detection

Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PC board, and whether the value is normal or abnormal is determined.

Malfunction
Decision
Conditions

Operation and:
1. When the capacity code is not contained in the PC board's memory, and the capacity setting adaptor is not connected.
2. When a capacity that doesn't exist for that unit is set.

Supposed
Causes

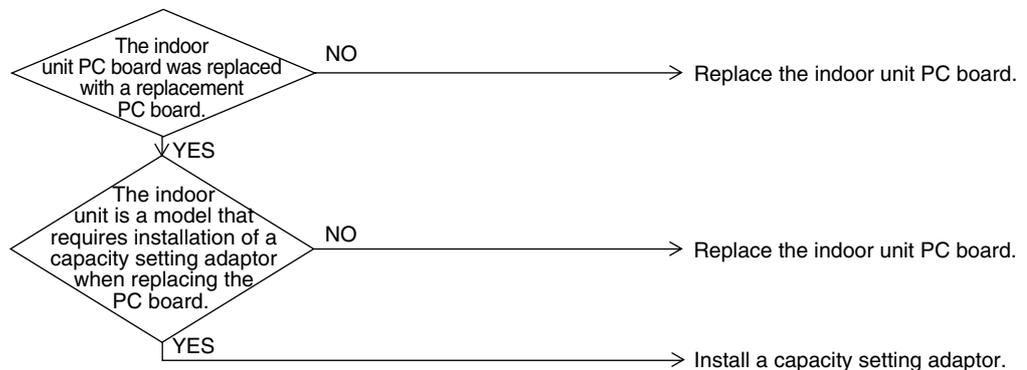
- You have forgotten to install the capacity setting adaptor.
- Defect of indoor unit PC board

Troubleshooting



Caution

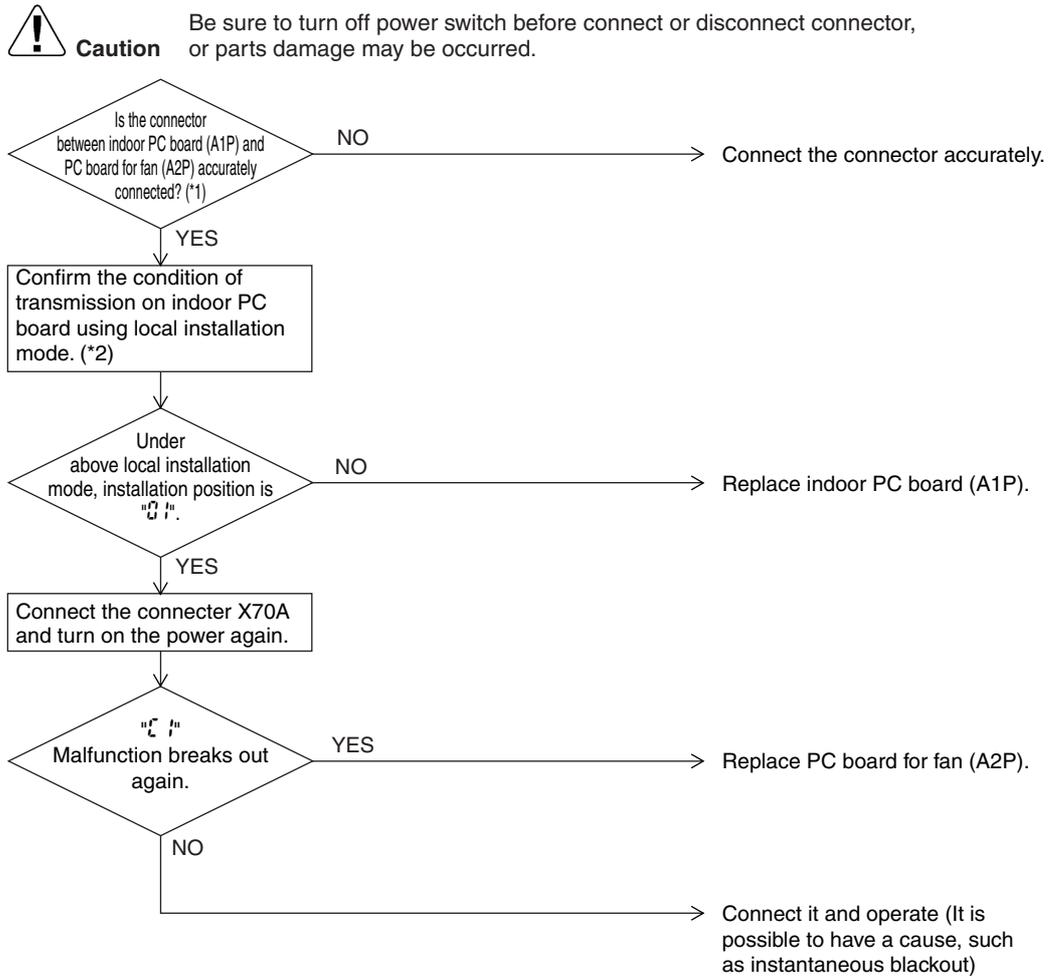
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.10 “E1” Indoor Unit: Failure of Transmission (Between Indoor unit PC Board and Fan PC Board)

Remote Controller Display	E1
Applicable Models	Indoor unit FXMQ50~125P
Method of Malfunction Detection	Check the condition of transmission between indoor PC board (A1P) and PC board for fan (A2P) using computer.
Malfunction Decision Conditions	When normal transmission is not conducted for certain duration.
Supposed Causes	<ul style="list-style-type: none"> ■ Connection defect of the connector between indoor PC board (A1P) and PC board for fan (A2P). ■ Malfunction of indoor PC board (A1P). ■ Malfunction of PC board for fan (A2P). ■ External factor, such as instantaneous blackout.

Troubleshooting



*1. Pull out and insert the connector once and check it is absolutely connected.

*2. Method to check transmission part of indoor PC board.

- ① Turn off the power and remove the connector X70A of indoor PC board (A1P).
- ② Short-circuit X70A.
- ③ After turning on the power, check below numbers under local setting remote control.
(Confirmation: Setting position NO. at the condition of setting switch No. 21 on mode No. 41)



Determination

01: Normal
Other than 01: Transmission defect on indoor PC board

★ After confirmation, turn off the power, take off the short-circuit and connect X70A back to original condition.

2.11 “E4” Indoor Unit: Malfunction of Thermistor (R2T) for Heat Exchanger

Remote Controller Display

E4

Applicable Models

Indoor unit
 FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by heat exchanger thermistor.

Malfunction Decision Conditions

When the heat exchanger thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

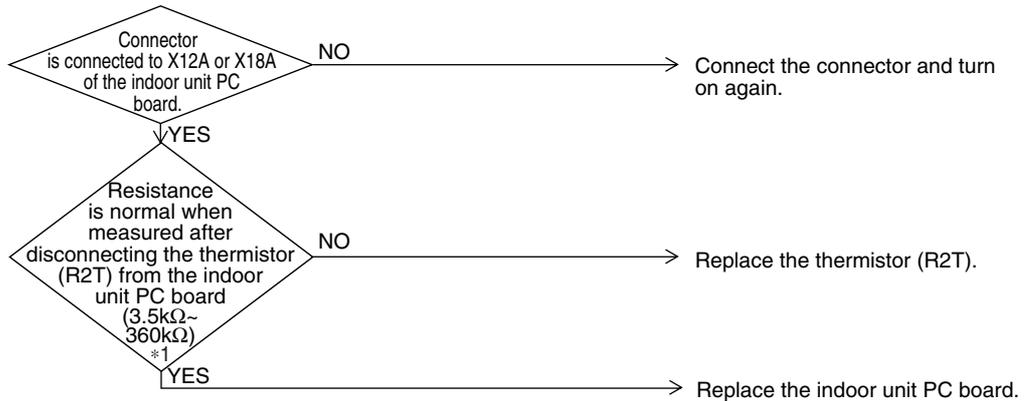
- Defect of thermistor (R2T) for liquid pipe
- Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P309.

2.12 “E5” Indoor Unit: Malfunction of Thermistor (R3T) for Gas Pipes

Remote
Controller
Display

E5

Applicable
Models

Indoor unit
FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of
Malfunction
Detection

Malfunction detection is carried out by temperature detected by gas pipe thermistor.

Malfunction
Decision
Conditions

When the gas pipe thermistor becomes disconnected or shorted while the unit is running.

Supposed
Causes

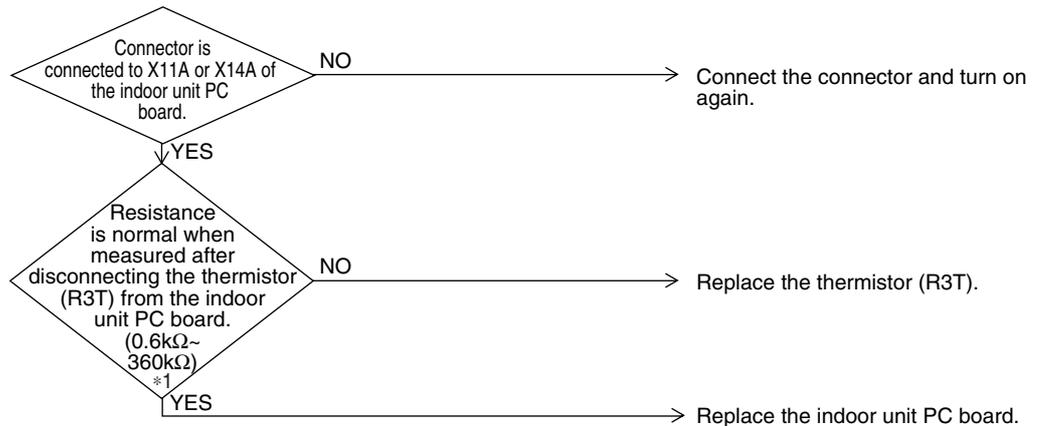
- Defect of indoor unit thermistor (R3T) for gas pipe
- Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P309.

2.13 “CE” Indoor Unit: Failure of Combination (Between Indoor unit PC Board and Fan PC Board)

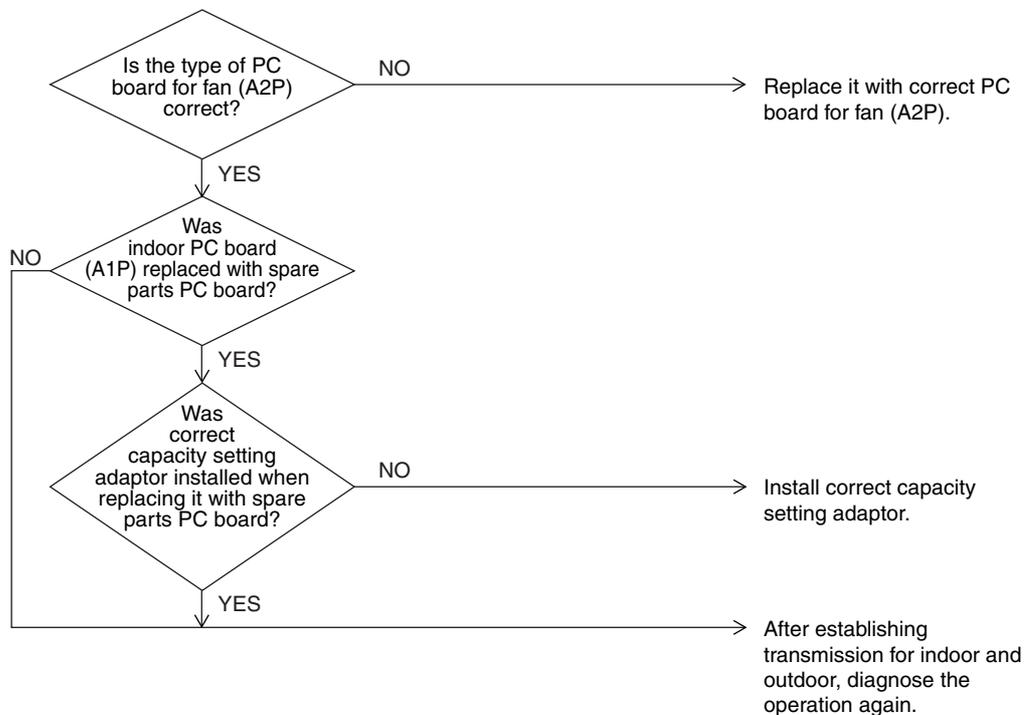
Remote Controller Display	CE
Applicable Models	Indoor unit FXMQ40~125P
Method of Malfunction Detection	Conduct open line detection with PC board for fan (A2P) using indoor PC board (A1P).
Malfunction Decision Conditions	When the communication data of PC board for fan (A2P) is determined as incorrect.
Supposed Causes	<p>The possible causes are:</p> <ul style="list-style-type: none"> ■ Malfunction of PC board for fan (A2P). ■ Connection defect of capacity setting adaptor. ■ Setting mistake on site.

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.14 “E9” Indoor Unit: Malfunction of Thermistor (R1T) for Suction Air

Remote
Controller
Display

E9

Applicable
Models

Indoor unit
FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of
Malfunction
Detection

Malfunction detection is carried out by temperature detected by suction air temperature thermistor.

Malfunction
Decision
Conditions

When the suction air temperature thermistor becomes disconnected or shorted while the unit is running.

Supposed
Causes

- Defect of indoor unit thermistor (R1T) for air inlet
- Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

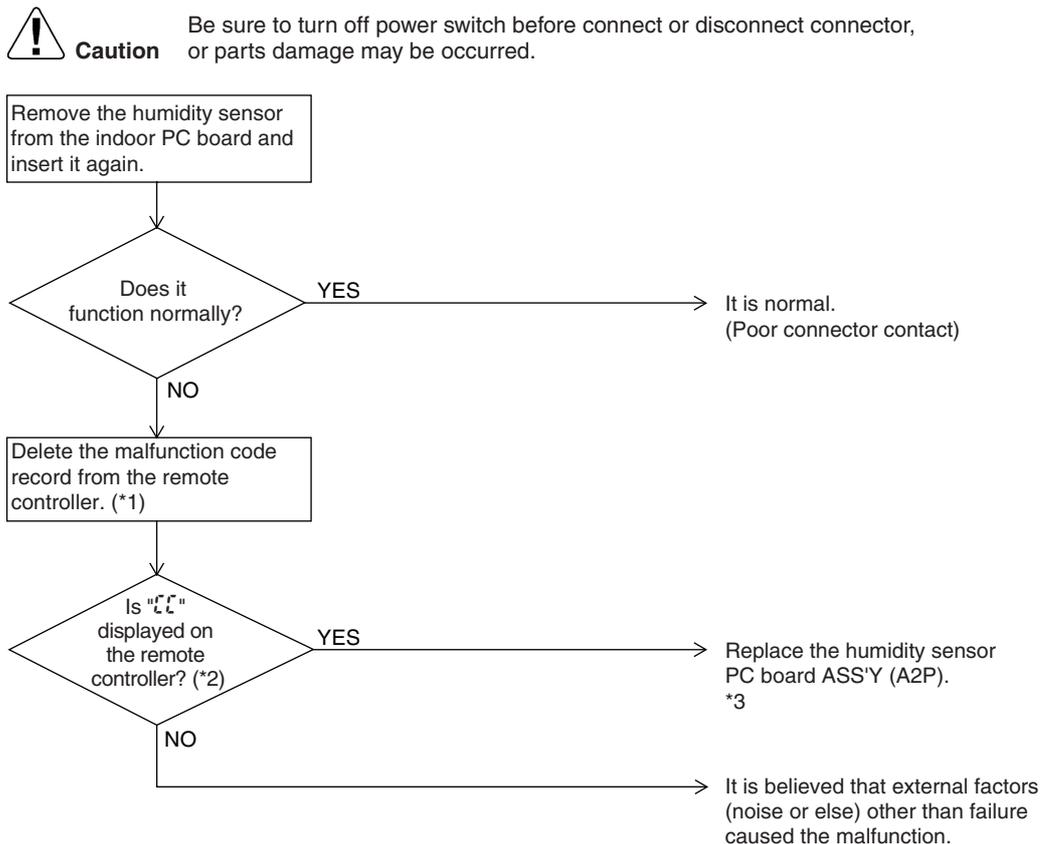


*1: Refer to thermistor resistance / temperature characteristics table on P309.

2.15 “CC” Indoor Unit: Malfunction of Humidity Sensor System

Remote Controller Display	CC
Applicable Models	Indoor unit FXFQ
Method of Malfunction Detection	Even if a malfunction occurs, operation still continues. Malfunction is detected according to the moisture (output voltage) detected by the moisture sensor.
Malfunction Decision Conditions	When the moisture sensor is disconnected or short-circuited
Supposed Causes	<ul style="list-style-type: none"> ■ Faulty sensor ■ Disconnection

Troubleshooting



- *1: To delete the record, the **ON/OFF** button of the remote controller must be pushed and held for 5 seconds in the check mode.
- *2: To display the code, the **Inspection/Test Operation** button of the remote controller must be pushed and held in the normal mode.
- *3: If "CC" is displayed even after replacing the humidity sensor PC board ASS'Y (A2P) and taking the steps *1 and 2, replace the indoor PC board ASS'Y (A1P).

2.16 "E" Indoor Unit: Malfunction of Thermostat Sensor in Remote Controller

Remote
Controller
Display



Applicable
Models

Indoor unit
FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of
Malfunction
Detection

Malfunction detection is carried out by temperature detected by remote controller air temperature thermistor. (Note1)

Malfunction
Decision
Conditions

When the remote controller air temperature thermistor becomes disconnected or shorted while the unit is running.

Supposed
Causes

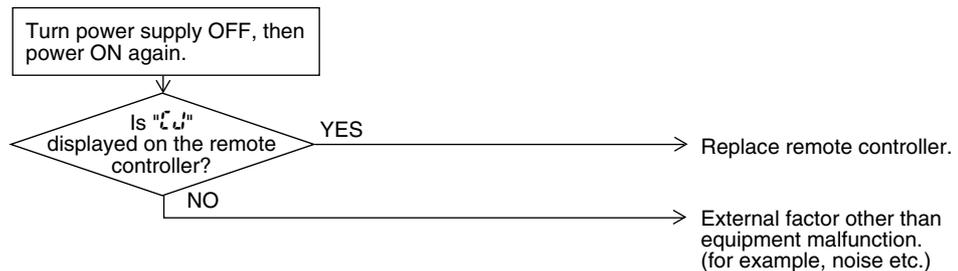
- Defect of remote controller thermistor
- Defect of remote controller PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



Note:

In case of remote controller thermistor malfunction, unit is still operable by suction air thermistor on indoor unit.

2.17 “E1” Outside Unit: PC Board Defect

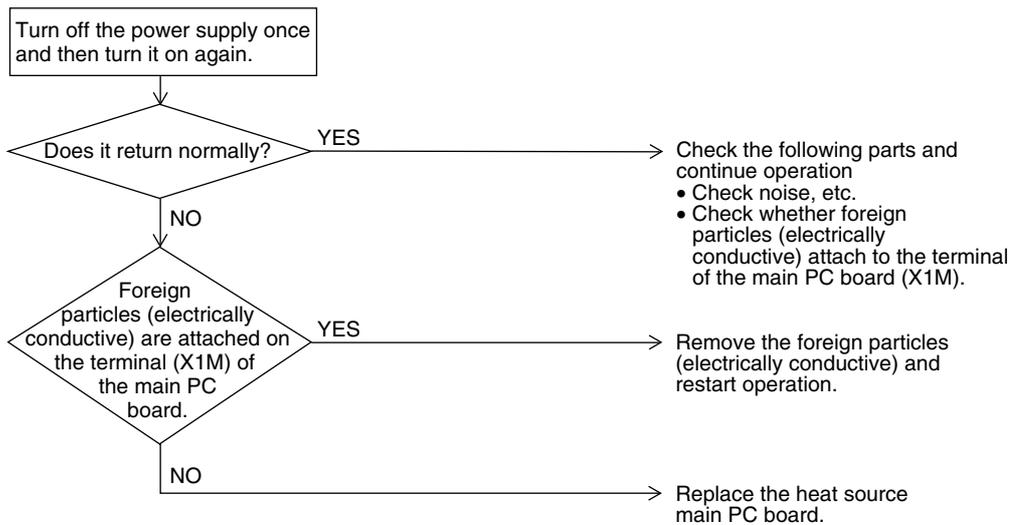
Remote Controller Display	E1
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Detect abnormalities by checking communication status of the hard part between the indoor unit and outside unit.
Malfunction Decision Conditions	When communication status of the hard part between the indoor unit and heat source unit is abnormal
Supposed Causes	<ul style="list-style-type: none"> ■ Faulty main PC board ■ Faulty communication part (photo coupler) on the main PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.18 “E3” Outside Unit: Actuation of High Pressure Switch

Remote Controller Display	E3
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Detect conductive property of the high pressure switch with the protector circuit.
Malfunction Decision Conditions	When the protector circuit is partially opened (For reference) Working pressure for the high pressure switch Working pressure: 4.0 MPa Return pressure: 2.85 MPa
Supposed Causes	<ul style="list-style-type: none"> ■ High pressure switch operation ■ Faulty high pressure switch ■ Faulty main PC board ■ Temporal power failure ■ Faulty high pressure sensor ■ Insufficient heat source water ■ Dirty water heat exchanger

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Check the following items:
 ① Is the stop valve open?
 ② Is the connector for HPS properly connected to the main PC board?
 ③ Is the high pressure switch electrically conductive?

Are all of the above conditions satisfied?
 NO → Improve defects.
 YES →

- Set up a pressure gauge in the high pressure service port.
- Connect the Service Checker.
- Restart operation after resetting operation with a remote controller.

Can the emergency stop (E3) be repeated?
 YES → Is HPS working value (4.0 MPa) normal?
 NO → Replace the HPS.
 YES →

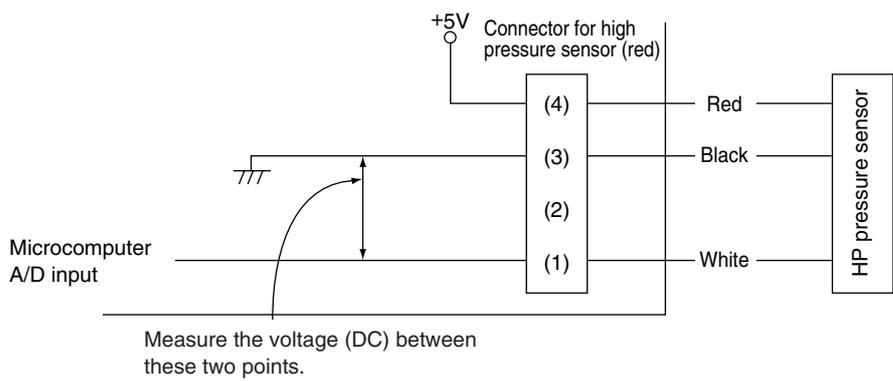
Are high pressure sensor characteristics normal? (*1)(*3)
 NO → Replace the high pressure sensor.
 YES →

Is PC board detector pressure normal? (*2)
 NO → Replace the main PC board.
 YES →

- The high pressure sensor is normal and the main PC board pressure detection is also normal.
- In fact, high pressure is rising.

CHECK 1 : Refer to page 261 to eliminate the causes of high pressure rise.

- *1 : Compare the pressure sensor voltage measurements with pressure gauge readings. (For the pressure sensor, voltage is measured at the connector and converted to pressure in accordance with page 311.)
- *2 : Compare "high pressure" checked with the Service Checker with pressure sensor voltage measurements (refer to *1).
- *3 : Measure the voltage of the pressure sensor.



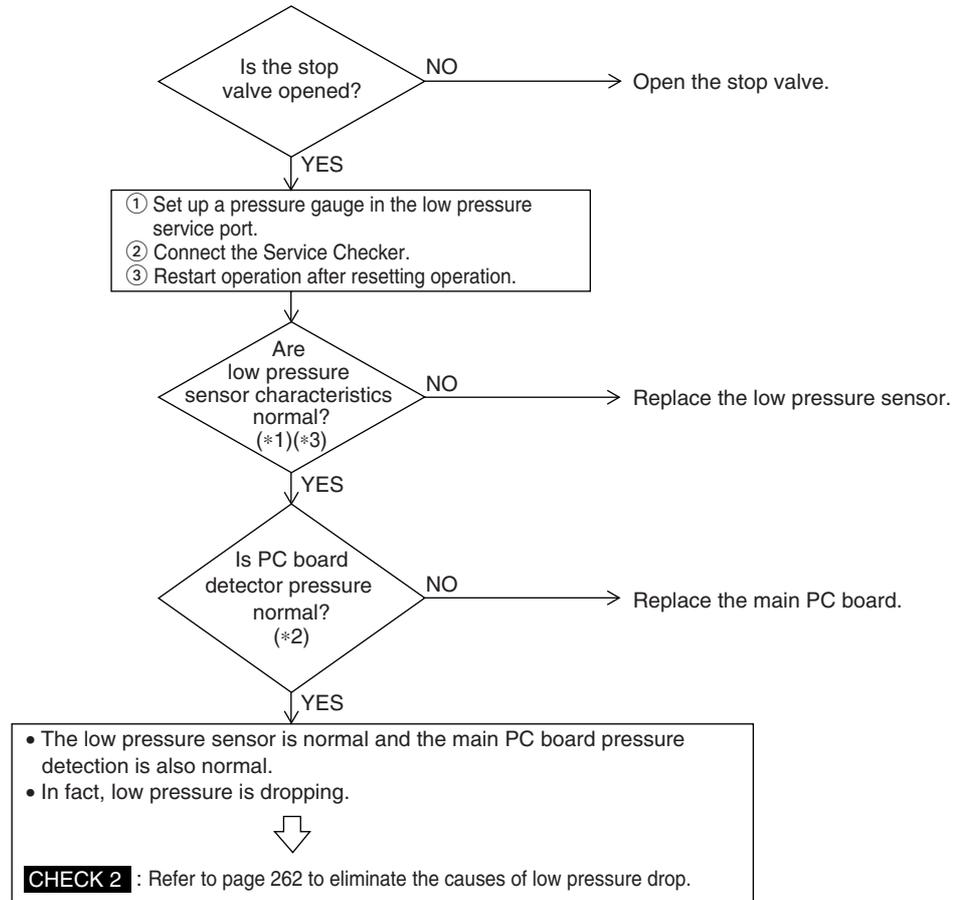
2.19 “E4” Outside Unit: Actuation of Low Pressure Sensor

Remote Controller Display	E4
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Judge the pressure detected by a low pressure sensor with the main PC board.
Malfunction Decision Conditions	When low pressure drops while the compressor is in operation Working pressure: 0.07 MPa (Retry: 3 times)
Supposed Causes	<ul style="list-style-type: none"> ■ Abnormal low pressure drop ■ Faulty low pressure sensor ■ Faulty main PC board ■ The stop valve left closed ■ Insufficient heat source water ■ Dirty water heat exchanger

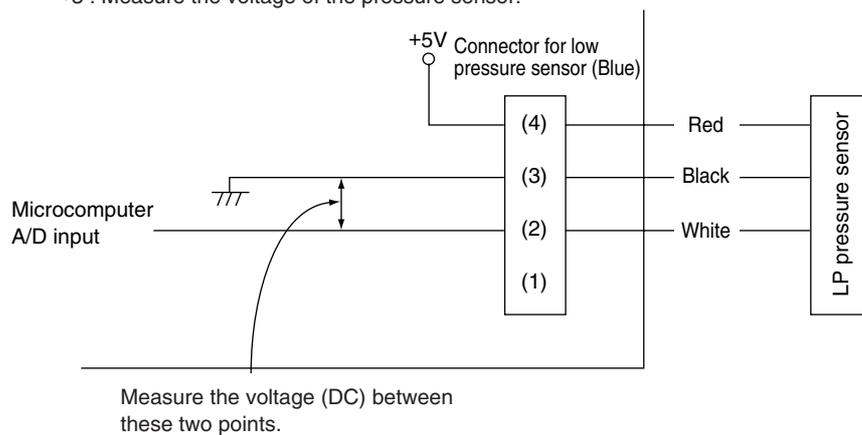
Troubleshooting



Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



- *1 : Compare the pressure sensor voltage measurements with pressure gauge readings. (For the pressure sensor, voltage is measured at the connector and converted to pressure in accordance with page 311.)
- *2 : Compare "low pressure" measured with the Service Checker with pressure sensor voltage measurements (refer to *1).
- *3 : Measure the voltage of the pressure sensor.



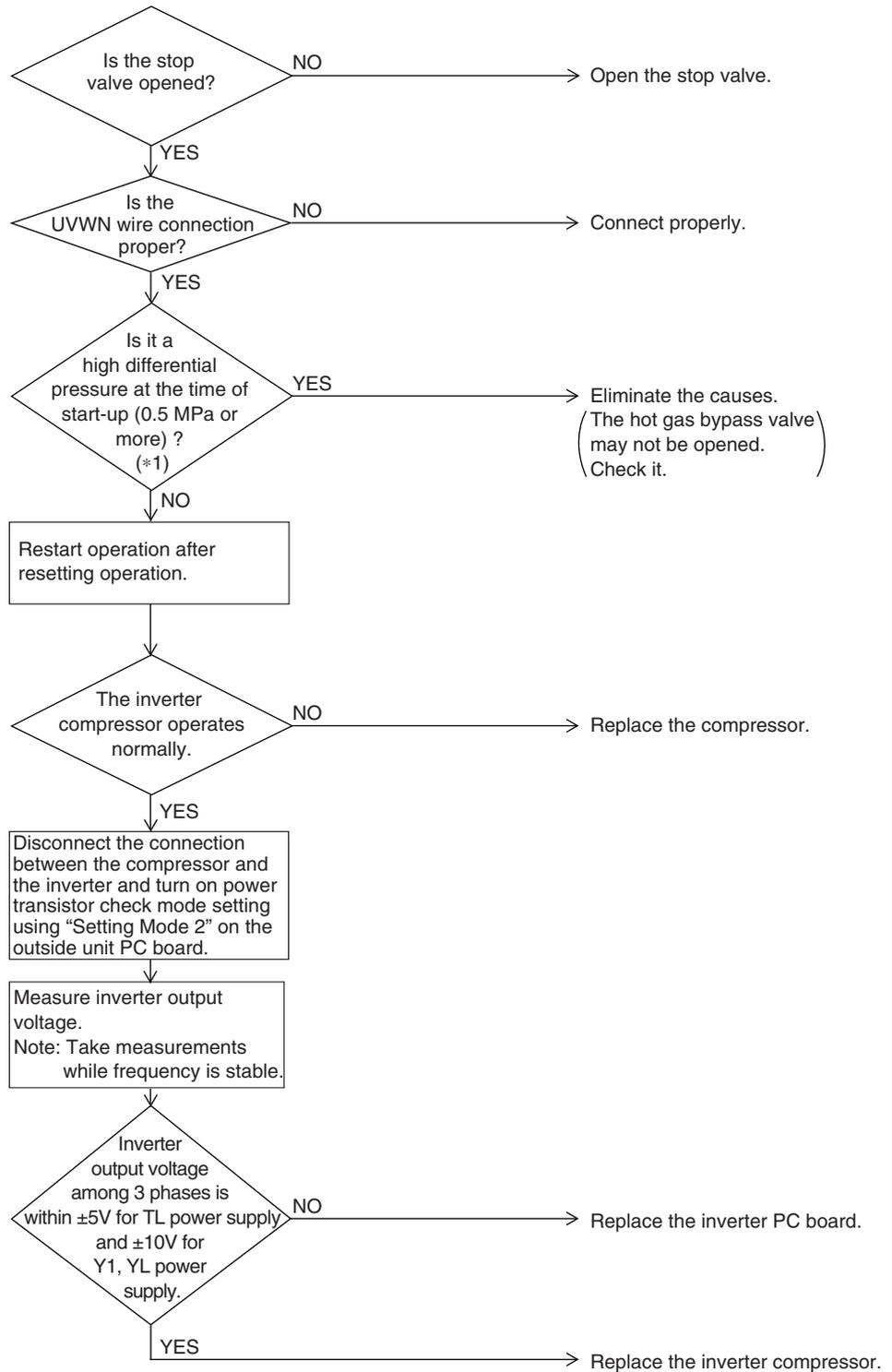
2.20 “E5” Compressor Motor Lock

Remote Controller Display	E5
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Pick up the location signal using the inverter PC board from the UVWN line connected between the inverter and the compressor and detect location signal pattern.
Malfunction Decision Conditions	In normal operation, location signal for a triple cycle of frequency applied, while in locked operation, it is a double cycle, and they are detected. (Retry twice/60 minutes)
Supposed Causes	<ul style="list-style-type: none"> ■ Inverter compressor lock ■ High differential pressure (0.5 MPa or more) ■ Incorrect UVWN wire connection ■ Faulty inverter PC board ■ Stop valve left closed

Troubleshooting



Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1 : Difference in pressure between high and low pressures before start-up

*2 : The quality of the power transistor diode module can be assessed also by means of measurement of resistance between terminals (page 312, 313).

2.21 “E9” Outside Unit: Malfunction of Moving Part of Electronic Expansion Valve (Y1E, Y3E)

Remote
Controller
Display

E9

Applicable
Models

Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

Check disconnection of connector
Check continuity of expansion valve coil

Malfunction
Decision
Conditions

Error is generated under no common power supply when the power is on.

Supposed
Causes

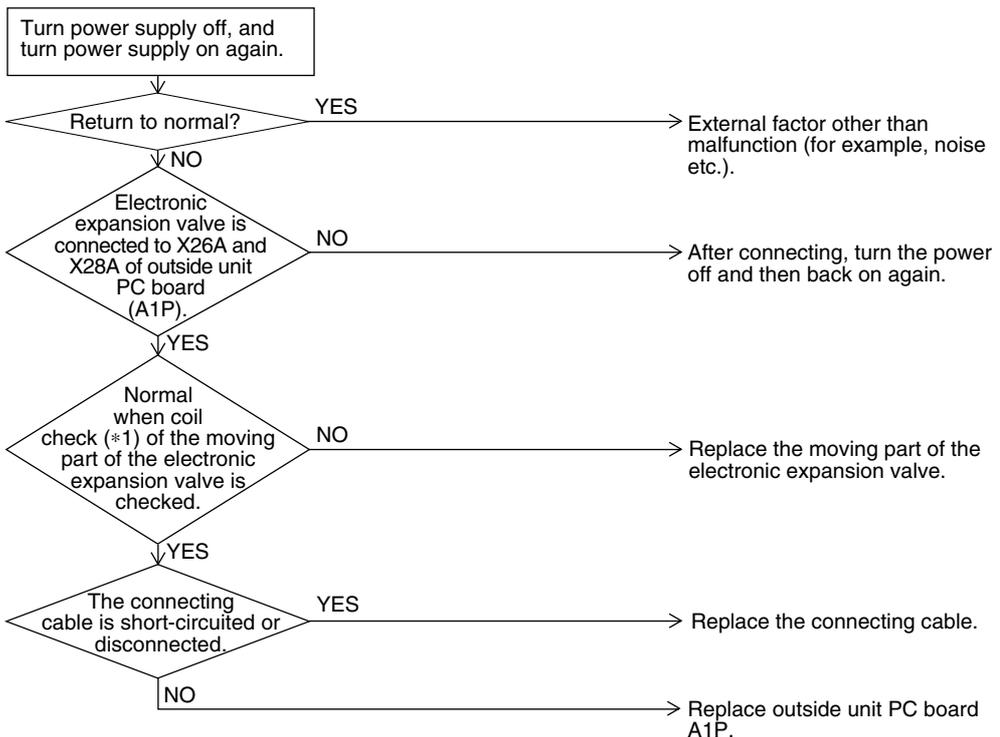
- Defect of moving part of electronic expansion valve
- Defect of outside unit PC board (A1P)
- Defect of connecting cable

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

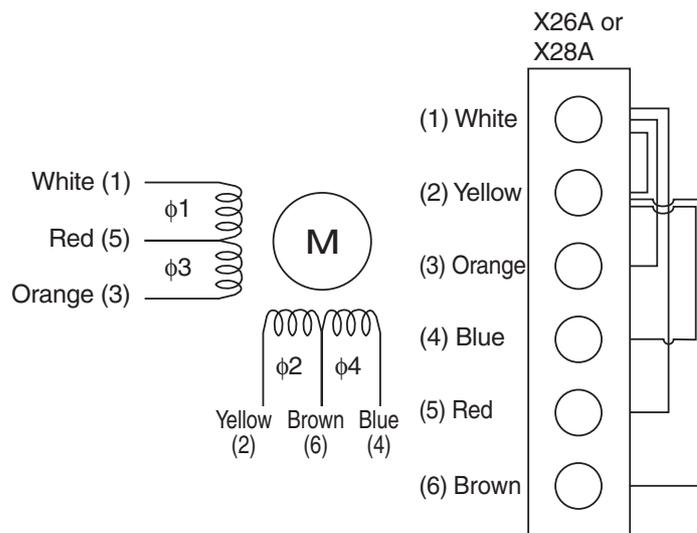


*1: Coil check method for the moving part of the electronic expansion valve
 Discount the electronic expansion valve from the PC board and check the continuity between the connector pins.

(Normal)

Pin No.	1. White	2. Yellow	3. Orange	4. Blue	5. Red	6. Brown
1. White		×	○ Approx. 300Ω	×	○ Approx. 150Ω	×
2. Yellow			×	○ Approx. 300Ω	×	○ Approx. 150Ω
3. Orange				×	○ Approx. 150Ω	×
4. Blue					×	○ Approx. 150Ω
5. Red						×
6. Brown						

○: Continuity
 ×: No continuity



2.22 “F3” Outside Unit: Abnormal Discharge Pipe Temperature

Remote Controller Display

F3

Applicable Models

Outside unit
RWEYQ8P, 10P

Method of Malfunction Detection

Abnormality is detected according to the temperature detected by the discharge pipe temperature sensor.

Malfunction Decision Conditions

- When the discharge pipe temperature rises to an abnormally high level (over 135°C)
- When the discharge pipe temperature rises suddenly (over 120°C continues 10 min.)

Supposed Causes

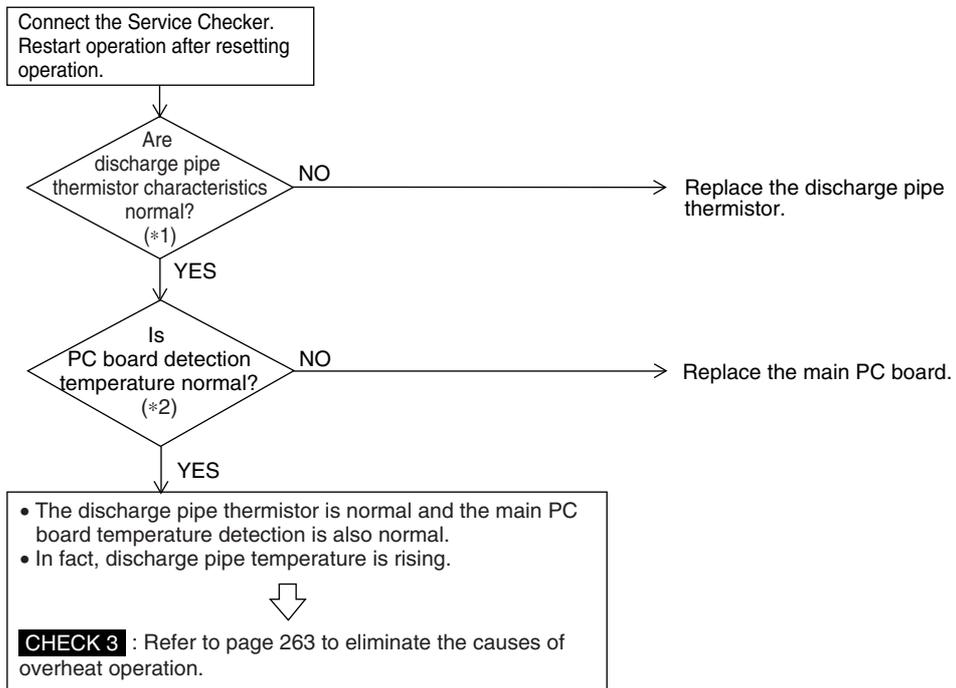
- Faulty discharge pipe temperature sensor
- Faulty connection of discharge pipe temperature sensor
- Faulty outside unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



- *1: Compare the resistance values of the discharge pipe thermistor with measurements of a surface thermometer.
(For temperature and resistance characteristics of a thermistor, refer to page 309, 310.)
- *2: Compare the discharge pipe temperature checked by the Service Checker with the resistance of the thermistor (refer to *1).

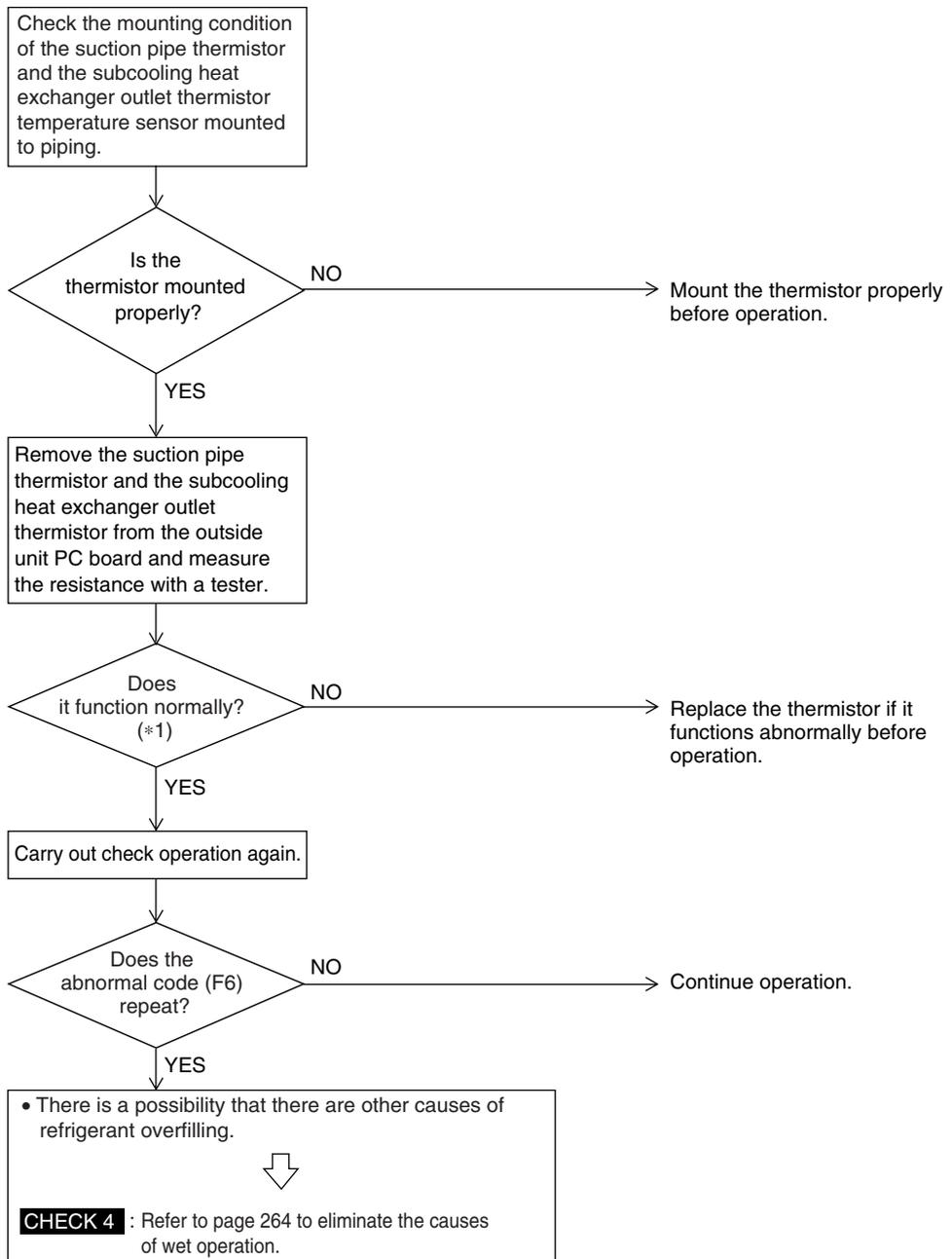
2.23 “FE” Refrigerant Overcharged

Remote Controller Display	FE
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Detect excessive charging of refrigerant using suction pipe temperature and subcooling heat exchanger outlet temperature during check operation.
Malfunction Decision Conditions	When the suction pipe temperature and the subcooling heat exchanger outlet temperature during check operation drop and become below the evaporation temperature
Supposed Causes	<ul style="list-style-type: none"> ■ Excessive refrigerant charging ■ Suction pipe thermistor removed ■ Subcooling heat exchanger outlet thermistor removed

Troubleshooting

**Caution**

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: For thermistor temperature and resistance characteristics, refer to page 309, 310.

