

## SERVICE MANUAL

# AIR-CONDITIONER

## MULTI TYPE

### < SUPER HEAT RECOVERY MULTI -i >

#### Outdoor Unit

#### Model name:

MMY-MAP0804FT8(Z)(ZG)-E  
MMY-MAP1004FT8(Z)(ZG)-E  
MMY-MAP1204FT8(Z)(ZG)-E  
MMY-MAP1404FT8(Z)(ZG)-E

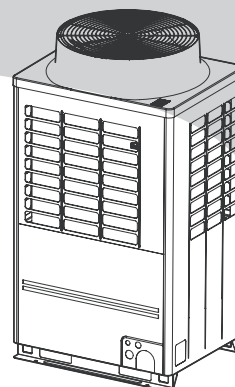
MMY-MAP0804FT8(Z)(ZG)-TR  
MMY-MAP1004FT8(Z)(ZG)-TR  
MMY-MAP1204FT8(Z)(ZG)-TR  
MMY-MAP1404FT8(Z)(ZG)-TR

MMY-MAP0804FT8(Z)(ZG)  
MMY-MAP1004FT8(Z)(ZG)  
MMY-MAP1204FT8(Z)(ZG)  
MMY-MAP1404FT8(Z)(ZG)

MMY-MAP0804FT7(Z)(ZG)  
MMY-MAP1004FT7(Z)(ZG)  
MMY-MAP1204FT7(Z)(ZG)  
MMY-MAP1404FT7(Z)(ZG)

**This service manual provides relevant explanations about new outdoor unit (SHRM-i).  
Please refer to the following service manuals for each indoor units.**

<4-way Cassette Type > ( MMU-AP****H )	A08-004
<2-way Cassette Type > ( MMU-AP****WH )	A10-007
<Concealed Duct Standard Type> ( MMD-AP****6BH-E )	A12-005
<Slim Duct Type> ( MMD-AP2244SPH-E, AP274SPH-E )	A12-005
<Air to Air Heat Exchanger with DX Coil Unit Type>	A10-022-2
High-wall Compact Type ( MMK-AP****4MH-E )(Made in Thailand model)	SVM-05052-1
High-wall Type ( MMK-AP****3H )(Made in Thailand model)	SVM-09-059
Console Type ( MML-AP****NH-E )(Made in Thailand model)	SVM-11-036
Other indoor units ( MM*-AP****H-E )	A10-033



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## Original instruction

Please read carefully through these instructions that contain important information which complies with the “Machinery” Directive (Directive 2006/42/EC), and ensure that you understand them.

Some of the details provided in these instructions differ from the service manual, and the instructions provided here take precedence.

## Generic Denomination: Air Conditioner

### Definition of Qualified Installer or Qualified Service Person

The air conditioner must be installed, maintained, repaired and removed by a qualified installer or qualified service person. When any of these jobs is to be done, ask a qualified installer or qualified service person to do them for you.

A qualified installer or qualified service person is an agent who has the qualifications and knowledge described in the table below.

Agent	Qualifications and knowledge which the agent must have
Qualified installer	<ul style="list-style-type: none"> <li>• The qualified installer is a person who installs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.</li> <li>• The qualified installer who is allowed to do the electrical work involved in installation, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• The qualified installer who is allowed to do the refrigerant handling and piping work involved in installation, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• The qualified installer who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> </ul>
Qualified service person	<ul style="list-style-type: none"> <li>• The qualified service person is a person who installs, repairs, maintains, relocates and removes the air conditioners made by Toshiba Carrier Corporation. He or she has been trained to install, repair, maintain, relocate and remove the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such operations by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to these operations.</li> <li>• The qualified service person who is allowed to do the electrical work involved in installation, repair, relocation and removal has the qualifications pertaining to this electrical work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to electrical work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• The qualified service person who is allowed to do the refrigerant handling and piping work involved in installation, repair, relocation and removal has the qualifications pertaining to this refrigerant handling and piping work as stipulated by the local laws and regulations, and he or she is a person who has been trained in matters relating to refrigerant handling and piping work on the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> <li>• The qualified service person who is allowed to work at heights has been trained in matters relating to working at heights with the air conditioners made by Toshiba Carrier Corporation or, alternatively, he or she has been instructed in such matters by an individual or individuals who have been trained and is thus thoroughly acquainted with the knowledge related to this work.</li> </ul>

## Definition of Protective Gear

When the air conditioner is to be transported, installed, maintained, repaired or removed, wear protective gloves and 'safety' work clothing.

In addition to such normal protective gear, wear the protective gear described below when undertaking the special work detailed in the table below.




Failure to wear the proper protective gear is dangerous because you will be more susceptible to injury, burns, electric shocks and other injuries.

Work undertaken	Protective gear worn
All types of work	Protective gloves 'Safety' working clothing
Electrical-related work	Gloves to provide protection for electricians and from heat Insulating shoes Clothing to provide protection from electric shock
Work done at heights (50 cm or more)	Helmets for use in industry
Transportation of heavy objects	Shoes with additional protective toe cap
Repair of outdoor unit	Gloves to provide protection for electricians and from heat

The important contents concerned to the safety are described on the product itself and on this Service Manual.




Please read this Service Manual after understanding the described items thoroughly in the following contents (Indications / Illustrated marks), and keep them.

### [Explanation of indications]

Indication	Explanation
 <b>DANGER</b>	Indicates contents assumed that an imminent danger causing a death or serious injury of the repair engineers and the third parties when an incorrect work has been executed.
 <b>WARNING</b>	Indicates possibilities assumed that a danger causing a death or serious injury of the repair engineers, the third parties, and the users due to troubles of the product after work when an incorrect work has been executed.
 <b>CAUTION</b>	Indicates contents assumed that an injury or property damage (*) may be caused on the repair engineers, the third parties, and the users due to troubles of the product after work when an incorrect work has been executed.

\* Property damage: Enlarged damage concerned to property, furniture, and domestic animal / pet

### [Explanation of illustrated marks]







Indication	Explanation
	Indicates prohibited items (Forbidden items to do) The sentences near an illustrated mark describe the concrete prohibited contents.
	Indicates mandatory items (Compulsory items to do) The sentences near an illustrated mark describe the concrete mandatory contents.
	Indicates cautions (Including danger / warning) The sentences or illustration near or in an illustrated mark describe the concrete cautious contents.

## Warning Indications on the Air Conditioner Unit

### [Confirmation of warning label on the main unit]

Confirm that labels are indicated on the specified positions





If removing the label during parts replace, stick it as the original.

Warning indication		Description
	<p><b>WARNING</b></p> <p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p>	<p><b>WARNING</b></p> <p><b>ELECTRICAL SHOCK HAZARD</b> Disconnect all remote electric power supplies before servicing.</p>
	<p><b>WARNING</b></p> <p>Moving parts. Do not operate unit with grille removed. Stop the unit before the servicing.</p>	<p><b>WARNING</b></p> <p>Moving parts. Do not operate unit with grille removed. Stop the unit before the servicing.</p>
	<p><b>CAUTION</b></p> <p>High temperature parts. You might get burned when removing this panel.</p>	<p><b>CAUTION</b></p> <p>High temperature parts. You might get burned when removing this panel.</p>
	<p><b>CAUTION</b></p> <p>Do not touch the aluminium fins of the unit. Doing so may result in injury.</p>	<p><b>CAUTION</b></p> <p>Do not touch the aluminium fins of the unit. Doing so may result in injury.</p>
	<p><b>CAUTION</b></p> <p><b>BURST HAZARD</b> Open the service valves before the operation, otherwise there might be the burst.</p>	<p><b>CAUTION</b></p> <p><b>BURST HAZARD</b> Open the service valves before the operation, otherwise there might be the burst.</p>
	<p><b>CAUTION</b></p> <p><b>Do not climb onto the fan guard.</b> Doing so may result in injury.</p>	<p><b>CAUTION</b></p> <p><b>Do not climb onto the fan guard.</b> Doing so may result in injury.</p>





# PRECAUTIONS FOR SAFETY







The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.







## DANGER


 Turn off braeaker	<p>Before carrying out the installation, maintenance, repair or removal work, be sure to set the circuit breaker for both the indoor and outdoor units to the OFF position. Otherwise, electric shocks may result.</p>
	<p>Before opening the intake grille of the indoor unit or service panel of the outdoor unit, set the circuit breaker to the OFF position.            Failure to set the circuit breaker to the OFF position may result in electric shocks through contact with the interior parts.            Only a qualified installer (*1) or qualified service person (*1) is allowed to remove the intake grille of the indoor unit or service panel of the outdoor unit and do the work required.</p>
	<p>Before starting to repair the outdoor unit fan or fan guard, be absolutely sure to set the circuit breaker to the OFF position, and place a "Work in progress" sign on the circuit breaker.</p>
	<p>When cleaning the filter or other parts of the indoor unit, set the circuit breaker to OFF without fail, and place a "Work in progress" sign near the circuit breaker before proceeding with the work.</p>
	<p>When you have noticed that some kind of trouble (such as when an error display has appeared, there is a smell of burning, abnormal sounds are heard, the air conditioner fails to cool or heat or water is leaking) has occurred in the air conditioner, do not touch the air conditioner yourself but set the circuit breaker to the OFF position, and contact a qualified service person. Take steps to ensure that the power will not be turned on (by marking "out of service" near the circuit breaker, for instance) until qualified service person arrives. Continuing to use the air conditioner in the trouble status may cause mechanical problems to escalate or result in electric shocks or other failure.</p>
 Electric shock hazard	<p>When you access inside of the service panel to repair electric parts, wait for about five minutes after turning off the breaker. Do not start repairing immediately. Otherwise you may get electric shock by touching terminals of high-voltage capacitors. Natural discharge of the capacitor takes about five minutes.</p>
 Prohibition	<p>Place a "Work in progress" sign near the circuit breaker while the installation, maintenance, repair or removal work is being carried out.            There is a danger of electric shocks if the circuit breaker is set to ON by mistake.</p> <p>Before operating the air conditioner after having completed the work, check that the electrical parts box cover of the indoor unit and service panel of the outdoor unit are closed, and set the circuit breaker to the ON position.            You may receive an electric shock if the power is turned on without first conducting these checks.</p>
 Stay on protection	<p>If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, wear insulated heat-resistant gloves, insulated boots and insulated work overalls, and take care to avoid touching any live parts.            You may receive an electric shock if you fail to heed this warning. Only qualified service person (*1) is allowed to do this kind of work.</p>

## **WARNIG**

 General	<p>Before starting to repair the air conditioner, read carefully through the Service Manual, and repair the air conditioner by following its instructions.</p>
	<p>Only qualified service person (*1) is allowed to repair the air conditioner. Repair of the air conditioner by unqualified person may give rise to a fire, electric shocks, injury, water leaks and / or other problems.</p>
	<p>Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.</p>
	<p>Only a qualified installer (*1) or qualified service person (*1) is allowed to carry out the electrical work of the air conditioner. Under no circumstances must this work be done by an unqualified individual since failure to carry out the work properly may result in electric shocks and / or electrical leaks.</p>
	<p>When transporting the air conditioner, wear shoes with protective toe caps, protective gloves and other protective clothing.</p>
	<p>When connecting the electrical wires, repairing the electrical parts or undertaking other electrical jobs, wear gloves to provide protection for electricians and from heat, insulating shoes and clothing to provide protection from electric shocks. Failure to wear this protective gear may result in electric shocks.</p>
	<p>Electrical wiring work shall be conducted according to law and regulation in the community and installation manual. Failure to do so may result in electrocution or short circuit.</p>
	<p>Only a qualified installer (*1) or qualified service person (*1) is allowed to undertake work at heights using a stand of 50 cm or more or to remove the intake grille of the indoor unit to undertake work.</p>
	<p>When working at heights, use a ladder which complies with the ISO 14122 standard, and follow the procedure in the ladder's instructions. Also wear a helmet for use in industry as protective gear to undertake the work.</p>
	<p>When working at heights, put a sign in place so that no-one will approach the work location, before proceeding with the work. Parts and other objects may fall from above, possibly injuring a person below.</p>
	<p>When executing address setting, test run, or troubleshooting through the checking window on the electric parts box, put on insulated gloves to provide protection from electric shock. Otherwise you may receive an electric shock.</p>
	<p>Do not touch the aluminum fin of the outdoor unit. You may injure yourself if you do so. If the fin must be touched for some reason, first put on protective gloves and safety work clothing, and then proceed.</p>
	<p>Do not climb onto or place objects on top of the outdoor unit. You may fall or the objects may fall off of the outdoor unit and result in injury.</p>
	<p>When transporting the air conditioner, wear shoes with additional protective toe caps.</p>
	<p>When transporting the air conditioner, do not take hold of the bands around the packing carton. You may injure yourself if the bands should break.</p>
	<p>Be sure that a heavy unit (10 kg or heavier) such as a compressor is carried by two persons.</p>
<p>This air conditioner has passed the pressure test as specified in IEC 60335-2-40 Annex EE.</p>	
<p>Places where ambient temperature falls below <math>-15^{\circ}\text{C}</math> for more than 72 hours running. The outdoor heat exchanger may be damaged by the frost.</p>	
 Check earth wires.	<p>Before troubleshooting or repair work, check the earth wire is connected to the earth terminals of the main unit, otherwise an electric shock is caused when a leak occurs. If the earth wire is not correctly connected, contact an electric engineer for rework.</p>
	<p>After completing the repair or relocation work, check that the ground wires are connected properly.</p>
	<p>Be sure to connect earth wire. (Grounding work) Incomplete grounding causes an electric shock. Do not connect ground wires to gas pipes, water pipes, and lightning rods or ground wires for telephone wires.</p>
 Prohibition of modification.	<p>Do not modify the products. Do not also disassemble or modify the parts. It may cause a fire, electric shock or injury.</p>
 Use specified parts.	<p>When any of the electrical parts are to be replaced, ensure that the replacement parts satisfy the specifications given in the Service Manual (or use the parts contained on the parts list in the Service Manual). Use of any parts which do not satisfy the required specifications may give rise to electric shocks, smoking and / or a fire.</p>

 Do not bring a child close to the equipment.	<p>If, in the course of carrying out repairs, it becomes absolutely necessary to check out the electrical parts with the electrical parts box cover of one or more of the indoor units and the service panel of the outdoor unit removed in order to find out exactly where the trouble lies, put a sign in place so that no one will approach the work location before proceeding with the work. Third-party individuals may enter the work site and receive electric shocks if this warning is not heeded.</p>
 Insulating measures	<p>Connect the cut-off lead wires with crimp contact, etc., put the closed end side upward and then apply a watercut method, otherwise a leak or production of fire is caused at the users' side.</p>
 No fire	<p>When performing repairs using a gas burner, replace the refrigerant with nitrogen gas because the oil that coats the pipes may otherwise burn.  When repairing the refrigerating cycle, take the following measures.</p> <ol style="list-style-type: none"> <li>1) Be attentive to fire around the cycle. When using a gas stove, etc., be sure to put out fire before work; otherwise the oil mixed with refrigerant gas may catch fire.</li> <li>2) Do not use a welder in the closed room. When using it without ventilation, carbon monoxide poisoning may be caused.</li> <li>3) Do not bring inflammables close to the refrigerant cycle, otherwise fire of the welder may catch the inflammables.</li> </ol>
 Refrigerant	<p>The refrigerant used by this air conditioner is the R410A.</p> <p>Check the used refrigerant name and use tools and materials of the parts which match with it. For the products which use R410A refrigerant, the refrigerant name is indicated at a position on the outdoor unit where is easy to see. To prevent miss-charging, the route of the service port is changed from one of the former R22.</p> <p>For an air conditioner which uses R410A, never use other refrigerant than R410A. For an air conditioner which uses other refrigerant (R22, etc.), never use R410A. If different types of refrigerant are mixed, abnormal high pressure generates in the refrigerating cycle and an injury due to breakage may be caused.</p> <p>When the air conditioner has been installed or relocated, follow the instructions in the Installation Manual and purge the air completely so that no gases other than the refrigerant will be mixed in the refrigerating cycle.  Failure to purge the air completely may cause the air conditioner to malfunction.</p> <p>Do not charge refrigerant additionally. If charging refrigerant additionally when refrigerant gas leaks, the refrigerant composition in the refrigerating cycle changes resulted in change of air conditioner characteristics or refrigerant over the specified standard amount is charged and an abnormal high pressure is applied to the inside of the refrigerating cycle resulted in cause of breakage or injury. Therefore if the refrigerant gas leaks, recover the refrigerant in the air conditioner, execute vacuuming, and then newly recharge the specified amount of liquid refrigerant.  In this time, never charge the refrigerant over the specified amount.</p> <p>When recharging the refrigerant in the refrigerating cycle, do not mix the refrigerant or air other than R410A into the specified refrigerant. If air or others is mixed with the refrigerant, abnormal high pressure generates in the refrigerating cycle resulted in cause of injury due to breakage.</p> <p>After installation work, check the refrigerant gas does not leak. If the refrigerant gas leaks in the room, poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous.</p> <p>Never recover the refrigerant into the outdoor unit. When the equipment is moved or repaired, be sure to recover the refrigerant with recovering device.  The refrigerant cannot be recovered in the outdoor unit; otherwise a serious accident such as breakage or injury is caused.</p>
 Assembly / Wiring	<p>After repair work, surely assemble the disassembled parts, and connect and lead the removed wires as before. Perform the work so that the cabinet or panel does not catch the inner wires.  If incorrect assembly or incorrect wire connection was done, a disaster such as a leak or fire is caused at user's side.</p>
 Insulator check	<p>After the work has finished, be sure to use an insulation tester set (500 V Megger) to check the resistance is 1 MΩ or more between the charge section and the non-charge metal section (Earth position).  If the resistance value is low, a disaster such as a leak or electric shock is caused at user's side.</p>

 Ventilation	<p>When the refrigerant gas leaks during work, execute ventilation.  If the refrigerant gas touches to a fire, poisonous gas generates. A case of leakage of the refrigerant and the closed room full with gas is dangerous because a shortage of oxygen occurs. Be sure to execute ventilation.</p>
 Compulsion	<p>When the refrigerant gas leaks, find up the leaked position and repair it surely.  If the leaked position cannot be found up and the repair work is interrupted, pump-down and tighten the service valve, otherwise the refrigerant gas may leak into the room.  The poisonous gas generates when gas touches to fire such as fan heater, stove or cooking stove though the refrigerant gas itself is innocuous.  When installing equipment which includes a large amount of charged refrigerant such as a multi air conditioner in a sub-room, it is necessary that the density does not the limit even if the refrigerant leaks.  If the refrigerant leaks and exceeds the limit density, an accident of shortage of oxygen is caused.</p> <p>Tighten the flare nut with a torque wrench in the specified manner.  Excessive tighten of the flare nut may cause a crack in the flare nut after a long period, which may result in refrigerant leakage.</p> <p>Nitrogen gas must be used for the airtight test.</p> <p>The charge hose must be connected in such a way that it is not slack.</p> <p>For the installation / moving / reinstallation work, follow to the Installation Manual.  If an incorrect installation is done, a trouble of the refrigerating cycle, water leak, electric shock or fire is caused.</p>
 Check after repair	<p>Once the repair work has been completed, check for refrigerant leaks, and check the insulation resistance and water drainage.  Then perform a trial run to check that the air conditioner is running properly.</p> <p>After repair work has finished, check there is no trouble. If check is not executed, a fire, electric shock or injury may be caused. For a check, turn off the power breaker.</p> <p>After repair work (installation of front panel and cabinet) has finished, execute a test run to check there is no generation of smoke or abnormal sound.  If check is not executed, a fire or an electric shock is caused. Before test run, install the front panel and cabinet.</p> <p>Be sure to fix the screws back which have been removed for installation or other purposes.</p>
 Do not operate the unit with the valve closed.	<p>Check the following matters before a test run after repairing piping.</p> <ul style="list-style-type: none"> <li>• Connect the pipes surely and there is no leak of refrigerant.</li> <li>• The valve is opened.</li> </ul> <p>Running the compressor under condition that the valve closes causes an abnormal high pressure resulted in damage of the parts of the compressor and etc. and moreover if there is leak of refrigerant at connecting section of pipes, the air is sucked and causes further abnormal high pressure resulted in burst or injury.</p>
 Check after reinstallation	<p>Only a qualified installer (*1) or qualified service person (*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and / or vibration may result.</p> <p>Check the following items after reinstallation.</p> <ol style="list-style-type: none"> <li>1) The earth wire is correctly connected.</li> <li>2) The power cord is not caught in the product.</li> <li>3) There is no inclination or unsteadiness and the installation is stable.</li> </ol> <p>If check is not executed, a fire, an electric shock or an injury is caused.</p> <p>When carrying out the pump-down work shut down the compressor before disconnecting the refrigerant pipe.  Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in reputeing, injury, etc.</p>
 Cooling check	<p>When the service panel of the outdoor unit is to be opened in order for the compressor or the area around this part to be repaired immediately after the air conditioner has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel.  If you fail to heed this warning, you will run the risk of burning yourself because the compressor pipes and other parts will be very hot to the touch. In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians.</p> <p>Take care not to get burned by compressor pipes or other parts when checking the cooling cycle while running the unit as they get heated while running. Be sure to put on gloves providing protection for electric shock and heat.</p> <p>When the service panel of the outdoor unit is to be opened in order for the fan motor, reactor, inverter or the areas around these parts to be repaired immediately after the air conditioner has been shut down, set the circuit breaker to the OFF position, and then wait at least 10 minutes before opening the service panel.  If you fail to heed this warning, you will run the risk of burning yourself because the fan motor, reactor, inverter heat sink and other parts will be very hot to the touch.  In addition, before proceeding with the repair work, wear the kind of insulated heat-resistant gloves designed to protect electricians.</p>

 Installation	Only a qualified installer (*1) or qualified service person (*1) is allowed to install the air conditioner. If the air conditioner is installed by an unqualified individual, a fire, electric shocks, injury, water leakage, noise and/or vibration may result.
	Before starting to install the air conditioner, read carefully through the Installation Manual, and follow its instructions to install the air conditioner.
	Be sure to use the company-specified products for the separately purchased parts. Use of non-specified products may result in fire, electric shock, water leakage or other failure. Have the installation performed by a qualified installer.
	Do not supply power from the power terminal block equipped on the outdoor unit to another outdoor unit. Capacity overflow may occur on the terminal block and may result in fire.
	Do not install the air conditioner in a location that may be subject to a risk of exposure to a combustible gas. If a combustible gas leaks and becomes concentrated around the unit, a fire may occur.
	Install the indoor unit at least 2.5 m above the floor level since otherwise the users may injure themselves or receive electric shocks if they poke their fingers or other objects into the indoor unit while the air conditioner is running.
	Install a circuit breaker that meets the specifications in the installation manual and the stipulations in the local regulations and laws.
	Install the circuit breaker where it can be easily accessed by the qualified service person (*1).
	If you install the unit in a small room, take appropriate measures to prevent the refrigerant from exceeding the limit concentration even if it leaks. Consult the dealer from whom you purchased the air conditioner when you implement the measures. Accumulation of highly concentrated refrigerant may cause an oxygen deficiency accident.
	Do not place any combustion appliance in a place where it is directly exposed to the wind of air conditioner, otherwise it may cause imperfect combustion.

### Explanations given to user

If you have discovered that the fan grille is damaged, do not approach the outdoor unit but set the circuit breaker to the OFF position, and contact a qualified service person to have the repairs done. Do not set the circuit breaker to the ON position until the repairs are completed.

### Relocation

- Only a qualified installer (\*1) or qualified service person (\*1) is allowed to relocate the air conditioner. It is dangerous for the air conditioner to be relocated by an unqualified individual since a fire, electric shocks, injury, water leakage, noise and / or vibration may result.
- When carrying out the pump-down work shut down the compressor before disconnecting the refrigerant pipe. Disconnecting the refrigerant pipe with the service valve left open and the compressor still operating will cause air, etc. to be sucked in, raising the pressure inside the refrigeration cycle to an abnormally high level, and possibly resulting in reputing, injury, etc.

(\*1) Refer to the “Definition of Qualified Installer or Qualified Service Person”

## Declaration of Conformity

Manufacturer: Toshiba Carrier Corporation  
336 Tadehara, Fuji-shi, Shizuoka-ken 416-8521 JAPAN

Authorized Representative / Nick Ball

TCF holder: Toshiba EMEA Engineering Director  
Toshiba Carrier UK Ltd.  
Porsham Close, Belliver Industrial Estate,  
PLYMOUTH, Devon, PL6 7DB.  
United Kingdom

Hereby declares that the machinery described below:

Generic Denomination: Air Conditioner

Model / type: Outdoor unit  
MMY-MAP0804FT8(Z)(ZG)-E(TR)  
MMY-MAP1004FT8(Z)(ZG)-E(TR)  
MMY-MAP1204FT8(Z)(ZG)-E(TR)  
MMY-MAP1404FT8(Z)(ZG)-E(TR)

Commercial name: Super Heat Recovery Multi Air Conditioner

Complies with the provisions of the "Machinery" Directive (Directive 2006/42/EC) and the regulations transposing into national law

Complies with the provisions of the following harmonized standard:  
EN 378-2: 2008+A2:2012

### NOTE

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This declaration becomes invalid if technical or operational modifications are introduced without the manufacturer's consent.

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## Specifications

Model	Sound power level (dBA)		Weight (kg) Main unit (Ceiling panel)
	Cooling	Heating	
MMY-MAP0804FT8(Z)(ZG)-E	77	79	259
MMY-MAP1004FT8(Z)(ZG)-E	78	80	259
MMY-MAP1204FT8(Z)(ZG)-E	81	83	334
MMY-MAP1404FT8(Z)(ZG)-E	82	84	334
MMY-MAP0804FT8(Z)(ZG)-TR	77	79	259
MMY-MAP1004FT8(Z)(ZG)-TR	78	80	259
MMY-MAP1204FT8(Z)(ZG)-TR	81	83	334
MMY-MAP1404FT8(Z)(ZG)-TR	82	84	334
MMY-MAP0804FT8(Z)(ZG)	77	79	259
MMY-MAP1004FT8(Z)(ZG)	78	80	259
MMY-MAP1204FT8(Z)(ZG)	81	83	334
MMY-MAP1404FT8(Z)(ZG)	82	84	334
MMY-MAP0804FT7(Z)(ZG)	77	79	259
MMY-MAP1004FT7(Z)(ZG)	78	80	259
MMY-MAP1204FT7(Z)(ZG)	81	83	334
MMY-MAP1404FT7(Z)(ZG)	82	84	334

## Connectable indoor units

Model type	Model Name
4-way cassette	MMU-AP****H*
Compact 4-way cassette	MMU-AP****MH*
2-way cassette	MMU-AP****WH*
1-way cassette	MMU-AP****YH*
	MMU-AP****SH*
Concealed duct, standard type	MMD-AP****BH*
Concealed duct, high static pressure	MMD-AP****H*
Slim duct	MMD-AP****SPH*
Ceiling	MMC-AP****H*
Floor standing cabinet type	MML-AP****H*
Floor standing Concealed type	MML-AP****BH*
Floor standing	MMF-AP****H*
High-wall compact	MMK-AP****MH* * For details on these models, read the owner's manuals that come with the indoor units.
High-wall	MMK-AP****H* * For details on these models, read the owner's manuals that come with the indoor units.
Air to Air Heat Exchanger with DX Coil Unit	MMD-VNK***HEXE* MMD-VN...HEXE. * For details on these models, read the owner's manuals that come with the indoor units.
Console Type	MML-AP****NH* * For details on these models, read the owner's manuals that come with the indoor units.

\* Fresh Air Intake Type cannot be connected with SHRM-i

## Carrying in the Outdoor Unit

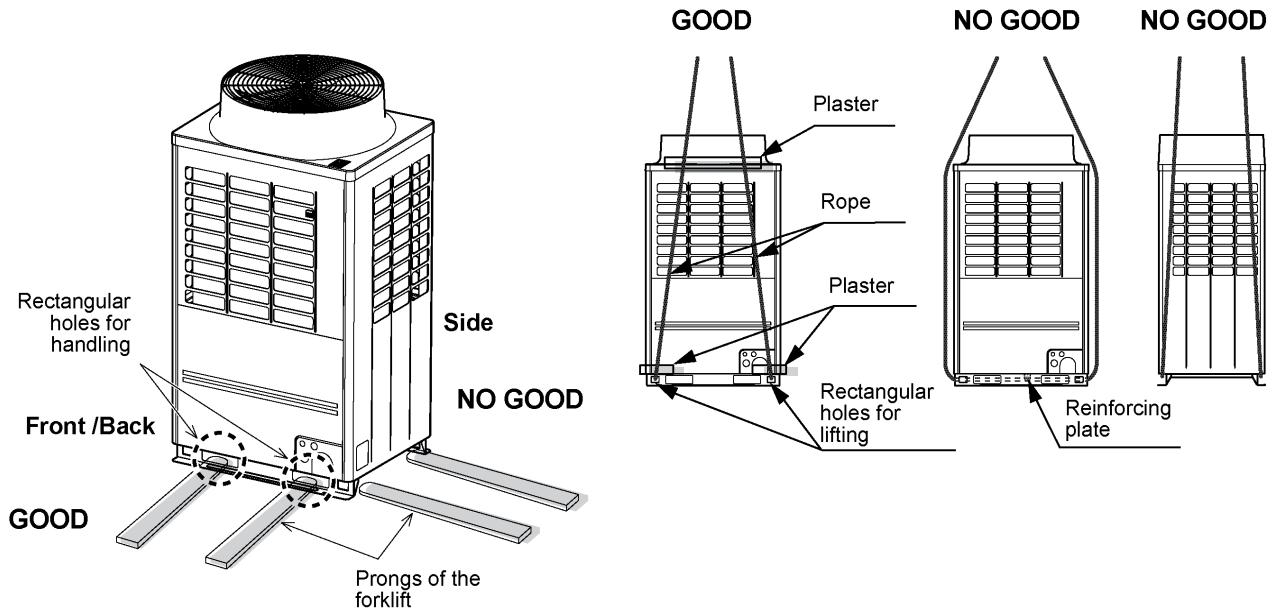
### CAUTION

Handle the outdoor unit carefully, observing the following items.

- When using a forklift or other machinery for loading/unloading in transportation, insert the prongs of the forklift into the rectangular holes for handling as shown below.
- When lifting up the unit, insert a rope able to bear the unit's weight into the rectangular holes for handling, and tie the unit from 4 sides.

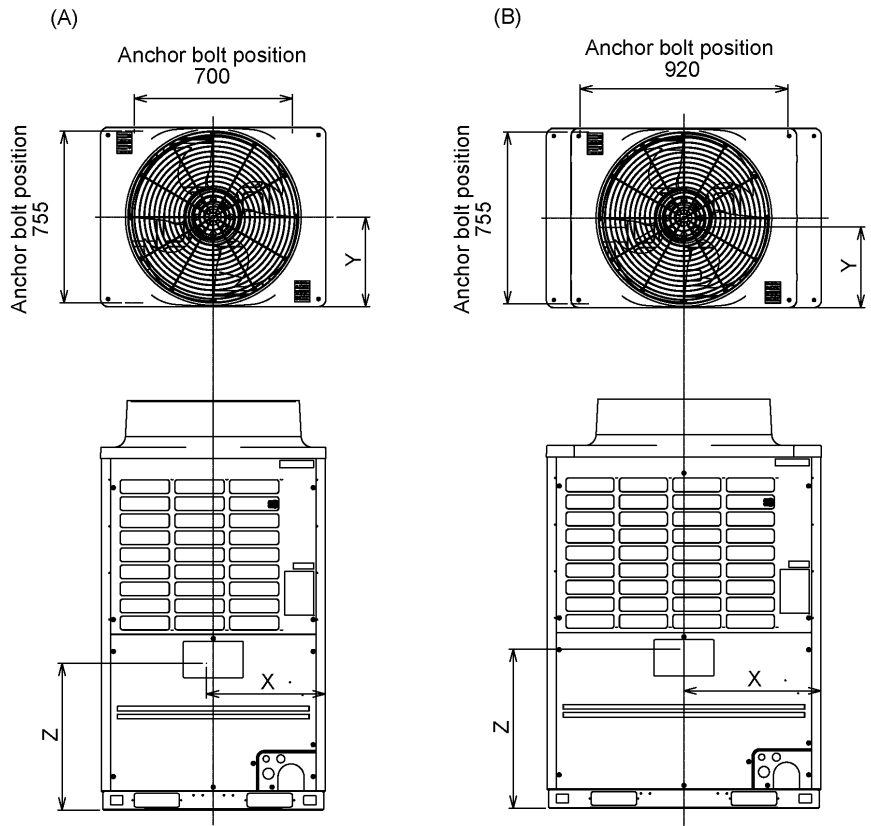
(Apply padding in positions where the rope comes into contact with the outdoor unit so that no damage is caused to the outer surface of the outdoor unit.)

(There are reinforcing plates on the side surfaces, so the rope cannot be passed through.)



# Weight centre and weight

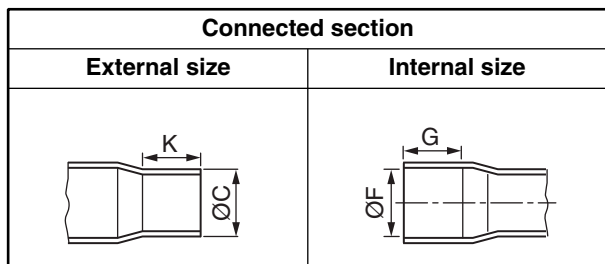
## ◆ Weight centre of an outdoor unit



No.	Model type	X (mm)	Y (mm)	Z (mm)	Weight (kg)
(A)	MAP080	490	370	680	259
	MAP100				
(B)	MAP120	590	350	700	334
	MAP140				

# Selection of Pipe Size

## Coupling size of brazed pipe



(Unit: mm)

Standard outer dia. of connected copper pipe	Connected section					Min. thickness of coupling
	External size	Internal size	Min. depth of insertion		Oval value	
	Standard outer dia. (Allowable difference)					
	C	F	K	G		
6.35	6.35 (±0.03)	6.45 (+0.04/-0.02)	7	6	0.06 or less	0.50
9.52	9.52 (±0.03)	9.62 (+0.04/-0.02)	8	7	0.08 or less	0.60
12.70	12.70 (±0.03)	12.81 (+0.04/-0.02)	9	8	0.10 or less	0.70
15.88	15.88 (±0.03)	16.00 (+0.04/-0.02)	9	8	0.13 or less	0.80
19.05	19.05 (±0.03)	19.19 (+0.03/-0.03)	11	10	0.15 or less	0.80
22.22	22.22 (±0.03)	22.36 (+0.03/-0.03)	11	10	0.16 or less	0.82
28.58	28.58 (±0.04)	28.75 (+0.06/-0.02)	13	12	0.20 or less	1.00
34.92	34.90 (±0.04)	35.11 (+0.04/-0.04)	14	13	0.25 or less	1.20
38.10	38.10 (±0.05)	38.31 (+0.08/-0.02)	15	14	0.27 or less	1.26
41.28	41.28 (±0.05)	41.50 (+0.08/-0.02)	15	14	0.28 or less	1.35

## ■ Screw size and tightening torque

	Screw size	Tightening torque (N•m)
Power supply terminal	M6	2.3 to 2.7
Earth screw	M8	5.5 to 6.6
Communication wire terminal	M3.5	1.2 to 1.4

## Adding refrigerant

After finishing vacuuming, exchange the vacuum pump with a refrigerant canister and start additional charging of refrigerant.

### Calculation of additional refrigerant charge amount

Refrigerant charge amount at shipment from the factory does not include the refrigerant for pipes at the local site. For refrigerant to be charged in pipes at the local site, calculate the amount and charge it additionally.

#### NOTE

If the additional refrigerant amount indicates minus as the result of calculation, use the air conditioner without additional refrigerant.

Outdoor unit type	MAP080	MAP100	MAP120	MAP140
Charging amount (kg)	11.0			

Additional refrigerant charge amount at local site	=	Real length of liquid pipe	×	Additional refrigerant charge amount per 1m liquid pipe (Table 1)	×	1.3	+	Corrective amount of refrigerant depending on HP of co-operating outdoor units (Table 2)
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**Table 1**

Liquid pipe dia. (mm)	6.4	9.5	12.7	15.9	19.1	22.2
Additional refrigerant amount/1m liquid pipe (kg/m)	0.025	0.055	0.105	0.160	0.250	0.350

**Table 2**

Equivalent HP	Model name of outdoor unit MMY-	Combination of outdoor unit MMY-			Corrective of refrigerant (kg)
		Unit 1	Unit 2	Unit 3	
8 HP	MAP0804*	MAP0804*	—	—	2
10 HP	MAP1004*	MAP1004*	—	—	3
12 HP	MAP1204*	MAP1204*	—	—	8
14 HP	MAP1404*	MAP1404*	—	—	10
16 HP	AP1614*	MAP0804*	MAP0804*	—	0
18 HP	AP1814*	MAP1004*	MAP0804*	—	1.5
20 HP	AP2014*	MAP1004*	MAP1004*	—	3.5
22 HP	AP2214*	MAP1204*	MAP1004*	—	7.5
24 HP	AP2414*	MAP1404*	MAP1004*	—	8.5
26 HP	AP2614*	MAP1404*	MAP1204*	—	11
28 HP	AP2814*	MAP1404*	MAP1404*	—	12
30 HP	AP3014*	MAP1004*	MAP1004*	MAP1004*	2.5
32 HP	AP3214*	MAP1204*	MAP1004*	MAP1004*	5
34 HP	AP3414*	MAP1404*	MAP1004*	MAP1004*	6
36 HP	AP3614*	MAP1204*	MAP1204*	MAP1204*	8
38 HP	AP3814*	MAP1404*	MAP1204*	MAP1204*	9.5
40 HP	AP4014*	MAP1404*	MAP1404*	MAP1204*	11
42 HP	AP4214*	MAP1404*	MAP1404*	MAP1404*	12.5

### Charging of refrigerant

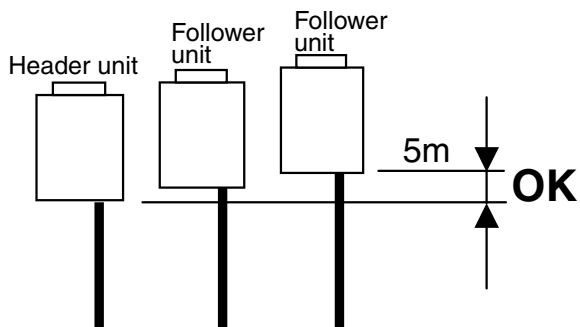
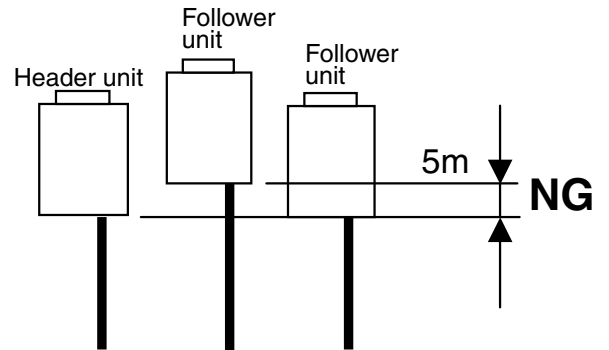
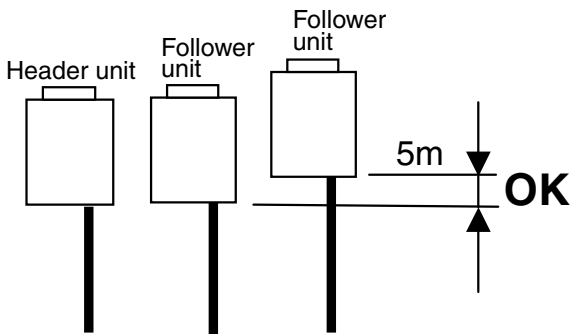
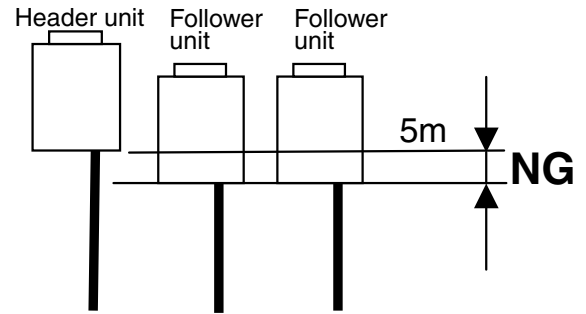
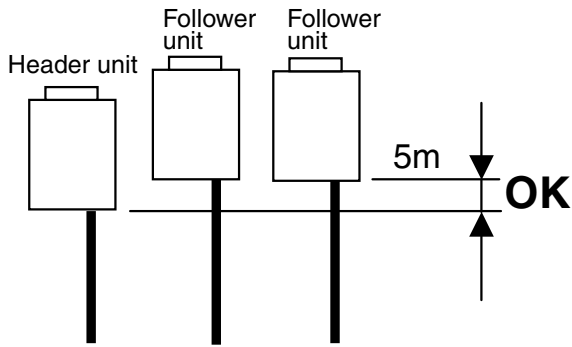
- Keeping the valve of the outdoor unit closed, be sure to charge the liquid refrigerant into the service port at the liquid side.
- If the specified amount of refrigerant cannot be charged, fully open the valves of the outdoor unit at liquid and gas sides, operate the air conditioner in COOL mode, and then charge refrigerant into service port at the gas side. In this time, choke the refrigerant slightly by operating the valve of the canister to charge liquid refrigerant.
- The liquid refrigerant may be charged suddenly, therefore be sure to charge refrigerant gradually.

## Selection of installation place

- The cooling performance may decline considerably when total operating capacity of cooling indoor units is less than 4 HP while ambient temperature is below 0°C.
- When system capacity is greater than 28 HP, height difference between indoor units is limited to 3 m. If the piping exceeds 3 m with a capacity greater than 28 HP there may be a case of capacity shortage in cooling.

## Height between outdoor units

Ensure that the header unit is installed below all connected follower outdoor unit(s). Possible product failure may occur if header unit is installed above any follower unit(s).



# New Refrigerant (R410A)

This air conditioner adopts a new HFC type refrigerant (R410A) which does not deplete the ozone layer.

## 1. Safety Caution Concerned to New Refrigerant

The pressure of R410A is high 1.6 times of that of the former refrigerant (R22). Accompanied with change of refrigerant, the refrigerating oil has been also changed. Therefore, be sure that water, dust, the former refrigerant or the former refrigerating oil is not mixed into the refrigerating cycle of the air conditioner with new refrigerant during installation work or service work. If an incorrect work or incorrect service is performed, there is a possibility to cause a serious accident. Use the tools and materials exclusive to R410A to purpose a safe work.

## 2. Cautions on Installation/Service

- (1) Do not mix the other refrigerant or refrigerating oil.  
For the tools exclusive to R410A, shapes of all the joints including the service port differ from those of the former refrigerant in order to prevent mixture of them.
- (2) As the use pressure of the new refrigerant is high, use material thickness of the pipe and tools which are specified for R410A.
- (3) In the installation time, use clean pipe materials and work with great attention so that water and others do not mix in because pipes are affected by impurities such as water, oxide scales, oil, etc. Use the clean pipes.  
Be sure to brazing with flowing nitrogen gas. (Never use gas other than nitrogen gas.)
- (4) For the earth protection, use a vacuum pump for air purge.
- (5) R410A refrigerant is azeotropic mixture type refrigerant. Therefore use liquid type to charge the refrigerant. (If using gas for charging, composition of the refrigerant changes and then characteristics of the air conditioner change.)

## 3. Pipe Materials

For the refrigerant pipes, copper pipe and joints are mainly used. It is necessary to select the most appropriate pipes to conform to the standard. Use clean material in which impurities adhere inside of pipe or joint to a minimum.

### (1) Copper pipe

#### <Piping>

The pipe thickness, flare finishing size, flare nut and others differ according to a refrigerant type.

When using a long copper pipe for R410A, it is recommended to select "Copper or copper-base pipe without seam" and one with bonded oil amount 40mg/10m or less. Also do not use crushed, deformed, discolored (especially inside) pipes. (Impurities cause clogging of expansion valves and capillary tubes.)

#### <Flare nut>

Use the flare nuts which are attached to the air conditioner unit.

### (2) Joint

The flare joint and socket joint are used for joints of the copper pipe. The joints are rarely used for installation of the air conditioner. However clear impurities when using them.

## 4. Tools

### (1) Required Tools for R410A

Mixing of different types of oil may cause a trouble such as generation of sludge, clogging of capillary, etc. Accordingly, the tools to be used are classified into the following three types.

- 1) Tools exclusive for R410A (Those which cannot be used for conventional refrigerant (R22))
- 2) Tools exclusive for R410A, but can be also used for conventional refrigerant (R22)
- 3) Tools commonly used for R410A and for conventional refrigerant (R22)

The table below shows the tools exclusive for R410A and their interchangeability.

### Tools exclusive for R410A (The following tools for R410A are required.)

#### Explanation of symbols

△ : Newly prepared (It is necessary to use it exclusively with R410A, separately from those for R22 or R407C.)

⊙ : Former tool is available.

Used tools	Usage	Proper use of tools/parts
Gauge manifold	Vacuuming, charging refrigerant and operation check	△ Exclusive to R410A
Charging hose		△ Exclusive to R410A
Charging cylinder	Charging refrigerant	Unusable (Use the Refrigerant charging balance.)
Gas leak detector	Checking gas leak	△ Exclusive to R410A
Vacuum pump	Vacuum drying	Usable if a counter-flow preventive adapter is attached
Vacuum pump with counterflow	Vacuum drying	⊙ R22 (Existing article)
Flare tool	Flare processing of pipes	⊙ Usable by adjusting size
Bender	Bending processing of pipes	⊙ R22 (Existing article)
Refrigerant recovery device	Recovering refrigerant	△ Exclusive to R410A
Torque wrench	Tightening flare nut	△ Exclusive to Ø12.7mm and Ø15.9mm, Ø19.1mm
Pipe cutter	Cutting pipes	⊙ R22 (Existing article)
Refrigerant canister	Charging refrigerant	△ Exclusive to R410A Enter the refrigerate name for identification
Welding machine/Nitrogen gas cylinder	Welding of pipes	⊙ R22 (Existing article)
Charging cylinder	Charging refrigerant	⊙ Unusable (Use the Refrigerant charging balance.)

**(Note 1)** When flaring is carried out for R410A using the conventional flare tools, adjustment of projection margin is necessary. For this adjustment, a copper pipe gauge, etc. are necessary.

**(Note 2)** Charging cylinder for R410A is being currently developed.

### General tools (Conventional tools can be used.)

In addition to the above exclusive tools, the following equipments which serve also for R22 are necessary as the general tools.

- |                                                   |                                         |
|---------------------------------------------------|-----------------------------------------|
| (1) Vacuum pump                                   | (7) Screwdriver (+, -)                  |
| Use vacuum pump by attaching vacuum pump adapter. | (8) Spanner or Monkey wrench            |
| (2) Torque wrench                                 | (9) Hole core drill                     |
| (3) Pipe cutter                                   | (10) Hexagon wrench (Opposite side 4mm) |
| (4) Reamer                                        | (11) Tape measure                       |
| (5) Pipe bender                                   | (12) Metal saw                          |
| (6) Level vial                                    |                                         |

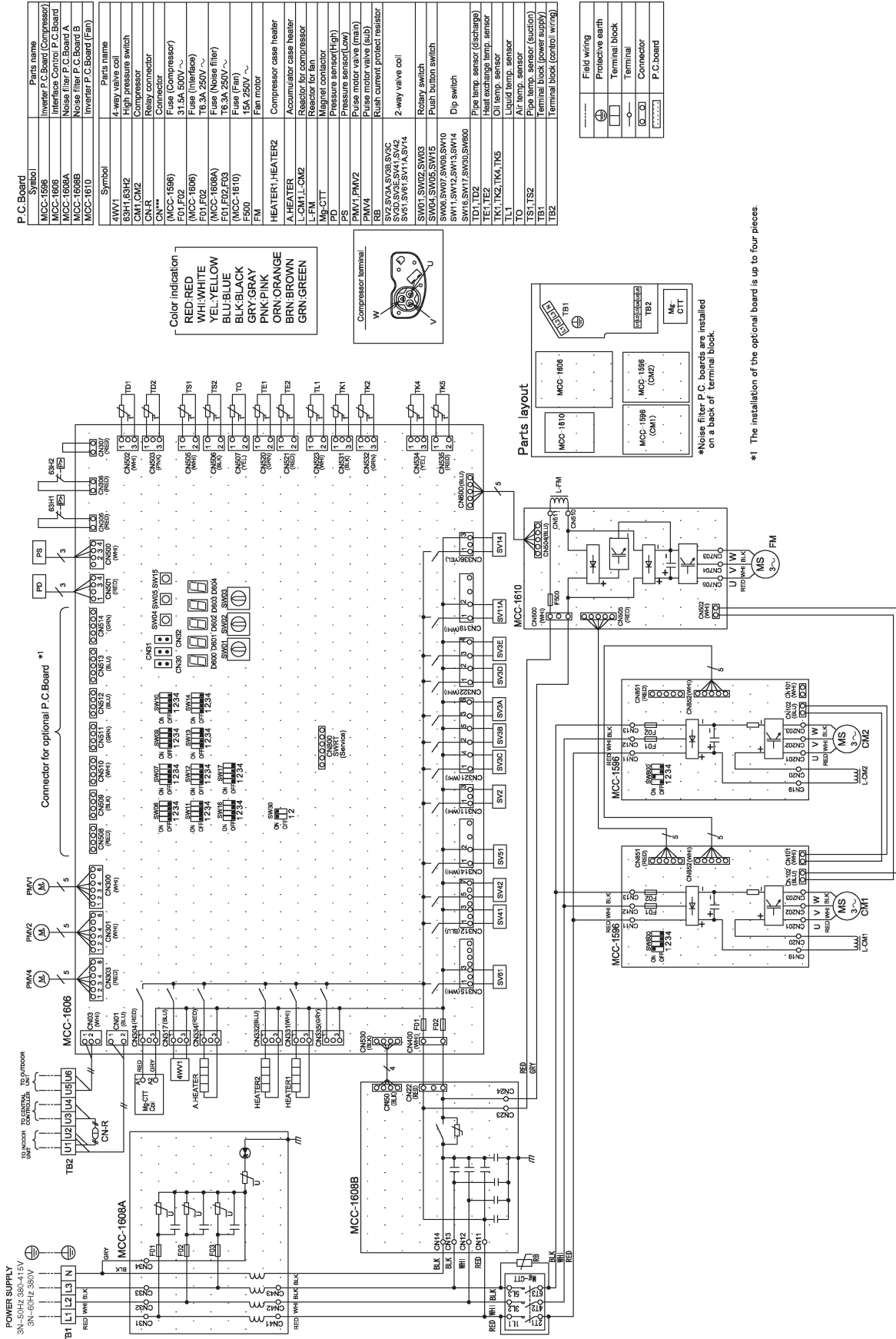
Also prepare the following equipments for other installation method and run check.

- |                 |                                  |
|-----------------|----------------------------------|
| (1) Clamp meter | (3) Insulation resistance tester |
| (2) Thermometer | (4) Electroscop                  |

# 1. WIRING DIAGRAMS

## 1-1. Outdoor Unit

Models: MMY-MAP0804\*, MAP1004\*



Symbol	Parts name
MCC-1596	Inverter P.C. Board (Compressor)
MCC-1606	Interface Control P.C. Board
MCC-1608A	Noise filter P.C. Board A
MCC-1608B	Noise filter P.C. Board B
MCC-1610	Inverter P.C. Board (Fan)
4WV1	4-way valve coil
69H1,69H2	High pressure switch
CMT,CM2	Compressor
CNR	Relay connector
CNT	Compressor case heater
(MCC-1596)	Fuse (Compressor)
F01,F02	31.5A 500V ~
F01,F02	Fuse (Interface)
(MCC-1608A)	TE.3A 250V ~
F01,F02,F03	Fuse (Noise filter)
(MCC-1610)	TE.3A 250V ~
F500	Fuse (Fan)
FM	Fan motor
HEATER1,HEATER2	Compressor case heater
A,HEATER	Accumulator case heater
L-CM1,L-CM2	Reactor for compressor
L-FM	Reactor for fan
Mg,CTT	Magnet connector
PS	Pressure sensor(High)
RS	Pressure sensor(Low)
RMV1,FMV2	Pressure motor valve (Main)
RMV4	Pressure motor valve (Sub)
RB	Rush current protect resistor
SV2,SV3A,SV3B,SV3C	2-way valve coil
SV3D,SV4E,SV41,SV42	Rotary switch
SV51,SV61,SV71,SV14	Push button switch
SW01,SW02,SW03	Dip switch
SW04,SW05,SW15	Pipe temp. sensor (discharge)
SW06,SW07,SW09,SW10	Heat exchange temp. sensor
SW11,SW12,SW13,SW14	Oil temp. sensor
TD1,TD2	Liquid temp. sensor
TE1,TE2	Air temp. sensor
TK1,TK2,TK4,TK5	Pipe temp. sensor (suction)
TL1	Terminal block (control wiring)
TO	Terminal block (power supply)
TS1,TS2	Terminal block (control wiring)
TB1	Terminal block (control wiring)
TS2	Terminal block (control wiring)

Field wiring
Protective earth
Terminal block
Terminal
Connector
P.C. board

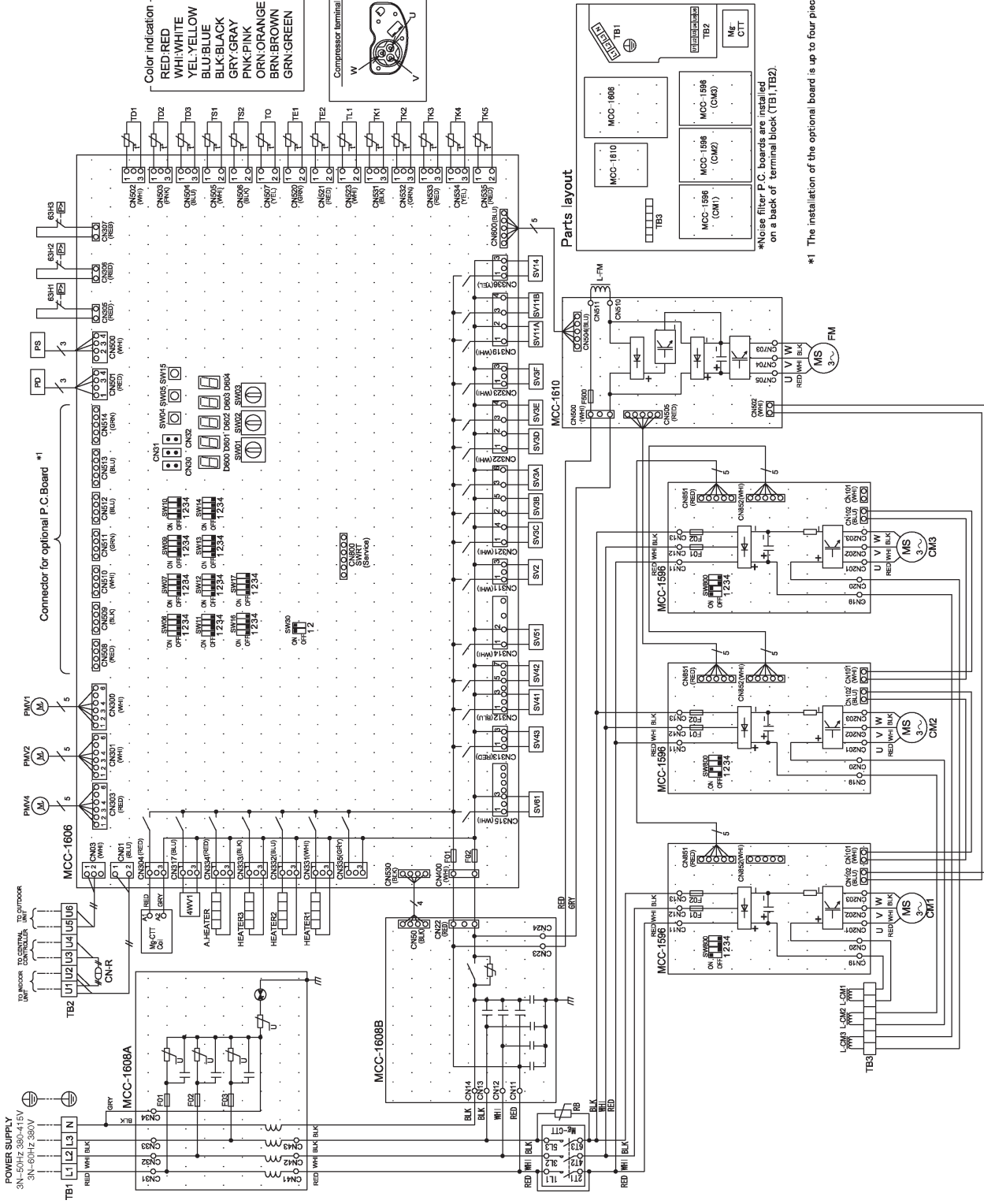
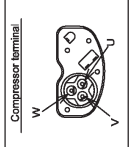
# Models: MMY-MAP1204\*, MAP1404\*

Symbol	Parts name
MCC-1586	Inverter P.C. Board (Compressor)
MCC-1606	Interface Control P.C. Board
MCC-1608A	Noise filter P.C. Board A
MCC-1608B	Noise filter P.C. Board B
MCC-1610	Inverter P.C. Board (Fan)

Symbol	Parts name
4WV1	4-way valve coil
B3H1,B3H2,B3H3	High pressure switch
CM1,CM2,CM3	Compressor
CNR	Relay connector
CNR***	Connector
(MCC-1586)	Fuse (Compressor)
(MCC-1606)	Fuse (Interface)
F01,F02	Fuse (Fan)
F03	Fuse (Noise filter)
(MCC-1608A)	Fuse (Noise filter)
F04,F02,F03	Fuse (Noise filter)
F05	Fuse (Fan)
F500	15A 250V ~
FM	Fan motor
HEATER1,HEATER2	Compressor case heater
HEATER3	Accumulator case heater
A-HEATER	Reactor for compressor
L-CM1,L-CM2,L-CM3	Reactor for fan
L-FM	Magnet reactor
Mg-CTT	Pressure sensor(High)
PD	Pressure sensor(Low)
PS	Pressure sensor(Low)
PMV1,PMV2	Pulse motor valve (main)
PMV4	Pulse motor valve (sub)
RG	Rust current protect resistor
SV1,SV2,SV3,SV4,SV5,SV6,SV7,SV8,SV9,SV10,SV11,SV12,SV13,SV14,SV15,SV16,SV17,SV18,SV19,SV20,SV21,SV22,SV23,SV24,SV25,SV26,SV27,SV28,SV29,SV30,SV31,SV32,SV33,SV34,SV35,SV36,SV37,SV38,SV39,SV40,SV41,SV42,SV43,SV44,SV45,SV46,SV47,SV48,SV49,SV50,SV51,SV52,SV53,SV54,SV55,SV56,SV57,SV58,SV59,SV60,SV61,SV62,SV63,SV64,SV65,SV66,SV67,SV68,SV69,SV70,SV71,SV72,SV73,SV74,SV75,SV76,SV77,SV78,SV79,SV80,SV81,SV82,SV83,SV84,SV85,SV86,SV87,SV88,SV89,SV90,SV91,SV92,SV93,SV94,SV95,SV96,SV97,SV98,SV99,SV100	2-way valve coil
SW04,SW05,SW15	Relay switch
SW06,SW07,SW09,SW10,SW11,SW12,SW13,SW14,SW16,SW17,SW90,SW900	Push button switch
TD1,TD2,TD3	Dip switch
TE1,TE2	Pipe temp. sensor (discharge)
TK1,TK2,TK3,TK4,TK5	Heat exchange temp. sensor
TL1	Oil temp. sensor
TO	Liquid temp. sensor
TS1,TS2	Air temp. sensor
TB1	Pipe temp. sensor (suction)
TB2	Terminal block (power supply)
TB3	Terminal block (control wiring)
TB3	Terminal block (terminal wiring connector)

Field wiring	Terminal block	Terminal	Connector	P.C. board
---	⊕	○	□	□

**Color indication**  
 RED-RED  
 WHI-WHITE  
 YEL-YELLOW  
 BLU-BLUE  
 BLK-BLACK  
 GRY-GRAY  
 PNK-PINK  
 ORN-ORANGE  
 BRN-BROWN  
 GRN-GREEN



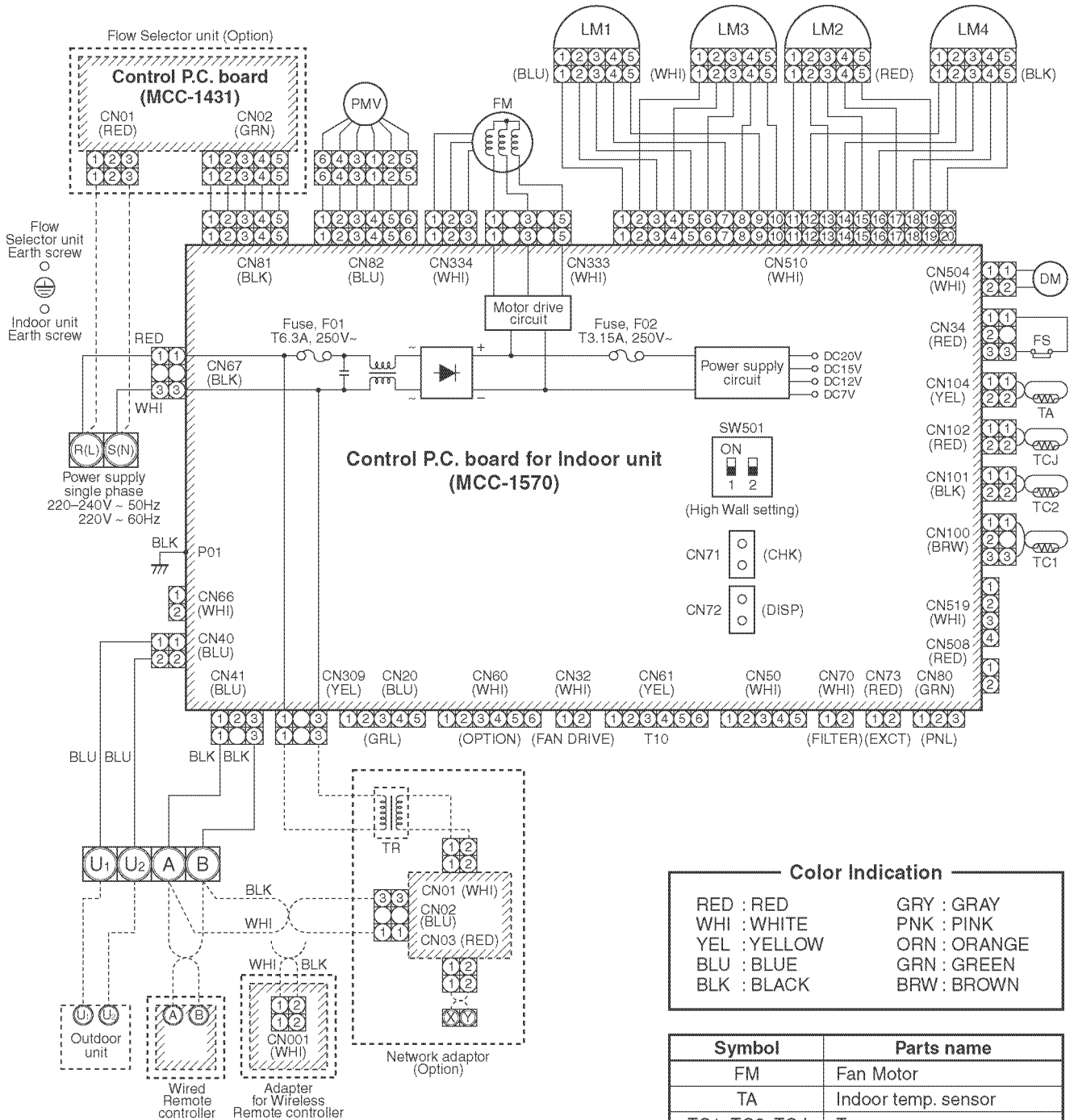
\*Noise filter P.C. boards are installed on a back of terminal block (TB1,TB2).