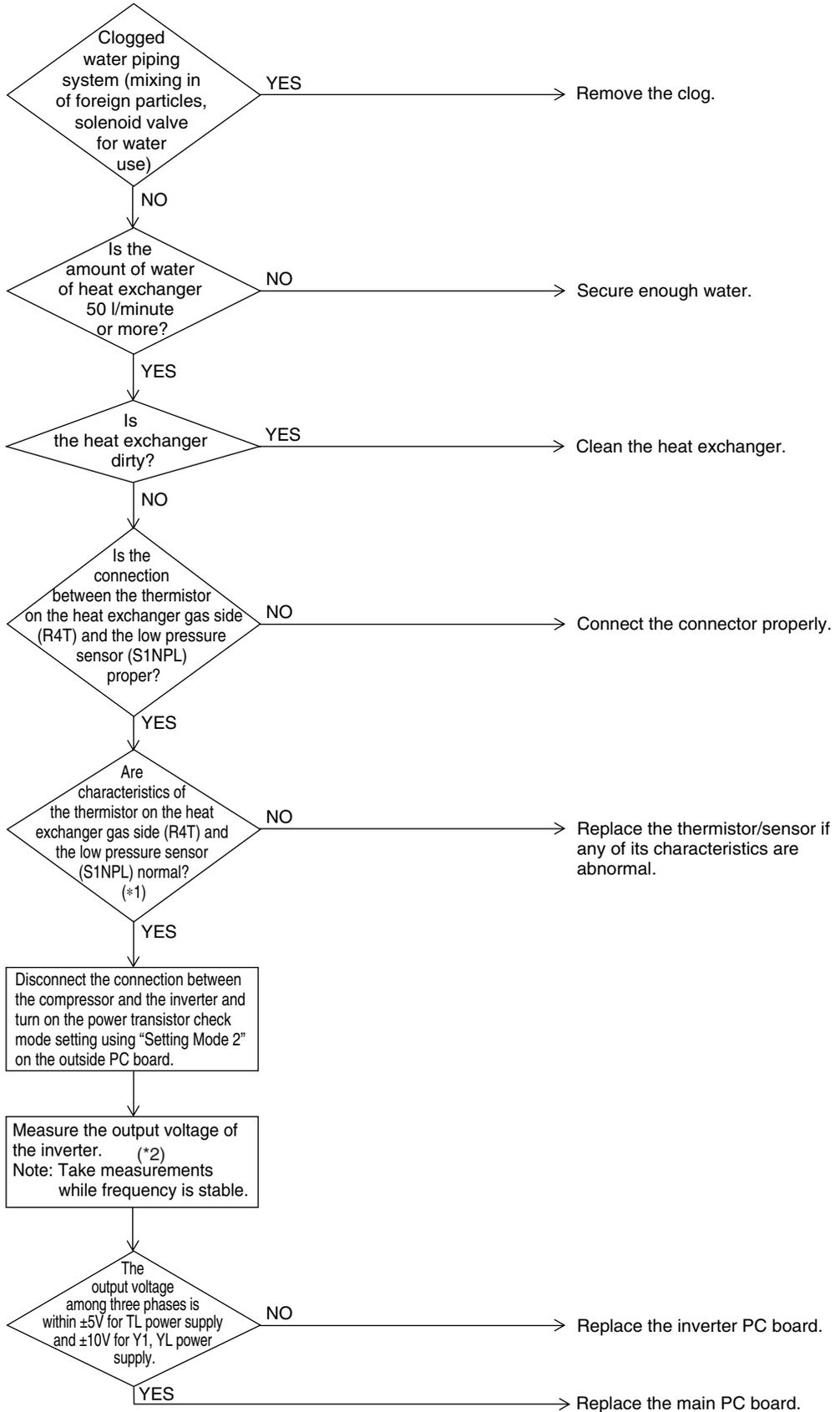
2.24 “H_L” Malfunction of Water System

Remote Controller Display	
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	<ul style="list-style-type: none"> ■ Detect abnormalities using the thermistor on the side of the heat exchanger gas. ■ Detect turned off interlock circuit. (When interlock setting is provided.)
Malfunction Decision Conditions	<ul style="list-style-type: none"> ■ When temperature on the heat exchanger gas side (R4T) drops remarkably with the smallest operation step (52 Hz) of the compressor ■ With interlock setting provided, when interlock circuit is turned off.
Supposed Causes	<ul style="list-style-type: none"> ■ Clogged water piping system ■ Insufficient heat exchanger water ■ Dirty heat exchanger ■ Disconnected connector ■ Faulty thermistor on the heat exchanger gas side ■ Faulty low pressure sensor

Troubleshooting



Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1 : For thermistor/sensor characteristics, refer to page 309, 310.

*2 : The quality of the power transistor diode module can be assessed by means of measurement of resistance between terminals (page 312, 313).

2.25 “U3” Outside Unit: Malfunction of Discharge Pipe Thermistor (R3T)

Remote Controller Display

U3

Applicable Models

Outside unit
RWEYQ8P, 10P

Method of Malfunction Detection

Malfunction is detected from the temperature detected by discharge pipe temperature thermistor.

Malfunction Decision Conditions

When a short circuit or an open circuit in the discharge pipe temperature thermistor is detected.

Supposed Causes

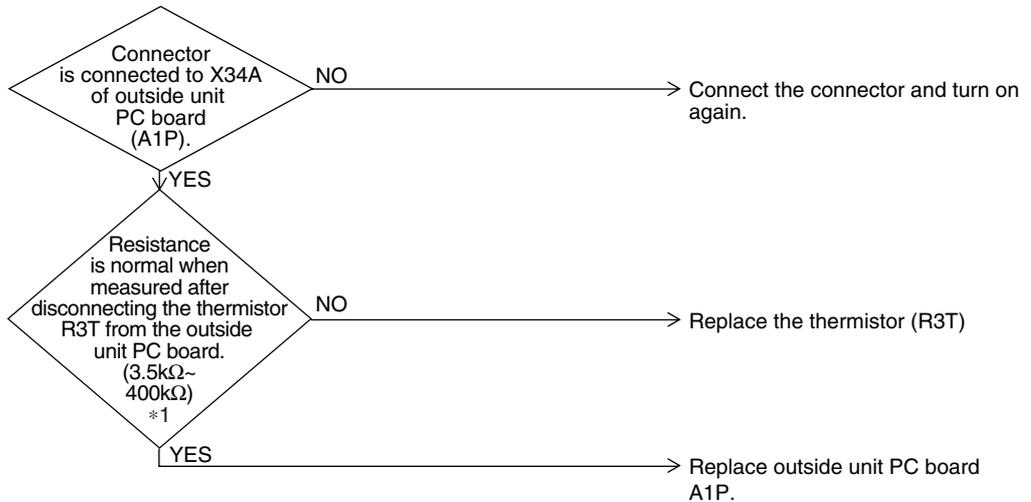
- Defect of thermistor (R3T) for outside unit discharge pipe
- Defect of outside unit PC board (A1P)

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P.310.

2.26 “U4” Malfunction of Heat Exchanger Gas Pipe Thermistor (R4T)

Remote
Controller
Display

U4

Applicable
Models

Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

Malfunction is detected according to the temperature detected by heat exchanger gas pipe thermistor.

Malfunction
Decision
Conditions

When the heat exchanger gas pipe thermistor is short circuited or open.

Supposed
Causes

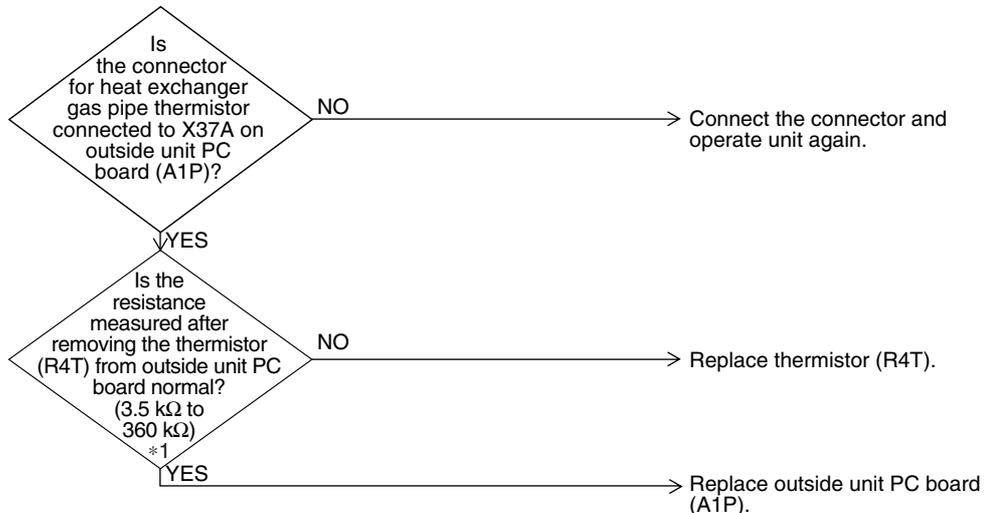
- Faulty heat exchanger gas pipe thermistor (R4T)
- Faulty outside unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P.309.

2.27 “U5” Outside Unit: Malfunction of Thermistor (R2T) for Suction Pipe

Remote Controller Display

U5

Applicable Models

Outside unit
RWEYQ8P, 10P

Method of Malfunction Detection

Malfunction is detected from the temperature detected by the suction pipe temperature thermistor.

Malfunction Decision Conditions

When a short circuit or an open circuit in the suction pipe temperature thermistor is detected.

Supposed Causes

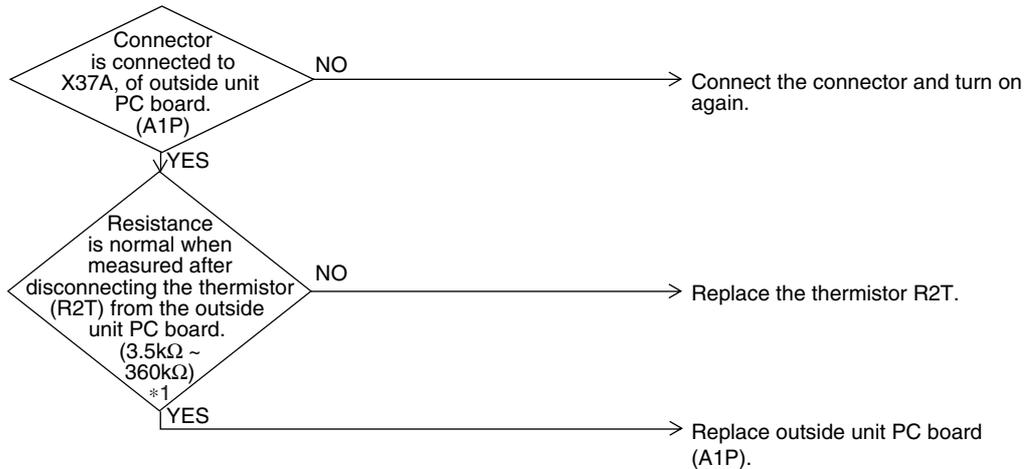
- Defect of thermistor (R2T) for outside unit suction pipe
- Defect of outside unit PC board (A1P)

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P.309.

2.28 “” Malfunction of Liquid Pipe Thermistor (R6T)

Remote
Controller
Display



Applicable
Models

Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

Malfunction is detected according to the temperature detected by receiver outlet liquid pipe thermistor.

Malfunction
Decision
Conditions

When the liquid pipe thermistor is short circuited or open.

Supposed
Causes

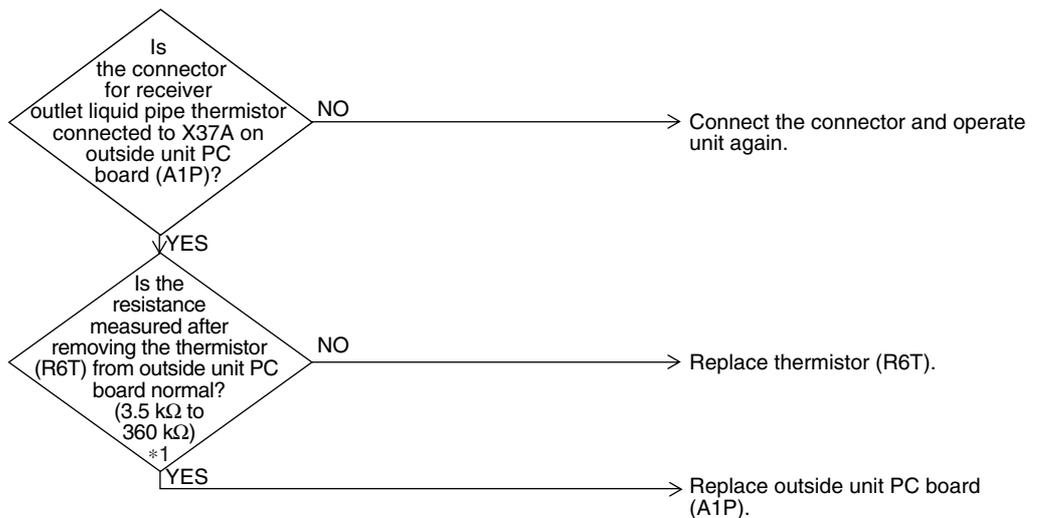
- Faulty liquid pipe thermistor (R6T)
- Faulty outside unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P.309.

2.29 “U9” Malfunction of Sub Cooling Heat Exchanger Outlet Thermistor (R5T)

Remote Controller Display

U9

Applicable Models

Outside unit
RWEYQ8P, 10P

Method of Malfunction Detection

Malfunction is detected according to the temperature detected by sub cooling heat exchanger outlet thermistor.

Malfunction Decision Conditions

When the sub cooling heat exchanger outlet thermistor is short circuited or open.

Supposed Causes

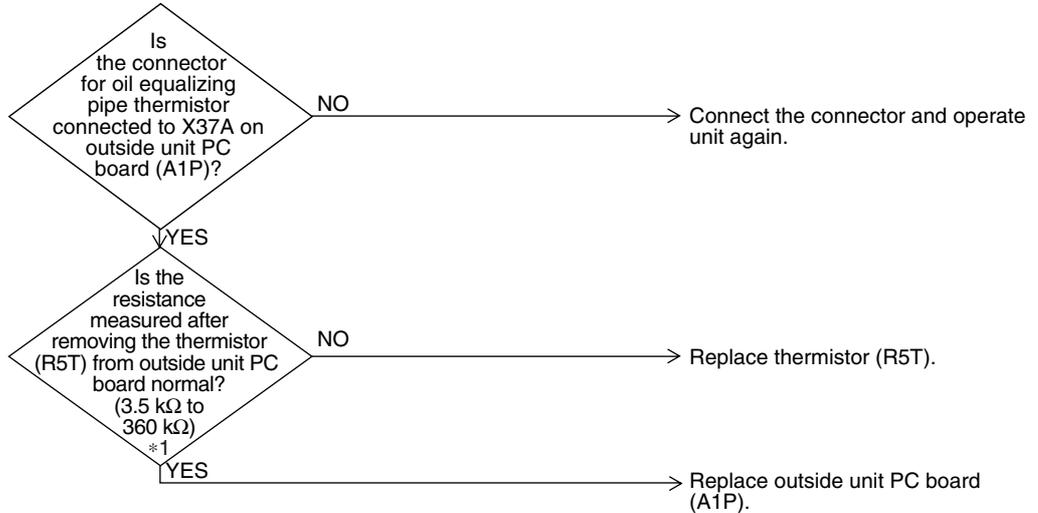
- Faulty receiver gas pipe thermistor (R5T)
- Faulty outside unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P.309.

2.30 “UR” Outside Unit: Malfunction of Discharge Pipe Pressure Sensor

Remote
Controller
Display



Applicable
Models

Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

Malfunction is detected from the pressure detected by the high pressure sensor.

Malfunction
Decision
Conditions

When the discharge pipe pressure sensor is short circuit or open circuit.

Supposed
Causes

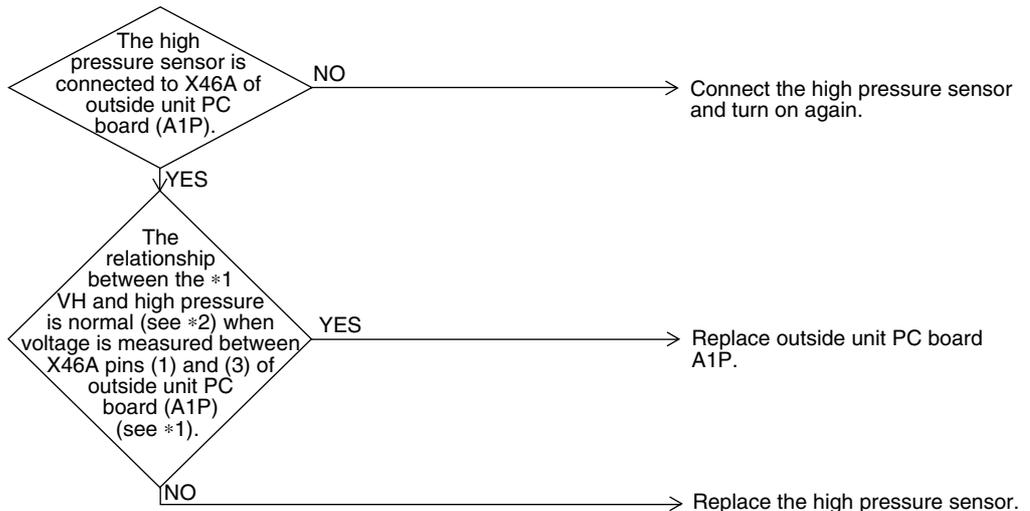
- Defect of high pressure sensor system
- Connection of low pressure sensor with wrong connection.
- Defect of outside unit PC board.

Troubleshooting

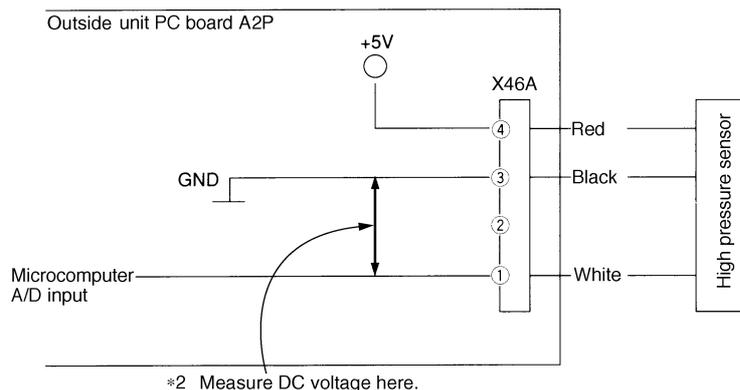


Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Voltage measurement point



*2: Refer to pressure sensor, pressure / voltage characteristics table on P.311.

2.31 “U” Outside Unit: Malfunction of Suction Pipe Pressure Sensor

Remote Controller Display



Applicable Models

Outside unit
RWEYQ8P, 10P

Method of Malfunction Detection

Malfunction is detected from pressure detected by low pressure sensor.

Malfunction Decision Conditions

When the suction pipe pressure sensor is short circuit or open circuit.

Supposed Causes

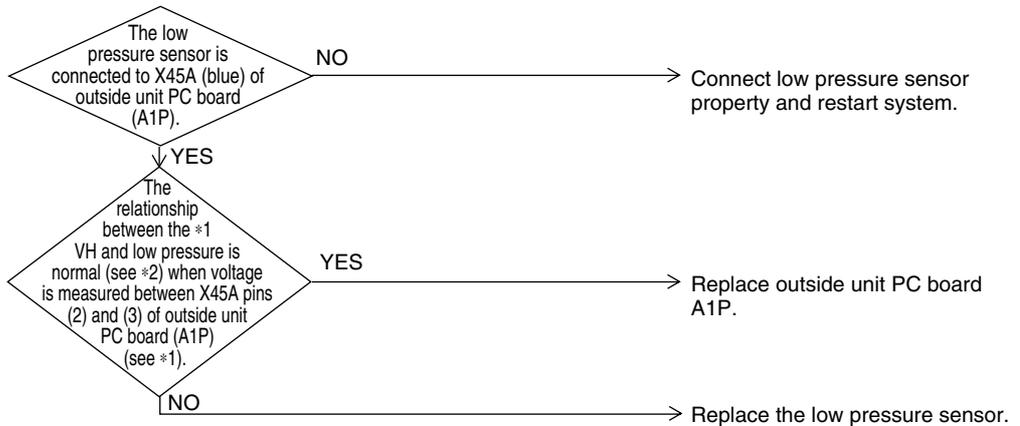
- Defect of low pressure sensor system
- Connection of high pressure sensor with wrong connection.
- Defect of outside unit PC board.

Troubleshooting

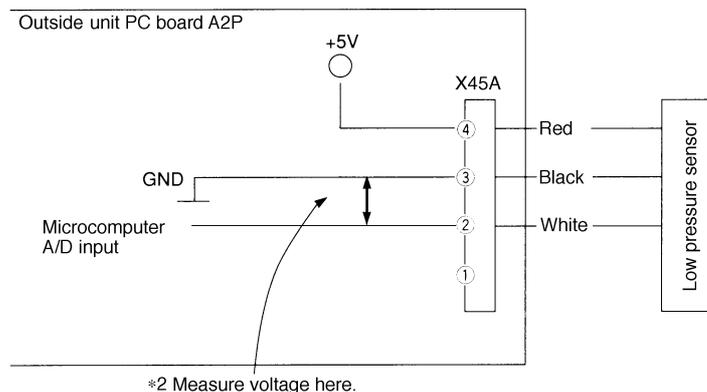


Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Voltage measurement point



*2: Refer to pressure sensor, pressure/voltage characteristics table on P.311.

2.32 “L4” Outside Unit: Malfunction of Inverter Radiating Fin Temperature Rise (R1T)

Remote
Controller
Display

L4

Applicable
Models

Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

Fin temperature is detected by the thermistor of the radiation fin.

Malfunction
Decision
Conditions

When the temperature of the inverter radiation fin increases above 98°C.

Supposed
Causes

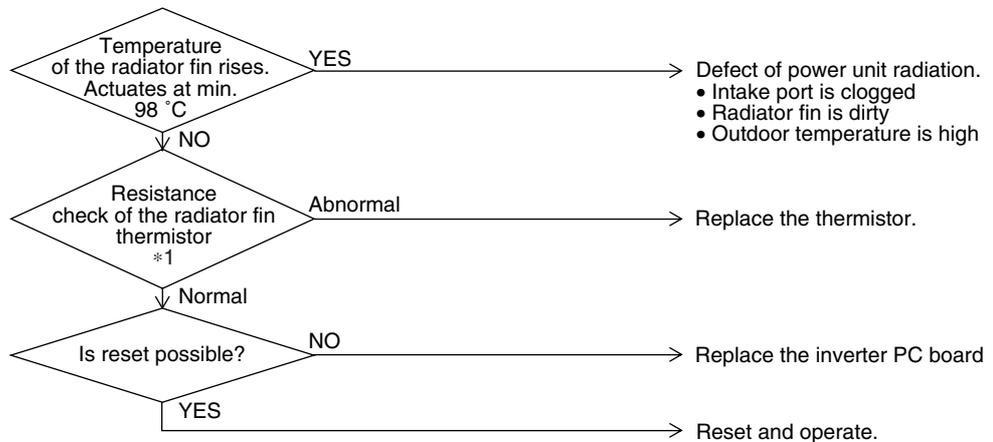
- Actuation of fin thermal (Actuates above 98°C)
- Defect of inverter PC board
- Defect of fin thermistor

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: Refer to thermistor resistance / temperature characteristics table on P.309.

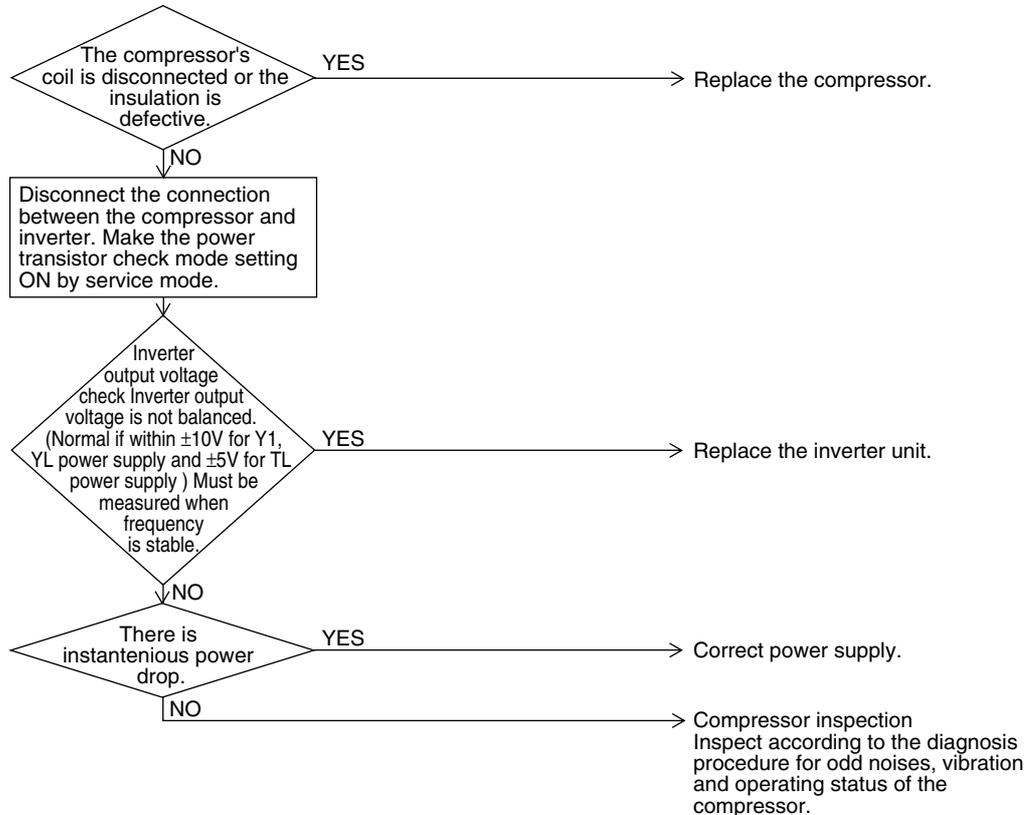
2.33 “L5” Outside Unit: Inverter Compressor Abnormal

Remote Controller Display	L5
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Malfunction is detected from current flowing in the power transistor.
Malfunction Decision Conditions	When an excessive current flows in the power transistor. (Instantaneous overcurrent also causes activation.)
Supposed Causes	<ul style="list-style-type: none"> ■ Defect of compressor coil (disconnected, defective insulation) ■ Compressor start-up malfunction (mechanical lock) ■ Defect of inverter PC board
Troubleshooting	Compressor inspection



Caution

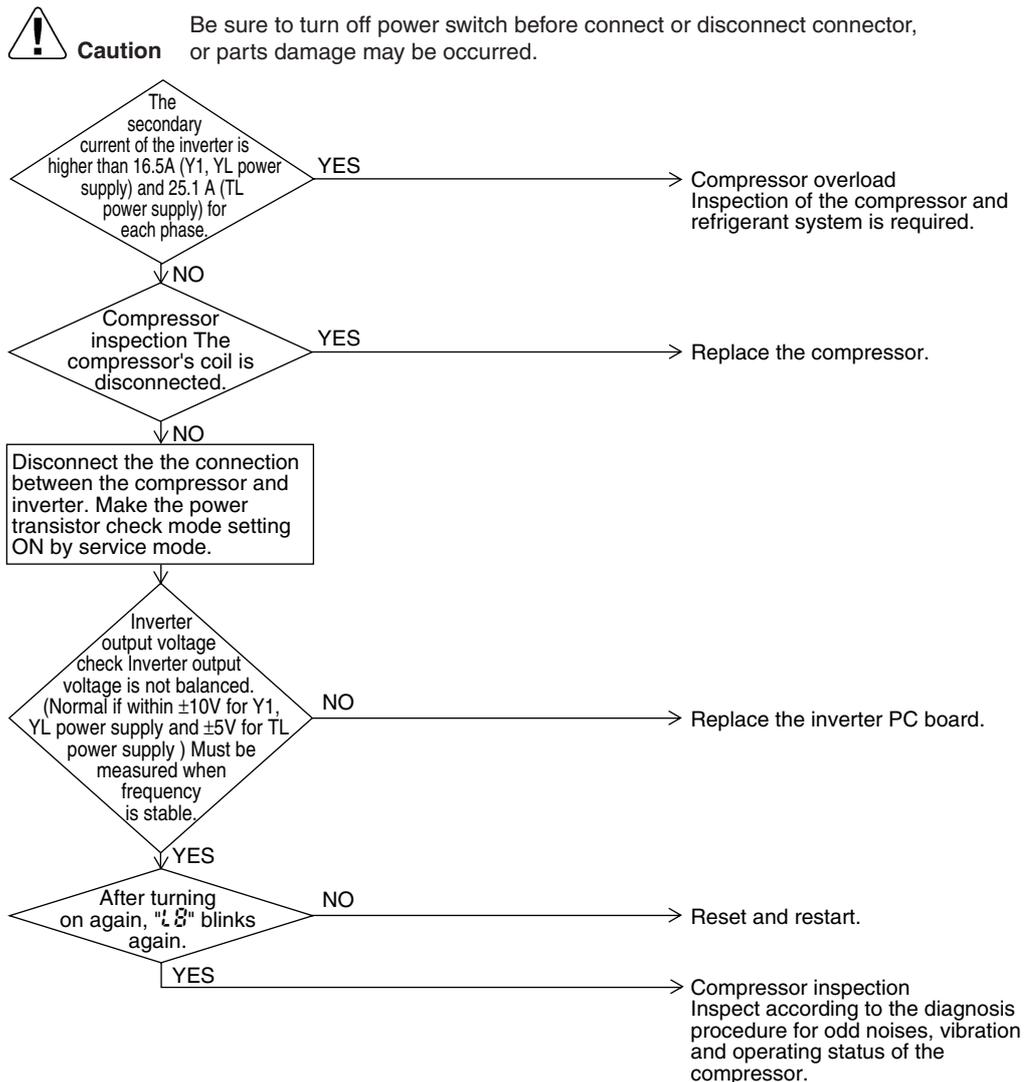
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



Higher voltage than actual is displayed when the inverter output voltage is checked by tester.

2.34 "L8" Outside Unit: Inverter Current Abnormal

Remote Controller Display	L8
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Malfunction is detected by current flowing in the power transistor.
Malfunction Decision Conditions	When overload in the compressor is detected.
Supposed Causes	<ul style="list-style-type: none"> ■ Compressor overload ■ Compressor coil disconnected ■ Defect of inverter PC board
Troubleshooting	Output current check



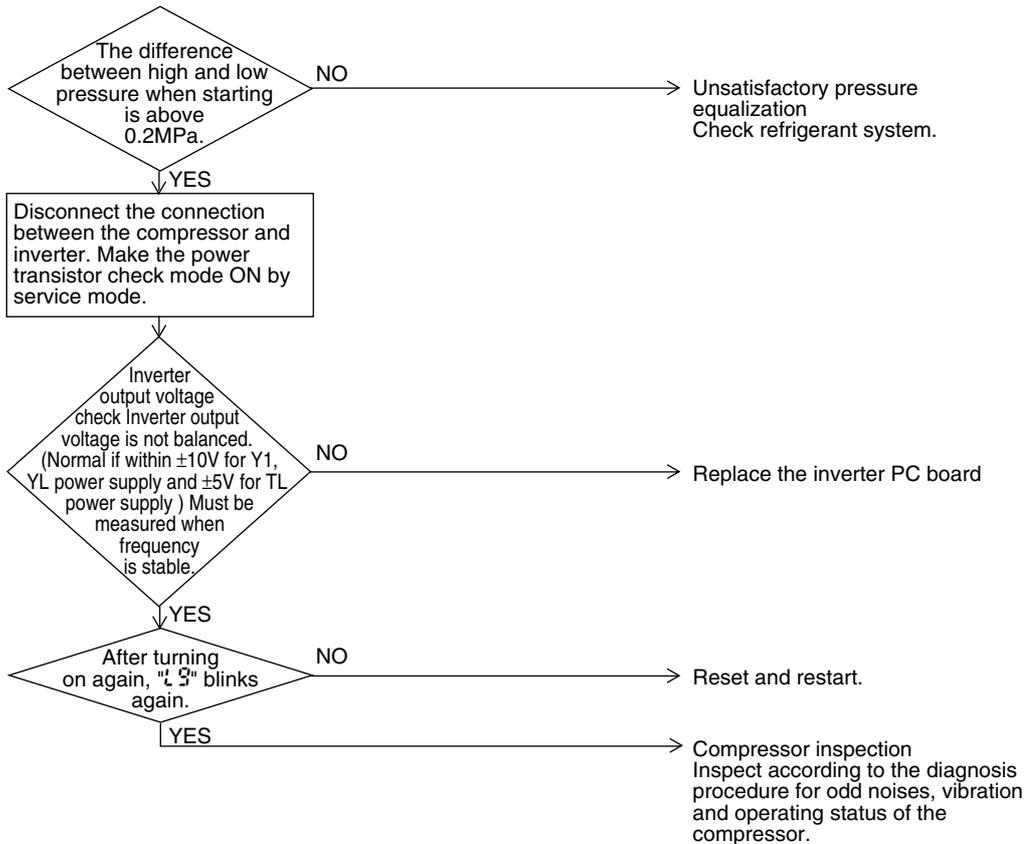
Higher voltage than actual is displayed when the inverter output voltage is checked by tester.

2.35 “L9” Outside Unit: Inverter Start Up Error

Remote Controller Display	L9
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Malfunction is detected from current flowing in the power transistor.
Malfunction Decision Conditions	When overload in the compressor is detected during startup
Supposed Causes	<ul style="list-style-type: none"> ■ Defect of compressor ■ Pressure differential start ■ Defect of inverter PC board

Troubleshooting

 **Caution** Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



Higher voltage than actual is displayed when the inverter output voltage is checked by tester.

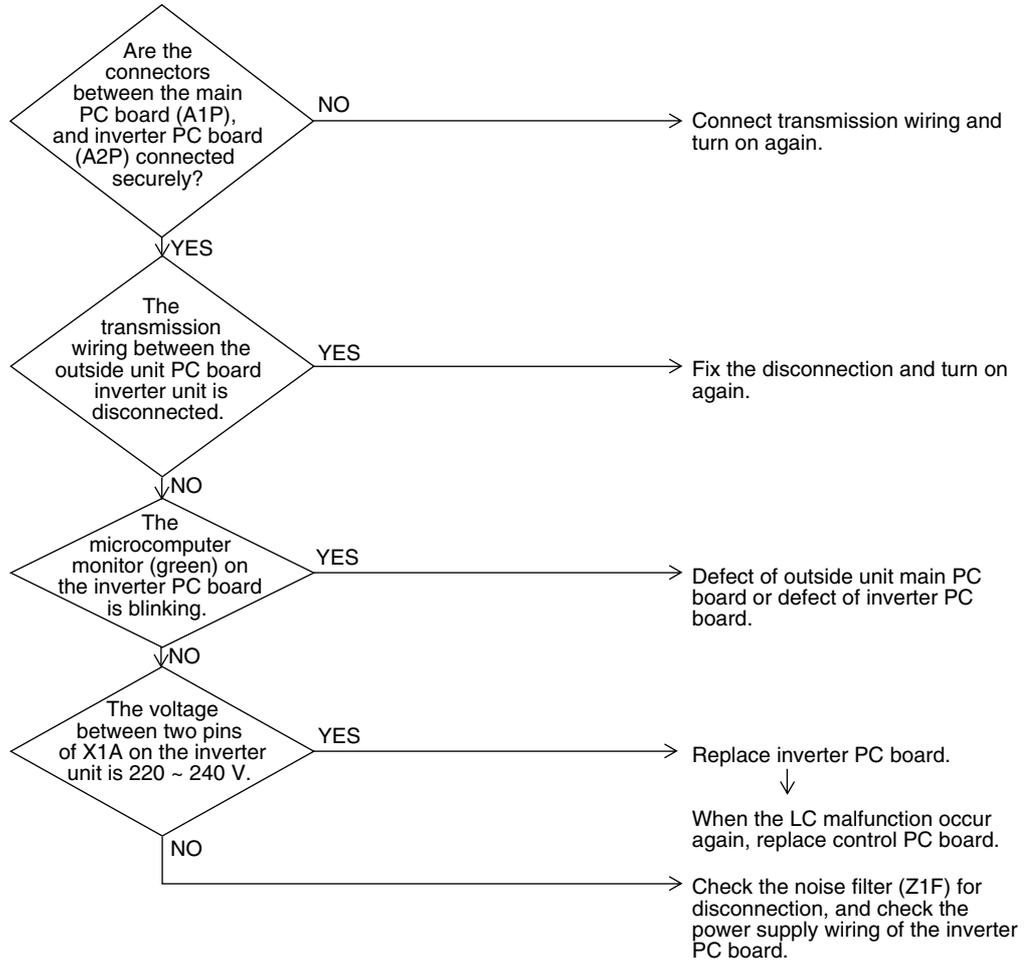
2.36 “LL” Outside Unit: Malfunction of Transmission between Inverter and Control PC Board

Remote Controller Display	LL
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Check the communication state between inverter PC board and control PC board by micro-computer.
Malfunction Decision Conditions	When the correct communication is not conducted in certain period.
Supposed Causes	<ul style="list-style-type: none"> ■ Malfunction of connection between the inverter PC board and outside unit control PC board ■ Defect of outside unit control PC board (transmission section) ■ Defect of inverter PC board ■ Defect of noise filter ■ External factor (Noise etc.)

Troubleshooting



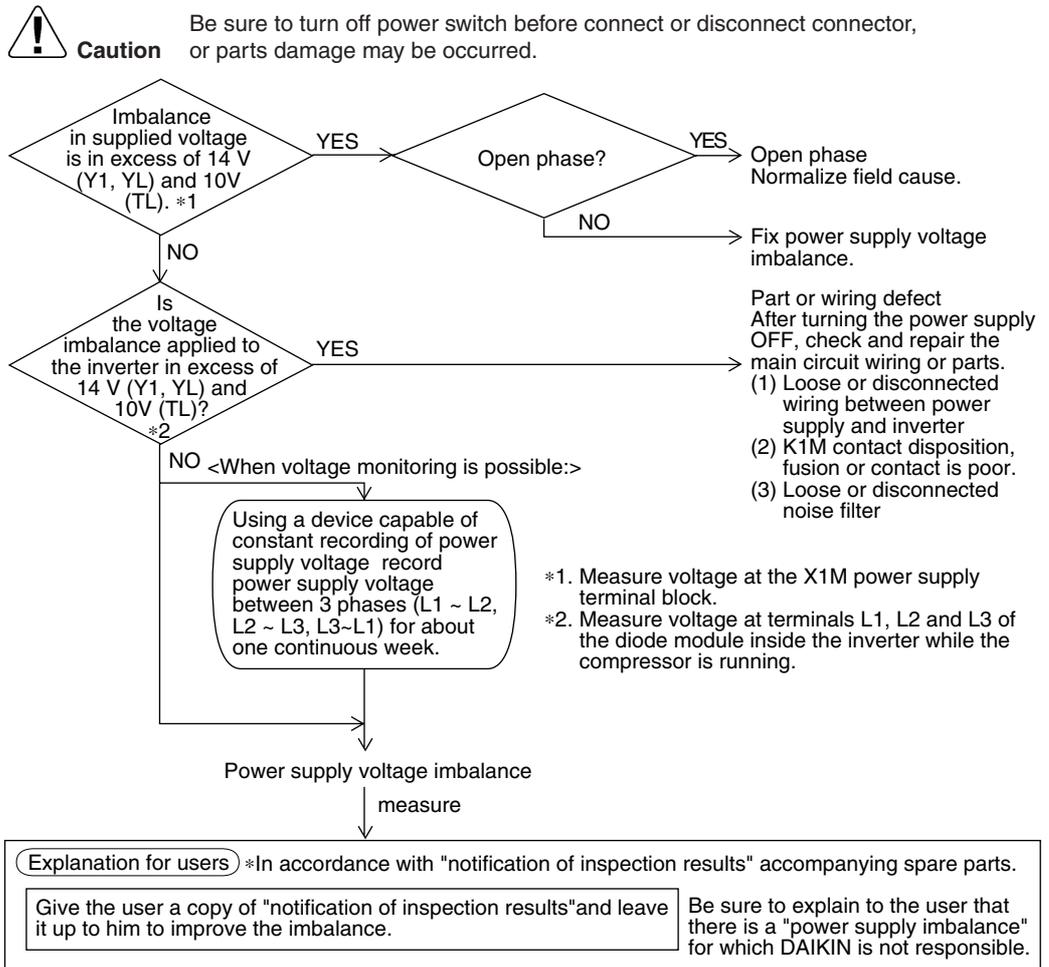
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.37 "P1" Outside Unit: Inverter Over-Ripple Protection

Remote Controller Display	P1
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Imbalance in supply voltage is detected in PC board.
Malfunction Decision Conditions	When the resistance value of thermistor becomes a value equivalent to open or short circuited status. <ul style="list-style-type: none"> Malfunction is not decided while the unit operation is continued. "P1" will be displayed by pressing the inspection button.
Supposed Causes	<ul style="list-style-type: none"> Open phase Voltage imbalance between phases Defect of main circuit capacitor Defect of inverter PC board Defect of K1M Improper main circuit wiring

Troubleshooting



2.38 "P4" Outside Unit: Malfunction of Inverter Radiating Fin Temperature Sensor

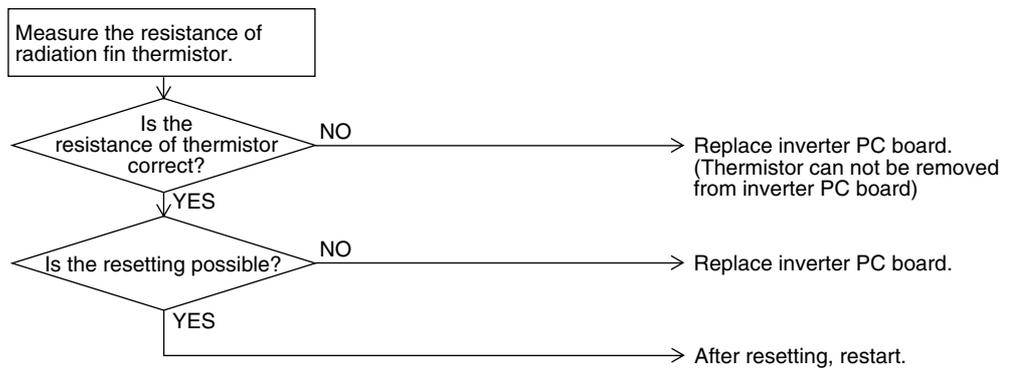
Remote Controller Display	P4
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Resistance of radiation fin thermistor is detected when the compressor is not operating.
Malfunction Decision Conditions	When the resistance value of thermistor becomes a value equivalent to open or short circuited status. <ul style="list-style-type: none"> ■ Malfunction is not decided while the unit operation is continued. <li style="padding-left: 20px;">"P4" will be displayed by pressing the inspection button.
Supposed Causes	<ul style="list-style-type: none"> ■ Defect of radiator fin temperature sensor ■ Defect of inverter PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*2: Refer to thermistor resistance / temperature characteristics table on P.309.

2.39 “” Low Pressure Drop Due to Refrigerant Shortage or Electronic Expansion Valve Failure

Remote Controller Display	
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Detect insufficient gas using low pressure or difference in temperature between the suction pipe and the heat exchanger.
Malfunction Decision Conditions	In cooling <ul style="list-style-type: none"> ■ Low pressure of 0.25 MPa or less continues for 30 minutes In heating <ul style="list-style-type: none"> ■ Suction gas superheated degree of 20°C or more continues for 60 minutes. * Abnormality is not confirmed and operation is continued.
Supposed Causes	<ul style="list-style-type: none"> ■ Insufficient gas or clogged refrigerant (wrong piping) ■ Faulty thermistor (R2T, R4T) ■ Faulty low pressure sensor ■ Faulty main PC board (A1P)

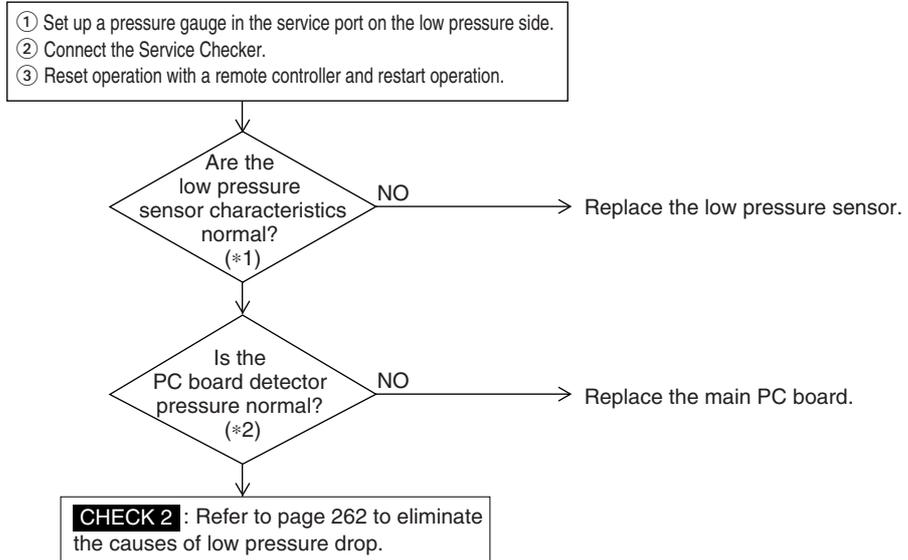
Troubleshooting



Caution

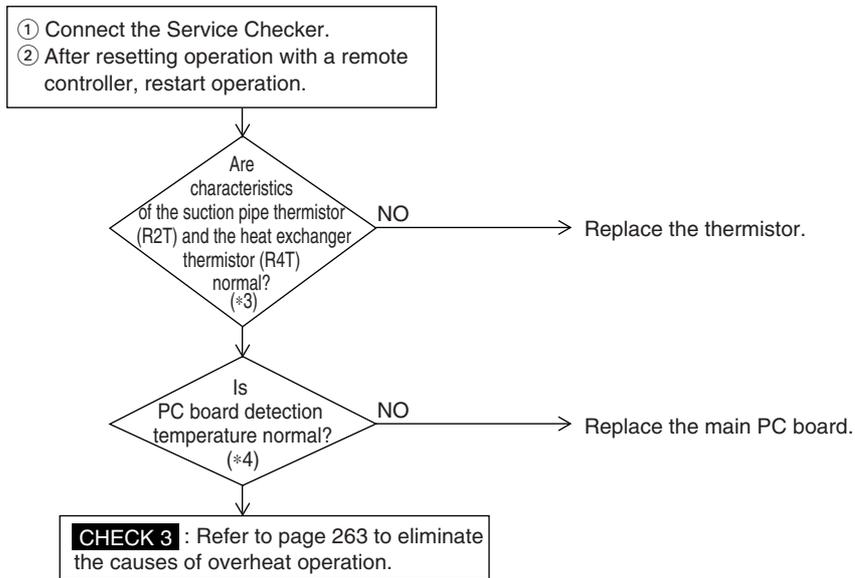
Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

In cooling



- *1 : Compare pressure sensor measurements with pressure gauge readings.
(For measurements by a pressure sensor, measure voltage between connectors (2) and (3) and convert it to pressure in accordance with page 311.)
- *2 : Compare low pressure measured by the Service Checker with pressure sensor measurements (refer to *1).

In heating



- *3 : Compare the thermistor resistance with surface thermostat measurements.
- *4 : Compare the suction pipe temperature checked by the Service Checker with measurements obtained in *3 above.

2.40 “U I” Reverse Phase, Open Phase

Remote
Controller
Display

U I

Applicable
Models

Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

The phase of each phase are detected by reverse phase detection circuit and right phase or reverse phase are judged.

Malfunction
Decision
Conditions

When a significant phase difference is made between phases.