\*1 The installation of the optional board is up to four pieces.

## 1-2. Indoor Unit

### 1-2-1. 4-way Cassette Type

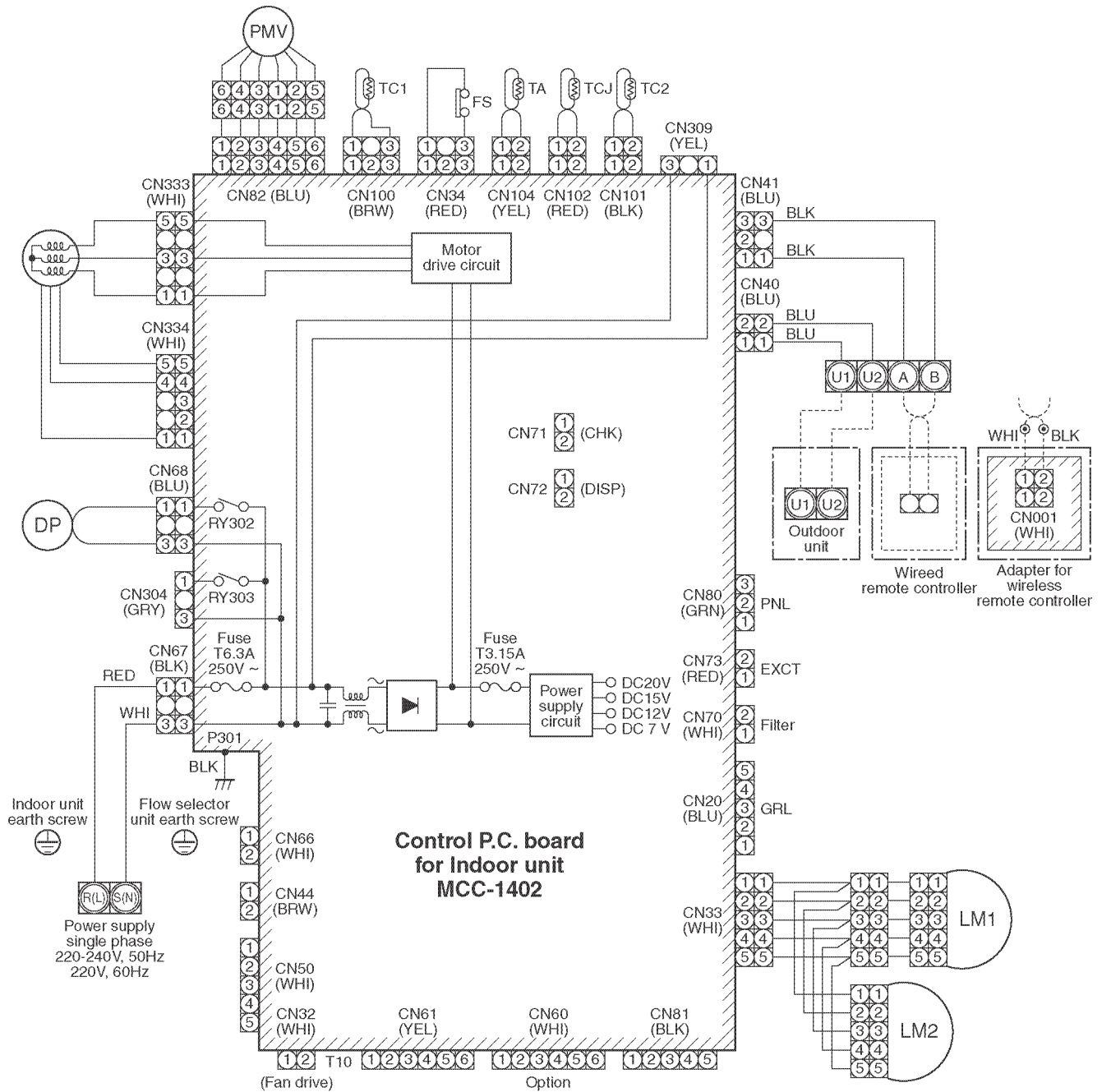
Models: MMU-AP0092H, AP0122H, AP0152H, AP0182H, AP0242H, AP0272H, AP0302H, AP0362H, AP0482H, and AP0562H



- indicates the terminal block.  
Letter at inside indicates the terminal number.
- A dotted line and broken line indicate the wiring site.
- ▨ indicates the control P.C. board.

## 1-2-2. Compact 4-way Cassette Type

Models: MMU-AP0074MH\*, AP0094MH\*, AP0124MH\*, AP0154MH\*, and AP0184MH\*

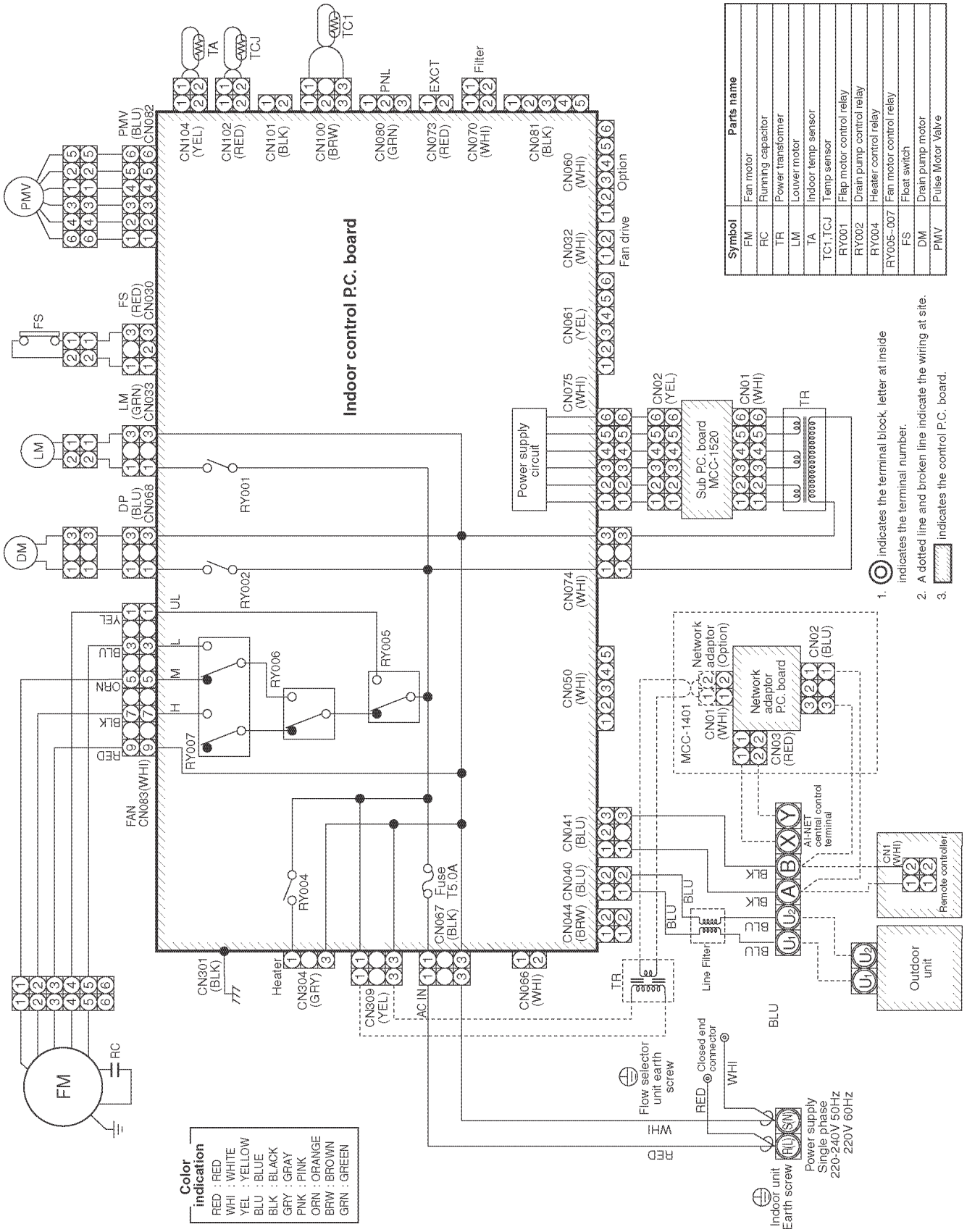


Symbol	Parts name
FM	Fan motor
TA	Indoor temp. sensor
TC1	Temp. sensor
TCJ	Temp. sensor
TC2	Temp. sensor
LM1, LM2	Louver motor
DP	Drain pump motor
FS	Float switch
RY302	Drain control relay
PMV	Pulse motor valve

Color indication
RED : RED
WHI : WHITE
YEL : YELLOW
BLU : BLUE
BLK : BLACK
GRY : GRAY
PNK : PINK
ORN : ORANGE
BRW : BROWN
GRN : GREEN

- ① indicates the terminal block letter.  
Letter at inside indicates the terminal number.
- A dotted line and broken line indicate the wiring at site.
- ▨ indicates a control P.C. board.

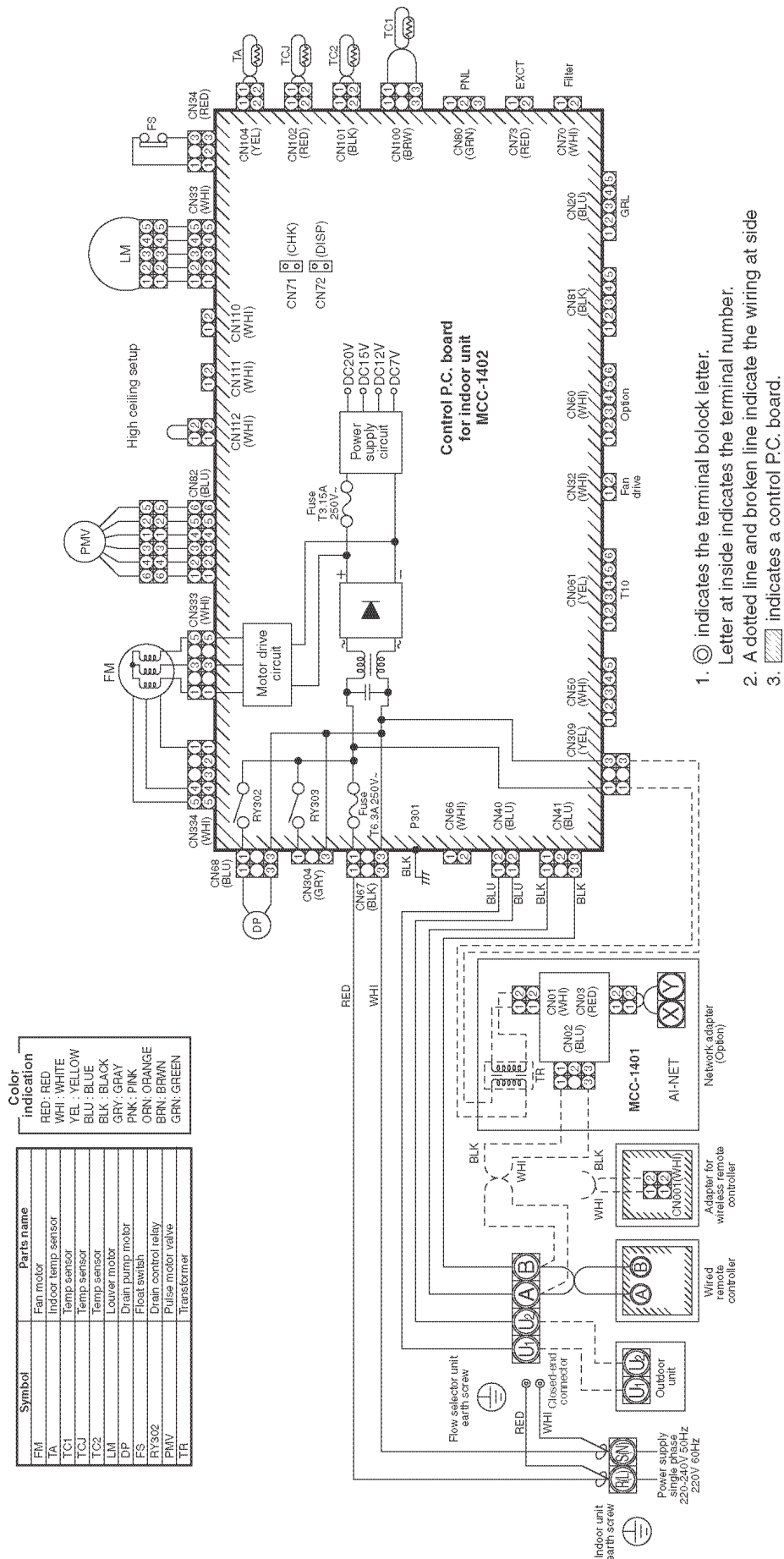
**1-2-3. 1-way Air Discharge Cassette Type (Compact type)**  
**Models: MMU-AP0074YH\*, AP0094YH\*, and AP0124YH\***



Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Power transformer
LM	Lower motor
TA	Indoor temp sensor
TC1, TCJ	Temp sensor
RY001	Flap motor control relay
RY002	Drain pump control relay
RY004	Heater control relay
RY005-007	Fan motor control relay
FS	Float switch
DM	Drain pump motor
PMV	Pulse Motor Valve

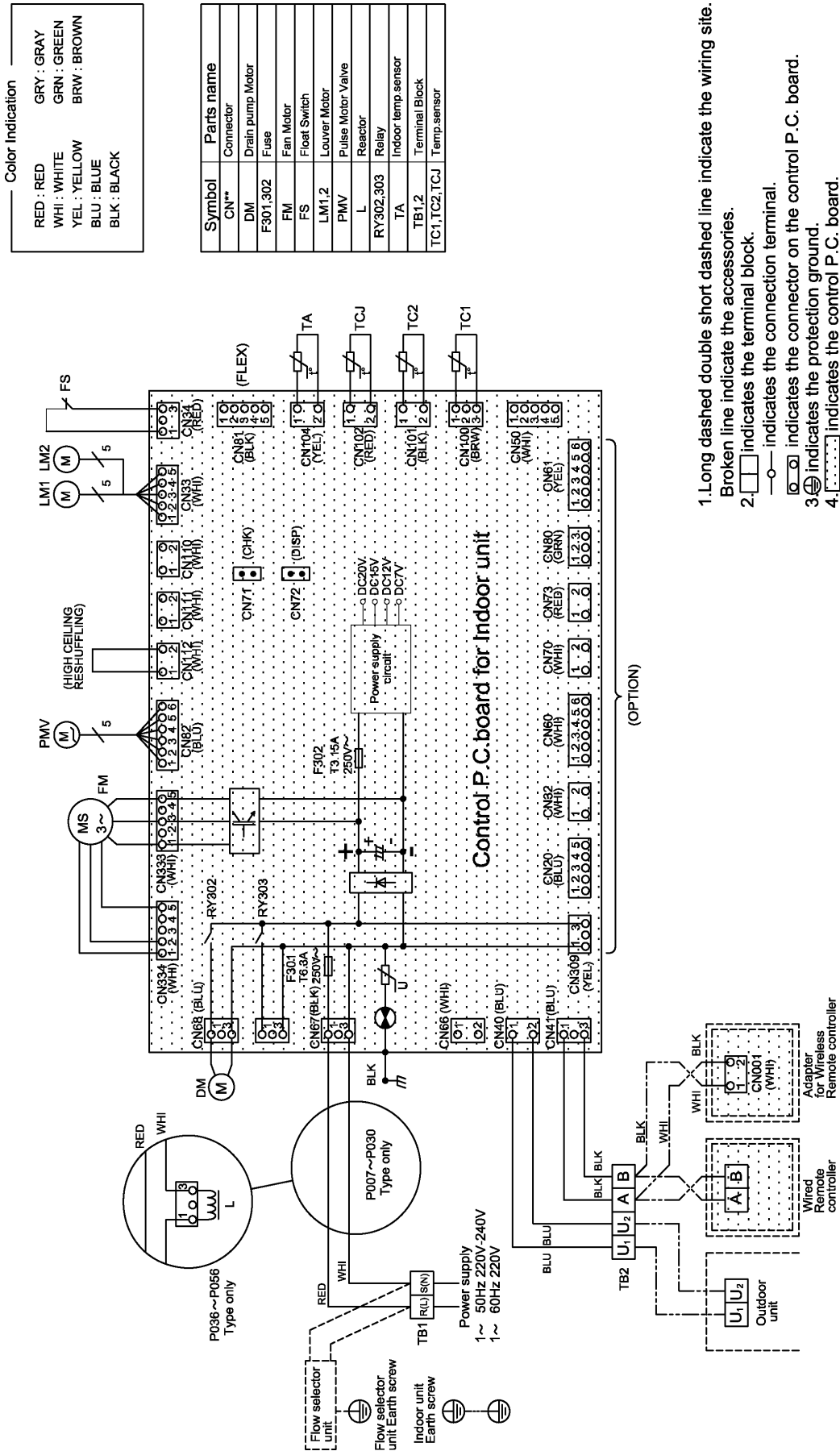
# 1-2-4. 1-way Cassette Type SH series

Models: MMU-AP0154SH\*, AP0184SH\*, and AP0244SH\*



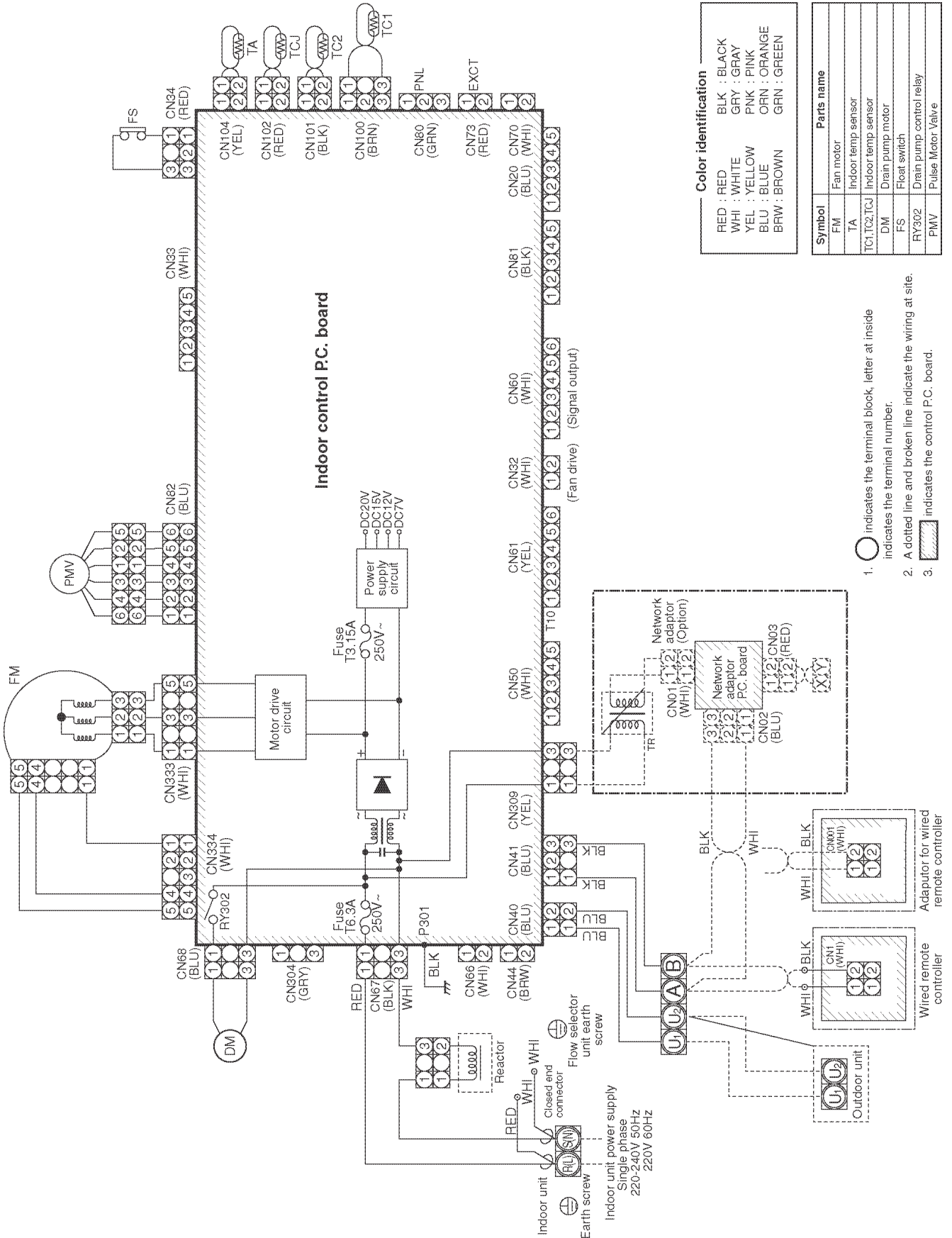
## 1-2-5. 2-way Cassette Type

Models: MMU-AP0072WH, AP0092WH, AP0122WH, AP0152WH, AP0182WH, AP0242WH, AP0272WH, AP0302WH, AP0482WH



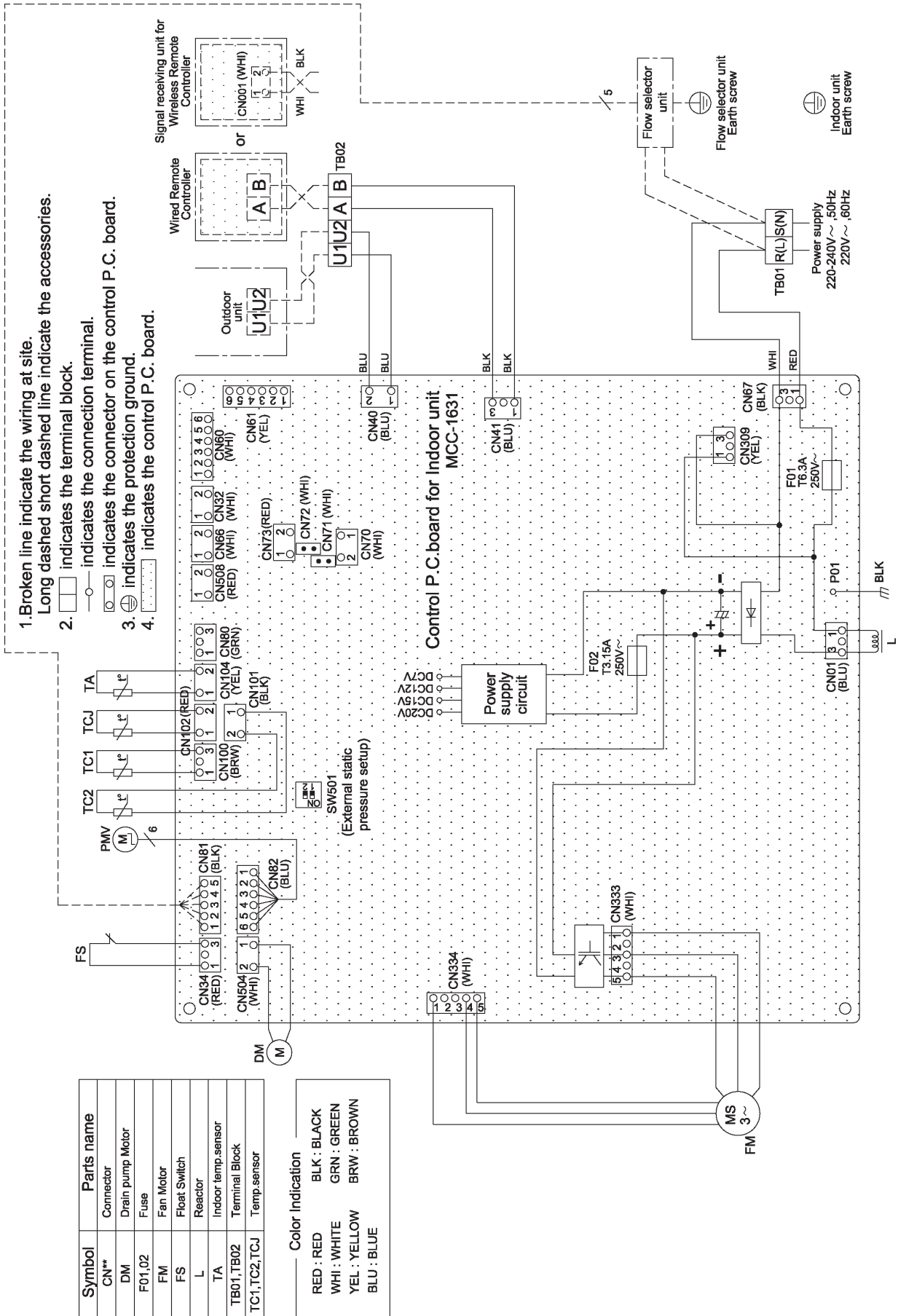
## 1-2-6. Concealed Duct Standard Type

Models: MMD-AP0074BH\*, AP0094BH\*, AP0124BH\*, AP0154BH\*, AP0184BH\*, AP0244BH\*, AP0274BH\*, AP0304BH\*, AP0364BH\*, AP0484BH\*, and AP0564BH\*



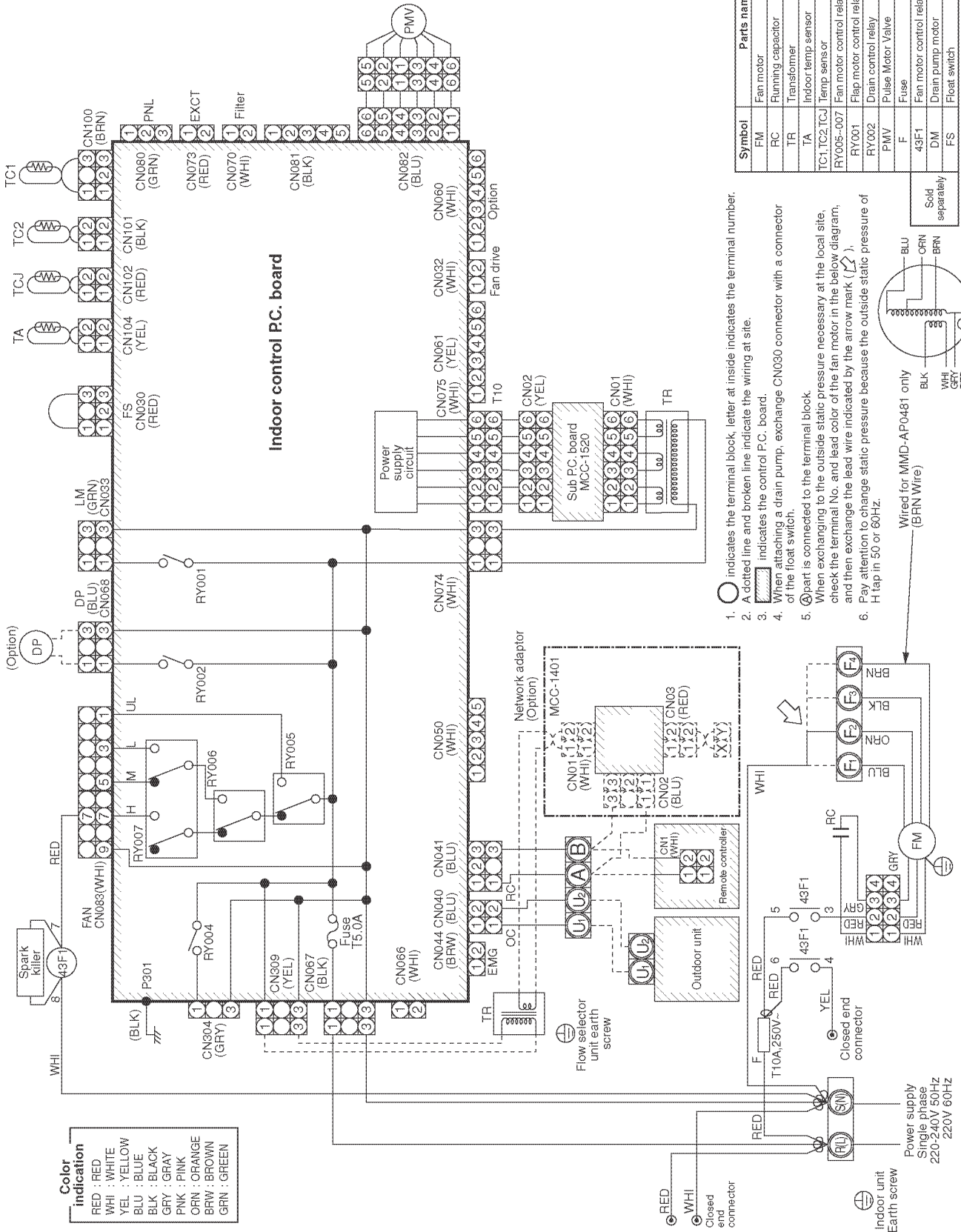
## 1-2-7. Concealed Duct Standard Type 6series

Models : MMD-AP0076BH\*, AP0096BH\*, AP0126BH\*, AP0156BH\*, AP0186BH\*, AP0246BH\*, AP0276BH\*, AP0306BH\*, AP0366BH\*, AP0486BH\*, AP0566BH\*



# 1-2-8. Concealed Duct High Static Pressure Type

Models: MMD-AP0184H\*, AP0244H\*, AP0274H\*, AP0364H\*, and AP0484H\*

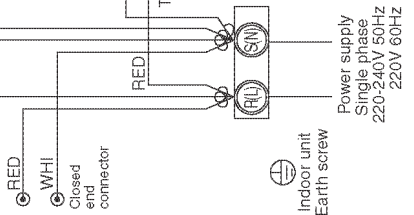
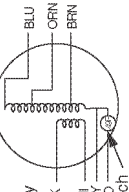


**Color indication**

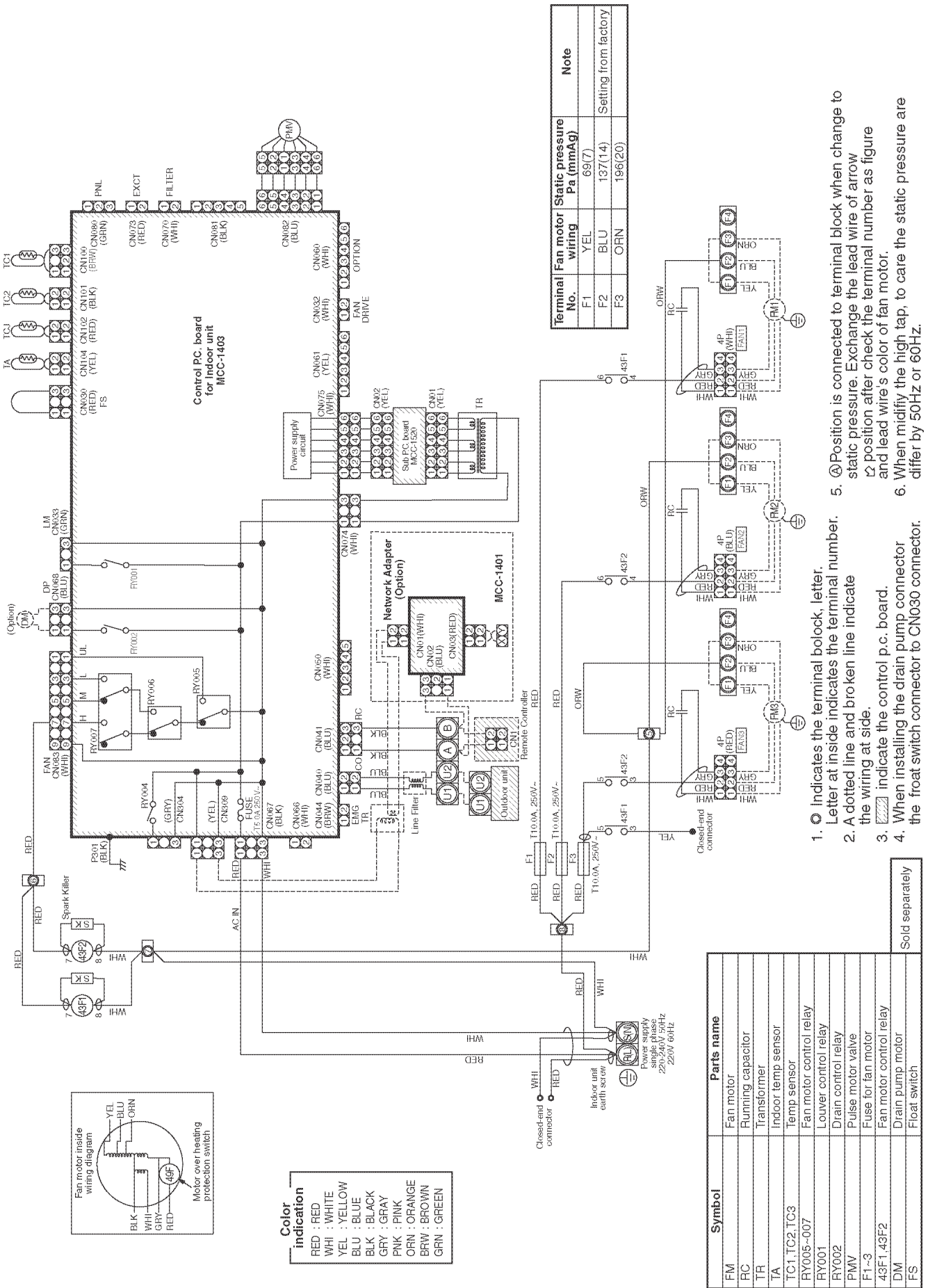
RED	: RED
WHI	: WHITE
YEL	: YELLOW
BLU	: BLUE
BLK	: BLACK
GRY	: GRAY
PNK	: PINK
ORN	: ORANGE
BRW	: BROWN
GRN	: GREEN

Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1, TC2, TCJ	Temp sensor
RY005-007	Fan motor control relay
RY001	Flap motor control relay
RY002	Drain control relay
PMV	Pulse Motor Valve
F	Fuse
43F1	Fan motor control relay
DM	Drain pump motor
FS	Float switch

1. ○ indicates the terminal block, letter at inside indicates the terminal number.
  2. A dotted line and broken line indicate the wiring at site.
  3. ■ indicates the control P.C. board.
  4. When attaching a drain pump, exchange CN030 connector with a connector of the float switch.
  5. ⊕ part is connected to the terminal block.
- When exchanging to the outside static pressure necessary at the local site, check the terminal No. and lead color of the fan motor in the below diagram, and then exchange the lead wire indicated by the arrow mark (↔). Pay attention to change static pressure because the outside static pressure of H tap in 50 or 60Hz.

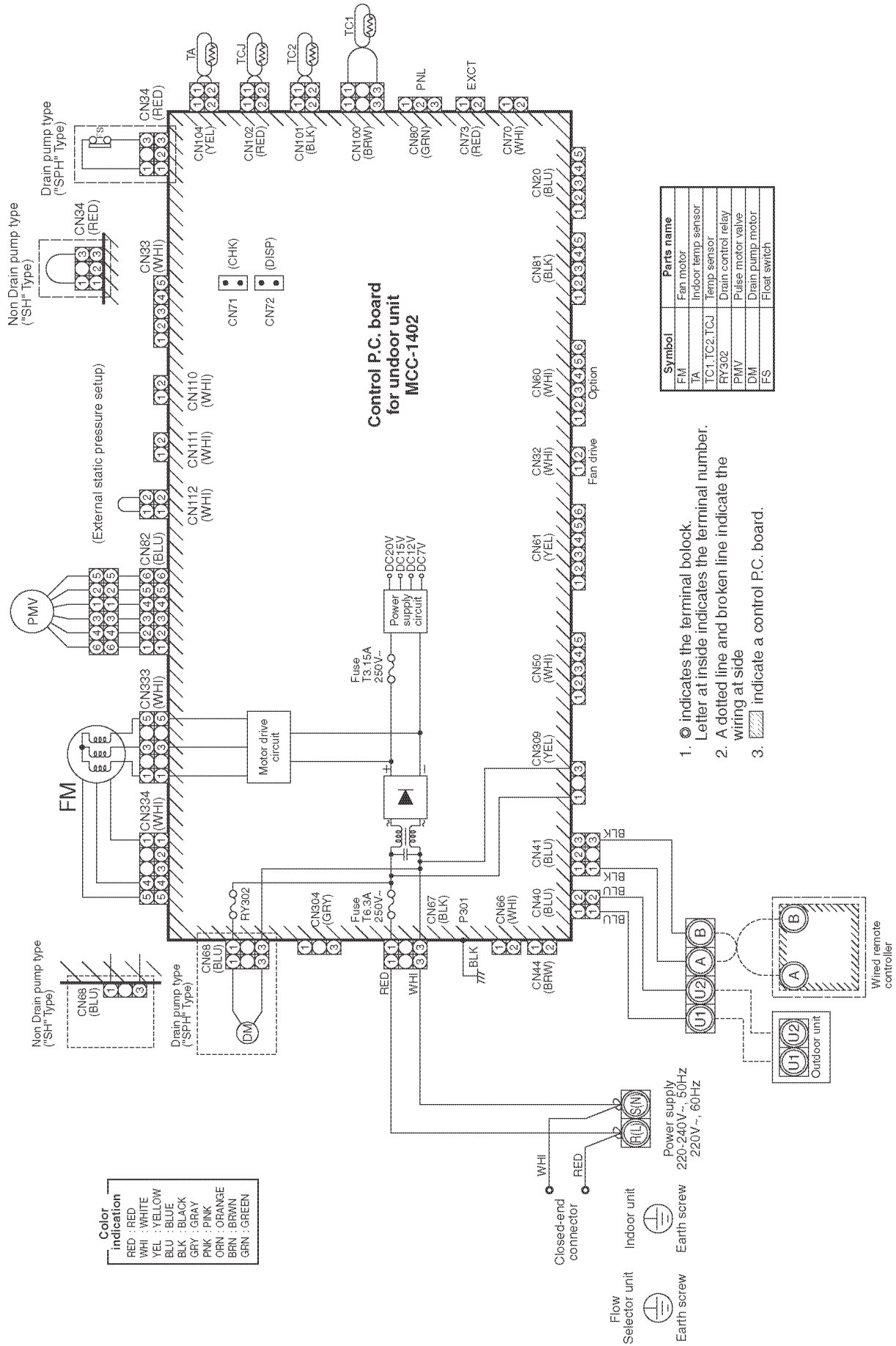


Models: MMD-AP0724H\* and AP0964H\*



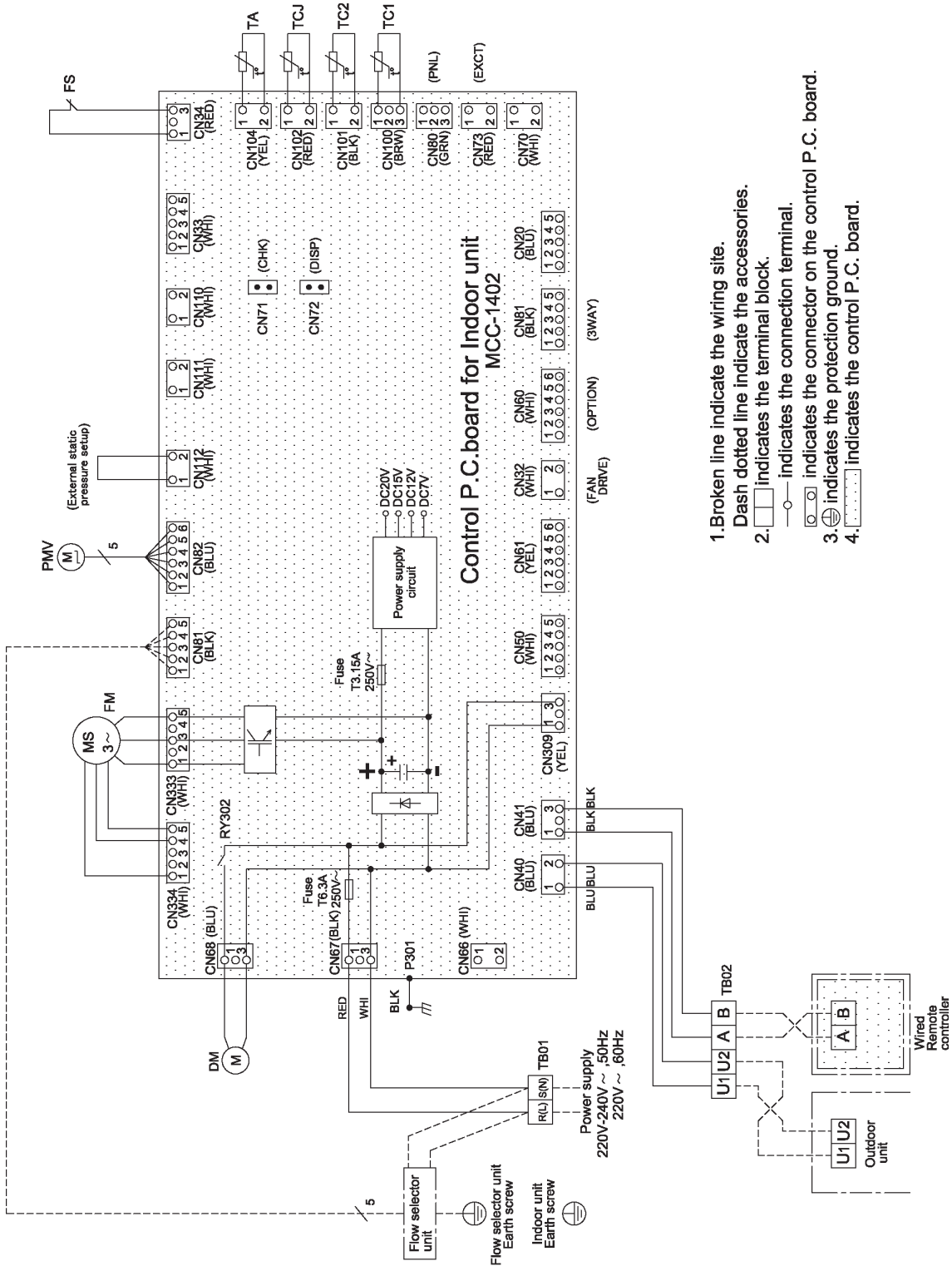
# 1-2-9. Slim Duct Type

Models: MMD-AP0074SPH\*, AP0094SPH\*, AP0124SPH\*, AP0154SPH\*, and AP0184SPH\*



# 1-2-10. Slim duct type

Models: MMD-AP0244SPH\*, MMD-AP0274SPH\*



Symbol	Parts name
FM	Fan Motor
TA	Indoor temp.sensor
TC1,TC2,TCJ	Temp.sensor
RY302	Relay
PMV	Pulse Motor Valve
DM	Drain pump Motor
TB01, TB02	Terminal Block
FS	Float Switch

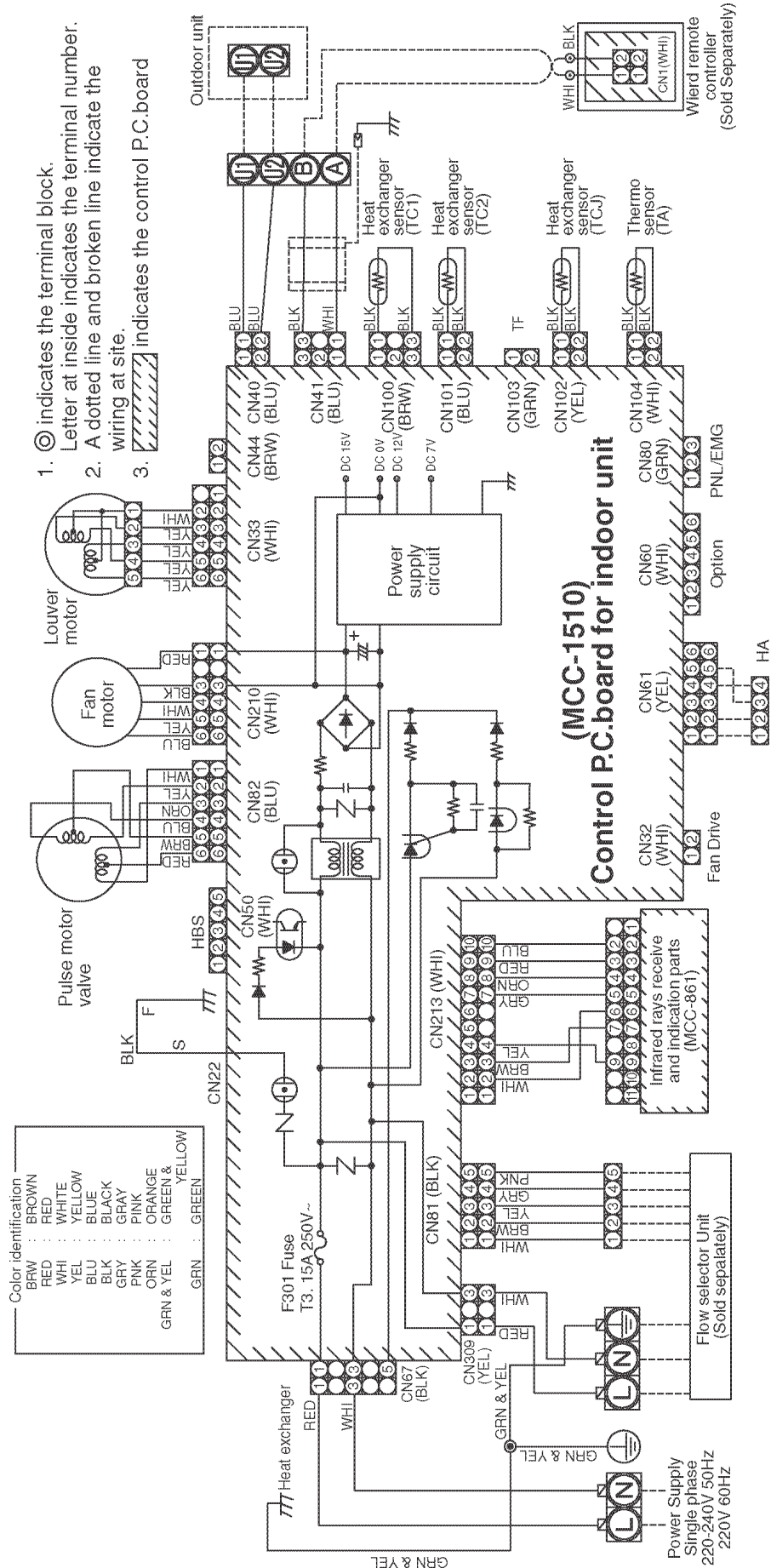
Color Indication	
RED : RED	GRY : GRAY
WHI : WHITE	GRN : GREEN
YEL : YELLOW	BRW : BROWN
BLU : BLUE	
BLK : BLACK	

1. Broken line indicate the wiring site.  
Dash dotted line indicate the accessories.
2. □ indicates the terminal block.  
—○— indicates the connection terminal.
3. ⊕ indicates the connector on the control P.C. board.
4. ⊕ indicates the protection ground.