Supposed
Causes

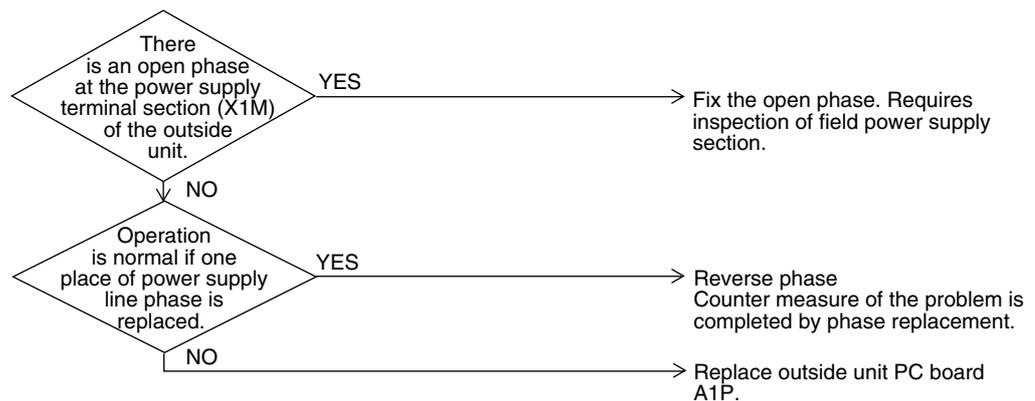
- Power supply reverse phase
- Power supply open phase
- Defect of outside PC board A1P

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.41 “U2” Power Supply Insufficient or Instantaneous Failure

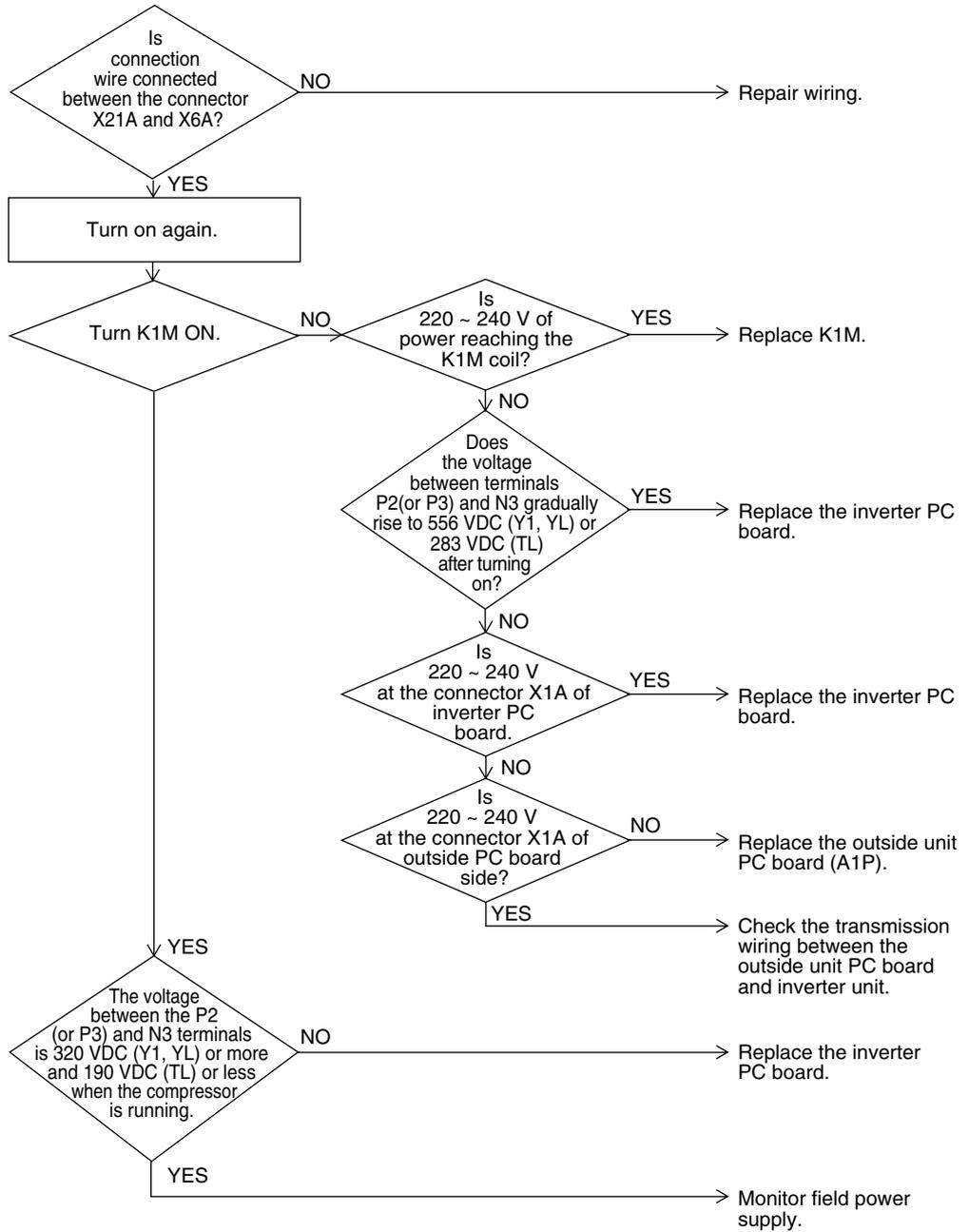
Remote Controller Display	U2
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Detection of voltage of main circuit capacitor built in the inverter and power supply voltage.
Malfunction Decision Conditions	When the capacitor above only has a voltage of 360 V or less (YL) and 210V or less (TL).
Supposed Causes	<ul style="list-style-type: none"> ■ Power supply insufficient ■ Instantaneous failure ■ Open phase ■ Defect of inverter PC board ■ Defect of outside control PC board ■ Defect of K1M. ■ Main circuit wiring defect

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



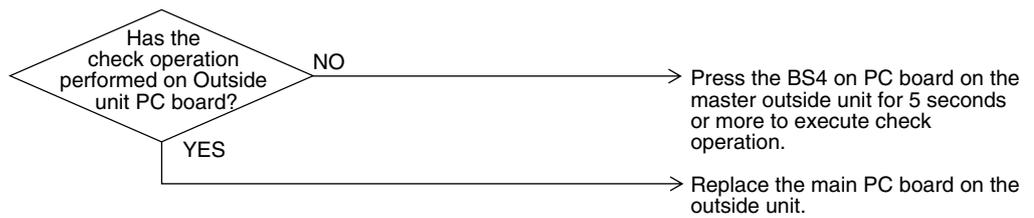
2.42 “U3” Check Operation not Executed

Remote Controller Display	U3
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Check operation is executed or not
Malfunction Decision Conditions	Malfunction is decided when the unit starts operation without check operation.
Supposed Causes	<ul style="list-style-type: none"> ■ Check operation is not executed.
Troubleshooting	



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



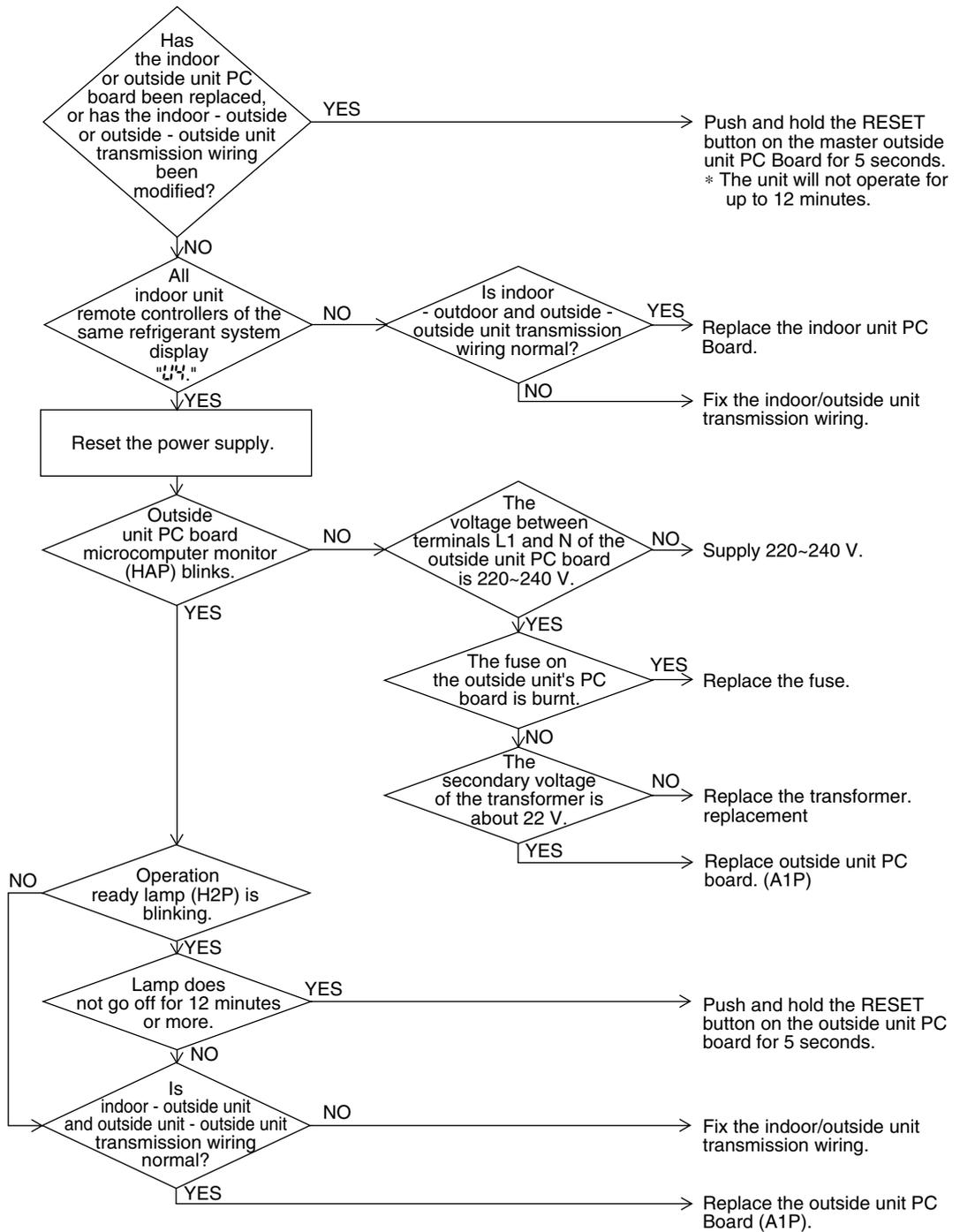
2.43 “U4” Malfunction of Transmission between Indoor Units

Remote Controller Display	U4
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Microcomputer checks if transmission between indoor and outside units is normal.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Indoor to outdoor, outside to outside unit transmission wiring F1, F2 disconnection, short circuit or wrong wiring ■ Outside unit power supply is OFF ■ System address doesn't match ■ Defect of indoor unit PC board ■ Defect of outside unit PC board

Troubleshooting



Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.44 "U5" Malfunction of Transmission between Remote Controller and Indoor Unit

Remote Controller Display

U5

Applicable Models

Indoor unit
 FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of Malfunction Detection

In case of controlling with 2-remote controller, check the system using microcomputer is signal transmission between indoor unit and remote controller (main and sub) is normal.

Malfunction Decision Conditions

Normal transmission does not continue for specified period.

Supposed Causes

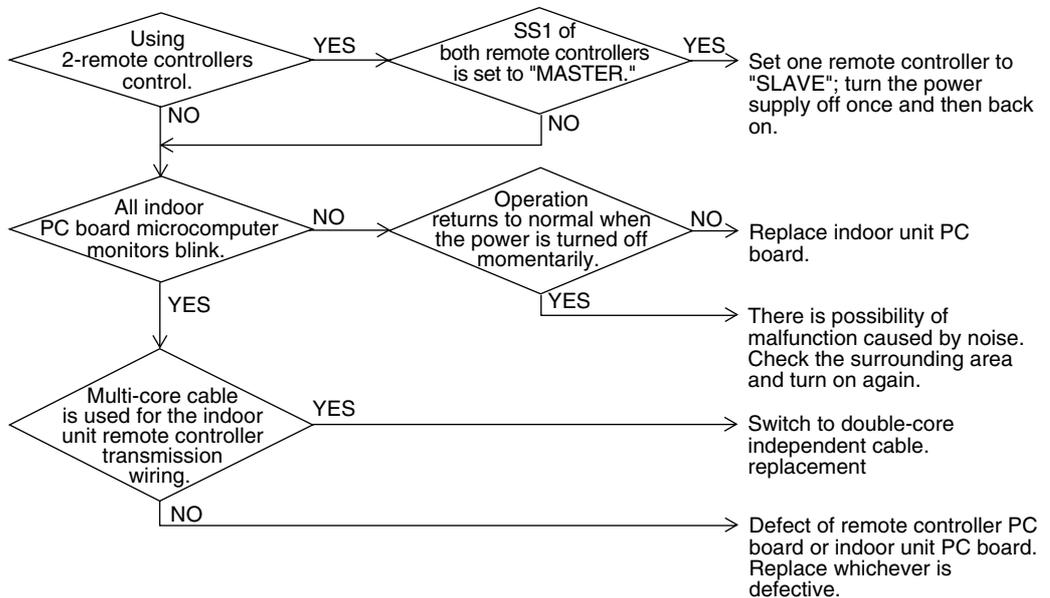
- Malfunction of indoor unit remote controller transmission
- Connection of two main remote controllers (when using 2 remote controllers)
- Defect of indoor unit PC board
- Defect of remote controller PC board
- Malfunction of transmission caused by noise

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.45 “U7” Malfunction of Transmission between Outside Units

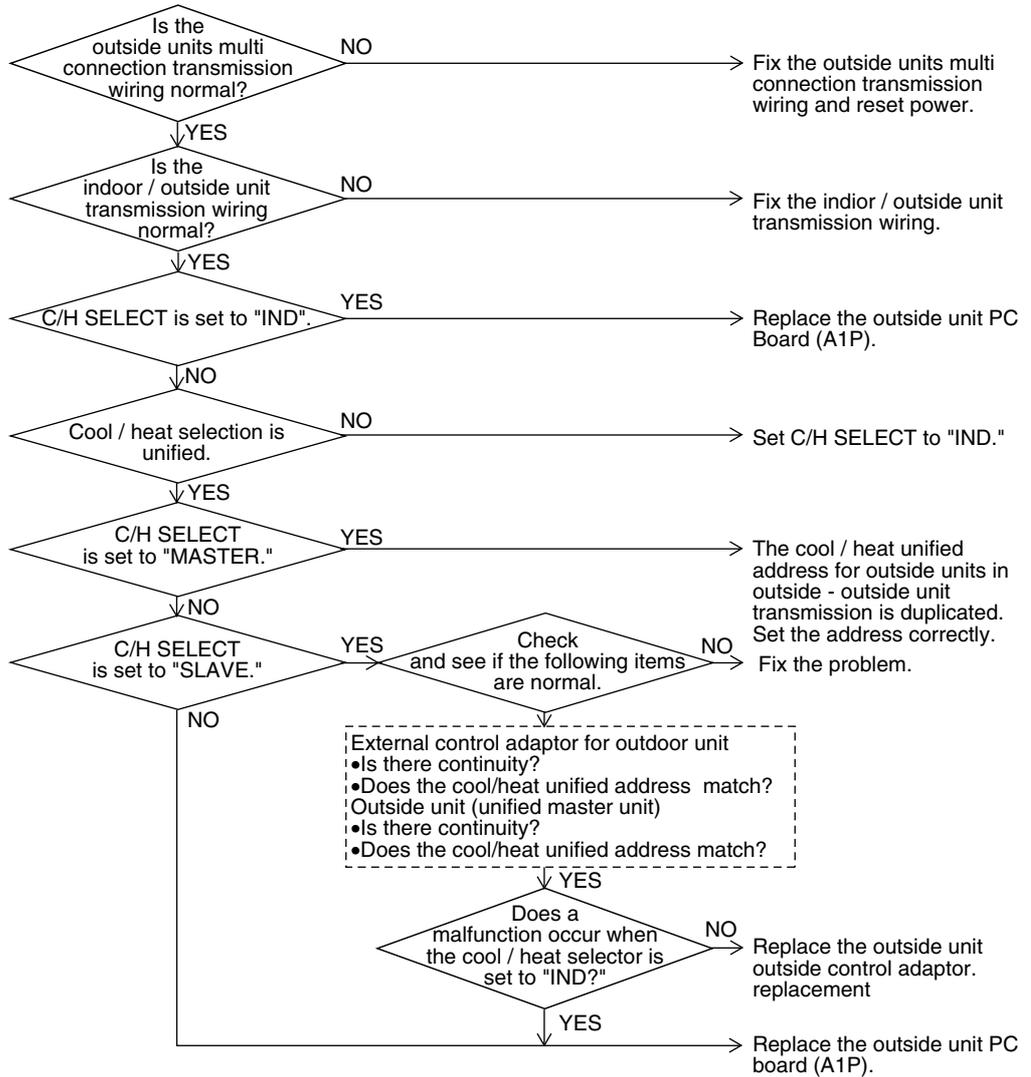
Remote Controller Display	U7
Applicable Models	Outside unit RWEYQ8P, 10P
Method of Malfunction Detection	Microcomputer checks if transmission between indoor unit and remote controller is normal.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Improper connection of transmission wiring between outside unit and external control adaptor for outdoor unit. ■ Improper cool/heat selection ■ Improper cool/heat unified address (outside unit, external control adaptor for outdoor unit) ■ Defect of outside unit PC board (A1P) ■ Defect of external control adaptor for outdoor unit ■ Improper connection of transmission wiring between outside units of multi outside unit connection.

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.46 “U8” Malfunction of Transmission between Master and Slave Remote Controllers

Remote Controller Display



Applicable Models

Indoor unit
 FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ

Method of Malfunction Detection

In case of controlling with 2-remote controller, check the system using microcomputer if signal transmission between indoor unit and remote controller (main and sub) is normal.

Malfunction Decision Conditions

Normal transmission does not continue for specified period.

Supposed Causes

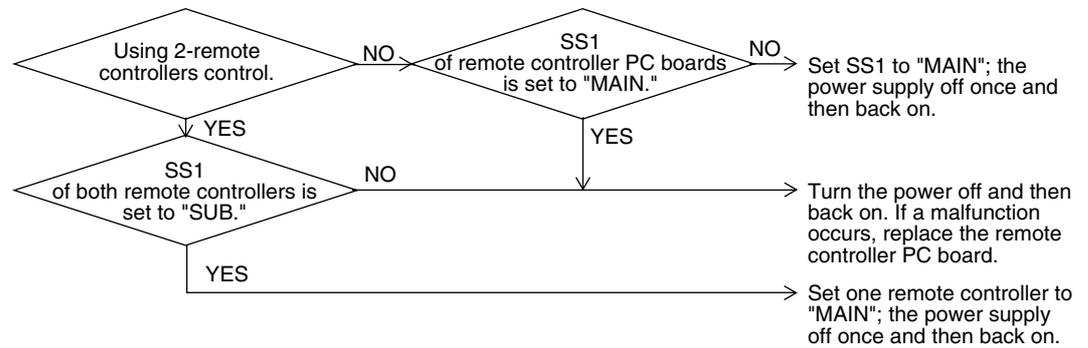
- Malfunction of transmission between main and sub remote controller
- Connection between sub remote controllers
- Defect of remote controller PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.47 “U9” Malfunction of Transmission between Indoor and Outside Units in the Same System

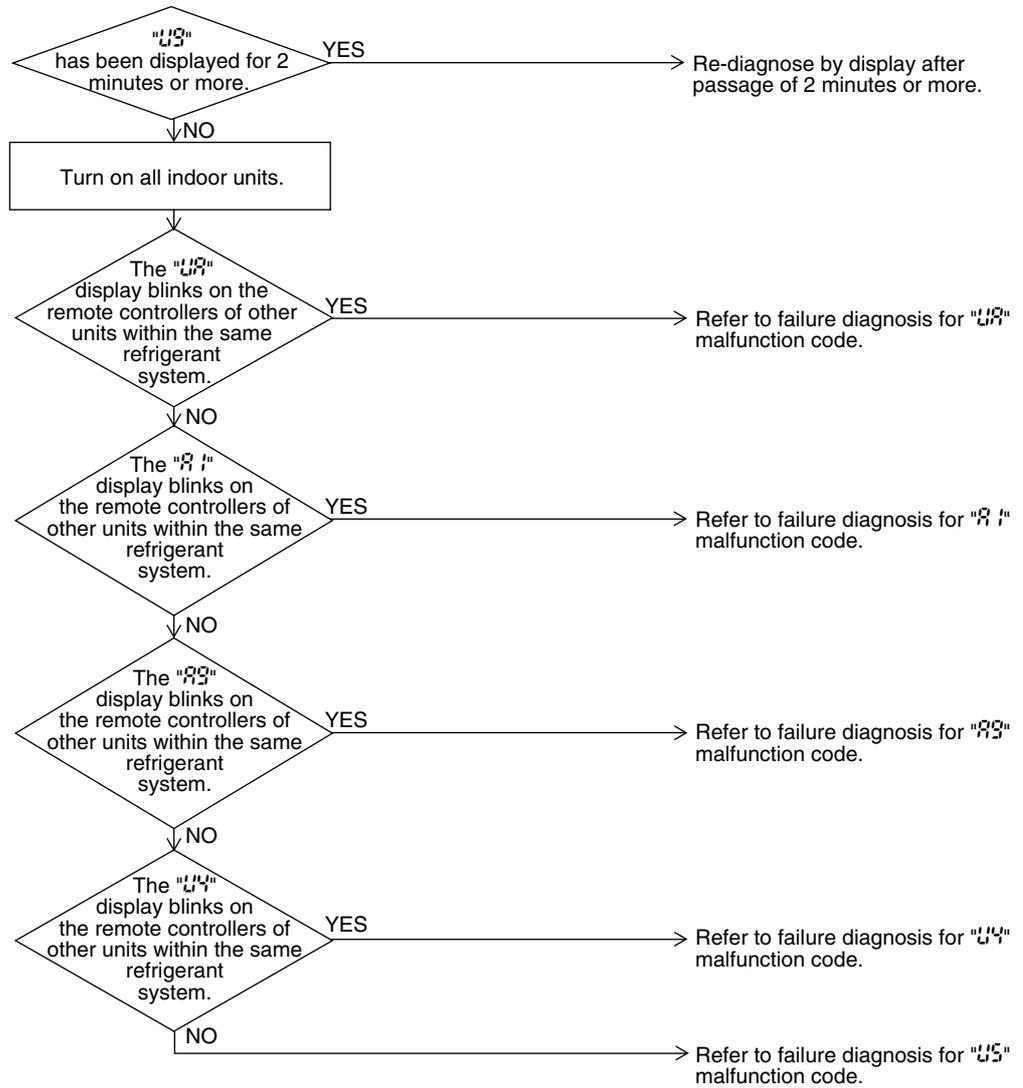
Remote Controller Display	U9
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
Method of Malfunction Detection	Detect the malfunction signal of any other indoor unit within the system concerned.
Malfunction Decision Conditions	When the malfunction decision is made on any other indoor unit within the system concerned.
Supposed Causes	<ul style="list-style-type: none"> ■ Malfunction of transmission within or outside of other system ■ Malfunction of electronic expansion valve in indoor unit of other system ■ Defect of PC board of indoor unit in other system ■ Improper connection of transmission wiring between indoor and outside unit

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.48 “UR” Indoor & Outside Units and Remote Controller Combination Failure

Remote Controller Display



Applicable Models

Indoor unit
 FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
 Outside unit
 RWEYQ8P, 10P

Method of Malfunction Detection

Detect abnormalities in combination of indoor and outside units and the remote controller using the outside unit PC board.

Malfunction Decision Conditions

When any of the followings is detected, failure is instantly confirmed.
 ■ When there is a problem in the combination of the indoor and outside units
 ■ When there is a problem in the combination of the indoor unit and the remote controller

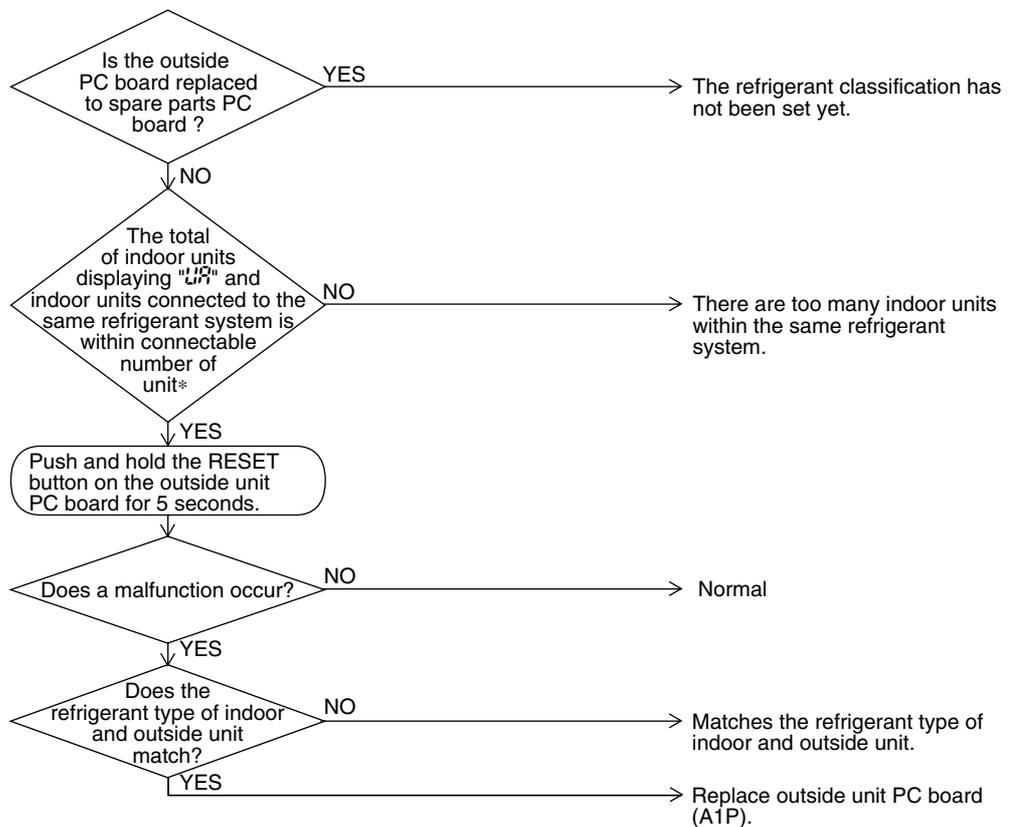
Supposed Causes

- Excess of connected indoor units
- Defect of outside unit PC board (A1P)
- Mismatching of the refrigerant type of indoor and outside unit.
- Setting of outside PC board was not conducted after replacing to spare parts PC board.

Troubleshooting



Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



* The number of indoor units that can be connected to a single outside unit system depends on the type of outside unit.

2.49 “U” Address Duplication of Centralized Controller

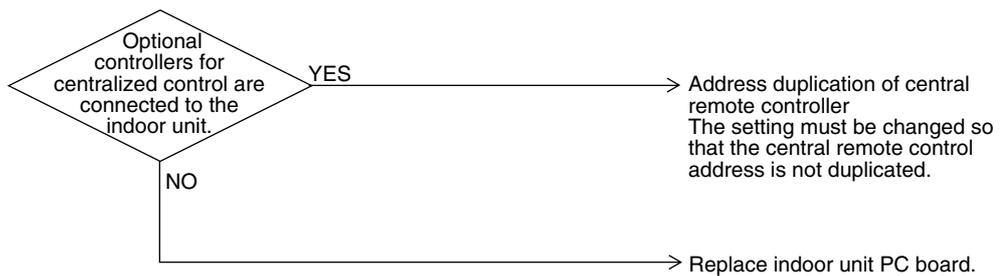
Remote Controller Display	
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ Centralized controller
Method of Malfunction Detection	The principal indoor unit detects the same address as that of its own on any other indoor unit.
Malfunction Decision Conditions	The malfunction decision is made as soon as the abnormality aforementioned is detected.
Supposed Causes	<ul style="list-style-type: none"> ■ Address duplication of centralized remote controller ■ Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.50 “UE” Malfunction of Transmission between Centralized Controller and Indoor Unit

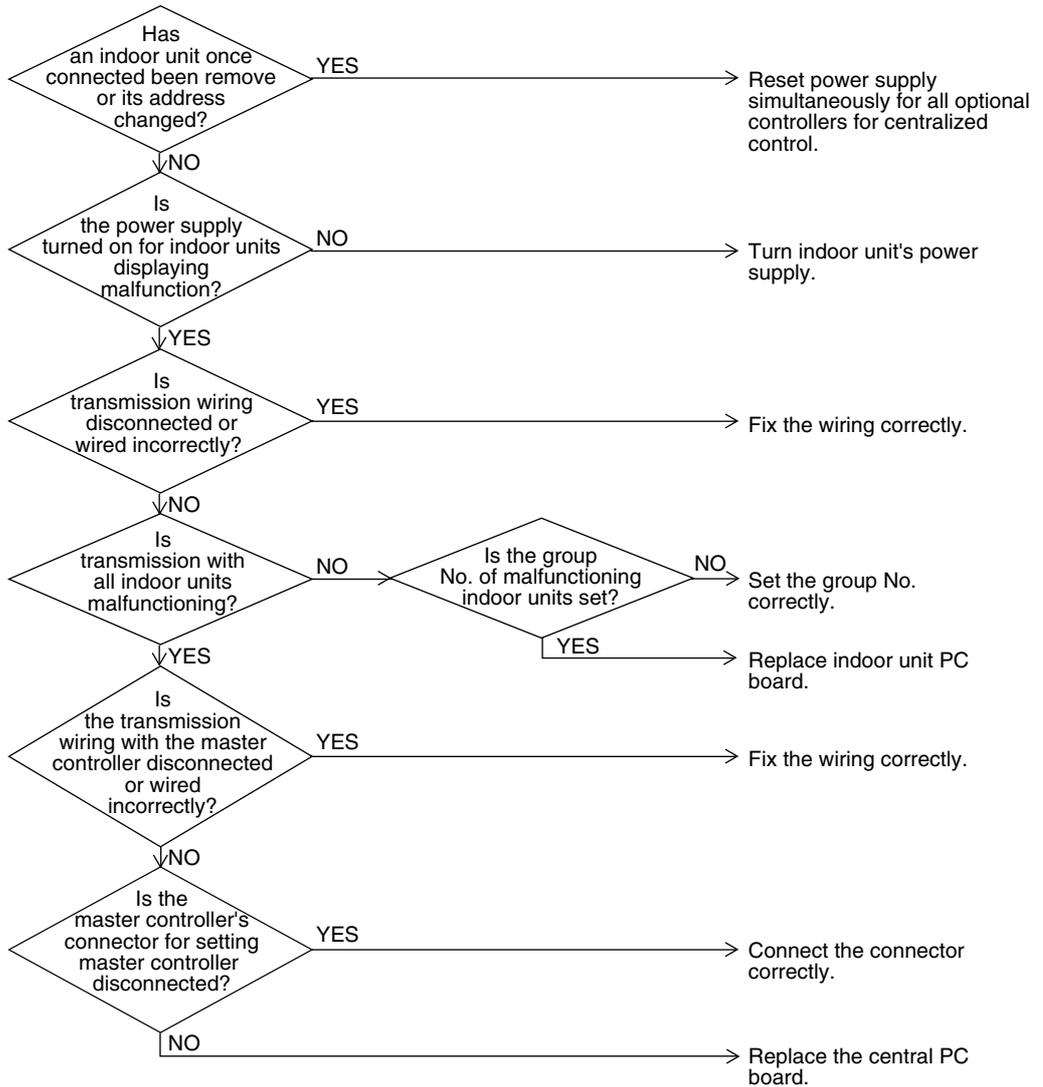
Remote Controller Display	UE
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ Centralized controller
Method of Malfunction Detection	Microcomputer checks if transmission between indoor unit and centralized controller is normal.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Malfunction of transmission between optional controllers for centralized control and indoor unit ■ Connector for setting master controller is disconnected. ■ Failure of PC board for central remote controller ■ Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.51 “UF” Refrigerant System not Set, Incompatible Wiring/ Piping

Remote
Controller
Display



Applicable
Models

Indoor unit
FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
Outside unit
RWEYQ8P, 10P

Method of
Malfunction
Detection

On check operation, the number of indoor units in terms of transmission is not corresponding to that of indoor units that have made changes in temperature.

Malfunction
Decision
Conditions

The malfunction is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed
Causes

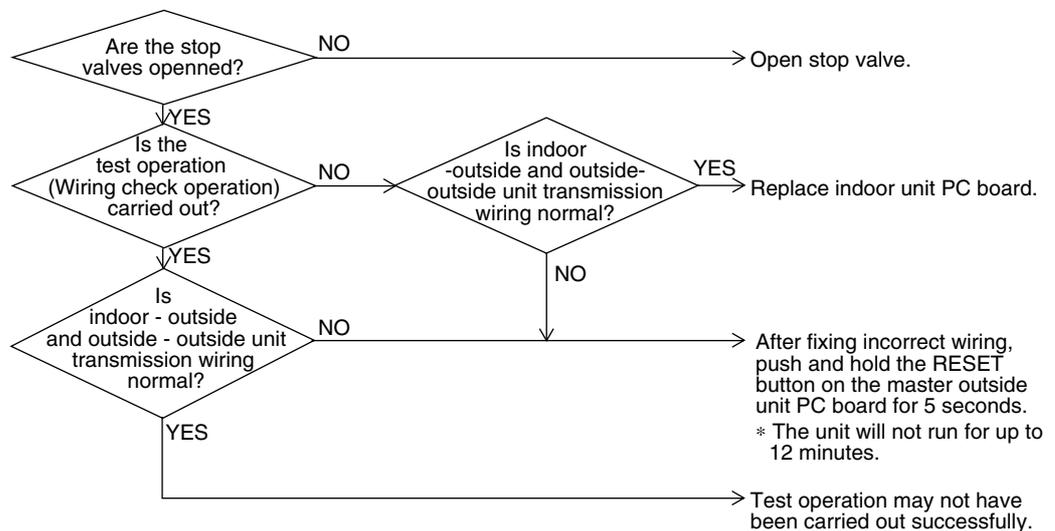
- Improper connection of transmission wiring between outside unit and external control adaptor for outdoor unit.
- Failure to execute wiring check operation
- Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



Note:

Test operation may not be successful if carried out after the outside unit has been off for more than 12 hours, or if it is not carried out after running all connected indoor units in the fan mode for at least an hour.

2.52 “UH” Malfunction of System, Refrigerant System Address Undefined

Remote Controller Display



Applicable Models

Indoor unit
 FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
 Outside unit
 RWEYQ8P, 10P

Method of Malfunction Detection

Detect an indoor unit with no auto address setting.

Malfunction Decision Conditions

The malfunction decision is made as soon as the abnormality aforementioned is detected.

Supposed Causes

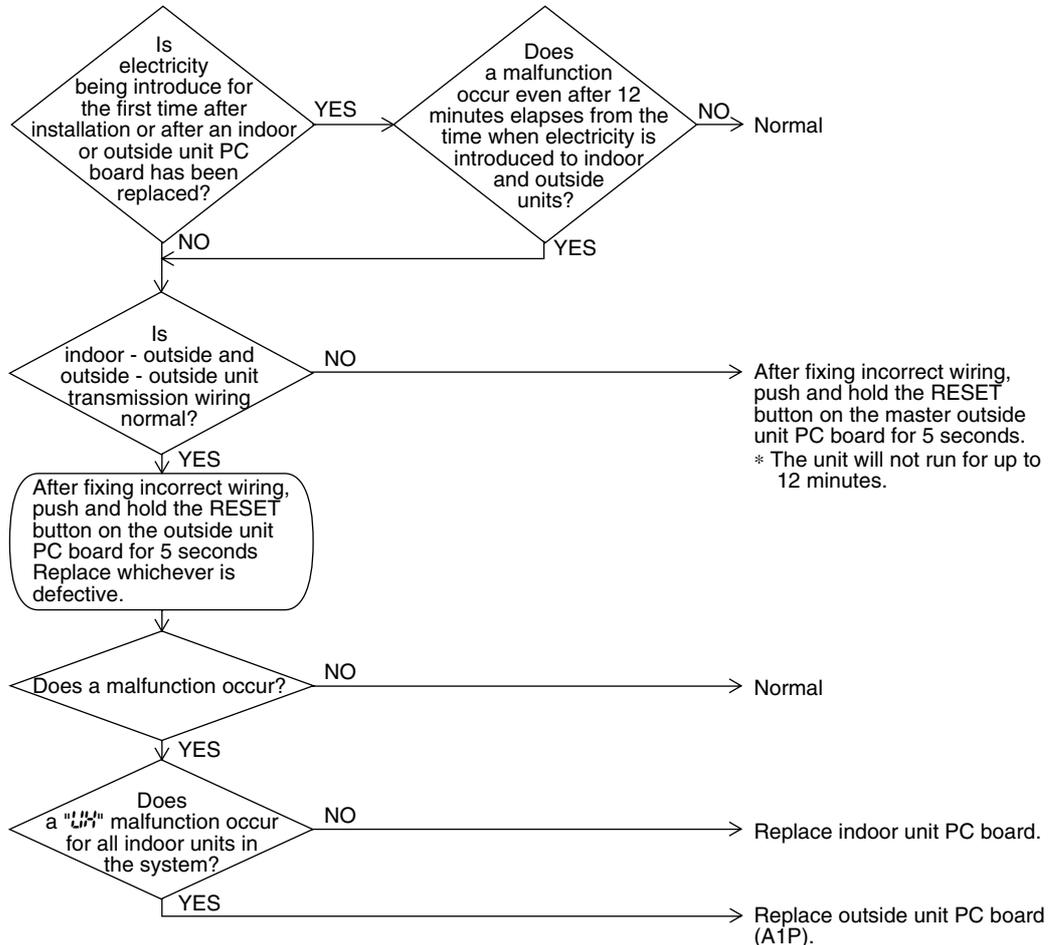
- Improper connection of transmission wiring between outside unit and outside unit outside control adaptor
- Defect of indoor unit PC board
- Defect of outside unit PC board (A1P)

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



3. Troubleshooting (OP: Central Remote Controller)

3.1 “MI” PC Board Defect

Remote Controller Display	MI
Applicable Models	Central remote controller
Method of Malfunction Detection	Detect an abnormality in the DIII-NET polarity circuit.
Malfunction Decision Conditions	When + polarity and - polarity are detected at the same time.
Supposed Causes	<ul style="list-style-type: none"> ■ Defect of central remote controller PC board
Troubleshooting	Replace the central remote controller.

3.2 “M8” Malfunction of Transmission between Optional Controllers for Centralized Control

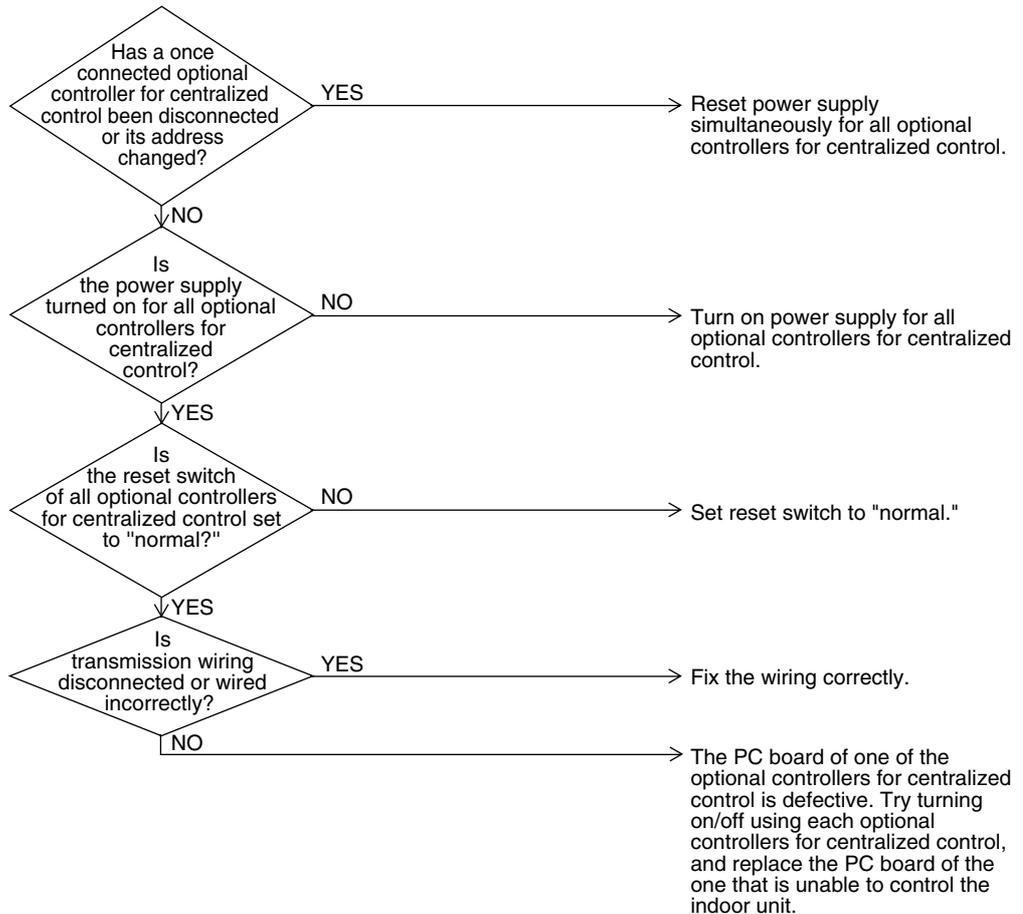
Remote Controller Display	M8
Applicable Models	Central remote controller
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data. (The system will be automatically reset.)
Malfunction Decision Conditions	When no master controller is present at the time of the startup of slave controller. When the centralized controller, which was connected once, shows no response.
Supposed Causes	<ul style="list-style-type: none"> ■ Malfunction of transmission between optional controllers for centralized control ■ Defect of PC board of optional controllers for centralized control

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



3.3 “MR” Improper Combination of Optional Controllers for Centralized Control

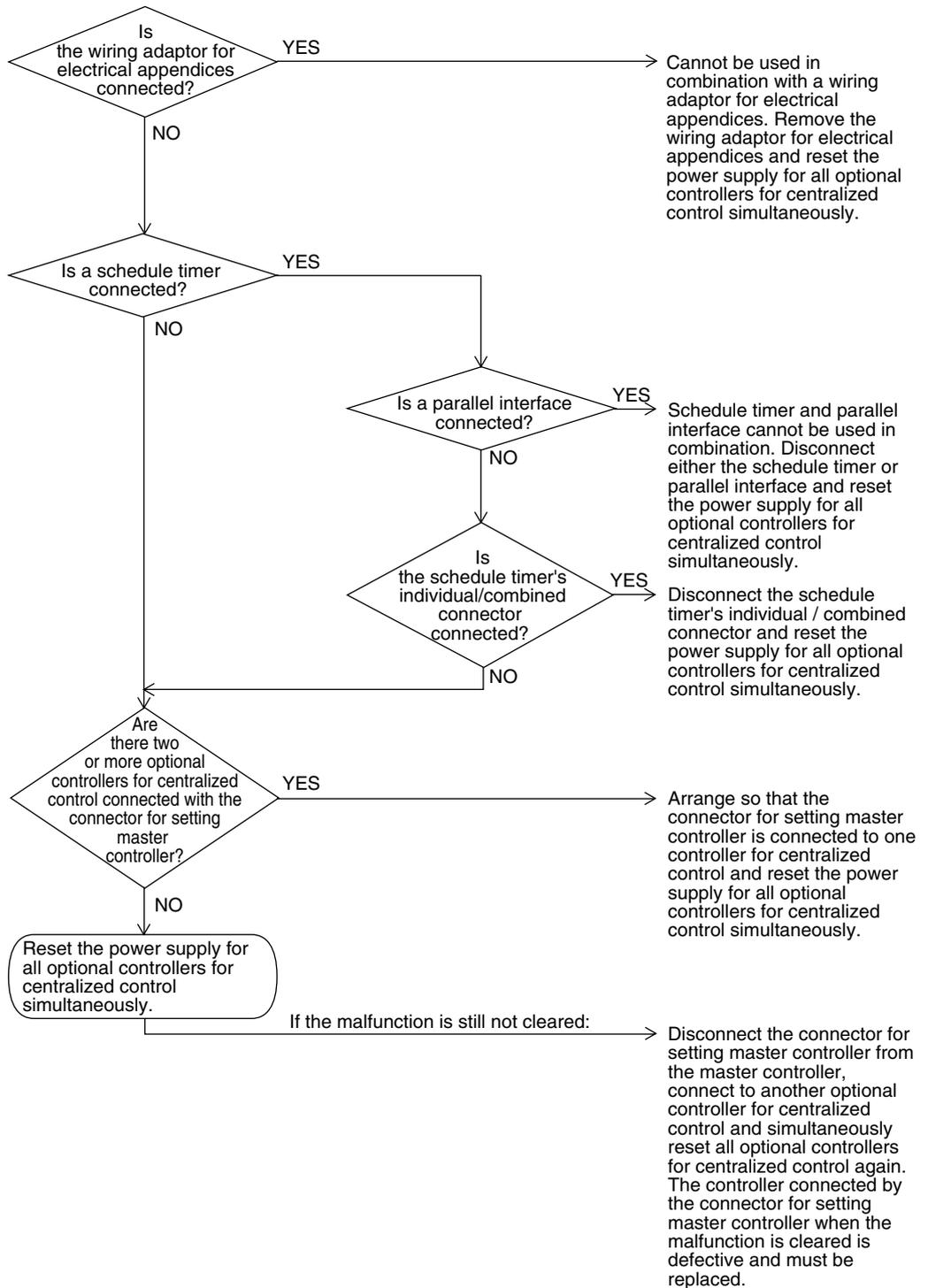
Remote Controller Display	MR
Applicable Models	Central remote controller
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When the schedule timer is set to individual use mode, other central component is present. When multiple master controller are present. When the remote control adaptor is present.
Supposed Causes	<ul style="list-style-type: none"> ■ Improper combination of optional controllers for centralized control ■ More than one master controller is connected ■ Defect of PC board of optional controller for centralized control