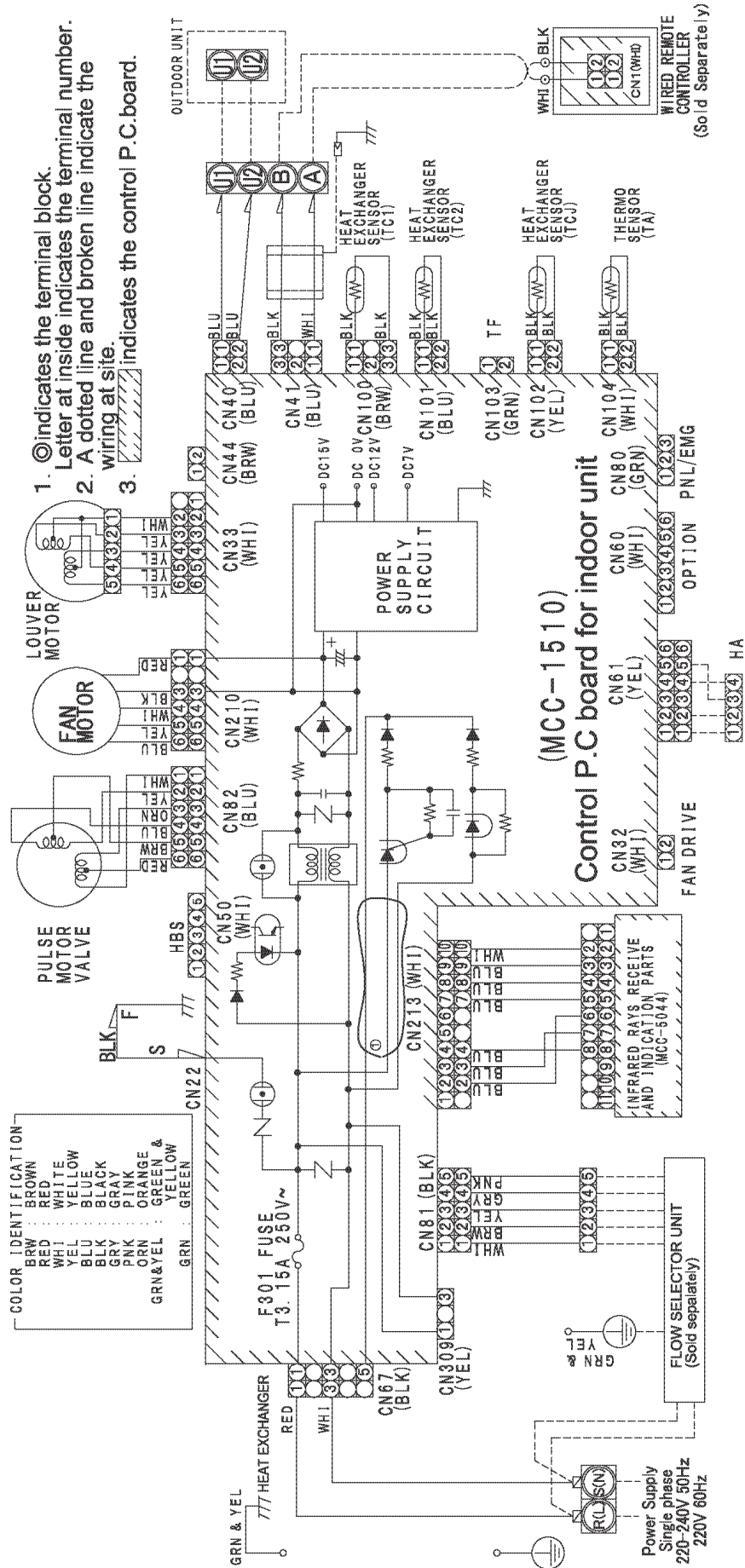
# 1-2-12. High Wall Type 4MH series

Models: MMK-AP0074MH\*, AP0094MH\*, and AP0124MH\*



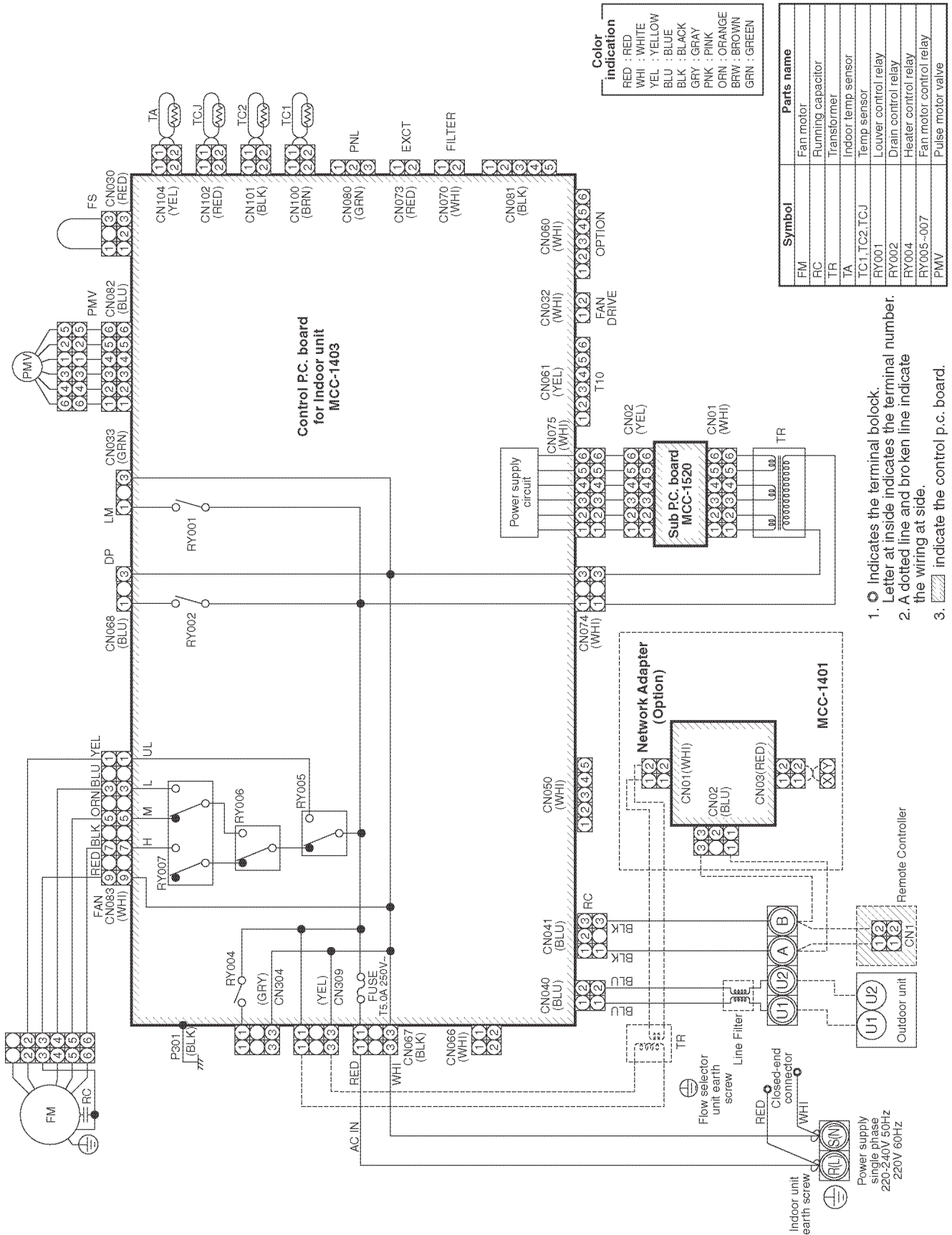
1-2-13. High Wall Type 3 series

Models: MMK-AP0073H, AP0093H, AP0123H, AP0153H, AP0183H, AP0243H



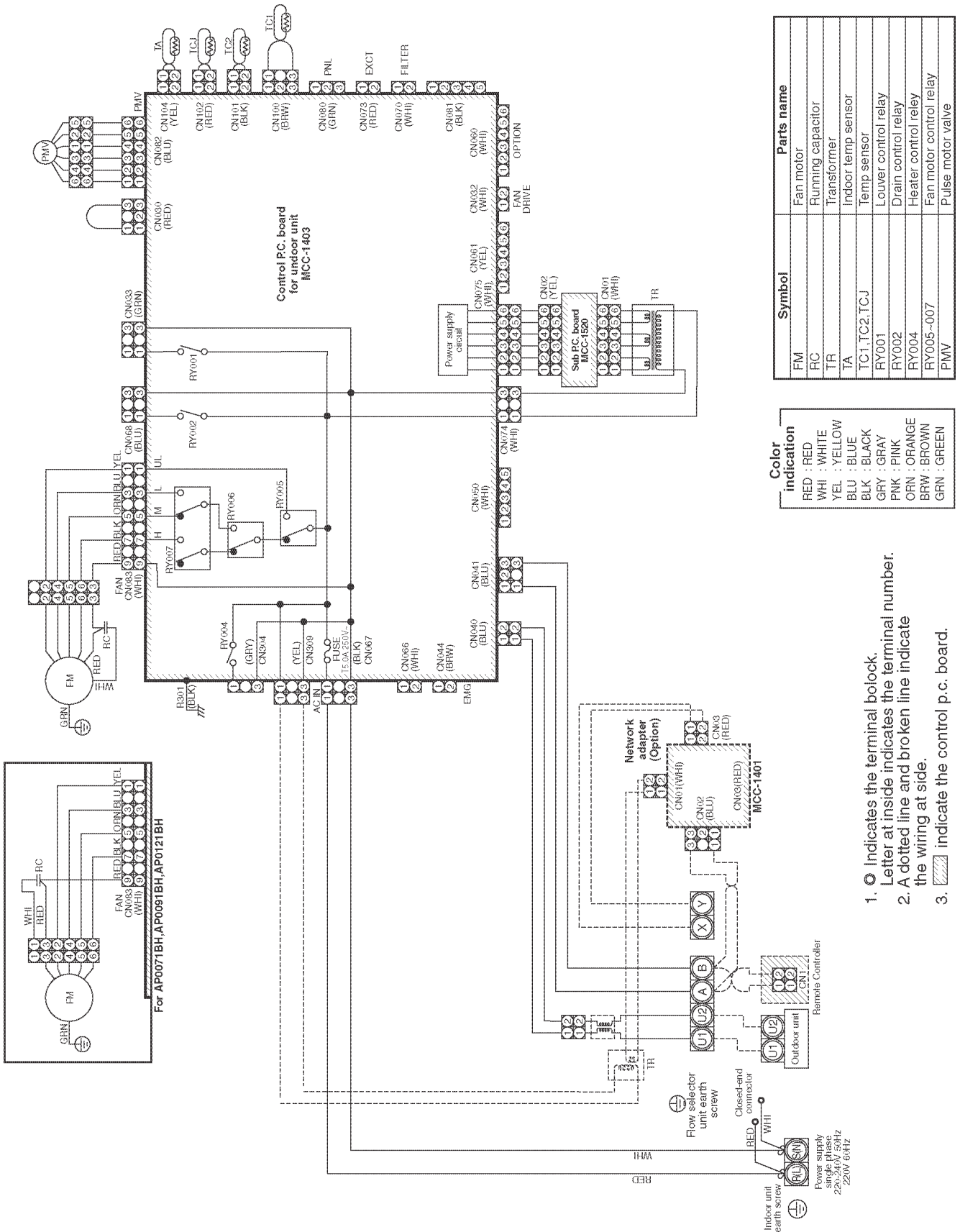
# 1-2-14. Floor Standing Cabinet Type

Models: MML-AP0074H\*, AP0094H\*, AP0124H\*, AP0154H\*, AP0184H\*, and AP0244H\*



# 1-2-15. Floor Standing Concealed Type

Models: MML-AP0074BH\*, AP0094BH\*, AP0124BH\*, AP0154BH\*, AP0184BH\*, and AP0244BH\*

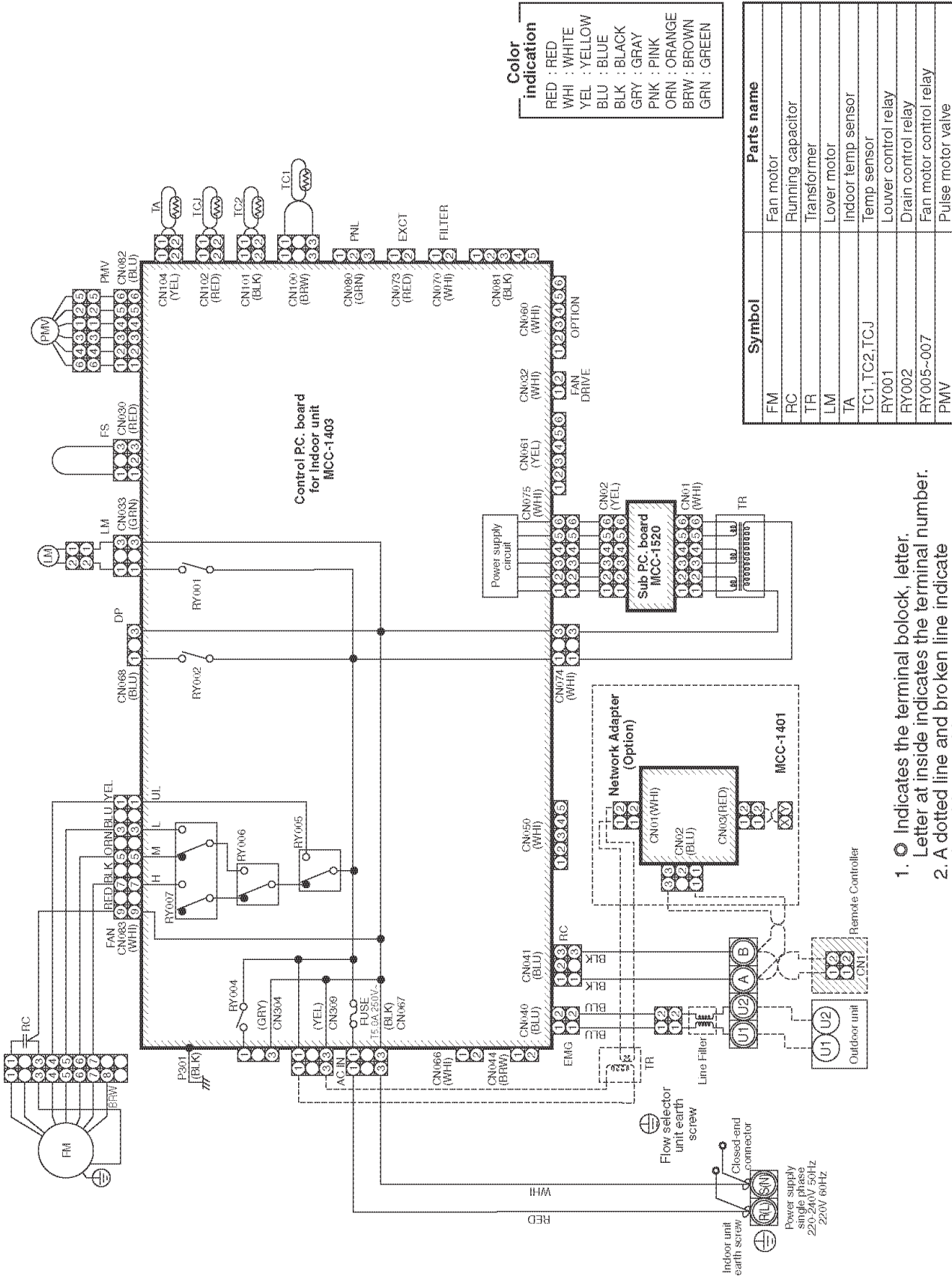


Symbol	Parts name
FM	Fan motor
RC	Running capacitor
TR	Transformer
TA	Indoor temp sensor
TC1, TC2, TCJ	Temp sensor
RY001	Lower control relay
RY002	Drain control relay
RY004	Heater control relay
RY005-007	Fan motor control relay
PMV	Pulse motor valve

Color indication
RED : RED
WHI : WHITE
YEL : YELLOW
BLU : BLUE
BLK : BLACK
GRY : GRAY
PNK : PINK
BRW : BROWN
GRN : GREEN

# 1-2-16. Floor Standing Type

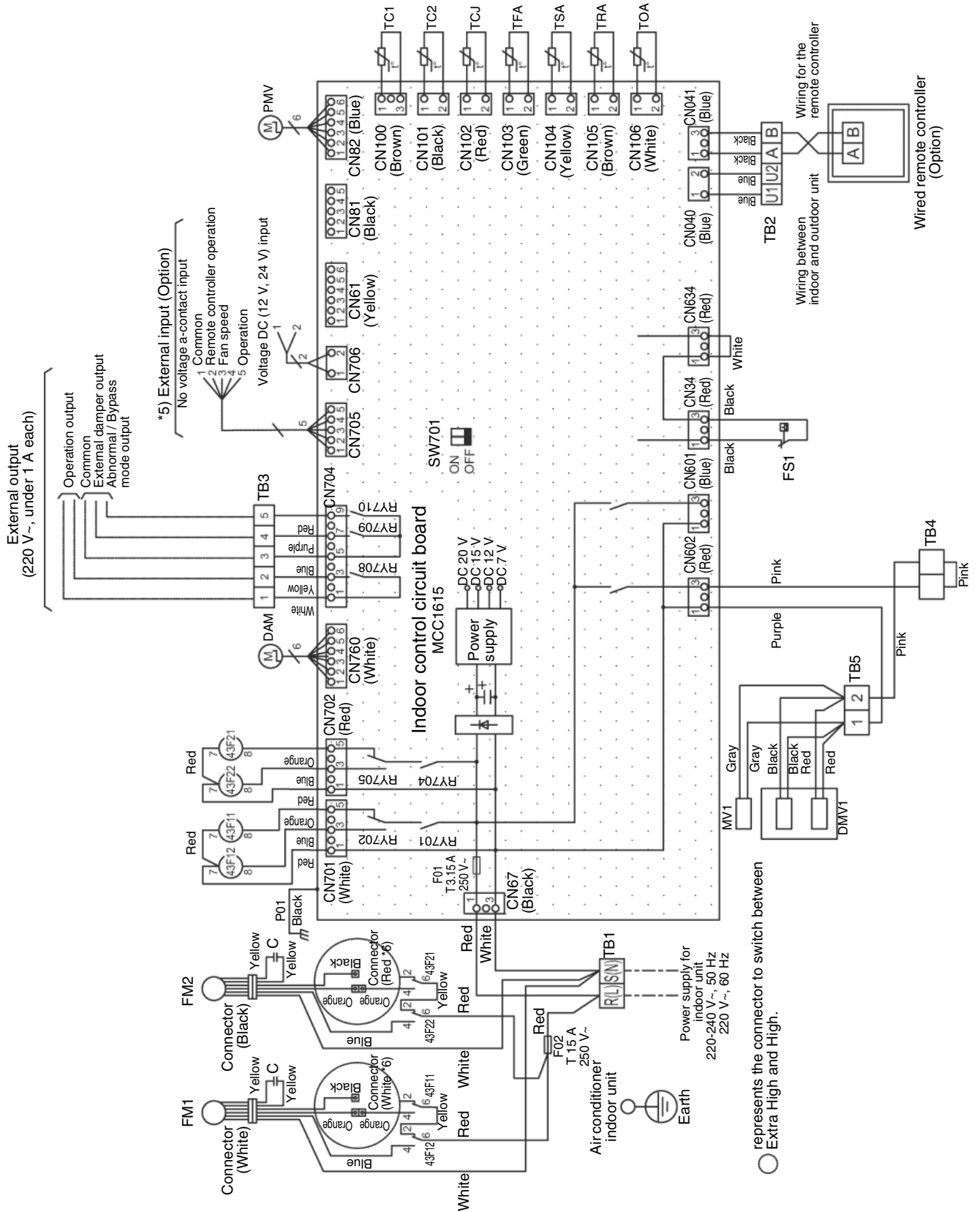
Models: MMF-AP0154H\*, AP0184H\*, AP0244H\*, AP0274H\*, AP0364H\*, AP0484H\*, and AP0564H\*



1. Indicates the terminal block, letter. Letter at inside indicates the terminal number.
2. A dotted line and broken line indicate the wiring at side.
3. indicate the control p.c. board.

# 1-2-17. Air to Air Heat Exchanger with DX Coil Unit







MMD-VNK502HEXE\*, MMD-VNK802HEXE\*, MMD-VNK1002HEXE\*, MMD-VNK1002HEXE2\*



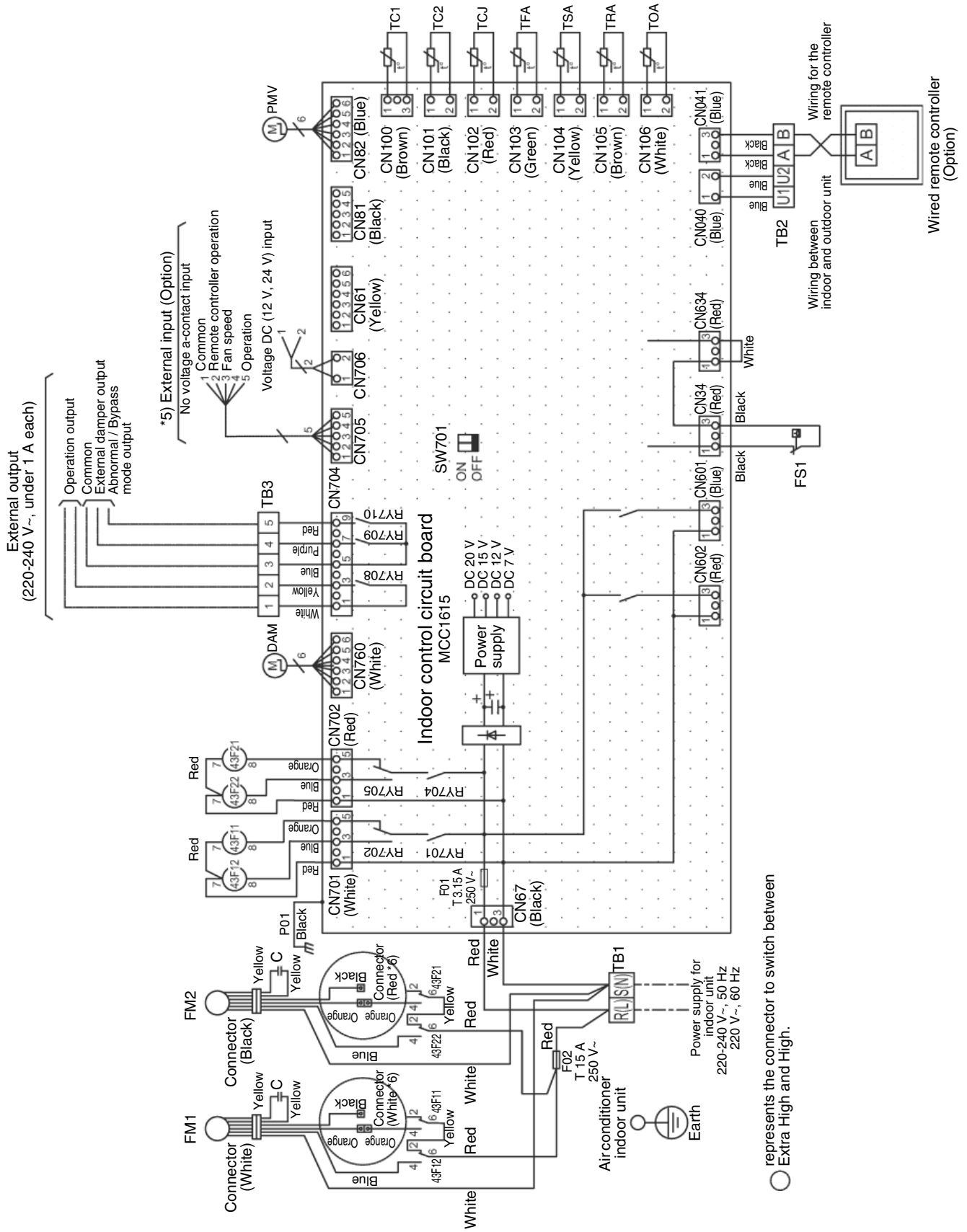
Code	Parts name
CN**	Connector
F01	Fuse (printed circuit board)
F02	Fuse (motor)
FM1	Air supplying motor
FM2	Air exhausting motor
DAM	Damper motor
TRA	TRA sensor
TOA	TOA sensor
TSA	TSA sensor

Code	Parts name
TFA	TFA sensor
TCJ, TC1, TC2	Indoor coil sensor
TB1	Terminal block (power source)
TB2	Terminal block (communication)
TB3	Terminal block (external output)
TB4	Terminal block (humidistat)
TB5	Terminal block (magnetic valve)
FS1	Float switch
MV1	Magnetic valve

Code	Parts name
DMV1	Decompression magnetic valve
PMV	Pulse modulating valve
SW701	Dip switch
43F11, 43F12	Relay for air supplying motor
43F21, 43F22	Relay for air exhausting motor
RY701, RY702	Relay for air supplying motor
RY704, RY705	Relay for air exhausting motor

- (1) The dotted line represents a wire procured locally, and the dashed line represents an option sold separately.
- (2)  represents a terminal block,  represents a connection terminal,  represents a connector on the printed circuit board and  represents a short circuit connector.
- (3)  represents a protective earth.
- (4)  represents a printed circuit board.
- (5) Using a no voltage a-contact input of the external input (option), the following operations are available.  
Between 1 and 2 : Selecting the remote controller operation (Invalid / Valid)  
Between 1 and 3 : Adjusting the fan speed (Low / High)  
Between 1 and 5 : Operation (ON / OFF)  
Use a microcurrent contact (DC 12 V, 1 mA). In addition, ON / OFF operation is possible when using a voltage of DC 12 V or 24 V.
- (6) Orange wire (High) is connected as factory default. To switch to “Extra High”, connect black wire's connector instead of orange.







MMD-VN502HEXE\*, MMD-VN802HEXE\*, MMD-VN1002HEXE\*, MMD-VN1002HEXE2



Code	Parts name
CN**	Connector
F01	Fuse (printed circuit board)
F02	Fuse (motor)
FM1	Air supplying motor
FM2	Air exhausting motor
DAM	Damper motor
TRA	TRA sensor
TOA	TOA sensor

Code	Parts name
TSA	TSA sensor
TFA	TFA sensor
TCJ, TC1, TC2	Indoor coil sensor
TB1	Terminal block (power source)
TB2	Terminal block (communication)
TB3	Terminal block (external output)
FS1	Float switch
PMV	Pulse modulating valve

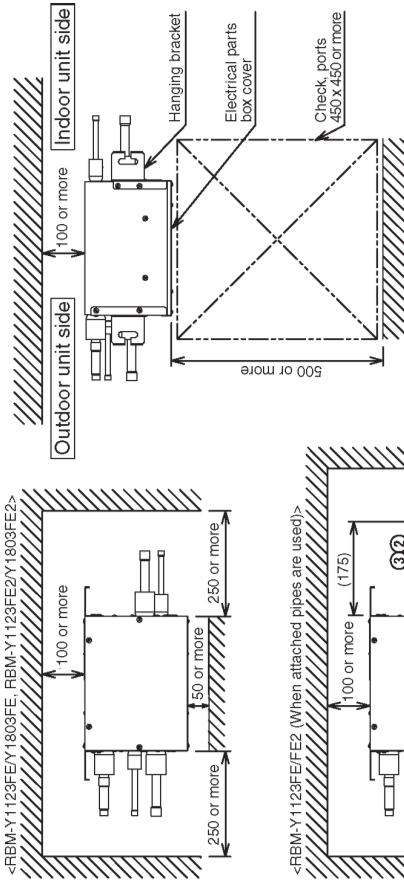
Code	Parts name
SW701	Dip switch
43F11, 43F12	Relay for air supplying motor
43F21, 43F22	Relay for air exhausting motor
RY701, RY702	Relay for air supplying motor
RY704, RY705	Relay for air exhausting motor

- (1) The dotted line represents a wire procured locally, and the dashed line represents an option sold separately.
- (2)  represents a terminal block,  represents a connection terminal,  represents a connector on the printed circuit board and  represents a short circuit connector.
- (3)  represents a protective earth.
- (4)  represents a printed circuit board.
- (5) Using a no voltage a-contact input of the external input (option), the following operations are available.  
Between 1 and 2 : Selecting the remote controller operation (Invalid / Valid)  
Between 1 and 3 : Adjusting the fan speed (Low / High)  
Between 1 and 5 : Operation (ON / OFF)  
Use a microcurrent contact (DC 12 V, 1 mA). In addition, ON / OFF operation is possible when using a voltage of DC 12 V or 24 V.
- (6) Orange wire (High) is connected as factory default. To switch to "Extra High", connect black wire's connector instead of orange.

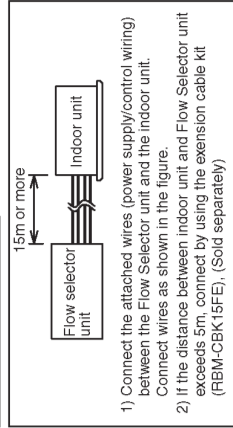
# 1-3. Flow Selector Unit

## RBM-Y1123FE, RBM-Y1803FE

### Installation space



### Connection Indoor unit

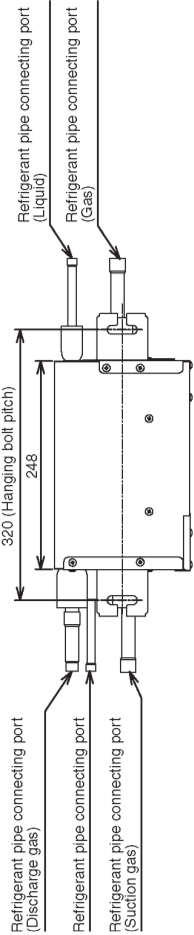


- 1) Connect the attached wires (power supply/control wiring) between the Flow Selector unit and the indoor unit. Connect wires as shown in the figure.
- 2) If the distance between indoor unit and Flow Selector unit exceeds 5m, connect by using the extension cable kit (RBM-CBK15FE). (Sold separately)

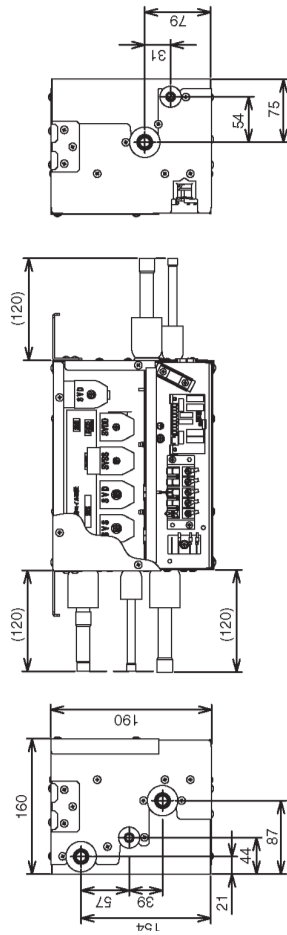
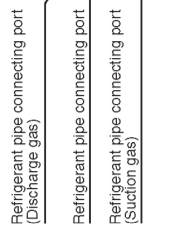
### Accessory pipe

③	Attach pipe (Gas pipe) 007-012type	Ø9.5 Brazing
②	Attach pipe (Gas pipe) 015-018type	Ø12.7 Brazing
①	Attach pipe (Liquid pipe) 007-018type	Ø6.4 Brazing
	Name	Application

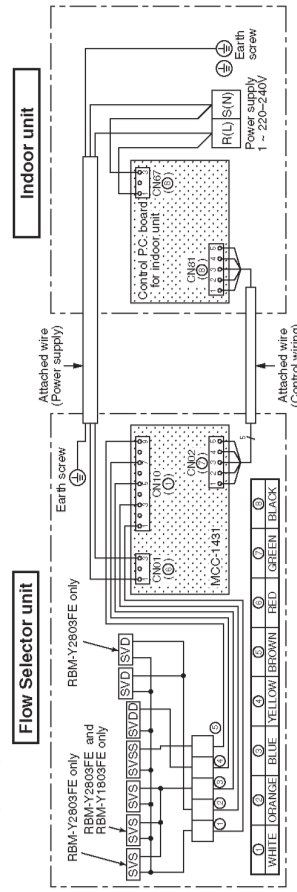
### Indoor unit side



### Outdoor unit side



### Wiring Diagram

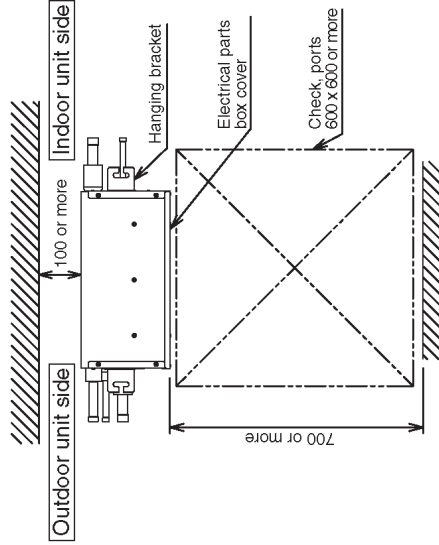
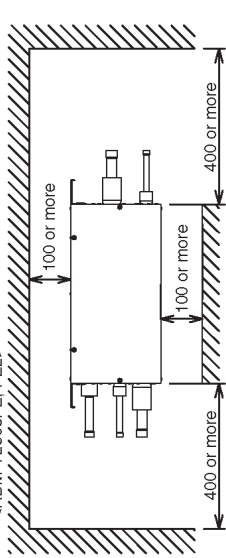


### Specifications

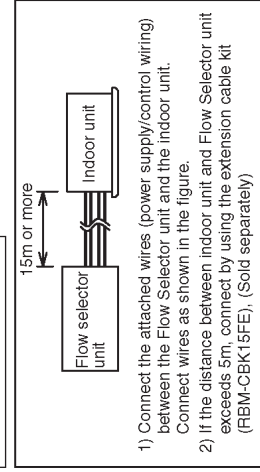
Material	Seamless phosphorus deoxidized copper pipe air conditioning	
Flow Selector unit	RBM-	Y1123FE, FE2
Indoor unit capacity code	Less than 11.2	Y1803FE, FE2
Indoor unit side pipe size (mm)	Gas pipe	11.2 or more less than 18.0
Outdoor unit side pipe size (mm)	Liquid pipe	Ø15.9
	Suction gas pipe	Ø9.5
	Discharge gas pipe	Ø15.9
Connectable indoor units	Liquid pipe	Ø12.7
		Ø9.5
		5
		8

# RBM-Y2803FE

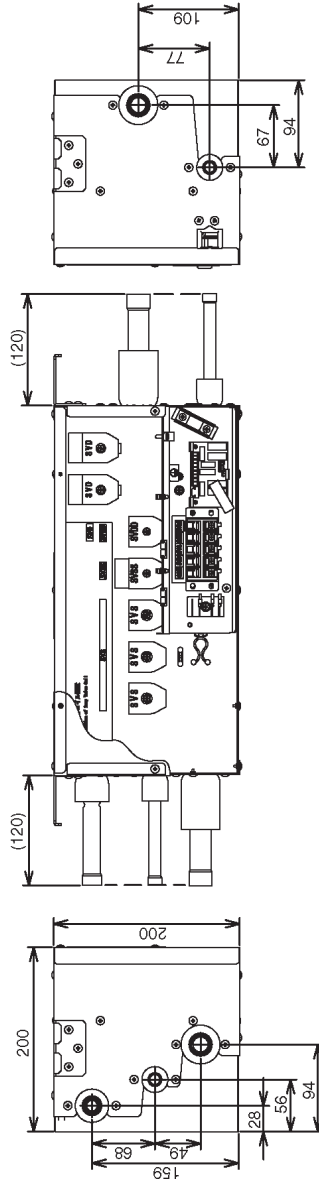
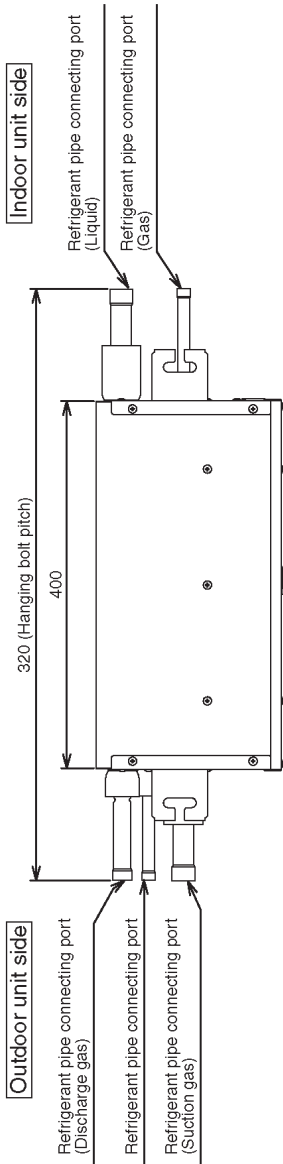
## Installation space



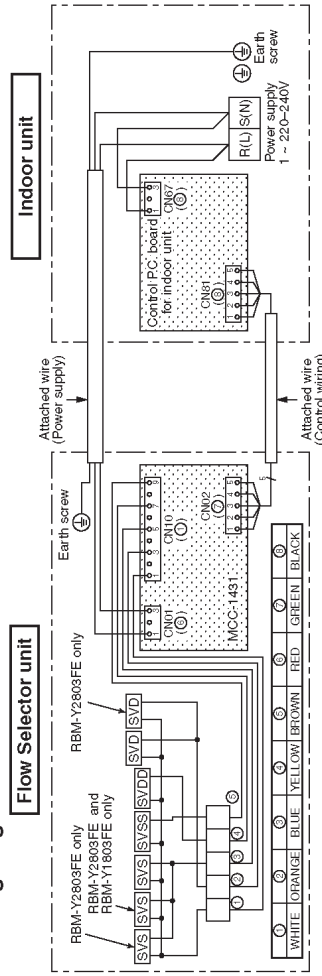
## Connection Indoor unit



- 1) Connect the attached wires (power supply/control wiring) between the Flow Selector unit and the Indoor unit. Connect wires as shown in the figure.
- 2) If the distance between indoor unit and Flow Selector unit exceeds 5m, connect by using the extension cable kit (RBM-CBK1SFE), (Sold separately)



## Wiring Diagram



## Specifications

Material	Seamless phosphorus deoxidized copper pipe air conditioning
Flow Selector unit	RBM-
Indoor unit capacity code	Y1803FE, FE2
Indoor unit capacity	18.0 or more less than 22.0
Indoor unit side pipe size (mm)	Gas pipe Ø22.2 Liquid pipe Ø12.7
Outdoor unit side pipe size (mm)	Suction gas pipe Ø22.2 Discharge gas pipe Ø19.1 Liquid pipe Ø12.7
Connectable indoor units	8

## 2. PARTS RATING

### 2-1. Outdoor Unit

(50Hz model: MMY-MAP\*\*\*4FT8-E, MAP\*\*\*4FT8-TR, MAP\*\*\*4FT8)

No.	Parts Name	Model	Specification	MMY-MAP			
				0804FT8*	1004FT8*	1204FT8*	1404FT8*
1	Compressor	DA421A3FB-29M	Output: 2.3kW × 2	○			
			Output: 3.1kW × 2		○		
			Output: 2.6kW × 3			○	
			Output: 3.1kW × 3				○
2	4-way valve coil	STF-H01AQ1956A1	AC208 ~ 230V	○	○	○	○
3	PMV (Pulse motor valve) coil	HAM-MD12TF-6	DV12V	○	○	○	○
4	2-way valve coil	VPV-M0AQ1843A0	SV3B AC208 ~ 230V	○	○		
			SV3B AC200V 50/60Hz			○	○
			SV3E			○	○
			SV3F			○	○
5	2-way valve coil	FQ-D640	SV2 AC200V 50/60Hz	○	○		
			SV3A	○	○		
			SV3C	○	○		
			SV3D	○	○		
			SV3E	○	○		
			SV41	○	○		
			SV42	○	○		
			SV5	○	○		
			SV6	○	○		
			SV2 AC200V 50/60Hz			○	○
			SV3A			○	○
			SV3C			○	○
			SV3D			○	○
			SV41			○	○
			SV42			○	○
			SV43			○	○
SV5			○	○			
SV6			○	○			
6	2-way valve coil	SR53 AC200L1500	SV11 AC200V 50/60Hz	○	○	○	○
			SV14	○	○	○	○
7	2-way valve	VPV-303DQ1	SV3E —			○	○
			SV3F —			○	○
8	2-way valve	VPV-603DQ2	SV3B —	○	○	○	○
9	2-way valve	FDF3A06	SV41 —	○	○		
			SV42 —	○	○		
			SV5 —	○	○		
			SV41 —			○	○
			SV42 —			○	○
			SV43 —			○	○
SV5 —			○	○			
10	2-way valve	FDF2A88	SV2 —	○	○		
			SV3A —	○	○		
			SV3C —	○	○		
			SV3D —	○	○		
			SV3E —	○	○		
			SV6 —	○	○		
			SV2 —			○	○
			SV3A —			○	○
			SV3C —			○	○
			SV3D —			○	○
SV6 —			○	○			
11	2-way valve	SR53-04WR BA	SV11 —	○	○	○	○
			SV14 —	○	○	○	○
12	High-pressure SW	ACB-4UB32W	OFF : 3.73MPa ON : 2.9MPa	○	○	○	○
13	Pressure sensor (For high pressure)	NSK-BC038F-067	0.5~4.3V/0~3.73MPa	○	○	○	○
14	Pressure sensor (For low pressure)	NSK-BC010F-067	0.5~3.5V/0~0.98MPa	○	○	○	○
15	Fan motor	STF-340A1000-1	DC280V/1kW	○	○	○	○
16	Case heater (For comp.)		AC240V/29W	○	○	○	○
17	Case heater (For accum.)		AC240V/55W	○	○	○	○
18	Fusible plug		73°C	○	○	○	○

## 2-2. Outdoor Unit

(60Hz model: MMY-MAP\*\*\*4FT7)

No.	Parts Name	Model	Specification	MMY-MAP			
				0804FT7*	1004FT7*	1204FT7*	1404FT7*
1	Compressor	DA421A3FB-29M	Output: 2.3kW × 2	○			
			Output: 3.1kW × 2		○		
			Output: 2.6kW × 3			○	
			Output: 3.1kW × 3				○
2	4-way valve coil	STF-H01AQ1956A1	AC208 ~ 230V	○	○	○	○
3	PMV (Pulse motor valve) coil	HAM-MD12TF-6	DV12V	○	○	○	○
4	2-way valve coil	VPV-M0AQ1843A0	SV3B AC208 ~ 230V	○	○		
			SV3B AC200V 50/60Hz			○	○
			SV3E			○	○
			SV3F			○	○
5	2-way valve coil	FQ-D640	SV2 AC200V 50/60Hz	○	○		
			SV3A	○	○		
			SV3C	○	○		
			SV3D	○	○		
			SV3E	○	○		
			SV41	○	○		
			SV42	○	○		
			SV5	○	○		
			SV6	○	○		
			SV2 AC200V 50/60Hz			○	○
			SV3A			○	○
			SV3C			○	○
			SV3D			○	○
			SV41			○	○
			SV42			○	○
			SV43			○	○
			SV5			○	○
			SV6			○	○
6	2-way valve coil	SR53 AC200L1500	SV11 AC200V 50/60Hz	○	○	○	○
			SV14	○	○	○	○
7	2-way valve	VPV-303DQ1	SV3E —			○	○
			SV3F —			○	○
8	2-way valve	VPV-603DQ2	SV3B —	○	○	○	○
9	2-way valve	FDF3A06	SV41 —	○	○		
			SV42 —	○	○		
			SV5 —	○	○		
			SV41 —			○	○
			SV42 —			○	○
			SV43 —			○	○
10	2-way valve	FDF2A88	SV2 —	○	○		
			SV3A —	○	○		
			SV3C —	○	○		
			SV3D —	○	○		
			SV3E —	○	○		
			SV6 —	○	○		
			SV2 —			○	○
			SV3A —			○	○
			SV3C —			○	○
			SV3D —			○	○
			SV6 —			○	○
			11	2-way valve	SR53-04WR BA	SV11 —	○
SV14 —	○	○				○	○
12	High-pressure SW	ACB-4UB32W	OFF : 3.73MPa ON : 2.9MPa	○	○	○	○
13	Pressure sensor (For high pressure)	NSK-BC038F-067	0.5~4.3V/0~3.73MPa	○	○	○	○
14	Pressure sensor (For low pressure)	NSK-BC010F-067	0.5~3.5V/0~0.98MPa	○	○	○	○
15	Fan motor	STF-340A1000-1	DC280V/1kW	○	○	○	○
16	Case heater (For comp.)		AC240V/29W	○	○	○	○
17	Case heater (For accum.)		AC240V/55W	○	○	○	○
18	Fusible plug		73°C	○	○	○	○

## 2-3. Outdoor Inverter

(50Hz model: MMY-MAP\*\*\*4FT8-E, MAP\*\*\*4FT8-TR, MAP\*\*\*4FT8)

No.	Parts Name	Model	Specification	MMY-MAP			
				0804FT8*	1004FT8*	1204FT8*	1404FT8*
1	Power supply terminal block	JXO-6004	AC600V/75A,4P	○	○	○	○
2	Relay terminal block for reactor	JXO-6B	AC250V/20A,6P			○	○
3	Communication terminal block	JXO-B2H	AC30V (or no more than DC42V) / 1A, 6P	○	○	○	○
4	Reactor (For comp.)	CH-79	5.8mH/16A	○	○	○	○
5	Reactor (For fan)	CH-55	5.8mH/14A	○	○	○	○
6	P.C. board (Noise filter)	MCC-1608	—	○	○	○	○
7	Line filter	—	2.71mH/AC400V/35A	○	○	○	○
8	P.C. board (I/F board)	MCC-1606	—	○	○	○	○
9	P.C. board (IPDU for Comp.)	MCC-1596	—	○	○	○	○
10	Fuse (MCC-1596)	GAC1 31.5A	31.5A/AC500V	○	○	○	○
11	Comp. motor drive IPM (MCC-1596)	PS22A76	25A/DC1200V	○	○	○	○
12	P.C. Board (IPDU for fan)	MCC-1610	—	○	○	○	○
13	Fuse (MCC-1610)	GDT250V15A	15A/AC250V	○	○	○	○
14	Fan motor drive IPM (MCC-1610)	FSBB20CH60C	20A/DC600V	○	○	○	○
15	Magnet switch (50Hz)	FC-1S	AC220-240V	○	○	○	○
16	PTC thermistor	MZ32-101RMARD01E	13A/AC500V	○	○	○	○
17	Pipe temp. sensor (TD)	—	-30°C – 135°C (Ambient temp. range)	○	○	○	○
18	Pipe temp. sensor (TS)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○
19	Heat exchanger temp. sensor (TE)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○
20	Outside temp. sensor (TO)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○
21	Oil temp. sensor (TK)	—	-30°C – 135°C (Ambient temp. range)	○	○	○	○
22	Liquid temp. sensor (TL)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○

## 2-4. Outdoor Inverter

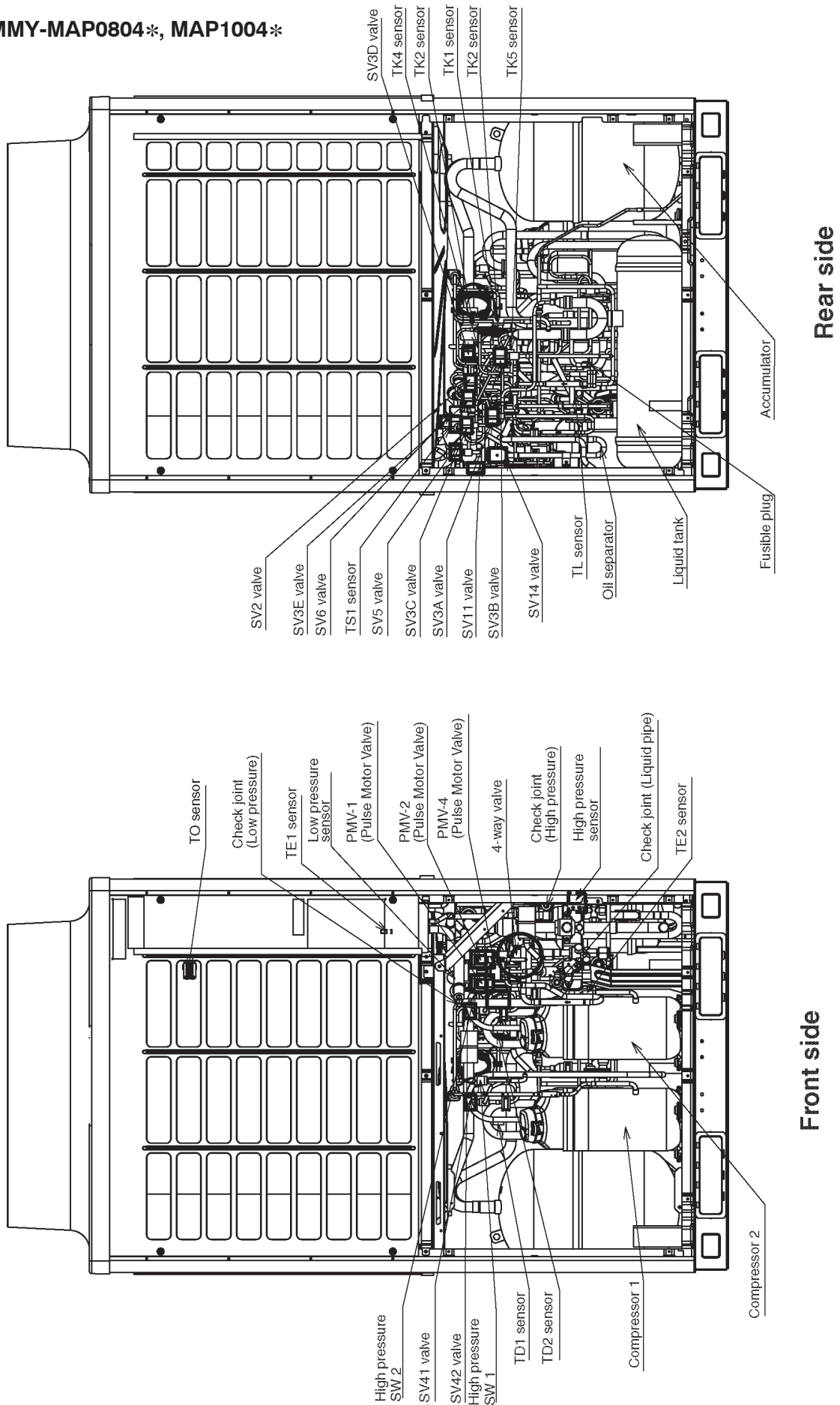
(60Hz model: MMY-MAP\*\*\*4FT7)

No.	Parts Name	Model	Specification	MMY-MAP			
				0804FT7*	1004FT7*	1204FT7*	1404FT7*
1	Power supply terminal block	JXO-6004	AC600V/75A,4P	○	○	○	○
2	Relay terminal block for reactor	JXO-6B	AC250V/20A,6P			○	○
3	Communication terminal block	JXO-B2H	AC30V (or no more than DC42V) / 1A, 6P	○	○	○	○
4	Reactor (For comp.)	CH-79	5.8mH/16A	○	○	○	○
5	Reactor (For fan)	CH-55	5.8mH/14A	○	○	○	○
6	P.C. board (Noise filter)	MCC-1608	—	○	○	○	○
7	Line filter	—	2.71mH/AC400V/35A	○	○	○	○
8	P.C. board (I/F board)	MCC-1606	—	○	○	○	○
9	P.C. board (IPDU for Comp.)	MCC-1596	—	○	○	○	○
10	Fuse (MCC-1596)	GAC1 31.5A	31.5A/AC500V	○	○	○	○
11	Comp. motor drive IPM (MCC-1596)	PS22A76	25A/DC1200V	○	○	○	○
12	P.C. Board (IPDU for fan)	MCC-1610	—	○	○	○	○
13	Fuse (MCC-1610)	GDT250V15A	15A/AC250V	○	○	○	○
14	Fan motor drive IPM (MCC-1610)	FSBB20CH60C	20A/DC600V	○	○	○	○
15	Magnet switch (60Hz)	FC-1S	AC200-220V	○	○	○	○
16	PTC thermistor	MZ32-101RMARD01E	13A/AC500V	○	○	○	○
17	Pipe temp. sensor (TD)	—	-30°C – 135°C (Ambient temp. range)	○	○	○	○
18	Pipe temp. sensor (TS)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○
19	Heat exchanger temp. sensor (TE)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○
20	Outside temp. sensor (TO)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○
21	Oil temp. sensor (TK)	—	-30°C – 135°C (Ambient temp. range)	○	○	○	○
22	Liquid temp. sensor (TL)	—	-20°C – 80°C (Ambient temp. range)	○	○	○	○

## 2-5. Parts Layout in Outdoor Unit

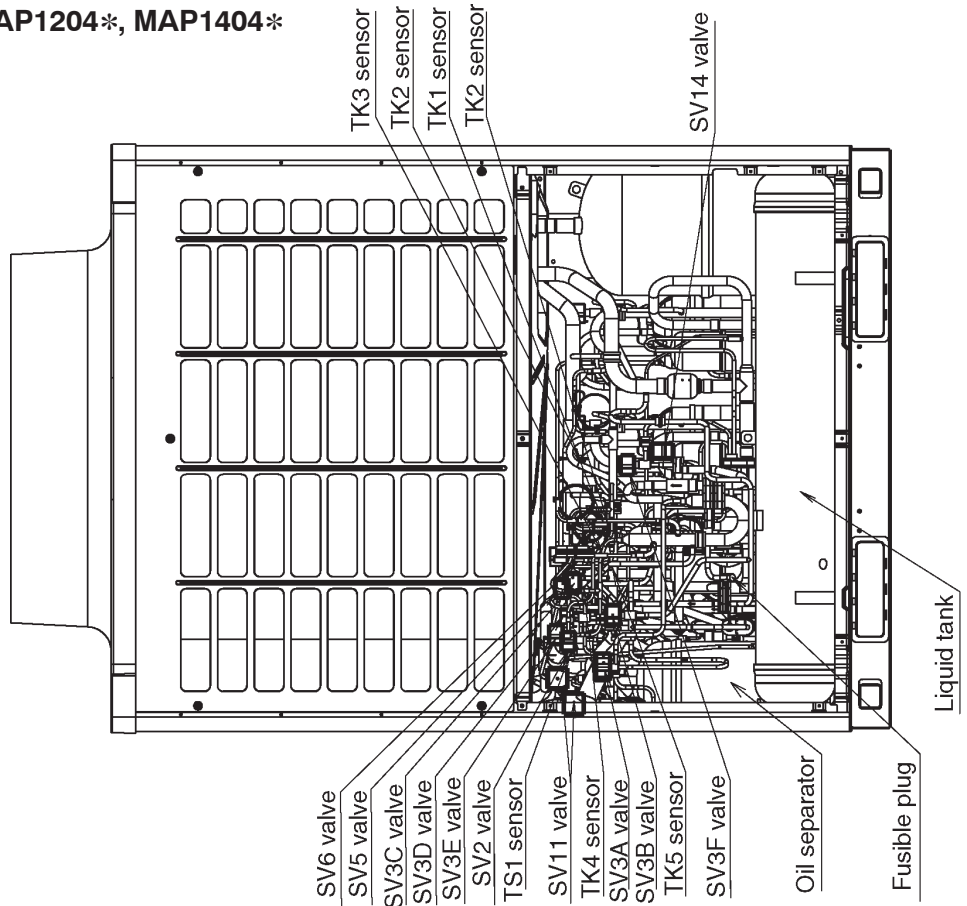
8, 10HP

Model: MMY-MAP0804\*, MAP1004\*

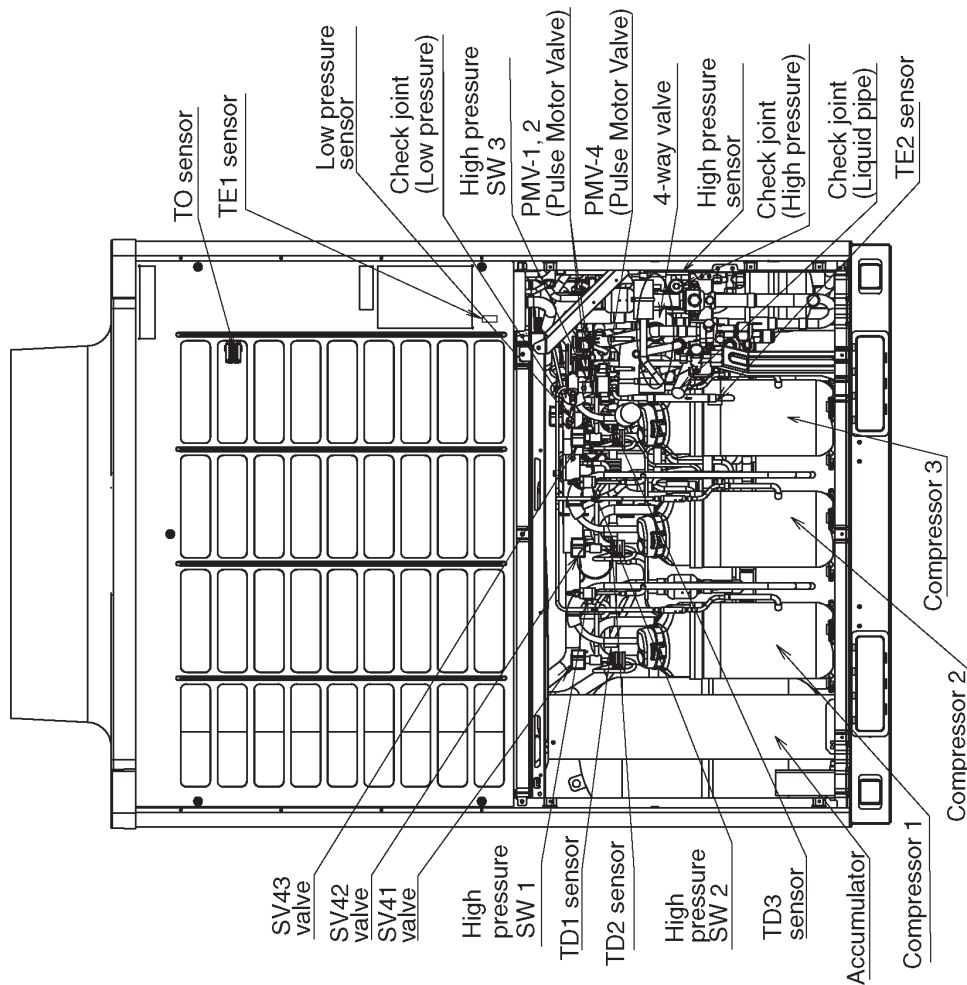


12, 14HP

Model: MMY-MAP1204\*, MAP1404\*



Rear side

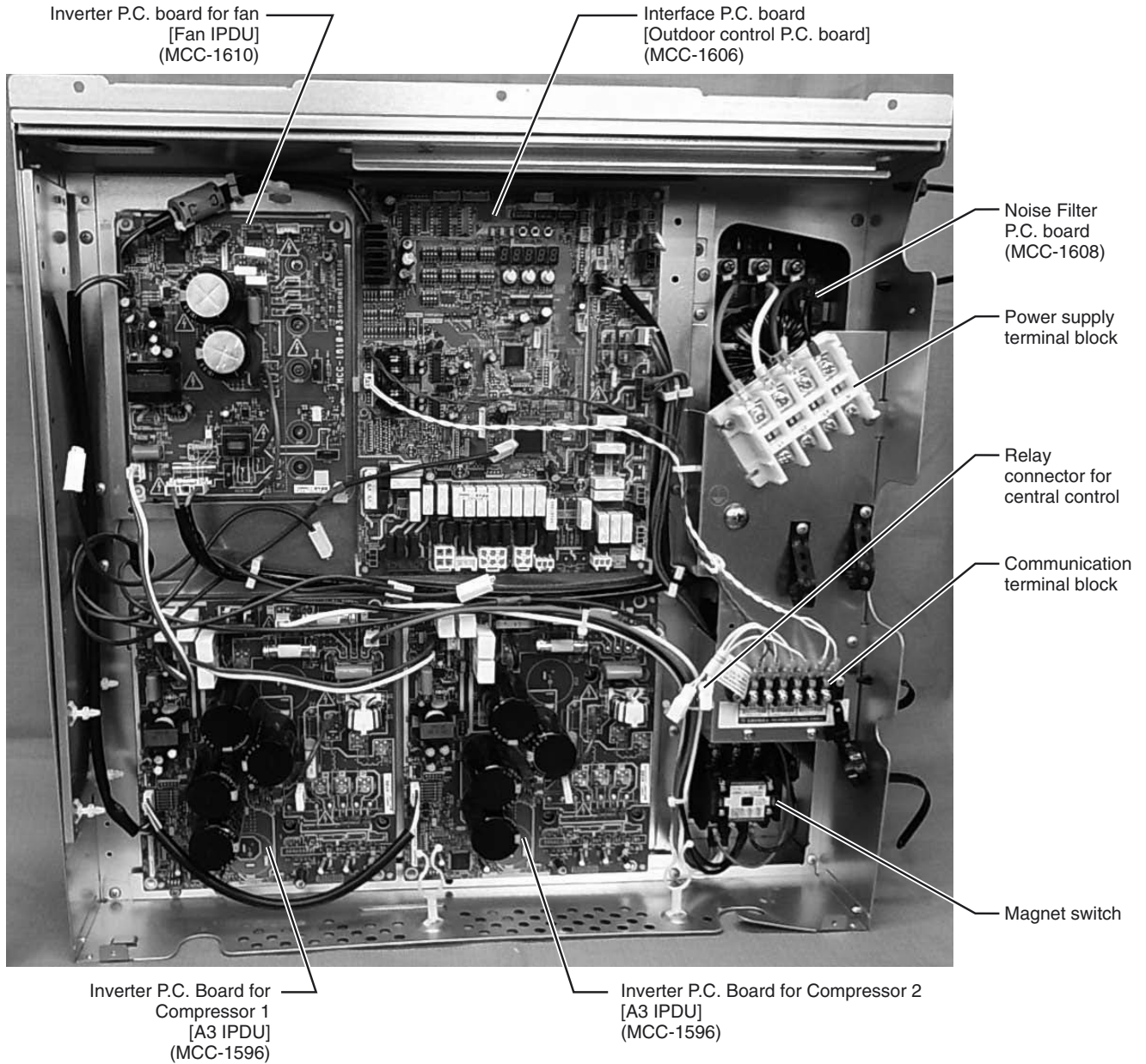


Front side

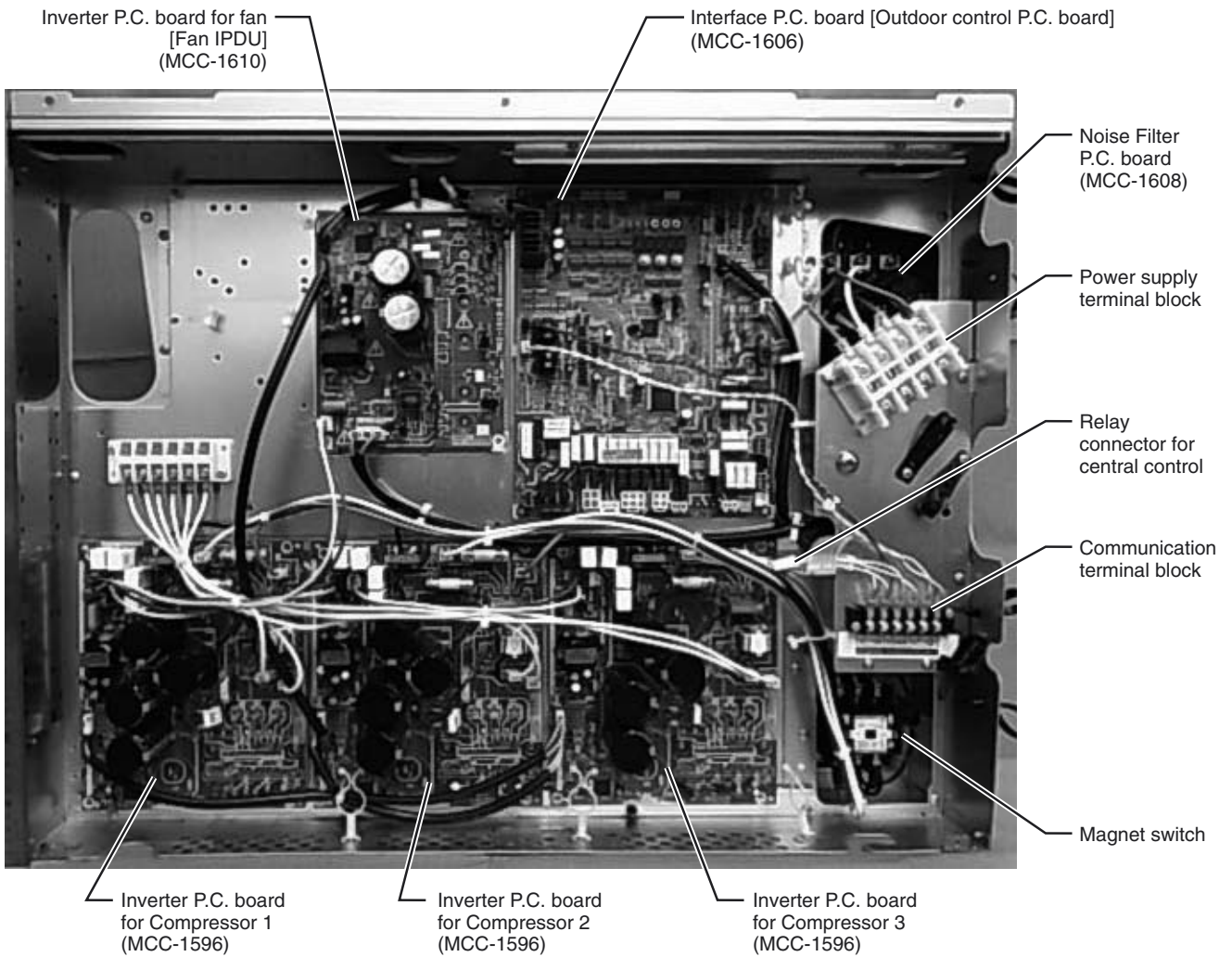
## 2-6. Parts Layout in Inverter Assembly

Outdoor Unit (8, 10, HP)

Model: MMY-MAP0804FT\*, MAP1004FT\*

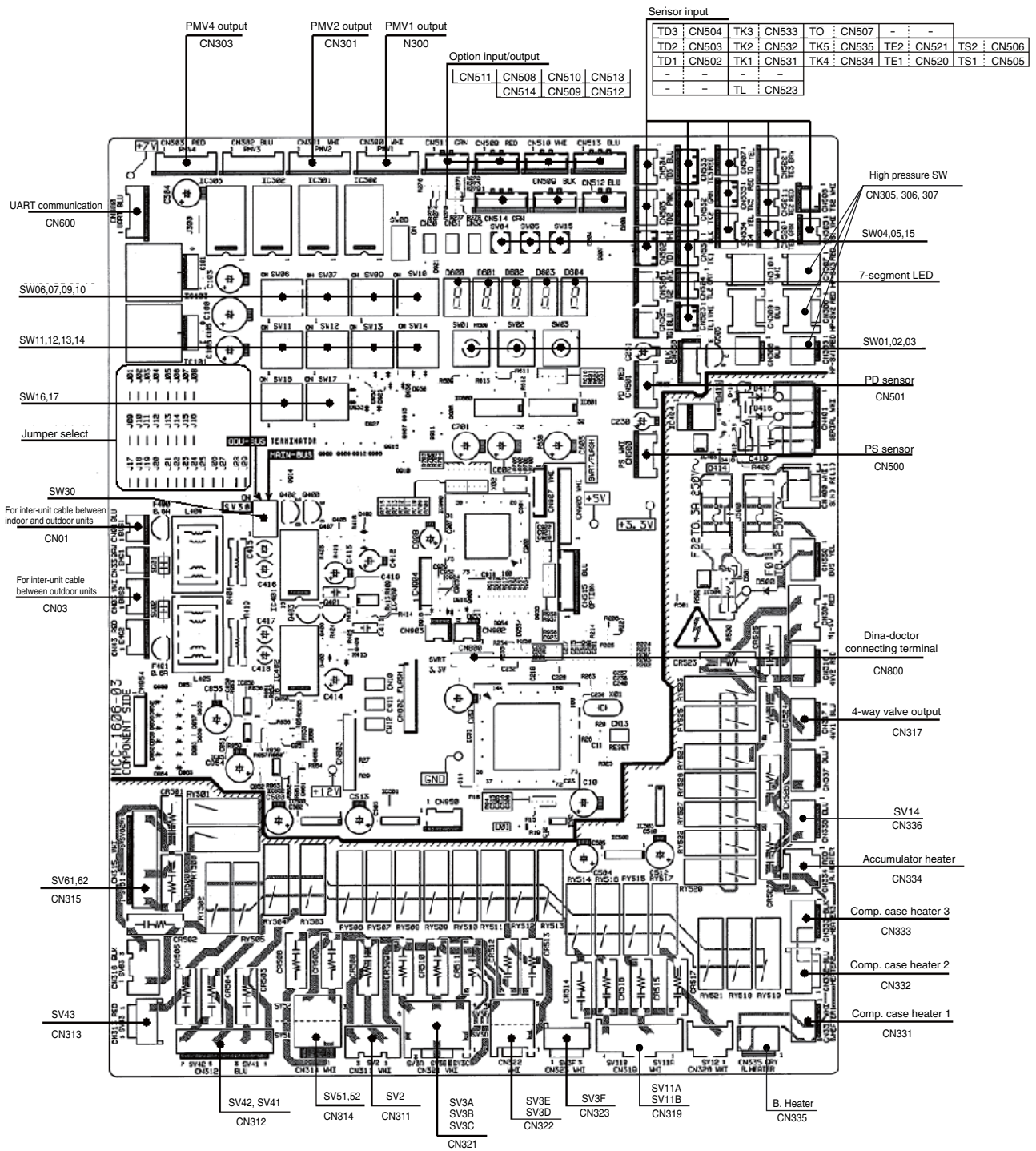


**Outdoor Unit (12, 14HP)**  
**Model: MMY-MAP1204FT\*, MAP1404FT\***

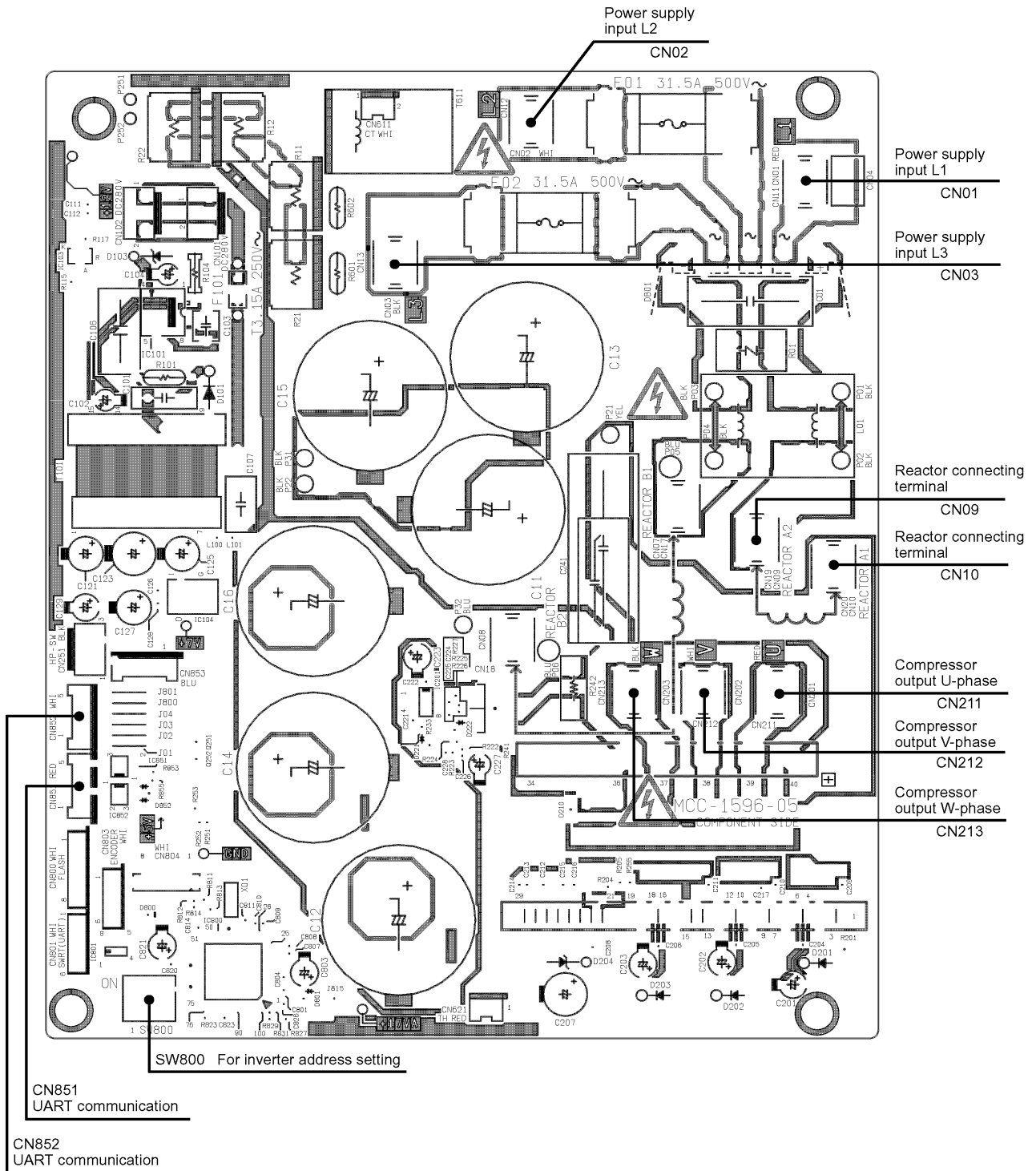


## 2-7. Outdoor (Inverter) Print Circuit Board

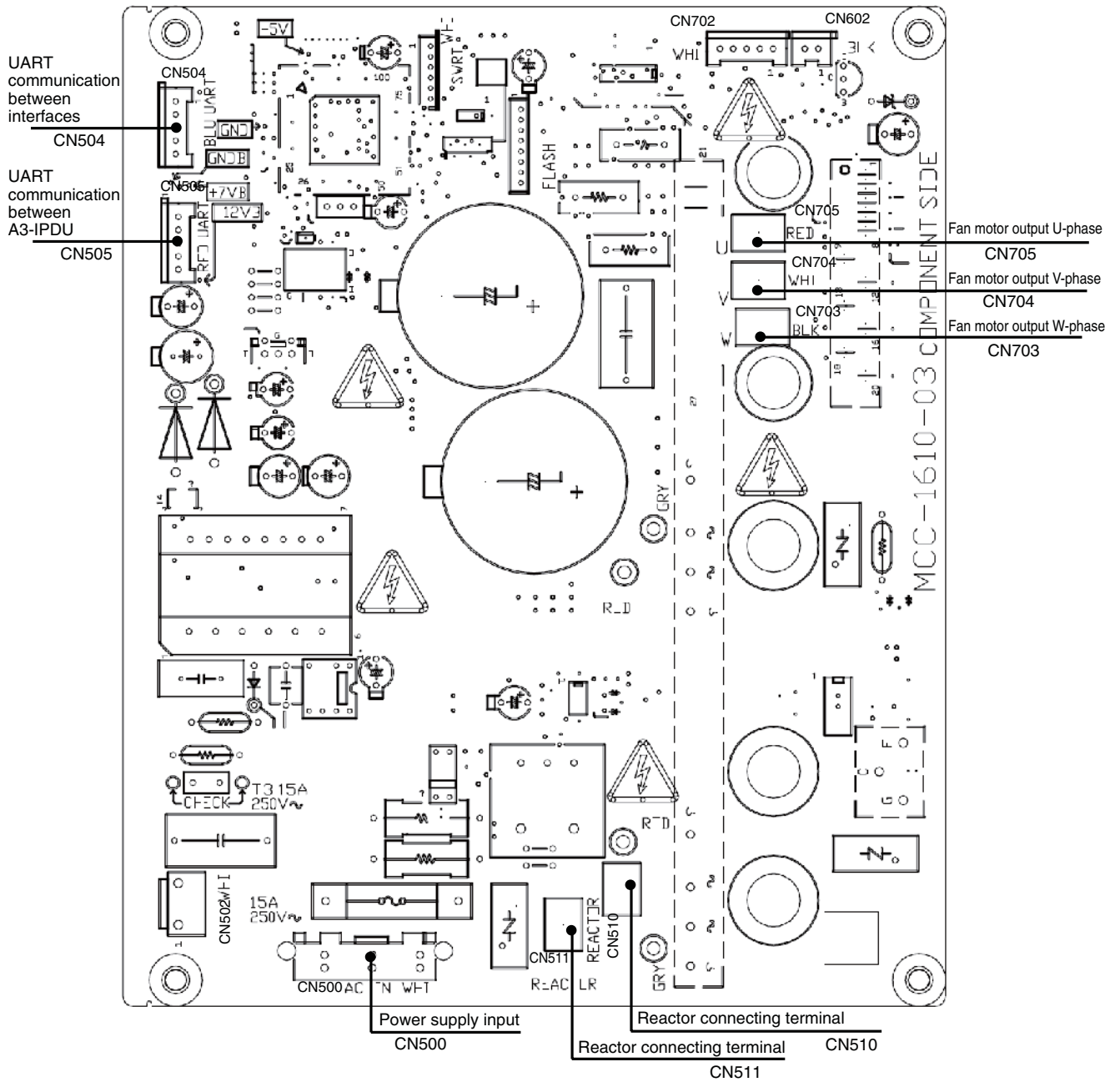
### 2-7-1. Interface P.C. board (MCC-1606)



**2-7-2. Inverter P.C. board for compressor (MCC-1596) A3-IPDU**



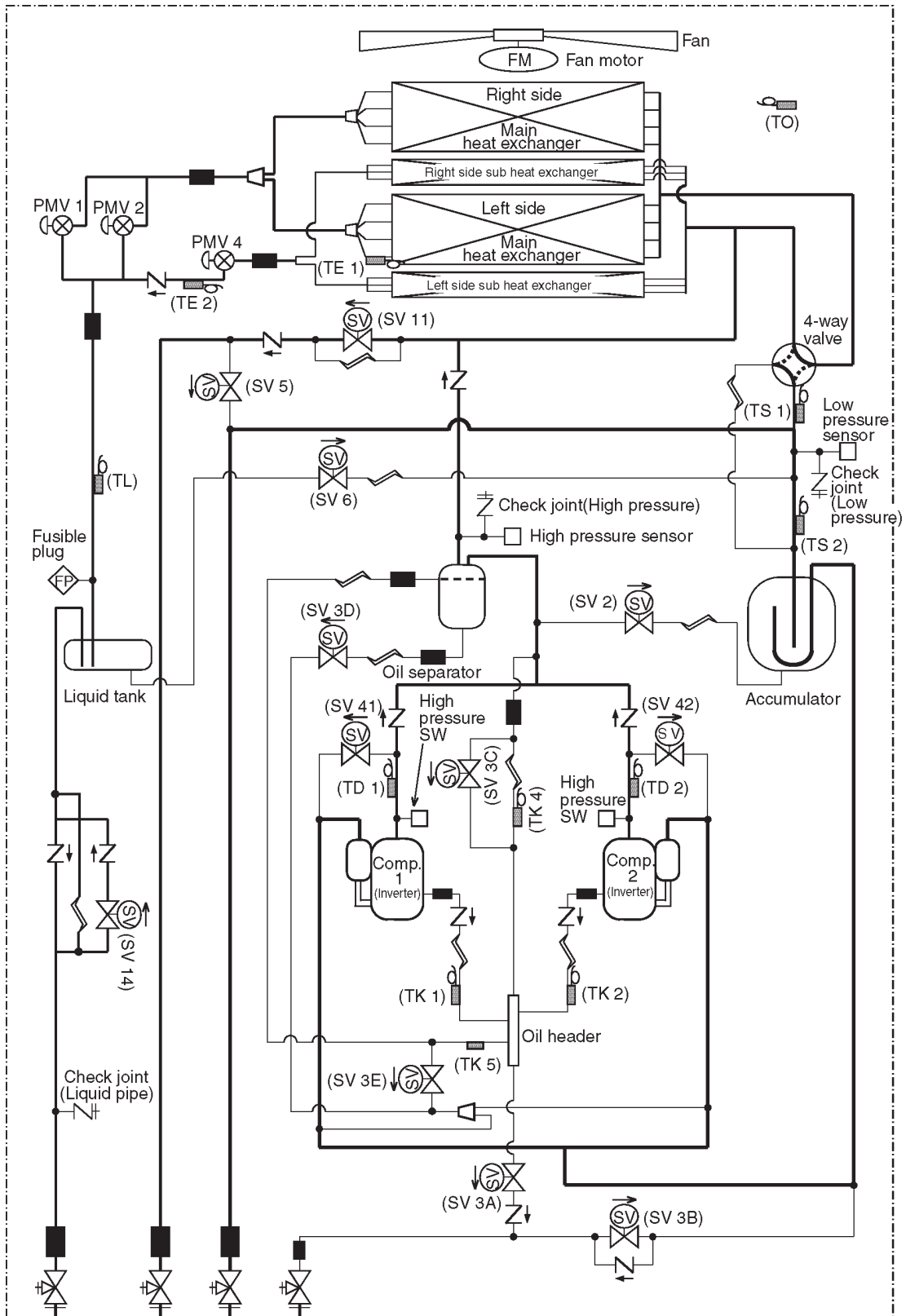
2-7-3. Inverter P.C. board for fan (MCC-1610)



# 3. REFRIGERANT PIPING SYSTEMATIC DRAWING

Outdoor Unit (8, 10HP)

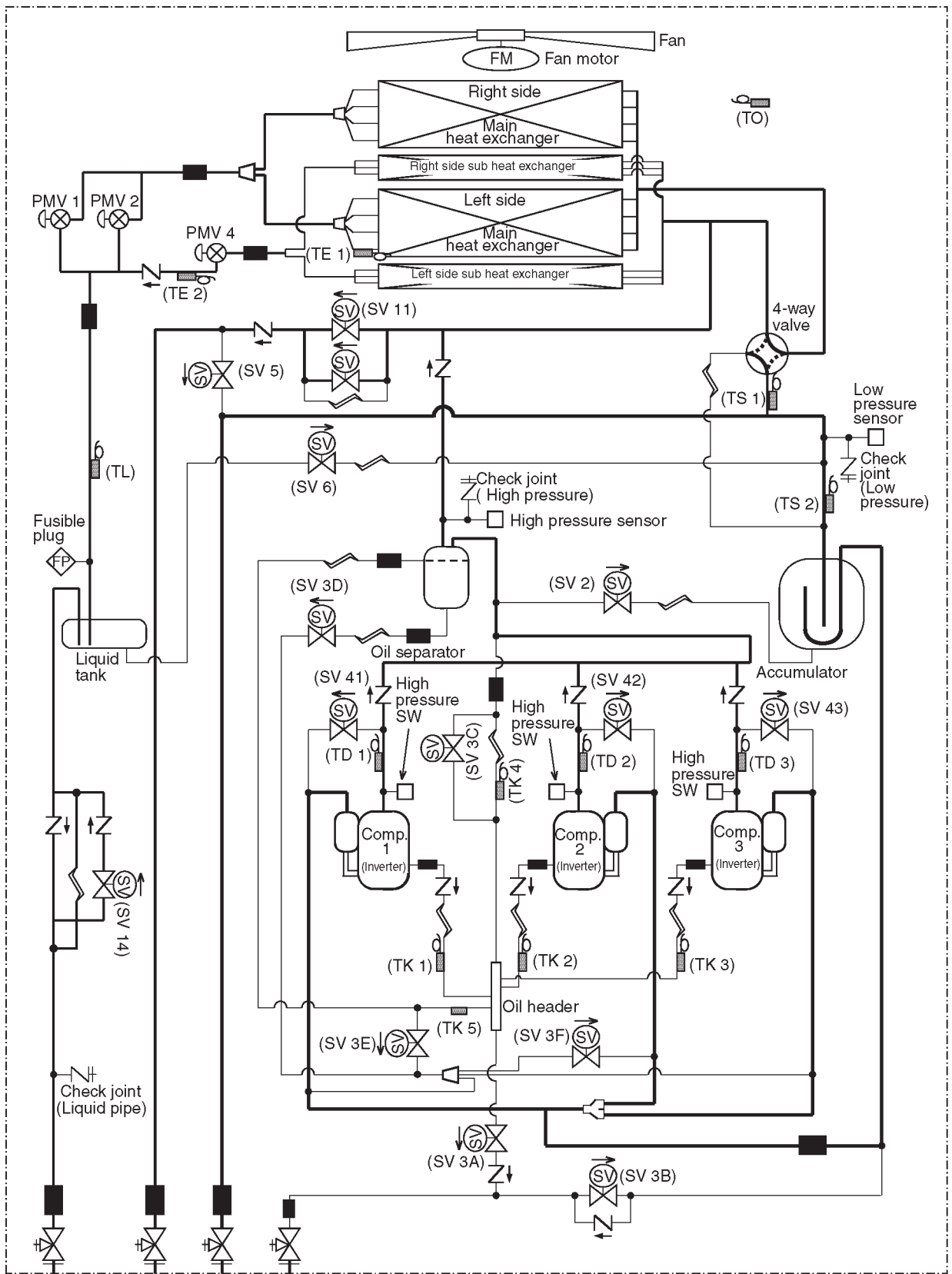
Model: MMY-MAP0804\*, MMY-MAP1004\*



Liquid side service valve  
 Discharge gas side service valve  
 Suction gas side service valve  
 Balance pipe service valve

Symbol							
	Solenoid valve	Capillary tube	Check valve	Check joint	Strainer	Temp. sensor	Distributor

**Outdoor Unit (12, 14HP)**  
**Model: MMY-MAP1204\*, MMY-MAP1404\***



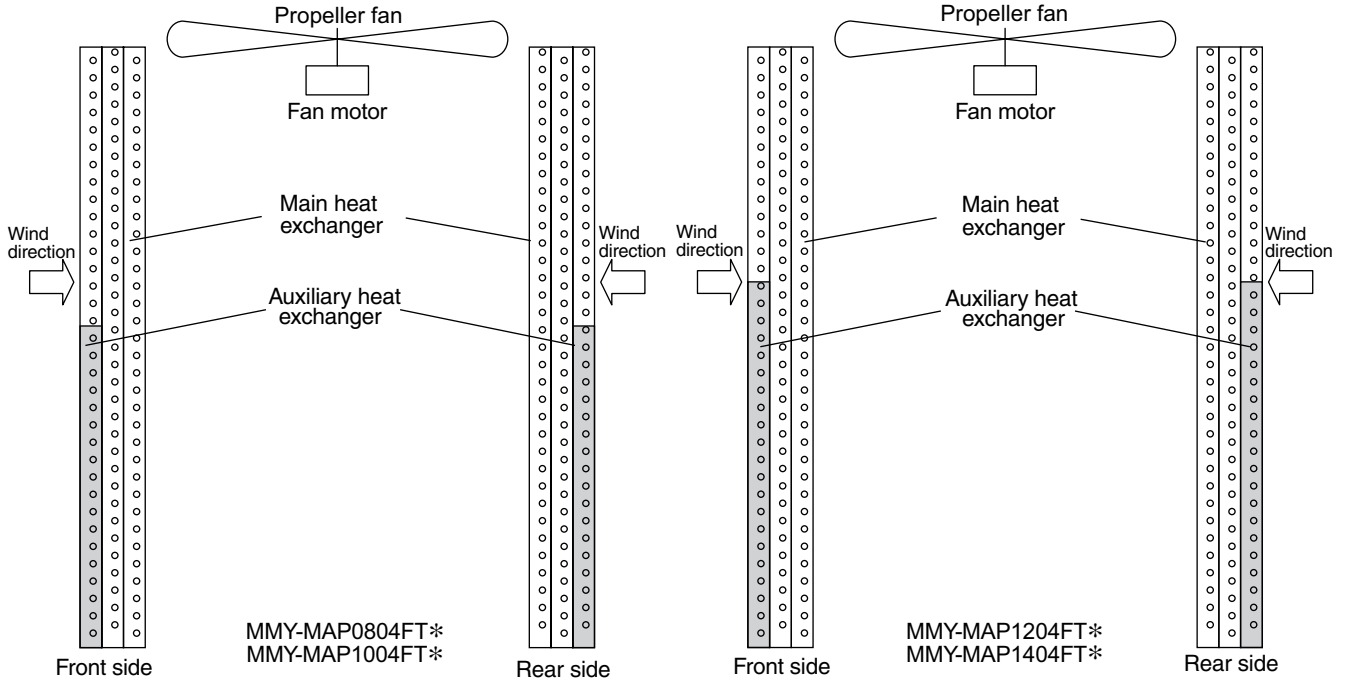
Liquid side service valve  
 Discharge gas side service valve  
 Suction gas side service valve  
 Balance pipe service valve

Symbol							
Symbol							
	Solenoid valve	Capillary tube	Check valve	Check joint	Strainer	Tempe. sensor	Distributor

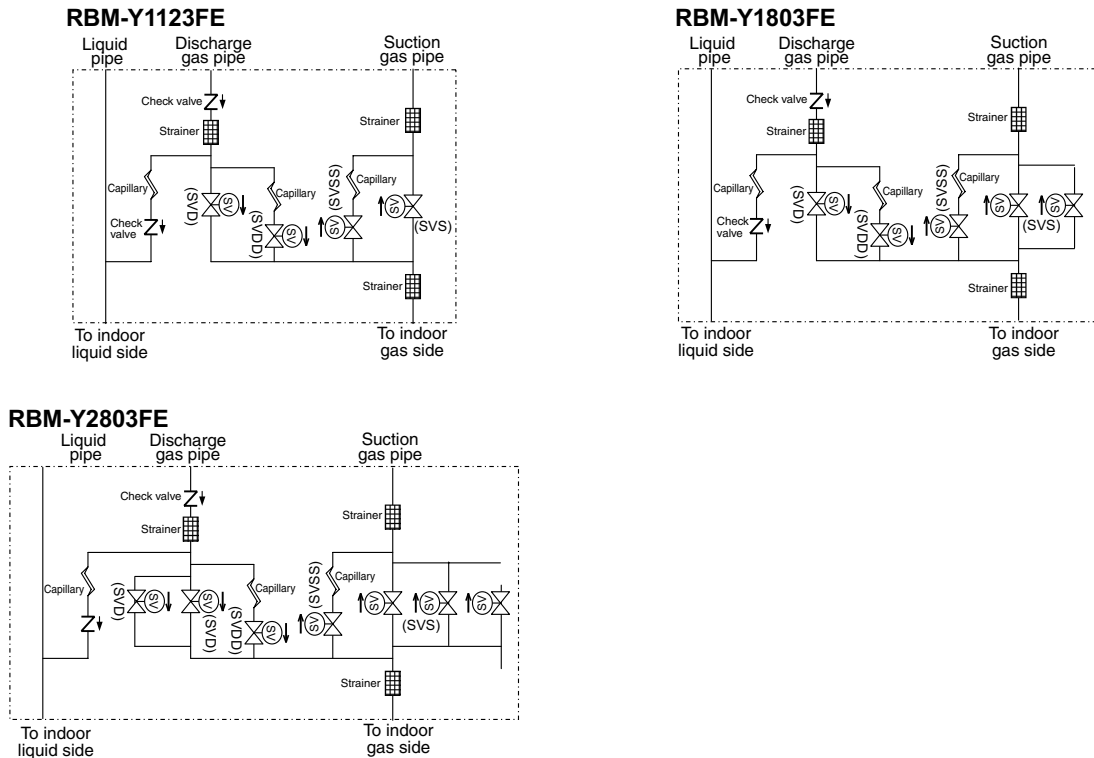
## Explanation of Functional Parts

Functional part name		Functional outline
Solenoid valve	SV3A	(Connector CN321: White) 1) Supplies oil reserved in the oil header during ON time.
	SV3B	(Connector CN321: White) 1) Returns oil supplied in the balance pipe to the compressor.
	SV3C	(Connector CN321: White) 1) Pressurizes oil reserved in the oil header during ON time.
	SV3D	(Connector CN322: White) 1) Reserves oil in the oil separator during OFF time. 2) Returns oil reserved in the oil separator to the compressor during ON time.
	SV3E	(Connector CN322: White) 1) Turns on during operation and balances oil between compressors.
	SV3F	(Connector CN323: White) 1) Controls oil level balances between compressors.
	SV2	(Connector CN311: White) Hot gas bypass 1) Low pressure release function 2) High pressure release function 3) Gas balance function during stop time
	SV41 SV42 SV43	(SV41 Connector CN312: Blue, SV42 Connector CN312: Blue, SV43 Connector CN313: Red) Start compensation valve of compressor 1) For gas balance start 2) High pressure release function 3) Low pressure release function
	SV5	(Connector CN314: White) 1) Gas balance function at defrost operation when the number of heating indoor units increased/decreased 2) Gas recovery function in the discharge gas pipes when the single cooling operation
	SV6	(Connector CN315: White) 1) Liquid bypass function for discharge temperature release (cooling bypass function) 2) Refrigerant recovery function from the stopped follower unit
	SV11	(Connector CN319: White) To block discharge gas pipe (At single cooling or defrost operation)
SV14	(Connector CN336: Yellow) 1) To block the liquid line	
4-way valve		(Connector CN317: Blue) 1) Cooling/heating exchange 2) Reverse defrost 3) Exchange of main heat exchanger with auxiliary heat exchanger
Pulse motor valve	PMV1, 2	(Connector CN300, 301: White) 1) Super heat control function at single heating, collective heating operation 2) Under cool control function in single cooling operation
	PMV4	(Connector CN303: Red) 1) Controls flow volume of the auxiliary heat exchanger at collective operation 2) Preventive function for high-pressure rising in single heating operation
Oil separator		1) Prevention for rapid decreasing of oil (Decreases oil flowing to the cycle) 2) Reserve function of surplus oil
Temp. Sensor	TD1, TD2, TD3	(TD1 Connector CN502: White, TD2 Connector CN503: Pink, TD3 Connector CN504: Blue) 1) Protection of compressor discharge temp.
	TS1	(Connector CN505: White) 1) Controls PMV1, 2 super heat in single heating / collective heating
	TS2	(Connector CN506: Black) 1) Controls indoor oil recovery at single cooling, collective cooling operation 2) Detects overheat of the cycle
	TE1	(Connector CN520: Green) 1) Controls defrost in single / collective heating operation 2) Controls outdoor fan in single / collective heating operation
	TE2	(Connector CN521: Red) 1) Controls flow volume of the auxiliary heat exchanger at collective operation
	TK1, TK2 TK3, TK4 TK5	(TK1 Connector CN531: Black, TK2 Connector CN532: Green, TK3 Connector CN533: Red, TK4 Connector CN534: Yellow, TK5 Connector CN535: Red) 1) Judges oil level of the compressor
	TL	(Connector CN523: White) 1) Detects under cool at single operation / collective cooling operation
	TO	(Connector CN507: Yellow) 1) Detects outside temperature
Pressure sensor	High pressure sensor	(Connector CN501: Red) 1) Detects high pressure and controls compressor capacity 2) Detects high pressure at single operation / collective cooling operation, and controls the fan in low ambient cooling operation 3) Detects under cool in indoor unit at single operation / collective heating operation 4) Controls rps of outdoor fan at collective cooling operation
	Low pressure sensor	(Connector CN500: White) 1) Detects low pressure at single / collective cooling operation and controls compressor capacity 2) Detects low pressure at single / collective heating operation, and controls the super heat
Heater	Compressor case heater	(Compressor 1 Connector CN331: White, Compressor 2 Connector CN332: Blue, Compressor 3 Connector CN333: Black) 1) Prevents liquid accumulation to compressor
	Accumulator case heater	(Connector CN334: Red) 1) Prevents liquid accumulation to accumulator
Balance pipe		1) Oil balancing in each outdoor unit

## Configuration of outdoor unit heat exchanger

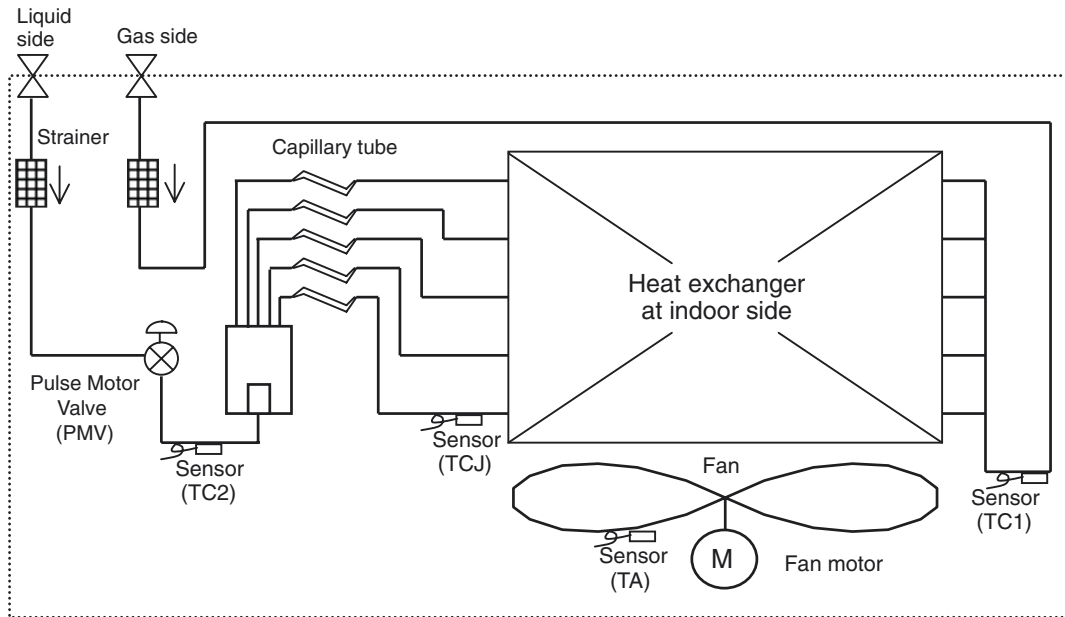


## Cooling / heating exchanger unit



Functional parts name		Function outline
Solenoid valve	SVD	(Discharge gas block valve) 1) High-pressure gas circuit at heating operation
	SVS	(Suction gas block valve) 1) Low-pressure gas circuit at cooling operation
	SVDD	(Pressure valve) 1) To increase pressure when No. of indoor heating units are increased
	SVSS	(Regulator valve) 1) To recover refrigerant in the stopped cooling thermo-OFF indoor unit 2) To decrease pressure when No. of indoor heating units are decreased

## Indoor Unit



### CAUTION

MMU-AP007YH, AP012YH type air conditioners have no TC2 sensor.

### Explanation of functional parts in indoor unit

Functional part name		Functional outline
Pulse Motor Valve	PMV	(Connector CN082 (6P): Blue) 1) Controls super heat in cooling operation 2) Controls under cool in heating operation 3) Recovers refrigerant oil in cooling operation 4) Recovers refrigerant oil in heating operation
Temp. Sensor	1.TA	(Connector CN104 (2P): Yellow) 1) Detects indoor suction temperature
	2.TC1	(Connector CN100 (3P): Brown) 1) Controls PMV super heat in cooling operation
	3.TC2	(Connector CN101 (2P): Black) 1) Controls PMV under cool in heating operation
	4.TCJ	(Connector CN102 (2P): Red) 1) Controls PMV super heat in cooling operation 2) [MMU-AP007YH to AP012YH only] Controls PMV under cool in heating operation

As shown in the following table, the operation modes are provided for this model.

### <Operation mode>

Operation mode	Outline
1. Single cooling	Cooling operation only without heating operation The outdoor heat exchanger (Main heat exchanger) is used as condenser.
2. Single heating	Heating operation only without cooling operation The outdoor heat exchanger (Main heat exchanger) is used as evaporator.
3. Collective cooling	Operating cooling function mainly, collective operation of cooling and heating operation or single cooling operation under outdoor temperature 10°C or below The outdoor heat exchanger (Auxiliary heat exchanger) is used as condenser.
4. Collective heating	Operating heating function mainly, collective operation of cooling and heating operation The outdoor heat exchanger (Main heat exchanger) is used as evaporator.
5. Defrost	Reversing 4-way valve, defrost the outdoor heat exchanger with single cooling cycle.

For the refrigerating cycle flow of each operation mode, refer to “4. System refrigerant piping schematic diagrams” and after.

## 4. SYSTEM REFRIGEERANT PIPING SCHEMATIC DIAGRAMS

### <Exchange of operation mode>

For exchange between each operation mode, follow the table below: When “Momentary stop” is executed, the unit does not operate for 3 minutes after stop of operation before update.

		After exchange			
		Single cooling (OFF)	Collective cooling (ON)	Collective heating (ON)	Single heating (ON)
Before exchange	Single cooling (OFF)		Operation continuation (OFF → ON)	Operation continuation (OFF → ON)	Momentary stop (OFF → ON)
	Collective cooling (ON)	Operation continuation (ON → OFF)		Operation continuation (ON as it is)	Operation continuation (ON as it is)
	Collective heating (ON)	Momentary stop (ON → OFF)	Operation continuation (ON as it is)		Operation continuation (ON as it is)
	Single heating (ON)	Momentary stop (ON → OFF)	Operation continuation (ON as it is)	Operation continuation (ON as it is)	

**Note)** In the table, status of 4-way valve is indicated in parenthesis.

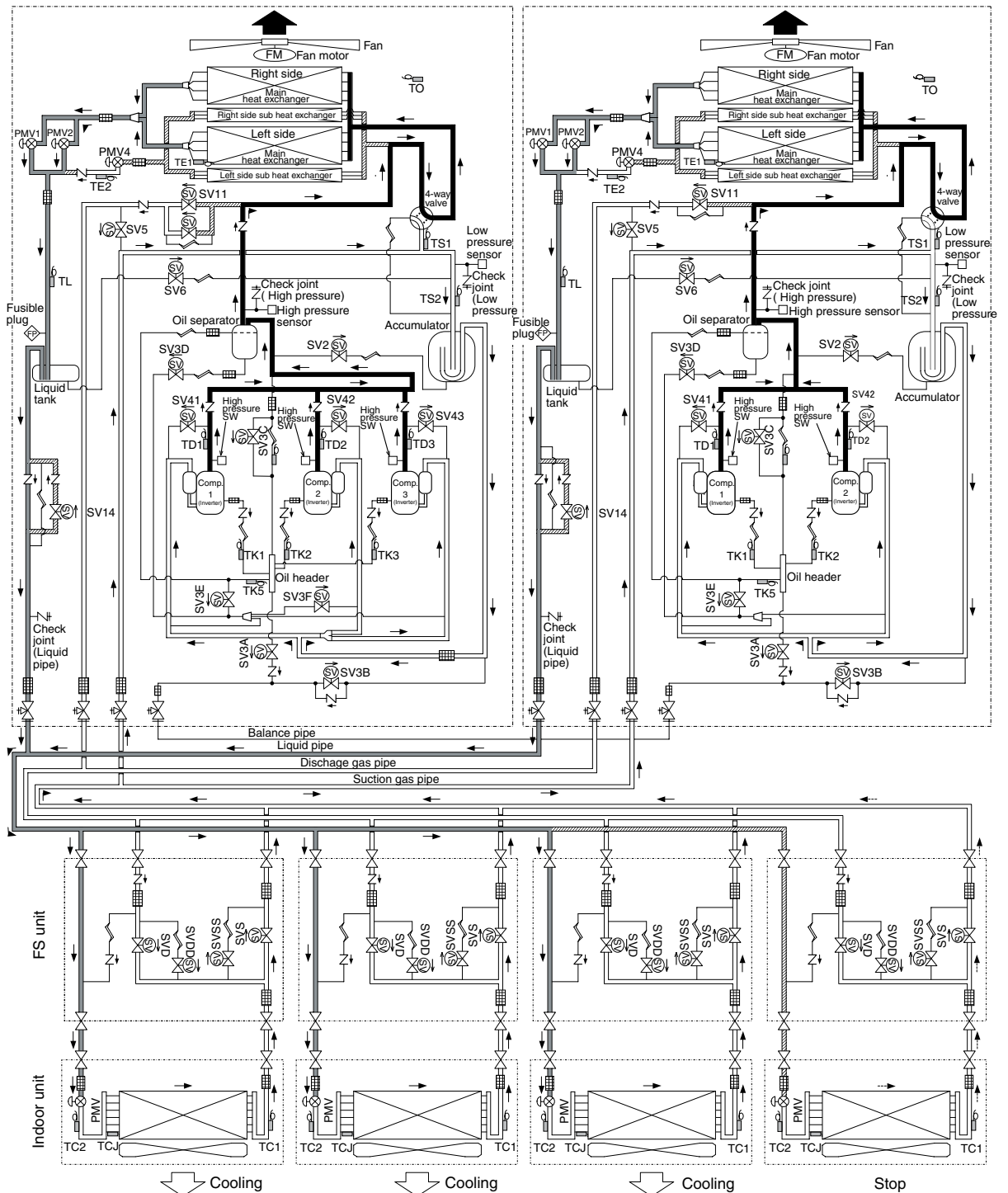
### <Exchange unit valve ON-OFF list>

Indoor operation mode	Control valve output outline of cooling/heating exchange unit (Operation standard)			
	SVD (High-pressure circuit valve)	SVDD (Pressure valve <For delay>)	SVS (Low-pressure circuit valve)	SVSS (Regulator valve <For delay>)
1. Stop (Remote controller OFF) <When all the system stop>	OFF <OFF>	OFF <OFF>	OFF <OFF>	ON <OFF>
2. Cooling thermo OFF	OFF	OFF	OFF	ON
3. Cooling thermo ON	OFF	OFF	ON	ON
4. Heating thermo OFF	ON	OFF	OFF	OFF
5. Heating thermo ON				
6. During detection of [E04] error	OFF	ON	OFF	OFF

# 4-1. Single Cooling mode (Operation of cooling only) when outside temperature is high (Standard: 10°C or higher) / Defrost mode

Outdoor header unit (MMY-MAP1404FT\*)

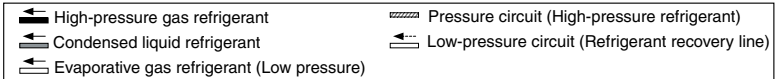
Outdoor follower unit (MMY-MAP1004FT\*)



Outdoor Unit			
4-Way valve	ON	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	ON	SV3C	Control
SV6	Control	SV3D	Control
SV11	OFF	SV3E	ON
SV14	OFF	SV3F	Control
PMV1, 2	Control	Outdoor fan	Control
PMV4	Close(*2)		

(\*1) SV4 (n) of stopped compressor (n)=ON  
 (\*2) It may be controlled.

FS unit / indoor unit			
Cooling thermo	ON	Stop	
SVD	OFF	SVD	OFF
SVS	ON	SVS	OFF
SVDD	OFF	SVDD	OFF
SVSS	ON	SVSS	ON
PMV	Control	PMV	Close



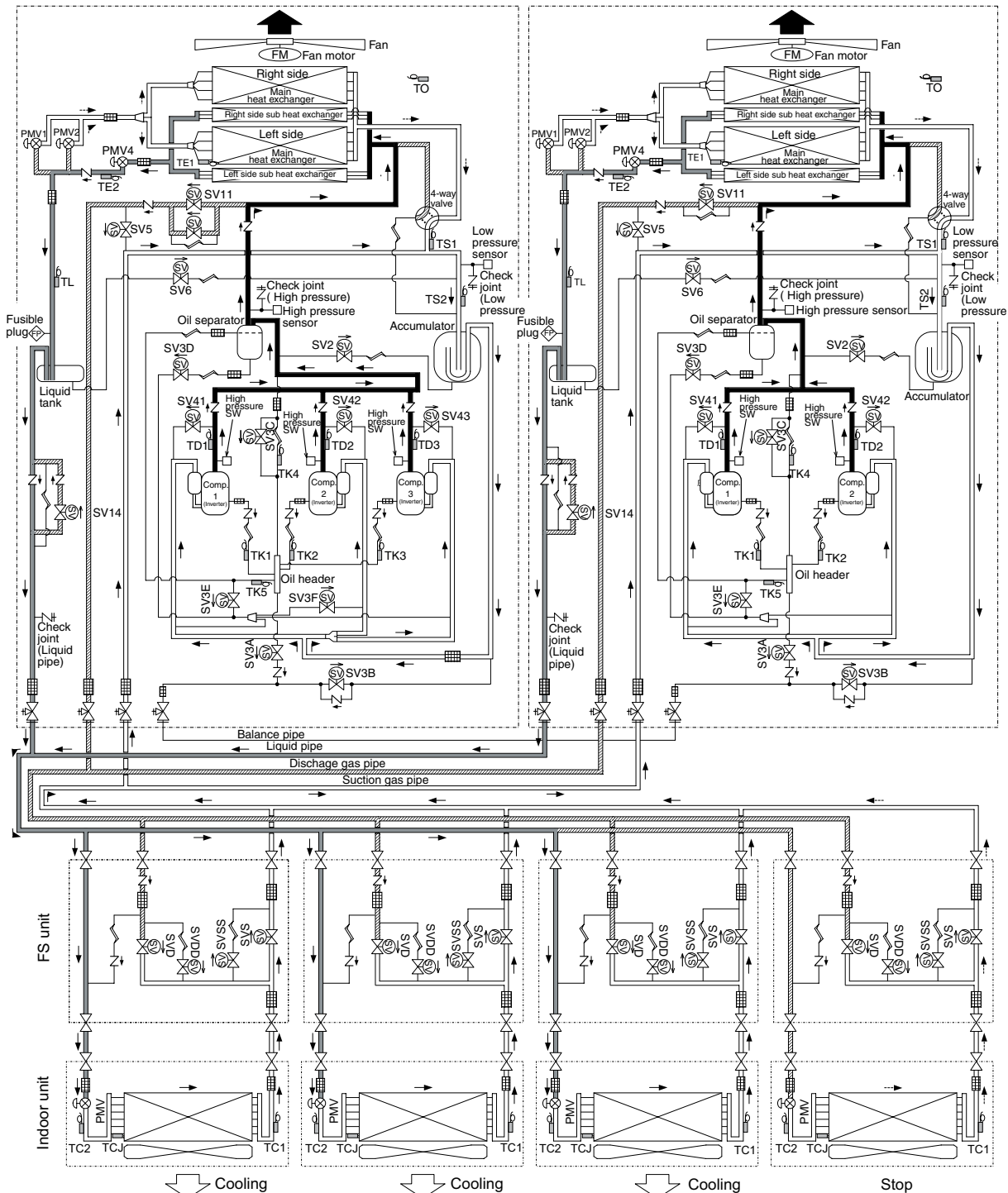
(24 HP system described in the example of (14 HP + 10 HP))

The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

## 4-2. Single Cooling mode (Operation of cooling only) when outside temperature is low (Standard: 10°C or lower)

Outdoor header unit (MMY-MAP1404FT\*)

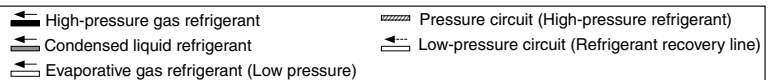
Outdoor follower unit (MMY-MAP1004FT\*)



Outdoor Unit			
4-Way valve	ON	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	OFF	SV3C	Control
SV6	Control	SV3D	Control
SV11	ON	SV3E	ON
SV14	OFF	SV3F	Control
PMV1, 2	Close (*2)	Outdoor fan	Control
PMV4	Control		

(\*1) SV4 (n) of stopped compressor (n)=ON  
 (\*2) It may be controlled.

FS unit / indoor unit			
Cooling thermo	ON	Stop	
SVD	OFF	SVD	OFF
SVS	ON	SVS	OFF
SVDD	ON	SVDD	OFF
SVSS	ON	SVSS	ON
PMV	Control	PMV	Close



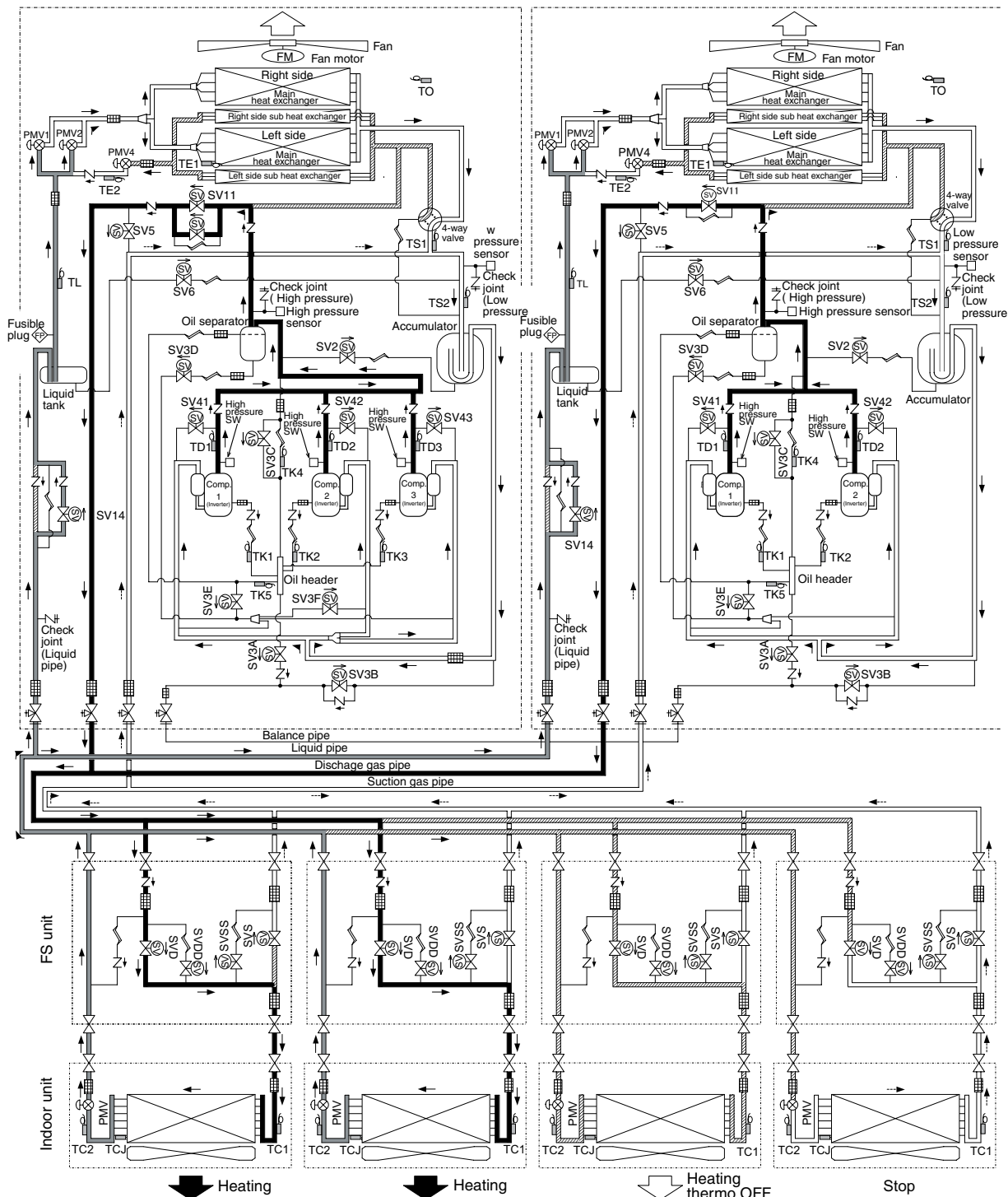
(24 HP system described in the example of (14 HP + 10 HP))

The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

### 4-3. Single Heating mode (Operation of heating only)

Outdoor header unit (MMY-MAP1404FT\*)

Outdoor follower unit (MMY-MAP1004FT\*)



Outdoor Unit			
4-Way valve	ON	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	OFF	SV3C	Control
SV6	Control	SV3D	Control
SV11	ON	SV3E	ON
SV14	ON(*2)	SV3F	Control
PMV1, 2	Control	Outdoor fan	Control
PMV4	Control(*3)		

(\*1) SV4 (n) of stopped compressor (n)=ON  
 (\*2) SV14 of stopped outdoor unit= OFF  
 (\*3) It may be controlled.

FS unit / indoor unit					
Heating thermo ON		Heating thermo OFF		Stop	
SVD	ON	SVD	ON	SVD	OFF
SVS	OFF	SVS	OFF	SVS	OFF
SVDD	OFF	SVDD	OFF	SVDD	OFF
SVSS	OFF	SVSS	OFF	SVSS	ON
PMV	Control	PMV	OFF	PMV	Close

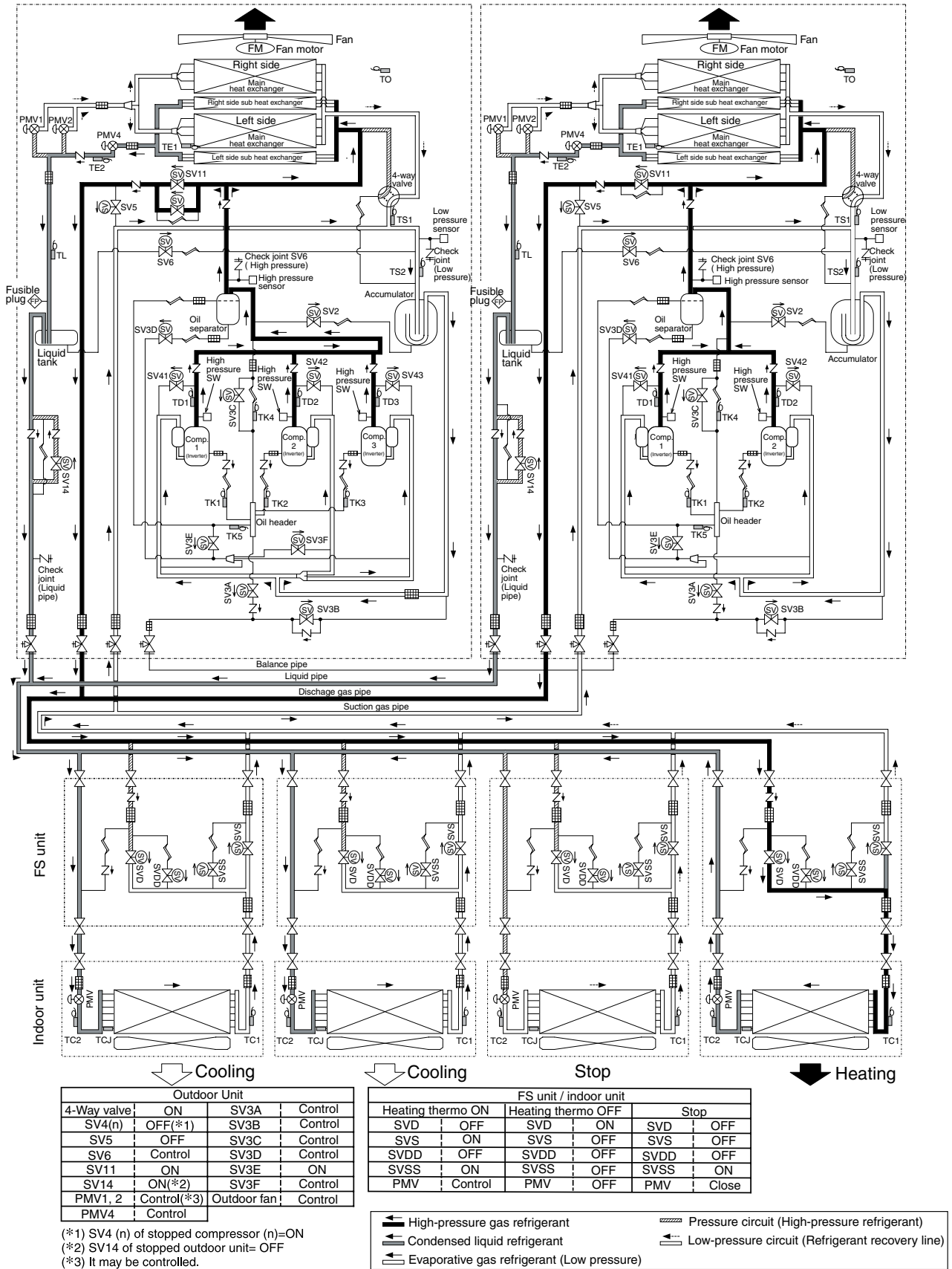
High-pressure gas refrigerant     
 Pressure circuit (High-pressure refrigerant)  
 Condensed liquid refrigerant     
 Low-pressure circuit (Refrigerant recovery line)  
 Evaporative gas refrigerant (Low pressure)

(24 HP system described in the example of (14 HP + 10 HP))

The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

#### 4-4. Collective cooling mode (Operating cooling function mainly, collective operation of cooling and heating operation)

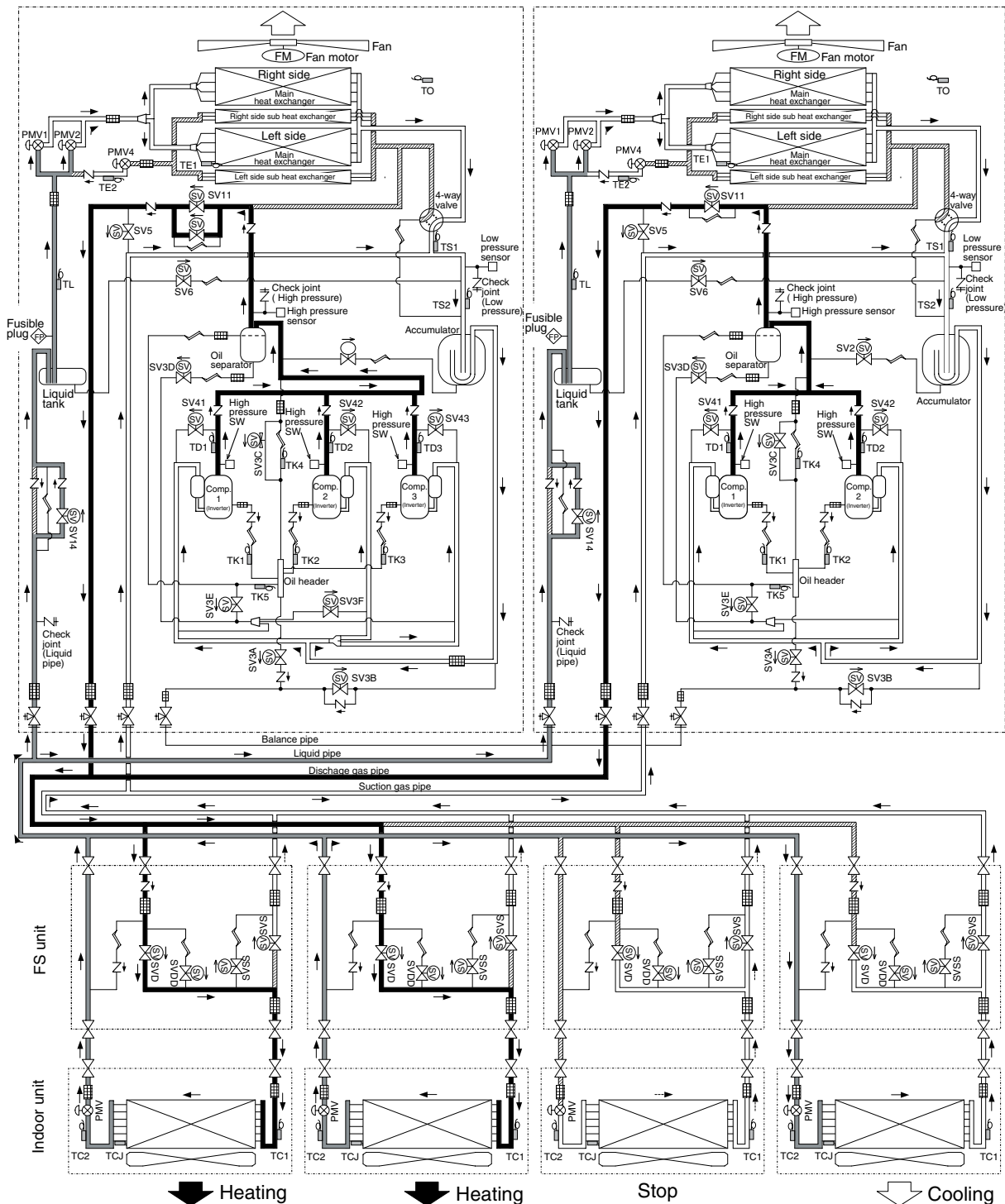
Outdoor header unit (MMY-MAP1404FT\*) Outdoor follower unit (MMY-MAP1004FT\*)



The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

## 4-5. Collective heating mode (Operating heating function mainly, collective operation of cooling and heating operation)

Outdoor header unit (MMY-MAP1404FT\*) Outdoor follower unit (MMY-MAP1004FT\*)



Outdoor Unit			
4-Way valve	ON	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	OFF	SV3C	Control
SV6	Control	SV3D	Control
SV11	ON	SV3E	ON
SV14	ON(*2)	SV3F	Control
PMV1, 2	Control	Outdoor fan	Control
PMV4	Control(*3)		

(\*1) SV4 (n) of stopped compressor (n)=ON  
 (\*2) SV14 of stopped outdoor unit= OFF  
 (\*3) It may be controlled.