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



3.4 “M” Address Duplication, Improper Setting

Remote Controller Display	M
Applicable Models	Central remote controller
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	Two units are both set to master controller mode or slave controller mode.
Supposed Causes	<ul style="list-style-type: none"> ■ Address duplication of centralized remote controller
Troubleshooting	<div style="text-align: center;">  <p>Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.</p> </div> <pre> graph TD Q{Are two or more central remote controllers connected?} Q -- YES --> A[Disconnect all central remote controllers except one and reset the power supply of the central remote controller.] Q -- NO --> B[Reset power supply of the central remote controller.] </pre>

4. Troubleshooting (OP: Schedule Timer)

4.1 “UE” Malfunction of Transmission between Centralized Controller and Indoor Unit

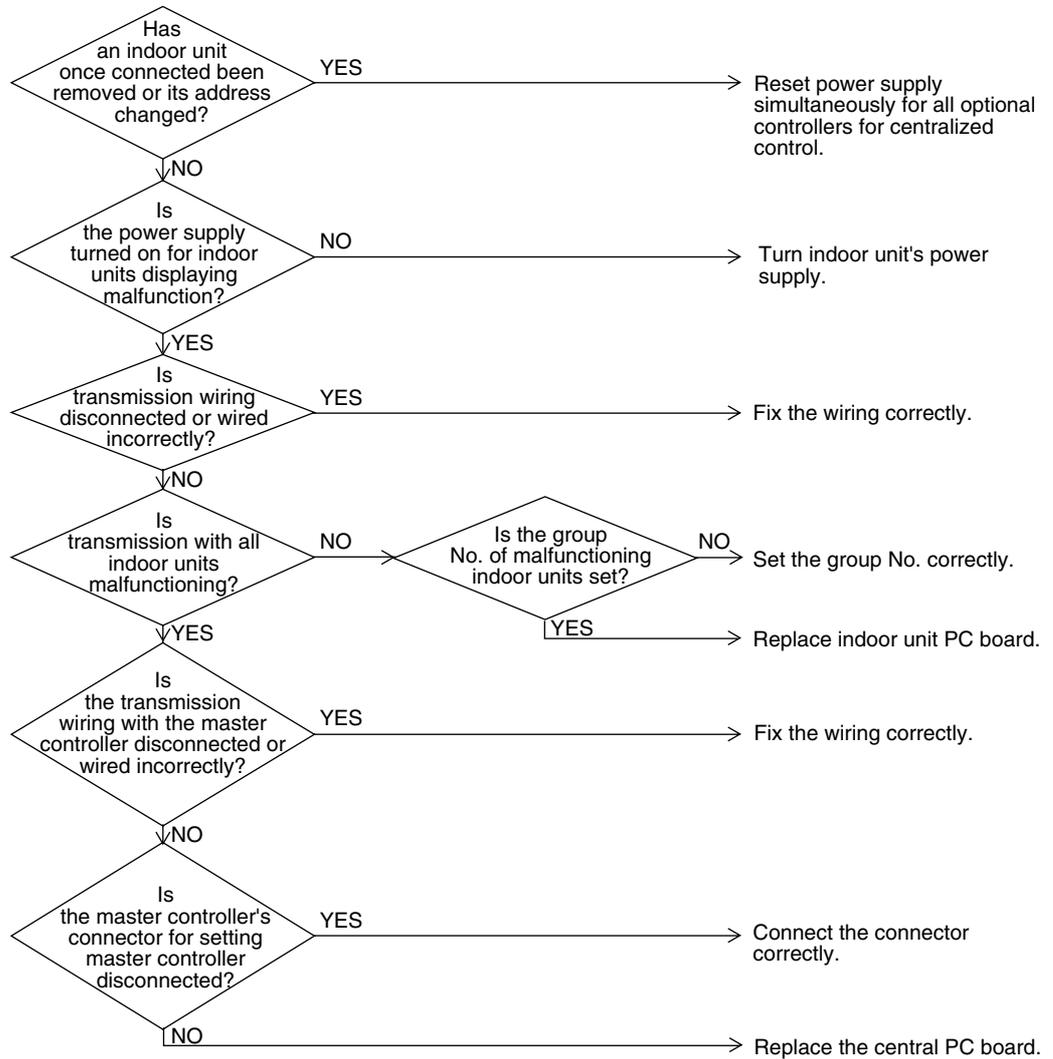
Remote Controller Display	UE
Applicable Models	Schedule timer Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
Method of Malfunction Detection	Microcomputer checks if transmission between indoor unit and centralized controller is normal.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none"> ■ Malfunction of transmission between central remote controller and indoor unit ■ Disconnection of connector for setting master controller (or individual/combined switching connector) ■ Defect of schedule timer PC board ■ Defect of indoor unit PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.2 “M1” PC Board Defect

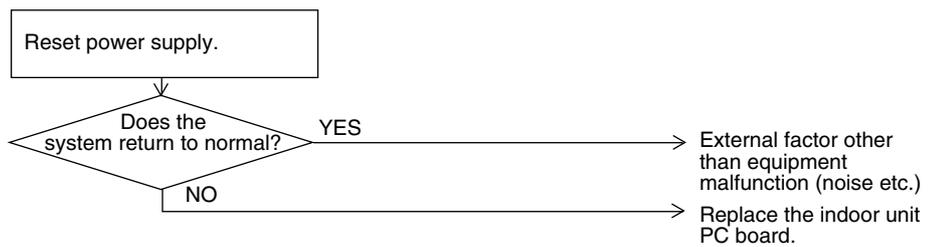
Remote Controller Display	M1
Applicable Models	Schedule timer
Method of Malfunction Detection	Detect an abnormality in the DIII-NET polarity circuit.
Malfunction Decision Conditions	When + polarity and - polarity are detected at the same time.
Supposed Causes	<ul style="list-style-type: none"> Defect of schedule timer PC board

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

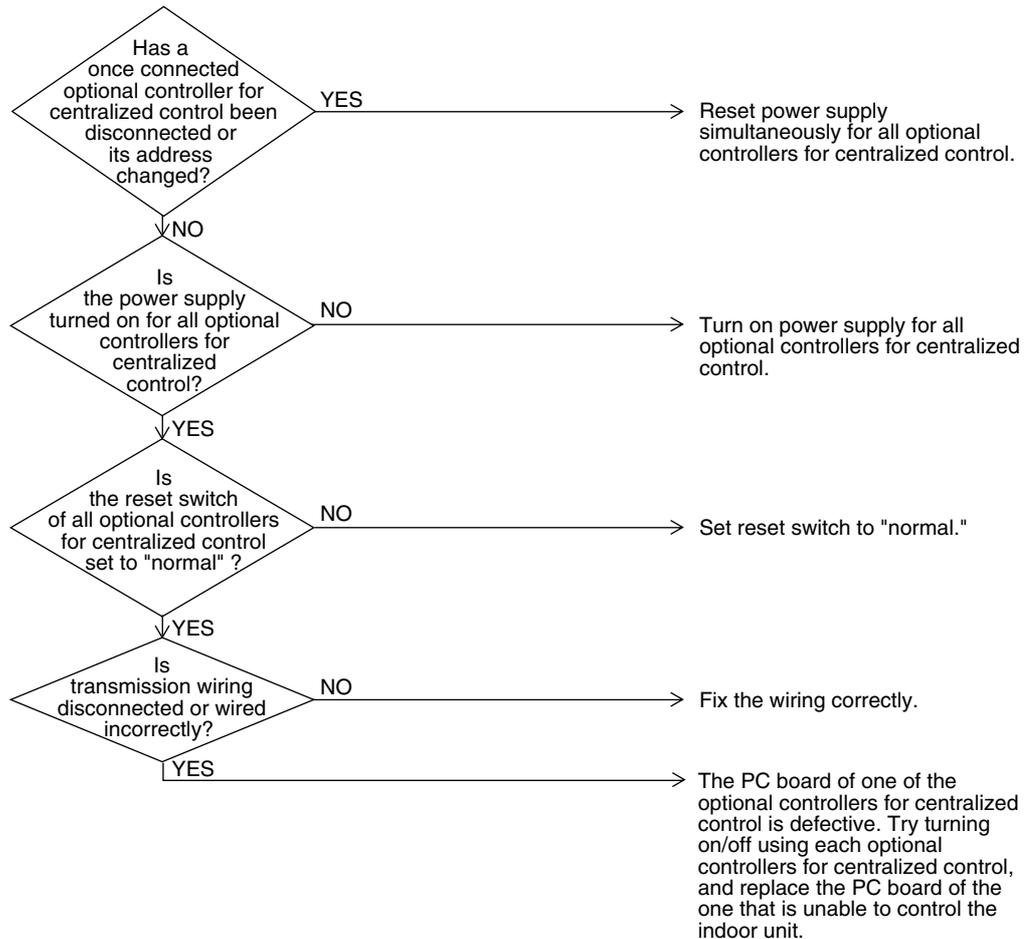


4.3 “M8” Malfunction of Transmission between Optional Controllers for Centralized Control

Remote Controller Display	M8
Applicable Models	Schedule timer
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data. (The system will be automatically reset.)
Malfunction Decision Conditions	When no master controller is present at the time of the startup of slave controller. When the optional controllers for centralized control which was connected once, shows no response.
Supposed Causes	<ul style="list-style-type: none"> ■ Malfunction of transmission between optional controllers for centralized control ■ Defect of PC board of optional controllers for centralized control

Troubleshooting

 **Caution** Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.4 “M₁” Improper Combination of Optional Controllers for Centralized Control

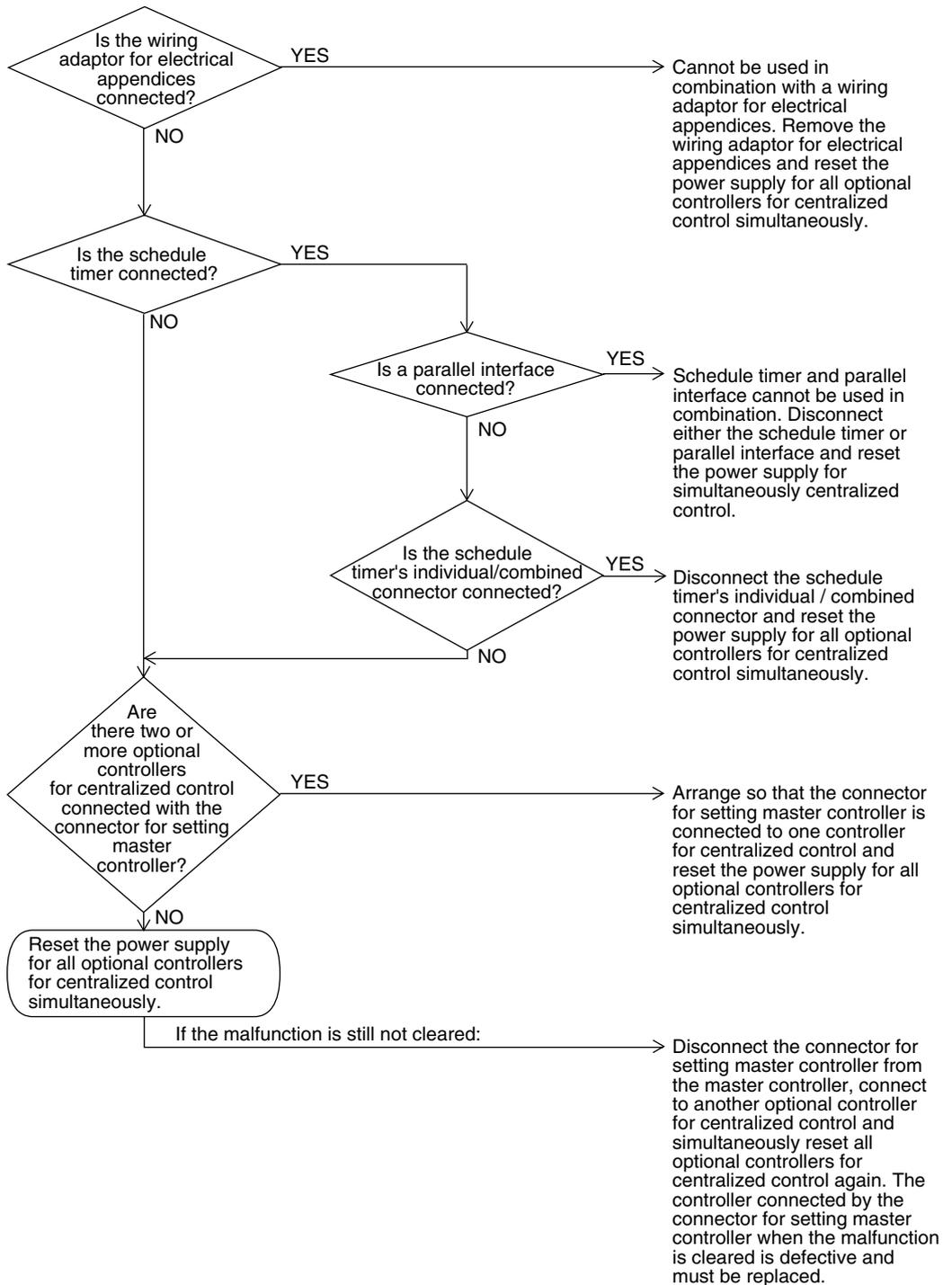
Remote Controller Display	M ₁
Applicable Models	Schedule timer
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When the schedule timer is set to individual use mode, other central component is present. When multiple master controller are present.
Supposed Causes	<ul style="list-style-type: none"> ■ Improper combination of optional controllers for centralized control ■ More than one master controller is connected. ■ Defect of PC board of optional controller for centralized control

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.5 “M1L” Address Duplication, Improper Setting

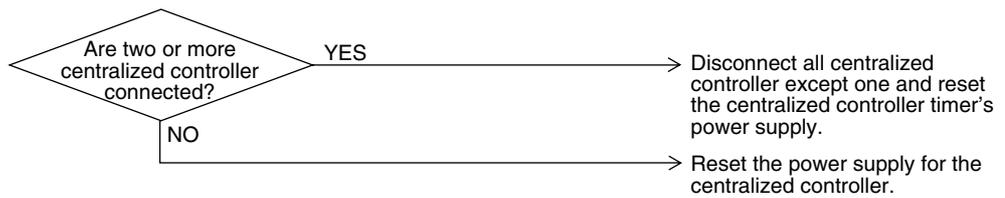
Remote Controller Display	M1L
Applicable Models	Indoor unit FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ schedule timer
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When two or more schedule timers are connected.
Supposed Causes	<ul style="list-style-type: none"> ■ Address duplication of optional controller for centralized control

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



5. Troubleshooting (OP: Unified ON/OFF Controller)

5.1 Operation Lamp Blinks

Remote Controller Display

Operation lamp blinks

Applicable Models

Indoor unit
 FXFQ, FXCQ, FXKQ, FXDQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ, FXUQ
 Unified ON/OFF controller

Method of Malfunction Detection

Detect the malfunction according to DIII-NET transmission data.

Malfunction Decision Conditions

Supposed Causes

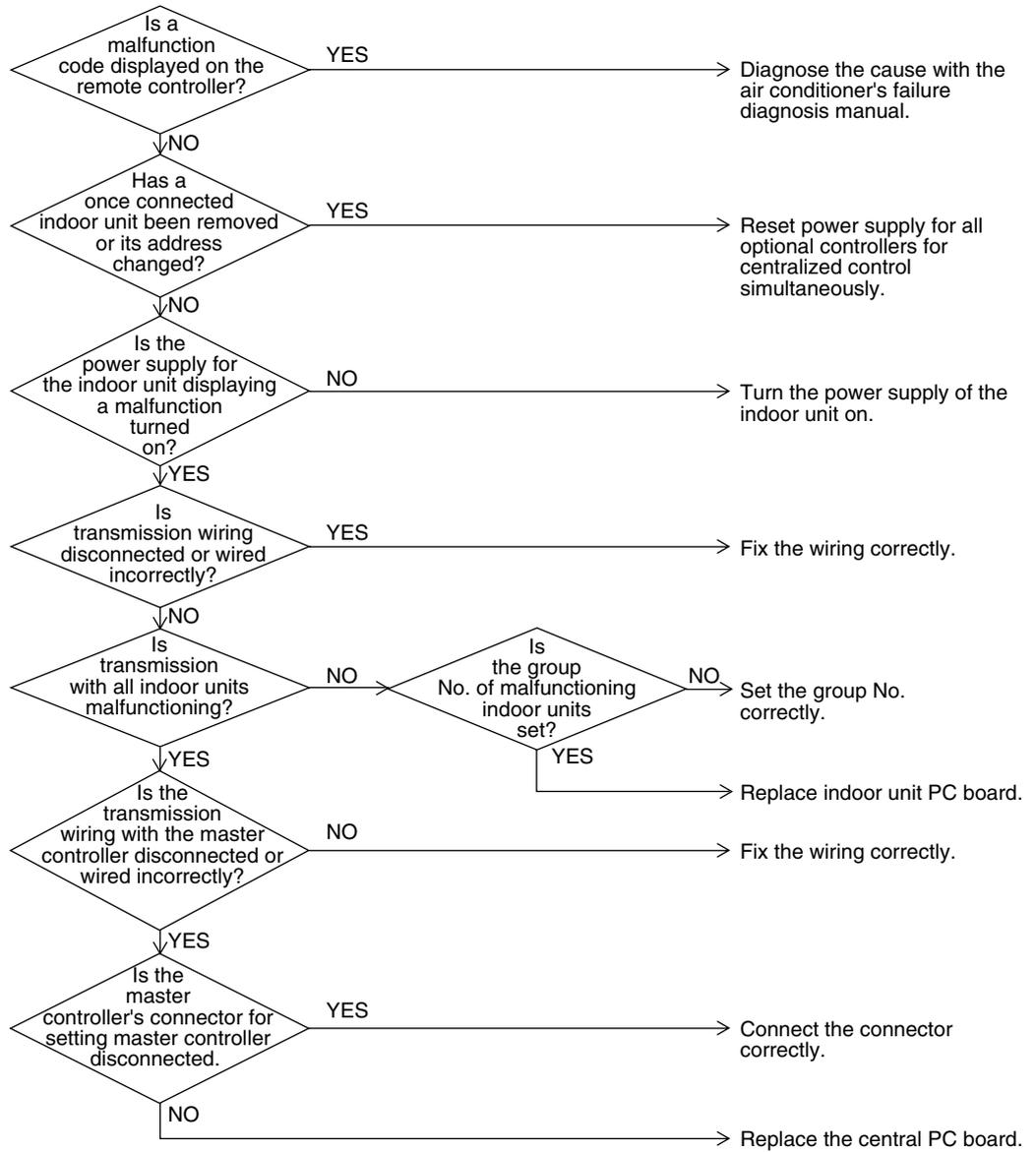
- Malfunction of transmission between optional controller and indoor unit
- Connector for setting master controller is disconnected
- Defect of unified ON/OFF controller
- Defect of indoor unit PC board
- Malfunction of air conditioner

Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



5.2 Display “Under Host Computer Integrate Control” Blinks (Repeats Single Blink)

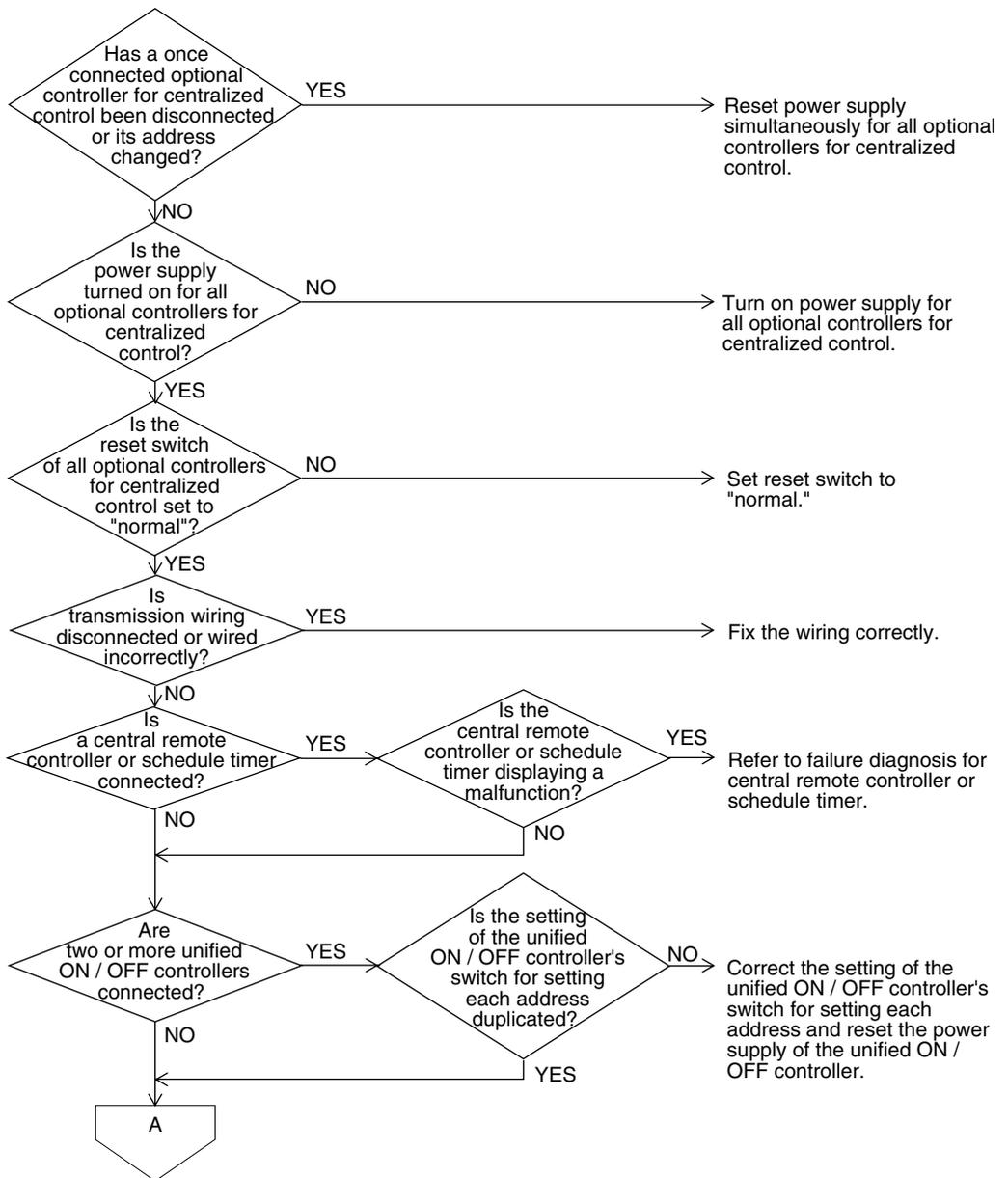
Remote Controller Display	“under host computer integrated control” (Repeats single blink)
Applicable Models	Unified ON/OFF controller Central remote controller, Schedule timer
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When the centralized controller, which was connected once, shows no response. The control ranges are overlapped. When multiple master central controller are present. When the schedule timer is set to individual use mode, other central controller is present. When the wiring adaptor for electrical appendices is present.
Supposed Causes	<ul style="list-style-type: none"> ■ Address duplication of central remote controller ■ Improper combination of optional controllers for centralized control ■ Connection of more than one master controller ■ Malfunction of transmission between optional controllers for centralized control ■ Defect of PC board of optional controllers for centralized control

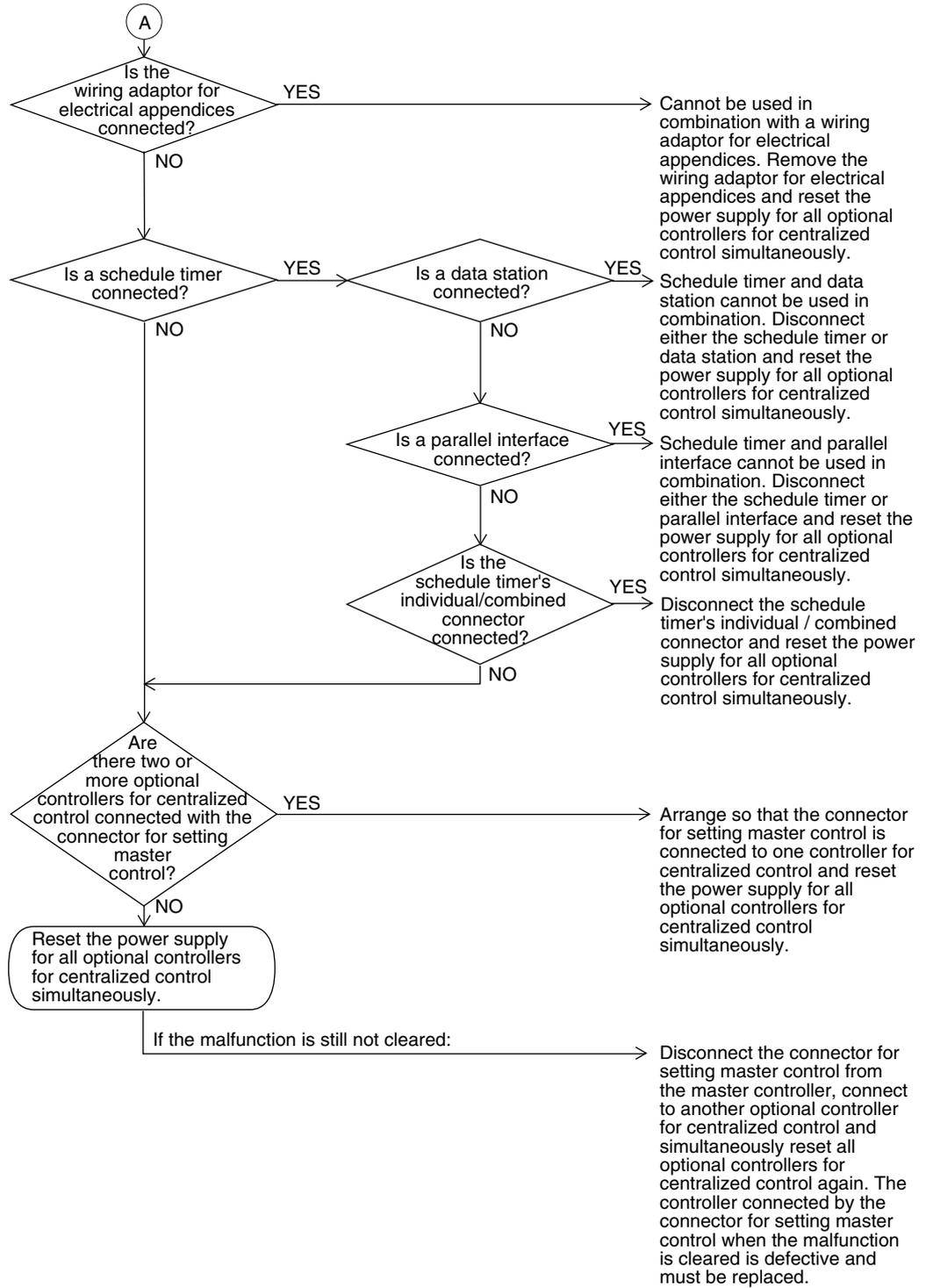
Troubleshooting



Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.





5.3 Display “Under Host Computer Integrate Control” Blinks (Repeats Double Blink)

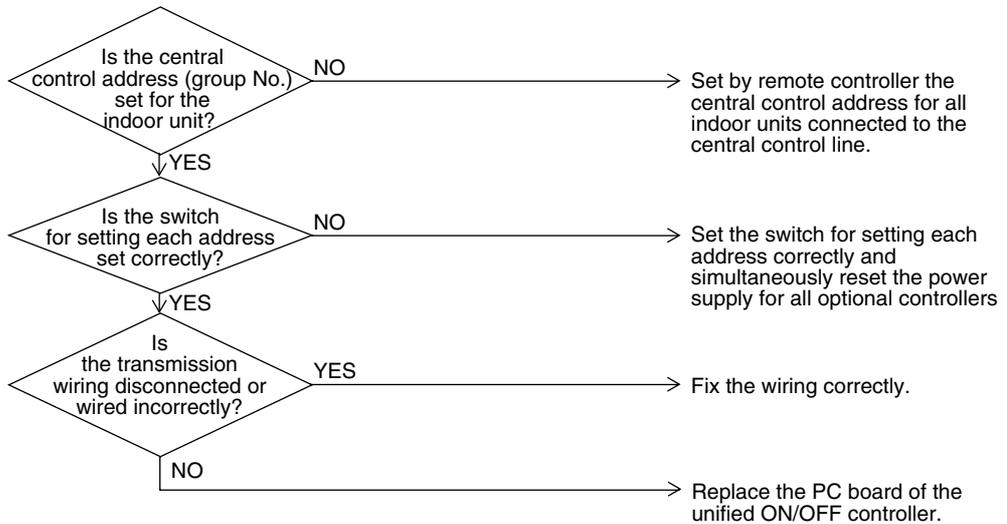
Remote Controller Display	“under host computer integrated control” (Repeats double blink)
Applicable Models	Unified ON/OFF controller
Method of Malfunction Detection	Detect the malfunction according to DIII-NET transmission data.
Malfunction Decision Conditions	When no central control addresses are set to indoor units. When no indoor units are connected within the control range.
Supposed Causes	<ul style="list-style-type: none"> ■ Central control address (group No.) is not set for indoor unit. ■ Improper address setting ■ Improper wiring of transmission wiring

Troubleshooting



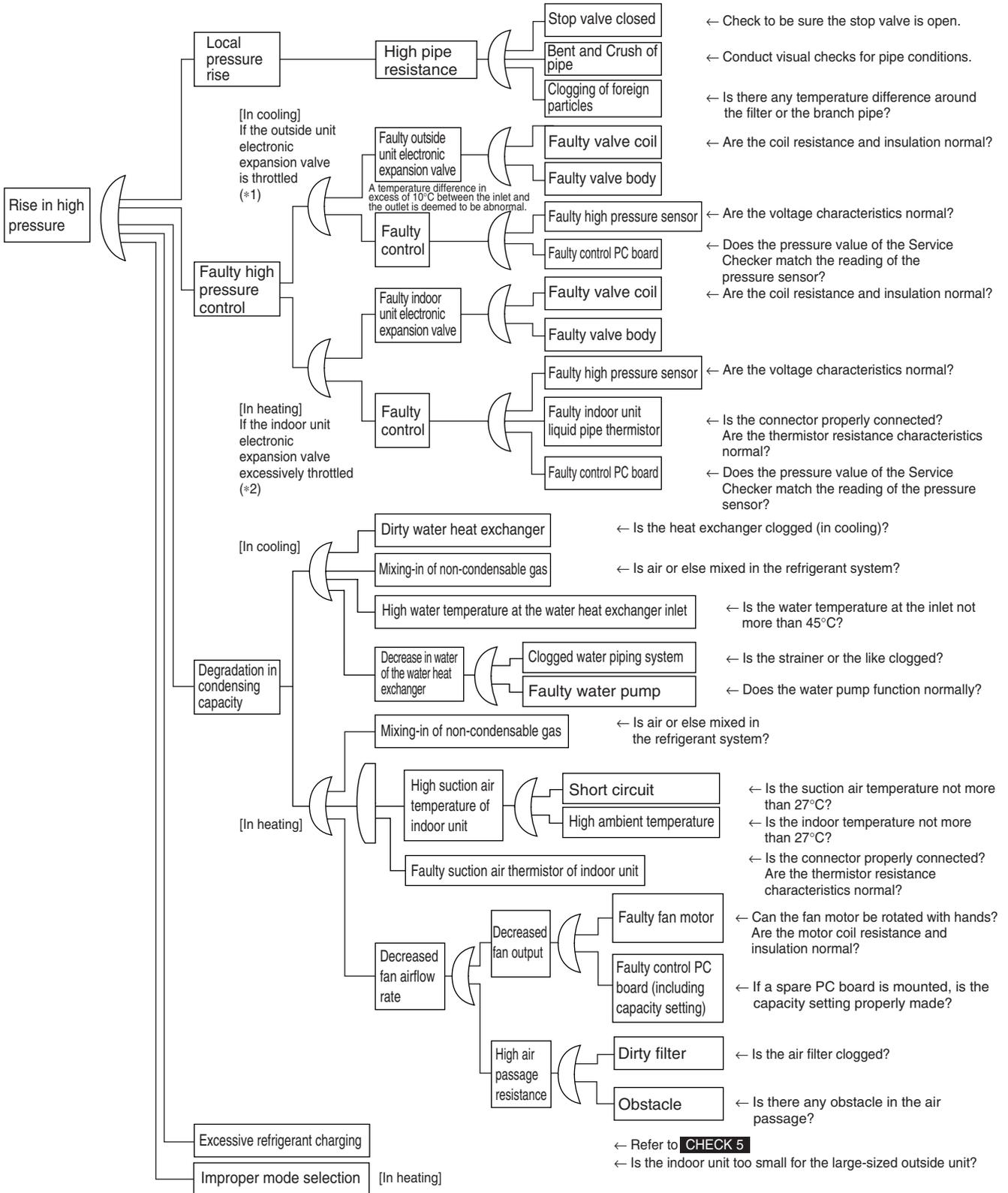
Caution

Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



CHECK 1 Check for causes of rise in high pressure

Referring to the Fault Tree Analysis (FTA) shown below, identify the faulty points.



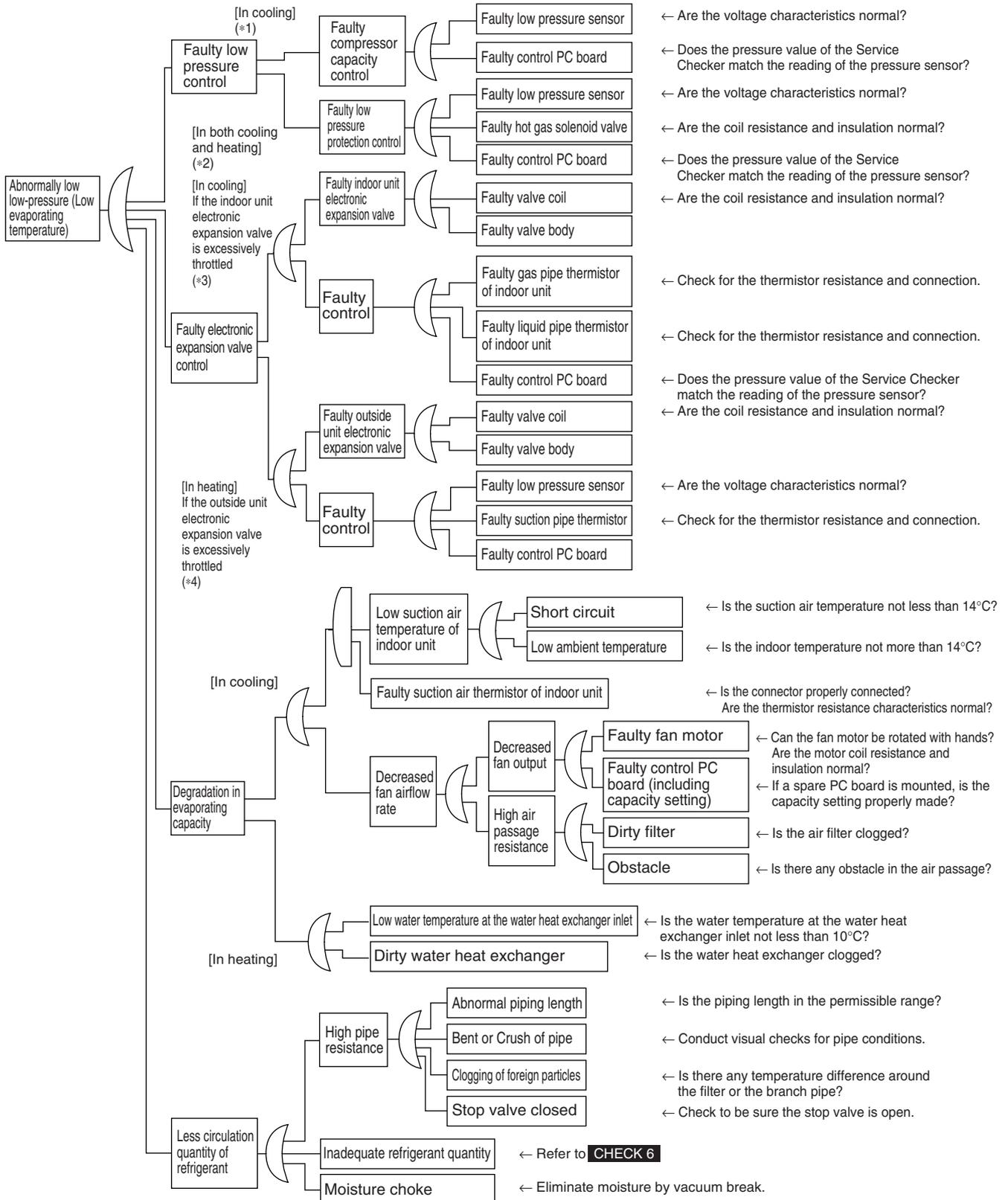
*1 : In cooling, the outside unit electronic expansion valve (Y1E) is fully open in normal condition.

*2 : In heating, the indoor unit electronic expansion valve is used for "subcooled degree control".

(Refer to "Electronic Expansion Valve Control" on page 95)

CHECK 2 Check for causes of drop in low pressure

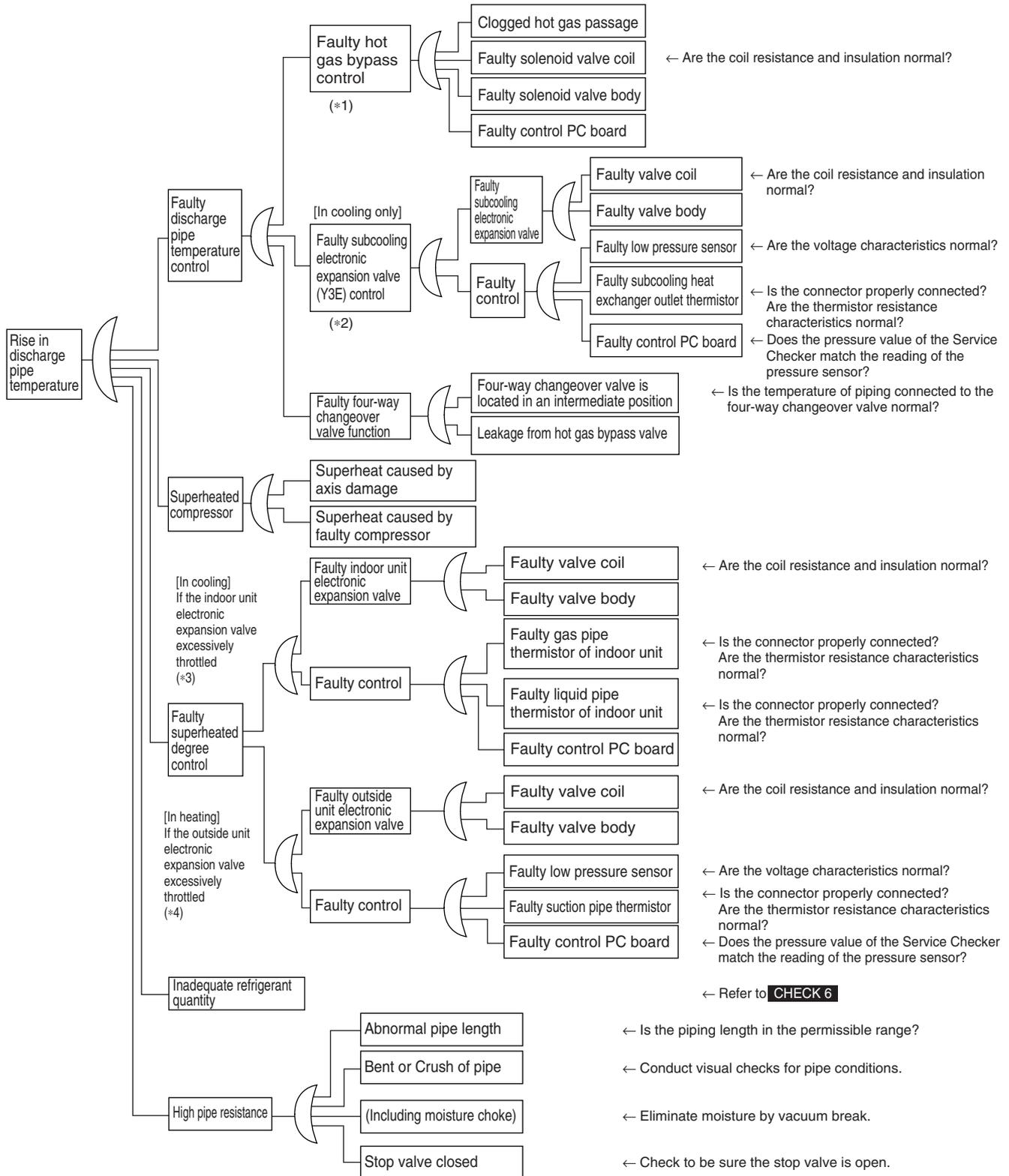
Referring to the Fault Tree Analysis (FTA) shown below, identify the faulty points.



*1 : For details of the compressor capacity control while in cooling, refer to "Compressor Control" on page 71.
 *2 : The "low pressure protection control" includes low pressure drop control and hot gas bypass control. For details, refer to page 77.
 *3 : In cooling, the indoor unit electronic expansion valve is used for "superheated degree control". (For details, refer to page 95.)
 *4 : In heating, the outdoor unit electronic expansion valve (Y1E) is used for "superheated degree control of outside unit heat exchanger". (For details, refer to page 73.)

CHECK 3 Check for causes of overheat operation

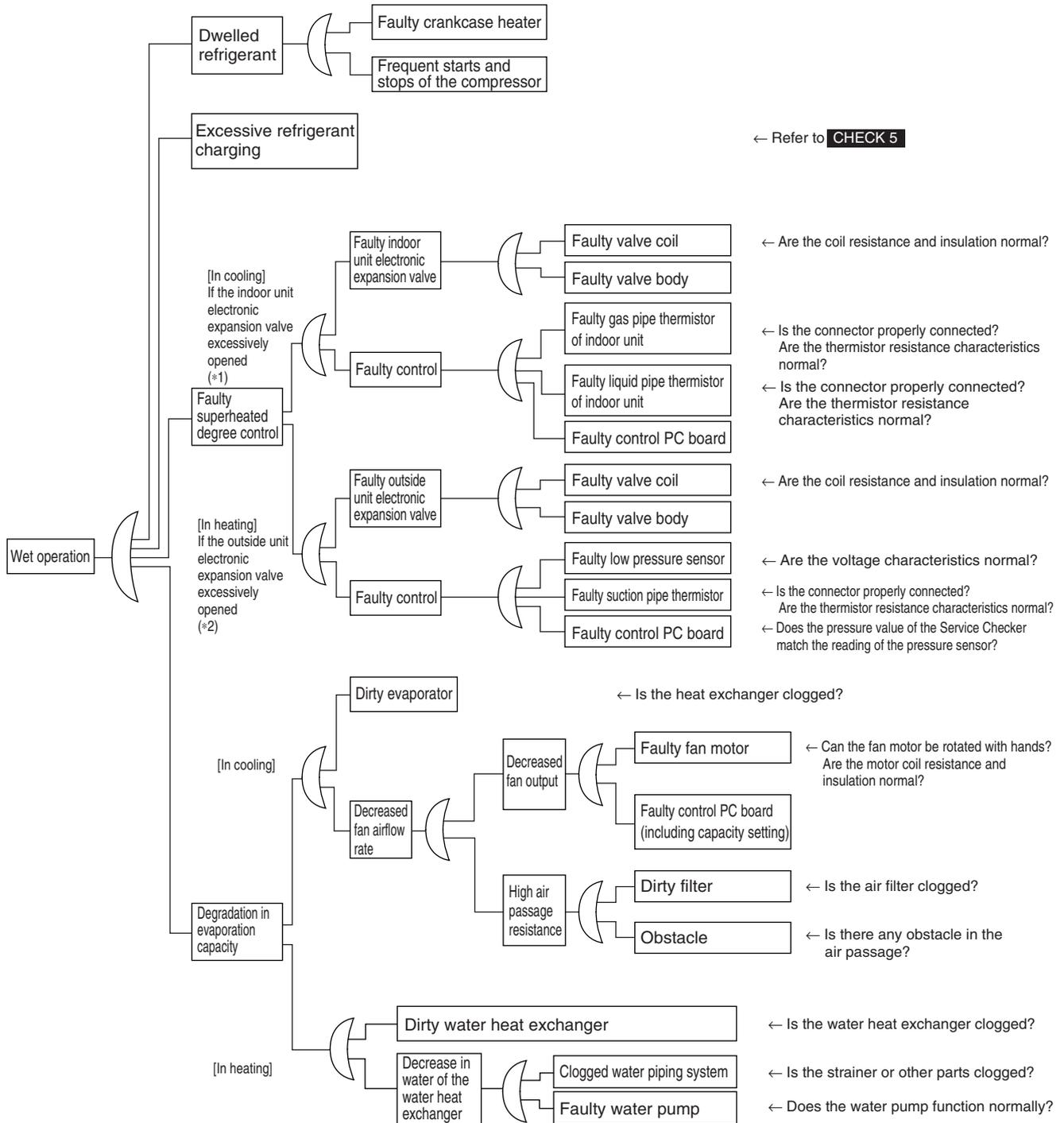
Referring to the Fault Tree Analysis (FTA) shown below, identify the faulty points.



- *1 : For hot gas bypass control, refer to "Low Pressure Protection Control" on page 77.
- *2 : For subcooling electronic expansion valve, refer to page 73.
- *3 : In cooling, the indoor unit electronic expansion valve is used for "superheated degree control". (Refer to page 95.)
- *4 : In heating, the outside unit electronic expansion valve (Y1E) is used for "superheated degree control." (Refer to page 73.)
- *5 : Reference values for superheated degree to be used in the judgment of overheat operation
 - ① Suction gas superheated degree: 10°C or more
 - ② Discharge gas superheated degree: 45°C or more, excluding when it is immediately after startup, under drop control or other specific conditions.
 (The values above must be used only for reference purposes. Even it is operated within the range above, operation may be normal in other conditions.)

CHECK 4 Check for causes of wet operation

Referring to the Fault Tree Analysis (FTA) shown below, identify the faulty points.



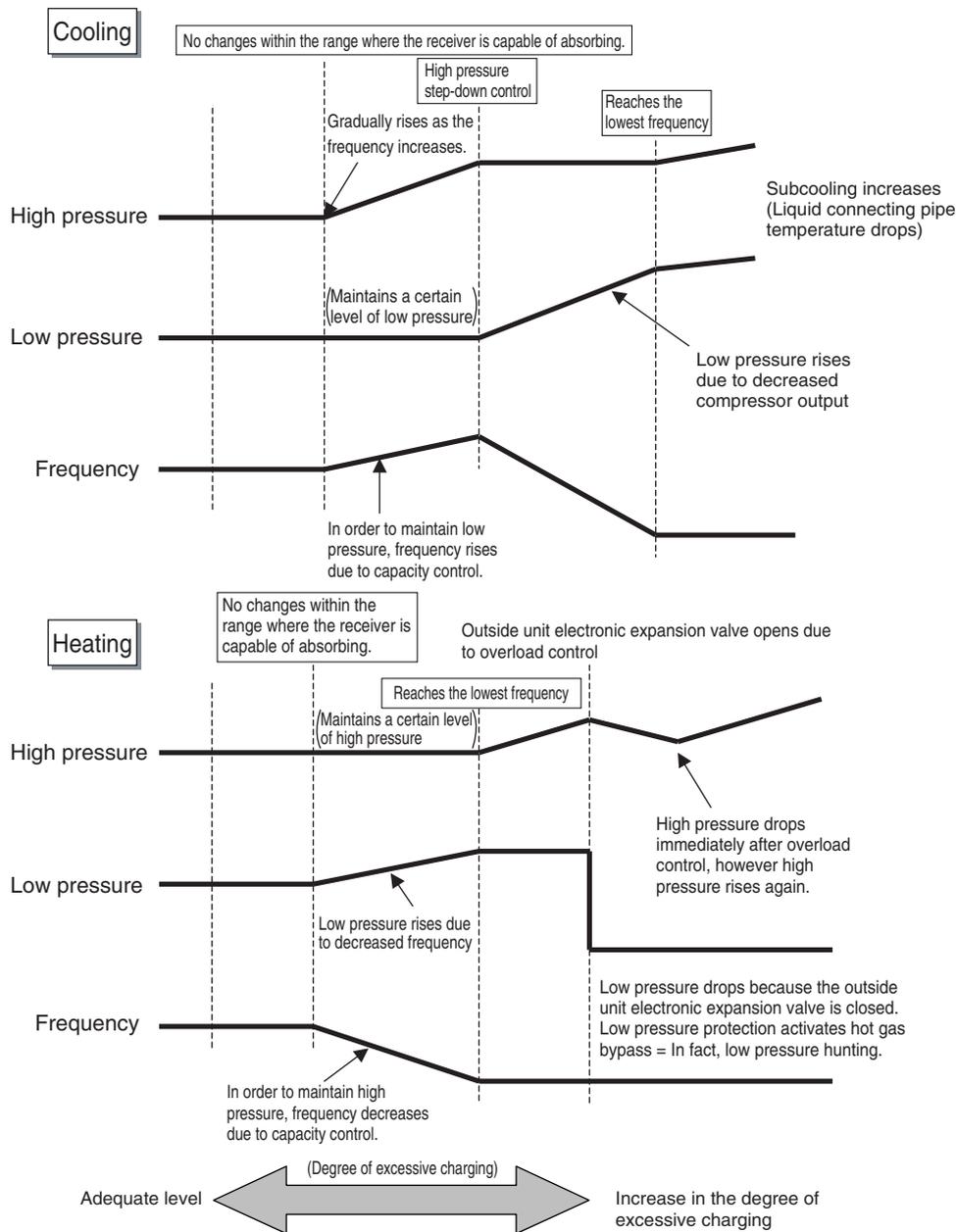
- *1 : In cooling, the indoor unit electronic expansion valve is used for “superheated degree control”. (Refer to page 95.)
- *2 : In heating, the outside unit electronic expansion valve (Y1E) is used for “superheated degree control”. (Refer to page 73.)
- *3 : Reference values for superheated degree to be used in the judgment of wet operation
 - ① Suction gas superheated degree: 3°C or less
 - ② Discharge gas superheated degree: 15°C or less, excluding when it is immediately after startup, under drop control or other specific conditions.
 (The values above must be used only for reference purposes. Even it is operated within the range above, operation may be normal in other conditions.)

CHECK 5 Check for excessive refrigerant charging

In case of the VRV, judgment must be made based on operation conditions in relation to pressure control and electronic expansion valve control. Refer to the following criteria to make such decisions.

Diagnosis of excessive refrigerant charging

- (1) Since high pressure rises, overload control is carried out and therefore capacity tends to be insufficient.
- (2) Since superheated degree of suction gas decreases (or it starts wet operation), the temperature of the compressor discharge pipe drops too much for pressure applied.
- (3) Since the subcooling degree of condensate liquid increases, the temperature of air blown through subcooled part decreases in heating.

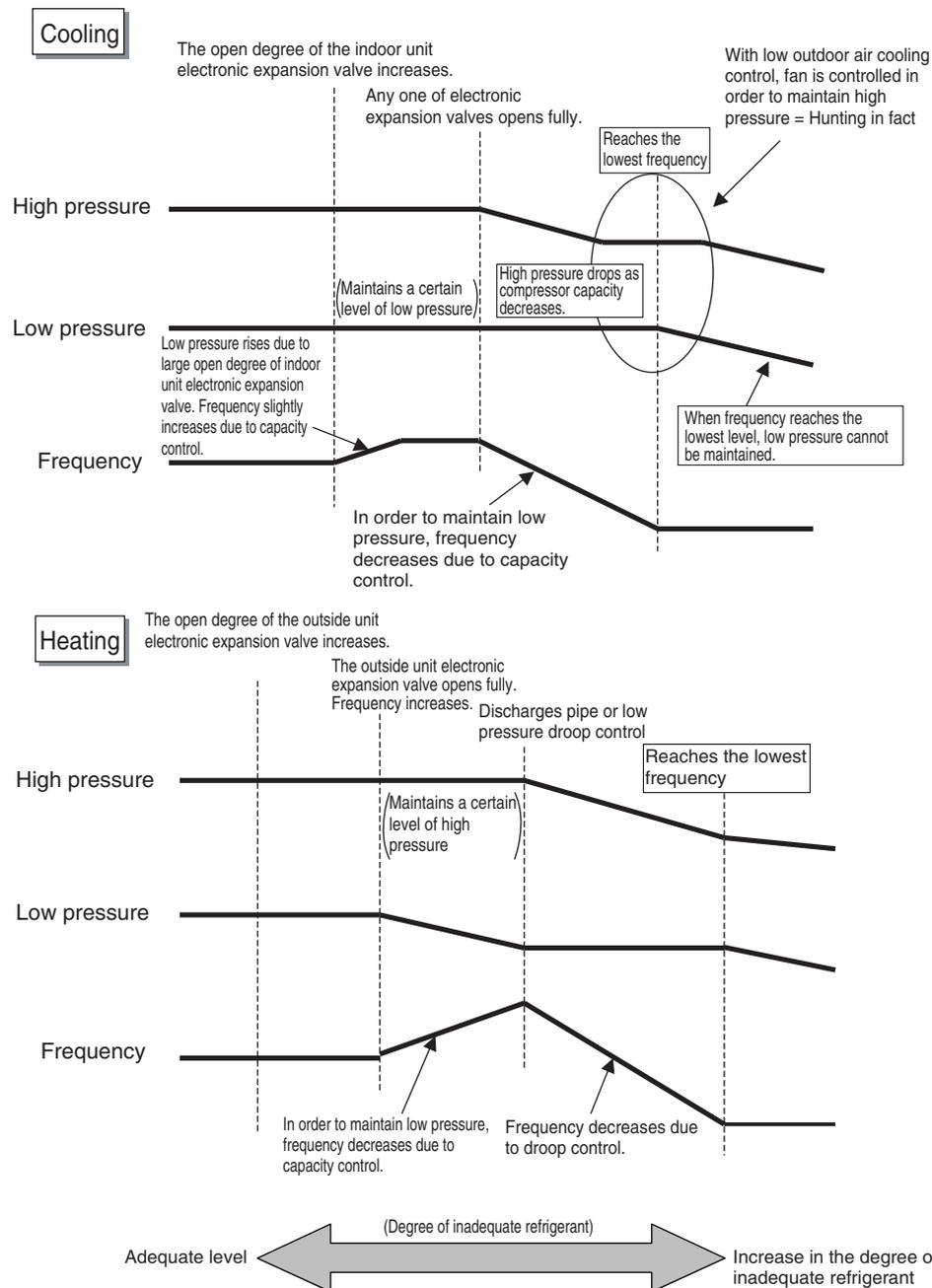


CHECK 6 Check for inadequate refrigerant quantity

In case of the VRV, judgment must be made based on operation conditions in relation to pressure control and electronic expansion valve control. Refer to the following criteria to make such decisions.

Diagnosis of inadequate refrigerant

- (1) The superheated degree of suction gas increases and temperature of compressor discharge gas rises.
- (2) The superheated degree of suction gas increases and the electronic expansion valve slightly opens.
- (3) With low pressure, cooling capacity (heating capacity) is unavailable.



Part 7

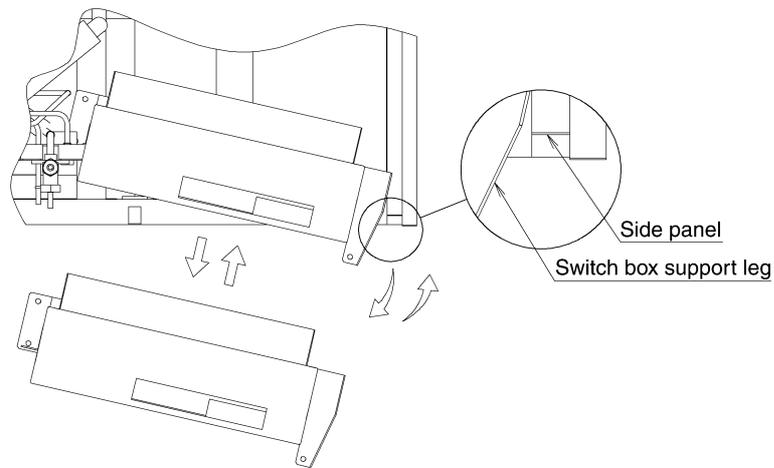
Procedure for Mounting / Dismounting of Switch Box

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1. Procedure for Mounting / Dismounting of Switch Box

1.1 Procedure for Dismounting

1. Dismount the lid from the switch box.
2. Disconnect high voltage and low voltage wirings from the PC board and the terminal blocks, referring to Figure on the right.
3. Unscrew mounting screws from the top plate, the stop valve mounting plate, and the bottom frame in a total of 6 places.
4. With attention paid not to make the switch box support leg into contact with the side panel, rotate the switch box to pull out it, while referring to Figure on the right.
In order to pull out the switch box, check to be sure no wirings get stuck with the switch box.

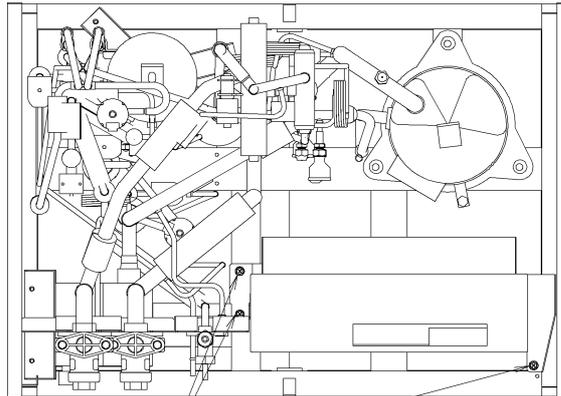


Procedure for Mounting/Dismounting of Switch Box

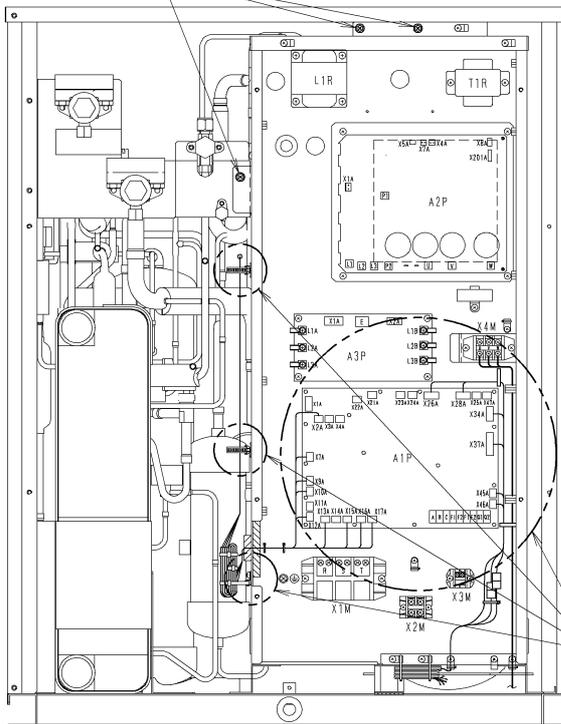
1.2 Procedure for Mounting

- Mount the switch box, following the procedure for dismounting in reverse.
After the completion of mounting, check to be sure connectors are all properly connected.

List of Detachable Connectors				
High voltage wiring	A1P	X7A	White (WHT)	Y1S
		X9A	Blue (BLU)	Y3S
		X10A	Pink (PNK)	Y4S
		X12A	Gray (GRY)	Y6S
		X2A	Red (RED)	S1PH
		X17A	Gray (GRY)	E1HC
		X13A	Green (GRN)	Y2S
		X15A	Blue (BLU)	Y5S
		X16A	Black (BLK)	Y7S
	X4M	U, V, W	M1C	
Low voltage wiring	A1P	X34A	Red (RED)	R3T
		X37A	White (WHT)	R2T
		X37A	White (WHT)	R4T
		X37A	White (WHT)	R5T
		X37A	White (WHT)	R6T
		X46A	Red (RED)	S1NPH
		X45A	Blue (BLU)	S1NPL
		X26A	White (WHT)*	Y1E
		X28A	Blue (BLU)*	Y3E
		* Attach or detach any connector at the relay connector.		



Screw/Unscrew the mounting screws.



Connect/Disconnect the wirings.

Part 8

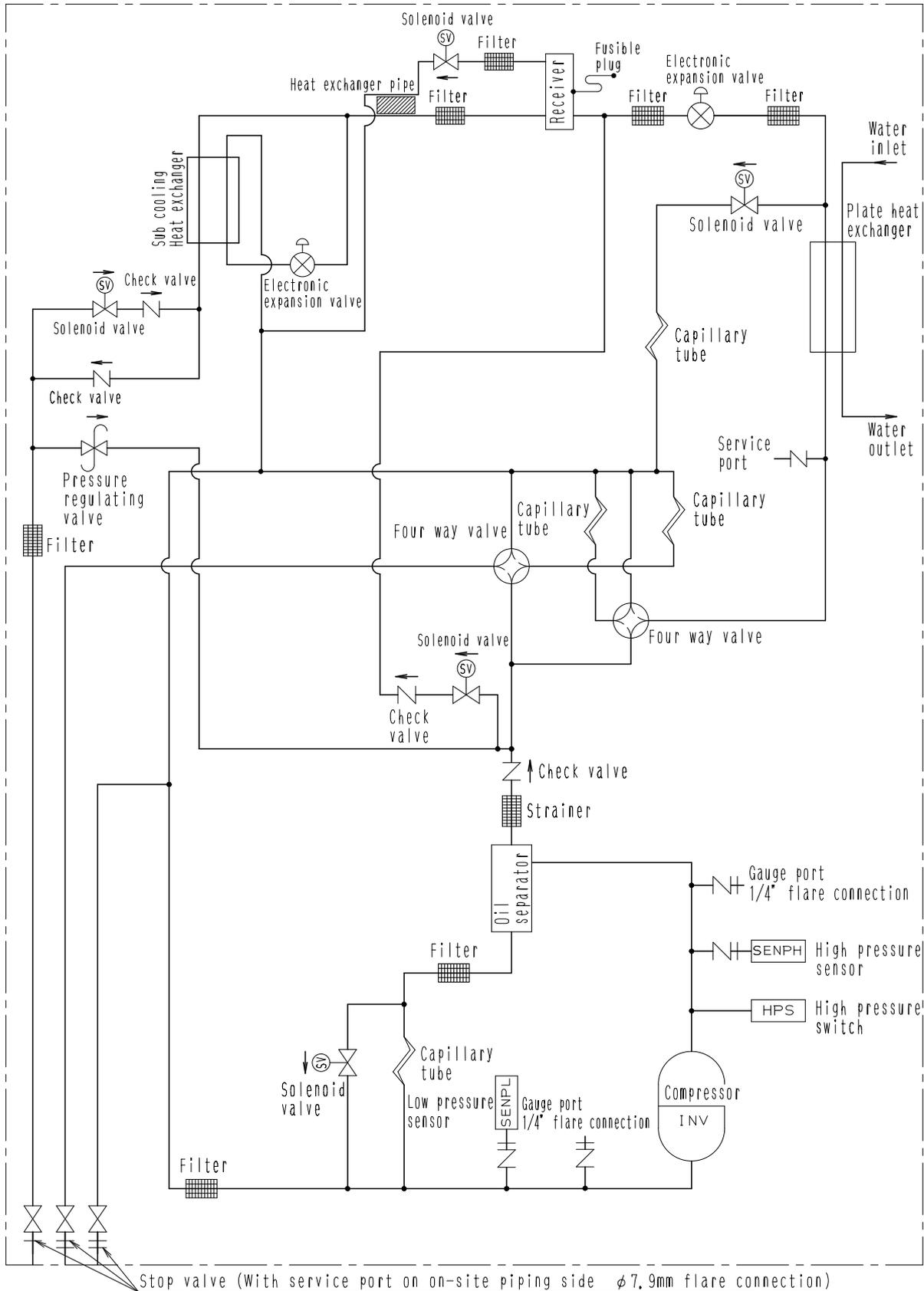
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1. Piping Diagrams

1.1 Outside Units

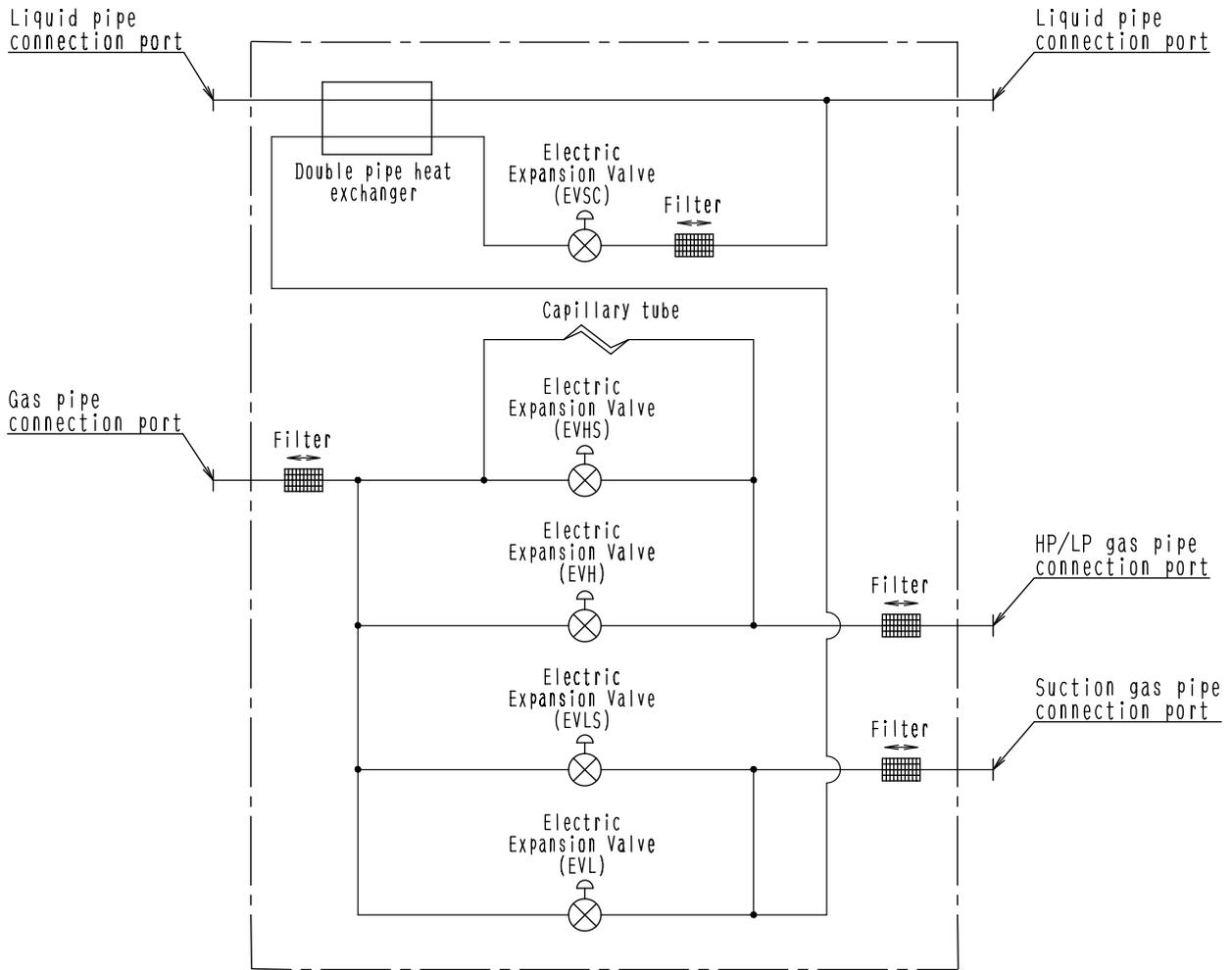
RWEYQ8P, 10P



4D048290C

1.2 BS Units

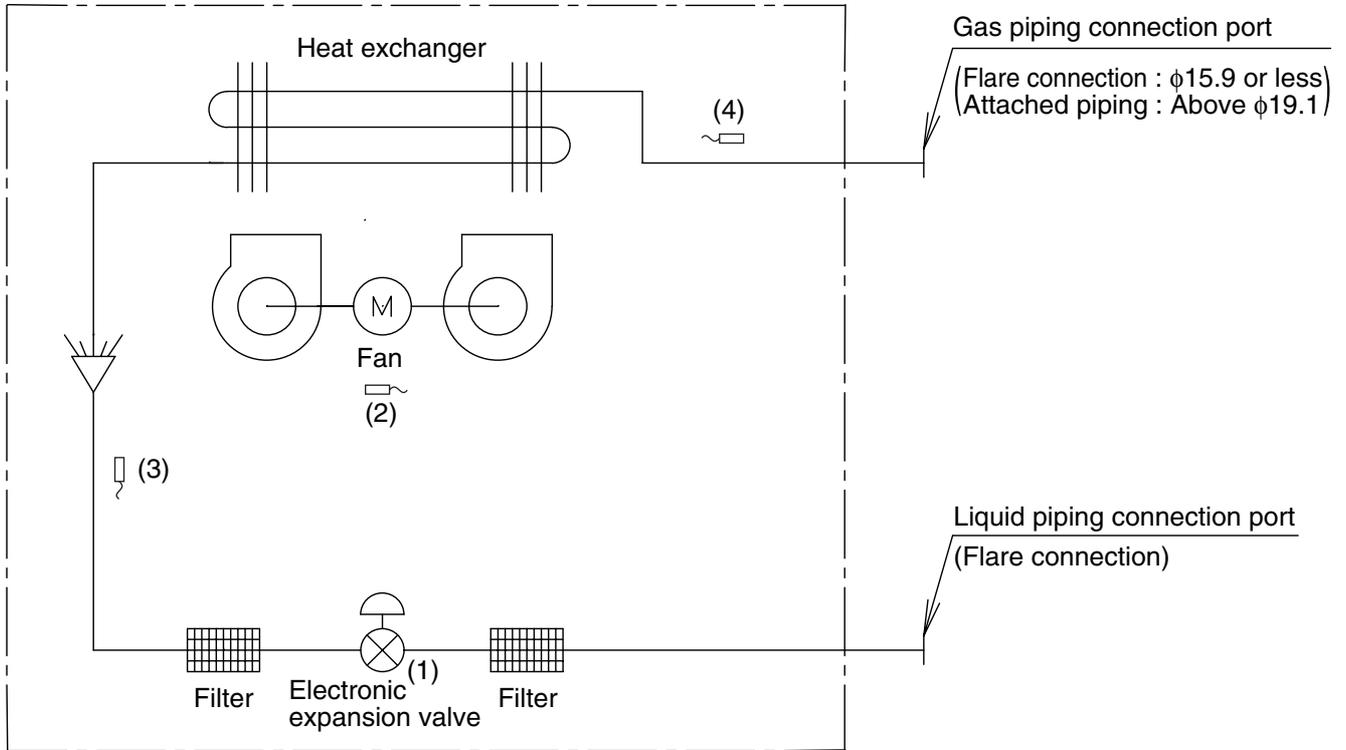
BSVQ100, 160, 250PV1
BSVQ36, 60PVJU



4D057985A

1.3 Indoor Unit

FXFQ, FXCQ, FXKQ, FXSQ, FXMQ, FXHQ, FXAQ, FXLQ, FXNQ



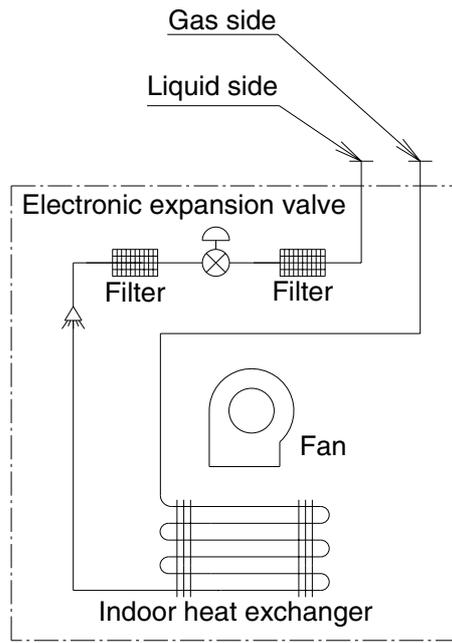
DU220-602J

Code	Name	Code	Main function
(1)	Electronic expansion valve	Y1E	Used for gas superheated degree control while in cooling operation or subcooled degree control while in heating operation.
(2)	Suction air temperature thermistor	R1T	Used for thermostat control.
(3)	Liquid pipe	R2T	Used for gas superheated degree control while in cooling operation or subcooled degree control while in heating operation.
(4)	Gas pipe	R3T	Used for gas superheated degree control while in cooling operation.

(mm)

Capacity	Gas	Liquid
20 / 25 / 32 / 40 / 50M(A)	$\phi 12.7$	$\phi 6.4$
63 / 80 / 100 / 125M(A)	$\phi 15.9$	$\phi 9.5$
200M(A)	$\phi 19.1$	$\phi 9.5$
250M(A)	$\phi 22.2$	$\phi 9.5$

FXDQ

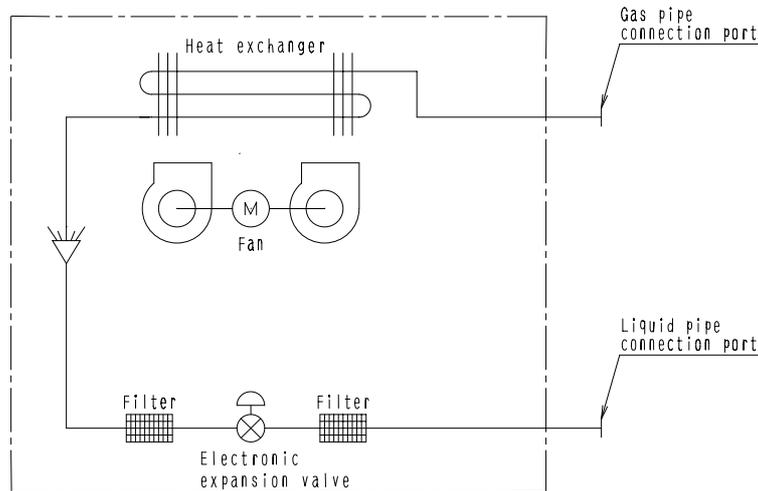


4D060927

■ Refrigerant pipe connection port diameters

Model	(mm)	
	Gas	Liquid
FXDQ20PB / 25PB / 32PB / 40NB / 50NBVE(T)	φ12.7	φ6.4
FXDQ63NBVE(T)	φ15.9	φ9.5

FXMQ20P / 25P / 32P / 40P / 50P / 63P / 80P / 100P / 125PVE



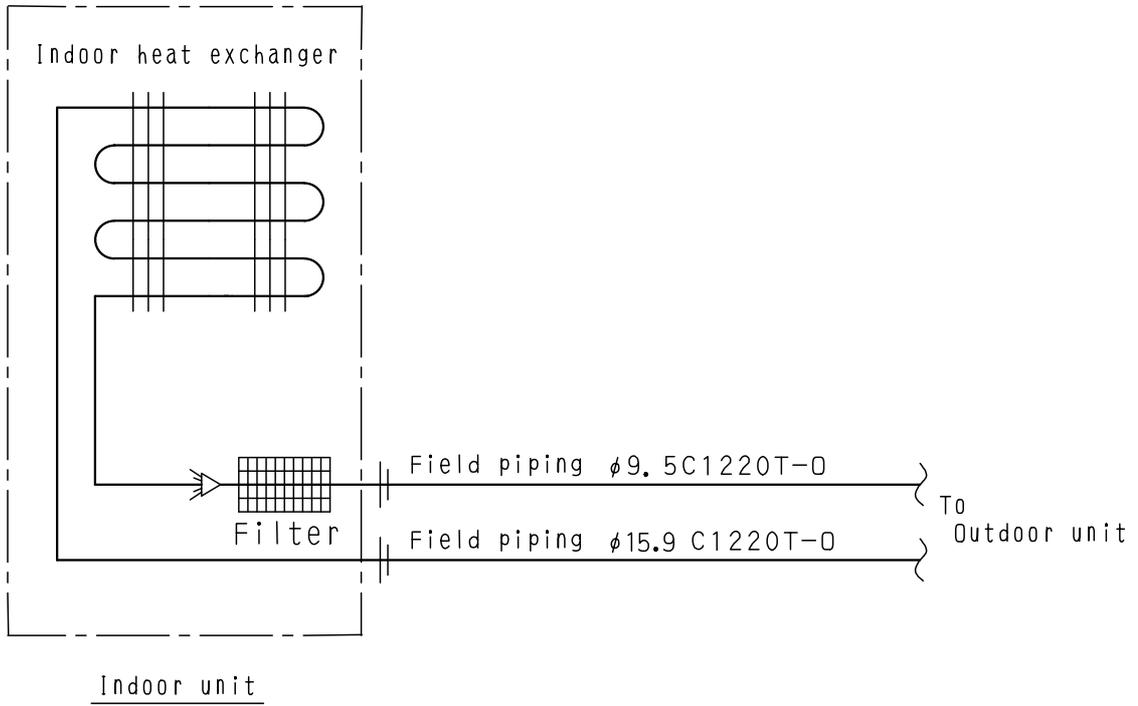
4D034245C

■ Refrigerant pipe connection port diameters

Model	(mm)	
	Gas	Liquid
FXMQ20P / 25P / 32P / 40P / 50PVE	φ12.7	φ6.4
FXMQ63P / 80P / 100P / 125PVE	φ15.9	φ9.5

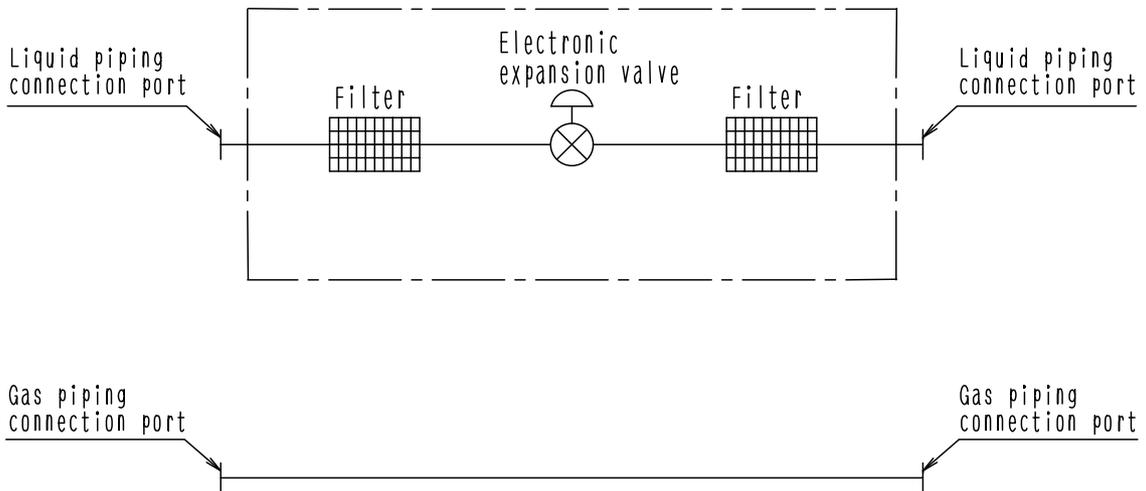
FXUQ + BEVQ

Indoor unit



4D037995H

Connection Unit

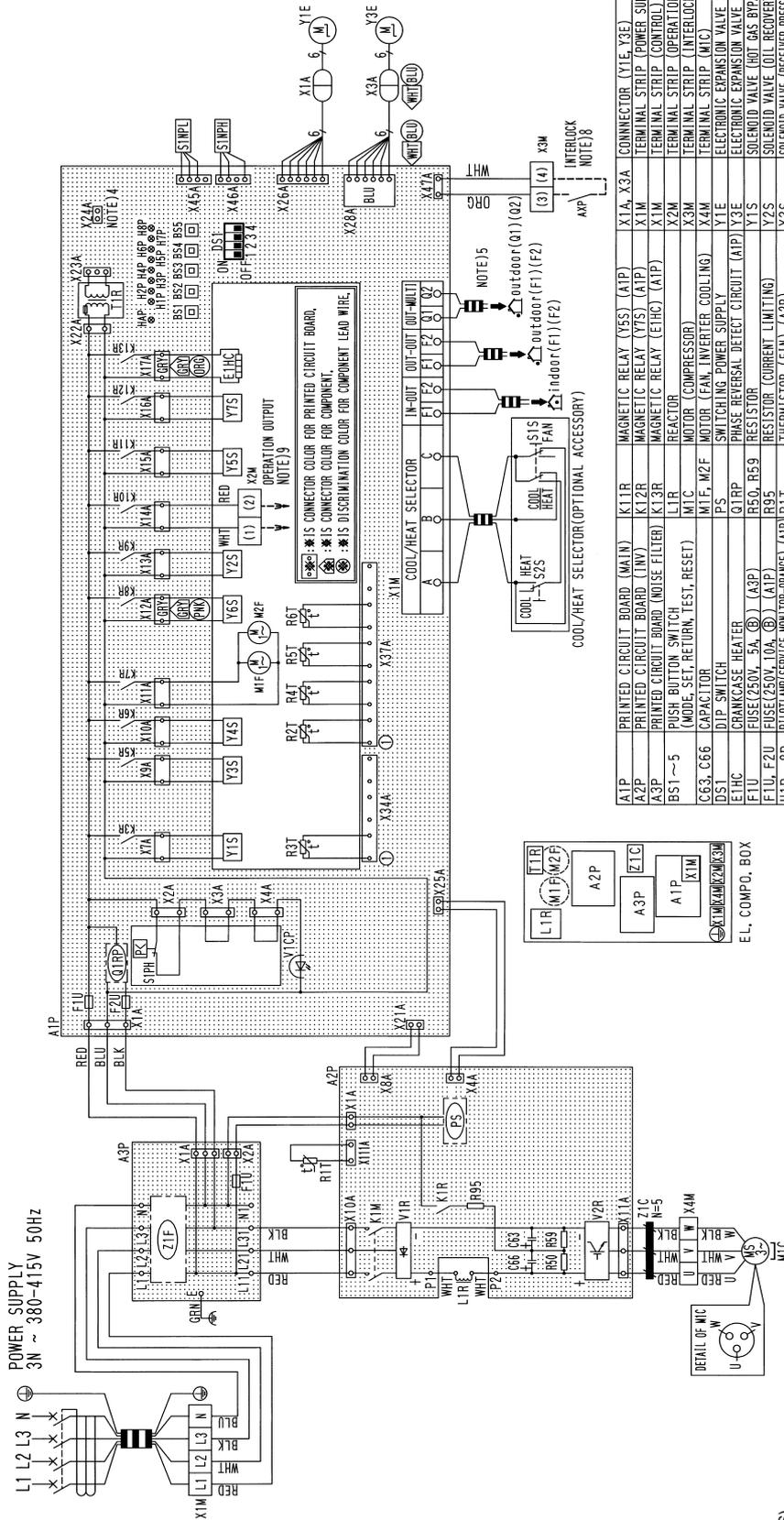


4D034127B

2. Wiring Diagrams

2.1 Outside Unit

RWEYQ8PY1, 10PY1

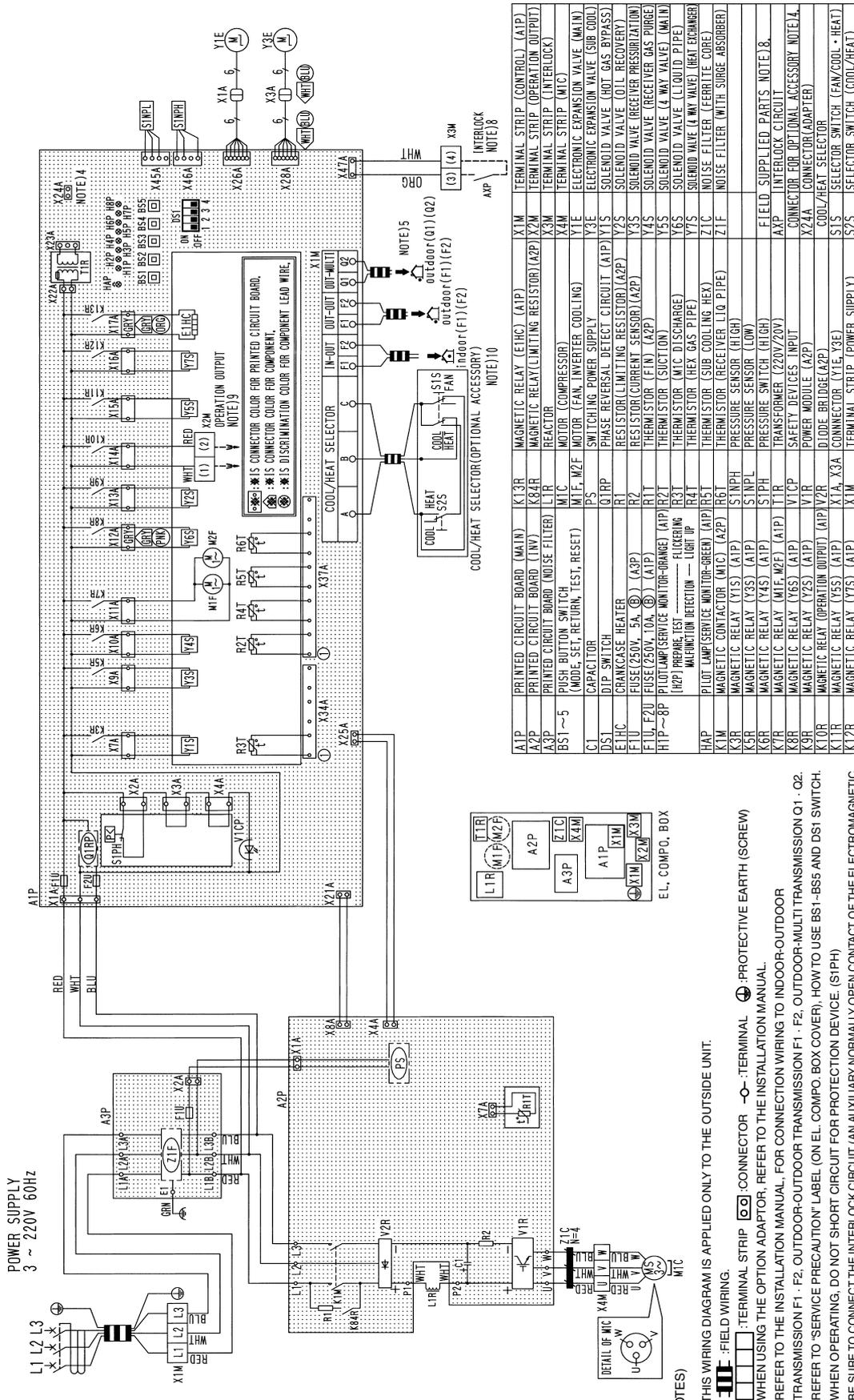


- NOTES)
1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTDOOR UNIT.
 2. [Symbol] - FIELD WIRING.
 3. [Symbol] - TERMINAL STRIP [Symbol] - CONNECTOR [Symbol] - TERMINAL [Symbol] - PROTECTIVE EARTH (SCREW)
 4. WHEN USING THE OPTION ADAPTOR, REFER TO THE INSTALLATION MANUAL.
 5. REFER TO THE INSTALLATION MANUAL, FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 - F2, OUTDOOR-OUTDOOR TRANSMISSION Q1 - Q2.
 6. REFER TO "SERVICE PRECAUTION" LABEL (ON EL. COMPO. BOX COVER), HOW TO USE BS1-B55 AND DS1 SWITCH.
 7. WHEN OPERATING, DON'T SHORT CIRCUIT FOR PROTECTION DEVICE. (S1PH)
 8. BE SURE TO CONNECT THE INTERLOCK CIRCUIT (AN AUXILIARY NORMALLY OPEN CONTACT OF THE ELECTROMAGNETIC SWITCH FOR THE HEAT SOURCE WATER PUMP) TO TERMINALS (3) AND (4) OF THE TERMINAL BLOCK (X3M). (MAKE SURE THAT THE AUXILIARY NORMALLY OPEN CONTACT CAN SWITCH A MINIMUM LOAD OF 1 MA AT 15 VDC.)
 9. INSTALL A HEAT SOURCE WATER PUMP OPERATION CIRCUIT BETWEEN THE TERMINAL (1)-(2) OF TERMINAL STRIP (X2M), WHEN INTERLOCKING A HEAT SOURCE WATER PUMP AND SYSTEM OPERATION. (OPERATION POWER WILL OUTPUT FROM THE HEAT SOURCE WATER PUMP WHEN THE OPERATION DISPLAY APPEARS ON THE INDOOR REMOTE CONTROLLER.)
 10. COOL/HEAT SELECTOR CANNOT BE CONNECTED WHEN OPERATING HEAT RECOVERY SYSTEM.
 11. COLORS BLK:BLACK RED:RED BLU:BLUE WHT:WHITE PNK:PINK GRY:GRAY ORG:ORANGE.