FS unit / indoor unit					
Cooling thermo ON		Stop		Cooling thermo OFF	
SVD	ON	SVD	OFF	SVD	OFF
SVS	OFF	SVS	OFF	SVS	ON
SVDD	OFF	SVDD	OFF	SVDD	OFF
SVSS	OFF	SVSS	ON	SVSS	ON
PMV	Control	PMV	Close	PMV	Close

High-pressure gas refrigerant     
 Pressure circuit (High-pressure refrigerant)  
 Condensed liquid refrigerant     
 Low-pressure circuit (Refrigerant recovery line)  
 Evaporative gas refrigerant (Low pressure)

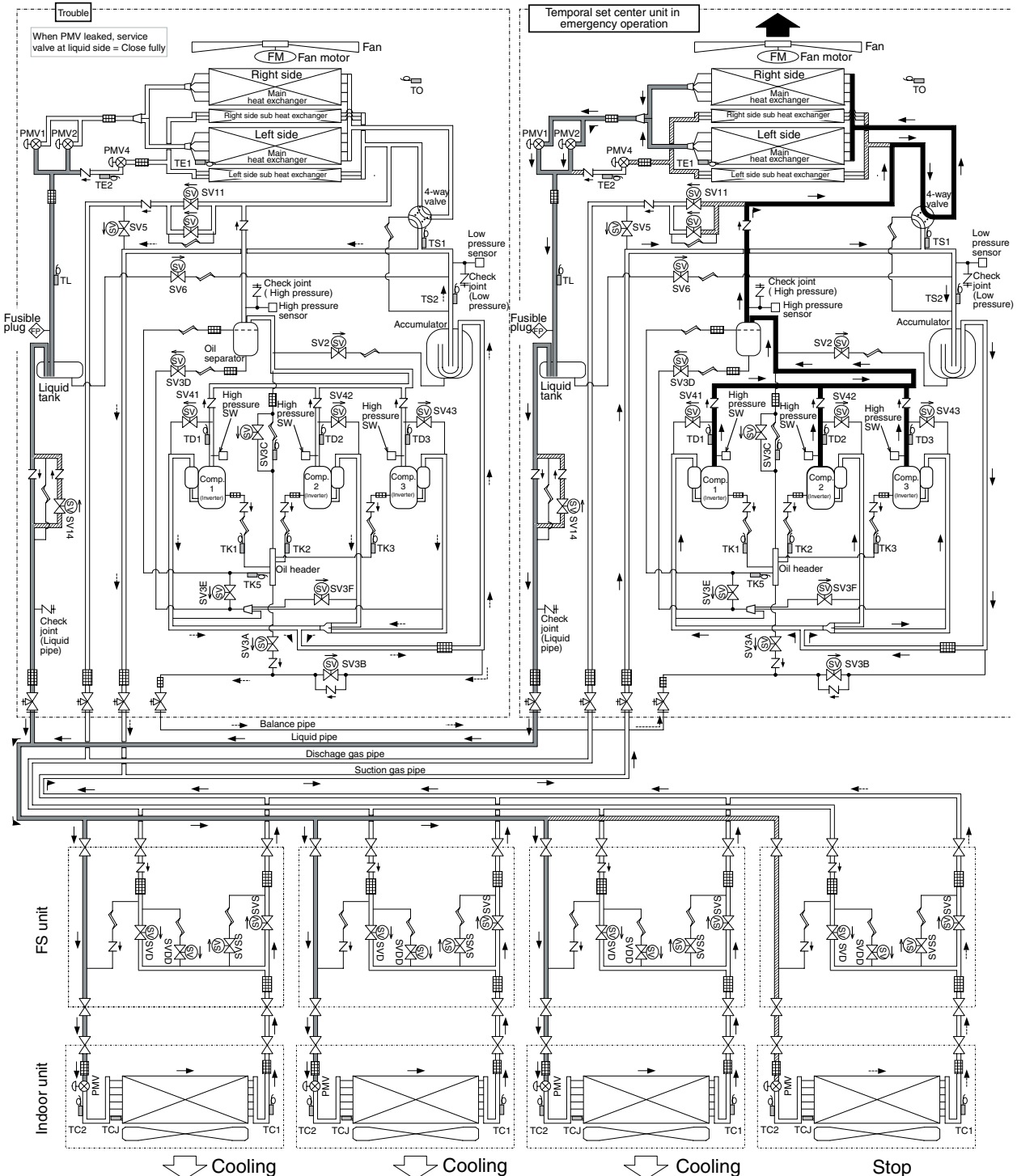
(24 HP system described in the example of (14 HP + 10 HP))

The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit".  
 Other outdoor units are called "Follower units".

## 4-6. Emergency operation (Single cooling operation at backup of the header unit)

Outdoor header unit (MMY-MAP1404FT\*)

Outdoor follower unit (MMY-MAP1404FT\*)



Trouble header outdoor unit			
4-Way valve	OFF	SV3A	OFF
SV4(n)	ON	SV3B	OFF
SV5	ON	SV3C	OFF
SV6	Control	SV3D	OFF
SV11	OFF	SV3E	ON
SV14	OFF	SV3F	OFF
PMV1, 2	Close	Outdoor fan	OFF
PMV4	Close		

(\*1) SV4 (n) of stopped compressor (n)=ON  
 (\*2) In defrost mode, PMV4 also opens.

Temporal header outdoor unit			
4-Way valve	ON	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	ON	SV3C	Control
SV6	Control	SV3D	Control
SV11	OFF	SV3E	ON
SV14	OFF	SV3F	Control
PMV1, 2	Control	Outdoor fan	Control
PMV4	Close(*2)		

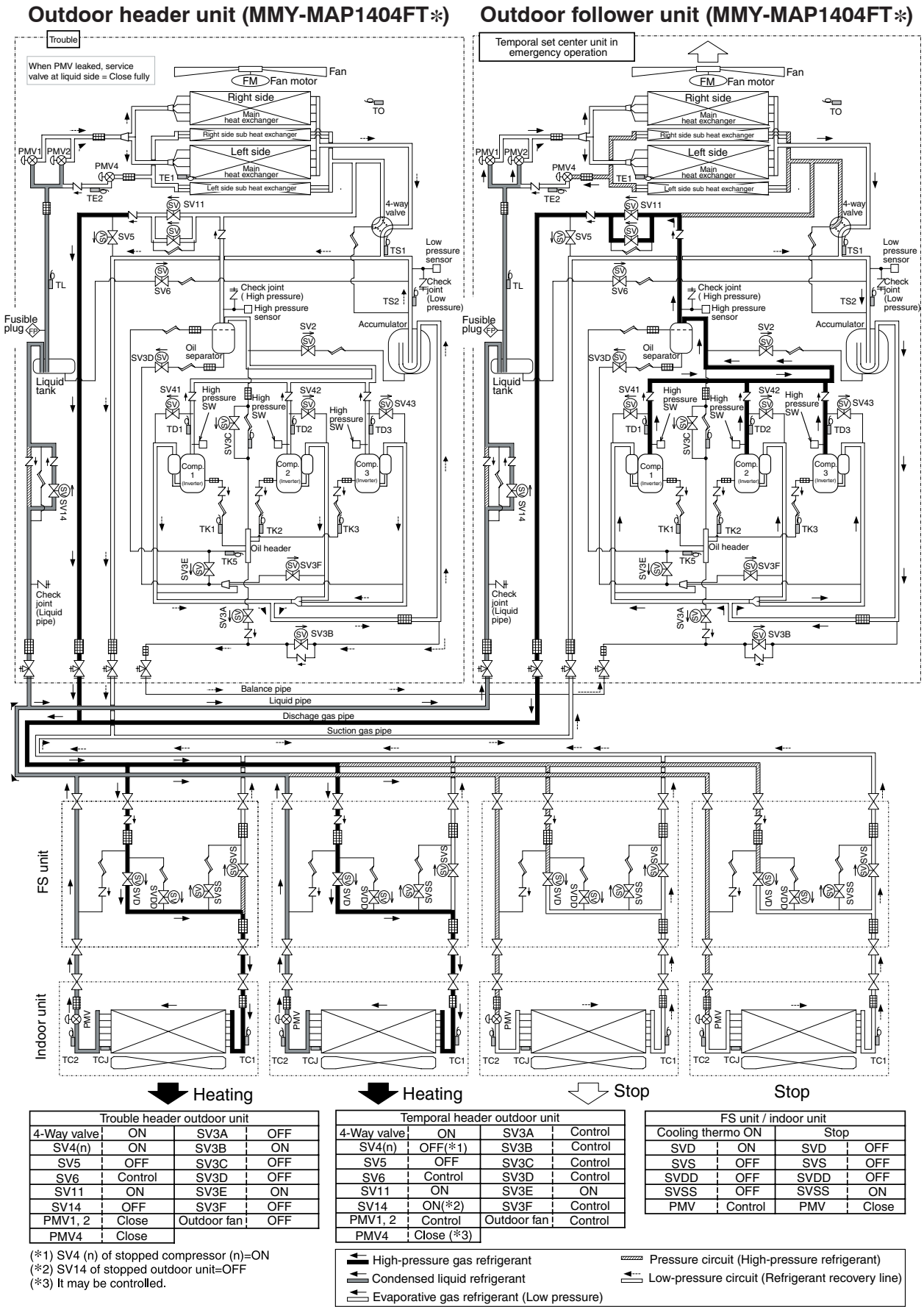
FS unit / indoor unit			
Cooling thermo ON	Stop		
SVD	OFF	SVD	OFF
SVS	ON	SVS	OFF
SVDD	OFF	SVDD	OFF
SVSS	ON	SVSS	ON
PMV	Control	PMV	Close

High-pressure gas refrigerant  
 Condensed liquid refrigerant  
 Evaporative gas refrigerant (Low pressure)  
 Pressure circuit (High-pressure refrigerant)  
 Low-pressure circuit (Refrigerant recovery line)

(24 HP system described in the example of (14 HP + 10 HP))

The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

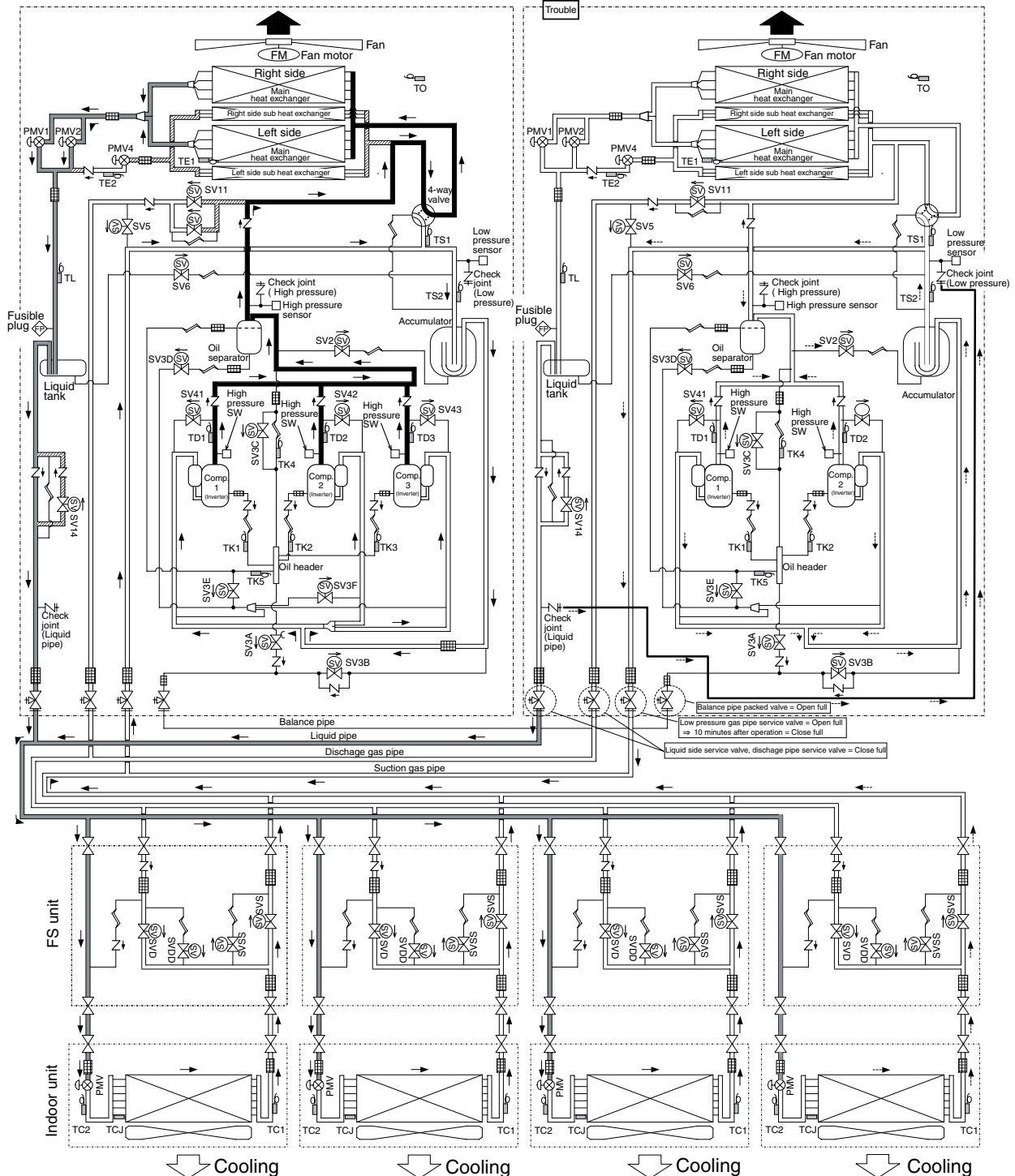
## 4-7. Emergency operation (Single heating operation at backup of the header unit)



The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

## 4-8. Refrigerant recovery (during pump-down operation) of the troubled outdoor unit (In case of trouble of follower unit)

Outdoor header unit (MMY-MAP1404FT\*) Outdoor follower unit (MMY-MAP1004FT\*)



Header outdoor unit			
4-Way valve	OFF	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	ON	SV3C	Control
SV6	Control	SV3D	Control
SV11	OFF	SV3E	ON
SV14	OFF	SV3F	Control
PMV1, 2	Control	Outdoor fan	Control
PMV4	Close(*2)		

Trouble outdoor unit			
4-Way valve	OFF	SV3A	Control
SV4(n)	OFF(*1)	SV3B	Control
SV5	ON	SV3C	Control
SV6	Control	SV3D	Control
SV11	OFF	SV3E	ON
SV14	OFF	SV3F	Control
PMV1, 2	Control	Outdoor fan	Control
PMV4	Close(*2)		

FS unit / indoor unit		
Cooling thermo	ON	
SVD	OFF	
SVS	ON	
SVDD	OFF	
SVSS	ON	
PMV	Control	

(\*1) SV4 (n) of stopped compressor (n)=ON  
(\*2) In defrost mode, PMV4 also opens.

High-pressure gas refrigerant  
 Condensed liquid refrigerant  
 Evaporative gas refrigerant (Low pressure)  
 Pressure circuit (High-pressure refrigerant)  
 Low-pressure circuit (Refrigerant recovery line)

(24 HP system described in the example of (14 HP + 10 HP))

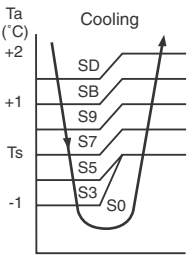
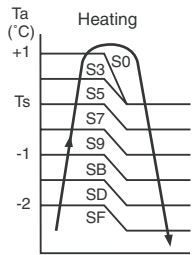
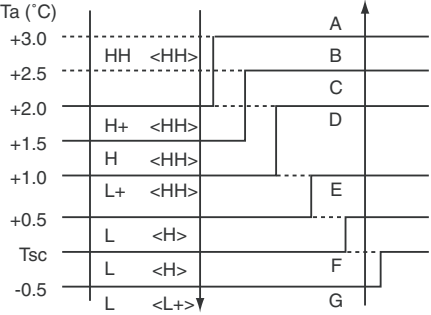
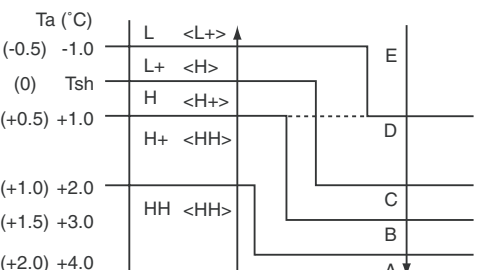
The outdoor unit which communication line between indoor and outdoor is connected is the "Header unit". Other outdoor units are called "Follower units".

# 5. CONTROL OUTLINE


## 5-1. Indoor Unit








### Control Specifications




NO.	Item	Specification outline	Remarks																					
1	Upon power supply reset	<p>1. Identification of outdoor unit When the power supply is reset, the outdoor unit is identified, and control is redirected according to the identification result.</p> <p>2. Indoor fan speed and air flow direction control availability settings Settings such as indoor fan speed and air flow direction control availability are replaced on the basis of EEPROM data.</p> <p>3. If power supply reset is performed in the wake of a fault, the check code is cleared. If the abnormality persists after the Start/Stop button on the remote controller is pushed to resume operation, the check code is redisplayed on the remote controller.</p>																						
2	Operation selection	<p>1. The operation mode changes in response to an operation selection command issued via the remote controller.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Remote controller command</th> <th>Control outline</th> </tr> </thead> <tbody> <tr> <td>STOP</td> <td>Air conditioner shutdown</td> </tr> <tr> <td>FAN</td> <td>Fan operation</td> </tr> <tr> <td>COOL</td> <td>Cooling operation</td> </tr> <tr> <td>DRY</td> <td>Drying operation</td> </tr> <tr> <td>HEAT</td> <td>Heating operation</td> </tr> <tr> <td>AUTO</td> <td>Automatic cooling/heating operation (Note 1)</td> </tr> </tbody> </table> <p><b>(Note 1)</b> Selection of cooling or heating operation is automatically carried out by the difference between the set temperature and the room temperature.</p> <p>Automatic control of cooling/heating operation</p> <p>a. For selection judgment of cooling / heating, see the figure below:</p> <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;"> </div> <div style="flex: 1; padding-left: 20px;"> <p>If the value exceeds +1.5 against Tsh when 10 minutes passed after thermostat-OFF, heating operation (thermo-OFF) is exchanged to cooling operation.</p> <p>Description in the parentheses is an example of cooling ON/OFF.</p> <p>If the value drops -1.5 against Tsc when 10 minutes passed after thermostat-OFF, cooling operation (thermo-OFF) is exchanged to heating operation.</p> </div> </div> <p>b. For automatic capacity control after judgment of cooling/heating, see item 4.</p> <p>c. Correction of room temperature control in heating operation, see item 3</p>	Remote controller command	Control outline	STOP	Air conditioner shutdown	FAN	Fan operation	COOL	Cooling operation	DRY	Drying operation	HEAT	Heating operation	AUTO	Automatic cooling/heating operation (Note 1)	<p>Ts: Temperature setting Ta: Room temperature</p> <p>Tdc: Cooling operation Temperature setting Tsh: Heating operation Temperature setting + room temperature control temperature compensation</p>							
Remote controller command	Control outline																							
STOP	Air conditioner shutdown																							
FAN	Fan operation																							
COOL	Cooling operation																							
DRY	Drying operation																							
HEAT	Heating operation																							
AUTO	Automatic cooling/heating operation (Note 1)																							
3	Room temp. control	<p>1. Adjustment range - remote controller temperature setting (°C)</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>COOL/DRY</th> <th>HEAT</th> </tr> </thead> <tbody> <tr> <td>Wired type</td> <td>18~29</td> <td>18~29</td> </tr> <tr> <td>Wireless type</td> <td>18~30</td> <td>17~30</td> </tr> </tbody> </table> <p>2. In heating operation, the temperature setting may be fine-tuned via the DN code "06".</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SET DATA</th> <th>0</th> <th>2</th> <th>4</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>Temperature setting adjustment</td> <td>+0°C</td> <td>+2°C</td> <td>+4°C</td> <td>+6°C</td> </tr> </tbody> </table> <p>Factory default</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SET DATA</th> </tr> </thead> <tbody> <tr> <td>2</td> </tr> </tbody> </table>		COOL/DRY	HEAT	Wired type	18~29	18~29	Wireless type	18~30	17~30	SET DATA	0	2	4	6	Temperature setting adjustment	+0°C	+2°C	+4°C	+6°C	SET DATA	2	<p>Shift in heating suction temperature (not applicable to remote controller thermo operation)</p>
	COOL/DRY	HEAT																						
Wired type	18~29	18~29																						
Wireless type	18~30	17~30																						
SET DATA	0	2	4	6																				
Temperature setting adjustment	+0°C	+2°C	+4°C	+6°C																				
SET DATA																								
2																								

NO.	Item	Specification outline	Remarks
4	Automatic capacity control	<p>1. The outdoor unit determines the operational capacities of indoor units according to the difference between Ta and Ts.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Cooling</p>  </div> <div style="text-align: center;"> <p>Heating</p>  </div> </div>	Ts: Temperature setting Ta: Room temperature
5	Fan speed control	<p>1. The fan operates in one of the four speed modes of "HIGH (HH)", "MED (H)", "LOW (L)" and "AUTO" on the basis of a command issued via the remote controller. (Concealed duct high static pressure type: HH only)</p> <p>2. In AUTO fan speed mode, the air speed changes according to the difference between Ta and Ts.</p> <p style="text-align: center;"><b>&lt;Cooling&gt;</b></p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• Control is identical in remote controller thermo and body thermo operation. Speed modes shown in &lt; &gt; apply to cooling operation under AUTO air conditioner operation mode.</li> <li>• In AUTO fan speed mode, the fan speed remains the same for 3 minutes each time a speed change occurs. However, a speed change command issued via the remote controller can override this, and the fan speed changes accordingly.</li> <li>• At the beginning of cooling operation, a higher speed (steeper downward temperature gradient) is chosen.</li> <li>• As long as the temperature difference remains on a boundary line, the fan speed stays the same.</li> </ul> <p style="text-align: center;"><b>&lt;Heating&gt;</b></p> <div style="text-align: center;">  </div> <p>Figures inside ( ) applies to remote controller thermo operation. Figures outside ( ) applies to body thermo operation. Speed modes shown in &lt; &gt; apply to heating operation under AUTO air conditioner operation mode.</p> <ul style="list-style-type: none"> <li>• In AUTO fan speed mode, the fan speed remains the same for 1 minute each time a speed change occurs. However, a speed change command issued via the remote controller can override this, and the fan speed changes accordingly.</li> <li>• At the beginning of heating operation, a higher speed (steeper upward temperature gradient) is chosen.</li> <li>• As long as the temperature difference remains on a boundary line, the fan speed stays the same.</li> <li>• When TC2 ≥ 60 °C, the fan speed is raised by one step.</li> </ul>	<p>HH &gt; H+ &gt; H &gt; L+ &gt; L &gt; UL or LL</p> <p>DN code "32" "0000": Body thermo "0001": Remote controller thermo</p> <p>TC2: Indoor heat exchanger sensor temperature</p>

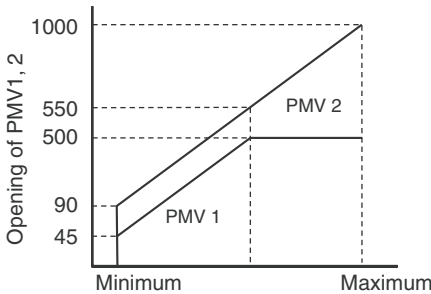
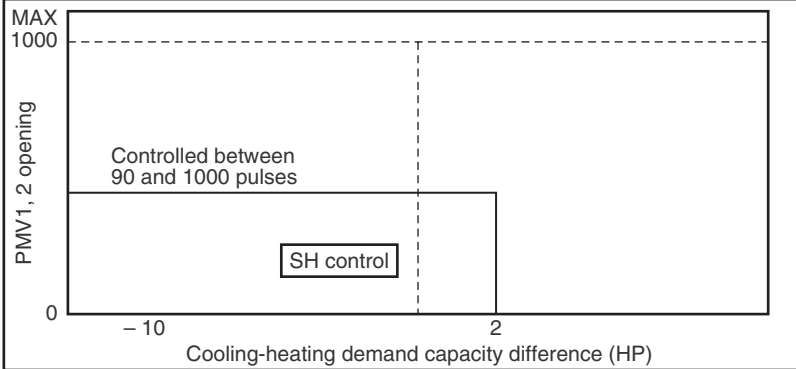
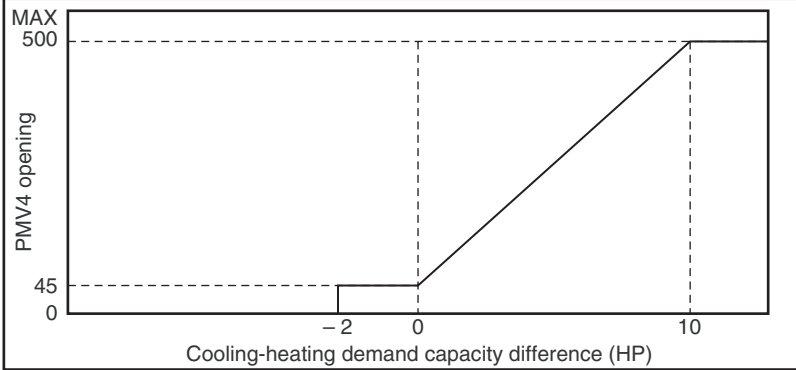
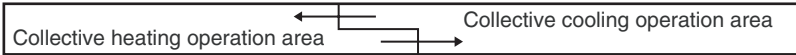
NO.	Item	Specification outline	Remarks															
6	Cold air discharge prevention control	<p>1. In heating operation, the upper limit of the fan tap is set according to the lower of whichever is the higher between TC2 sensor and TCJ sensor temperatures, on the one hand, and TC1 sensor temperature, on the other.</p> <ul style="list-style-type: none"> <li>• If the fan continuously operates in zone B for 6 minutes, it automatically moves into zone C.</li> <li>• During defrosting, the control point is shifted by +6°C.</li> </ul> <p style="text-align: right;">       Zone A: OFF        Zone B: 26 °C or above and below 28 °C Breeze        Zone C: 28 °C or above and below 30 °C Low        Zone D: 30 °C or above and below 32 °C Medium        Zone E: High     </p>	<p>TCJ: Indoor heat exchanger sensor temperature</p> <ul style="list-style-type: none"> <li>• In zones D and E, priority is given to the remote controller fan speed setting.</li> <li>• In zone A, "HEATING STANDBY" is displayed.</li> </ul>															
7	Freeze prevention control (low temp. release)	<p>1. During cooling, the air conditioner is operated in the manner described below according to the temperature readings of the TC1, TC2 and TCJ sensors.</p> <ul style="list-style-type: none"> <li>• If zone J operation is detected for 5 minutes, the air conditioner is forced into thermo OFF.</li> <li>• In zone K, the timer is put on pause, with the current timer count retained.</li> <li>• If zone I operation is detected, the timer count is cleared, and the air conditioner returns to normal operation.</li> <li>• If continuous zone J operation forces the air conditioner into thermo OFF, the indoor fan is operated in breeze mode until it moves into zone I.</li> </ul> <p>The control is terminated under the following conditions:</p> <p>Termination conditions</p> <ol style="list-style-type: none"> <li>1) <math>TC1 \geq 12^{\circ}\text{C}</math>, <math>TC2 \geq 12^{\circ}\text{C}</math>, and <math>TCJ \geq 12^{\circ}\text{C}</math></li> <li>2) Passage of 20 minutes after stoppage</li> </ol> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>TC1</th> <th>TC2, TCJ</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>10°C(5°C)</td> <td>-10°C</td> </tr> <tr> <td>Q1</td> <td>0°C</td> <td>-14°C</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">Temperature in ( ): If the temperature is below this value when the power is turned on, the air conditioner is forced into thermo OFF.</p> <p>2. During cooling, the air conditioner is operated in the manner described below according to the temperature readings of the TC2 and TCJ sensors.</p> <ul style="list-style-type: none"> <li>• If zone M operation is detected for 45 minutes, the air conditioner is forced into thermo OFF.</li> <li>• In zone N, the timer is put on pause, with the current timer count retained.</li> <li>• When the air conditioner goes back into zone M, timer count is resumed from the retained value.</li> <li>• If zone L operation is detected, the timer count is cleared, and the air conditioner returns to normal operation.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>TC2, TCJ</th> </tr> </thead> <tbody> <tr> <td>P2</td> <td>5</td> </tr> <tr> <td>Q2</td> <td>-2.0</td> </tr> </tbody> </table> <p>Reset conditions</p> <ol style="list-style-type: none"> <li>1) <math>TC1 \geq 12^{\circ}\text{C}</math>, <math>TC2 \geq 12^{\circ}\text{C}</math> and <math>TCJ \geq 12^{\circ}\text{C}</math></li> <li>2) Passage of 20 minutes after stoppage</li> </ol>		TC1	TC2, TCJ	P1	10°C(5°C)	-10°C	Q1	0°C	-14°C		TC2, TCJ	P2	5	Q2	-2.0	<p>TC1: Indoor heat exchanger sensor temperature</p> <p>* With models without TC2, TC2 is not part of the control parameters.</p>
	TC1	TC2, TCJ																
P1	10°C(5°C)	-10°C																
Q1	0°C	-14°C																
	TC2, TCJ																	
P2	5																	
Q2	-2.0																	

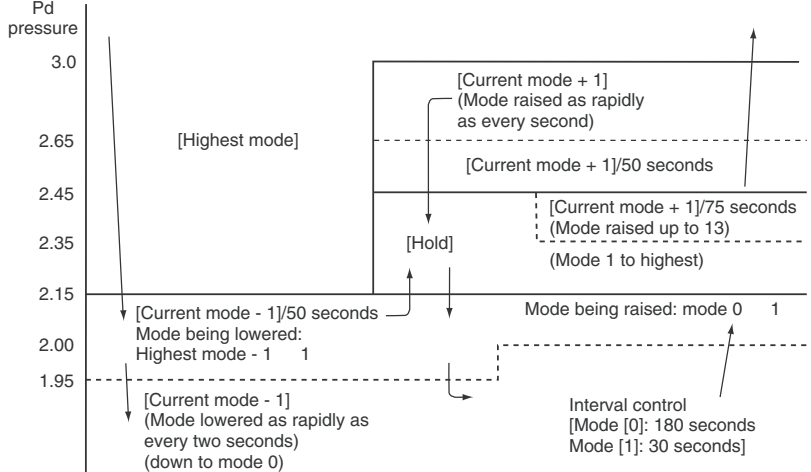
NO.	Item	Specification outline	Remarks
8	Cooling oil (refrigerant) recovery control	<p>While the outdoor unit is recovering cooling oil (refrigerant), the indoor units perform the following control tasks:  [common for operational (cooling thermo ON / thermo OFF / FAN), as well as nonoperational indoor units]</p> <ol style="list-style-type: none"> <li>1) Open the indoor PMV to a certain degree.</li> <li>2) Engage in recovery control for a specified period of time and return to normal cooling operation at the end of this period upon terminating the control.</li> <li>3) Operate the drain pump throughout the recovery control period and for about 1 minute after it.</li> </ol>	<ul style="list-style-type: none"> <li>• Recovery operation normally takes place roughly every 2 hours.</li> <li>• The opening position of the indoor PMV depending on the type and capacity of the indoor unit.</li> </ul>
9	Heating refrigerant (oil) recovery control	<p>While the outdoor unit is recovering heating refrigerant (oil), the indoor units perform the following control tasks:</p> <ol style="list-style-type: none"> <li>1) Open the indoor PMV to a certain degree.</li> <li>2) Control the indoor fan according to the operation mode.</li> </ol> <p>[Indoor units operating in heating thermo ON/OFF state]  Let the indoor fan continue operating, but turn it off if the temperature of the indoor heat exchanger drops.</p> <p>[Indoor units operating in FAN mode]  Turn off the indoor fan and display “HEATING STANDBY  ” on the remote controller.</p> <p>[Non-operational indoor units]  Keep the indoor fan turned off.</p> <ol style="list-style-type: none"> <li>3) Terminate the recovery operation depending on the TC2 temperature reading. The timing of termination is determined by each indoor unit.</li> <li>4) Operate the indoor fan and drain pump for about 1 minute after the termination of the recovery operation. (Applicable to 4-way cassette type, 2-way cassette type and 1-way cassette type)</li> </ol>	<ul style="list-style-type: none"> <li>• Recovery operation normally takes place roughly every hour.</li> <li>• The opening position of the indoor PMV depending on the type and capacity of the indoor unit.</li> </ul>
10	Defrosting control	<p>While the outdoor unit is engaged in defrosting control, the indoor units perform the following control tasks:</p> <ol style="list-style-type: none"> <li>1) Open the indoor PMV to a certain degree.</li> <li>2) Control the indoor fan according to the operation mode.</li> </ol> <p>[Indoor units operating in heating thermo ON/OFF state]  Let the indoor fan continue operating for a while, but turn it off as the temperature of the indoor heat exchanger drops.</p> <p>[Indoor units operating in FAN mode]  Let the indoor fan continue operating.</p> <p>[Non-operational indoor units]  Keep the indoor fan turned off.</p> <ol style="list-style-type: none"> <li>3) As defrosting control comes to an end, it gives way to heating refrigerant (oil) recovery control.  (For control details, see “9. Heating refrigerant (oil) recovery control” above.)</li> </ol>	<ul style="list-style-type: none"> <li>• For defrosting commencement conditions, see item of outdoor unit, “7. Defrosting control (reverse defrosting method)” above.</li> <li>• The opening position of the indoor PMV depending on the type and capacity</li> </ul>
11	Short intermittent operation compensation control	<ol style="list-style-type: none"> <li>1. For 5 minutes after startup, the system is forced to continue operating even if it reaches the thermo OFF region.</li> <li>2. However, priority is given to cooling/heating selection, operation standby, and protective control, so that there is no overriding of thermo OFF in these cases.</li> </ol>	
12	Drain pump control	<ol style="list-style-type: none"> <li>1. During cooling (including DRY operation), the drain pump is operated at all times.</li> <li>2. If the float switch is activated while the drain pump is in operation, the drain pump continues operating, with the relevant check code displayed.</li> <li>3. If the float switch is activated while the drain pump is turned off, thermo OFF is forced on the air conditioner, with the drain pump put into operation. If the float switch continues to be activated for about 5 minutes, the drain pump is turned off, with the relevant check code displayed.</li> </ol>	Check code [P10]
13	Elimination of residual heat	<ol style="list-style-type: none"> <li>1. When the air conditioner is turned off after engaging in heating operation, the indoor fan is operated for about 30 seconds in “breeze” mode.</li> </ol>	

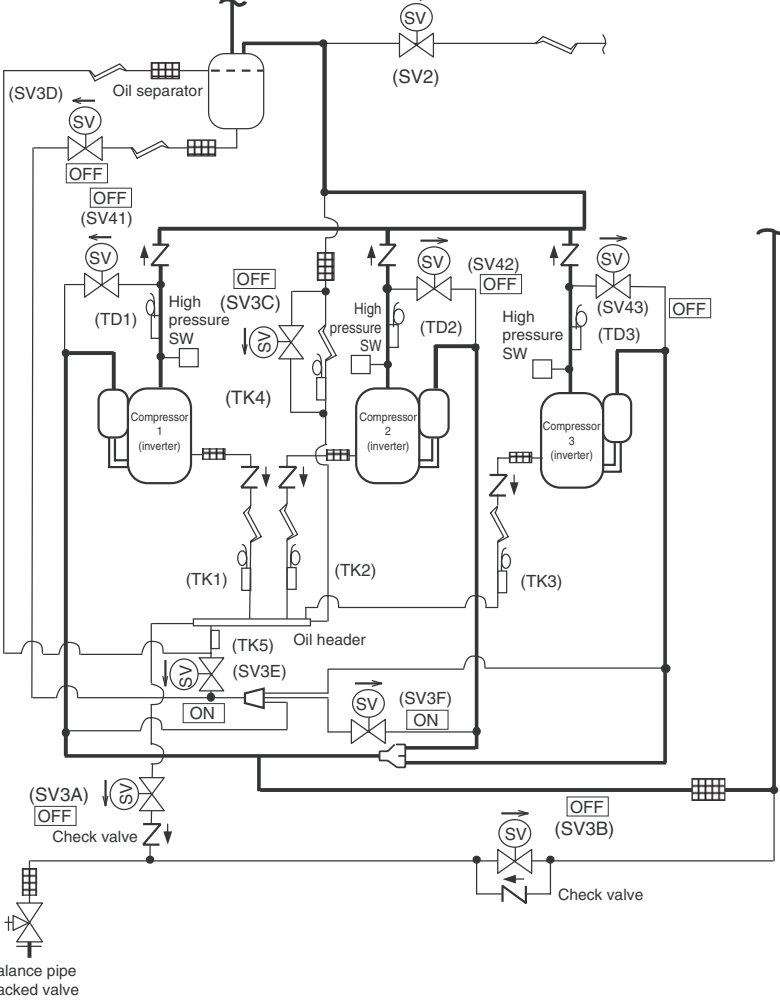
NO.	Item	Specification outline	Remarks																																																		
14	Filter sign display (not applicable to wireless type) * Provided in the separately mounted type, TCB-AX21E.	1. The indoor fan's cumulative hours of operation are counted, and when these exceed the prescribed value (150H/2500H), a filter replacement signal is sent to the remote controller to display a filter sign on it. 2. When a filter reset signal is received from the remote controller, the timer measuring cumulative hours is cleared. If the prescribed hours have been exceeded, the hours count is reset, with the sign on the remote controller display erased. <table border="1" data-bbox="395 387 1201 613"> <thead> <tr> <th data-bbox="395 387 579 416">Filter service life</th> <th data-bbox="579 387 922 416">2500H</th> <th data-bbox="922 387 1201 416">150H</th> </tr> </thead> <tbody> <tr> <td data-bbox="395 416 579 613">Type</td> <td data-bbox="579 416 922 613">               4-way cassette type                1-way cassette type (SH, YH)                2-way cassette type ceiling type                Concealed duct standard type                Concealed duct high static pressure type                Slim duct type             </td> <td data-bbox="922 416 1201 613">               High wall type                Floor standing type                Floor standing concealed type                Floor standing cabinet type             </td> </tr> </tbody> </table>	Filter service life	2500H	150H	Type	4-way cassette type 1-way cassette type (SH, YH) 2-way cassette type ceiling type Concealed duct standard type Concealed duct high static pressure type Slim duct type	High wall type Floor standing type Floor standing concealed type Floor standing cabinet type	"FILTER  " displayed																																												
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15	Operation standby Heating standby	<Operation standby> ..... Displayed on remote controller 1. When any of the DN codes listed below is displayed <ul style="list-style-type: none"> <li>• "P05" - Detection of an open phase in the power supply wiring</li> <li>• "P10" - Detection of indoor flooding in at least one indoor unit</li> <li>• "L30" - Detection of an interlock alarm in at least one indoor unit</li> </ul> 2. All indoor units not able to engage in any of the above operations stand by in thermo OFF state. 3. The indoor fan has been turned off because the system is engaged in a heat refrigerant (oil) recovery operation.  <Heating standby> ..... Displayed on remote controller 1. Normal thermo OFF <ul style="list-style-type: none"> <li>• During heating, the indoor unit goes thermo OFF as the heating temperature setting is reached.</li> </ul> 2. During heating, the fan rotates at a breeze speed (UL or lower) or remains stationary to prevent cold air from being discharged (including defrosting operation). 3. Forced thermo OFF <ul style="list-style-type: none"> <li>• "HEAT" operation is unavailable because at least one indoor unit is operating in "COOL/DRY" mode under priority cooling setting (bit 1 of SW11 on outdoor I/F P.C. board ON).</li> </ul>	<ul style="list-style-type: none"> <li>• "OPERATION STANDBY  " displayed</li> <li>No display provided on wireless remote controller</li> <li>• "HEATING STANDBY  " displayed</li> </ul>																																																		
16	Selection of central control mode	1. The range of operations that can be performed via an indoor unit remote controller can be determined through the setting of the central controller. 2. Setting details  TCC-Link central control <table border="1" data-bbox="395 1384 1201 1626"> <thead> <tr> <th data-bbox="395 1384 512 1480" rowspan="2">Operation via TCC-Link central control</th> <th colspan="6" data-bbox="512 1384 1082 1413">Operation via RBC-AMT32E</th> <th data-bbox="1082 1384 1201 1480" rowspan="2">RBC-AMT32E display</th> </tr> <tr> <th data-bbox="512 1413 603 1480">Start/stop selection</th> <th data-bbox="603 1413 694 1480">Operation mode selection</th> <th data-bbox="694 1413 785 1480">Timer setting</th> <th data-bbox="785 1413 876 1480">Temperature setting</th> <th data-bbox="876 1413 967 1480">Fan speed setting</th> <th data-bbox="967 1413 1082 1480">Air flow direction setting</th> </tr> </thead> <tbody> <tr> <td data-bbox="395 1480 512 1509">Individual</td> <td data-bbox="512 1480 603 1509">○</td> <td data-bbox="603 1480 694 1509">○</td> <td data-bbox="694 1480 785 1509">○</td> <td data-bbox="785 1480 876 1509">○</td> <td data-bbox="876 1480 967 1509">○</td> <td data-bbox="967 1480 1082 1509">○</td> <td data-bbox="1082 1480 1201 1626" rowspan="5">"CENTRAL CONTROL IN PROGRESS" </td> </tr> <tr> <td data-bbox="395 1509 512 1538">Central 1</td> <td data-bbox="512 1509 603 1538">×</td> <td data-bbox="603 1509 694 1538">○</td> <td data-bbox="694 1509 785 1538">×</td> <td data-bbox="785 1509 876 1538">○</td> <td data-bbox="876 1509 967 1538">○</td> <td data-bbox="967 1509 1082 1538">○</td> </tr> <tr> <td data-bbox="395 1538 512 1568">Central 2</td> <td data-bbox="512 1538 603 1568">×</td> <td data-bbox="603 1538 694 1568">×</td> <td data-bbox="694 1538 785 1568">×</td> <td data-bbox="785 1538 876 1568">×</td> <td data-bbox="876 1538 967 1568">○</td> <td data-bbox="967 1538 1082 1568">○</td> </tr> <tr> <td data-bbox="395 1568 512 1597">Central 3</td> <td data-bbox="512 1568 603 1597">○</td> <td data-bbox="603 1568 694 1597">×</td> <td data-bbox="694 1568 785 1597">○</td> <td data-bbox="785 1568 876 1597">×</td> <td data-bbox="876 1568 967 1597">○</td> <td data-bbox="967 1568 1082 1597">○</td> </tr> <tr> <td data-bbox="395 1597 512 1626">Central 4</td> <td data-bbox="512 1597 603 1626">○</td> <td data-bbox="603 1597 694 1626">×</td> <td data-bbox="694 1597 785 1626">○</td> <td data-bbox="785 1597 876 1626">○</td> <td data-bbox="876 1597 967 1626">○</td> <td data-bbox="967 1597 1082 1626">○</td> </tr> </tbody> </table> (○: Accessible ×: Inaccessible)	Operation via TCC-Link central control	Operation via RBC-AMT32E						RBC-AMT32E display	Start/stop selection	Operation mode selection	Timer setting	Temperature setting	Fan speed setting	Air flow direction setting	Individual	○	○	○	○	○	○	"CENTRAL CONTROL IN PROGRESS" 	Central 1	×	○	×	○	○	○	Central 2	×	×	×	×	○	○	Central 3	○	×	○	×	○	○	Central 4	○	×	○	○	○	○	<ul style="list-style-type: none"> <li>• In the case of a wired remote controller, "CENTRAL CONTROL IN PROGRESS  " is displayed (lit up) while in central control mode.</li> <li>• The display blinks when a control function inaccessible to a remote controller is chosen.</li> <li>• A wireless remote controller has the same set of control functions, although there is no display. When a control operation is performed via a wireless remote controller while in central control mode, a peep sound alert (5 times) is provided.</li> </ul>
Operation via TCC-Link central control	Operation via RBC-AMT32E						RBC-AMT32E display																																														
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Central 4	○	×	○	○	○	○																																															

NO.	Item	Specification outline	Remarks																									
17	Louver control	<p>1. Louver position setting</p> <ul style="list-style-type: none"> <li>When the louver position is changed, the louver turns all the way down before settling in the set position.</li> <li>Louver position is adjustable in the range shown in the diagrams below.</li> </ul> <p style="text-align: center;"> <span style="margin-right: 100px;">During cooling/drying</span> <span>During heating/fan-only operation</span> </p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <ul style="list-style-type: none"> <li>During group operation, position setting can be performed individually or collectively.</li> </ul> <p>2. Swing setting</p> <ul style="list-style-type: none"> <li>The "SWING" sign is displayed, along with alternating images as shown below.</li> </ul> <p style="text-align: center;">In all operation modes</p> <div style="display: flex; justify-content: center; align-items: center;">  </div> <ul style="list-style-type: none"> <li>During group operation, swing setting can be performed individually or collectively.</li> </ul> <p>3. Set louver positions</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>4-way</th> <th>1-way (SH)</th> <th>2-way</th> <th>Ceiling</th> </tr> </thead> <tbody> <tr> <td>Normal stop</td> <td>Downward</td> <td>Closed</td> <td>Upward</td> <td>Horizontal</td> </tr> <tr> <td>Abnormal stop</td> <td>Downward</td> <td>No change</td> <td>Upward</td> <td>Horizontal</td> </tr> <tr> <td>Heating standby</td> <td>Upward</td> <td>Upward</td> <td>Upward</td> <td>Horizontal</td> </tr> <tr> <td>Oil/refrigerant recovery</td> <td>Upward</td> <td>Upward</td> <td>No change</td> <td>Horizontal</td> </tr> </tbody> </table>		4-way	1-way (SH)	2-way	Ceiling	Normal stop	Downward	Closed	Upward	Horizontal	Abnormal stop	Downward	No change	Upward	Horizontal	Heating standby	Upward	Upward	Upward	Horizontal	Oil/refrigerant recovery	Upward	Upward	No change	Horizontal	
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18	DC motor	<p>1. When the fan is turned on, the positions of the stator and rotor are determined. (The motor turns in incremental steps.)</p> <p>2. The fan operates in accordance with commands issued by the indoor controller.</p> <p><b>Note:</b> If the fan is rotating while the air conditioner is turned off due to an inflow of outside air or some other reason, the indoor unit may operate without turning on the fan motor.</p> <p><b>Note:</b> If fan motor lock is detected, the indoor unit is turned off, with an error display provided.</p>	Check code "P12"																									

## 5-2. Outdoor Unit

NO.	Item	Specification outline	Remarks
1	Pulse motor valve (PMV) control	<p>1. PMV1, 2 control (PMV1 and 2)</p> <ol style="list-style-type: none"> <li>1) During air conditioner operation, the pulse count of a PMV (pulse motor valve) is controlled between 90 and 1000.</li> <li>2) During single cooling, the PMV opening is controlled on the basis of measurements provided by the TL temperature sensor and the Pd pressure sensor (under cool control).</li> <li>3) During single heating, the PMV opening is controlled on the basis of measurements provided by the TS and TD temperature sensors and the PS pressure sensor (super heat control).</li> <li>4) PMVs are fully closed when the air conditioner is in thermo OFF state or upon being turned off normally or shut down due to an abnormality.</li> </ol>  <p>2. PMV4 control</p> <ol style="list-style-type: none"> <li>1) PMV4 (Pulse Motor Valve) is controlled between 0 and 500 pulses at collective cooling / heating operation.</li> <li>2) PMV4 opening is controlled according to the demand capacity difference (HP) between cooling and heating operation.</li> <li>3) PMVs are fully closed when the air conditioner is in thermo OFF state or upon being turned off normally or shut down due to an abnormality.</li> </ol>   	<ul style="list-style-type: none"> <li>• During single heating, collective heating, PMV control may be provided with PMV1 alone, operated at 45 pulses (minimum), with PMV2 turned off.</li> </ul>

NO.	Item	Specification outline	Remarks																																						
2	Outdoor fan control	<p>1. Single cooling fan control</p> <p>1) Outdoor fan speed (mode) is controlled on the basis of measurements provided by the Pd pressure sensor.</p> <p>2) For a specified period after the start of cooling operation, the header outdoor unit controls outdoor fan speed (mode) on the basis of measurements provided by the Pd pressure sensor. Follower units, on the other hand, control outdoor fan speed (mode) on the basis of measurements provided by the TE1 temperature sensor.</p>  <p>* Available control modes are 0 (at rest) to 63.</p> <p>2. Single heating fan control</p> <p>1) Outdoor fan speed (mode) is controlled on the basis of measurements provided by the TE1 temperature sensor.</p> <p>2) If TE1 &gt; 25°C is continuously detected for 8 minutes, the fan may be turned off. However, this condition is the same as normal thermo OFF, so that fan operation will be restarted.</p> <p>3) For a specified period after air conditioner startup and during defrosting, this control is disabled.</p> <p>4) When refrigerant is in extremely short supply, this control may cause the air conditioner to be repeatedly turned on and off.</p> <table border="1" data-bbox="391 1232 1204 1467"> <thead> <tr> <th>TE1 temperature (°C)</th> <th>Control Action</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>Zone A: Lowest mode, timer count for forced compressor shutdown</td> </tr> <tr> <td>8</td> <td>Zone B: -2/30 seconds (down to lowest mode)</td> </tr> <tr> <td>6</td> <td>Zone C: -1/30 seconds (down to lowest mode)</td> </tr> <tr> <td>4</td> <td>Zone D: Hold (staying at current mode)</td> </tr> <tr> <td>2</td> <td>Zone E: +1/30 seconds (up to highest mode)</td> </tr> <tr> <td></td> <td>Zone F: Highest mode</td> </tr> </tbody> </table> <p>3. Collective cooling fan control</p> <p>The outdoor fan rps (mode) is controlled by the objective condensation temperature (Pd) during collective cooling operation.</p> <table border="1" data-bbox="422 1579 1077 1848"> <thead> <tr> <th colspan="2">Pd (Mpa)</th> <th>Control Action</th> </tr> <tr> <th>At heating thermo-OFF</th> <th>At heating thermo-ON</th> <th></th> </tr> </thead> <tbody> <tr> <td>3.10</td> <td>3.21</td> <td>[Mode at present + 1] / Until Min.1 second</td> </tr> <tr> <td>2.94</td> <td>3.14</td> <td>[Mode at present + 1] / 40 seconds</td> </tr> <tr> <td>2.72</td> <td>2.94</td> <td>HOLD (Keeps the mode at present)</td> </tr> <tr> <td>2.67</td> <td>2.86</td> <td>[Mode at present - 1] / 40 seconds</td> </tr> <tr> <td>2.57</td> <td>2.76</td> <td>[Mode at present - 1] / 16 seconds</td> </tr> <tr> <td></td> <td></td> <td>[Mode at present - 1] / 2 seconds</td> </tr> </tbody> </table> <p>4. Control while follower unit stops</p> <p>To prevent refrigerant stagnation into heat exchanger of the outdoor unit, operate the fan with Mode 1. (Except defrost operation)</p>	TE1 temperature (°C)	Control Action	25	Zone A: Lowest mode, timer count for forced compressor shutdown	8	Zone B: -2/30 seconds (down to lowest mode)	6	Zone C: -1/30 seconds (down to lowest mode)	4	Zone D: Hold (staying at current mode)	2	Zone E: +1/30 seconds (up to highest mode)		Zone F: Highest mode	Pd (Mpa)		Control Action	At heating thermo-OFF	At heating thermo-ON		3.10	3.21	[Mode at present + 1] / Until Min.1 second	2.94	3.14	[Mode at present + 1] / 40 seconds	2.72	2.94	HOLD (Keeps the mode at present)	2.67	2.86	[Mode at present - 1] / 40 seconds	2.57	2.76	[Mode at present - 1] / 16 seconds			[Mode at present - 1] / 2 seconds	<ul style="list-style-type: none"> <li>The fan speed corresponding to the highest mode varies with the HP capacity of the outdoor unit.</li> <li>The fan speed corresponding to the highest mode varies with the HP capacity of the outdoor unit.</li> <li>The fan speed corresponding to the highest mode varies with HP capacity of the outdoor unit</li> <li>This control may cause the air conditioner to be fan stop.</li> </ul>
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2.57	2.76	[Mode at present - 1] / 16 seconds																																							
		[Mode at present - 1] / 2 seconds																																							

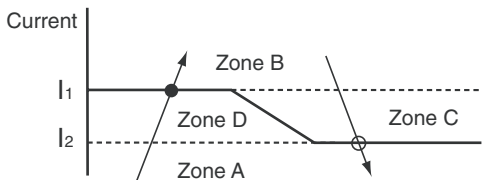
NO.	Item	Specification outline	Remarks
3	Capacity control	<p>1) The compressors of the header and follower units are controlled on the basis of capacity demand issued by indoor controllers.</p> <p>2) The two or three compressors featured in an outdoor unit operate on a rotational basis, so that, every time they come to a stop, their order of startup changes.</p> <p>3) Where two follower units are connected, every time the system goes thermo OFF or all the compressors featured in the follower units come to a stop, the priority startup order of the follower units changes, as they are also subject to rotational operation.</p>	<ul style="list-style-type: none"> <li>Minimum rps of the compressor is 24 rps.</li> </ul>
4	Oil level detection control	<p>1) Judgment as to whether an optimum amount of oil is present in the compressor cases is made on the basis of the temperature readings of sensors TK1 to TK5. This control function is performed by the header unit and each follower unit individually.</p> <p>2) In concrete terms, judgment is based on the relationship between the temperature measurements provided by TK1, TK2 or TK3, on the one hand, and those provided by TK4 or TK5, on the other. If there is depletion, oil equalization control takes over.</p> <p>3) This control function is performed whenever at least one compressor is in operation.</p>  <p>The diagram illustrates the oil level detection control system. It features three compressor units (Compressor 1, 2, and 3) connected to a common oil header. Each compressor unit includes a high-pressure switch (SV3C, SV42, SV43) and a temperature sensor (TK1, TK2, TK3). The oil header has a common high-pressure switch (SV3E) and a temperature sensor (TK5). The system also includes an oil separator (SV3D), check valves (SV3A, SV3B), and a balance pipe with a packed valve. Various valves are shown in ON or OFF positions.</p>	<ul style="list-style-type: none"> <li>Oil level detection takes place regardless of the number of compressors, whether it be one, two or three.</li> <li>Rough guide for oil level judgment <ol style="list-style-type: none"> <li>If <math>TK1 - TK4 \geq 14\text{ }^{\circ}\text{C}</math>, oil level of compressor 1 is optimum.</li> <li>If <math>TK2 - TK4 \geq 14\text{ }^{\circ}\text{C}</math>, oil level of compressor 2 is optimum.</li> <li>If <math>TK3 - TK4 \geq 14\text{ }^{\circ}\text{C}</math>, oil level of compressor 3 is optimum.</li> </ol> </li> </ul>