A1P	PRINTED CIRCUIT BOARD (MAIN)	K11R	MAGNETIC RELAY (Y5S) (A1P)	X1A, X3A	CONNECTOR (Y1E, Y3E)
A2P	PRINTED CIRCUIT BOARD (INV)	K12R	MAGNETIC RELAY (Y7S) (A1P)	X1M	TERMINAL STRIP (POWER SUPPLY)
A3P	PRINTED CIRCUIT BOARD (NOISE FILTER)	K13R	MAGNETIC RELAY (E1HC) (A1P)	X1M	TERMINAL STRIP (CONTROL) (A1P)
BS1~5	PUSH BUTTON SWITCH	L1R	REACTOR	X2M	TERMINAL STRIP (OPERATION OUTPUT)
C63, C66	CAPACITOR	M1F, M2F	MOTOR (COMPRESSOR)	X3M	TERMINAL STRIP (INTERLOCK)
DS1	DIP SWITCH	P5	SWITCHING POWER SUPPLY	X4M	TERMINAL STRIP (MTC)
E1HC	CRANKCASE HEATER	Q1RP	PHASE REVERSAL DETECT CIRCUIT (A1P) Y3E	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
F1U, F2U	FUSE (250V, 5A) (A3P)	R50, R59	RESISTOR	Y1S	SOLENOID VALVE (HOT GAS BYPASS)
H1P~8P	PILOT LAMP (SERVICE MONITOR-ORANGE) (A1P)	R93	RESISTOR (CURRENT LIMITING)	Y2S	SOLENOID VALVE (OIL RECOVERY)
HAP	PILOT LAMP (SERVICE MONITOR-GREEN) (A1P)	R11	THERMISTOR (FIN) (A2P)	Y3S	SOLENOID VALVE (RECEIVER PRESSURIZATION)
K1M	MAGNETIC RELAY (Y2S) (A1P)	R21	THERMISTOR (SUCTION)	Y4S	SOLENOID VALVE (RECEIVER GAS PURGE)
K1R	MAGNETIC RELAY (Y1S) (A1P)	R31	THERMISTOR (HEX GAS PIPE)	Y6S	SOLENOID VALVE (LIQUID PIPE)
K1S	MAGNETIC RELAY (Y3S) (A1P)	R41	THERMISTOR (MTC DISCHARGE)	Y7S	SOLENOID VALVE (4 WAY VALVE) (MAIN)
K1T	MAGNETIC RELAY (Y4S) (A1P)	R51	THERMISTOR (SUB COOLING HEX)	Y8S	SOLENOID VALVE (4 WAY VALVE) (HEAT EXCHANGER)
K1U	MAGNETIC RELAY (Y5S) (A1P)	R61	THERMISTOR (RECEIVER LIQ PIPE)	Z1C	SOLENOID VALVE (LIQUID PIPE)
K1V	MAGNETIC RELAY (Y6S) (A1P)	S1NH	PRESSURE SENSOR (LOW)	Z1F	NOISE FILTER (FERRITE CORE)
K1W	MAGNETIC RELAY (Y7S) (A1P)	S1PH	PRESSURE SENSOR (HIGH)		
K1X	MAGNETIC RELAY (M1F, M2F) (A1P)	T1R	TRANSFORMER (220-240V/20V)		
K1Y	MAGNETIC RELAY (Y5S) (A1P)	V1CP	SAFETY RELAY (C/S INPUT)		
K1Z	MAGNETIC RELAY (Y2S) (A1P)	V1R	DIODE BRIDGE (A2P)		
K1O	MAGNETIC RELAY (OPERATION OUTPUT) (A1P)	V2R	POWER MODULE (A2P)		
					COOL/HEAT SELECTOR
					SELECTOR SWITCH (FAN/COOL - HEAT)
					SELECTOR SWITCH (COOL/HEAT)

C: 3D061377B

RWEYQ10PTL



A1P	PRINTED CIRCUIT BOARD (MAIN)	K1, K3R	MAGNETIC RELAY (ETHC) (A1P)	X1M	TERMINAL STRIP (CONTROL) (A1P)
A2P	PRINTED CIRCUIT BOARD (INV)	K8, K4R	MAGNETIC RELAY (LIMITING RESISTOR) (A2P)	X2M	TERMINAL STRIP (OPERATION OUTPUT)
A3P	PRINTED CIRCUIT BOARD (NOISE FILTER)	L1R	REACTOR	X3M	TERMINAL STRIP (INTERLOCK)
BS1~5	PUSH BUTTON SWITCH (MODE, SET, RETURN, TEST, RESET)	M1C	MOTOR (COMPRESSOR)	X4M	TERMINAL STRIP (MTC)
C1	CAPACITOR	M1F, M2F	MOTOR (FAN, INVERTER COOLING)	Y1E	ELECTRONIC EXPANSION VALVE (MAIN)
DS1	DIP SWITCH	O1RP	PHASE REVERSAL DETECT CIRCUIT (A1P)	Y3E	ELECTRONIC EXPANSION VALVE (SUB COOL)
ETHC	CRANKCASE HEATER	R1	RESISTOR (LIMITING RESISTOR) (A2P)	Y3S	SOLENOID VALVE (HOT GAS BYPASS)
F1U	FUSE (250V, 5A) (A3P)	R2	RESISTOR (LIMITING RESISTOR) (A2P)	Y3S	SOLENOID VALVE (OIL RECOVERY)
F2U	FUSE (250V, 10A) (A1P)	R11	THERMISTOR (FAN) (A2P)	Y4S	SOLENOID VALVE (RECEIVER PRESSURIZATION)
H1P~8P	PILOT LAMP (SERVICE MONITOR-ORANGE) (A1P)	R21	THERMISTOR (SUCTION)	Y5S	SOLENOID VALVE (4 WAY VALVE) (MAIN)
		R31	THERMISTOR (MTC DISCHARGE)	Y6S	SOLENOID VALVE (LIQUID PIPE)
		R41	THERMISTOR (HEX GAS PIPE)	Y7S	SOLENOID VALVE (4 WAY VALVE) (HEAT EXCHANGER)
		R51	THERMISTOR (SUB COOLING HEX)	Z1C	NOISE FILTER (FERRITE CORE)
		R61	THERMISTOR (RECEIVER LIQ PIPE)	Z1F	NOISE FILTER (WITH SURGE ABSORBER)
K1M	MAGNETIC CONTACTOR (MTC) (A2P)	S1PH	PRESSURE SENSOR (HIGH)		
K3R	MAGNETIC RELAY (Y3S) (A1P)	S1PL	PRESSURE SENSOR (LOW)		
K6R	MAGNETIC RELAY (Y4S) (A1P)	STPH	TRANSFORMER (220V/20V)		
K8R	MAGNETIC RELAY (M1F, M2F) (A1P)	V1R	SAFETY DEVICES INPUT		
K9R	MAGNETIC RELAY (Y6S) (A1P)	V1P	POWER MODULE (A2P)		
K10R	MAGNETIC RELAY (OPERATION OUTPUT) (A1P)	V2R	DIODE BRIDGE (A2P)		
K11R	MAGNETIC RELAY (Y5S) (A1P)	X1A, X3A	CONNECTOR (11E, 13E)	S1S	SELECTOR SWITCH (FAN/COOL + HEAT)
K12R	MAGNETIC RELAY (Y5S) (A1P)	X1M	TERMINAL STRIP (POWER SUPPLY)	S2S	SELECTOR SWITCH (COOL/HEAT)

NOTES

1. THIS WIRING DIAGRAM IS APPLIED ONLY TO THE OUTSIDE UNIT.
2. [Symbol] : FIELD WIRING.
3. [Symbol] : TERMINAL STRIP [Symbol] : CONNECTOR [Symbol] : PROTECTIVE EARTH (SCREW)
4. WHEN USING THE OPTION ADAPTOR, REFER TO THE INSTALLATION MANUAL.
5. REFER TO THE INSTALLATION MANUAL FOR CONNECTION WIRING TO INDOOR-OUTDOOR TRANSMISSION F1 · F2, OUTDOOR-OUTDOOR TRANSMISSION Q1 · Q2.
6. REFER TO 'SERVICE PRECAUTION' LABEL (ON EL. COMPO. BOX COVER), HOW TO USE BS1~BS5 AND DS1 SWITCH.
7. WHEN OPERATING, DO NOT SHORT CIRCUIT FOR PROTECTION DEVICE. (S1PH)
8. BE SURE TO CONNECT THE INTERLOCK CIRCUIT (AN AUXILIARY NORMALLY OPEN CONTACT OF THE ELECTROMAGNETIC SWITCH FOR THE HEAT SOURCE WATER PUMP) TO TERMINALS (9) AND (4) OF THE TERMINAL BLOCK (X3M) (MAKE SURE THAT THE AUXILIARY NORMALLY OPEN CONTACT CAN SWITCH A MINIMUM LOAD OF 1 MA AT 15 VDC.)
9. INSTALL A HEAT SOURCE WATER PUMP OPERATION CIRCUIT BETWEEN THE TERMINAL (1)-(2) OF TERMINAL STRIP (X2M), WHEN INTERLOCKING A HEAT SOURCE WATER PUMP AND SYSTEM OPERATION.
10. OPERATION POWER WILL OUTPUT FROM THE HEAT SOURCE WATER PUMP WHEN THE OPERATION DISPLAY APPEARS ON THE INDOOR REMOTE CONTROLLER.)
11. COLORS BLK:BLACK RED:RED BLU:BLUE WHT:WHITE PNK:PINK GRY:GRAY ORG:ORANGE.

3D061376A

2.2 Outside Unit Field Wiring

RWEYQ8PY1 / RWEYQ10PY1 / RWEYQ16PY1 / RWEYQ18PY1 / RWEYQ20PY1 / RWEYQ24PY1
 RWEYQ26PY1 / RWEYQ28PY1 / RWEYQ30PY1
 RWEYQ10PYL / RWEYQ20PYL / RWEYQ30PYL

[Operation System : Heat Pump]

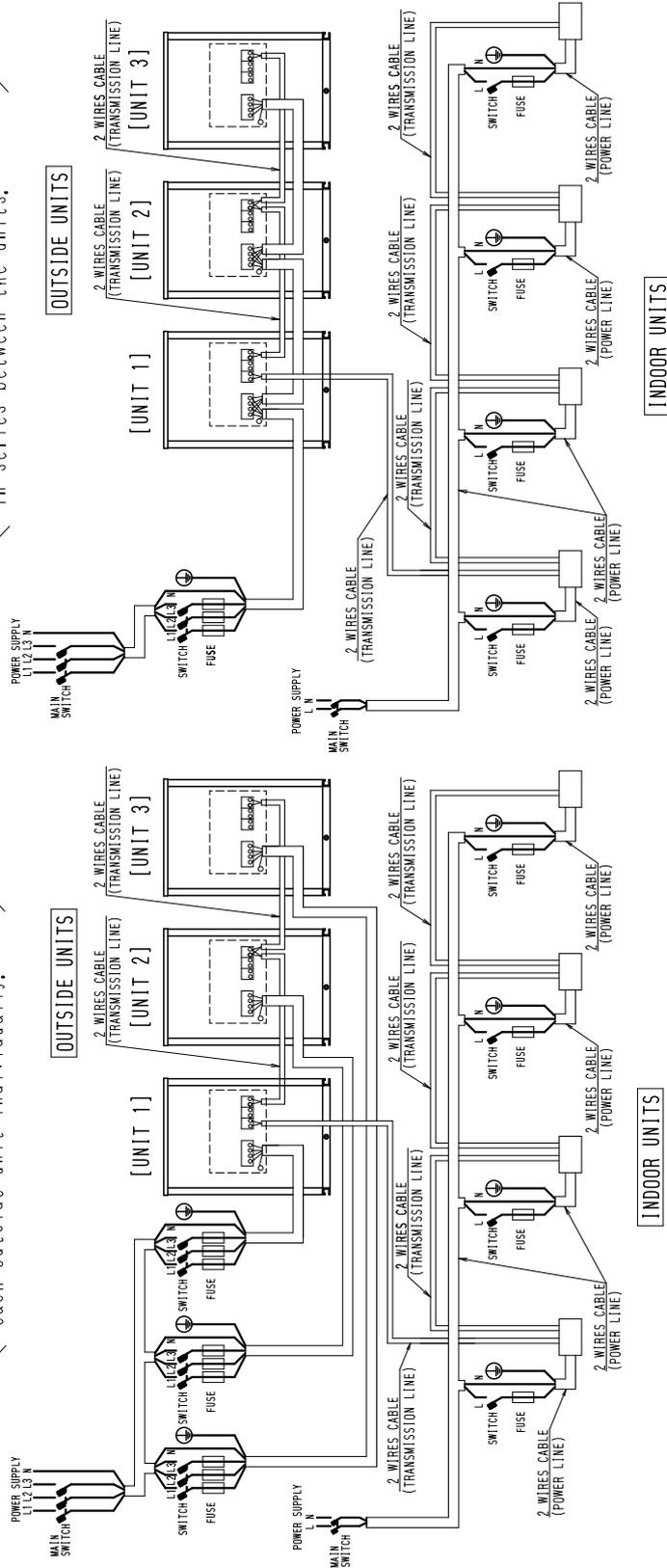
- Notes 1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes, 2) Use copper conductors only, 3) As for details, see wiring diagram, 4) Install circuit breaker for safety, 5) All field wiring and components must be provided by licensed electrician,

- 6) Unit shall be grounded in compliance with the applicable local and national codes, 7) Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation, 8) Be sure to install the switch and the fuse to the power line of each equipment, 9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources, 10) If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.

Running the product in reversed phase may break the compressor and other parts.

When the power source is supplied to each outside unit individually,

When the power source is connected in series between the units,



3D048824D

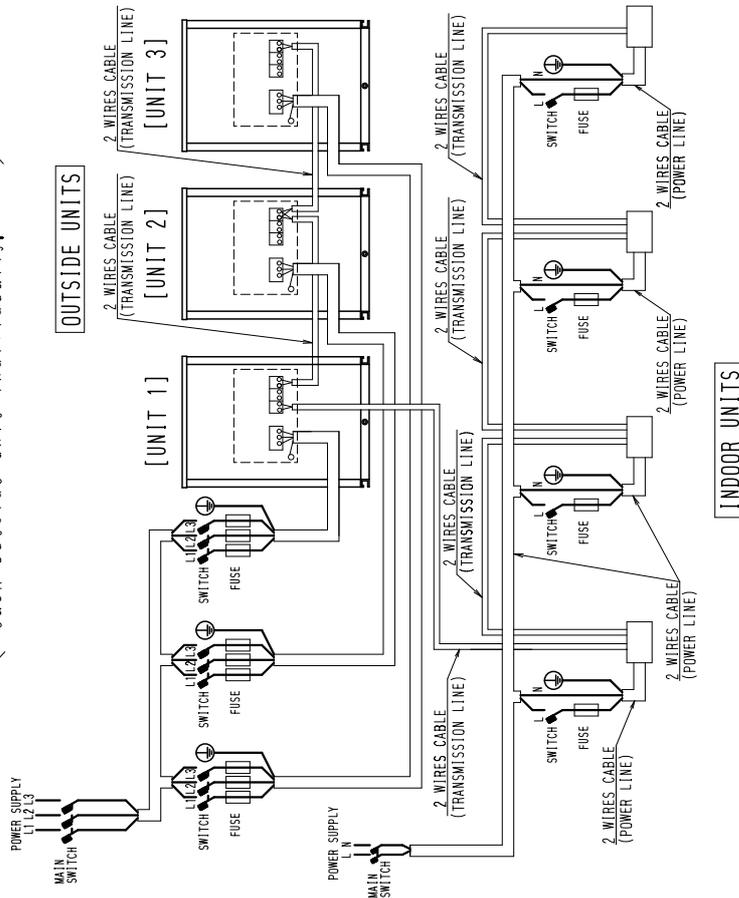
RWEYQ10PTL / RWEYQ20PTL / RWEYQ30PTL

[Operation System : Heat Pump]

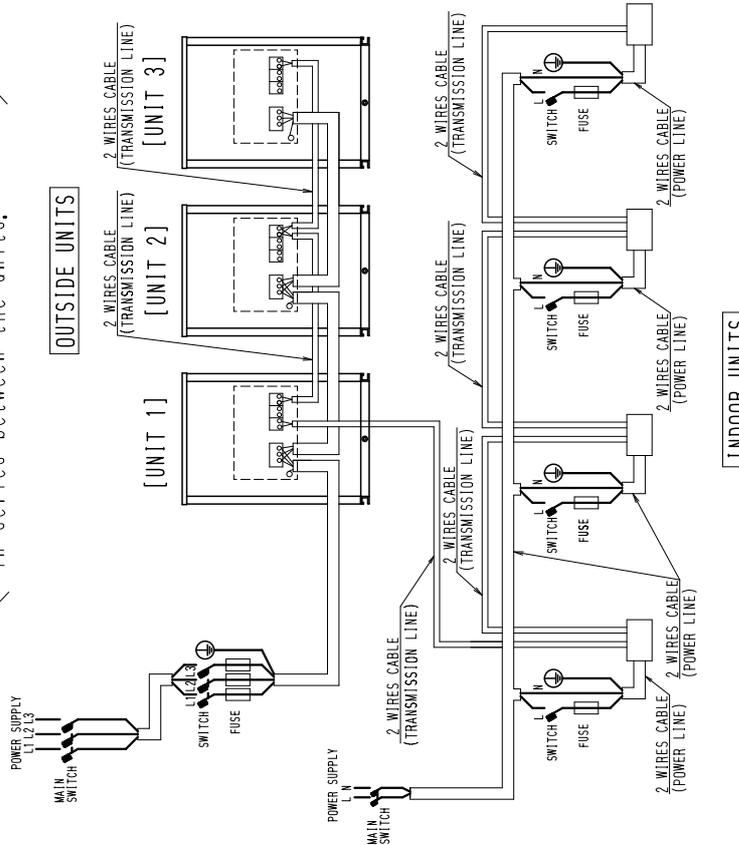
- Notes 1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes.
- 2) Use copper conductors only.
 - 3) As for details, see wiring diagram.
 - 4) Install circuit breaker for safety.
 - 5) All field wiring and components must be provided by licensed electrician.

- 6) Unit shall be grounded in compliance with the applicable local and national codes.
 - 7) Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
 - 8) Be sure to install the switch and the fuse to the power line of each equipment.
 - 9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
 - 10) If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
- Running the product in reversed phase may break the compressor and other parts.

When the power source is supplied to each outside unit individually.



When the power source is connected in series between the units.



3D052076A

**RWEYQ8PY1 / RWEYQ10PY1 / RWEYQ16PY1 / RWEYQ18PY1 / RWEYQ20PY1
RWEYQ24PY1 / RWEYQ26PY1 / RWEYQ28PY1 / RWEYQ30PY1
RWEYQ10PYL / RWEYQ20PYL / RWEYQ30PYL**

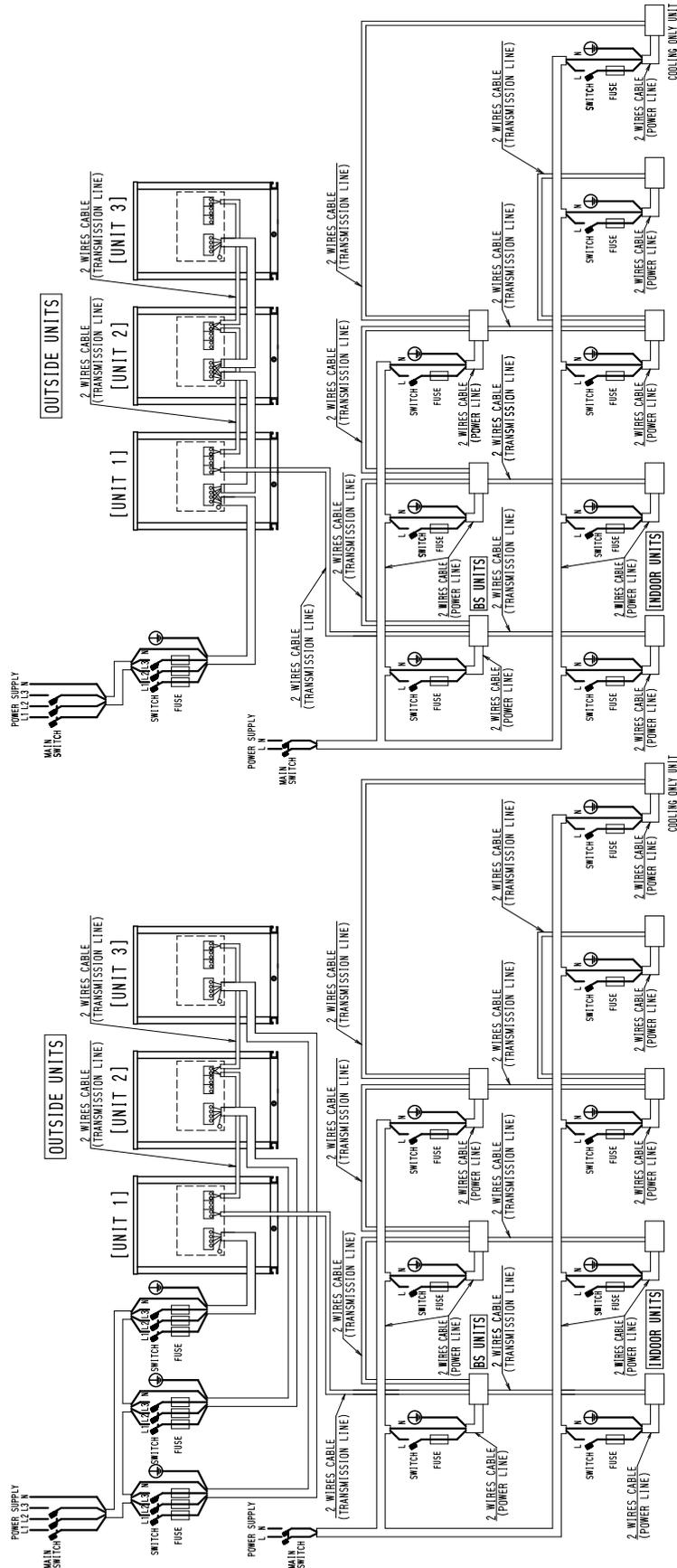
[Operation system : Heat Recovery]

- Notes 1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes,
2) Use copper conductors only.
3) As for details, see wiring diagram.
4) Install circuit breaker for safety.
5) All field wiring and components must be provided by licensed electrician.

- 6) Unit shall be grounded in compliance with the applicable local and national codes.
7) Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
8) Be sure to install the switch and the fuse to the power line of each equipment.
9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
10) If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally.
Running the product in reversed phase may break the compressor and other parts.

When the power source is supplied to each outside unit individually.

When the power source is connected in series between the units.



3D048823D

RWEYQ10PTL / RWEYQ20PTL / RWEYQ30PTL

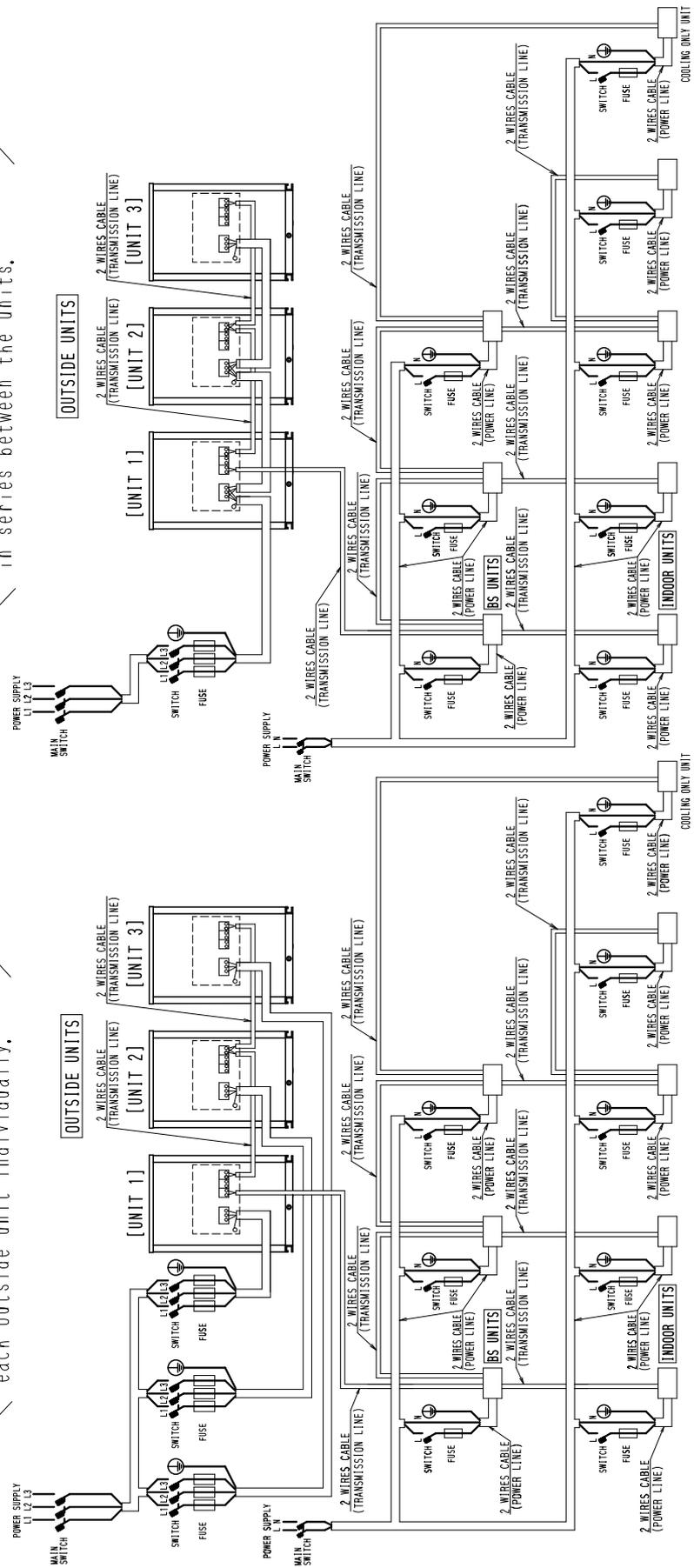
[Operation system : Heat Recovery]

- Notes 1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes, 2) Use copper conductors only, 3) As for details, see wiring diagram, 4) Install circuit breaker for safety, 5) All field wiring and components must be provided by licensed electrician.

- 6) Unit shall be grounded in compliance with the applicable local and national codes, 7) Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation, 8) Be sure to install the switch and the fuse to the power line of each equipment, 9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources, 10) If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally, Running the product in reversed phase may break the compressor and other parts.

When the power source is supplied to each outside unit individually,

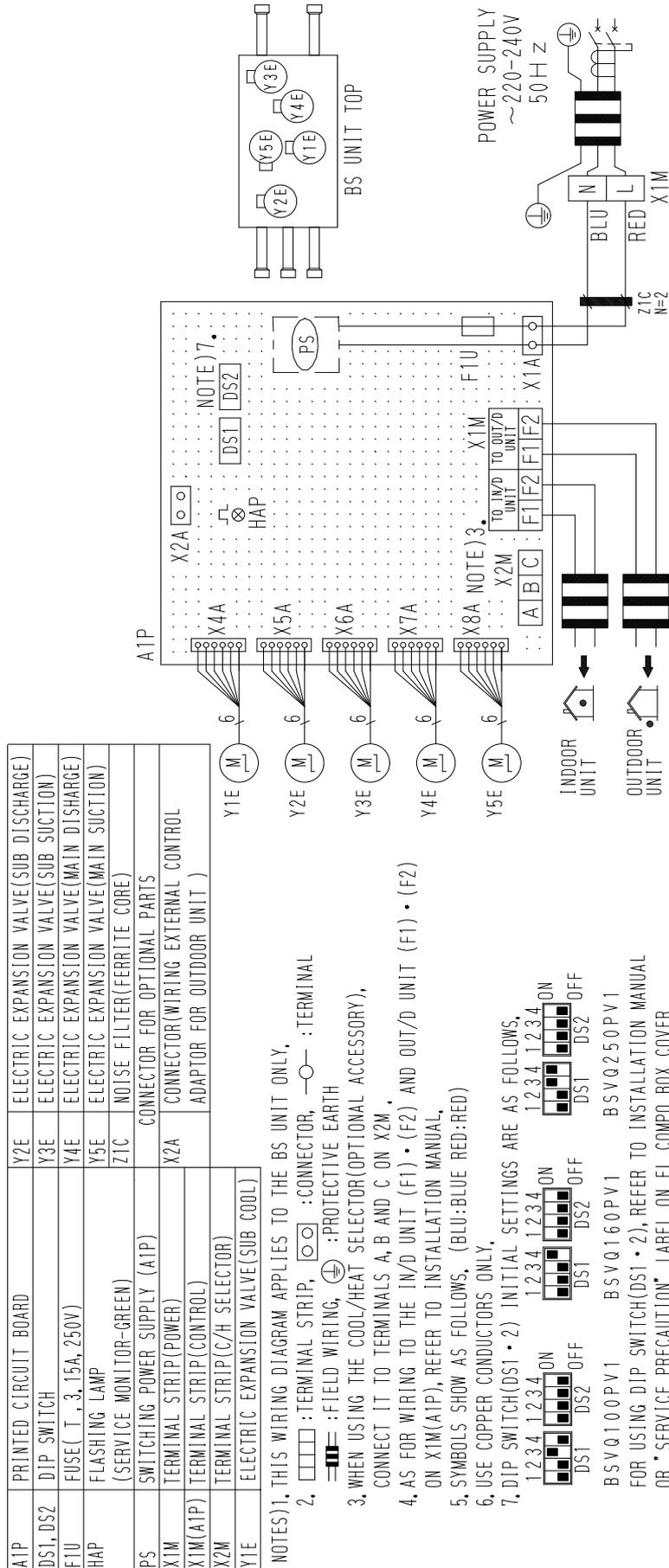
When the power source is connected in series between the units,



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2.3 BS Unit

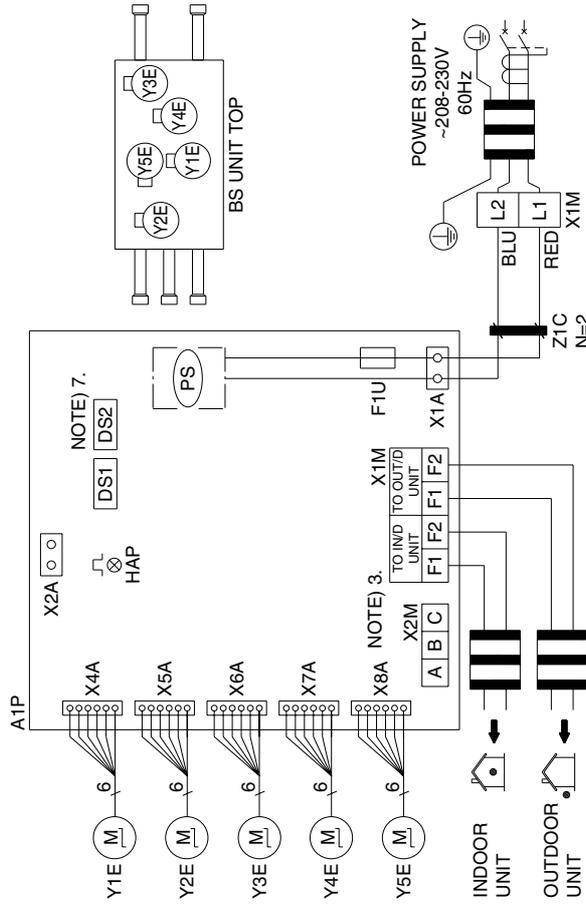
BSVQ100P / 160P / 250PV1



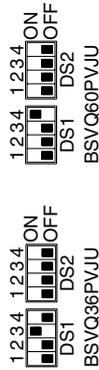
3D055928C

BSVQ36P / 60PVJU

A1P	PRINTED CIRCUIT BOARD	Y2E	ELECTRIC EXPANSION VALVE (SUB DISCHARGE)
DS1, DS2	DIP SWITCH	Y3E	ELECTRIC EXPANSION VALVE (SUB SUCTION)
F1U	FUSE (T. 3.15A, 250V)	Y4E	ELECTRIC EXPANSION VALVE (MAIN DISCHARGE)
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN)	Y5E	ELECTRIC EXPANSION VALVE (MAIN SUCTION)
PS	SWITCHING POWER SUPPLY (A1P)	Z1C	NOISE FILTER (FERRITE CORE)
X1M	TERMINAL STRIP (POWER)	X2A	CONNECTOR FOR OPTIONAL PARTS CONNECTOR (WIRING EXTERNAL CONTROL ADAPTOR FOR OUTDOOR UNIT)
X1M (A1P)	TERMINAL STRIP (CONTROL)		
X2M	TERMINAL STRIP (C/H SELECTOR)		
Y1E	ELECTRIC EXPANSION VALVE (SUB COOL)		



- NOTES) 1. THIS WIRING DIAGRAM APPLIES TO THE BS UNIT ONLY.
2. □□□□ : TERMINAL STRIP, □□□ : CONNECTOR, —○— : TERMINAL
 —■— : FIELD WIRING, ⊕ : PROTECTIVE EARTH
3. WHEN USING THE COOL/HEAT SELECTOR (OPTIONAL ACCESSORY),
 CONNECT IT TO TERMINALS A, B AND C ON X2M.
4. AS FOR WIRING TO THE IN/D UNIT (F1) · (F2) AND OUT/D UNIT (F1) · (F2)
 ON X1M (A1P), REFER TO INSTALLATION MANUAL.
5. SYMBOLS SHOW AS FOLLOWS. (BLU : BLUE RED : RED)
6. USE COPPER CONDUCTORS ONLY.
7. DIP SWITCH (DS1 · 2) INITIAL SETTINGS ARE AS FOLLOWS.

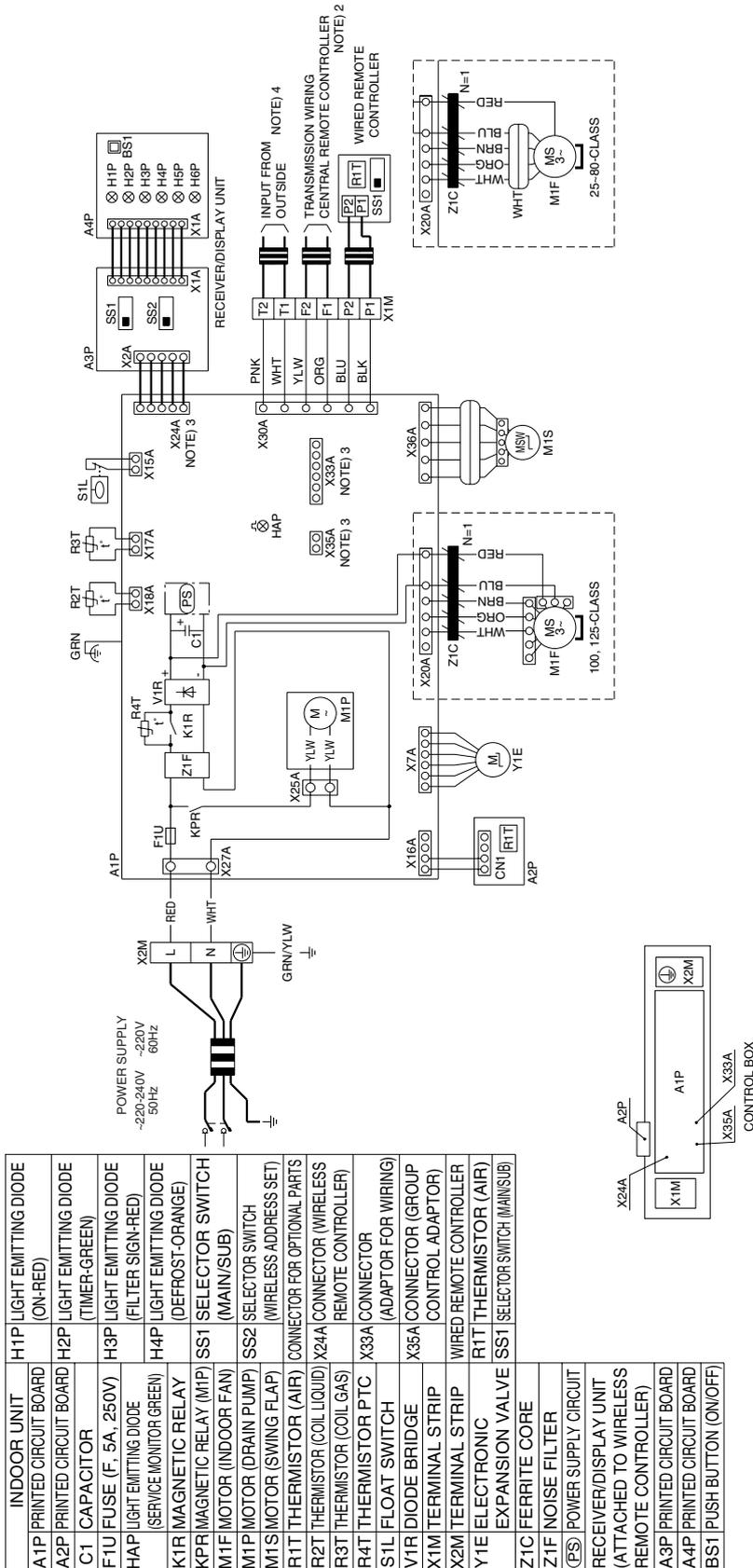


FOR USING DIP SWITCH (DS1 · 2), REFER TO INSTALLATION MANUAL
 OR "SERVICE PRECAUTION" LABEL ON EL. COMPO. BOX COVER.

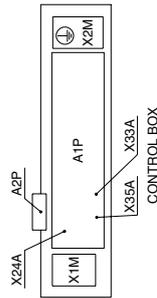
3D058235A

2.4 Indoor Unit

FXFQ25P / 32P / 40P / 50P / 63P / 80P / 100P / 125PVE



INDOOR UNIT	H1P	LIGHT EMITTING DIODE (ON-RED)
A1P	PRINTED CIRCUIT BOARD	
A2P	PRINTED CIRCUIT BOARD (TIMER-GREEN)	
F1U	CAPACITOR	
C1	FUSE (F, 5A, 250V)	
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)	
H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)	
K1R	MAGNETIC RELAY	
KPR	MAGNETIC RELAY (MIP)	
M1F	MOTOR (INDOOR FAN)	
M1P	MOTOR (DRAIN PUMP)	
M1S	MOTOR (SWING FLAP)	
R1T	THERMISTOR (AIR)	
R2T	THERMISTOR (COIL LIQUID)	
R3T	THERMISTOR (COIL GAS)	
R4T	THERMISTOR PTC	
S1L	FLOAT SWITCH	
V1R	DIODE BRIDGE	
X1M	TERMINAL STRIP	
X2M	TERMINAL STRIP	
Y1E	ELECTRONIC EXPANSION VALVE	
Z1C	FERRITE CORE	
Z1F	NOISE FILTER	
(PS)	POWER SUPPLY CIRCUIT	
RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)		
A3P	PRINTED CIRCUIT BOARD	
A4P	PRINTED CIRCUIT BOARD	
BS1	PUSH BUTTON (ON/OFF)	

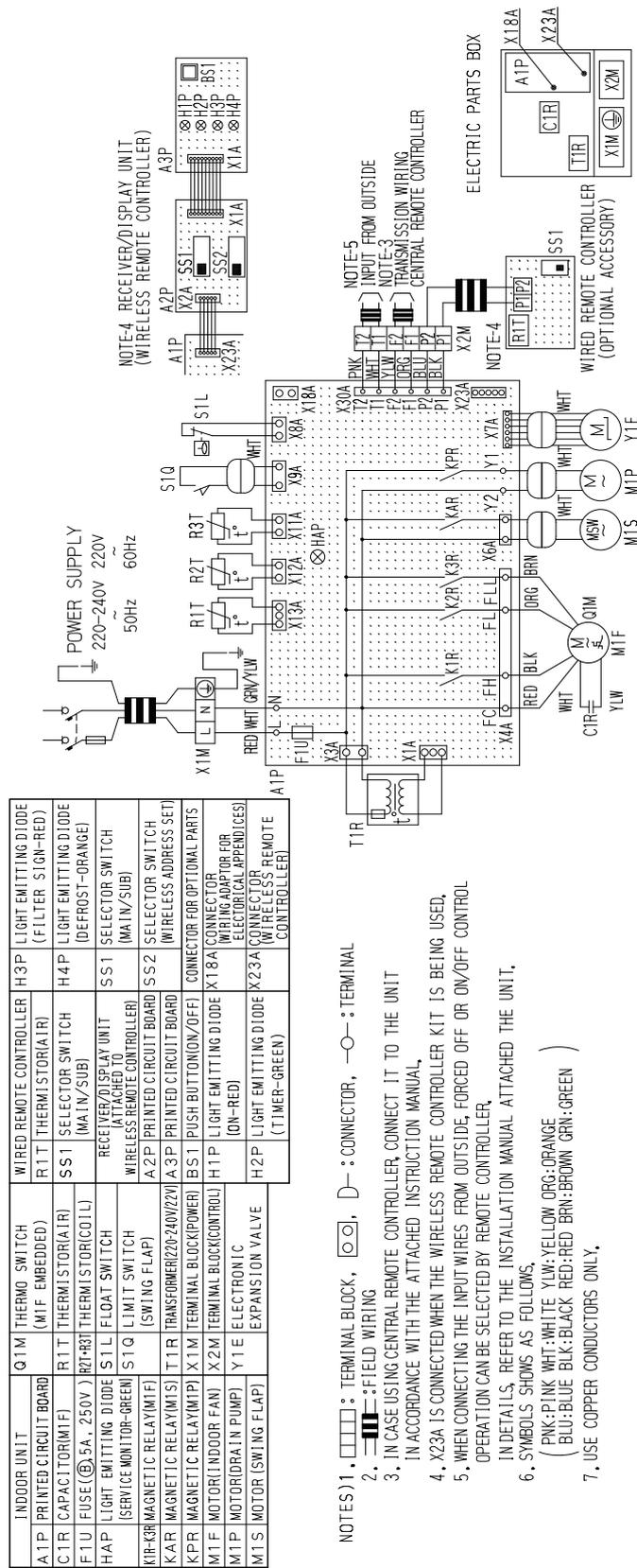


NOTES

1. : TERMINAL : FIELD WIRING
2. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. X24A, X33A AND X35A ARE CONNECTED WHEN THE OPTIONAL ACCESSORIES ARE BEING USED.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR MORE DETAILS.
5. CONFIRM THE METHOD OF SETTING THE SELECTOR SWITCH (SS1, SS2) BY INSTALLATION MANUAL AND ENGINEERING DATA, ETC.
6. SYMBOLS SHOWS AS FOLLOWS:
 RED : RED BLK : BLACK WHT : WHITE YLW : YELLOW GRN : GREEN
 ORG : ORANGE BRN : BROWN PNK : PINK GRY : GRAY BLU : BLUE

3D059890

FXCQ20M / 25M / 32M / 63MVE

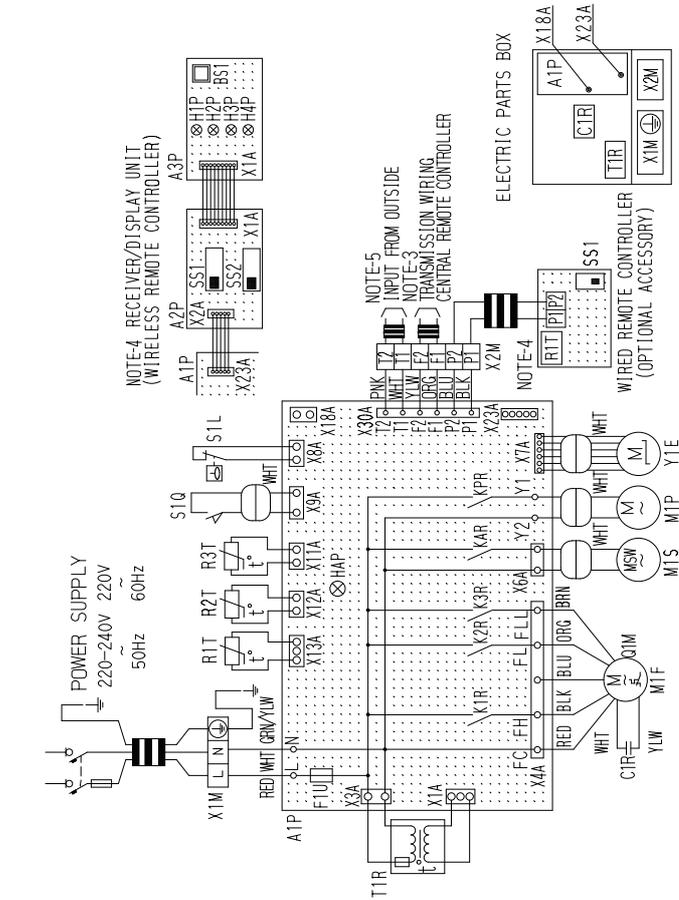


- NOTES) 1. [Symbol]: TERMINAL BLOCK, [Symbol]: FIELD WIRING
2. [Symbol]: CONNECTOR, [Symbol]: TERMINAL
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
5. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER.
6. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
(PINK: PINK WHT: WHITE YLW: YELLOW ORG: ORANGE
BLU: BLUE BLK: BLACK RED: RED BRN: BROWN GRN: GREEN)
7. USE COPPER CONDUCTORS ONLY.

INDOOR UNIT	Q1M	THERMO SWITCH (MIF EMBEDDED)	WIRED REMOTE CONTROLLER (R1T THERMISTOR(AIR))	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
A1P PRINTED CIRCUIT BOARD	R1T THERMISTOR(AIR)	R1T THERMISTOR(AIR)	SS1 SELECTOR SWITCH (MAIN/SUB)	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
C1P CAPACITOR(MIF)	R2T THERMISTOR(AIR)	R2T THERMISTOR(AIR)	RECEIVER/DISPLAY UNIT (ATTACHED TO MAIN/SUB)	SS1	SELECTOR SWITCH (MAIN/SUB)
F1U FUSE(5A, 250V)	R3T THERMISTOR(COIL)	R3T THERMISTOR(COIL)	WIRED REMOTE CONTROLLER (A2P PRINTED CIRCUIT BOARD)	SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
H4P LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	S1L FLOAT SWITCH (SWING FLAP)	S1L FLOAT SWITCH (SWING FLAP)	B51 PUSH BUTTON(ON/OFF)	CONNECTOR FOR OPTIONAL PARTS (X18A)	CONNECTOR (WIRING ADAPTOR FOR ELECTORICAL APPENDICES)
K1R-K3R MAGNETIC RELAY(MIF)	S1Q LIMIT SWITCH (SWING FLAP)	S1Q LIMIT SWITCH (SWING FLAP)	H1P LIGHT EMITTING DIODE (ON-RED)	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
K4R MAGNETIC RELAY(MIS)	T1R TRANSFORMER(220-240V/220V)	T1R TRANSFORMER(220-240V/220V)	H2P LIGHT EMITTING DIODE (TIMER-GREEN)		
KPR MAGNETIC RELAY(MIP)	X1M TERMINAL BLOCK(POWER)	X1M TERMINAL BLOCK(POWER)			
M1F MOTOR(INDOOR FAN)	X2M TERMINAL BLOCK(CONTROL)	X2M TERMINAL BLOCK(CONTROL)			
M1S MOTOR(SWING FLAP)	Y1E ELECTRONIC EXPANSION VALVE	Y1E ELECTRONIC EXPANSION VALVE			

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FXCQ40M / 50M / 80M/ 125MVE

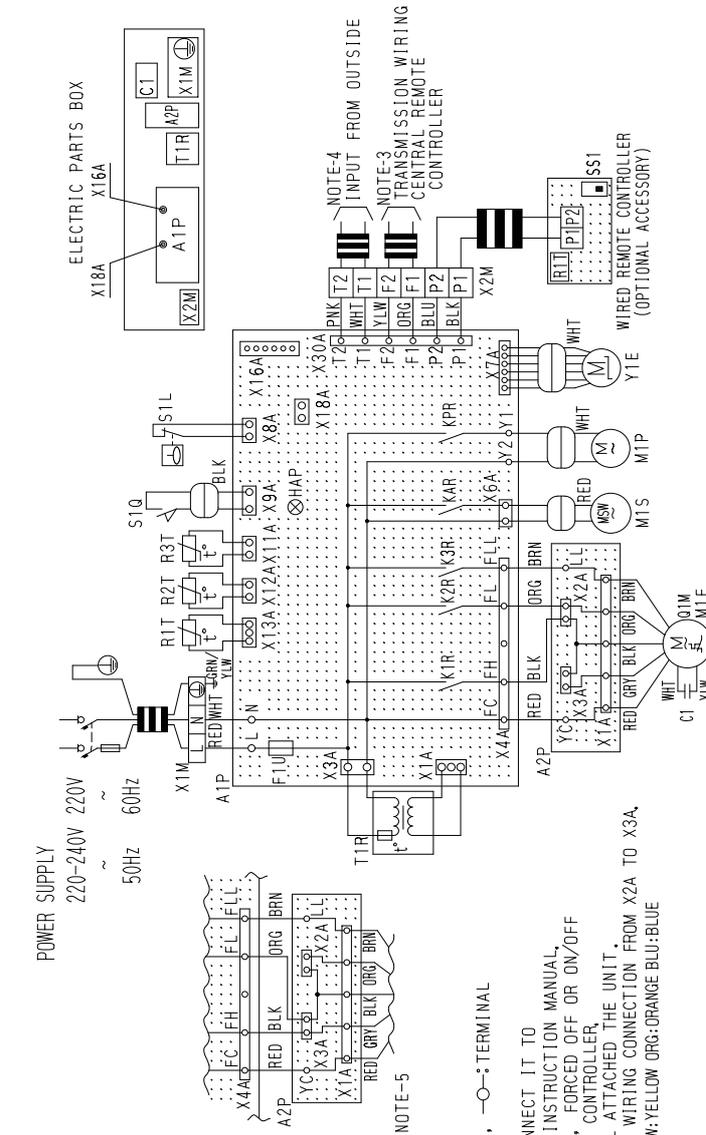


A1P	PRINTED CIRCUIT BOARD	S1L	FLOAT SWITCH	H1P	LIGHT EMITTING DIODE (ON-RED)
C1P	CAPACITOR(M1F)	S1Q	LIMIT SWITCH (SWING FLAP)	H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
F1U	FUSE(⑤.5A, 250V)	T1R	TRANSFORMER(220-240V/22V)	H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
H4P	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X1M	TERMINAL BLOCK(POWER)	H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
K1R-K3R	MAGNETIC RELAY(M1F)	X2M	TERMINAL BLOCK(CONTROL)	S S1	SELECTOR SWITCH (MAIN/SUB)
K4R	MAGNETIC RELAY(M1S)	Y1E	ELECTRONIC EXPANSION VALVE	S S2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
KPR	MOTOR(INDOOR FAN)	W1R	WIRED REMOTE CONTROLLER	CONNECTOR FOR OPTIONAL PARTS	
M1P	MOTOR(DRAIN PUMP)	R1T	THERMISTOR(AIR)	X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
M1S	MOTOR (SWING FLAP)	S S1	SELECTOR SWITCH (MAIN/SUB)	X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
Q1M	THERMO SWITCH (M1F EMBEDDED)	RECEIVER/DISPLAY UNIT (WIRELESS REMOTE CONTROLLER)			
R1T	THERMISTOR(AIR)	A2P	PRINTED CIRCUIT BOARD	CONNECTOR FOR OPTIONAL PARTS	
R2T-R3T	THERMISTOR(COIL)	A3P	PRINTED CIRCUIT BOARD	X30A	CONNECTOR (WIRELESS REMOTE CONTROLLER)
		BS1	PUSH BUTTON(ON/OFF)	X3A	CONNECTOR (WIRELESS REMOTE CONTROLLER)

- NOTES) 1. : TERMINAL BLOCK, : TERMINAL
2. : FIELD WIRING
3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
5. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER.
6. SYMBOLS SHOWS AS FOLLOWS,
 (PINK:PINK WHT:WHITE YLW:YELLOW ORG:ORANGE
 BLU:BLUE BLK:BLACK RED:RED BRN: BROWN GRN:GREEN)
7. USE COPPER CONDUCTORS ONLY.

3D099557A

FXKQ25MA / 32MA / 40MA / 63MAVE

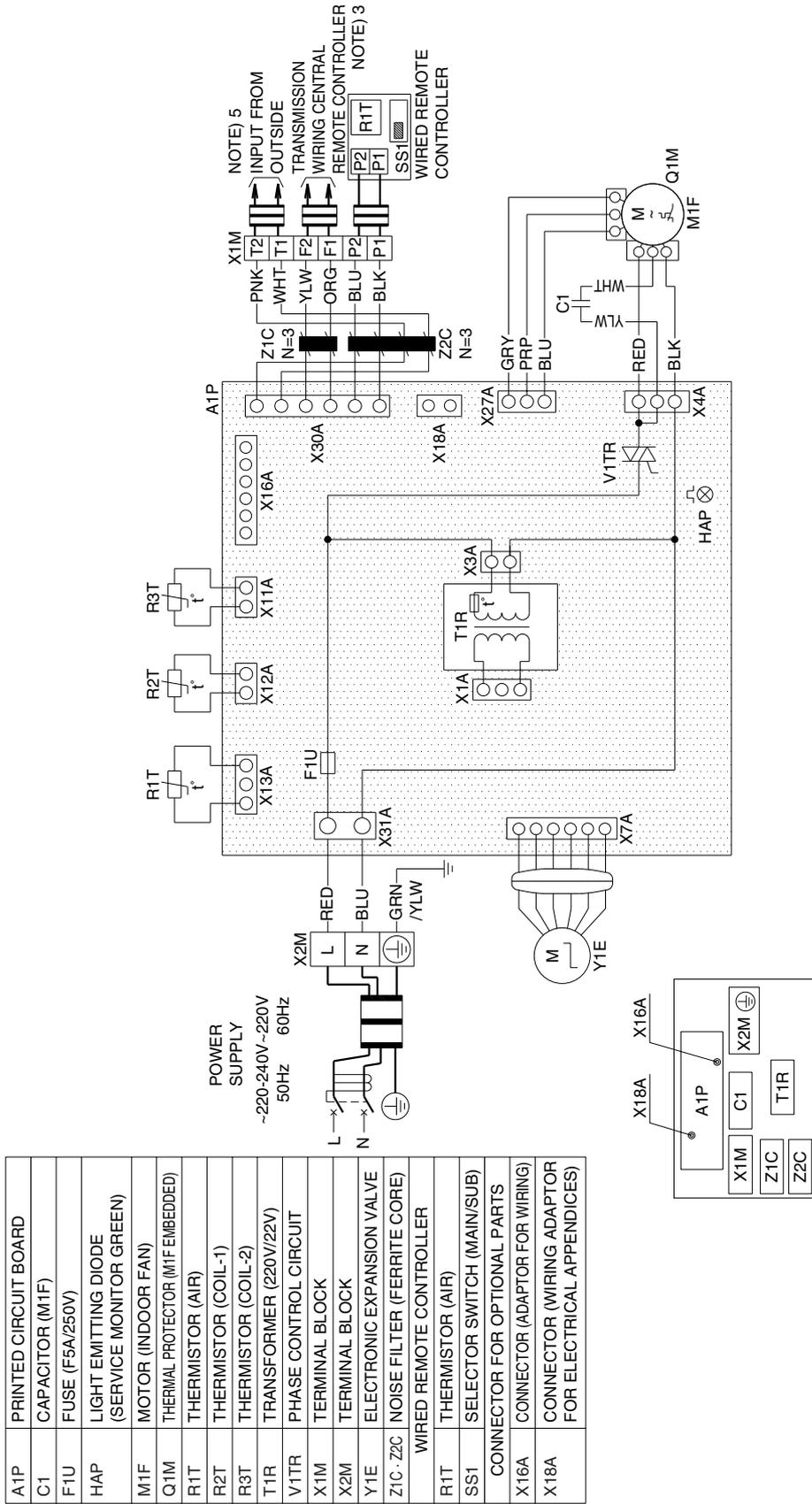


INDOOR UNIT	R1T	THERMISTOR(AIR)
A1P	PRINTED CIRCUIT BOARD	R2T-R3T THERMISTOR(COIL)
A2P	TERMINAL BOARD	S1L FLOAT SWITCH
C1	CAPACITOR (MIF)	S1Q LIMIT SWITCH(SWING FLAP)
F1U	FUSE (5A, 250V)	T1R TRANSFORMER(220-240V/22V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)	X1M TERMINAL BLOCK(POWER)
K1R-K3R	MAGNETIC RELAY(MIF)	X2M TERMINAL BLOCK(CONTROL)
KAR	MAGNETIC RELAY(MIS)	Y1E ELECTRONIC EXPANSION VALVE
KPR	MAGNETIC RELAY(MIP)	WIRED REMOTE CONTROLLER
M1F	MOTOR (INDOOR FAN)	R1T THERMISTOR(AIR)
M1P	MOTOR (DRAIN PUMP)	S1S SELECTOR SWITCH (MAIN/SUB)
M1S	MOTOR (SWING FLAP)	CONNECTOR FOR OPTIONAL PARTS
Q1M	THERMO SWITCH (MIF EMBEDDED)	X16A CONNECTOR(ADAPTOR FOR WIRING)
		X18A CONNECTOR(WIRING ADAPTOR FOR ELECTRICAL APPENDICES)

- NOTES
1. □□□□: TERMINAL BLOCK, □□□: CONNECTOR, ○: TERMINAL
 2. —■—: FIELD WIRING
 3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
 4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
 5. IN CASE HIGH E.S.P. OPERATION, CHANGE OVER THE WIRING CONNECTION FROM X2A TO X3A.
 6. SYMBOLS SHOW AS FOLLOWS, (PNK:PINK WHT:WHITE YLW:YELLOW ORG:ORANGE BLU:BLUE BLK:BLACK RED:RED BRN:BROWN GRY:GRAY)
 7. USE COPPER CONDUCTORS ONLY.

3D039564C

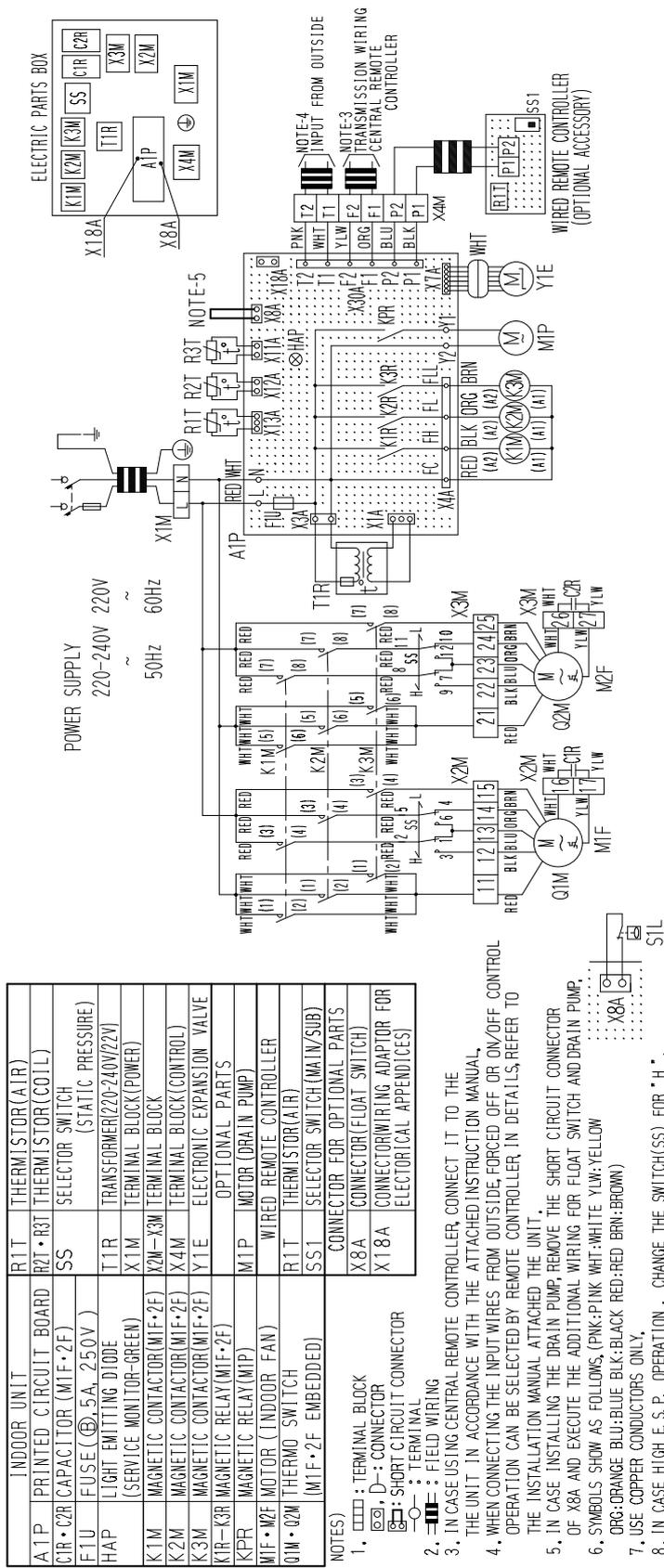
**FXDQ20PB / 25PB / 32PB
FXDQ40NB / 50NB / 63NBVET (without Drain Pump)**



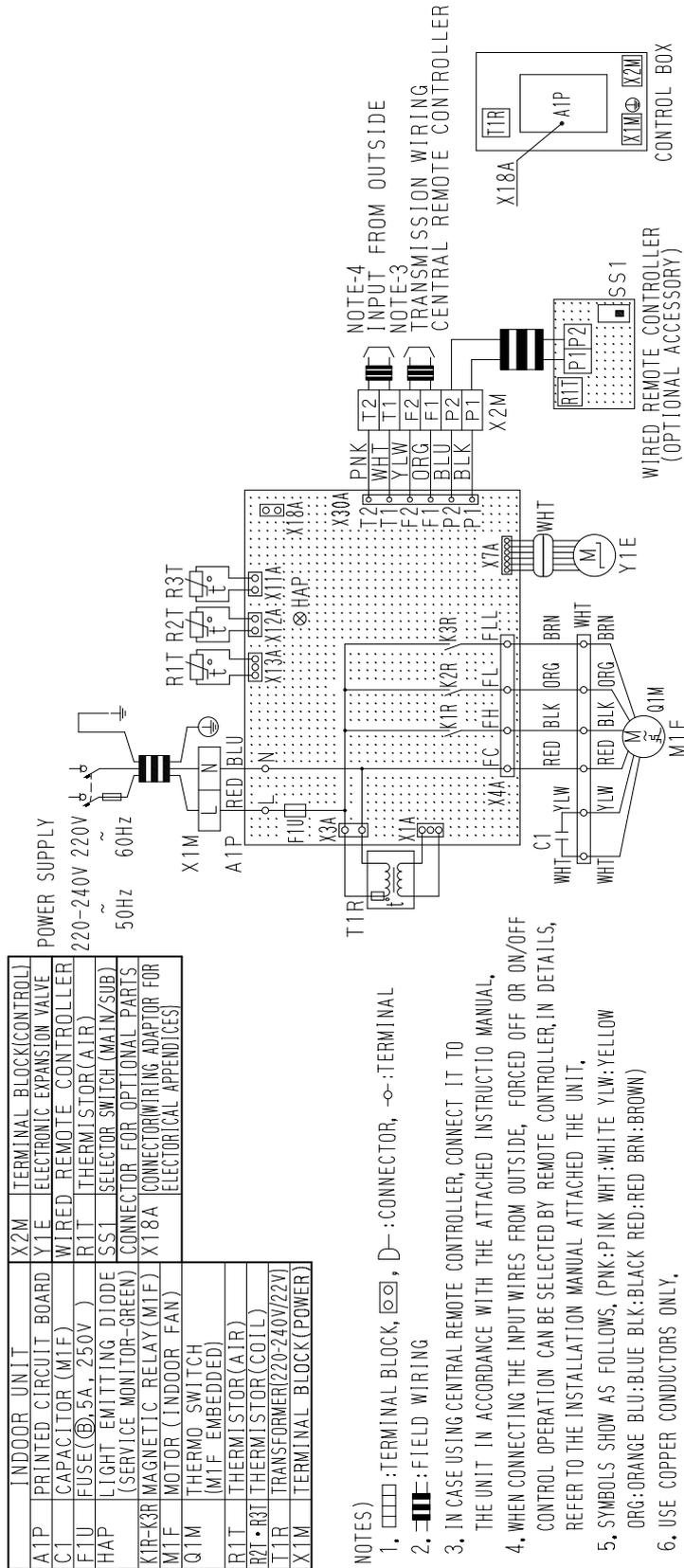
3D060548

FXMQ200MA / 250MAVE

3D039621B



FXLQ20 / 25 / 32 / 40 / 50 / 63MAVE
 FXNQ20 / 25 / 32 / 40 / 50 / 63MAVE

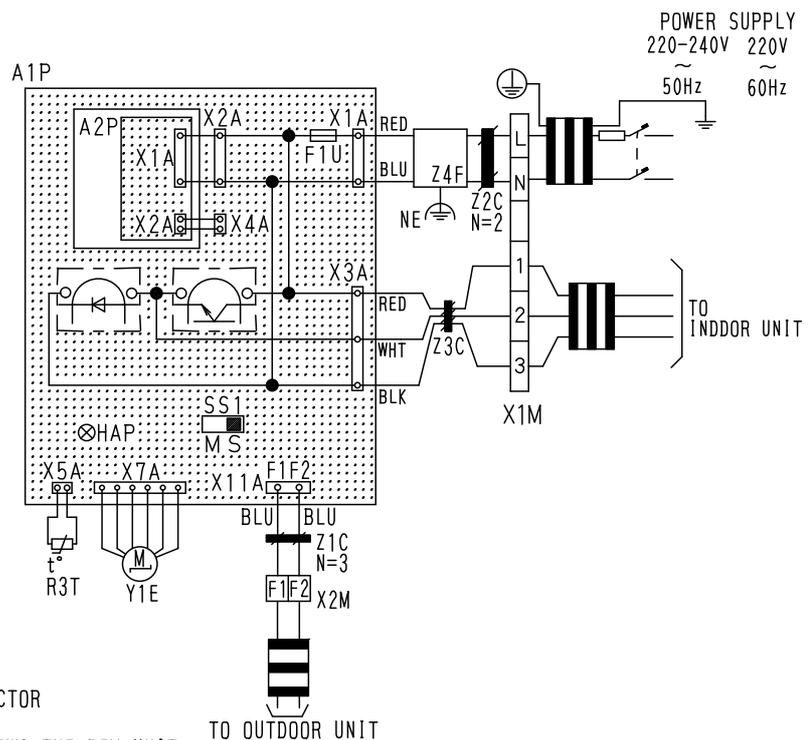
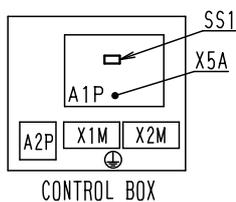


- NOTES)
1. □□□□: TERMINAL BLOCK, □□□□: CONNECTOR, ○○: TERMINAL
 2. —|—: FIELD WIRING
 3. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
 4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
 5. SYMBOLS SHOW AS FOLLOWS, (PNK:PINK WHT:WHITE YLW:YELLOW ORG:ORANGE BLU:BLUE BLK:BLACK RED:RED BRN:BROWN)
 6. USE COPPER CONDUCTORS ONLY.

3D039826D

BEVQ71MA / 100MA / 125MAVE

BEV UNIT	
A1P	PRINTED CIRCUIT BOARD ASSY
A2P	POWER SUPPLY PRINTED CIRCUIT BOARD ASSY(220-240V/16V)
F1U	FUSE(ⓑ, 10A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GRREN)
R3T	THERMISTOR(GAS)
SS1	SELECTOR SWITCH(M/S)
X1M	TERMINAL STRIP(POWER)
X2M	TERMINAL STRIP(TRANSMISSION)
Y1E	ELECTRONIC EXPANSION VALVE
Z1C · Z2C Z3C · Z4F	NOISE FILTER



注) 1. □□□□ : TERMINAL □□□□ : CONNECTOR

2. ≡≡≡≡ : FIELD WIRING

3. THIS WIRING DIAGRAM ONLY SHOWS THE BEV UNIT, SEE THE WIRING DIAGRAMS AND INSTALLATION MANUALS FOR THE WIRING AND SETTINGS FOR THE INDOOR, OUTDOOR, AND BS UNITS.

4. SEE THE INDOOR UNIT'S WIRING DIAGRAM WHEN INSTALLING OPTIONAL PARTS FOR THE INDOOR UNIT.

5. ONLY ONE INDOOR UNIT MAY BE CONNECTED TO THE BEV UNIT.

6. ALWAYS USE THE SKY AIR CONNECTION ADAPTER FOR THE INDOOR UNIT WHEN USING A CENTRAL CONTROL UNIT.

REFER TO THE MANUAL ATTACHED THE UNIT WHEN CONNECTING.

7. COOL/HEAT CHANGEOVER OF INDOOR UNITS CONNECTED TO BEV UNIT CANNOT BE CARRIED OUT UNLESS THEY ARE CONNECTED TO BS UNIT.

IN CASE OF A SYSTEM WITH BEV UNIT ONLY, COOL/HEAT SELECTOR IS REQUIRED.

8. SET THE SS1 TO "M" ONLY FOR THE BEV UNIT CONNECTED TO THE INDOOR UNIT WHICH IS TO HAVE COOL/HEAT SWITCHING CAPABILITY, WHEN CONNECTING THE BS UNIT.

THE "M/S" ON THE SS1 STANDS FOR "MAIN/SUB". THIS IS SET TO "S" WHEN SHIPPED FROM THE FACTORY.

9. CONNECT THE ATTACHED THERMISTOR TO THE R3T.

10. SYMBOLS SHOW AS FOLLOWS,
(BLU:BLUE RED:RED WHT:WHITE BLK:BLACK)

3D044901B

3. List of Electrical and Functional Parts

3.1 Outside Unit

3.1.1 RWEYQ8PY1, 10PY1, 10PYL

Item	Name		Symbol	Model
				RWEYQ8PY1, 10PY1, 10PYL
Compressor	Inverter	Type	M1C	JT1G-VDKYR@T
		OC protection device		13.5A
Electronic expansion valve (Main)			Y1E	Fully closed: 0pls Fully open: 2000pls
Electronic expansion valve (Subcool)			Y2E	Fully closed: 0pls Fully open: 2000pls
Pressure protection	High pressure switch	For M1C	HPS	OFF: $4.0^{+0}_{-0.12}$ MPa ON: 3.0 ± 0.15 MPa
	Low pressure sensor		S1NPL	OFF: 0.07MPa
	Fusible plug		—	Open: 70~75°C
Temperature protection	Discharge gas temperature protection (Discharge pipe thermistor)		R3T	OFF: 135°C
	Inverter fin temperature protection (Radiator fin thermistor)		R1T	OFF: 98°C
Others	Fuse	For main PC board	F1U	250V AC 10A Class B
			F2U	250V AC 10A Class B
		For Noise filter PC board	F1U	250V AC 5A Class B

3.1.2 RWEYQ10PTL

Item	Name		Symbol	Model
				RWEYQ10PTL
Compressor	Inverter	Type	M1C	JT100G-VDK@SB
		OC protection device		24.0A
Electronic expansion valve (Main)			Y1E	Fully closed: 0pls Fully open: 2000pls
Electronic expansion valve (Subcool)			Y2E	Fully closed: 0pls Fully open: 2000pls
Pressure protection	High pressure switch	For M1C	HPS	OFF: $4.0^{+0}_{-0.12}$ MPa ON: 3.0 ± 0.15 MPa
	Low pressure sensor		S1NPL	OFF: 0.07MPa
	Fusible plug		—	Open: 70~75°C
Temperature protection	Discharge gas temperature protection (Discharge pipe thermistor)		R3T	OFF: 135°C
	Inverter fin temperature protection (Radiator fin thermistor)		R1T	OFF: 98°C
Others	Fuse	For main PC board	F1U	250V AC 10A Class B
			F2U	250V AC 10A Class B
		For Noise filter PC board	F1U	250V AC 5A Class B

3.2 Indoor Side

3.2.1 Indoor Unit

Parts Name		Symbol	Model							Remark
			FXFQ25 PVE	FXFQ32 PVE	FXFQ40 PVE	FXFQ50 PVE	FXFQ63 PVE	FXFQ80 PVE	FXFQ100 PVE	
Remote Controller	Wired Remote Controller		BRC1C62							Option
	Wireless Remote Controller		BRC7F634F							
Motors	Fan Motor	M1F	DC280V 56W 8P				DC 320V 120W 8P			
	Drain Pump	M1P	AC220-240V (50Hz) AC220V (60Hz) PLD-12230DM Thermal Fuse 145°C							
	Swing Motor	M1S	MP35HCA[3P080801-1] Stepping Motor DC12V							
Thermistors	Thermistor (Suction Air)	R1T	In PC board A2P or wired remote controller							
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-14 φ8 L1000 20kΩ (25°C)							
	Thermistor (Heat Exchanger)	R2T	ST8602A-15 φ6 L1000 20kΩ (25°C)							
Others	Float Switch	S1L	FS-0211B							
	Fuse	F1U	250V 5A φ5.2							
	Thermal Fuse	TFu	—							
	Transformer	T1R	—							

Parts Name		Symbol	Model							Remark
			FXCQ 20MVE	FXCQ 25MVE	FXCQ 32MVE	FXCQ 40MVE	FXCQ 50MVE	FXCQ 63MVE	FXCQ 80MVE	
Remote Controller	Wired Remote Controller		BRC1C62							Option
	Wireless Remote Controller		BRC7C62							
Motors	Fan Motor	M1F	AC 220~240V 50Hz							
			1φ10W	1φ15W	1φ20W	1φ30W	1φ50W	1φ85W		
			Thermal Fuse 152°C			—	Thermal protector 135°C : OFF 87°C : ON			
	Drain Pump	M1P	AC220-240V (50Hz) AC220V (60Hz) PLD-12230DM Thermal Fuse 145°C							
	Swing Motor	M1S	MT8-L[3PA07509-1] AC200~240V							
Thermistors	Thermistor (Suction Air)	R1T	ST8601-6 φ4 L1250 20kΩ (25°C)							
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-6 φ8 L1250 20kΩ (25°C)							
	Thermistor (Heat Exchanger)	R2T	ST8602A-5 φ6 L1000 20kΩ (25°C)							
Others	Float Switch	S1L	FS-0211B							
	Fuse	F1U	250V 5A φ5.2							
	Transformer	T1R	TR22H21R8							

Parts Name		Symbol	Model				Remark
			FXKQ 25MAVE	FXKQ 32MAVE	FXKQ 40MAVE	FXKQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1C62				Option
	Wireless Remote Controller		BRC4C61				
Motors	Fan Motor	M1F	AC 220~240V 50Hz				
			1φ15W 4P		1φ20W 4P	1φ45W 4P	
			Thermal Fuse 146°C		Thermal protector 120°C : OFF 105°C : ON		
	Drain Pump	M1P	AC 220-240V (50Hz) PLD-12200DM Thermal Fuse 145°C				
Swing Motor	M1S	MP35HCA [3P080801-1] AC200~240V					
Thermistors	Thermistor (Suction Air)	R1T	ST8601-13 φ4 L630 20kΩ (25°C)				
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-7 φ8 L1600 20kΩ (25°C)				
	Thermistor (Heat Exchanger)	R2T	ST8602A-7 φ6 L1600 20kΩ (25°C)				
Others	Float Switch	S1L	FS-0211B				
	Fuse	F1U	250V 5A φ5.2				
	Transformer	T1R	TR22H21R8				

Parts Name		Symbol	Model						Remark
			FXDQ 20PBVE(T)	FXDQ 25PBVE(T)	FXDQ 32PBVE(T)	FXDQ 40NBVE(T)	FXDQ 50NBVE(T)	FXDQ 63NBVE(T)	
Remote Controller	Wired Remote Controller		BRC1C62						Option
	Wireless Remote Controller		BRC4C65						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ62W			1φ130W			
	Drain Pump	M1P	Thermal protector 130°C: OFF, 83°C: ON AC220-240V (50Hz) PLD-12230DM Thermal Fuse 145°C						*
Thermistors	Thermistor (Suction Air)	R1T	ST8601-1 φ4 L=250 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-4 φ8 L=800 20kΩ (25°C)						
	Thermistor (Heat Exchanger)	R2T	ST8602A-4 φ6 L=800 20kΩ (25°C)						
Others	Float Switch	S1L	FS-0211E						*
	Fuse	F1U	250V 5A φ5.2						
	Transformer	T1R	TR22H21R8						

*only for FXDQ20~63N(B)VE, FXDQ20~32PBVE (with Drain Pump Type)

Parts Name		Symbol	Model									Remark
			FXSQ 20MVE	FXSQ 25MVE	FXSQ 32MVE	FXSQ 40MVE	FXSQ 50MVE	FXSQ 63MVE	FXSQ 80MVE	FXSQ 100MVE	FXSQ 125MVE	
Remote Controller	Wired Remote Controller		BRC1C62									Option
	Wireless Remote Controller		BRC4C62									
Motors	Fan Motor	M1F	AC 220~240V 50Hz									
			1φ50W			1φ65W	1φ85W	1φ125W	1φ225W			
	Thermal Fuse 152°C						Thermal protector 135°C : OFF 87°C : ON					
Thermistors	Drain Pump	M1P	AC220-240V (50Hz) PLD-1223ODM Thermal Fuse 145°C									
	Thermistor (Suction Air)	R1T	ST8601-4 φ4 L800 20kΩ (25°C)									
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-7 φ8 L1600 20kΩ (25°C)									
Others	Thermistor (Heat Exchanger)	R2T	ST8602A-6 φ6 L1250 20kΩ (25°C)									
	Float Switch	S1L	FS-0211B									
	Fuse	F1U	250V 5A φ5.2									
	Transformer	T1R	TR22H21R8									

Parts Name		Symbol	Model					Remark
			FXMQ 40PVE	FXMQ 50PVE	FXMQ 63PVE	FXMQ 80PVE	FXMQ 100PVE	
Remote Controller	Wired Remote Controller		BRC1C62					
	Wireless Remote Controller		BRC4C65					
Motors	Fan Motor	M1F	DC280V 140W 8P			DC373V 350W 8P		
	Drain Pump	M1P	AC220-240V (50/60Hz) PLD-1223ODM Thermal protector 145°C					
Thermistors	Thermistor (Suction Air)	R1T	ST8601-3 φ L630 20kΩ (25°C)					
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-14 φ8 L1000 20kΩ (25°C)					
	Thermistor (for Heat Exchanger)	R2T	ST8602A-6 φ8 L1250 20kΩ (25°C)					
Others	Float Switch	S1L	FS-0211B					
	Fuse (A1P)	F1U	250V 3.15A					
	Fuse (A2P, A3P)	F3U F4U	250V 6.3A					
	Fuse (A2P)	F2U	250V 5A	—				

Parts Name		Symbol	Model			Remark
			FXHQ 32MAVE	FXHQ 63MAVE	FXHQ 100MAVE	
Remote Controller	Wired Remote Controller		BRC1C62			Option
	Wireless Controller		BRC7E63W			
Motors	Fan Motor	M1F	AC 220~240V/220V 50Hz/60Hz			
			1φ63W		1φ130W	
			Thermal protector 130°C : OFF 80°C : ON			
	Capacitor for Fan Motor	C1R	3.0μF-400V		9.0μF-400V	
Swing Motor	M1S	MT8-L[3P058751-1] AC200~240V				
Thermistors	Thermistor (Suction Air)	R1T	ST8601A-1 φ4 L250 20kΩ (25°C)			
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-6 φ8 L = 1250 20kΩ (25°C)		ST8605-6 φ8 L = 1250 20kΩ (25°C)	
	Thermistor (Heat Exchanger)	R2T	ST8602A-6 φ6 L = 1250 20kΩ (25°C)		ST8602A-6 φ6 L = 1250 20kΩ (25°C)	
Others	Fuse	F1U	250V 5A φ5.2			
	Transformer	T1R	TR22H21R8			

Parts Name		Symbol	Model						Remark
			FXAQ 20MAVE	FXAQ 25MAVE	FXAQ 32MAVE	FXAQ 40MAVE	FXAQ 50MAVE	FXAQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1C62						Option
	Wireless Remote Controller		BRC7E618						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ40W			1φ43W			
			Thermal protector 130°C : OFF 80°C : ON						
Swing Motor	M1S	MP24 [3SB40333-1] AC200~240V			MSFBC20C21 [3SB40550-1] AC200~240V				
Thermistors	Thermistor (Suction Air)	R1T	ST8601-2 φ4 L400 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-2 φ8 L400 20kΩ (25°C)						
	Thermistor (for Heat Exchanger)	R2T	ST8602-2 φ6 L400 20kΩ (25°C)						
Others	Float Switch	S1L	OPTION						
	Fuse	F1U	250V 5A φ5.2						

Parts Name		Symbol	Model						Remark
			FXLQ 20MAVE	FXLQ 25MAVE	FXLQ 32MAVE	FXLQ 40MAVE	FXLQ 50MAVE	FXLQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1C62						Option
	Wireless Remote Controller		BRC4C62						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ15W	1φ25W		1φ35W			
	Thermal protector 135°C : OFF 120°C : ON								
	Capacitor for Fan Motor	C1R	1.0μF-400V	0.5μF-400V	1.0μF-400V	1.5μF-400V	2.0μF-400V		
Thermistors	Thermistor (Suction Air)	R1T	ST8601-6 φ4 L1250 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-9 φ8 L2500 20kΩ (25°C)						
	Thermistor (for Heat Exchanger)	R2T	ST8602A-9 φ6 L2500 20kΩ (25°C)						
Others	Fuse	F1U	AC250V 5A						
	Transformer	T1R	TR22H21R8						

Parts Name		Symbol	Model						Remark
			FXNQ 20MAVE	FXNQ 25MAVE	FXNQ 32MAVE	FXNQ 40MAVE	FXNQ 50MAVE	FXNQ 63MAVE	
Remote Controller	Wired Remote Controller		BRC1C62						Option
	Wireless Remote Controller		BRC4C62						
Motors	Fan Motor	M1F	AC 220~240V 50Hz						
			1φ15W	1φ25W		1φ35W			
	Thermal protector 135°C : OFF 120°C : ON								
	Capacitor for Fan Motor	C1R	1.0μF-400V	0.5μF-400V	1.0μF-400V	1.5μF-400V	2.0μF-400V		
Thermistors	Thermistor (Suction Air)	R1T	ST8601-6 φ4 L1250 20kΩ (25°C)						
	Thermistor (for Heat Exchanger High Temp.)	R3T	ST8605-9 φ8 L2500 20kΩ (25°C)						
	Thermistor (for Heat Exchanger)	R2T	ST8602A-9 φ6 L2500 20kΩ (25°C)						
Others	Fuse	F1U	AC250V 5A						
	Transformer	T1R	TR22H21R8						

Parts Name		Symbol	Model			Remark
			FXUQ71MAV1	FXUQ100MAV1	FXUQ125MAV1	
Remote Controller	Wired Remote Controller		BRC1C62			Option
	Wireless Remote Controller		BRC7C528W			
Motors	Fan Motor	M1F	AC 220~240V 50Hz			
			1φ45W	1φ90W		
	Thermal protector 130°C		Thermal protector 130°C : OFF 83°C : ON			
	Drain Pump	M1P	AC220-240V (50Hz) AC220V (60Hz) PJV-1426			
	Swing Motor	M1S	MT8-L[3PA07572-1] AC200~240V			
Thermistors	Thermistor (Suction Air)	R1T	ST8601-1 φ4 L=250 20kΩ (25°C)			
	Thermistor (Heat Exchanger)	R2T	ST8602A-4 φ6 L=800 20kΩ (25°C)			
Others	Float Switch	S1L	FS-0211B			

4. Option List

4.1 Optional Accessories

Optional accessories		Models	RWEYQ08PY1	RWEYQ10PY1 RWEYQ10PTL RWEYQ10PYL	RWEYQ16PY1	RWEYQ18PY1	RWEYQ20PY1 RWEYQ20PTL RWEYQ20PYL	RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1 RWEYQ30PTL RWEYQ30PYL
COOL/HEAT Selector		KRC19-26A									
Fixing box		KJB111A									
Distributive piping	Refnet header	KHRP25M33H (Max, 8 branch)	KHRP25M33H, KHRP25M72H (Max, 8 branch) (Max, 8 branch)		KHRP25M33H, KHRP25M72H, KHRP25M73H (Max, 8 branch) (Max, 8 branch) (Max, 8 branch)						
	Refnet joint	KHRP26M22H, KHRP26M33H (Max, 4 branch) (Max, 8 branch)	KHRP26M22H, KHRP26M33H, KHRP26M72H (Max, 4 branch) (Max, 8 branch) (Max, 8 branch)		KHRP26M22H, KHRP26M33H, KHRP26M72H, KHRP26M73H (Max, 4 branch) (Max, 8 branch) (Max, 8 branch) (Max, 8 branch)						
	Outside unit multi connection piping kit	—	BHFP22MA56, BHFP26MA56		BHFP22MA84, BHFP26MA84						
External control adaptor for outdoor unit		DTA104A62									
Strainer kit ★1		BWU26A15, BWU26A20									

- Note:**
1. Refer to the latest drawing.
 2. In the case of heat recovery system, COOL/HEAT Selector cannot be connected.
 3. ★1 Accessory exclusively for Y1 models.
Contained in the product package for TL and YL models.

3D062157

5. Example of Connection

* Below table is mentioned about the case of heat recovery system (3-piping: suction gas, HP/LP gas and liquid pipes).

In case of heat pump system (2-piping: gas and liquid pipes), select the pipe size from suction gas pipe for gas pipes and from liquid gas pipe for liquid pipes. And BS unit is not required.

Example of connection

(Connection of 8 indoor units Heat pump system)
(2-piping)

• Piping between outside unit and BS unit
 (Thick line): 3-piping
 { HP/LP gas piping
 Suction gas piping
 Liquid piping

• Piping between BS unit and indoor unit,
 (Thin line): 2-piping
 { Gas piping
 Liquid piping

[*]
 In case of multi outside unit system, re-read the [outside unit] as [the first outside branch seen from the indoor unit side].

		Branch with REFNET joint		Branch with REFNET joint and REFNET header		Branch with REFNET header	
Single outside unit system	Example 1			Example 2			
	Example 4			Example 5			
Multi outside unit system	Example 3			Example 6			

Maximum allowable length	Between outside (*) and indoor units	Actual pipe length	Pipe length between outside (*) and indoor units ≤ 120m (Example 1,4) unit [8]: a + b + c + d + e + s ≤ 120m	(Example 2,5) unit [6]: a + b + l ≤ 120m, [8]: a + m + n + p ≤ 120m	(Example 3,6) unit [8]: a + o ≤ 120m
		Equivalent length	Equivalent pipe length between outside (*) and indoor units ≤ 140m (Note 1) (assume equivalent pipe length of REFNET joint to be 0.5m, that of REFNET header to be 1m, BSV100,160 is 4 m and BSV250 is 6m.)		
		Total extension length	Total piping length from outside unit (*) to all indoor units ≤ 300m		
Allowable height length	Between outside branch and outside unit (In case of multi system)	Actual pipe length	Piping length from outside branch to outside unit ≤ 10m Equivalent length: max 13m		
	Between outside and indoor units	Difference in height	Difference in height between outside and indoor units (H1) ≤ 50m (Max 40m if the outside unit is below)		
	Between indoor and indoor units	Difference in height	Difference in height between indoor units (H2) ≤ 15m		
Allowable length after the branch	Between outside and outside units	Difference in height	Difference in height between outside unit (main) and outside unit (sub) (H3) ≤ 2m		
	Between indoor and indoor units	Difference in height	Pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 40m (Note 2) (Example 1,4) unit [8]: b + c + d + e + s ≤ 40m (Example 2,5) unit [6]: b + l ≤ 40m, [8]: m + n + p ≤ 40m (Example 3,6) unit [8]: o ≤ 40m		

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R-410A.

How to select REFNET joint:
 • When using REFNET joints at the first branch counted from the outside unit side. Choose from the following table in accordance with the capacity of the outside unit. (Example 1,2,4,5 : REFNET joint-A)

Outside unit capacity type	Refrigerant branch kit name	
	Heat recovery system	Heat pump system
RWEYQ10 type	KHRP25A33T	KHRP26A33T
RWEYQ20 type	KHRP25A72T + KHRP25M72TP	KHRP26A72T
RWEYQ30 type	KHRP25A73T + KHRP25M73TP	KHRP26A73T + KHRP26M73TP

• For REFNET joints other than the first branch, select the proper branch kit model based on the total capacity index.

Indoor capacity index	Refrigerant branch kit name	
	In case of 3-tube piping	In case of 2-tube piping
< 200	KHRP25A22T	KHRP26A22T
200 ≤ x < 290	KHRP25A33T	KHRP26A33T
290 ≤ x < 640	KHRP25A72T+KHRP25M72TP	KHRP26A72T
640 ≤	KHRP25A73T+KHRP25M73TP	KHRP26A73T+KHRP26M73TP

How to select REFNET header
 • Select suitable one from the table below according to the total capacity of indoor units to be connected to the downstream of REFNET header.
 • Be careful that 250 type cannot be connected to the downstream of REFNET header.

Indoor capacity index	Refrigerant branch kit name	
	In case of 3-tube piping	In case of 2-tube piping
< 200	KHRP25M33H	KHRP26M33H
200 ≤ x < 290	KHRP25M33H	KHRP26M33H
290 ≤ x < 640	KHRP25M72H+KHRP25M72HP	KHRP26M72H
640 ≤	KHRP25M73H+KHRP25M73HP	KHRP26M73H+KHRP26M73HP

How to select an outside branch kit (Needed when the outside unit type is RWEYQ20 or more.)
 • Select from the table below according to the number of outside units.

Number of units of outside unit	Heat recovery system	Heat pump system
2 unit	BHFP26MA56	BHFP22MA56
3 unit	BHFP26MA84	BHFP22MA84

Pipe size selection

Caution
 The thickness of the pipes in the table shows the requirements of Japanese High Pressure Gas Control law. (As of Jan. 2003)
 The thickness and material shall be selected in accordance with local code.

For a multi outside unit system, make the settings in accordance with the following figure.

Piping between outside unit (*) and refrigerant branch kit (part A)
 Piping between outside branch and outside unit (part C)
 • Match to the size of connection piping of outside unit (Unit: mm)

Capacity type of outside unit	Piping size (outer diameter × Min. thickness)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
RWEYQ10	φ22.2 × 0.80	φ19.1 × 0.80	φ 9.5 × 0.80
RWEYQ20	φ28.6 × 0.99	φ22.2 × 0.80	φ15.9 × 0.99
RWEYQ30	φ34.9 × 1.21	φ28.6 × 0.99	φ19.1 × 0.80

Piping between outside branches (part B)
 • Select the size from the following table based on the total capacity of the outside unit to be connected to upstream (Unit: mm)

Total capacity of outside unit	Piping size (outer diameter × Min. thickness)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
RWEYQ20	φ28.6 × 0.99	φ22.2 × 0.80	φ15.9 × 0.99

Piping between BS unit and refrigerant branching kit
 • Select one from the table below according to the total capacity of indoor units to be connected to downstream.
 • For the gas piping size in case of 2-tube piping between refrigerant branching kit/BS unit and refrigerant branching kit, select the size of suction gas piping.
 • The size of connection piping should not exceed the refrigerant piping size selected under the generic term of the system. (Unit: mm)

Indoor capacity index	Piping size (outer diameter × minimum wall thickness)		
	Suction gas pipe	HP/LP gas pipe	Liquid pipe
< 150	φ15.9 × 0.99	φ12.7 × 0.80	φ 9.5 × 0.80
150 ≤ x < 200	φ19.1 × 0.80	φ15.9 × 0.99	
200 ≤ x < 290	φ22.2 × 0.80	φ19.1 × 0.80	φ12.7 × 0.80
290 ≤ x < 420	φ28.6 × 0.99		
420 ≤ x < 640	φ28.6 × 0.99	φ28.6 × 0.99	φ15.9 × 0.99
640 ≤ x < 920	φ34.9 × 1.21		
920 ≤	φ41.3 × 1.43	φ19.1 × 0.80	

Piping between BS unit (refrigerant branch kit) and indoor unit
 • Match to the size of the connection piping on the indoor unit.
 Indoor unit connection piping size (Unit:mm)

Indoor capacity type	Piping size (outer diameter × minimum wall thickness)	
	Gas pipe	Liquid pipe
20, 25, 32, 40, 50 type	φ12.7 × 0.80	φ6.4 × 0.80
63, 80, 100, 125 type	φ15.9 × 0.99	φ9.5 × 0.80
200 type	φ19.1 × 0.80	φ9.5 × 0.80
250 type	φ22.2 × 0.80	

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged R (kg)
 (R should be rounded off in units of 0.1kg.)

$$R = \left(\frac{\text{Total length (m) of liquid piping size at } \phi 22.2}{\text{kg/m}} \right) \times 0.37 + \left(\frac{\text{Total length (m) of liquid piping size at } \phi 19.1}{\text{kg/m}} \right) \times 0.26 + \left(\frac{\text{Total length (m) of liquid piping size at } \phi 15.9}{\text{kg/m}} \right) \times 0.18 + \left(\frac{\text{Total length (m) of liquid piping size at } \phi 12.7}{\text{kg/m}} \right) \times 0.12$$

$$+ \left(\frac{\text{Total length (m) of liquid piping size at } \phi 9.5}{\text{kg/m}} \right) \times 0.059 + \left(\frac{\text{Total length (m) of liquid piping size at } \phi 6.4}{\text{kg/m}} \right) \times 0.022 + \text{Corrected volume by outside unit}$$

System name	Heat pump system	Heat recovery system
RWEYQ10	3 kg	4 kg
RWEYQ20	4.5 kg	6.5 kg
RWEYQ30	6 kg	9 kg

Example for refrigerant branch using REFNET joint and REFNET header for RWEYQ30 (Heat recovery system)
 If the outside unit is RWEYQ30 and the piping lengths are as at right

$$R = \underset{a}{30 \times 0.26} + \underset{b+u}{11 \times 0.18} + \underset{ic}{10 \times 0.12} + \underset{+d+e+f+r+s+t}{49 \times 0.059} + \underset{g+h+j+k+l+m+n+o+p}{100 \times 0.022} + 9 = 25.071$$

[25.1] (kg)

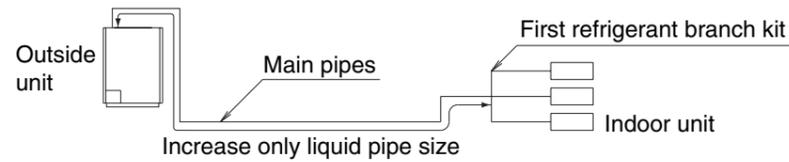
Appendix

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Note 1.

When the equivalent pipe length between outside and indoor units is 80m or more, the size of main pipes on the liquid side (refer to the figure below) must be increased according to the right table. (Never increase suction gas pipe and HP/LP gas pipe.)

System	Liquid pipe
RWEYQ10PYL/TL	φ9.5 → φ12.7
RWEYQ20PYL/TL	φ15.9 → φ19.1
RWEYQ30PYL/TL	φ19.1 → φ22.2



Note 2. Allowable length after the first refrigerant branch kit to indoor units is 40m or less, however it can be extended up to 90m if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings	
1. It is necessary to increase the gas pipe size (*1) between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.	$\boxed{8}$ $b+c+d+e+f+g+p \leq 90$ m increase the gas pipe size (*1) of b, c, d, e, f, g	Increase the gas pipe size (*1) as follows $\phi 9.5 \rightarrow \phi 12.7$ $\phi 15.9 \rightarrow \phi 19.1$ $\phi 22.2 \rightarrow \phi 25.4^{*2}$ $\phi 34.9 \rightarrow \phi 38.1^{*2}$ $\phi 12.7 \rightarrow \phi 15.9$ $\phi 19.1 \rightarrow \phi 22.2$ $\phi 28.6 \rightarrow \phi 31.8^{*2}$
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	$a+b \times 2+c \times 2+d \times 2+e \times 2+f \times 2+g \times 2$ $+h+i+j+k+l+m+n+p \leq 300$ m	
3. Indoor unit to the nearest branch kit ≤ 40 m	$h, i, j, \dots, p \leq 40$ m	
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 40 m	The farthest indoor unit $\boxed{8}$ The nearest indoor unit $\boxed{1}$ $(a+b+c+d+e+f+g+p) - (a+h) \leq 40$ m	

*1 In case of heat pump system, the liquid pipe and gas pipe.
 In case of heat recovery system, the liquid pipe and suction gas pipe.
 *2 If available on the site, use this size. Otherwise it can not be increased.