NO.	Item	Specification outline	Remarks
5	Oil equation control	<p>This control function is aimed at preventing compressors from running out of oil by evening out the oil supply to outdoor units, and is basically performed by opening/closing solenoid valves SV3A, SV3B, SV3C, SV3D, and SV3F. There are three control patterns as described below. (For a schematic diagram of oil equalization control, see 4. Oil level detection control in the previous page.)</p> <ol style="list-style-type: none"> <li>1. Preparatory control If the oil level judgment result in the memory continues to be "low" for 30 seconds, SV3B is turned on, with SV3D turned on and off intermittently.</li> <li>2. Oil equation control This control function is performed to transfer oil to the outdoor unit whose oil level is low from other outdoor units. It takes place whenever the header unit registers a low oil level result while at least one of its compressors is turned on or at least one of the follower units issues an oil level equation request. This control function does not apply to a header unit-only system (no follower units connected).</li> <li>3. Oil depletion protection control This control function is performed if oil equation control fails to achieve an optimum oil level. In concrete terms, if a low oil level situation continues for 30 minutes, the unit is brought to a protective shutdown, followed by a restart 2 minutes and 30 seconds later. If protective shutdown is repeated three times, the error is confirmed as final. (There will be no more restarts.) The error code is "H07".</li> </ol>	<ul style="list-style-type: none"> <li>• Oil accumulated in the oil separator is returned to the compressor.</li> <li>• This is normal oil equalization control.</li> <li>• This protective control is performed when a prolonged low oil level is detected.</li> </ul>
6	Refrigerant/oil recovery control	<ol style="list-style-type: none"> <li>1. Cooling oil (refrigerant) recovery control Performed during single cooling or collective cooling operation, this control function aims to: periodically collect any refrigerating oil condensate that has built up in inter-unit gas pipes and indoor units and return it to outdoor units when the compressor operation command is inadequate; and prevent the accumulation of refrigerant in outdoor heat exchangers while cooling operation is in progress under low outside air temperature conditions. It is managed by the header outdoor unit. <ol style="list-style-type: none"> <li>1) Control commencement conditions <ul style="list-style-type: none"> <li>• When cooling operation has continued for at least 2 hours</li> <li>• When cooling operation has started (compressors have just been turned on, though this does not always happen depending on outside air temperature conditions).</li> </ul> </li> <li>2) Control details <ul style="list-style-type: none"> <li>• All compressors currently in operation are operated at the minimum speed, with those currently not in operation turned on.</li> <li>• Indoor units are set to the cooling oil (refrigerant) recovery control mode, with their indoor PMVs opened to a certain degree.</li> <li>• Compressors are operated at the target speed.</li> <li>• After recovery control is performed for a specified period of time, it is terminated, and normal cooling operation resumes.</li> </ul> </li> </ol> </li> <li>2. Heating refrigerant (oil) recovery control Performed during single heating or collective heating operation, this control function aims to recover any liquid refrigerant trapped inside indoor units that have been turned off. It also serves the additional purposes of recovering indoor/outdoor refrigerant after defrosting and recovering oil present in outdoor heat exchangers during heating overload operation. This control function is managed by the header outdoor unit. <ol style="list-style-type: none"> <li>1) Control commencement conditions <ul style="list-style-type: none"> <li>• When heating operation has started (compressors have just been turned on)</li> <li>• When heating takes over upon completion of defrosting</li> <li>• When heating operation has continued for 60 minutes</li> </ul> </li> <li>2) Control details <ul style="list-style-type: none"> <li>• All compressors currently in operation are operated at the minimum speed, with those currently not in operation turned on.</li> <li>• Indoor units are set to the heating refrigerant (oil) recovery control mode, with their indoor PMVs opened to a certain degree.</li> <li>• Compressors are operated at the target speed.</li> <li>• Upon completion of refrigerant recovery for all the indoor units, normal cooling operation resumes.</li> </ul> </li> </ol> </li> <li>3. Cooling oil recovery control at collective operation This control is provided to recover the refrigerator oil which stagnates in the low-pressure gas inter-unit piping at collective operation (regardless of cooling or heating). <ol style="list-style-type: none"> <li>1) Control condition (Representative) <ul style="list-style-type: none"> <li>• When integrating time of compressor ON reached to 95 minutes during collective operation</li> </ul> </li> <li>2) Control contents When the conditions are satisfied, set cooling operation to heating indoor unit temporarily (stop the indoor fan) and then recover oil for 2 minutes 30 seconds to max. 10 minutes. The cooling indoor unit continues operation.</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• Cooling oil recovery control takes place approximately every 2 hours.</li> <li>• Control duration is about 2 to 5 minutes, though it varies according to the operating conditions of the system.</li> <li>• Heating oil recovery control takes place approximately every hour.</li> <li>• Control duration is about 2 to 10 minutes, though it varies according to loading conditions.</li> <li>• Compressor rotational speed varies with control conditions, indoor unit capacity, and outdoor unit specification.</li> </ul>

NO.	Item	Specification outline	Remarks
7	Defrosting control (reverse defrosting method)	<p>1. Defrosting commencement conditions</p> <ul style="list-style-type: none"> <li>• During heating operation, the cumulative duration of operation in which TE1 sensor temperature falls below frost formation temperature is measured, and when this reaches 55 minutes, defrosting control is introduced. (Just after startup or upon changeover from cooling to heating, the target cumulative duration is 25 minutes.)</li> <li>* If the outdoor units are a combination of different models, all the units begin engaging in defrosting control as soon as one of them satisfies defrosting commencement conditions.</li> </ul> <p>2. Details of defrosting control</p> <ol style="list-style-type: none"> <li>1) All compressors currently in operation are operated at the minimum speed.</li> <li>2) When a specified amount of time passes from the time the compressors reached the minimum speed, the outdoor fans are turned off by closing the 4-way valves.</li> <li>3) All compressors currently not in operation are turned on and operated at the target rotational speed for defrosting control.</li> </ol> <p>3. Defrosting termination conditions</p> <ul style="list-style-type: none"> <li>• Defrosting termination conditions are met when the TE1 temperature sensor measurement reaches a specified value (roughly 12 °C) a certain period of time after the commencement of defrosting control. In that event, defrosting termination control takes over.</li> <li>* If the outdoor units are a combination of different models, defrosting termination control commences when all the units satisfy the defrosting termination conditions. As long as one or more outdoor units are yet to satisfy the defrosting termination conditions, those that have engage in standby operation.</li> </ul> <p>4. Details of defrosting termination control</p> <ol style="list-style-type: none"> <li>1) Compressors are operated at the standby operation speed.</li> <li>2) When a specified amount of time passes, the 4-way valves are opened.</li> <li>3) Indoor heating refrigerant recovery control is performed.</li> </ol> <p>For control details, see " 6. Refrigerant/oil recovery control".</p>	<ul style="list-style-type: none"> <li>• Frost formation temperature is - 1.5 °C.</li> <li>• If the outdoor units are a combination of different models, defrosting operation, once started, cannot be manually terminated for about 2 minutes.</li> <li>• To protect the refrigerating cycle circuit, the fan mode may be controlled during defrosting.</li> <li>• During defrosting control, compressors are controlled so that their speeds do not exceed 76.6 rps.</li> <li>• During standby operation, compressor speed is in the 24-33.5 rps range. (It varies from outdoor unit to outdoor unit.)</li> </ul>

NO.	Item	Specification outline	Remarks																																								
8	Release valve control	<p>1. SV2 gas balance control</p> <p>This control function is aimed at achieving gas balance by opening SV2 while compressors are turned off so as to reduce their startup load the next time they are turned on. It is individually performed by the header outdoor unit and each follower outdoor unit.</p> <p>1) Control conditions</p> <ul style="list-style-type: none"> <li>In cooling, compressors have been turned off.</li> <li>In heating, the header unit has been shut down.</li> </ul> <p>2) Control details</p> <ul style="list-style-type: none"> <li>The control point is changed according to <math>\Delta P</math> (Pd pressure - Ps pressure) registered just before the compressors were turned off.</li> <li>When <math>\Delta P \geq P1</math>, SV2 is opened. When this results in <math>\Delta P &lt; P2</math>, SV2 is closed.</li> <li>When <math>\Delta P &lt; P1</math>, SV2 is closed.</li> </ul> <p style="text-align: right;">(Unit: MPa)</p> <table border="1" data-bbox="395 589 1201 779"> <thead> <tr> <th rowspan="3">Control points for Pd pressure P1, P2</th> <th colspan="2">Heating</th> <th colspan="4">Cooling</th> </tr> <tr> <th colspan="2">Header unit compressors</th> <th colspan="2">Header unit compressors</th> <th colspan="2">Header unit compressors</th> </tr> <tr> <th colspan="2">OFF</th> <th colspan="2">OFF</th> <th colspan="2">ON</th> </tr> <tr> <td></td> <th>P1</th> <th>P2</th> <th>P1</th> <th>P2</th> <th>P1</th> <th>P2</th> </tr> </thead> <tbody> <tr> <td>Header unit</td> <td>1.3</td> <td>1.1</td> <td>1.3</td> <td>1.1</td> <td>—</td> <td>—</td> </tr> <tr> <td>Follower unit</td> <td>1.3</td> <td>1.1</td> <td>1.3</td> <td>1.1</td> <td>0.5</td> <td>0.4</td> </tr> </tbody> </table> <p>2. SV2 high pressure release control</p> <p>This control function is aimed at mitigating pressure rise while a compressor is in operation at low speeds.</p> <p>1) Control conditions</p> <ul style="list-style-type: none"> <li>In case of single heating, single cooling, collective heating or collective cooling is operating</li> <li>In case that a header unit singly operates a compressor</li> </ul> <p>2) Control details</p> <ul style="list-style-type: none"> <li>When Pd pressure becomes 3.4 MPa, SV2 is opened.</li> <li>When Pd pressure becomes 2.8 MPa, SV2 is closed.</li> </ul> <p>3) Termination conditions</p> <ul style="list-style-type: none"> <li>Shutdown, thermo OFF, defrosting operation.</li> <li>The number of header unit compressors in operation increases to two or more.</li> <li>At least one follower unit compressor is turned on.</li> </ul> <p>3. SV2 low pressure release control</p> <p>This control function is aimed at preventing a rapid fall in pressure during transient operation. It is individually performed by the header outdoor unit and each follower outdoor unit.</p> <p>The control is always provided except during periods of stoppage or thermo OFF.</p> <p>1) Control details</p> <ul style="list-style-type: none"> <li>When Ps pressure becomes <math>\leq 0.16</math> MPa, SV2 is opened.</li> <li>When Ps pressure becomes <math>&gt; 0.20</math> MPa, SV2 is closed.</li> </ul> <p>4. SV41, 42, 43 low pressure release control</p> <p>This control function is aimed at providing low pressure protection, and is individually performed by the header unit and each follower unit.</p> <p>The control takes place during defrost operation, heating operation, collecting heating, collective cooling and single cooling operation.</p> <p>1) Control details (heating)</p> <p>When Ps pressure becomes 0.1 MPa, SV41, 42 and 43 are opened; when Ps pressure becomes 0.15 MPa, SV41, 42 and 43 are closed.</p> <p>2) Control details (cooling)</p> <p>When Ps pressure and Pd pressure become 0.14 MPa and 1.7 MPa, respectively, SV41 and 42 are opened; when Ps pressure and Pd pressure become 0.19 MPa and 2.2 MPa, respectively, SV41 and 42 are closed.</p> <p>5. SV6 valve clean bypass control</p> <p>This control is provided for controlling liquid refrigerant bypass to control discharge temperature-up or temperature inside of the compressor. It works during single cooling, single heating, collective cooling, collective heating, collective heating and defrost operation.</p> <p>1) Control contents (Single cooling)</p> <p>When TD temperature <math>\geq 95^\circ\text{C}</math> and compression ratio <math>\geq 3.0</math>, turn SV6 to ON, and when TD temperature <math>\leq 83^\circ\text{C}</math> or compression ratio <math>\geq 2.0</math>, turn SV6 to OFF.</p> <p>2) Control contents (Other operation)</p> <p>When TD temperature <math>\geq 95^\circ\text{C}</math> and compression ratio <math>\geq 4.2</math>, turn SV6 to ON, and when TD temperature <math>\leq 83^\circ\text{C}</math> or compression ratio <math>\geq 3.2</math>, turn SV6 to OFF.</p>	Control points for Pd pressure P1, P2	Heating		Cooling				Header unit compressors		Header unit compressors		Header unit compressors		OFF		OFF		ON			P1	P2	P1	P2	P1	P2	Header unit	1.3	1.1	1.3	1.1	—	—	Follower unit	1.3	1.1	1.3	1.1	0.5	0.4	
Control points for Pd pressure P1, P2	Heating			Cooling																																							
	Header unit compressors			Header unit compressors		Header unit compressors																																					
	OFF		OFF		ON																																						
	P1	P2	P1	P2	P1	P2																																					
Header unit	1.3	1.1	1.3	1.1	—	—																																					
Follower unit	1.3	1.1	1.3	1.1	0.5	0.4																																					

NO.	Item	Specification outline	Remarks
9	High pressure release compressor shutdown control	<p>This control function is aimed at automatically shutting down a compressor in an outdoor unit depending on Pd pressure. It is individually performed by the header unit and each follower unit.</p> <p>1) Control details</p> <ul style="list-style-type: none"> <li>• Compressors are shut down when Pd pressure reaches or exceeds P0.</li> <li>• The compressor restart prevention timer (2 minutes 30 seconds) is set, and the control terminated.</li> </ul>	<ul style="list-style-type: none"> <li>• When Pd ≥ P0 = 3.45 MPa, compressor No. 2 or No. 3 (the last one of three compressors in terms of startup order in a three compressor configuration) is shut down.</li> <li>• When Pd ≥ P0 = 3.5 MPa, compressor No. 1 (the first compressor in terms of startup order) is shut down.</li> </ul>
10	Case heater control	<p>There are two types of case heaters: a compressor case heater and an accumulator case heater. This control function is aimed at preventing the accumulation of refrigerant in those cases, and is performed by all outdoor units.</p> <p>If the power supply has not been turned on for a specified period before a postinstallation test run, compressor failure may occur. Similarly, when starting compressors after a long period of no power supply, it is recommended that the power supply be turned on for a while before operation is resumed, just like a post-installation test run.</p> <p>This control function is sometimes used alongside an electrical charging of the compressor motor windings. In this case, a charging sound may be heard, but this is normal.</p> <p>1) Control details</p> <ul style="list-style-type: none"> <li>• The heaters are turned on while the compressors are turned off.</li> <li>• The heaters are turned off when To sensor temperature becomes ≥ 28 °C, and are turned back on when To sensor temperature becomes ≤ 25 °C.</li> <li>• When the compressors are turned on, the heaters are kept on for 10 minutes.</li> </ul>	

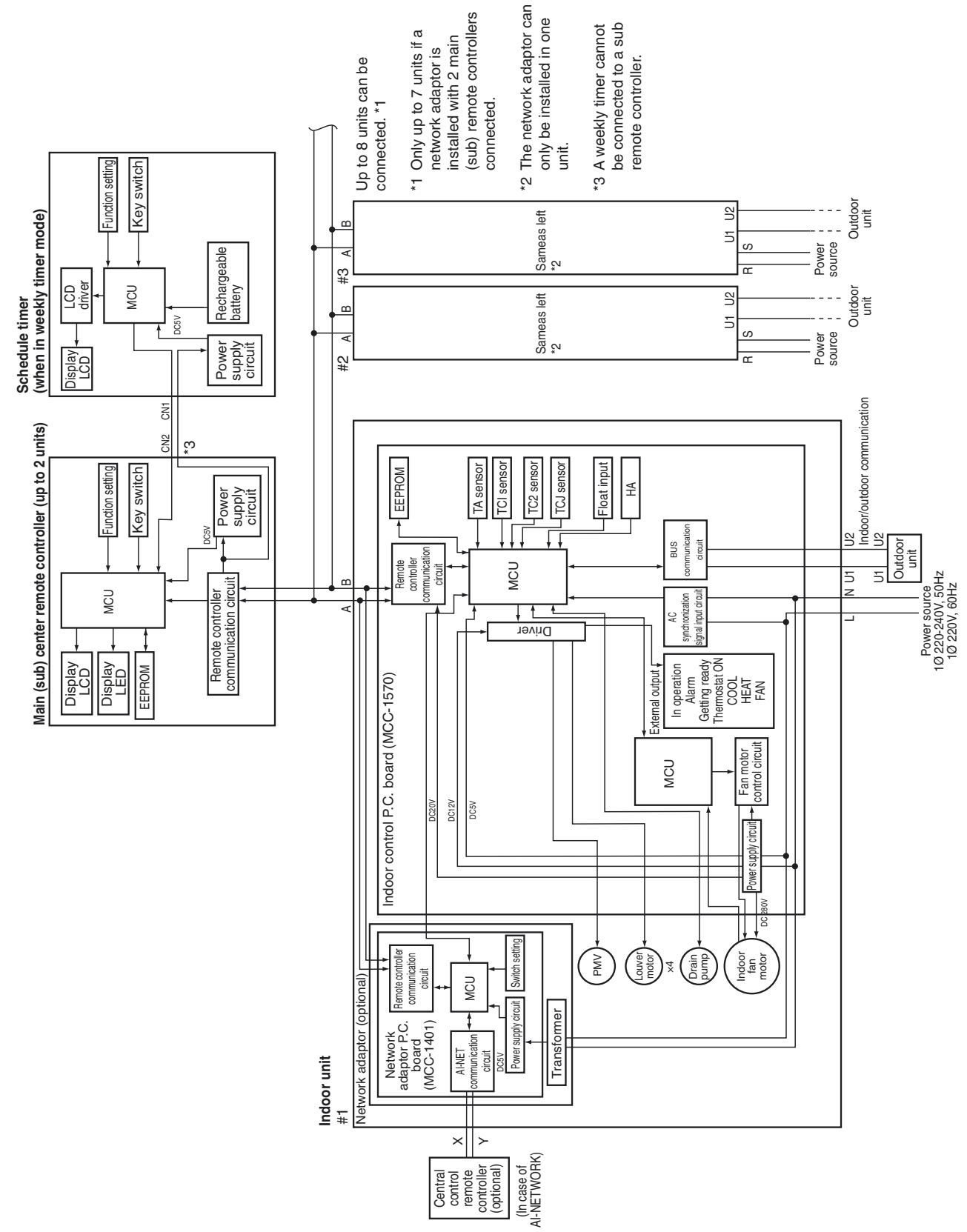
NO.	Item	Specification outline	Remarks															
11	A3-IPDU control	<p>IPDU controls inverter compressors by issuing commands relating to compressor speeds, speed increases/decreases, and current release control values via the interface P.C. board.</p> <p>The main control functions of the IPDU P.C. board are described below.</p> <p>1. Current release control</p> <p>To prevent inverter input current from exceeding the specified value, output frequency is controlled with AC input current as detected by T02 mounted on the control P.C. board.</p>  <p>Zone A: Compressors are operated normally.  Zone D: The current operating frequency is maintained.  Zone B: Operating frequency is lowered.  Zone C: The lowering of operating frequency is halted to maintain the current frequency.</p> <p>Current control values for various outdoor units are shown below.</p> <table border="1" data-bbox="622 772 989 974"> <thead> <tr> <th>Outdoor unit HP capacity</th> <th>I<sub>1</sub></th> <th>I<sub>2</sub></th> </tr> </thead> <tbody> <tr> <td>14</td> <td>18.5</td> <td>18.0</td> </tr> <tr> <td>12</td> <td>14.5</td> <td>14.0</td> </tr> <tr> <td>10</td> <td>19.0</td> <td>18.5</td> </tr> <tr> <td>8</td> <td>15.0</td> <td>14.5</td> </tr> </tbody> </table> <p>2. Heat sink temperature detection control</p> <ol style="list-style-type: none"> <li>1) This control function is aimed at protecting IGBT from overheating via a thermistor (TH sensor) mounted in the compressor drive module (Q201) of A3-IPDU.</li> <li>2) When TH ≥ 85 °C is detected, the fan operation mode is raised by one step, followed by a series of additional step-ups right up to the highest mode at a rate of one step/5 seconds.</li> <li>3) After step 2), the normal fan mode is restored when TH falls to &lt; 85 °C.</li> <li>4) When TH ≥ 105 °C, compressors are shut down.</li> <li>5) Compressors are restarted 2 minutes and 30 seconds later, with an error count of 1 recorded. If this is repeated four times (error count reaches 4), the error is confirmed as final. The error [P07] is displayed. (There will be no more restarts.) <ul style="list-style-type: none"> <li>* Possible causes of the confirmed error include a heat buildup in the outdoor unit, fan abnormality, blockage of the cooling duct, and IPDU P.C. board fault.</li> <li>* The TH temperature used in this control function is the highest registered by A3-IPDU1, A3-IPDU2, and A3-IPDU3.</li> </ul> </li> </ol> <p>3. Overcurrent protection control</p> <ol style="list-style-type: none"> <li>1) When the overcurrent protection circuit on an IPDU P.C. board detects an abnormal current, the compressor is shut down.</li> <li>2) The compressor is restarted 2 minutes and 30 seconds later, with an error count of 1 recorded. If the compressor successfully operates for at least 10 minutes after a restart, the error count is cleared.</li> <li>3) If the error count reaches 8, the error is confirmed as final.</li> </ol> <p>4. High pressure SW control</p> <ol style="list-style-type: none"> <li>1) When the high pressure SW of an inverter compressor is activated, the compressor is shut down with an error count of 1 recorded.</li> <li>2) The compressor is restarted 2 minutes 30 seconds later, and, if it successfully operates for at least 10 minutes, the error count is cleared.</li> <li>3) If the error count reaches 4, the error is confirmed as final. The error "P04" is displayed.</li> </ol>	Outdoor unit HP capacity	I <sub>1</sub>	I <sub>2</sub>	14	18.5	18.0	12	14.5	14.0	10	19.0	18.5	8	15.0	14.5	<ul style="list-style-type: none"> <li>• A3-IPDU1, 2 and 3 are each provided with a TH sensor.</li> <li>• Connected to A3-IPDU, the high-pressure SW is normally closed.</li> </ul>
Outdoor unit HP capacity	I <sub>1</sub>	I <sub>2</sub>																
14	18.5	18.0																
12	14.5	14.0																
10	19.0	18.5																
8	15.0	14.5																

# 6. APPLIED CONTROL AND FUNCTIONS (INCLUDING CIRCUIT CONFIGURATION)

## 6-1. Indoor Controller Block Diagram

### 6-1-1. When Main (Sub) Remote Controller Connected

#### <4-way Cassette Type> (MMU-AP\*\*\*2H)



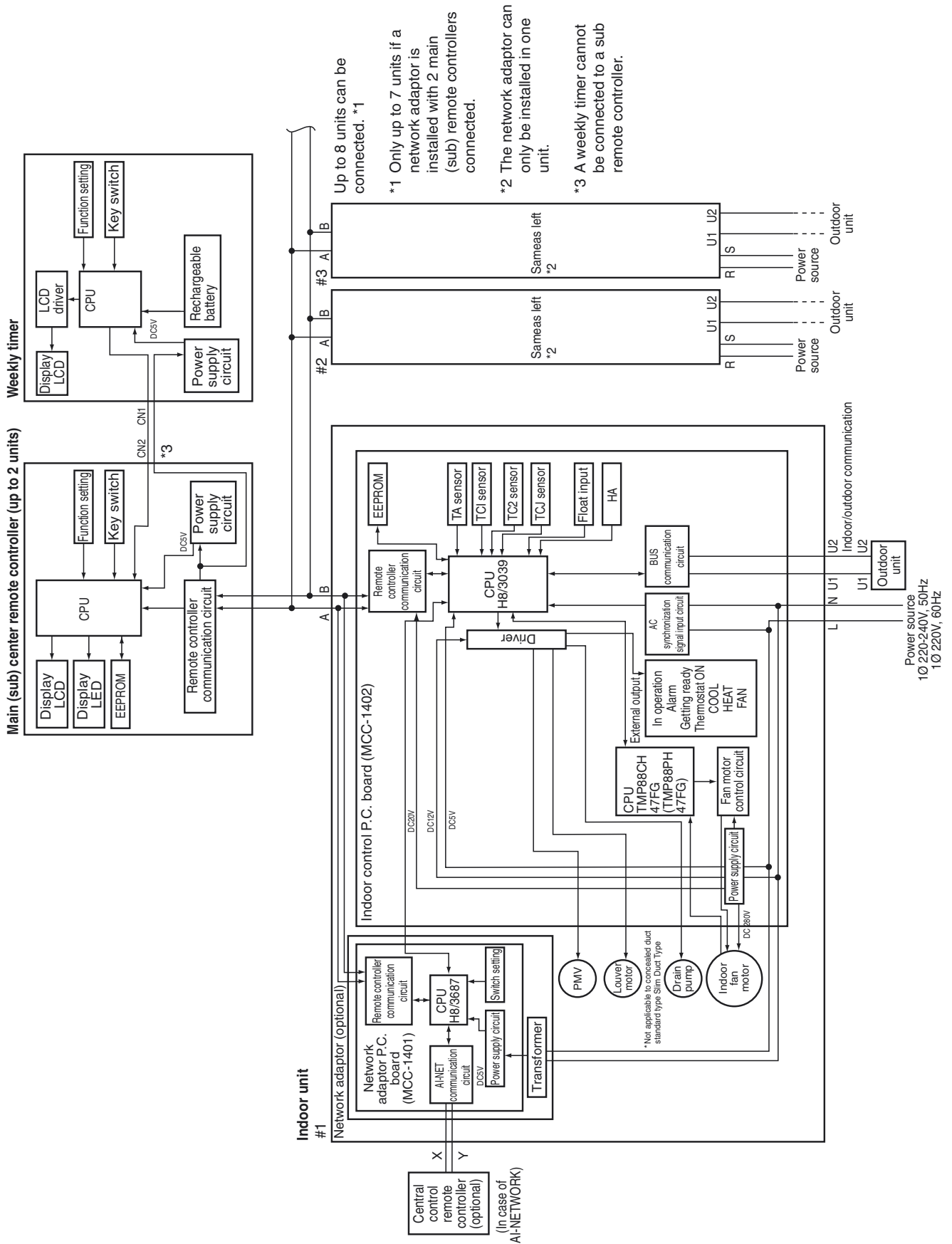
Up to 8 units can be connected. \*1

\*1 Only up to 7 units if a network adaptor is installed with 2 main (sub) remote controllers connected.

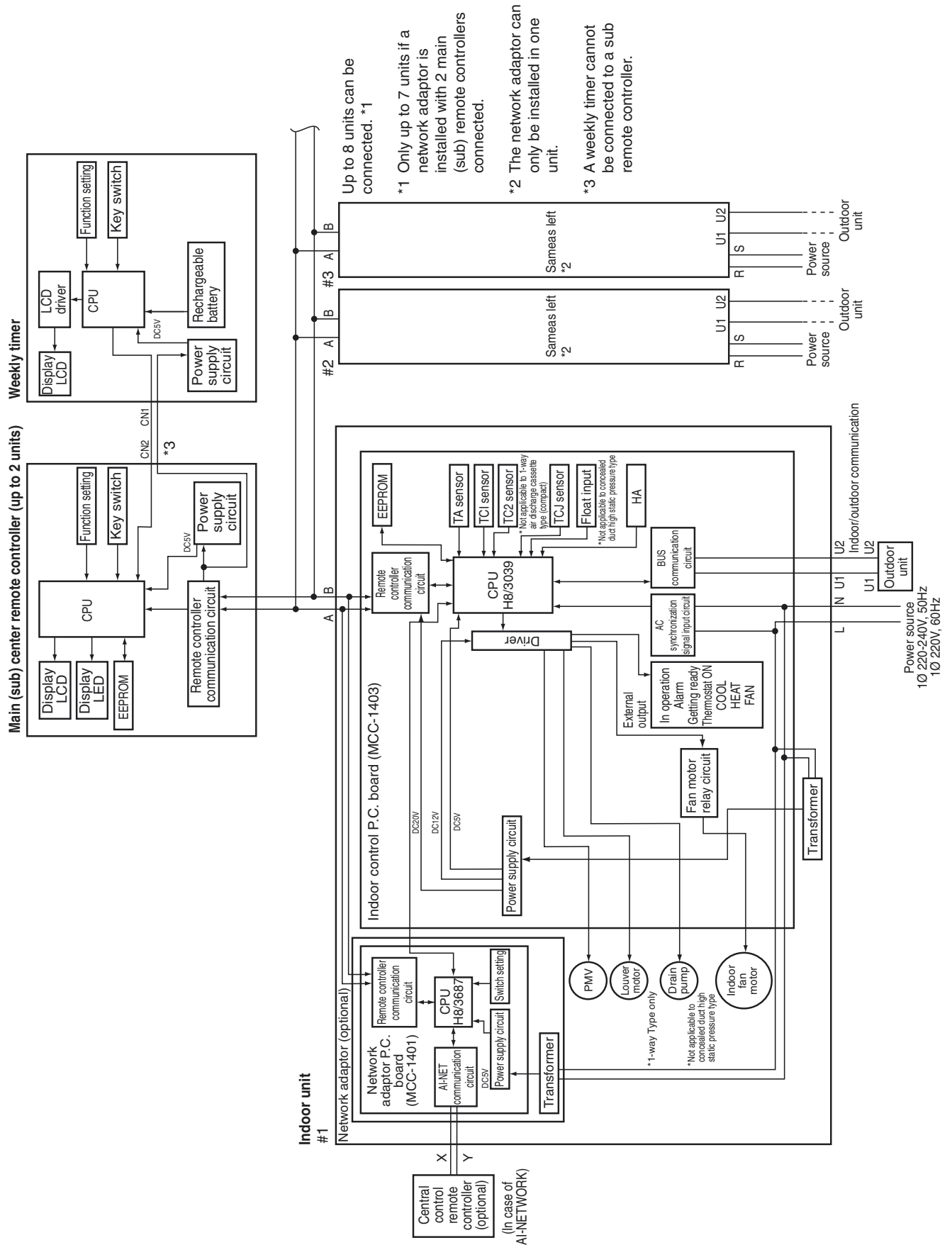
\*2 The network adaptor can only be installed in one unit.

\*3 A weekly timer cannot be connected to a sub remote controller.

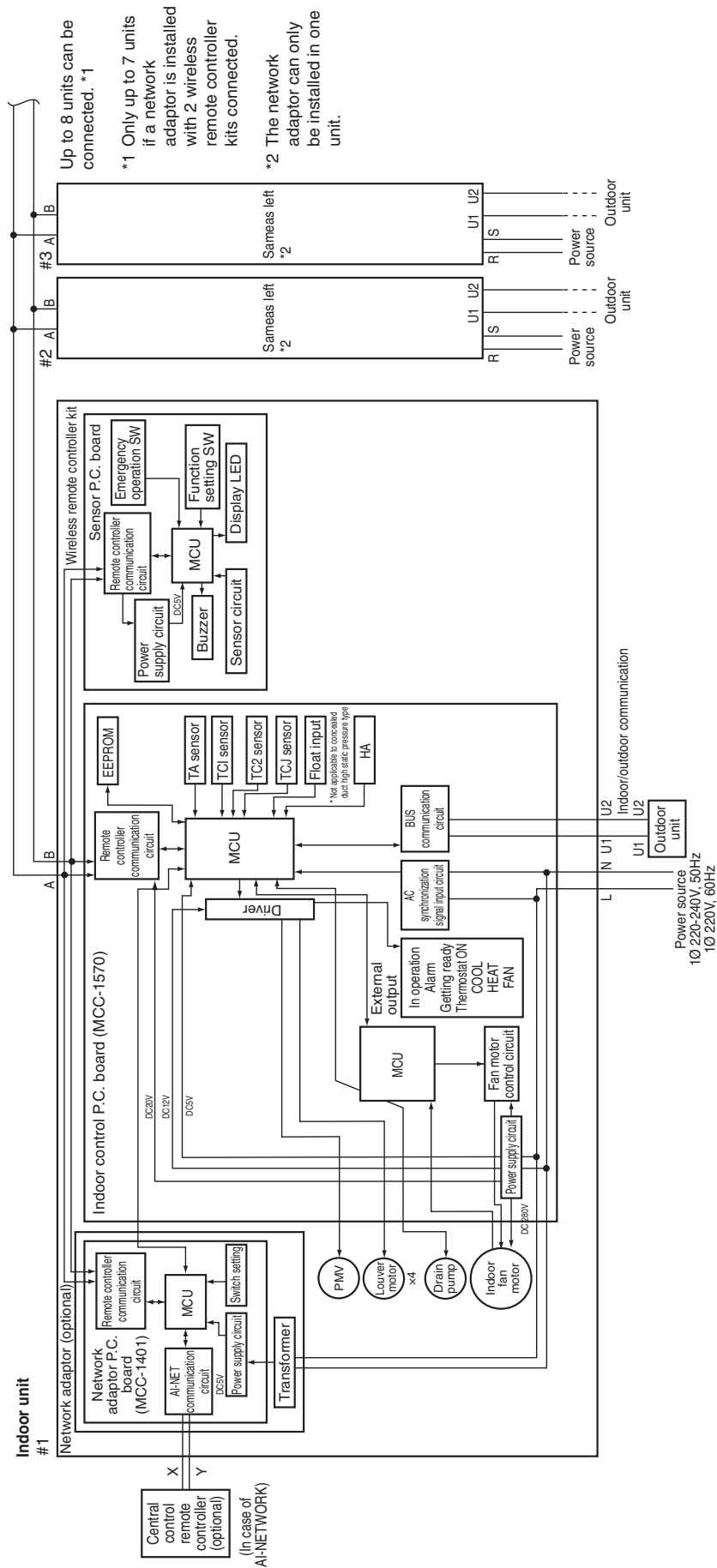
<Compact 4-way Cassette Type, 1-way Cassette (SH) Type, 2-way Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type, High Wall Type>



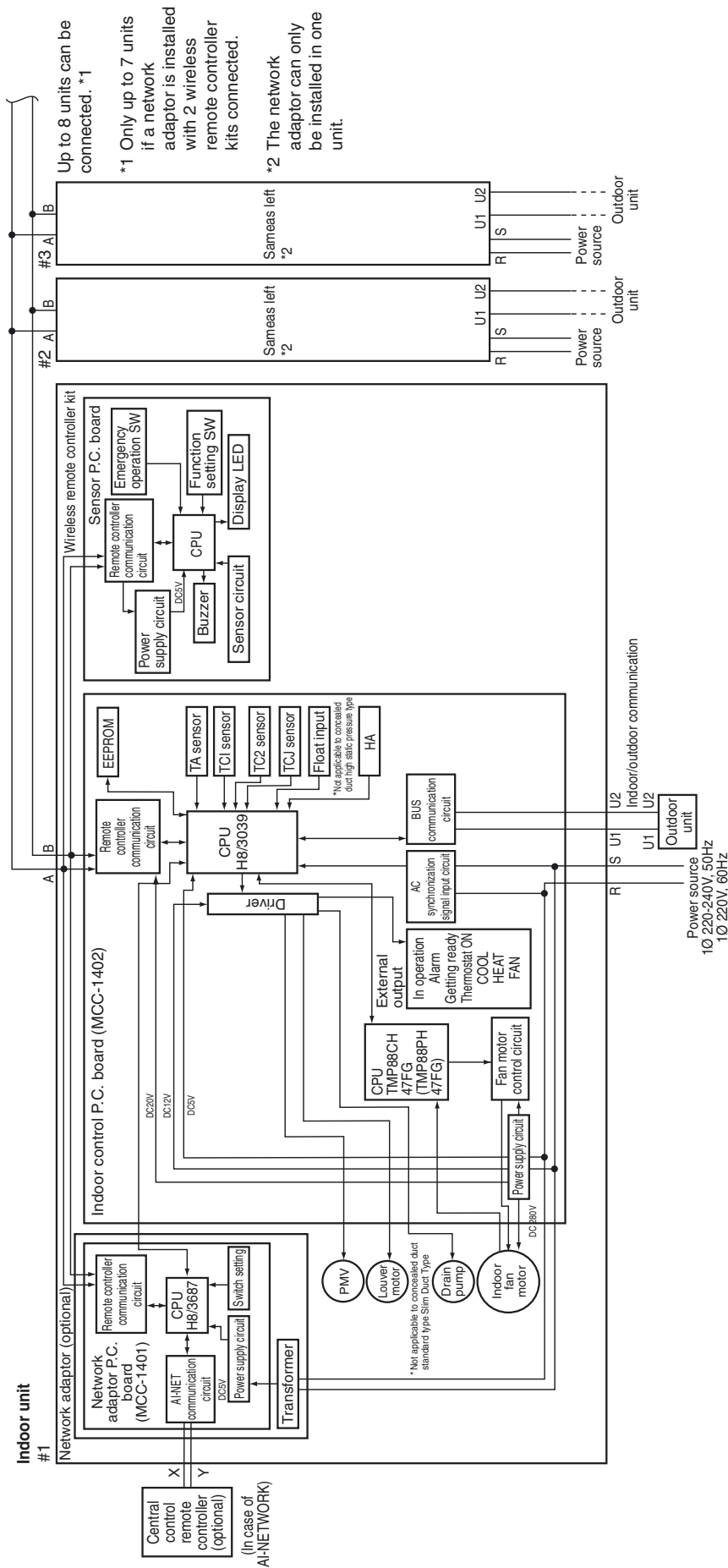
<1-way Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>



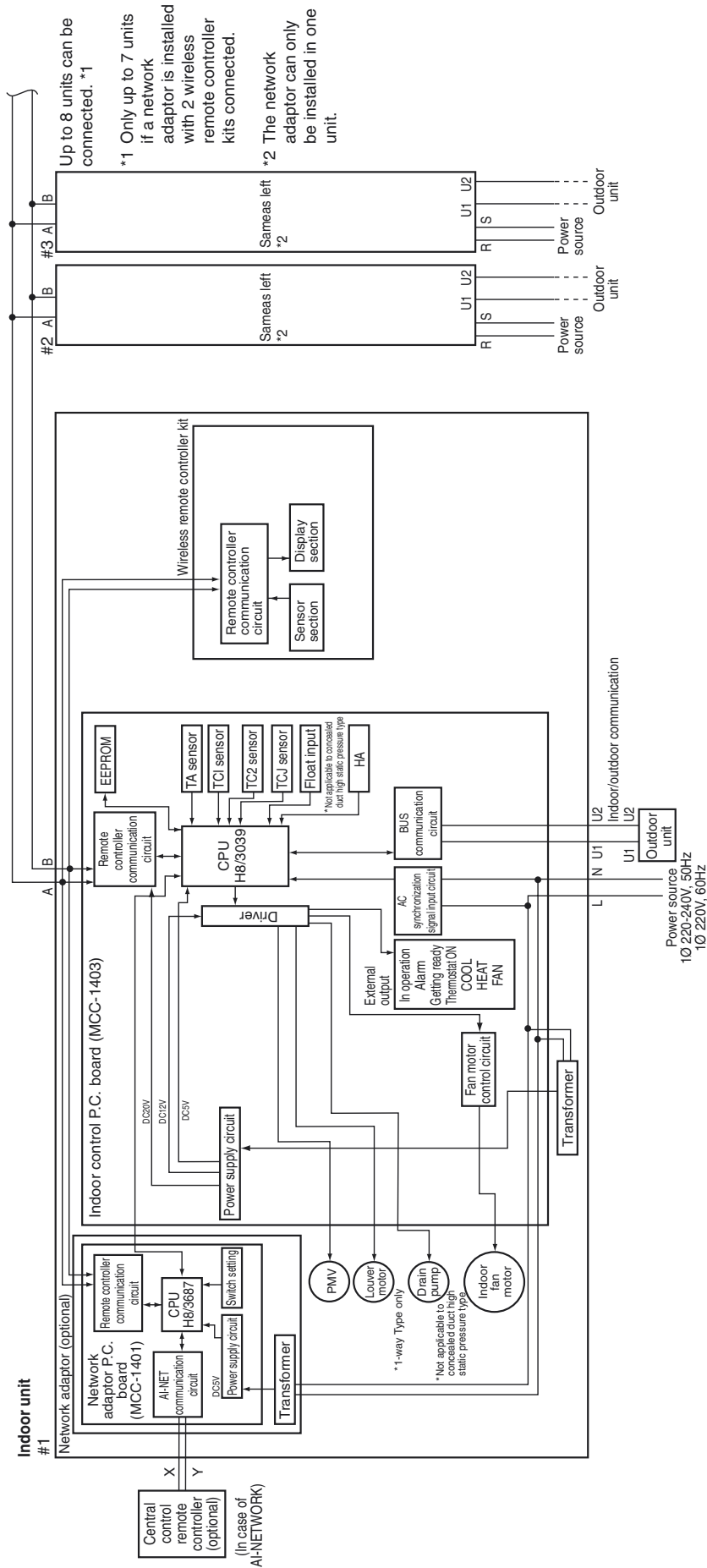
## 6-1-2. When Wireless Remote Controller Kit Connected <4-way Cassette Type> (MMU-AP\*\*\*2H)



<Compact 4-way Cassette Type, 1-way Cassette (SH) Type, 2-way Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type, High Wall Type>

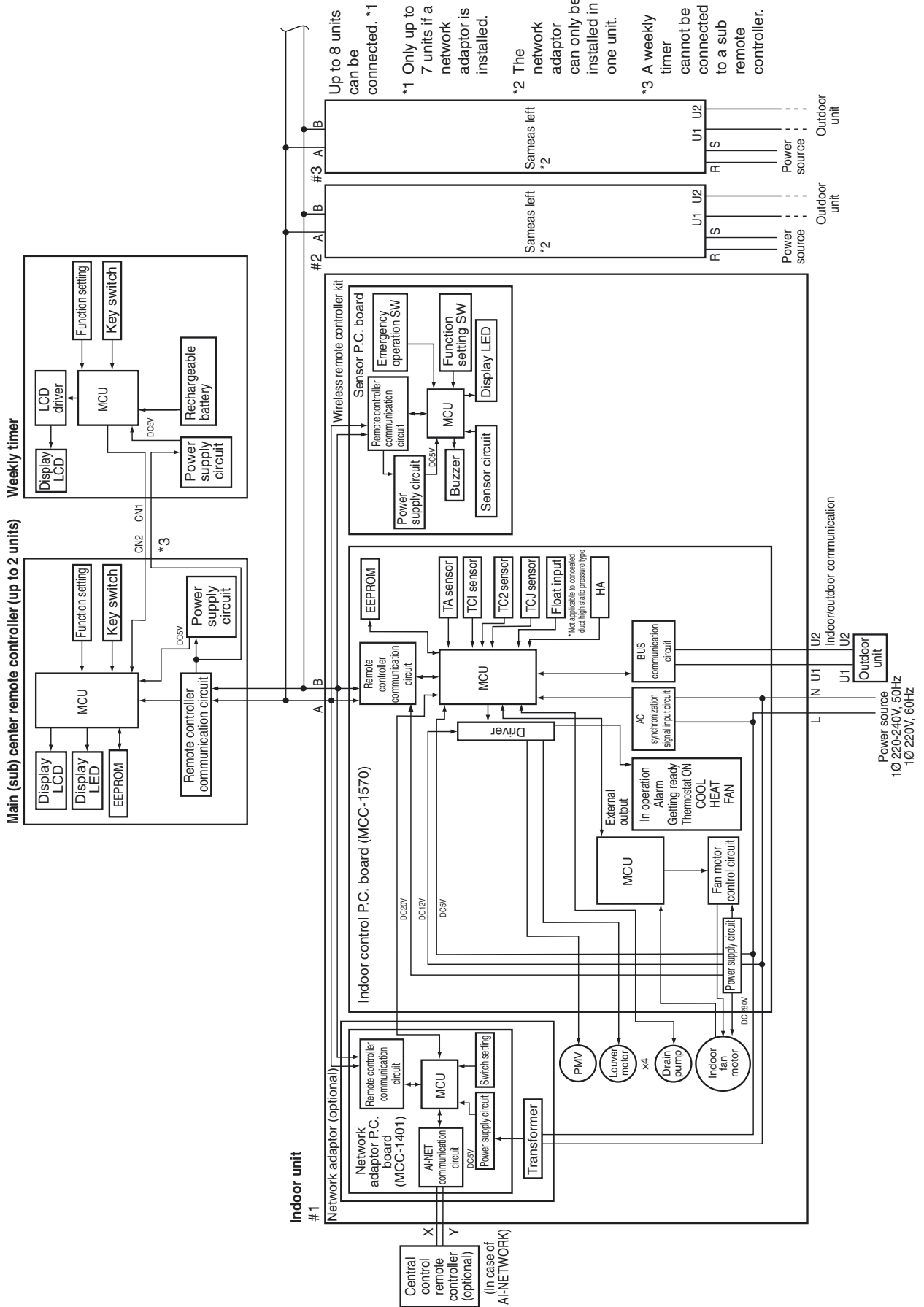


<1-way Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>

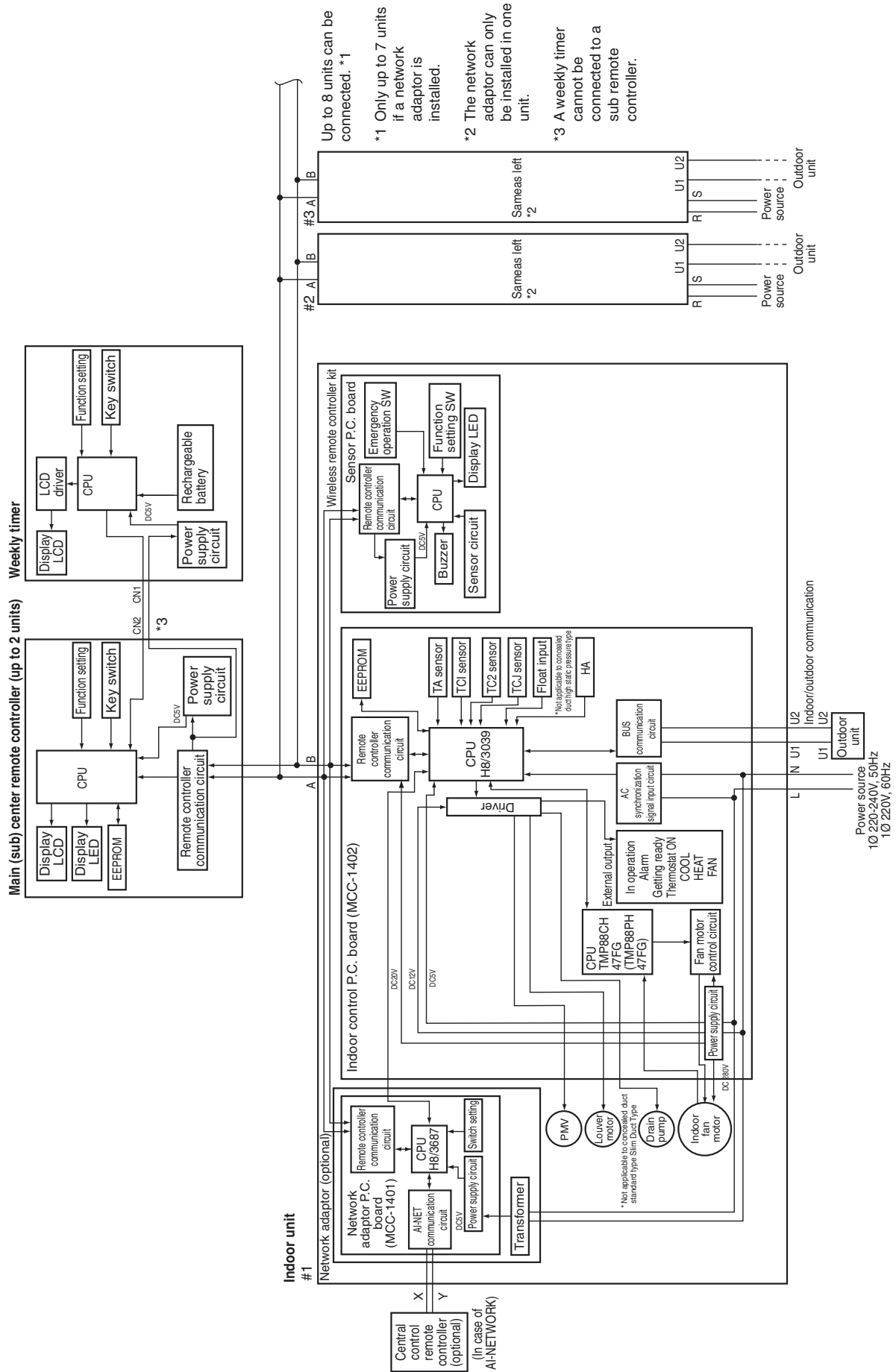


### 6-1-3. When Both Main (Sub) Remote Controller and Wireless Remote Controller Kit Connected

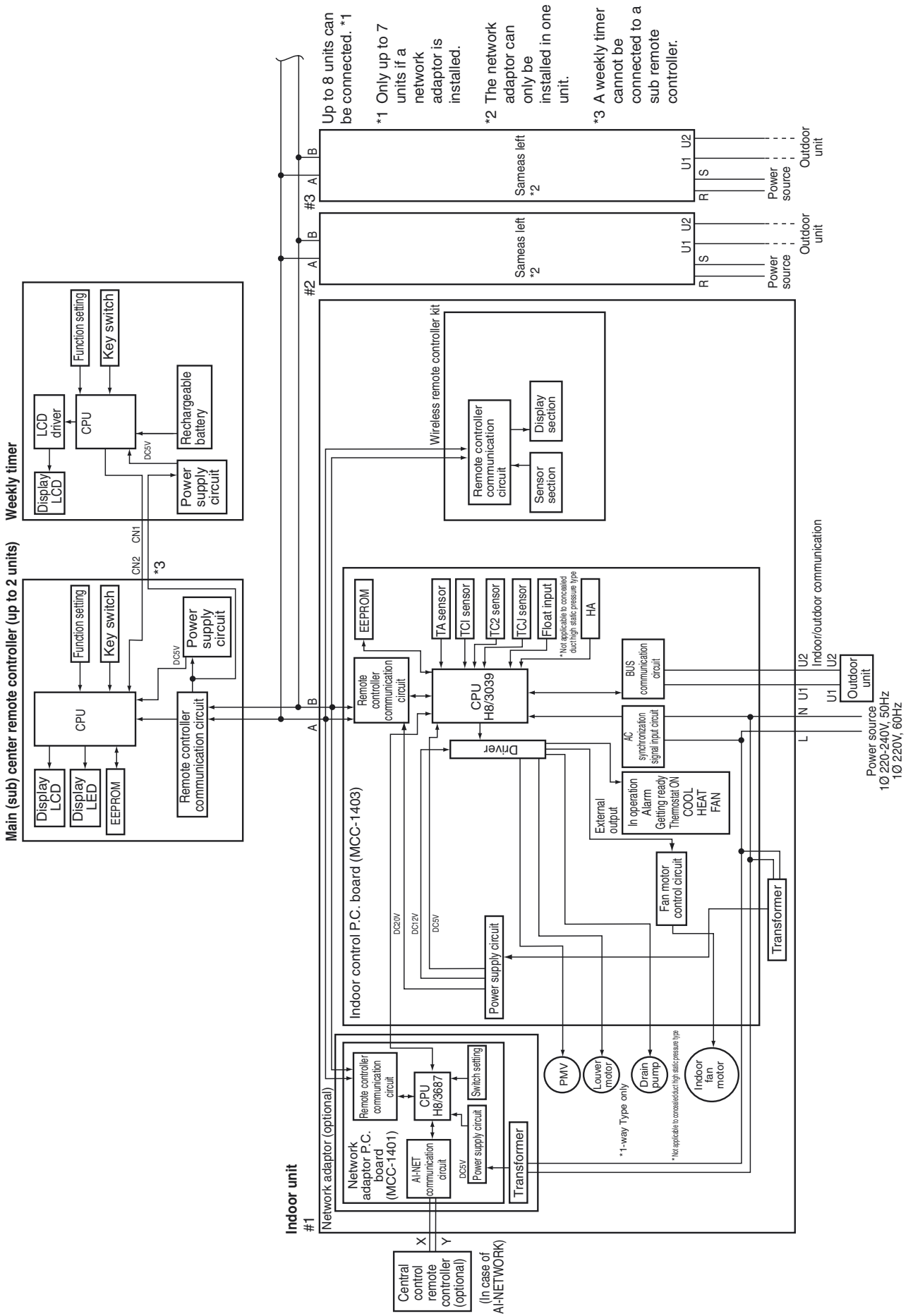
#### <4-way Cassette Type> (MMU-AP\*\*\*2H)



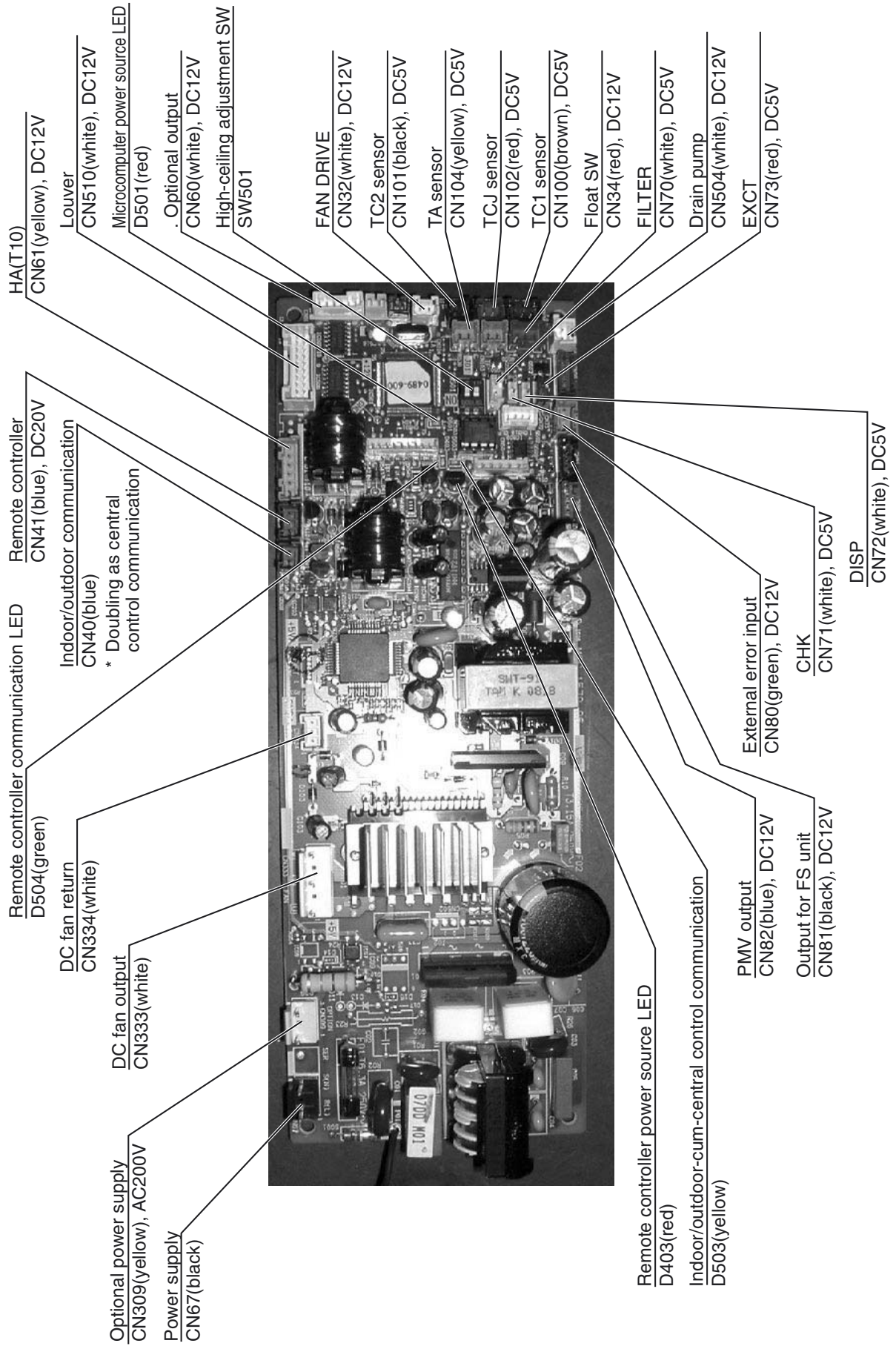
<Compact 4-way Cassette Type, 1-way Cassette (SH) Type, 2-way Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type, High Wall Type>



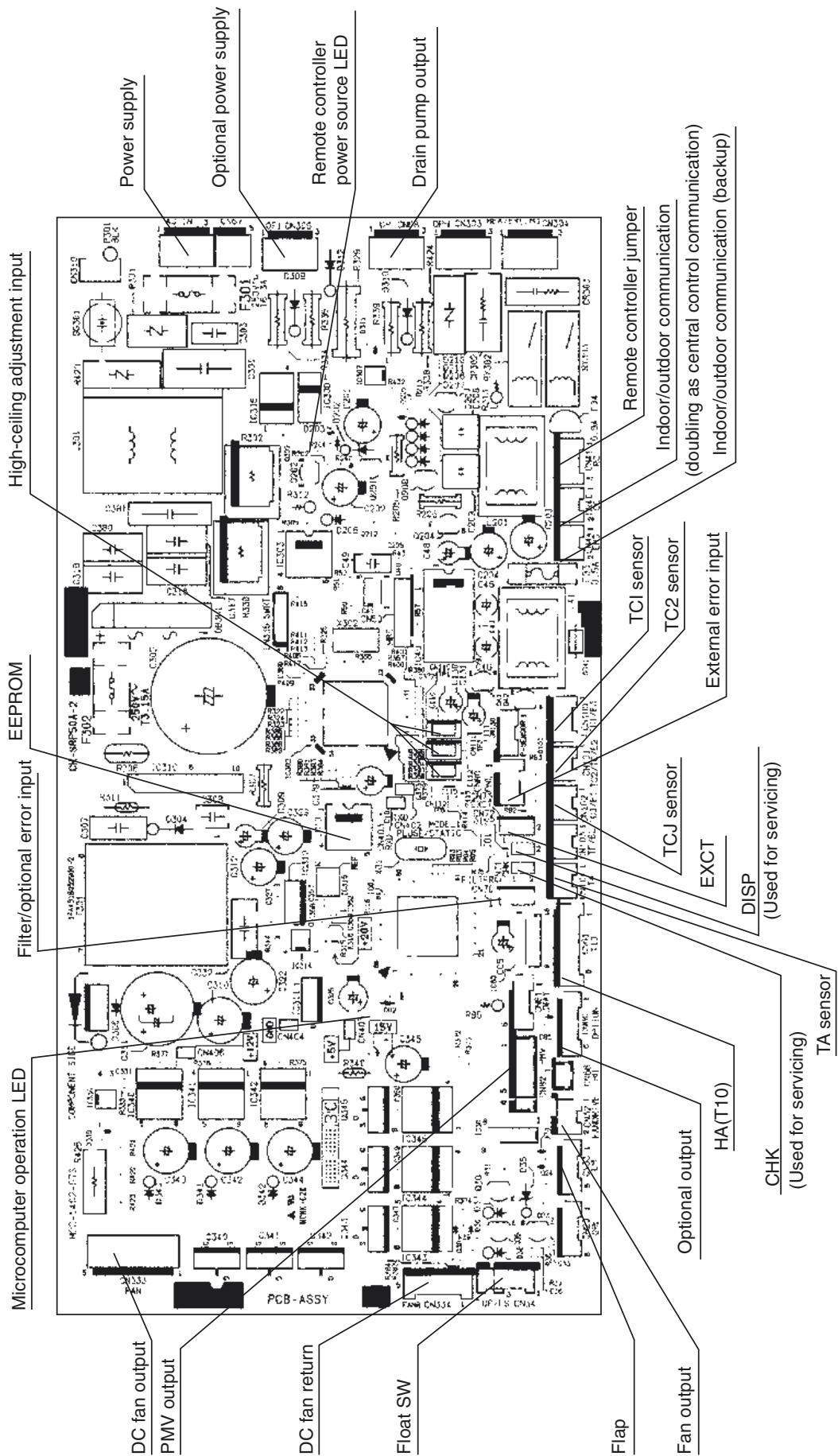
<1-way Cassette (YH) Type, Floor Standing Type, Concealed Duct High Static Pressure Type, Floor Standing Concealed Type, Floor Standing Cabinet Type>



**6-2. Indoor Printed Circuit Board**  
**MCC-1570 <4-way Cassette Type> (MMU-AP\*\*\*2H)**



**MCC-1402 <Compact 4-way Cassette Type, 1-way Cassette (SH) Type, 2-way Cassette Type, Ceiling Type, Concealed Duct Standard Type, Slim Duct Type, High Wall Type>**





### 6-3. Optional Connector Specifications of Indoor P.C. Board

Function	Connector No.	Pin No.	Specification	Remarks
Fan output	CN32	1	DC12V	Factory default setting: ON when indoor unit in operation and OFF when indoor unit at rest * Fan can be operated on its own by pushing F AN button on remote controller (DN = 31)
		2	Output	
HA	CN61	1	Start/stop input	Start/stop input for HA (J01: In place/Removed = Pulse input (factory default)/Step input)
		2	0V(COM)	
		3	Remote controller disabling input	
		4	In-operation output	
		5	DC12V(COM)	
		6	Alarm output	
Optional output	CN60	1	DC12V(COM)	ON while alarm ON
		2	Defrosting output	ON while outdoor unit defrosted
		3	Thermostat ON output	ON while real thermostat ON (compressor ON)
		4	Cooling output	ON while air conditioner in cooling or related operation (COOL, DRY or cooling under AUTO mode)
		5	Heating output	ON while air conditioner in heating operation (HEAT or heating under AUTO mode)
		6	Fan output	ON while indoor fan ON (air cleaner in use or via interlock wiring)
External error input	CN80	1	DC12V(COM)	Generates test code L30 and automatically shuts down air conditioner (only if condition persists for 1 minute)
		2	DC12V(COM)	
		3	External error input	
FILTER Optional error	CN70	1	"FILTER/optional/humidifier setting" input	Factory default setting to be humidifier (evaporative + drain pump OFF) Used for control of optional error input (display of action of protective device for equipment connected externally) * "Optional error input" setting to be performed via the remote controller (DN = 24)
		2	0V	
CHK Operation check	CN71	1	Check mode input	Used for indoor operation check (prescribed operational status output, such as indoor fan "H" or drain pump ON, to be generated without communication with outdoor unit or remote controller)
		2	0V	
DISP Display mode	CN72	1	Display mode input	Product display mode - Communication just between indoor unit and remote controller enabled (upon turning on of power) Timer short-circuited out (always)
		2	0V	
EXCT Demand	CN73	1	Demand input	Imposes thermostat OFF on indoor unit
		2	0V	

## 6-4. Test Operation of Indoor Unit

### Check function for operation of indoor unit (Functions at indoor unit side)

This function is provided to check the operation of the indoor unit singly without communication with the remote controller or the outdoor unit. This function can be used regardless of operation or stop of the system. However, if using this function for a long time, a trouble of the equipment may be caused. Limit using this function within several minutes.