6. Thermistor Resistance / Temperature Characteristics

Indoor unit	For air suction	R1T
	For liquid pipe	R2T
	For gas pipe	R3T
Outdoor unit	For outdoor air	R1T
	For coil	R2T
	For suction pipe	R4T
	For Receiver gas pipe	R5T

			(kΩ)		
T°C	0.0	0.5	T°C	0.0	0.5
-20	197.81	192.08	30	16.10	15.76
-19	186.53	181.16	31	15.43	15.10
-18	175.97	170.94	32	14.79	14.48
-17	166.07	161.36	33	14.18	13.88
-16	156.80	152.38	34	13.59	13.31
-15	148.10	143.96	35	13.04	12.77
-14	139.94	136.05	36	12.51	12.25
-13	132.28	128.63	37	12.01	11.76
-12	125.09	121.66	38	11.52	11.29
-11	118.34	115.12	39	11.06	10.84
-10	111.99	108.96	40	10.63	10.41
-9	106.03	103.18	41	10.21	10.00
-8	100.41	97.73	42	9.81	9.61
-7	95.14	92.61	43	9.42	9.24
-6	90.17	87.79	44	9.06	8.88
-5	85.49	83.25	45	8.71	8.54
-4	81.08	78.97	46	8.37	8.21
-3	76.93	74.94	47	8.05	7.90
-2	73.01	71.14	48	7.75	7.60
-1	69.32	67.56	49	7.46	7.31
0	65.84	64.17	50	7.18	7.04
1	62.54	60.96	51	6.91	6.78
2	59.43	57.94	52	6.65	6.53
3	56.49	55.08	53	6.41	6.33
4	53.71	52.38	54	6.18	6.13
5	51.09	49.83	55	5.95	5.93
6	48.61	47.42	56	5.74	5.74
7	46.26	45.14	57	5.54	5.54
8	44.05	42.98	58	5.35	5.35
9	41.95	40.94	59	5.17	5.17
10	39.96	39.01	60	4.99	4.99
11	38.08	37.18	61	4.82	4.82
12	36.30	35.45	62	4.66	4.66
13	34.62	33.81	63	4.51	4.51
14	33.02	32.25	64	4.36	4.36
15	31.50	30.77	65	4.22	4.22
16	30.06	29.37	66	4.08	4.08
17	28.70	28.05	67	3.94	3.94
18	27.41	26.78	68	3.81	3.81
19	26.18	25.59	69	3.68	3.68
20	25.01	24.45	70	3.56	3.56
21	23.91	23.37	71	3.44	3.44
22	22.85	22.35	72	3.32	3.32
23	21.85	21.37	73	3.21	3.21
24	20.90	20.45	74	3.11	3.11
25	20.00	19.56	75	3.01	3.01
26	19.14	18.73	76	2.91	2.91
27	18.32	17.93	77	2.82	2.82
28	17.54	17.17	78	2.72	2.72
29	16.80	16.45	79	2.64	2.64
30	16.10	15.76	80	2.55	2.55

**Outside Unit
Thermistors for
Discharge Pipe
(R3T)**

						(kΩ)		
T°C	0.0	0.5	T°C	0.0	0.5	T°C	0.0	0.5
0	640.44	624.65	50	72.32	70.96	100	13.35	13.15
1	609.31	594.43	51	69.64	68.34	101	12.95	12.76
2	579.96	565.78	52	67.06	65.82	102	12.57	12.38
3	552.00	538.63	53	64.60	63.41	103	12.20	12.01
4	525.63	512.97	54	62.24	61.09	104	11.84	11.66
5	500.66	488.67	55	59.97	58.87	105	11.49	11.32
6	477.01	465.65	56	57.80	56.75	106	11.15	10.99
7	454.60	443.84	57	55.72	54.70	107	10.83	10.67
8	433.37	423.17	58	53.72	52.84	108	10.52	10.36
9	413.24	403.57	59	51.98	50.96	109	10.21	10.06
10	394.16	384.98	60	49.96	49.06	110	9.92	9.78
11	376.05	367.35	61	48.19	47.33	111	9.64	9.50
12	358.88	350.62	62	46.49	45.67	112	9.36	9.23
13	342.58	334.74	63	44.86	44.07	113	9.10	8.97
14	327.10	319.66	64	43.30	42.54	114	8.84	8.71
15	312.41	305.33	65	41.79	41.06	115	8.59	8.47
16	298.45	291.73	66	40.35	39.65	116	8.35	8.23
17	285.18	278.80	67	38.96	38.29	117	8.12	8.01
18	272.58	266.51	68	37.63	36.98	118	7.89	7.78
19	260.60	254.72	69	36.34	35.72	119	7.68	7.57
20	249.00	243.61	70	35.11	34.51	120	7.47	7.36
21	238.36	233.14	71	33.92	33.35	121	7.26	7.16
22	228.05	223.08	72	32.78	32.23	122	7.06	6.97
23	218.24	213.51	73	31.69	31.15	123	6.87	6.78
24	208.90	204.39	74	30.63	30.12	124	6.69	6.59
25	200.00	195.71	75	29.61	29.12	125	6.51	6.42
26	191.53	187.44	76	28.64	28.16	126	6.33	6.25
27	183.46	179.57	77	27.69	27.24	127	6.16	6.08
28	175.77	172.06	78	26.79	26.35	128	6.00	5.92
29	168.44	164.90	79	25.91	25.49	129	5.84	5.76
30	161.45	158.08	80	25.07	24.66	130	5.69	5.61
31	154.79	151.57	81	24.26	23.87	131	5.54	5.46
32	148.43	145.37	82	23.48	23.10	132	5.39	5.32
33	142.37	139.44	83	22.73	22.36	133	5.25	5.18
34	136.59	133.79	84	22.01	21.65	134	5.12	5.05
35	131.06	128.39	85	21.31	20.97	135	4.98	4.92
36	125.79	123.24	86	20.63	20.31	136	4.86	4.79
37	120.76	118.32	87	19.98	19.67	137	4.73	4.67
38	115.95	113.62	88	19.36	19.05	138	4.61	4.55
39	111.35	109.13	89	18.75	18.46	139	4.49	4.44
40	106.96	104.84	90	18.17	17.89	140	4.38	4.32
41	102.76	100.73	91	17.61	17.34	141	4.27	4.22
42	98.75	96.81	92	17.07	16.80	142	4.16	4.11
43	94.92	93.06	93	16.54	16.29	143	4.06	4.01
44	91.25	89.47	94	16.04	15.79	144	3.96	3.91
45	87.74	86.04	95	15.55	15.31	145	3.86	3.81
46	84.38	82.75	96	15.08	14.85	146	3.76	3.72
47	81.16	79.61	97	14.62	14.40	147	3.67	3.62
48	78.09	76.60	98	14.18	13.97	148	3.58	3.54
49	75.14	73.71	99	13.76	13.55	149	3.49	3.45
50	72.32	70.96	100	13.35	13.15	150	3.41	3.37

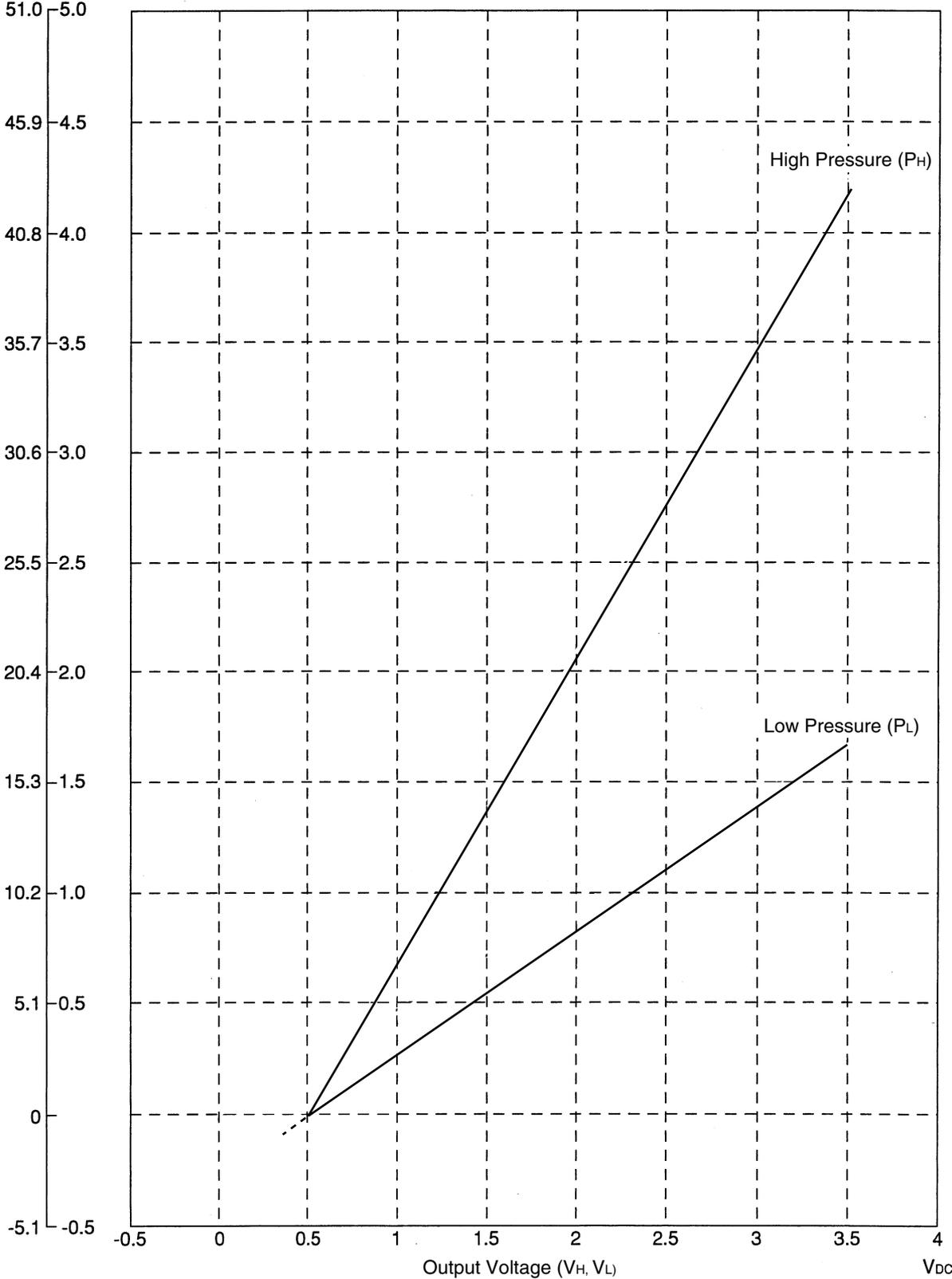
7. Pressure Sensor

$P_H = 1.38V - 0.69$
 $P_L = 0.57V - 0.28$
 P_H : High pressure (MPa)
 P_L : Low pressure (MPa)
 V : Voltage (V)

P_H : Detected Pressure [High Side] MPa
 P_L : Detected Pressure [Low Side] MPa
 V_H : Output Voltage [High Side] V_{DC}
 V_L : Output Voltage [Low Side] V_{DC}

Detected Pressure

P_H, P_L
 (kg/cm²) MPa



(V3053)

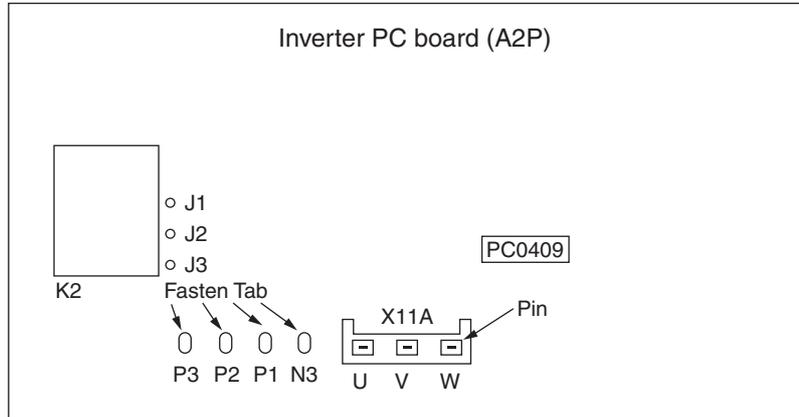
8. Method of Checking the Inverter's Power Transistors and Diode Modules

[In case of YL (3ph, 380V, 60Hz) power supply]

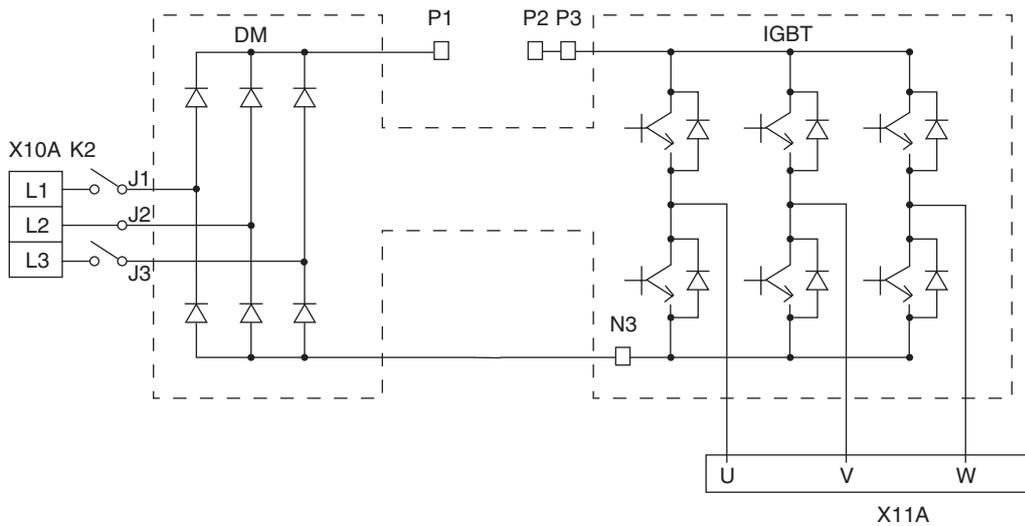
Please conduct followings before checking

- (1) Make the outside unit power off.
- (2) Disconnect the electric wiring connected to the power transistor and diode module.

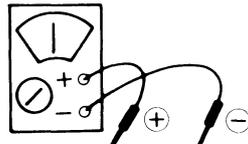
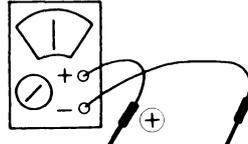
Inverter PC Board



Electronic Circuit



Power Transistor IGBT (On Inverter PC Board)

		Resistance	Tester Range			Resistance	Tester Range		
P3	—	U	$9\pm6\Omega$	x 1k	N3	—	U	$17\pm12\Omega$	x 1k
∕	—	V	$9\pm6\Omega$	x 1k	∕	—	V	$17\pm12\Omega$	x 1k
∕	—	W	$9\pm6\Omega$	x 1k	∕	—	W	$17\pm12\Omega$	x 1k
U	—	P3	$17\pm12\Omega$	x 1k	U	—	N3	$9\pm6\Omega$	x 1k
V	—	∕	$17\pm12\Omega$	x 1k	V	—	∕	$9\pm6\Omega$	x 1k
W	—	∕	$17\pm12\Omega$	x 1k	W	—	∕	$9\pm6\Omega$	x 1k

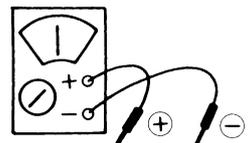
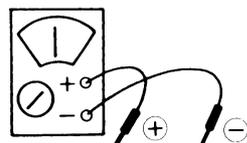
(Decision)

If other than given above, the power unit is defective and must be replaced.



Note: Above figures are measured by analogue tester. Make sure to set “Tester Range” to “x 1k”.

Diode Module

		Resistance	Tester Range			Resistance	Tester Range		
P1	—	J1	$9\pm6\Omega$	x 1k	N3	—	J1	∞	x 1k
P1	—	J3	$9\pm6\Omega$	x 1k	∕	—	J3	∞	x 1k
P1	—	J2	$9\pm6\Omega$	x 1k	∕	—	J2	∞	x 1k
J1	—	P1	∞	x 1k	L1	—	N3	$9\pm6\Omega$	x 1k
J3	—	P1	∞	x 1k	L2	—	N3	$9\pm6\Omega$	x 1k
J2	—	P1	∞	x 1k	L3	—	N3	$9\pm6\Omega$	x 1k

(V2897)

(Decision)

If other than given above, the diode module is defective and must be replaced.



Note: Above figures are measured by analogue tester. Make sure to set “Tester Range” to “x 1k”.

[In case of TL (3ph, 220V, 60Hz) power supply]

Please conduct following before checking

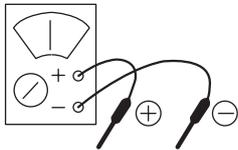
- (1) Make the outside unit power off.
- (2) Disconnect the electric wiring connected to the power transistor and diode module.

[In case of TL (3ph, 220V, 60Hz) power supply]

Please conduct followings before checking.

- (1) Make the outside unit power off.
- (2) Disconnect the electric wiring connected to the power transistor and diode module.

[Checking procedure]



○Power transistor
[Judgment criteria]

Values for each phase in *1 and *2 in the following table must be the same.

<The conditions that must be judged as the same value>

- ① The difference in resistance among each phase in *1 is 10Ω or less.
- ② The difference in resistance among each phase in *2 is 200Ω or less.

Tester electrode +	Tester electrode -	Resistance Ω	Tester range
P3	U	10~20(*1)	×1K
P3	V	10~20(*1)	×1K
P3	W	10~20(*1)	×1K
U	P3	100~300k→∞ (*2)	×1M
V	P3	100~300k→∞ (*2)	×1M
W	P3	100~300k→∞ (*2)	×1M
N3	U	100~300k→∞ (*2)	×1M
N3	V	100~300k→∞ (*2)	×1M
N3	W	100~300k→∞ (*2)	×1M
U	N3	10~20(*1)	×1K
V	N3	10~20(*1)	×1K
W	N3	10~20(*1)	×1K

* When a digital tester is used, "∞" and "continuity" may be switched.

○Diode module
[Judgment criteria]

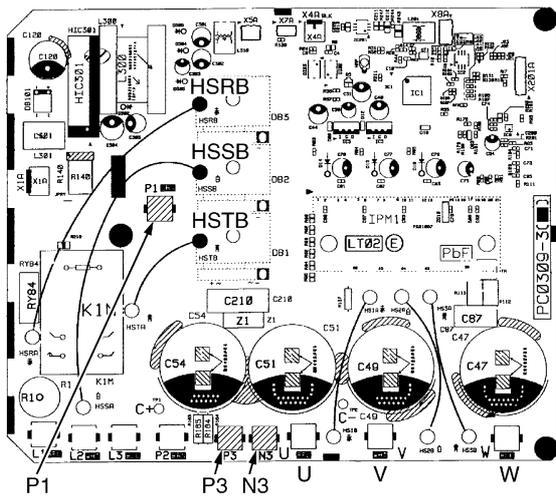
Values for each phase in *1 and *2 in the following table must be the same.

<The conditions that must be judged as the same value>

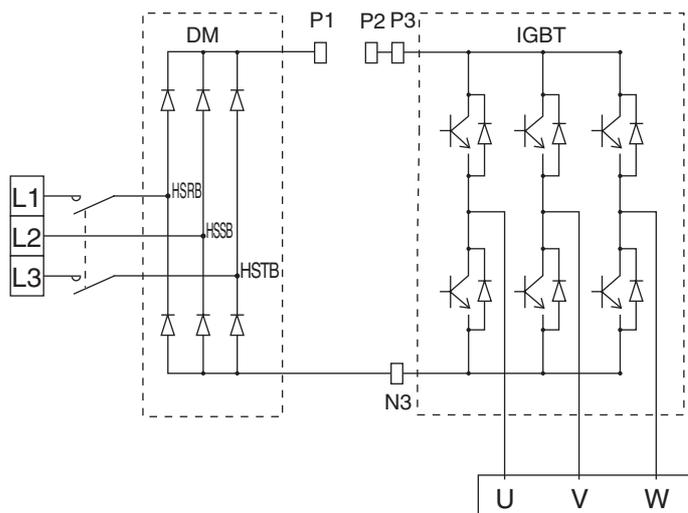
- ① The difference in resistance among each phase in *1 is 10Ω or less.
- ② All of the resistances of each phase in *2 is ∞Ω.

Tester electrode +	Tester electrode -	Resistance Ω	Tester range
P1	HSRB	10~20(*1)	×1K
P1	HSSB	10~20(*1)	×1K
P1	HSTB	10~20(*1)	×1K
HSRB	P1	∞ (*2)	×1K
HSSB	P1	∞ (*2)	×1K
HSTB	P1	∞ (*2)	×1K
N3	HSRB	∞ (*2)	×1K
N3	HSSB	∞ (*2)	×1K
N3	HSTB	∞ (*2)	×1K
HSRB	N3	10~20(*1)	×1K
HSSB	N3	10~20(*1)	×1K
HSTB	N3	10~20(*1)	×1K

Printed Circuit Board



Circuit Diagram



Part 9

Precautions for New Refrigerant (R-410A)

1. Precautions for New Refrigerant (R-410A)	316
1.1 Outline	316
1.2 Refrigerant Cylinders.....	318
1.3 Service Tools.....	319

1. Precautions for New Refrigerant (R-410A)

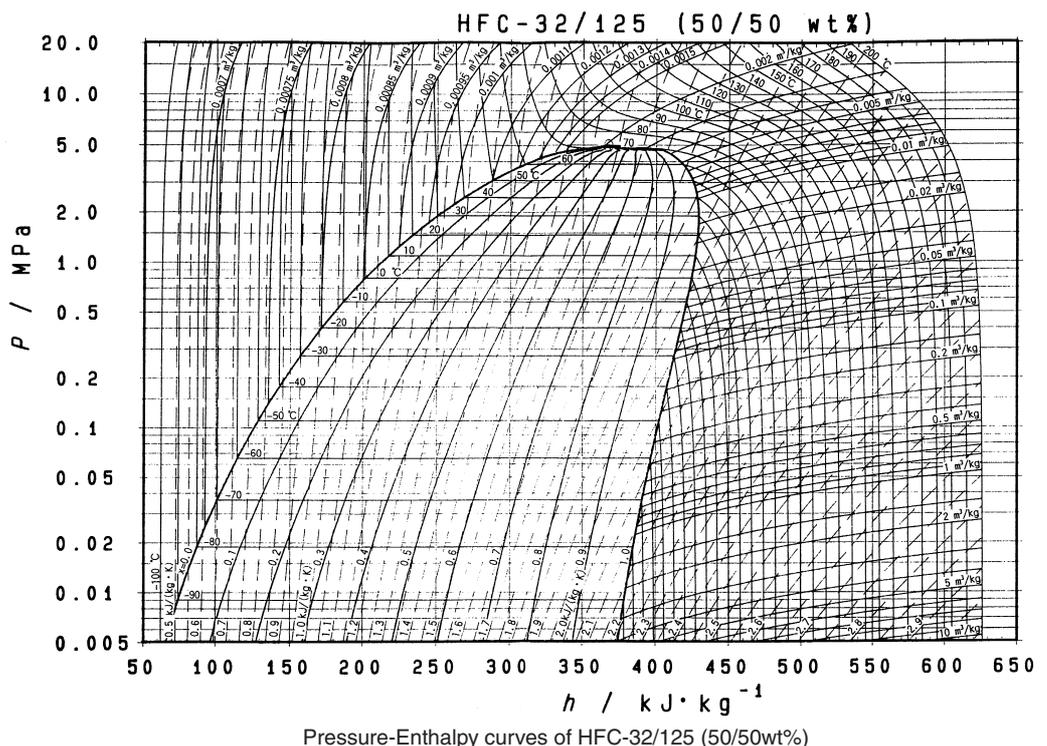
1.1 Outline

1.1.1 About Refrigerant R-410A

- Characteristics of new refrigerant, R-410A
 1. Performance
Almost the same performance as R-22 and R-407C
 2. Pressure
Working pressure is approx. 1.4 times more than R-22 and R-407C.
 3. Refrigerant composition
Few problems in composition control, since it is a Quasi-azeotropic mixture refrigerant.

	HFC units (Units using new refrigerants)		HCFC units
Refrigerant name	R-407C	R-410A	R-22
Composing substances	Non-azeotropic mixture of HFC32, HFC125 and HFC134a (*1)	Quasi-azeotropic mixture of HFC32 and JFC125 (*1)	Single-component refrigerant
Design pressure	3.2 MPa (gauge pressure) = 32.6 kgf/cm ²	4.0 MPa (gauge pressure) = 40.78 kgf/cm ²	2.75MPa (gauge pressure) = 28.0 kgf/cm ²
Refrigerant oil	Synthetic oil (Ether)		Mineral oil (Suniso)
Ozone destruction factor (ODP)	0	0	0.05
Combustibility	None	None	None
Toxicity	None	None	None

- ★1. Non-azeotropic mixture refrigerant: mixture of two or more refrigerants having different boiling points.
- ★2. Quasi-azeotropic mixture refrigerant: mixture of two or more refrigerants having similar boiling points.
- ★3. The design pressure is different at each product. Please refer to the installation manual for each product.
(Reference) 1 MPa ≒ 10.19716 kgf / cm²



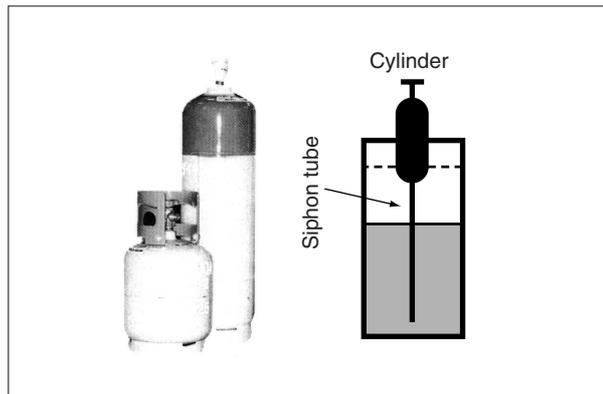
■ Thermodynamic characteristic of R-410A

DAIREP ver2.0

Temperature (°C)	Steam pressure (kPa)		Density (kg/m ³)		Specific heat at constant pressure (kJ/kgK)		Specific enthalpy (kJ/kg)		Specific entropy (kJ/KgK)	
	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-70	36.13	36.11	1410.7	1.582	1.372	0.695	100.8	390.6	0.649	2.074
-68	40.83	40.80	1404.7	1.774	1.374	0.700	103.6	391.8	0.663	2.066
-66	46.02	45.98	1398.6	1.984	1.375	0.705	106.3	393.0	0.676	2.058
-64	51.73	51.68	1392.5	2.213	1.377	0.710	109.1	394.1	0.689	2.051
-62	58.00	57.94	1386.4	2.463	1.378	0.715	111.9	395.3	0.702	2.044
-60	64.87	64.80	1380.2	2.734	1.379	0.720	114.6	396.4	0.715	2.037
-58	72.38	72.29	1374.0	3.030	1.380	0.726	117.4	397.6	0.728	2.030
-56	80.57	80.46	1367.8	3.350	1.382	0.732	120.1	398.7	0.741	2.023
-54	89.49	89.36	1361.6	3.696	1.384	0.737	122.9	399.8	0.754	2.017
-52	99.18	99.03	1355.3	4.071	1.386	0.744	125.7	400.9	0.766	2.010
-51.58	101.32	101.17	1354.0	4.153	1.386	0.745	126.3	401.1	0.769	2.009
-50	109.69	109.51	1349.0	4.474	1.388	0.750	128.5	402.0	0.779	2.004
-48	121.07	120.85	1342.7	4.909	1.391	0.756	131.2	403.1	0.791	1.998
-46	133.36	133.11	1336.3	5.377	1.394	0.763	134.0	404.1	0.803	1.992
-44	146.61	146.32	1330.0	5.880	1.397	0.770	136.8	405.2	0.816	1.987
-42	160.89	160.55	1323.5	6.419	1.401	0.777	139.6	406.2	0.828	1.981
-40	176.24	175.85	1317.0	6.996	1.405	0.785	142.4	407.3	0.840	1.976
-38	192.71	192.27	1310.5	7.614	1.409	0.792	145.3	408.3	0.852	1.970
-36	210.37	209.86	1304.0	8.275	1.414	0.800	148.1	409.3	0.864	1.965
-34	229.26	228.69	1297.3	8.980	1.419	0.809	150.9	410.2	0.875	1.960
-32	249.46	248.81	1290.6	9.732	1.424	0.817	153.8	411.2	0.887	1.955
-30	271.01	270.28	1283.9	10.53	1.430	0.826	156.6	412.1	0.899	1.950
-28	293.99	293.16	1277.1	11.39	1.436	0.835	159.5	413.1	0.911	1.946
-26	318.44	317.52	1270.2	12.29	1.442	0.844	162.4	414.0	0.922	1.941
-24	344.44	343.41	1263.3	13.26	1.448	0.854	165.3	414.9	0.934	1.936
-22	372.05	370.90	1256.3	14.28	1.455	0.864	168.2	415.7	0.945	1.932
-20	401.34	400.06	1249.2	15.37	1.461	0.875	171.1	416.6	0.957	1.927
-18	432.36	430.95	1242.0	16.52	1.468	0.886	174.1	417.4	0.968	1.923
-16	465.20	463.64	1234.8	17.74	1.476	0.897	177.0	418.2	0.980	1.919
-14	499.91	498.20	1227.5	19.04	1.483	0.909	180.0	419.0	0.991	1.914
-12	536.58	534.69	1220.0	20.41	1.491	0.921	182.9	419.8	1.003	1.910
-10	575.26	573.20	1212.5	21.86	1.499	0.933	185.9	420.5	1.014	1.906
-8	616.03	613.78	1204.9	23.39	1.507	0.947	189.0	421.2	1.025	1.902
-6	658.97	656.52	1197.2	25.01	1.516	0.960	192.0	421.9	1.036	1.898
-4	704.15	701.49	1189.4	26.72	1.524	0.975	195.0	422.6	1.048	1.894
-2	751.64	748.76	1181.4	28.53	1.533	0.990	198.1	423.2	1.059	1.890
0	801.52	798.41	1173.4	30.44	1.543	1.005	201.2	423.8	1.070	1.886
2	853.87	850.52	1165.3	32.46	1.552	1.022	204.3	424.4	1.081	1.882
4	908.77	905.16	1157.0	34.59	1.563	1.039	207.4	424.9	1.092	1.878
6	966.29	962.42	1148.6	36.83	1.573	1.057	210.5	425.5	1.103	1.874
8	1026.5	1022.4	1140.0	39.21	1.584	1.076	213.7	425.9	1.114	1.870
10	1089.5	1085.1	1131.3	41.71	1.596	1.096	216.8	426.4	1.125	1.866
12	1155.4	1150.7	1122.5	44.35	1.608	1.117	220.0	426.8	1.136	1.862
14	1224.3	1219.2	1113.5	47.14	1.621	1.139	223.2	427.2	1.147	1.859
16	1296.2	1290.8	1104.4	50.09	1.635	1.163	226.5	427.5	1.158	1.855
18	1371.2	1365.5	1095.1	53.20	1.650	1.188	229.7	427.8	1.169	1.851
20	1449.4	1443.4	1085.6	56.48	1.666	1.215	233.0	428.1	1.180	1.847
22	1530.9	1524.6	1075.9	59.96	1.683	1.243	236.4	428.3	1.191	1.843
24	1615.8	1609.2	1066.0	63.63	1.701	1.273	239.7	428.4	1.202	1.839
26	1704.2	1697.2	1055.9	67.51	1.721	1.306	243.1	428.6	1.214	1.834
28	1796.2	1788.9	1045.5	71.62	1.743	1.341	246.5	428.6	1.225	1.830
30	1891.9	1884.2	1034.9	75.97	1.767	1.379	249.9	428.6	1.236	1.826
32	1991.3	1983.2	1024.1	80.58	1.793	1.420	253.4	428.6	1.247	1.822
34	2094.5	2086.2	1012.9	85.48	1.822	1.465	256.9	428.4	1.258	1.817
36	2201.7	2193.1	1001.4	90.68	1.855	1.514	260.5	428.3	1.269	1.813
38	2313.0	2304.0	989.5	96.22	1.891	1.569	264.1	428.0	1.281	1.808
40	2428.4	2419.2	977.3	102.1	1.932	1.629	267.8	427.7	1.292	1.803
42	2548.1	2538.6	964.6	108.4	1.979	1.696	271.5	427.2	1.303	1.798
44	2672.2	2662.4	951.4	115.2	2.033	1.771	275.3	426.7	1.315	1.793
46	2800.7	2790.7	937.7	122.4	2.095	1.857	279.2	426.1	1.327	1.788
48	2933.7	2923.6	923.3	130.2	2.168	1.955	283.2	425.4	1.339	1.782
50	3071.5	3061.2	908.2	138.6	2.256	2.069	287.3	424.5	1.351	1.776
52	3214.0	3203.6	892.2	147.7	2.362	2.203	291.5	423.5	1.363	1.770
54	3361.4	3351.0	875.1	157.6	2.493	2.363	295.8	422.4	1.376	1.764
56	3513.8	3503.5	856.8	168.4	2.661	2.557	300.3	421.0	1.389	1.757
58	3671.3	3661.2	836.9	180.4	2.883	2.799	305.0	419.4	1.403	1.749
60	3834.1	3824.2	814.9	193.7	3.191	3.106	310.0	417.6	1.417	1.741
62	4002.1	3992.7	790.1	208.6	3.650	3.511	315.3	415.5	1.433	1.732
64	4175.7	4166.8	761.0	225.6	4.415	4.064	321.2	413.0	1.450	1.722

1.2 Refrigerant Cylinders

- Cylinder specifications
 - The cylinder is painted refrigerant color (pink).
 - The cylinder valve is equipped with a siphon tube.



Refrigerant can be charged in liquid state with cylinder in upright position.

Caution: Do not lay cylinder on its side during charging, since it cause refrigerant in gas state to enter the system.

■ Handling of cylinders

(1) Laws and regulations

R-410A is liquefied gas, and the High-Pressure Gas Safety Law must be observed in handling them. Before using, refer to the High-Pressure Gas Safety Law.

The Law stipulates standards and regulations that must be followed to prevent accidents with high-pressure gases. Be sure to follow the regulations.

(2) Handling of vessels

Since R-410A is high-pressure gas, it is contained in high-pressure vessels.

Although those vessels are durable and strong, careless handling can cause damage that can lead to unexpected accidents. Do not drop vessels, let them fall, apply impact or roll them on the ground.

(3) Storage

Although R-410A is not flammable, it must be stored in a well-ventilated, cool, and dark place in the same way as any other high-pressure gases.

It should also be noted that high-pressure vessels are equipped with safety devices that releases gas when the ambient temperature reaches more than a certain level (fusible plug melts) and when the pressure exceeds a certain level (spring-type safety valve operates).

1.3 Service Tools

R-410A is used under higher working pressure, compared to previous refrigerants (R-22, R-407C). Furthermore, the refrigerating machine oil has been changed from Suniso oil to Ether oil, and if oil mixing is occurred, sludge results in the refrigerants and causes other problems. Therefore, gauge manifolds and charge hoses that are used with a previous refrigerant (R-22, R-407C) can not be used for products that use new refrigerants.

Be sure to use dedicated tools and devices.

■ Tool compatibility

Tool	Compatibility			Reasons for change
	HFC		HCFC	
	R-410A	R-407C	R-22	
Gauge manifold Charge hose	×			<ul style="list-style-type: none"> Do not use the same tools for R-22 and R-410A. Thread specification differs for R-410A and R-407C.
Charging cylinder	×		○	<ul style="list-style-type: none"> Weighting instrument used for HFCs.
Gas detector	○		×	<ul style="list-style-type: none"> The same tool can be used for HFCs.
Vacuum pump (pump with reverse flow preventive function)		○		<ul style="list-style-type: none"> To use existing pump for HFCs, vacuum pump adaptor must be installed.
Weighting instrument		○		
Charge mouthpiece	×			<ul style="list-style-type: none"> Seal material is different between R-22 and HFCs. Thread specification is different between R-410A and others.
Flaring tool (Clutch type)		○		<ul style="list-style-type: none"> For R-410A, flare gauge is necessary.
Torque wrench		○		<ul style="list-style-type: none"> Torque-up for 1/2 and 5/8
Pipe cutter		○		
Pipe expander		○		
Pipe bender		○		
Pipe assembling oil	×			<ul style="list-style-type: none"> Due to refrigerating machine oil change. (No Suniso oil can be used.)
Refrigerant recovery device	Check your recovery device.			
Refrigerant piping	See the chart below.			<ul style="list-style-type: none"> Only $\phi 19.1$ is changed to 1/2H material while the previous material is "O".

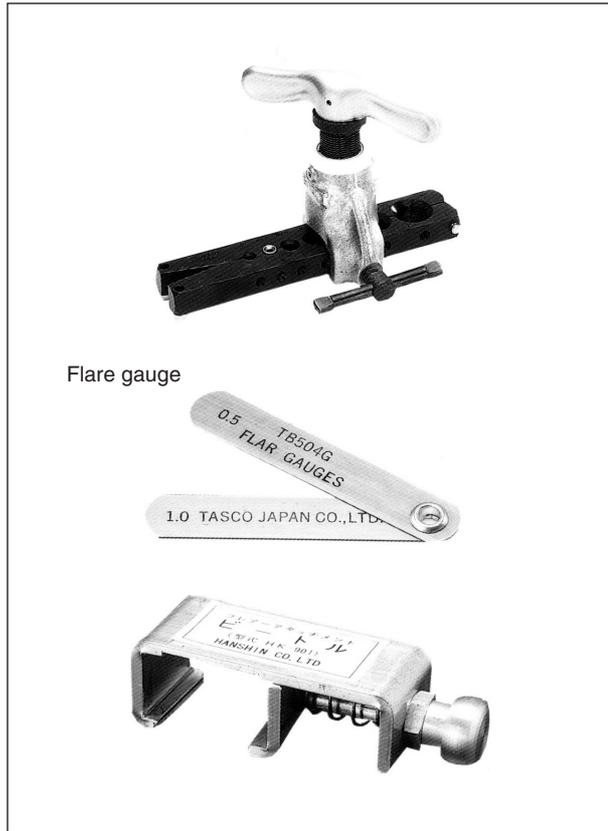
As for the charge mouthpiece and packing, 1/2UNF20 is necessary for mouthpiece size of charge hose.

■ Copper tube material and thickness

Pipe size	Ve-up		Ve-upII	
	R-407C		R-410A	
	Material	Thickness t (mm)	Material	Thickness t (mm)
$\phi 6.4$	O	0.8	O	0.8
$\phi 9.5$	O	0.8	O	0.8
$\phi 12.7$	O	0.8	O	0.8
$\phi 15.9$	O	1.0	O	1.0
$\phi 19.1$	O	1.0	1/2H	1.0
$\phi 22.2$	1/2H	1.0	1/2H	1.0
$\phi 25.4$	1/2H	1.0	1/2H	1.0
$\phi 28.6$	1/2H	1.0	1/2H	1.0
$\phi 31.8$	1/2H	1.2	1/2H	1.1
$\phi 38.1$	1/2H	1.4	1/2H	1.4
$\phi 44.5$	1/2H	1.6	1/2H	1.6

* O: Soft (Annealed)
H: Hard (Drawn)

1. Flaring tool



■ Specifications

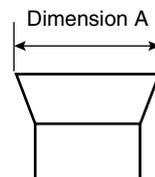
- Dimension A

Unit:mm

Nominal size	Tube O.D. Do	A ⁺⁰ _{-0.4}	
		Class-2 (R-410A)	Class-1 (Conventional)
1/4	6.35	9.1	9.0
3/8	9.52	13.2	13.0
1/2	12.70	16.6	16.2
5/8	15.88	19.7	19.4
3/4	19.05	24.0	23.3

■ Differences

- Change of dimension A



For class-1: R-407C
For class-2: R-410A

Conventional flaring tools can be used when the work process is changed.
(change of work process)

Previously, a pipe extension margin of 0 to 0.5mm was provided for flaring. For R-410A air conditioners, perform pipe flaring with a pipe extension margin of 1.0 to 1.5mm.
(For clutch type only)

Conventional tool with pipe extension margin adjustment can be used.

2. Torque wrench



■ Specifications

• Dimension B

Unit:mm

Nominal size	Class-1	Class-2	Previous
1/2	24	26	24
5/8	27	29	27

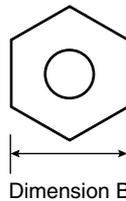
No change in tightening torque

No change in pipes of other sizes

■ Differences

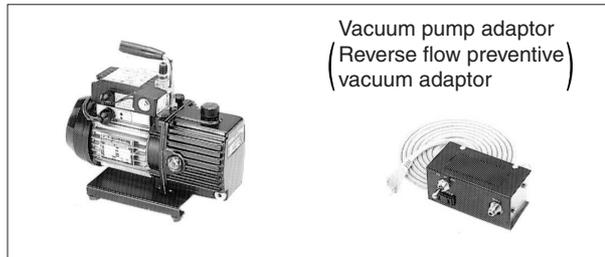
• Change of dimension B

Only 1/2", 5/8" are extended



For class-1: R-407C
For class-2: R-410A

3. Vacuum pump with check valve



■ Specifications

• Discharge speed

50 l/min (50Hz)

60 l/min (60Hz)

• Suction port UNF7/16-20(1/4 Flare)

UNF1/2-20(5/16 Flare) with adaptor

● Maximum degree of vacuum

Select a vacuum pump which is able to keep the vacuum degree of the system in excess of -100.7 kPa (5 torr - 755 mmHg).

■ Differences

• Equipped with function to prevent reverse oil flow

Previous vacuum pump can be used by installing adaptor.

4. Leak tester



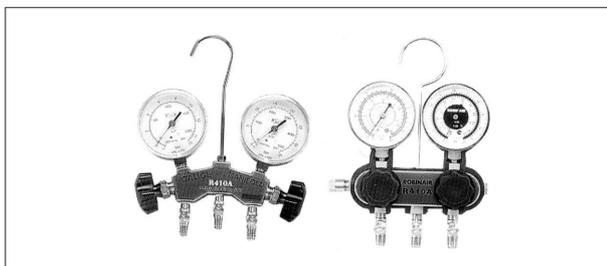
- Specifications
 - Hydrogen detecting type, etc.
 - Applicable refrigerants
R-410A, R-407C, R-404A, R-507A, R-134a, etc.
- Differences
 - Previous testers detected chlorine. Since HFCs do not contain chlorine, new tester detects hydrogen.

5. Refrigerant oil (Air compal)



- Specifications
 - Contains synthetic oil, therefore it can be used for piping work of every refrigerant cycle.
 - Offers high rust resistance and stability over long period of time.
- Differences
 - Can be used for R-410A and R-22 units.

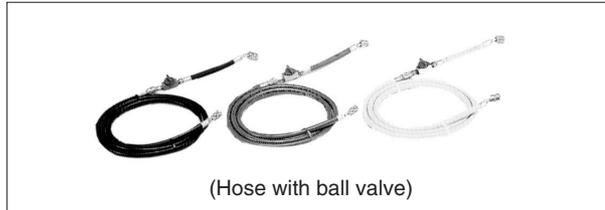
6. Gauge manifold for R-410A



- Specifications
 - High pressure gauge
- 0.1 to 5.3 MPa (-76 cmHg to 53 kg/cm²)
 - Low pressure gauge
- 0.1 to 3.8 MPa (-76 cmHg to 38 kg/cm²)
 - 1/4" → 5/16" (2min → 2.5min)
 - No oil is used in pressure test of gauges.
→ For prevention of contamination

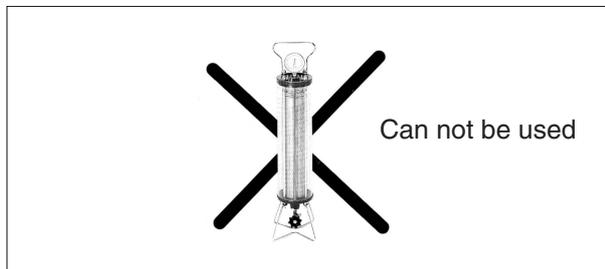
- Temperature scale indicates the relationship between pressure and temperature in gas saturated state.
- Differences
 - Change in pressure
 - Change in service port diameter

7. Charge hose for R-410A



- Specifications
 - Working pressure 5.08 MPa (51.8 kg/cm²)
 - Rupture pressure 25.4 MPa (259 kg/cm²)
 - Available with and without hand-operate valve that prevents refrigerant from outflow.
- Differences
 - Pressure proof hose
 - Change in service port diameter
 - Use of nylon coated material for HFC resistance

8. Charging cylinder



- Specifications
 - Use weigher for refrigerant charge listed below to charge directly from refrigerant cylinder.
- Differences
 - The cylinder can not be used for mixed refrigerant since mixing ratio is changed during charging.

When R-410A is charged in liquid state using charging cylinder, foaming phenomenon is generated inside charging cylinder.

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If you have any enquiries, please contact your local importer, distributor and/or retailer.

Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.



JMI-0107



JQA-1452

About ISO 9001

ISO 9001 is a plant certification system defined by the International Organization for Standardization (ISO) relating to quality assurance. ISO 9001 certification covers quality assurance aspects related to the "design, development, manufacture, installation, and supplementary service" of products manufactured at the plant.



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About ISO 14001

ISO 14001 is the standard defined by the International Organization for Standardization (ISO) relating to environmental management systems. Our group has been acknowledged by an internationally accredited compliance organisation as having an appropriate programme of environmental protection procedures and activities to meet the requirements of ISO 14001.

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