#### [How to operate]

- 1) Short-circuit CHK pin (CN71 on the indoor P.C. board).  
The operation mode differs according to the indoor unit status in that time.  
Normal time: Both float SW and fan motor are normal.  
Abnormal time: Either one of float SW or fan motor is abnormal.
- 2) Restricted to the normal time, if short-circuiting DISP pin (CN72 on the indoor P.C. board) in addition to short-circuit of CHK pin (CN71 on the indoor P.C. board), the minimum opening degree (30pls) can be set to the indoor PMV only.  
When open DISP pin, the maximum opening degree (1500pls) can be obtained again.

#### [How to clear]

Open CHK pin. While the system is operating, it stops once but automatically returns to operation after several minutes.

	Short-circuit of CHK pin		
	Normal time		Abnormal time
	DISP pin open	DISP pin short circuit	
Fan motor	(H)	(H)	Stop
Indoor PMV (*)	Max. opening degree (1500pls)	Min. opening degree (30pls)	Min. opening degree (30pls)
Louver	Horizontal	Horizontal	Immediate stop
Drain pump	ON	ON	ON
Communication	All ignored	All ignored	All ignored
P.C. board LED	Lights	Lights	Flashes

- To exchange the indoor PMV coil, set the indoor PMV to Max. opening degree.
- For the detailed positions of CHK pin (CN71 on indoor P.C. board) and DISP pin (CN72 on indoor P.C. board), refer to 6-2. Indoor Printed Circuit Board.

## 6-5. Method to Set Indoor Unit Function DN Code

When performing this task, be sure to use RBC-AMS51E\* or RBC-AMT32E.  
For operation of RBC-AMS51E\*, refer to the attached manual.

<Procedure> To be performed only when system at rest

- 1 Push the  +  +  buttons simultaneously and hold for at least 4 seconds.

The unit No. displayed first is the address of the header indoor unit in group control.

Then the fan and louver of the selected indoor unit move.

- 2 Each time the “Select unit” side of the  button is pushed, one of the indoor unit Nos. under group control is displayed in turn. Then the fan and louver of the selected indoor unit move.

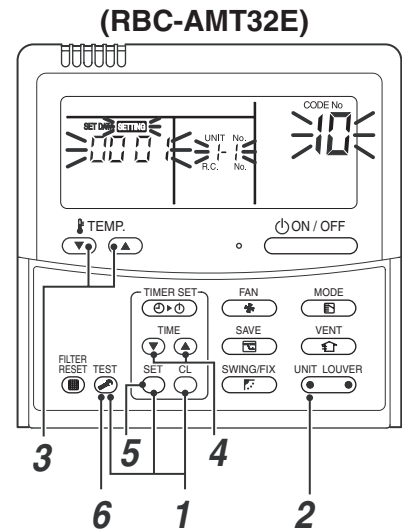
- 3 Use the  button to select the CODE No. (DN code) of the desired function.

- 4 Use the  button to select the desired SET DATA associated with the selected function.

- 5 Push the  button. (The display changes from flashing to steady.)

- To change the selected indoor unit, go back to step 2.
- To change the selected function, go back to step 3.

- 6 When the  button is pushed, the system returns to normal off state.



**Function CODE No. (DN Code) Table (Includes All Functions Needed to Perform Applied Control on Site)**

DN	Item	Description	At shipment
01	Filter display delay timer	0000: None 0001: 150H 0002: 2500H 0003: 5000H 0004: 10000H	According to type
02	Dirty state of filter	0000: Standard 0001: High degree of dirt (Half of standard time)	0000: Standard
03	Central control address	0001: No.1 unit to 0064: No.64 unit 0099: Unfixed	0099: Unfixed
04	Specific indoor unit priority	0000: No priority 0001: Priority	0000: No priority
06	Heating temp shift	0000: No shift to 0001: +1°C 0002: +2°C to 0010: +10°C (Up to +6 recommended)	0002: +2°C (Floor type 0000: 0°C)
0d	Existence of [AUTO] mode	0000: Provided 0001: Not provided (Automatic selection from connected outdoor unit)	0001: Not provided
0E	FS unit Connection set of multiple indoor units	0000: Standard (1 FS unit : 1 indoor unit) 0001: Multiple units connected ((1 FS unit : Multiple indoor units)	0000: Standard
0F	Cooling only	0000: Heat pump 0001: Cooling only (No display of [AUTO] [HEAT])	0000: Heat pump
10	Type	0001: 4-way Cassette	Depending on model type
11	Indoor unit capacity	0000: Unfixed 0001 to 0050	According to capacity type
12	Line address	0001: No.1 unit to 0030: No.30 unit	0099: Unfixed
13	Indoor unit address	0001: No.1 unit to 0048: No.48 unit	0099: Unfixed
14	Group address	0000: Individual 0001: Header unit of group 0002: Follower unit of group	0099: Unfixed
19	Group address	0000: No louver 0001: Swing only 0002: (1-way Cassette type, Ceiling type) 0003: (2-way Cassette type) 0004: (4-way Cassette type)	According to type
1E	Temp difference of [AUTO] mode selection COOL → HEAT, HEAT → COOL	0000: 0 deg to 0010: 10 deg (For setup temperature, reversal of COOL/HEAT by } (Data value)/2)	0003: 3 deg (Ts ±1.5)
28	Automatic restart of power failure	0000: None 0001: Restart	0000: None
2A	Selection of option/error input (CN70)	0000: Filter input 0001: Alarm input (Air washer, etc.) 0002: None	0002: None
2E	HA terminal (CN61) select	0000: Usual 0001: Leaving-ON prevention control 0002: Fire alarm input	0000: Usual (HA terminal)
31	Ventilating fan control	0000: Unavailable 0001: Available	0000: Unavailable
32	TA sensor selection	0000: Body TA sensor 0001: Remote controller sensor	0000: Body TA sensor
33	Temperature unit select	0000: °C (at factory shipment) 0001: °F	0000: °C
F0	Swing mode	0001: Standard 0002: Dual swing 0003: Cycle swing	0001: Standard
F1	Louver fixed position (Louver No.1)	0000: Release 0001: Horizontal discharge position 0005: Downward discharge position	0000: Not fixed
F2	Louver fixed position (Louver No.2)	0000: Release 0001: Horizontal discharge position 0005: Downward discharge position	0000: Not fixed
F3	Louver fixed position (Louver No.3)	0000: Release 0001: Horizontal discharge position 0005: Downward discharge position	0000: Not fixed
F4	Louver fixed position (Louver No.4)	0000: Release 0001: Horizontal discharge position 0005: Downward discharge position	0000: Not fixed

DN	Item	Description	At shipment				
5d	High-ceiling adjustment (Air flow selection)	1-way cassette (SH)	0000: Standard				
		Value		Type	AP015, AP018	AP024	
		0000		Standard (factory default)	3.5 m or less	3.8 m or less	
		0001		High-ceiling (1)	4.0 m or less	4.0 m or less	
		0003		High-ceiling (3)	4.2 m or less	4.2 m or less	
		2-way cassette					
		Value		Type	AP007~AP030	AP036~AP056	
		0000		Standard (factory default)	2.7 m or less	2.7 m or less	
		0001		High-ceiling (1)	3.2 m or less (*)	3.0 m or less	
		0003		High-ceiling (3)	3.8 m or less (*)	3.5 m or less	
		* The high-ceiling installation of model AP007 to AP012 can only be undertaken when the combined capacity of the indoor units connected is 100% or less than the capacity of the outdoor unit. Do not proceed with high-ceiling installation if this limit is exceeded.					
		4-way cassette					
		Value		Type	AP009~AP012	AP015~AP018	
				Air flow at outlet	4 directions	3 directions	2 directions
0000	Standard (factory default)	2.7 m	2.8 m	3.0 m	2.8 m	3.2 m	3.5 m
0001	High-ceiling (1)	—	—	—	3.2 m	3.5 m	3.8 m
0003	High-ceiling (3)	—	—	—	3.5 m	3.8 m	—
Value	Type	AP024~AP030	AP036~AP056				
	Air flow at outlet	4 directions	3 directions	2 directions	4 directions	3 directions	2 directions
0000	Standard (factory default)	3.0 m	3.3 m	3.6 m	3.0 m	3.3 m	3.6 m
0001	High-ceiling (1)	3.3 m	3.5 m	3.8 m	3.3 m	3.5 m	3.8 m
0003	High-ceiling (3)	3.6 m	3.8 m	—	3.6 m	3.8 m	—
Ceiling							
Value	Type	AP015~AP056					
0000	Standard (factory default)	3.5 m or less					
0001	High-ceiling (1)	4.0 m or less					
	Built-in filter	2-way cassette 0000: Standard filter (factory default) 0001: Super long-life filter 4-way cassette 0000: Standard filter (factory default) Ceiling 0000: Standard filter (factory default) Concealed duct standard 0000: Standard filter (factory default) 0001: High-performance filter (65%, 90%)					
	Static pressure selection	Concealed duct standard 0000: Standard (factory default) 0001: High static pressure 1 0003: High static pressure 2 0006: Low static pressure	Slim Duct (AP007~AP018) 0000: Standard (factory default) 0001: High static pressure 1 0003: High static pressure 2 0006: High static pressure 3				
60	Timer setting (wired remote controller)	0000: Available (can be performed)	0001: Unavailable (cannot be performed)	0000: Available			

## Codes (DN codes) for changing settings (Necessary for local advanced control)

DN	Item	Description		At shipment
40	Humidifier type setting	0000: No humidifier	0001: Humidifier	Depends on the type
47	Ventilation fan speed during nighttime heat purge operation	0000: Always LOW	0001: Operate at ventilation fan speed set last time the operation was stopped	0000: Always LOW
48	Unbalanced fan speed ventilation	0000: Invalid 0002: SA < EA	0001: SA > EA	0000: Invalid
4C	Nighttime heat purge setting	0000: Invalid 0001: Start in 1 hour	to 0048: Start in 48 hours	0000: Invalid
4E	Linkage with external devices	0000: ON / OFF linked 0002: OFF linked	0001: ON linked	0000: ON / OFF linked
5C	Damper output	0000: Normal	0001: Nighttime heat purge compatible	0000: Normal
60	Timer setting (Wired remote controller)	0000: Possible	0001: Not possible	0000: Possible
BB	Humidity judgment by outdoor temperature	0000: Not judged	0001: Judged	0000: Not judged
BD	Continuous humidifying time	0001: 1 hour	to 0020: 20 hours	0006: 6 hours
BE	Delay after drainage	0015: 15 minutes	to 0030: 30 minutes	0015: 15 minutes
C9	Air to Air intake temperature correction (Cool)	0000: No shift 0002: -1.0°C	to 0001: -0.5°C 0007: -3.5°C	0004: -2.0°C
CA	Air to Air intake temperature correction (Heat)	0000: No shift 0002: 1.0°C	to 0001: 0.5°C 0007: 3.5°C	0005: 2.5°C
D0	Power saving mode	0000: Invalid	0001: Valid	0001: Valid
EA	Current ventilation mode	0002: Heat exchange mode	0003: Automatic mode	0002: Heat exchange mode
EB	Current ventilation fan speed	0002: High 0004: Unbalanced	0003: Low	0002: High
ED	Operation output	0000: Normal operation only 0002: Nighttime heat purge only 0004: Exhausting fan linked	0001: Normal + Nighttime heat purge 0003: Supplying fan linked	0000: Normal operation only
EE	Abnormal signal / Bypass mode signal switch	0000: Abnormal signal output	0001: Bypass signal output	0000: Abnormal signal output

**Type**  
**DN code “10”**

Value	Type	Model
0000	1-way Cassette MMU-AP	MMU-AP***SH
0001* <sup>1</sup>	4-way Cassette MMU-AP	MMU-AP***H
0002	2-way Cassette MMU-AP	MMU-AP***WH
0003	1-way Cassette (Compact)	MMU-AP***YH
0004	Concealed Duct Standard MMD-AP	MMD-AP***BH
0005	Slim Duct MMD-AP	MMD-AP***SPH (SH)
0006	Concealed Duct High Static Pressure	MMD-AP***H
0007	Ceiling	MMC-AP***H
0008	High Wall MMK-AP	MMK-AP***H
0010	Floor Standing Cabinet MML-AP	MML-AP***H
0011	Floor Standing Concealed MML-AP	MML-AP***BH
0013	Floor Standing MMF-AP	MMF-AP***H
	Compact 4-way Cassette	MMU-AP***MH
0050	Air to Air Heat Exchanger with DX coil Unit	MMD-VN***HEX*

\*1 Default value stored in EEPROM mounted on service P.C. board

**Indoor Unit Capacity**  
**DN code “11”**

Value	Capacity
0000*	Invalid
0001	007 type
0003	009 type
0005	012 type
0007	015 type
0009	018 type
0011	024 type
0012	027 type
0013	030 type
0015	036 type
0017	048 type
0018	056 type
0021	072 type
0023	096 type
~	—

\*1 Default value stored in EEPROM mounted on service P.C. board

## 6-6. Applied Control of Indoor Unit

### 6-6-1. Control system using remote control interface (TCB-IFCB4E2)

#### Wiring and setting

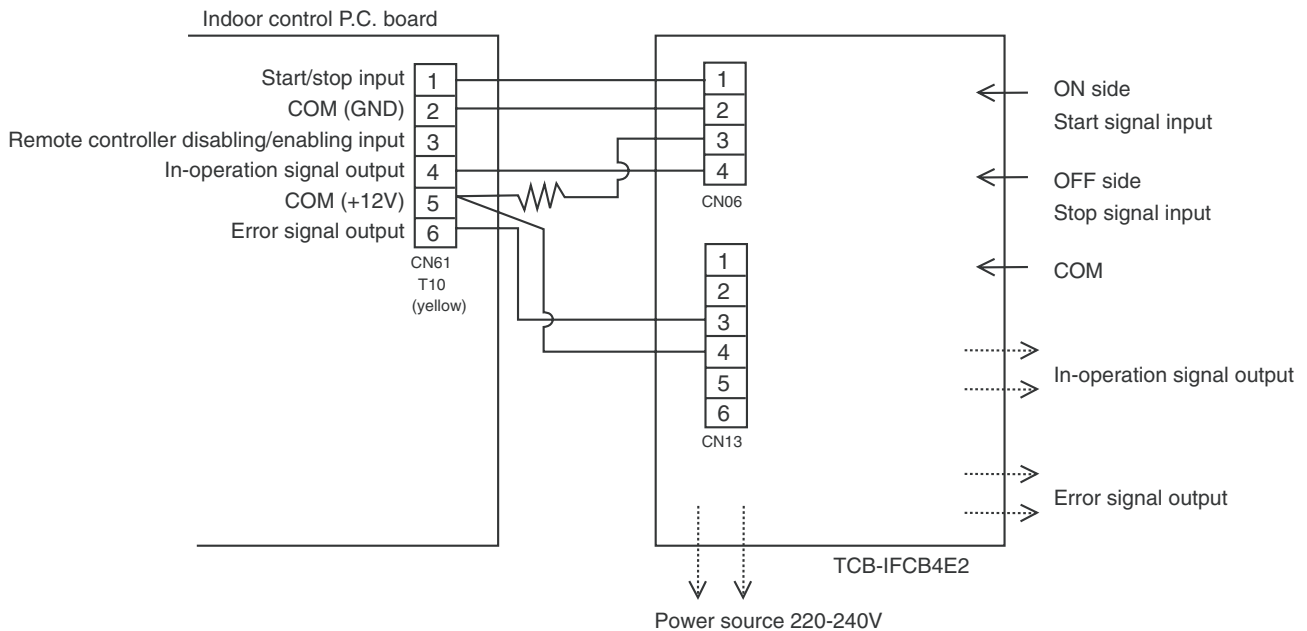
- In the case of group control, the control system functions as long as it is connected to one of the indoor units (control P.C. board) in the group. If it is desired to access the operation and error statuses of other units, relevant signals must be brought to it from those units individually.

#### Control items

- |                             |                                                                                                                                        |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| (1) Start/Stop input signal | Start/stop of unit                                                                                                                     |
| (2) In-operation signal     | Output present while unit in normal operation                                                                                          |
| (3) Error signal            | Output present while alarm (e.g. serial communication error or operation of protective device for indoor/outdoor unit) being activated |

#### Wiring diagram of control system using remote control interface (TCB-IFCB4E2)

Input IFCB4E2: No-voltage ON/OFF serial signal  
 Output No-voltage contact (in-operation and error indication)  
 Contact capacity: Max. AC 240V, 0.5A



## 6-6-2. Ventilating fan control from remote controller

### [Function]

- The start/stop operation can be operated from the wired remote controller when air to air heat exchanger or ventilating fan is installed in the system.
- The fan can be operated even if the indoor unit is not operating.
- Use a fan which can receive the no-voltage A contact as an outside input signal.
- In a group control, the units are collectively operated and they can not be individually operated.

### 1. Operation

Handle a wired remote controller in the following procedure.

- \* Use the wired remote controller during stop of the system.
- \* Be sure to set up the wired remote controller to the header unit. (Same in group control)
- \* In a group control, if the wired remote controller is set up to the header unit, both header and follower units are simultaneously operable.

### 1 Push concurrently + + buttons for 4 seconds or more.

The unit No. displayed firstly indicates the header indoor unit address in the group control. In this time, the fan of the selected indoor unit turns on.

### 2 Every pushing button, the indoor unit numbers in group control are displayed successively.

In this time, the fan of the selected indoor unit only turns on.

### 3 Using the setup temp or button, specify the CODE No. 31.

### 4 Using the timer time or button, select the SET DATA. (At shipment: 0000)

The setup data are as follows:

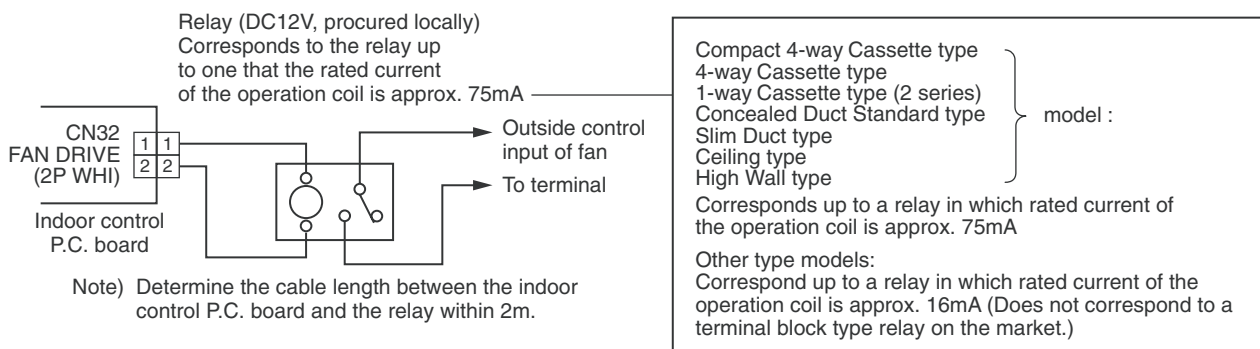
SET DATA	Handling of operation of air to air heat exchanger or ventilating fan
0000	Unavailable (At shipment)
0001	Available

### 5 Push button. (OK if display goes on.)

- To change the selected indoor unit, go to the procedure 2).
- To change the item to be set up, go to the procedure 3).

### 6 Pushing returns the status to the usual stop status.

## 2. Wiring



### 6-6-3. Leaving-ON prevention control

#### [Function]

- This function controls the indoor units individually. It is connected with cable to the control P.C. board of the indoor unit.
- In a group control, it is connected with cable to the indoor unit (Control P.C. board), and the CODE No. 2E is set to the connected indoor unit.
- It is used when the start operation from outside is unnecessary but the stop operation is necessary.
- Using a card switch box, card lock, etc, the forgotten-OFF of the indoor unit can be protected.
- When inserting a card, start/stop operation from the remote controller is allowed.
- When taking out a card, the system stops if the indoor unit is operating and start/stop operation from the remote controller is forbidden.

#### 1. Control items

- 1) Outside contact ON: The start/stop operation from the remote controller is allowed.  
(Status that card is inserted in the card switch box)
  - 2) Outside contact OFF: If the indoor unit is operating, it is stopped forcibly.  
(Start/Stop prohibited to remote controller)  
(Status that card is taken out from the card switch box)
- \* When the card switch box does not perform the above contact operation, convert it using a relay with b contact.

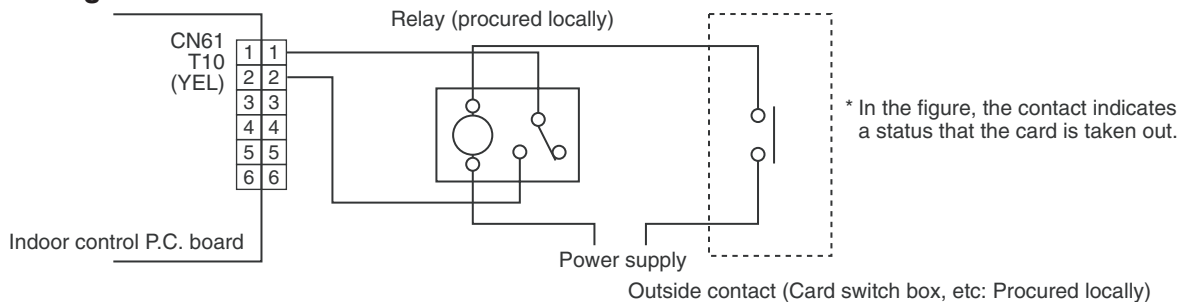
#### 2. Operation

Handle the wired remote controller switch in the following procedure.

- \* Use the wired remote controller switch during stop of the system.

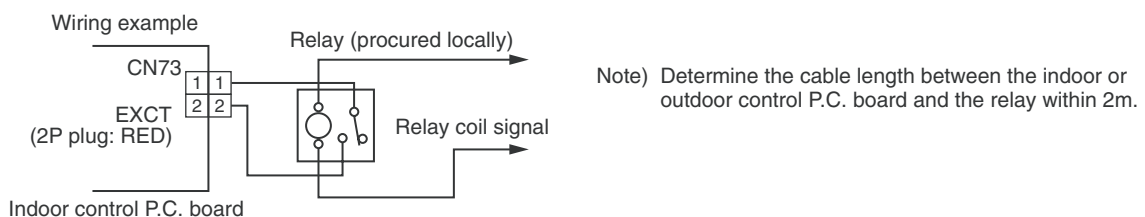
- 1 Push concurrently  $\text{○}^{\text{SET}}$  +  $\text{○}^{\text{CL}}$  +  $\text{⊗}^{\text{TEST}}$  buttons for 4 seconds or more.**
- 2 Using the setup temp  $\text{▼}$  or  $\text{▲}$  button, specify the CODE No. 2E.**
- 3 Using the timer time  $\text{▼}$  or  $\text{▲}$  button, set 000 to the SET DATA.**
- 4 Push  $\text{○}^{\text{SET}}$  button.**
- 5 Push  $\text{⊗}^{\text{TEST}}$  button. (The status returns to the usual stop status.)**

#### 3. Wiring



### 6-6-4. Power peak-cut from indoor unit

When the relay is turned on, a forced thermostat-OFF operation starts.



## 6-7. Applied control for Outdoor Unit

The outdoor fan high static pressure support and priority operation mode setting (cooling / heating / number of units / or priority indoor unit) functions are made available by setting relevant switches provided on the interface P.C. board of the outdoor unit.

### 6-7-1. Outdoor Fan High Static Pressure Shift

#### Purpose/characteristics

This function is used when connecting a duct to the discharge port of an outdoor unit (as part of, for example, unit installation on the floor by floor installation.)

#### Setup

Turn ON the DIP switch [SW10, Bit 2] provided on the interface P.C. board of the outdoor unit.

This function must be enabled with every discharge duct connected outdoor unit for both of the header and follower units.

#### Specification

Increase the speed of the propeller fan units on the outdoor fan to allow the installation of a duct with a maximum external static pressure not greater than specified in the table below. If a discharge duct with a resistance greater than 15 Pa (1.5 mmAq) is to be used, enable this function. The maximum external static pressures of base units are shown below (Table 1). In the case of combined use of multiple outdoor units, set all the units to the same maximum external static pressure as the one with the lowest maximum external static pressure (see table2).

Table 1: Maximum External Static Pressures of Base Outdoor Units

Model	MMY-	MAP0804*	MAP1004*	MAP1204*	MAP1404*
Maximum external static pressure	(Pa)	50	40	40	40
(*) Outdoor unit air flow	(m <sup>3</sup> /h)	8700	9420	12000	12960

(\*) Calculate duct resistance from outdoor unit air flow.

Table 2: Maximum External Static Pressures for Combined Use of Base Units

(1) Standard models

Combined horsepower output	Model MMY	Combination of outdoor units			Maximum external static pressure (Pa)
		Unit 1	Unit 2	Unit 3	
8	MAP0804*	MAP0804*			50
10	MAP1004*	MAP1004*			40
12	MAP1204*	MAP1204*			40
14	MAP1404*	MAP1404*			40
16	AP1614*	MAP0804*	MAP0804*		50
18	AP1814*	MAP1004*	MAP0804*		40
20	AP2014*	MAP1004*	MAP1004*		40
22	AP2214*	MAP1204*	MAP1004*		40
24	AP2414*	MAP1404*	MAP1004*		40
26	AP2614*	MAP1404*	MAP1204*		40
28	AP2814*	MAP1404*	MAP1404*		40
30	AP3014*	MAP1004*	MAP1004*	MAP1004*	40
32	AP3214*	MAP1204*	MAP1004*	MAP1004*	40
34	AP3414*	MAP1404*	MAP1004*	MAP1004*	40
36	AP3614*	MAP1204*	MAP1204*	MAP1204*	40
38	AP3814*	MAP1404*	MAP1204*	MAP1204*	40
40	AP4014*	MAP1404*	MAP1404*	MAP1204*	40
42	AP4214*	MAP1404*	MAP1404*	MAP1404*	40

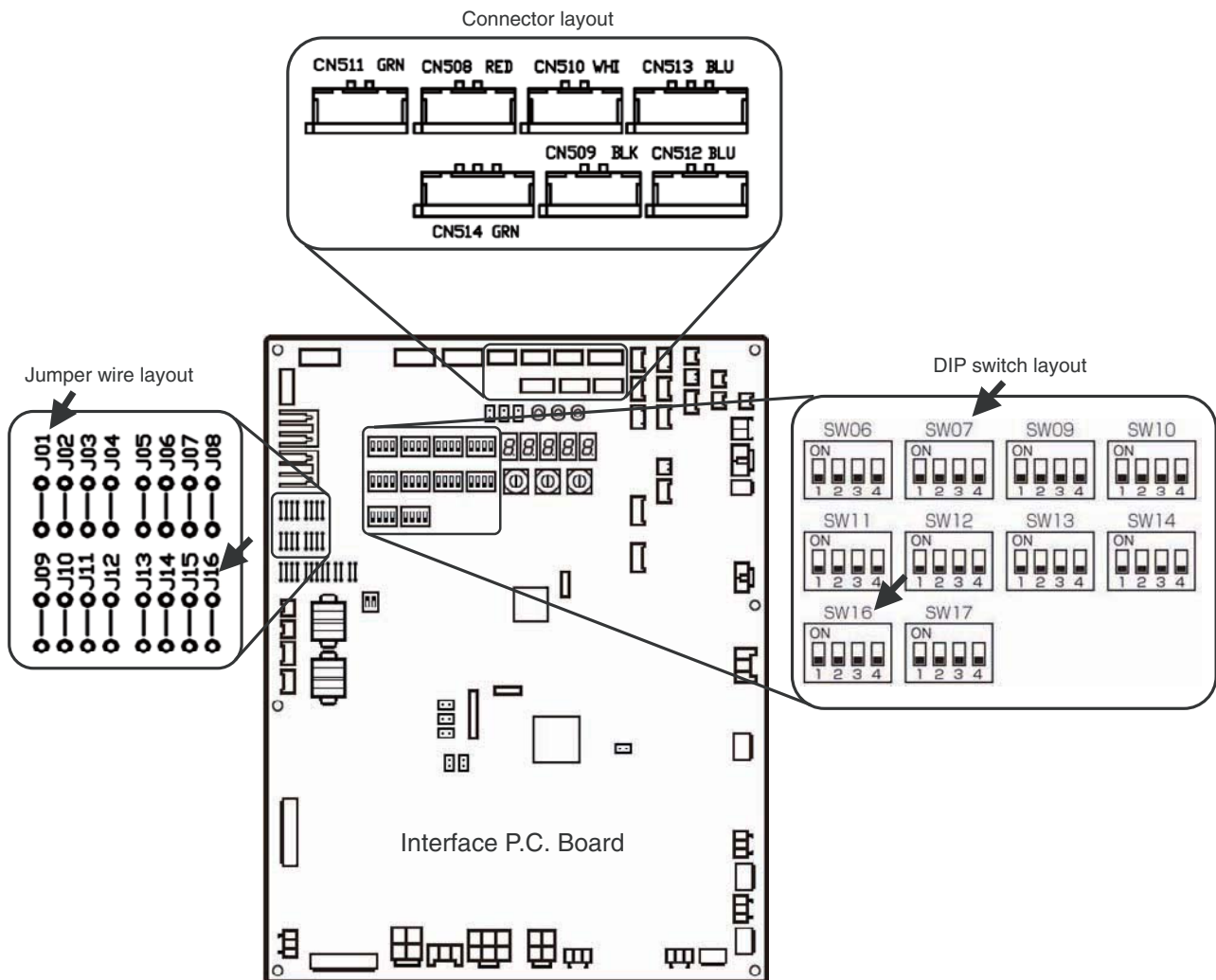
## 6-8. Applied Control Using Optional Board for Outdoor Unit

Optional control P.C. boards provide access to a range of functions as listed below.

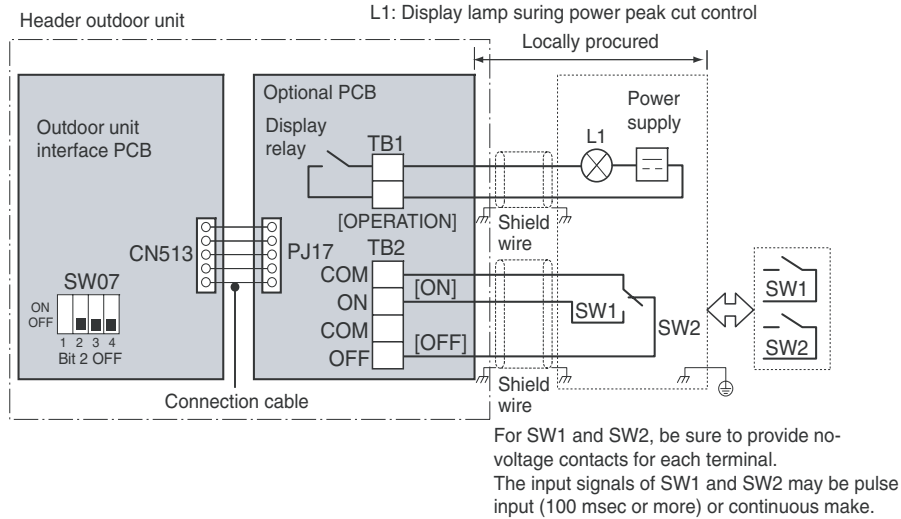
No.	Function	Outdoor unit for control P.C. board connection	Control P.C. board to be used			Outdoor unit interface P.C. board setting*			
			PCDM4E	PCMO4E	PCIN4E	Connector No.	DIP SW No.	Bit	Jumper to be removed
1	Power peak-cut Control (Standard)	Header unit	√	–	–	CN513(blue)	SW07	1	–
	Power peak-cut Control (For one input function)	Header unit	√	–	–	CN513(blue)	SW07	1	J16
2	Power peak-cut Control (Enhanced Functions)	Header unit	√	–	–	CN513(blue)	SW07	1.2	–
3	Snowfall Fan Control	Header unit	–	√	–	CN509(black)	–	–	–
4	External master ON/OFF Control	Header unit	–	√	–	CN512(blue)	–	–	–
5	Night operation (sound reduction) Control	Header unit	–	√	–	CN508(red)	–	–	–
6	Operation Mode Selection Control	Header unit	–	√	–	CN510(white)	–	–	–
	Operation Mode Selection Control (forced choice)	Header unit	–	√	–	CN510(white)	–	–	J01
7	Error/Operation output	Header unit	–	–	√	CN511(green)	–	–	–
8	Compressor Operation Output	Individual outdoor unit	–	–	√	CN514(green)	–	–	–
9	Operating Rate Output	Header unit	–	–	√	CN514(green)	SW16	1	–

### Layout of Outdoor Unit Interface P.C. Board

\* DIP switch settings and jumper wire statuses vary from function to function.



### 6-8-1. Power peak-cut Control (Standard): TCB-PCDM4E



#### Operation

An external power peak-cut control signal limits the peak capacity of the outdoor unit.

L1: Power peak-cut control indication lamp

SW1: Power peak-cut control ON switch (ON as long as target power peak-cut control has been reached or exceeded, normally OFF)\*1

SW2: Power peak-cut control OFF switch (OFF as long as target power peak-cut control has not been reached or exceeded, normally ON)\*1

\*1 The inputs of SW1 and SW2 can be either pulse (100 msec or wider) or step signals.

Do not turn on SW1 and SW2 simultaneously.

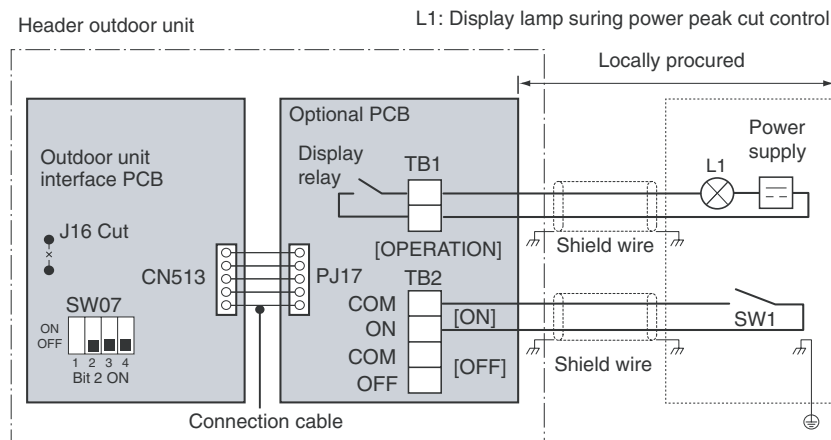
\* Be sure to provide a contact for each terminal.

#### Power peak-cut control settings

Power peak-cut control P.C. board	SW1	SW2	L1	Interface P.C. board of header outdoor unit	
				SW07 Bit 1 OFF	SW07 Bit 1 ON
Power peak-cut control ON signal received	ON	OFF	ON	0% (forced stop)	60% capacity (upper limit regulated)
Power peak-cut control OFF signal received	OFF	ON	OFF	100% (normal operation)	100% (normal operation)

#### Two-core cable support <only available with SHRS-i and SMMS-i (4 series)>

SMMS-i series allows ON/OFF power peak-cut control to be implemented using a power peak-cut control ON input (SW1) alone, provided that the J16 jumper wire on the interface P.C. board of the header outdoor unit has been removed.



**<SW07 Bit 2 OFF (two-step control)>**

Power peak-cut control is enabled as long as SW1, as shown on the wiring diagram, is ON (continuously).

Jumper wire J16	Input SW1	SW07 Bit 1		Indicator relay (L1)
		Bit 1 OFF	Bit 1 ON	
Cut	OFF	100% (normal operation)	100% (normal operation)	OFF
	ON	0% (forced stop)	Approx. 60% (upper limit regulated)	ON

Note 1: Specifications of display relay contact

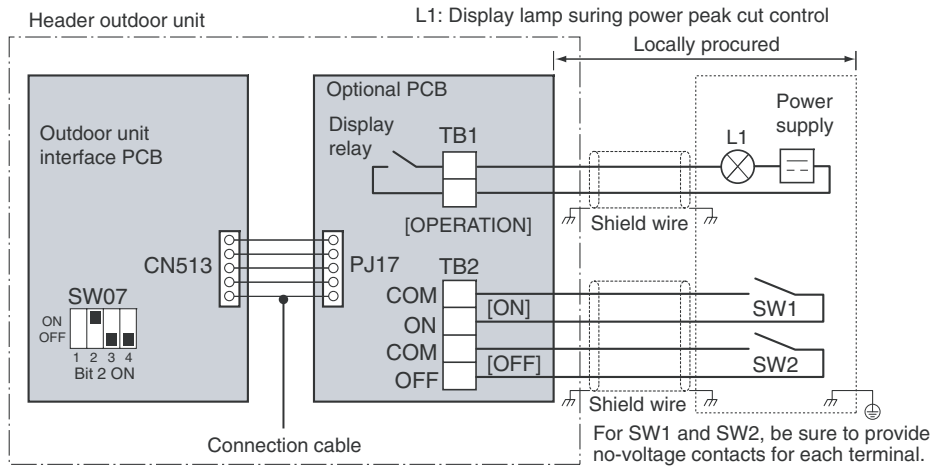
- The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.

**<Electrical Rating>**

220 to 240 VAC, 10 mA or more, 1 A or less  
 24 VAC, 10 mA or more, 1 A or less (non-conductive load)

When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit. The optional P.C. board should be connected to the header outdoor unit (U1).

**6-8-2. Power peak-cut Control (Extended) : TCB-PCDM4E**



**Operation**

An external power peak-cut control signal limits the peak capacity of the outdoor unit.

L1: Power peak-cut control indication lamp

SW1: Power peak-cut control ON switch\*1

SW2: Power peak-cut control OFF switch\*1

\*1 The inputs of SW1 and SW2 can be either pulse (100 msec or wider) or step signals.

\* Be sure to provide a contact for each terminal.

**Extended power peak-cut control settings**

Specifications of display relay contact

External power peak-cut control signals		Peak capacity		Indication lamp
		I/F SW07 Bit 1		
SW1	SW2	OFF	ON	L1
OFF	OFF	100% (normal operation)	100% (normal operation)	OFF
ON	OFF	80% (upper limit regulated)	85% (upper limit regulated)	ON
OFF	ON	60% (upper limit regulated)	75% (upper limit regulated)	ON
ON	ON	0% (forced stop)	60% (upper limit regulated)	ON

Note 1: Specifications of display relay contact

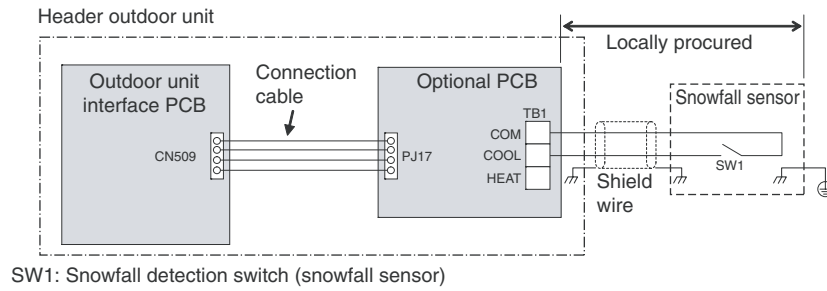
- The terminal for display output ([Operation] terminal) must satisfy the following electrical rating.

**<Electrical Rating>**

220 to 240 VAC, 10 mA or more, 1 A or less  
 24 VAC, 10 mA or more, 1 A or less (non-conductive load)

When connecting a conductive load (e.g. relay coil) to the display relay load, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit. The optional P.C. board should be connected to the header outdoor unit (U1).

### 6-8-3. Snowfall Fan Control : TCB-PCMO4E



#### Operation

An external snowfall signal turns on the outdoor unit fan.

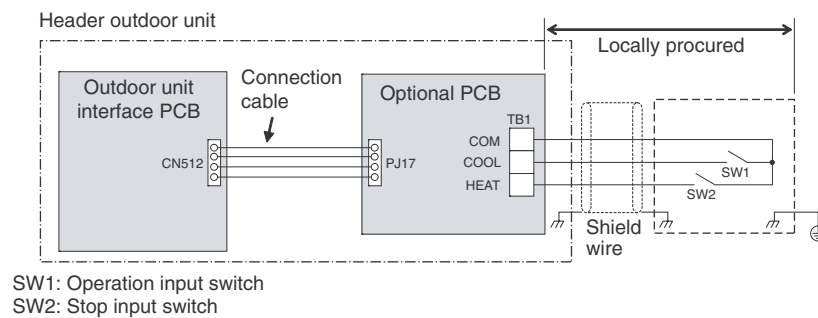
Terminal	Input signal	Operation
COOL (SW1)	ON	Snowfall fan control (Turns on outdoor unit fan)
	OFF	
	ON	Normal operation (Cancels control)
	OFF	

The input signal is recognized during its rising/falling phase.

(After reaching the top/bottom of the rising/falling edge, the signal must remain there for at least 100 ms.)

The optional P.C. board should be connected to the header outdoor unit (U1).

### 6-8-4. External master ON/OFF Control : TCB-PCMO4E



#### Operation

The system is started/stopped from the outdoor unit.

Terminal	Input signal	Operation
COOL (SW1)	ON	Turns on all indoor units
	OFF	
HEAT (SW2)	ON	Turns off all indoor units
	OFF	

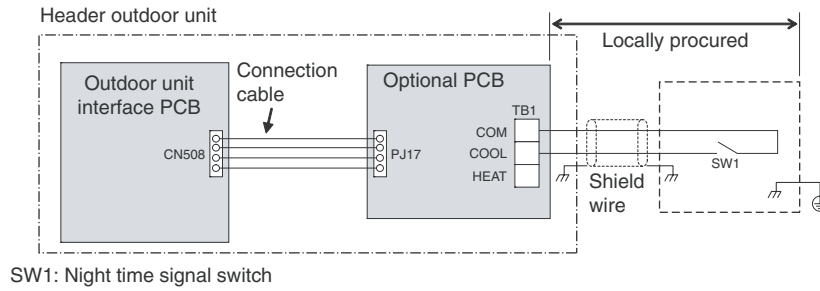
The input signal is recognized during its falling phase. (After reaching the bottom of the falling edge, the signal must remain there for at least 100 ms.)

#### **! CAUTION**

- (1) Do not turn on the COOL (SW1) and HEAT (SW2) terminals simultaneously.
  - (2) Be sure to provide a contact for each terminal.
- External signal: No-voltage pulse contact

The optional P.C. board should be connected to the header outdoor unit (U1).

### 6-8-5. Night operation (sound reduction) Control : TCB-PCMO4E



#### Operation

This function decreases noise at night or other times as necessary.

Terminal	Input signal	Operation
COOL (SW1)	ON	Night time control
	OFF	
	ON	Normal operation
	OFF	

The input signal is recognized during its rising/falling phase.  
 (After reaching the top/bottom of the rising/falling edge, the signal must remain there for at least 100 ms.)  
 The optional P.C. board should be connected to the header outdoor unit (U1).

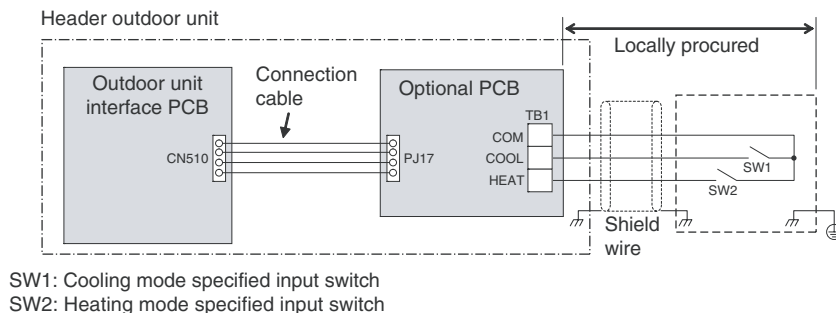
The system's capacity is reduced during low-noise operation.  
 The table below provides a rough guide to this capacity reduction.

Outdoor unit (base unit)	During low-noise mode* dB(A)	Capacity	
		Cooling	Heating
Model 0804	50	approx. 85%	approx. 80%
Model 1004	50	approx. 70%	approx. 65%
Model 1204	50	approx. 60%	approx. 55%
Model 1404	53	approx. 80%	approx. 80%

Relative to maximum capacity

\* Position of noise measuring device: 1 m from the front face of the set and 1.5 m above ground (Measured in anechoic room)

## 6-8-6. Operation Mode Selection Control : TCB-PCMO4E



### NOTE

SW1: COOL mode selection switch  
SW2: HEAT mode selection switch

Input signal		Operation	Remarks
COOL (SW1)	HEAT (SW2)		
ON	OFF	Only cooling operation allowed	*
OFF	ON	Only heating operation allowed	*
OFF	OFF	Normal operation	

\* The display “ (Operation mode selection control in progress)” appears on the remote controller

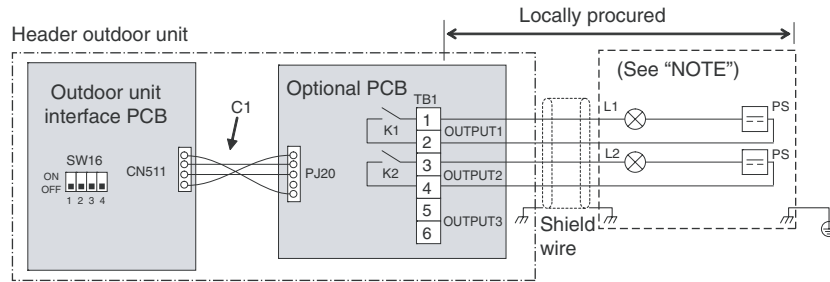
### Indoor unit operation intervention function [only supported by SHRM-i and SMMS-i (4 series)]

The statuses of indoor units operating in a mode different from the selected operation mode can be changed by changing the status of a jumper wire (J01) provided on the interface P.C. board of the header outdoor unit.

Jumper wire	Description of intervention		
J01 connected (factory default)	All indoor units operating in a mode different from the selected operation mode (prohibited-mode indoor units) become non-priority units (thermostat OFF). Prohibited-mode indoor units		
	Operation mode	Operation status	Remote controller display
	COOL	Fan operation at air flow rate set via remote controller	“” operation ready
	HEAT	Fan operation at extremely low air flow rate	
FAN	Fan operation at air flow rate set via remote controller as normal		
J01 cut	The selected operation mode is imposed on all indoor units operating in a different mode.		
	Mode selected at P.C. board	Remote controller operation / display	
	Normal	All modes (COOL, DRY, HEAT and FAN) available	“” operation mode control” (turned on during remote controller operation)
	COOL	Only COOL, DRY and FAN available	
HEAT	Only HEAT and FAN available		

The optional P.C. board should be connected to the header outdoor unit (U1).

## 6-8-7. Error/Operation Output : TCB-PCIN4E



### Operation

In-operation output: An in-operation indication signal is output as long as at least one indoor unit is in operation in the line.

Error output: An error indication signal is output if an error occurs in at least one indoor/outdoor unit in the line.

#### Note 1: Output Relay (K1, K2, K3) Contact Specifications

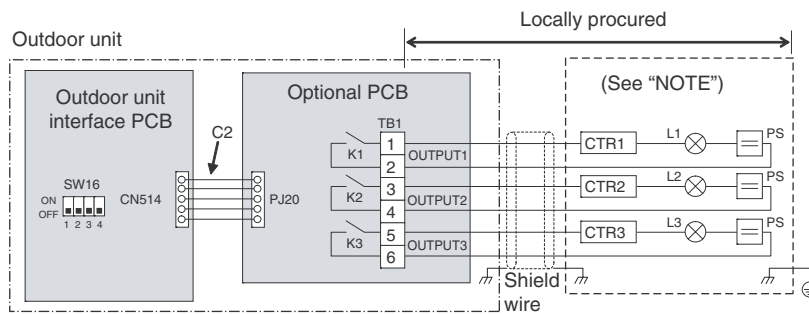
- Output terminals (OUTPUT1, 2, 3) must satisfy the following electrical rating.
- When connecting a conductive load (e.g. relay coil) to loads K1, K2 and K3, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

<Electrical Rating>  
 220-240 VAC, 10 mA or more, 1A or less  
 24 VAC, 10 mA or more, 1 A or less (non-conductive load)

C1	Connector cable 1 (CN511)
CN511	Connector on Interface side (green)
K1,K2	Relays
L1	Error indication Lamp
L2	Operation indication Lamp
OUTPUT1	Error output
OUTPUT2	Operation output
PJ20	Connector on optional PCB side
TB1	Terminal block

The optional P.C. board should be connected to the header outdoor unit (U1).

**6-8-8. Compressor Operation Output : TCB-PCIN4E**  
**[Only supported by SHRM-i and SMMS-i (4 series)]**



**Operation**

When a compressor is in operation, a relay connected to the output terminal assigned to it is turned on (closed).

When it is at rest, the relay is turned off (open).

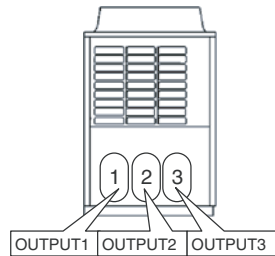
The output terminals are named OUTPUT1, OUTPUT2 and OUTPUT3 from left to right when facing the front of the outdoor unit, as shown in the diagram.

**Note 1: Output Relay (K1, K2, K3) Contact Specifications**

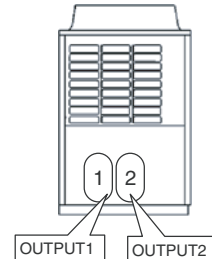
- Output terminals (OUTPUT1, 2, 3) must satisfy the following electrical rating.
- When connecting a conductive load (e.g. relay coil) to loads K1, K2 and K3, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

<b>&lt;Electrical Rating&gt;</b>	
220-240 VAC, 10 mA or more, 1A or less	
24 VAC, 10 mA or more, 1 A or less (non-conductive load)	

Model featuring three compressors

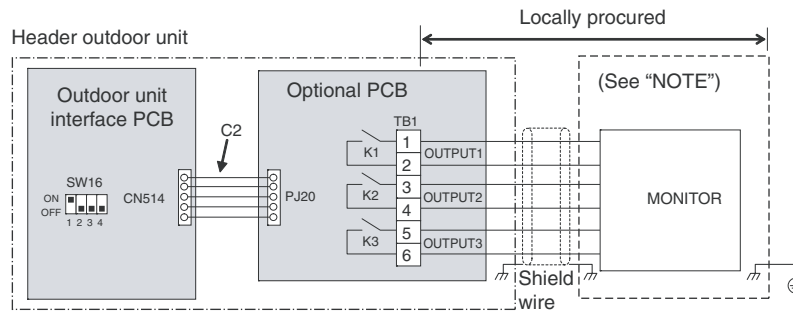


Model featuring two compressors



C2	Connection cable 2 (CN514)
CN514	Interface-side connector (green)
CTR1	Elapsed operation counter 1
CTR2	Elapsed operation counter 2
CTR3	Elapsed operation counter 3
K1,K2,K3	Relay
L1,L2,L3	Operation indication lamp
OUTPUT1	Compressor 1 in-operation output terminal
OUTPUT2	Compressor 2 in-operation output terminal
OUTPUT3	Compressor 3 in-operation output terminal
PJ20	Optional P.C. board-side connector
PS	Power supply unit
TB1	Terminal block

### 6-8-9. Operating Rate Output : TCB-PCIN4E [Only supported by SMMS-i (4 series)]



#### Operation

At the output terminals, a signal is present (relay closed) or absent (relay open) in various combinations according to the system operation factor, as shown in the diagram.

(The operation rate (FA) is the percentage ratio of the current output of the system to the maximum output (100%).)

Function	SW16	OUTPUT1	OUTPUT2	OUTPUT3	Operation factor (FA)
System operation rate output	 Bit 1: ON Bit 2: OFF	off	off	off	FA=0%
		on	off	off	0%<FA<20%
		off	on	off	20%≤FA<35%
		on	on	off	35%≤FA<50%
		off	off	on	50%≤FA<65%
		on	off	on	65%≤FA<80%
		off	on	on	80%≤FA<95%
		on	on	on	95%≤FA

off = Relay open  
on = Relay closed

C2	Connection cable 2 (CN514)
CN514	Interface-side connector (green)
MONITOR	Monitoring device
OUTPUT1	Output terminal for each function
OUTPUT2	Output terminal for each function
OUTPUT3	Output terminal for each function
PJ20	Connector on optional PCB side
TB1	Terminal block

\* Connect the optional P.C. board to the header outdoor unit.

#### Note 1: Output Relay (K1, K2, K3) Contact Specifications

- Output terminals (OUTPUT1, 2, 3) must satisfy the following electrical rating.
- When connecting a conductive load (e.g. relay coil) to loads K1, K2 and K3, insert a surge killer CR (for an AC power supply) or a diode for preventing back electromotive force (for a DC power supply) on the bypass circuit.

#### <Electrical Rating>

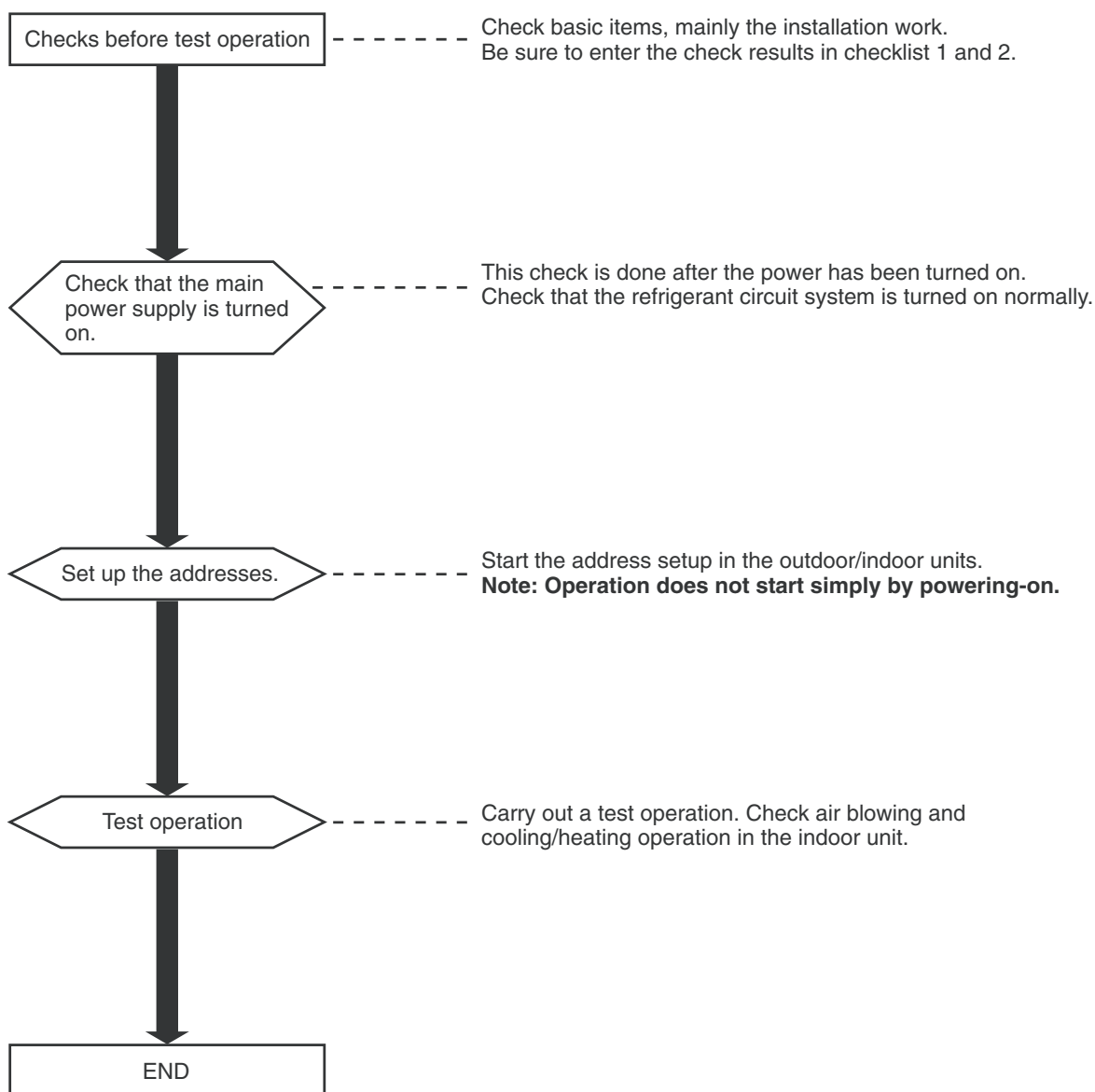
220-240 VAC, 10 mA or more, 1A or less

24 VAC, 10 mA or more, 1 A or less (non-conductive load)

# 7. TEST OPERATION

## 7-1. Procedure and Summary of Test Operation

A test operation is executed with the following procedure. When problems or an error occurs at any step, remove the causes of the problem or error referring to “8 TROUBLESHOOTING.”



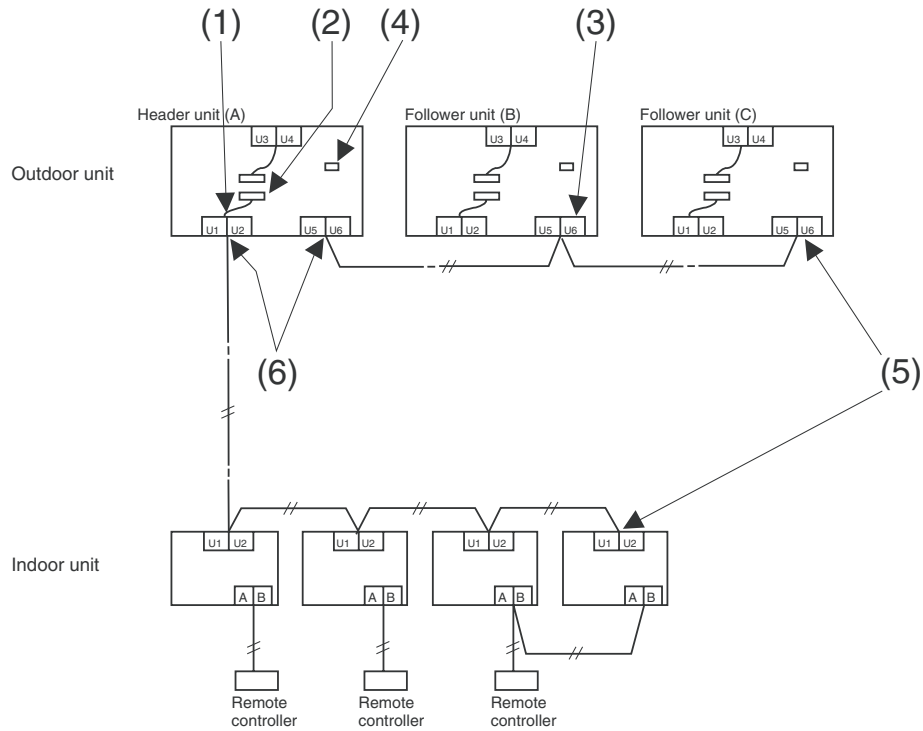
## 7-2. Check Items before Test Operation (before powering on)

Prior to the test operation, check the following items to verify there are no problems with the installation work.

### Main check items for electric wiring

The communication system differs from that of R22 or R407 refrigerant “Modular Multi system” air conditioners. Check wiring points again carefully.

(1) In the case that a central control system is not connected:



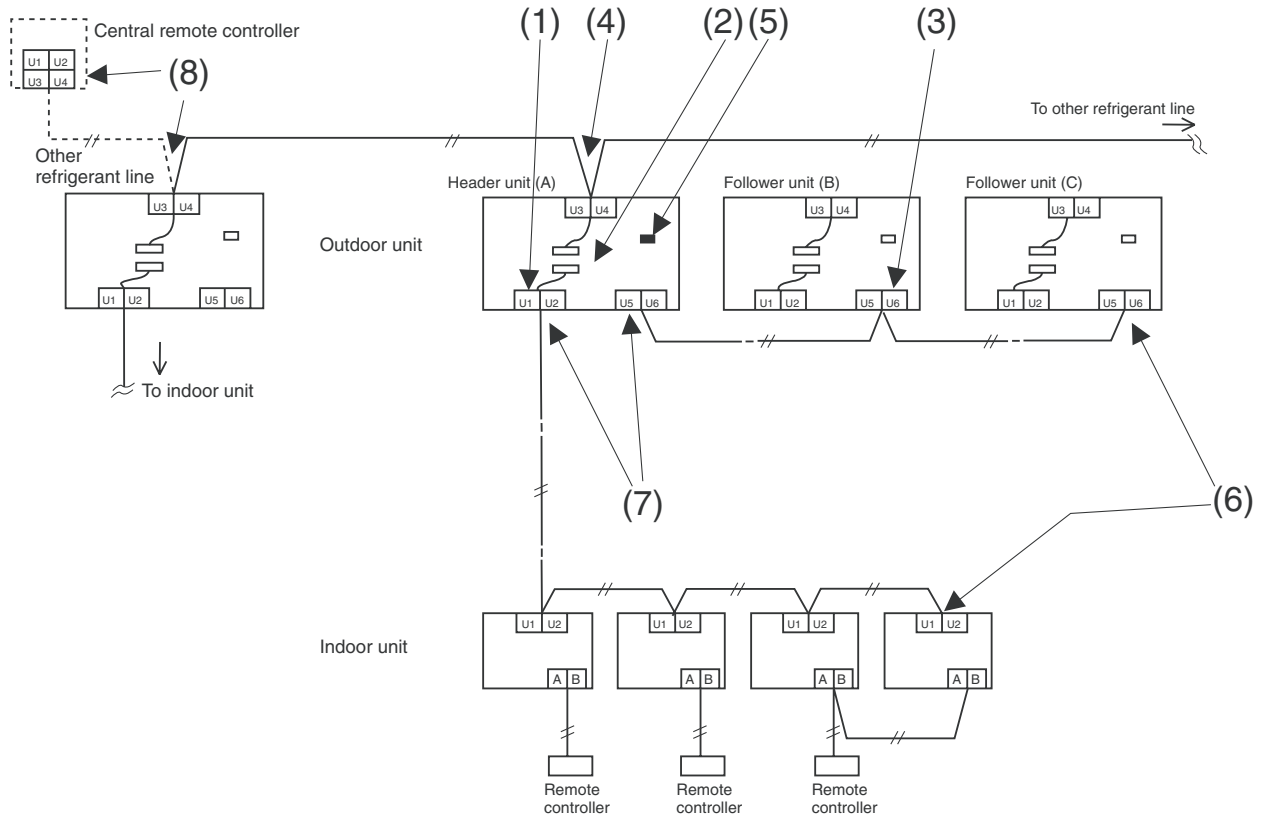
Main check items	Check
(1) Are the indoor and outdoor communication lines of the header unit connected to the U1/U2 terminals?	
(2) Is the relay connector between the U1/U2 terminal and the U3/U4 terminal removed? (Set up at shipment from the factory)	
(3) Is the communication line between outdoor units connected to the U5/U6 terminal?	
(4) Is the terminal resistance (SW30-bit 2) on the interface PC board of the header unit turned on? (Set up at shipment from the factory)	
(5) Is the end terminal of the shield wire open?	
(6) Is the end terminal of the shield wire earthed at the header unit side?	

### NOTE

The figure above does not show all the electric wires.

For details, refer to the installation manuals for the outdoor unit, indoor unit, remote controller, or optional devices.

(2) In the case that a central control system is connected (before address setup)

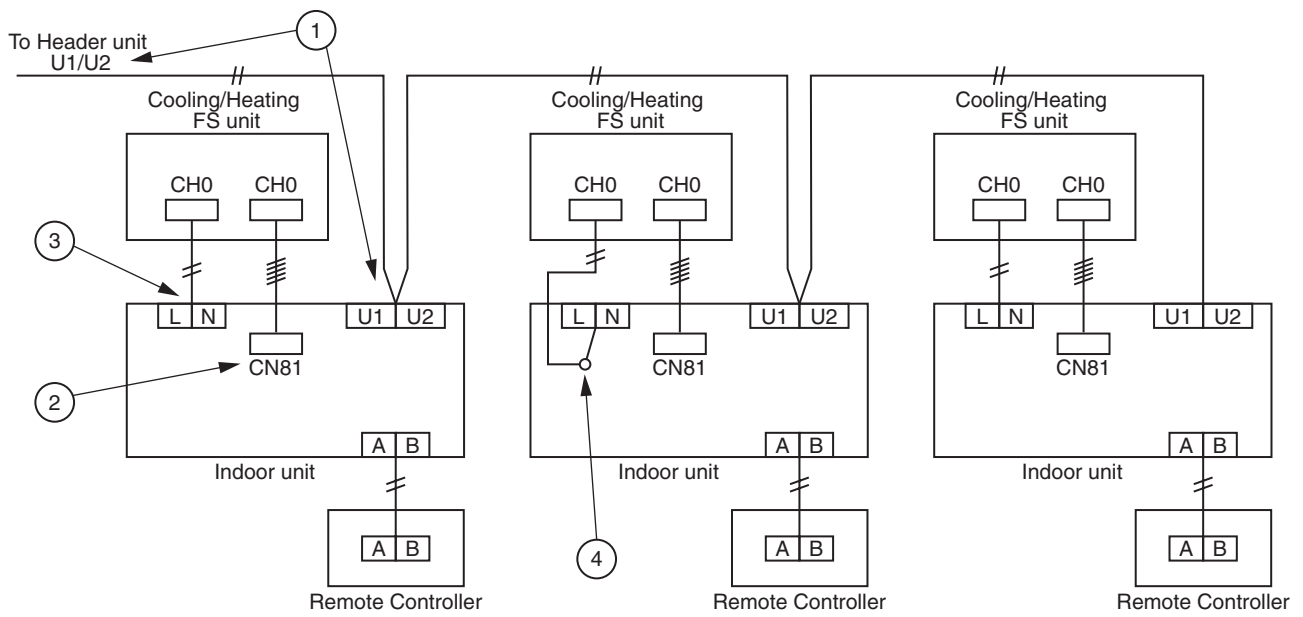


Main check items	Check
(1) Are the indoor and outdoor communication lines of the header unit connected to the U1/U2 terminals?	
(2) Is the relay connector between the U1/U2 terminal and the U3/U4 terminal removed? (Set up at shipment from the factory) (Keep the relay connector disconnected before address setup.)	
(3) Is the communication line between outdoor units connected to the U5/U6 terminal?	
(4) Is the communication line of the central control system connected to the header unit U3/U4 terminals of each refrigerant line? (The communication line of the central control system may be connected to the communication lines of the indoor/outdoor communication lines.)	
(5) Is the terminal resistance (SW30-bit 2) on the interface PC board of the header unit turned on? (Set up at shipment from the factory) * After address setup and test operation check, turn on the SW30-bit 2 of the header unit for the smallest line address, and turn off SW30-bit 2 of the header unit for other refrigerant lines. (See page 133, "7-4-3. Address Setup Procedure")	
(6) Is the end terminal of the shield wire open?	
(7) Is the end terminal of the shield wire earthed at the header unit side?	
(8) Is the shield line between the collectively controlled devices and the outdoor unit earthed at the outdoor unit side? (Opened at the central controlled devices side)	
(9) When the refrigerant line and the central control system of the DI-SDI series are connected: → Are Network adapter (TCB-PCNT30TLE2) correctly connected? → When the DI-SDI series operates with group, twin, or triple operation, are the adapters connected to the header unit of the indoor unit?	

**NOTE**

The figure above does not show all the electric wires.  
For details, refer to the installation manuals for the outdoor unit, indoor unit, remote controller, or optional devices.

(3) Connection check of FS (Flow Selector) unit with indoor unit



Main check items	Check
(1) Is the indoor/outdoor communication line connected to U1/U2 terminals of the center unit?	
(2) Is the control wires connected of FS unit to the connector CN81?	
(3) Is the power supply wires connected of FS unit to RS Faston terminal?	
(4) In case of the indoor unit wish end-closed connector, Is power supply wire of FS unit connected to end-closed connector?	

**Note)** The above figure does not described all the electric wiring. For details, refer to the Installation Manual of FS unit.

## Checklist 1

- Check that there are no problems with the installation work.

Is the capacity of the circuit breaker (Earth leakage breaker) appropriate?	Outdoor total capacity <input type="text"/> A	Header unit (A) <input type="text"/> A	Indoor unit <input type="text"/> A
		Follower unit (B) <input type="text"/> A	
		Follower unit (C) <input type="text"/> A	
Is the gauge of the power cable correct?		Header unit (A) <input type="text"/> mm <sup>2</sup>	Indoor unit <input type="text"/> mm <sup>2</sup>
		Follower unit (B) <input type="text"/> mm <sup>2</sup>	
		Follower unit (C) <input type="text"/> mm <sup>2</sup>	
Is the control communication line correct?		Indoor-outdoor connection terminals (U1, U2) <input type="text"/>	
		Outdoor-outdoor connection terminals (U5, U6) <input type="text"/>	
		Central control system connection terminals (U3, U4) <input type="text"/>	
Is the power of indoor units supplied collectively?			
Is it grounded to earth?			
Is the resistance sufficient? (10 MΩ or higher)		<input type="text"/> MΩ or higher	
Is the main power voltage sufficient? (within 380-415 V ±10%)		<input type="text"/> V	
Is the diameter of connecting pipe correct?			
Is the branch kit correct?			
Is the water drain of the indoor unit arranged so that it flows without accumulation?			
Is the heat insulation of pipes sufficient? (connecting pipes, branch kit)			
Is there no short circuit of discharge air in the indoor/outdoor units?			
After an airtightness test of the pipes, are vacuuming and adding of refrigerant executed?			
Are the valves of all the outdoor units fully opened?			
		Gas side	Liquid side
		Balance side	
	Header unit (A)	<input type="text"/>	<input type="text"/>
	Follower unit (B)	<input type="text"/>	<input type="text"/>
	Follower unit (C)	<input type="text"/>	<input type="text"/>

## Checklist 2

- Check the additional amount of refrigerant.

Calculate the additional amount of refrigerant from the additional amount of refrigerant (A) by the pipe diameter on the liquid side, the pipe length to be connected, and the corrective amount of refrigerant (C) according to system horsepower.

$$\text{Additional amount of refrigerant} = \underbrace{\text{Actual liquid pipe length} \times \text{Additional amount of refrigerant per 1 m of liquid pipe}}_{(A)} \times 1.3 + \underbrace{\text{Corrective amount of refrigerant according to system horsepower}}_{(C)}$$

First, enter the total length for each liquid pipe diameter in the following table, and then calculate the additional amount of refrigerant by pipe length.

### <Additional amount of refrigerant by pipe length>

Pipe diameter on the liquid side	Standard amount of refrigerant kg/m	Total pipe length on each liquid side m	Additional amount of refrigerant pipe diameter on each liquid side kg
Ø6.4	0.025 ×	=	Kg
Ø9.5	0.055 ×	=	Kg
Ø12.7	0.105 ×	=	Kg
Ø15.9	0.160 ×	=	Kg
Ø19.0	0.250 ×	=	Kg
Ø22.2	0.350 ×	=	Kg
Additional amount of refrigerant by pipe length (A)			Kg

Next, refer to the following table for the corrective amount of refrigerant (C) according to system horsepower.

### <Corrective amount of refrigerant according to system horsepower>

Equivalent HP	Model name of outdoor unit MMY-	Combination of outdoor unit MMY-			Corrective of refrigerant (kg)
		Unit 1	Unit 2	Unit 3	
8 HP	MAP0804*	MAP0804*	—	—	2
10 HP	MAP1004*	MAP1004*	—	—	3
12 HP	MAP1204*	MAP1204*	—	—	8
14 HP	MAP1404*	MAP1404*	—	—	10
16 HP	AP1614*	MAP0804*	MAP0804*	—	0
18 HP	AP1814*	MAP1004*	MAP0804*	—	1.5
20 HP	AP2014*	MAP1004*	MAP1004*	—	3.5
22 HP	AP2214*	MAP1204*	MAP1004*	—	7.5
24 HP	AP2414*	MAP1404*	MAP1004*	—	8.5
26 HP	AP2614*	MAP1404*	MAP1204*	—	11
28 HP	AP2814*	MAP1404*	MAP1404*	—	12
30 HP	AP3014*	MAP1004*	MAP1004*	MAP1004*	2.5
32 HP	AP3214*	MAP1204*	MAP1004*	MAP1004*	5
34 HP	AP3414*	MAP1404*	MAP1004*	MAP1004*	6
36 HP	AP3614*	MAP1204*	MAP1204*	MAP1204*	8
38 HP	AP3814*	MAP1404*	MAP1204*	MAP1204*	9.5
40 HP	AP4014*	MAP1404*	MAP1404*	MAP1204*	11
42 HP	AP4214*	MAP1404*	MAP1404*	MAP1404*	12.5

Lastly, add the additional amount of refrigerant by pipe length (A) to the corrective amount of refrigerant by combined horsepower (C). This is the final additional amount of refrigerant.

If a minus sign is indicated as the result, do not add the refrigerant (= 0 kg).

### <Additional amount of refrigerant>

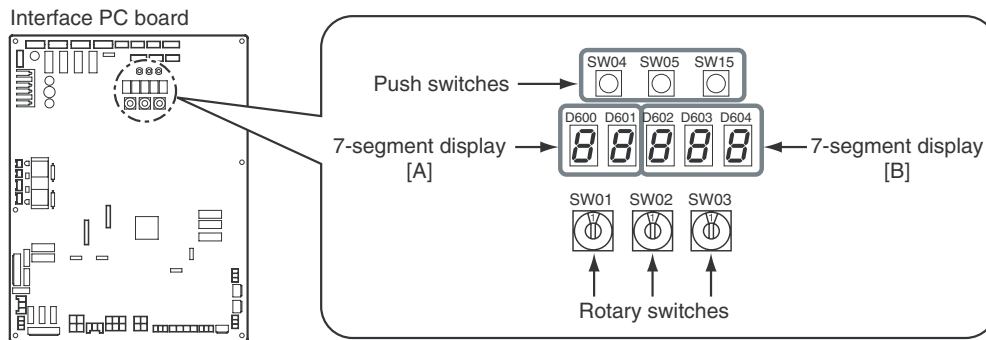
Additional amount of refrigerant by pipe length (A)	Kg
Corrective amount of refrigerant according to combined horsepower (C)	Kg
Additional amount of refrigerant	Kg

### 7-3. Check at Main Power-on

After turning on the main power of the indoor units and outdoor unit in the refrigerant line to conduct a test operation, check the following items in each outdoor and indoor unit.  
(After turning on the main power, be sure to check in order: indoor unit → outdoor unit.)

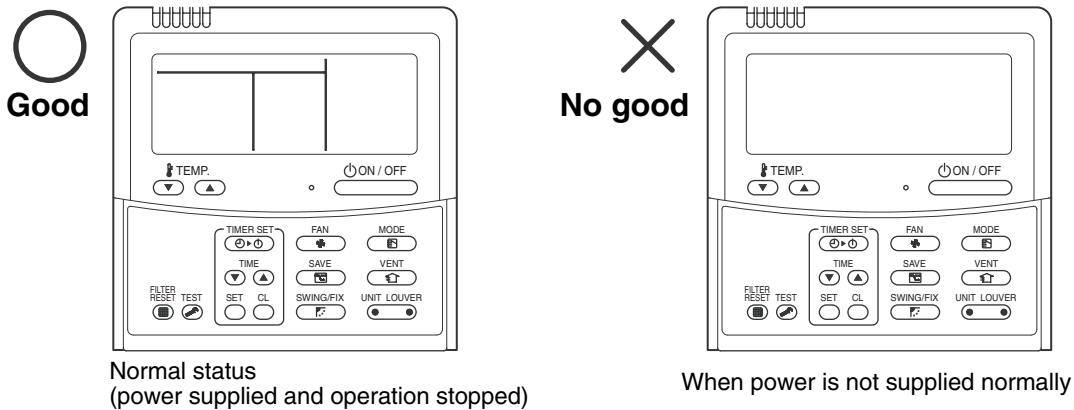
#### <Check on the outdoor unit>

- (1) Check that all the rotary switches, SW01, SW02, and SW03, on the interface PC board of the header unit are set to "1."
- (2) If another check code is displayed on the 7-segment display [B], remove the cause of the problem referring to Section, "8 TROUBLESHOOTING".
- (3) Check that "L08" is displayed on the 7-segment display [B] on the interface PC board of the header unit.  
(L08: Indoor address not set up)  
(If the address setup operation has already been completed during servicing, etc., the above check code is not displayed, and "U1" is displayed on the 7-segment display [A].)



#### <Check on the indoor unit>

- (1) Display check on the remote controller (in the case of a wired remote controller)  
Check that a frame, as shown in the following figure at left, is displayed on the LC display section of the remote controller.



If no frame is displayed, as shown in the above figure at right, the remote controller does not have a normal supply of power; check the following items.

- Check the power supply of the indoor unit.
- Check the cabling between the indoor unit and the remote controller.
- Check whether there is a cutoff of wire around the indoor control PC board or not, and check for connection failures of the connectors.
- Check for failure of the transformer for the indoor electrical control box.
- Check for failure of the indoor control PC board.

## 7-4. Address Setup

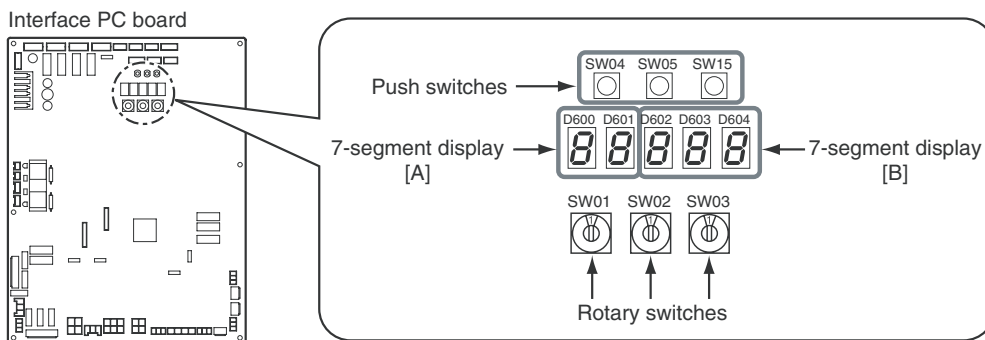
This product requires address setup before operation.  
Follow this procedure for address setup.

### 7-4-1. Precautions

- (1) Address setup is not performed simply by turning on the power supply.
- (2) For indoor units, address setup can be done either by “manual address setup” or “by automatic address setup”  
Automatic address setup: Setup from SW15 on the interface PC board of the header unit  
Manual address setup: Setup from the wired remote controller. (For details, refer to “7-4-3. Address Setup Procedure.”)
- (3) Automatic setup usually takes about 5 minutes per line. In some cases, however, it may take up to 10 minutes.
- (4) It is unnecessary to operate the air conditioner to achieve address setup.

### 7-4-2. Address Setup and Check Procedure

Procedure	Item	Operation and check contents																													
1	Indoor unit power-on	Turn on the power of the indoor unit for the refrigerant line for which the address is to be set up.																													
2	Outdoor unit power-on	Turn on the power of all the outdoor units for the refrigerant line for which the address is to be set up.																													
3	7-segment display check	Check that “L08” is displayed on the 7-segment display [B] on the interface PC board of the header unit in the system where the address is to be set up.																													
4	Address setup start	Confirm the items in “7-4-3. Address Setup Procedure,” and then set up the address according to the operation procedure. (Be careful to note that the setup operation may differ in group control and central control systems.)  <b>Note:</b> <b>The address cannot be set up if switches are not operated.</b>																													
5	Display check after setup	<ul style="list-style-type: none"> <li>• After address setup, “U1” “ ” is displayed on the 7-segment display.</li> <li>• For follower outdoor units, “U2” to “U3” are displayed on the 7-segment display [A].</li> <li>• If an error code is displayed on the 7-segment display [B], remove the cause of the problem referring to “8 TROUBLESHOOTING.”</li> </ul>																													
6	System information check after setup	<p>Using the 7-segment display function, check the system information of the scheduled system. (This check is executed on the interface PC board of the header unit.)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">Rotary switch setup</th> <th colspan="2">7-segment display</th> </tr> <tr> <th>SW01</th> <th>SW02</th> <th>SW03</th> <th>[A]</th> <th>[B]</th> </tr> </thead> <tbody> <tr> <td>System capacity</td> <td>1</td> <td>2</td> <td>3</td> <td>[Number of horsepower]</td> <td>[H P]</td> </tr> <tr> <td>Number of connected outdoor units</td> <td>1</td> <td>3</td> <td>3</td> <td>[Number of units]</td> <td>[ P]</td> </tr> <tr> <td>Number of connected indoor units</td> <td>1</td> <td>4</td> <td>3</td> <td>[Number of connected units]</td> <td></td> </tr> </tbody> </table> <p>After the above checks, return rotary switches SW01, SW02, and SW03 to 1/1/1.</p>		Rotary switch setup			7-segment display		SW01	SW02	SW03	[A]	[B]	System capacity	1	2	3	[Number of horsepower]	[H P]	Number of connected outdoor units	1	3	3	[Number of units]	[ P]	Number of connected indoor units	1	4	3	[Number of connected units]	
	Rotary switch setup			7-segment display																											
	SW01	SW02	SW03	[A]	[B]																										
System capacity	1	2	3	[Number of horsepower]	[H P]																										
Number of connected outdoor units	1	3	3	[Number of units]	[ P]																										
Number of connected indoor units	1	4	3	[Number of connected units]																											



### 7-4-3. Address Setup Procedure

No central control:

go to Address setting procedure 1

Central control of 2 or more refrigerant lines:

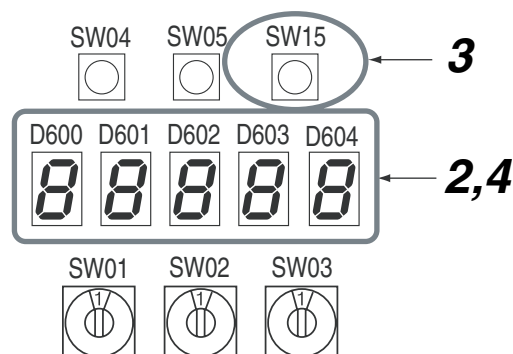
go to Address setting procedure 2

(Example)	When controlling a single refrigerant line centrally	When controlling 2 or more refrigerant lines centrally
Address setting procedure	To procedure 1	To procedure 2
System wiring diagram		

#### Address setting procedure 1

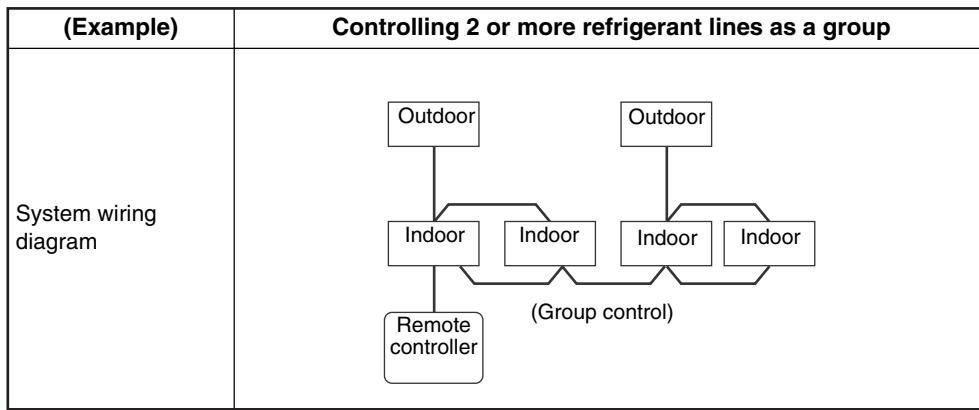
- 1** Turn on indoor units first, and then turn on outdoor units.
- 2** About one minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the header outdoor unit indicates **U. 1. L08 (U. 1. flash)**.
- 3** Push SW 15 to start the automatic address setting.  
(It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)
- 4** The 7-segment display indicates **Auto 1 → Auto 2 → Auto 3**.  
After the indication, **U. 1. - - - (U. 1. flash)** starts flashing on the display.  
When the flashing stops and **U. 1. - - - (U. 1. light)** remain lit on the display, the setting is complete.

#### Interface P.C. board on the header outdoor unit



#### REQUIREMENT

- When 2 or more refrigerant lines are controlled as a group, be sure to turn on all the indoor units in the group before setting addresses.
- If you set the unit addresses of each line separately, each line's header indoor unit is set separately. In that case, the CODE No. "L03" (Indoor header unit overlap) is indicated as running starts. Change the group address to make one unit the header unit using wired remote controller.



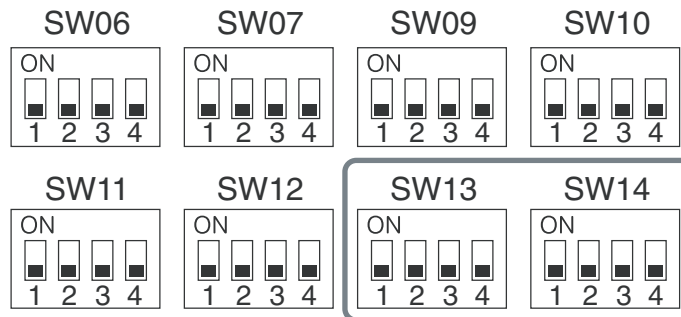
## Address setting procedure 2

- 1 Set a system address for each system using SW 13 and 14 on the interface P.C. board on the header outdoor unit of each system.  
(Factory default: Address 1)

### NOTE

Be sure to set a unique address on each system. Do not use a same address as another system (refrigerant line) or DI/SDI series.

### Interface P.C. board on the header outdoor unit



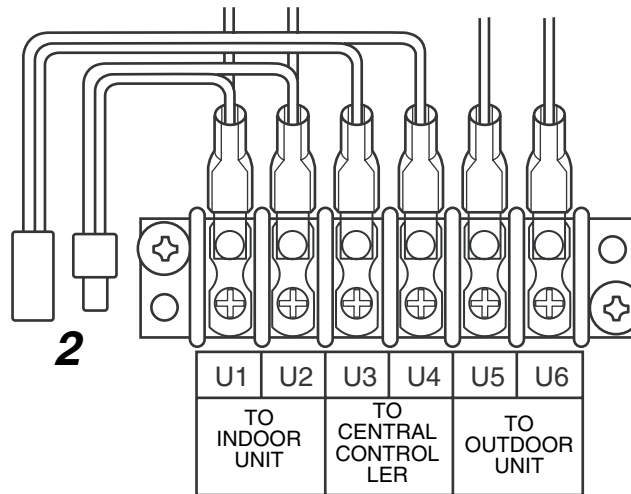
Line address switches on the outdoor interface PC board (O : switch on, X : switch off)

Line address	SW13				SW14			
	1	2	3	4	1	2	3	4
1				X	X	X	X	X
2				X	O	X	X	X
3				X	X	O	X	X
4				X	O	O	X	X
5				X	X	X	O	X
6				X	O	X	O	X
7				X	X	O	O	X
8				X	O	O	O	X
9				X	X	X	X	O
10				X	O	X	X	O
11				X	X	O	X	O
12				X	O	O	X	O
13				X	X	X	O	O
14				X	O	X	O	O

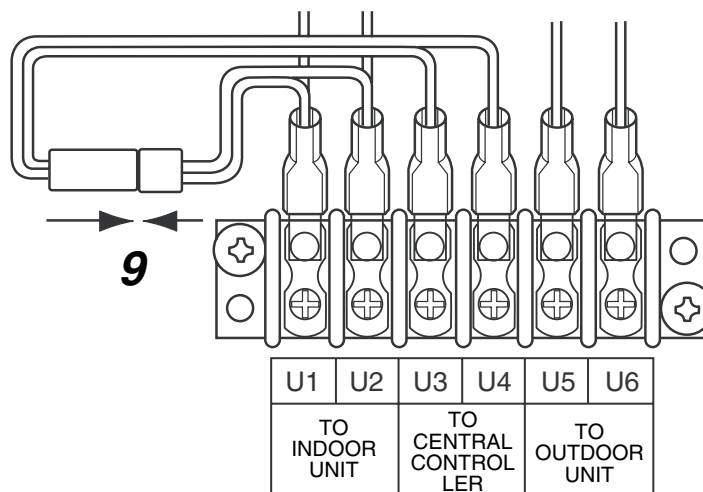
Line address	SW13				SW14			
	1	2	3	4	1	2	3	4
15				X	X	O	O	O
16				X	O	O	O	O
17				O	X	X	X	X
18				O	O	X	X	X
19				O	X	O	X	X
20				O	O	O	X	X
21				O	X	X	O	X
22				O	O	X	O	X
23				O	X	O	O	X
24				O	O	O	O	X
25				O	X	X	X	O
26				O	O	X	X	O
27				O	X	O	X	O
28				O	O	O	X	O

Not used for setup of line address (do not change setup.)

- 2** Be sure to disconnect the relay connectors between the [U1U2] and [U3U4] terminals on all the header outdoor units that will be connected to the central control. (Factory default: disconnected)



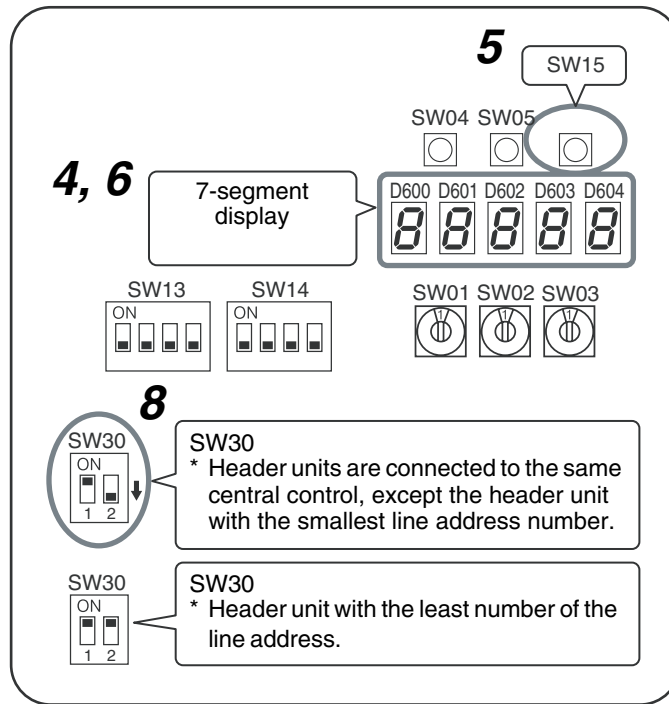
- 3** Turn on indoor units first, and then turn on outdoor units.
- 4** About 1 minute after turning the power on, confirm that the 7-segment display on the interface P.C. board of the header outdoor unit indicates **U. 1. L08 (U. 1. flash)**.
- 5** Push SW 15 to start the automatic address setting.  
(It may take up to 10 minutes (normally about 5 minutes) to complete one line's setting.)
- 6** The 7-segment display indicates **Auto 1 → Auto 2 → Auto 3**.  
After the indication, **U. 1. - - - (U. 1. flash)** starts flashing on the display.  
When the flashing stops and **U. 1. - - - (U. 1. light)** remains lit on the display, the setting is complete.
- 7** Repeat steps 4 to 6 for other refrigerant lines.
- 8** After completing address setting of all systems, turn off dip switch 2 of SW30 on the interface P.C. boards of all the header outdoor units connected to the same central control, except the unit that has the lowest address.  
(For unifying the termination of the wiring for the central control of indoor and outdoor units)
- 9** Connect the relay connectors between the [U1, U2] and [U3, U4] terminals of the header outdoor unit of each refrigerant line.



## 10 Set the central control address.

(For the setting of the central control address, refer to the installation manuals of the central control devices or “Manual address setup from the remote controller” in the next to the following page and after.

### Header unit interface P.C. board

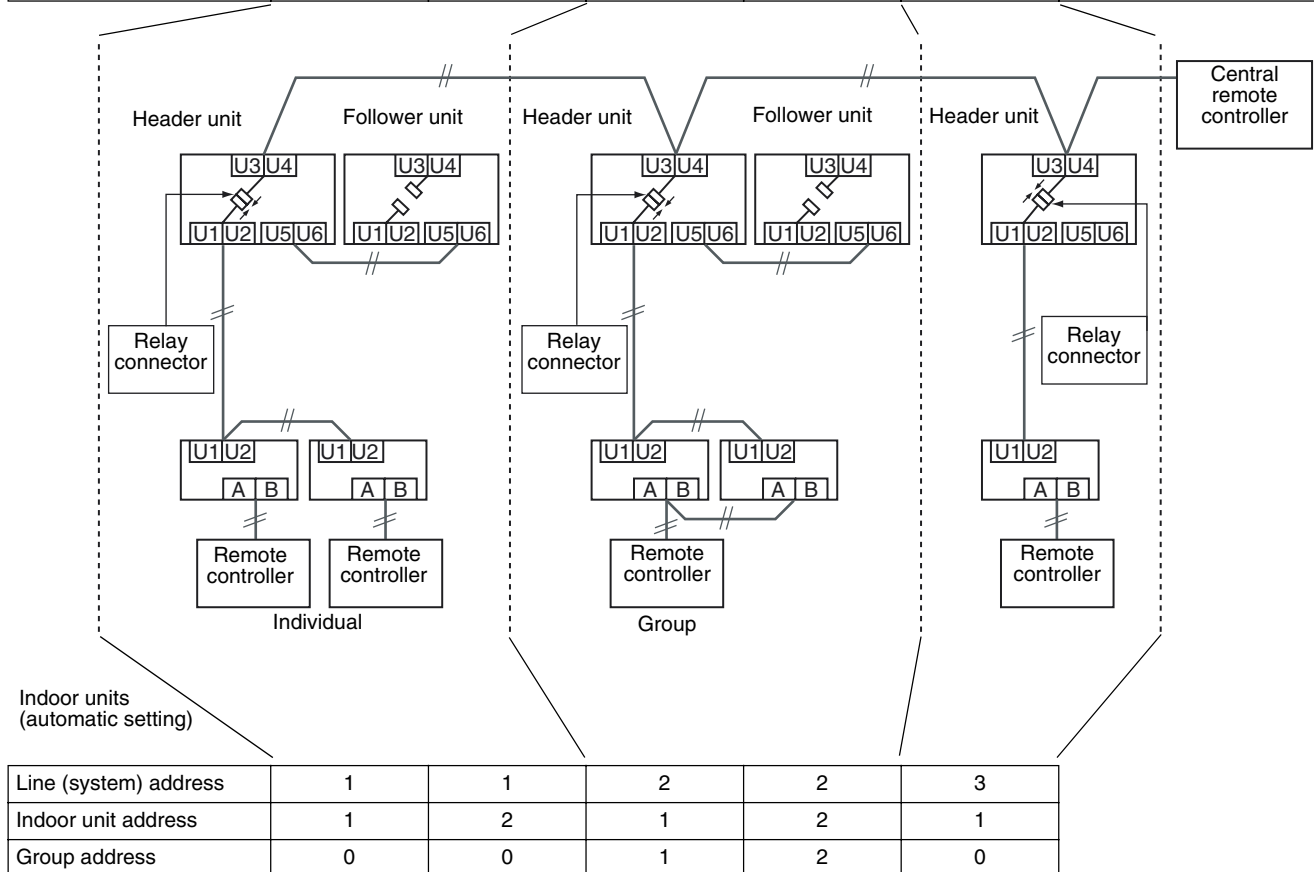


## Switch setting (setting example when controlling 2 or more refrigerant lines centrally)

### Outdoor units (setting manually)

\*The items in bold font must be set manually.

Outdoor unit's interface P.C. board	Header unit	Follower unit	Header unit	Follower unit	Header unit	Factory default
SW13, 14 (Line (system) address)	1	(No setting required)	2	(No setting required)	3	1
Dip switch 2 of SW30 (Terminator of indoor/ outdoor communication line and central control line)	ON	(No setting required)	<b>Set to OFF after setting addresses.</b>	(No setting required)	<b>Set to OFF after setting addresses.</b>	ON
Relay connector	<b>Connect after setting addresses.</b>	Open	<b>Connect after setting addresses.</b>	Open	<b>Connect after setting addresses.</b>	Open



### CAUTION

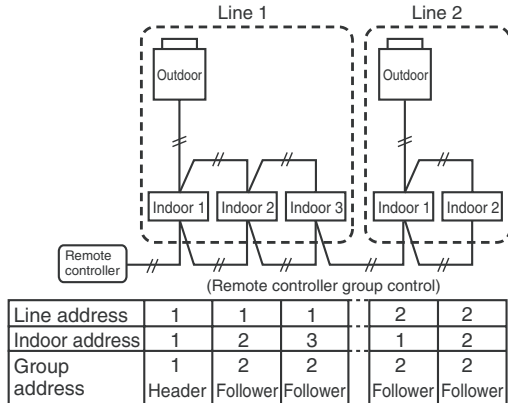
#### Relay connector connection

Never connect relay connectors between the [U1, U2] and [U3, U4] terminals before completing address setting of all the refrigerant lines. Otherwise, the addresses cannot be set correctly.

## Manual address setup from the remote controller

With indoor wiring work completed and outdoor wiring work not done—in cases where indoor unit addresses are decided in advance from the wired remote controller, or in cases where addresses are change after address setup.

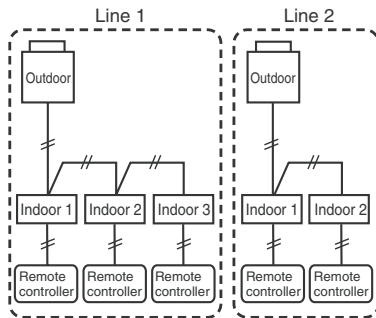
(Wiring example for 2 refrigerant lines)



In the above example, where remote controllers are not yet wired, set the address manually after individually connecting the wired remote controller.



(Wiring during manual address setup)

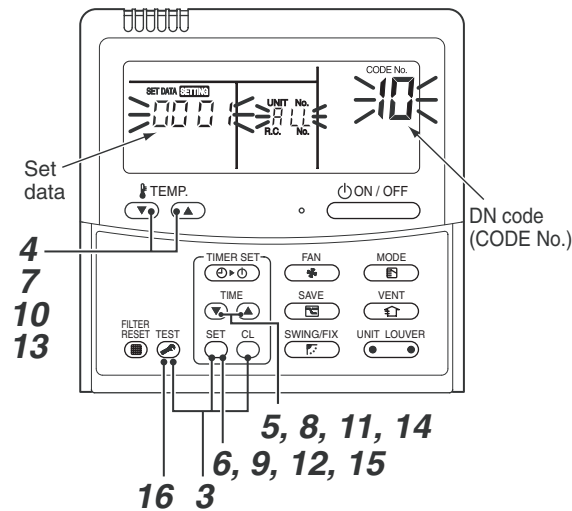


After address setup, return to the original wiring over remote controllers.

Group address

Individual: 0000  
Header unit: 0001  
Follower unit: 0002

In cases of remote controller group control



- 1** Arrange one indoor unit and one remote controller set to 1 by 1.
- 2** Turn on the power.
- 3** Push the **SET** + **CL** + **TEST** buttons simultaneously for 4 seconds or more.  
LCD begins blinking.
- ▼ (Refrigerant line address)
- 4** Using the **TEMP** buttons, set the DN code to 12.
- 5** Using the **TIME** buttons, set up the line address (match it with the line address on the interface PC board of the header unit on the same refrigerant line).
- 6** Push the **SET** button (OK when the display goes on).
- ▼ (Indoor address)
- 7** Using the **TEMP** buttons, set the DN code to 13.
- 8** Using the **TIME** buttons, set up the indoor address. (0001~0048)
- 9** Push the **SET** button (OK when the display goes on).
- ▼ (Group address)
- 10** Using the **TEMP** buttons, set the DN code to 14.
- 11** Using the **TIME** buttons, set Individual = 0000, Header unit = 0001, Follower unit = 0002.
- 12** Push the **SET** button (OK when the display goes on).
- ▼ (Central control address)
- 13** Using the **TEMP** buttons, set DN code to 03.
- 14** Using the **TIME** buttons, set up the central control address. (0001~0064)
- 15** Push **SET** button. (OK when display goes on).
- 16** Push the **TEST** button.  
Setup is finished ("Setting up" blinks; when "Setting up" goes off, operation is possible).
- 17** Return to the original wiring over remote controllers.

## NOTE

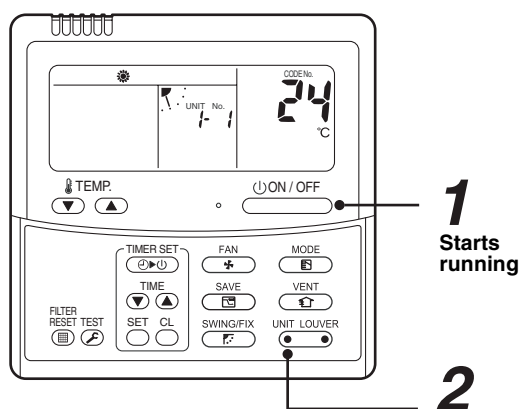
- (1) When setting the line address from the remote controller, do not use addresses 29 and 30. Addresses 29 and 30 cannot be set up on the outdoor unit. If they are incorrectly used, the code "E04" (indoor/outdoor communication circuit error) is output.
- (2) When manual address setup has been done from a remote controller, and central control over refrigerant lines is to be done, setup the header unit of each line as follows:
  - Using SW13 and SW14 on the interface PC board of the header unit of each line, setup the line address for each line.
  - Except for the line with the smallest line address number, set SW03-bit 2 to "off" for the interface PC board of the header unit of lines connected to the same central control (put the resistance of the end terminals of the central control line, indoors and outdoors, into one).
  - Connect the relay connector between U1/U2 and U3/U4 of the header unit for each refrigerant line.
  - After that, set up the central control address. (For central control address setup, refer to the installation manual of the central control devices.)

## ■ Confirming the indoor unit addresses and the position of an indoor unit using the remote controller

### ◆ Confirming the numbers and positions of indoor units

To see the indoor unit address of an indoor unit which you know the position of

- ▼ When the unit is individual (the indoor unit is paired with a wired remote controller one-to-one), or it is a group-controlled one.




(Execute it while the units are running.)

**1** Push the  button if the units stop.

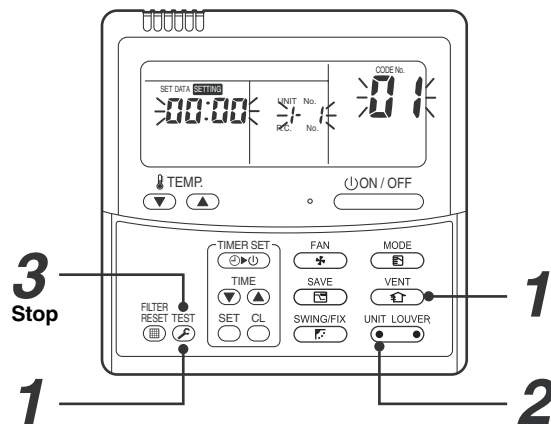
**2** Push the  button (left side of the button).

A unit number 1-1 is indicated on the LCD (it will disappear after a few seconds). The indicated number shows the system address and indoor unit address of the unit.

When 2 or more indoor units are connected to the remote controller (group-controlled units), a number of other connected units appears each time you push the  button (left side of the button).

## To find an indoor unit's position from its address

### ▼ When checking unit numbers controlled as a group



**(Execute it while the units are stopped.)**

The indoor unit numbers in a group are indicated one after another. The fan and louvers of the indicated units are activated.

**1** Push and hold the  and  buttons at the same time for more than 4 seconds.

- RLL appears on UNIT No. on the LCD display.
- The fans and louvers of all the indoor units in the group are activated.

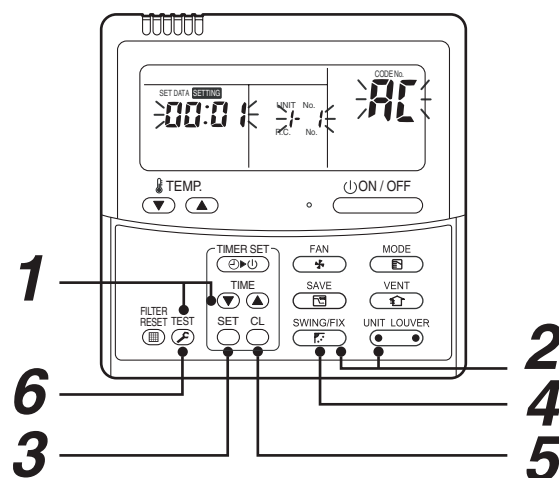
**2** Push the  button (left side of the button). Each time you push the button, the indoor unit numbers are indicated one after another.

- The first-indicated unit number is the address of the header unit.
- Only the fan and louvers of the indicated indoor unit are activated.

**3** Push the  button to finish the procedure.

All the indoor units in the group stop.

▼ To check all the indoor unit addresses using an arbitrary wired remote controller.  
(When communication wirings of 2 or more refrigerant lines are interconnected for central control)



**(Execute it while the units are stopped.)**

You can check indoor unit addresses and positions of the indoor units in a single refrigerant line. When an outdoor unit is selected, the indoor unit numbers of the refrigerant line of the selected unit are indicated one after another and the fan and louvers of the indicated indoor units are activated.

- 1** Push and hold the **TIME** (▼) and buttons at the same time for more than 4 seconds. At first, the line 1 and CODE No. **FL** (Address Change) are indicated on the LCD display. (Select an outdoor unit.)
- 2** Push **UNIT LOUVER** (left side of the button) and **SWING/FIX** buttons repeatedly to select a system address.
- 3** Push the **SET** button to confirm the system address selection.
  - The address of an indoor unit connected to the selected refrigerant line is indicated on the LCD display and its fan and louvers are activated.
- 4** Push the **UNIT LOUVER** (left side of the button) button. Each time you push the button, the indoor unit numbers of the selected refrigerant line are indicated one after another.
  - Only the fan and louvers of the indicated indoor unit are activated.

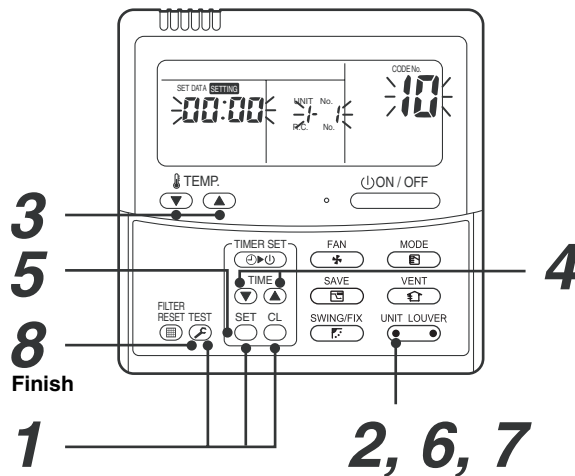
◆ **To select another system address**

- 5** Push the **CL** button to return to step 2.
  - After returning to step 2, select another system address and check the indoor unit addresses of the line.
- 6** Push **TEST** the button to finish the procedure.

■ **Changing the indoor unit address using a remote controller**

To change an indoor unit address using a wired remote controller.

- ▼ The method to change the address of an individual indoor unit (the indoor unit is paired with a wired remote controller one-to-one), or an indoor unit in a group. (The method is available when the addresses have already been set automatically.)



(Execute it while the units are stopped.)

- 1** Push and hold the **SET**, **CL**, and **TEST** buttons at the same time for more than 4 seconds. (If 2 or more indoor units are controlled in a group, the first indicated UNIT No. is that of the head unit.)
- 2** Push the **UNIT LOUVER** (left side of the button) repeatedly to select an indoor unit number to change if 2 or more units are controlled in a group. (The fan and louvers of the selected indoor unit are activated.) (The fan of the selected indoor unit is turned on.)
- 3** Push the **TEMP.** (▼) / (▲) buttons repeatedly to select **13** for CODE No..

- 4** Push the **TIME** (▼) / (▲) buttons repeatedly to change the value indicated in the **SET DATA** section to that you want.
- 5** Push the **SET** button.
- 6** Push the **UNIT LOUVER** button (left side of the button) repeatedly to select another indoor **UNIT No.** to change.  
Repeat steps **4** to **6** to change the indoor unit addresses so as to make each of them unique.
- 7** Push the **UNIT LOUVER** button (left side of the button) to check the changed addresses.
- 8** If the addresses have been changed correctly, push the **TEST** button to finish the procedure.

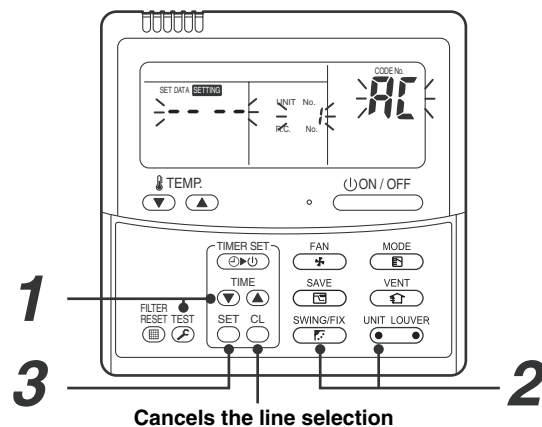
▼ **To change all the indoor unit addresses using an arbitrary wired remote controller.**  
(The method is available when the addresses have already been set automatically.)

(When communication wirings of 2 or more refrigerant lines are interconnected for central control)

**NOTE**

You can change the addresses of indoor units in each refrigerant line using an arbitrary wired remote controller.

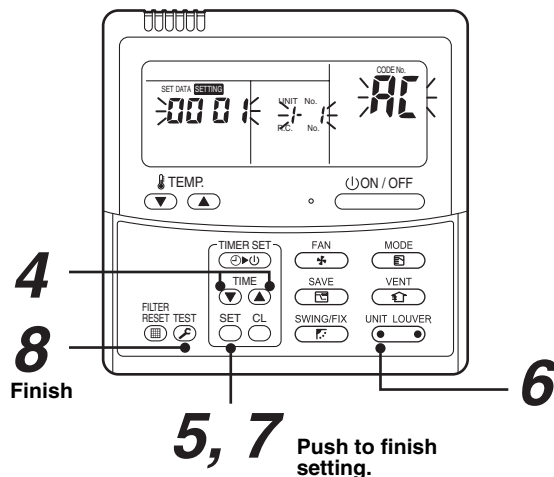
- \* Enter the address check/change mode and change the addresses.



If no number appears on **UNIT No.**, no outdoor unit exists on the line. Push **CL** button and select another line following step **2**.

(Execute it while the units are stopped.)

- 1** Push and hold the **TIME** (▼) / (▲) buttons at the same time for more than 4 seconds.  
At first, the line 1 and **CODE No. RL** (Address Change) are indicated on the LCD display.
- 2** Push **UNIT LOUVER** (left side of the button) and **SWING/FIX** buttons repeatedly to select a system address.
- 3** Push the **SET** button.
  - The address of one of the indoor units connected to the selected refrigerant line is indicated on the LCD display and the fan and louvers of the unit are activated.  
At first, the current indoor unit address is displayed in **SET DATA**.  
(No system address is indicated.)



- 4** Push the TIME / buttons repeatedly to change the value of the indoor unit address in SET DATA.  
Change the value in SET DATA to that of a new address.
- 5** Push the button to confirm the new address on SET DATA.
- 6** Push the button (left side of the button) repeatedly to select another address to change.  
Each time you push the button, the indoor unit numbers in a refrigerant line are indicated one after another. Only the fan and louvers of the selected indoor unit are activated.  
Repeat steps **4** to **6** to change the indoor unit addresses so as to make each of them unique.
- 7** Push the button.  
(All the segments on the LCD display light up.)
- 8** Push the button to finish the procedure.

## ■ Resetting the address (Resetting to the factory default (address undecided))

### Method 1

Clearing each address separately using a wired remote controller.  
Set the system address, indoor unit address and group address to “0099” using a wired remote controller.  
(For the setting procedure, refer to the address setting procedures using the wired remote controller on the previous pages.)

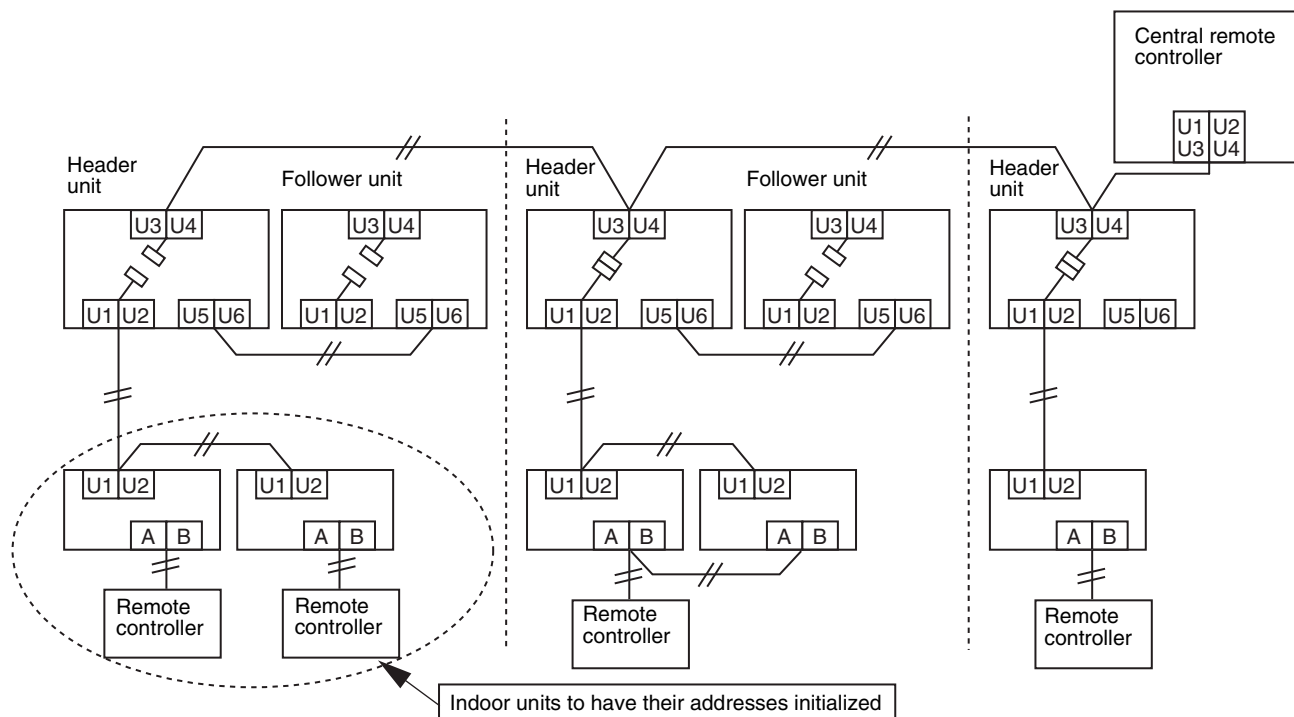
### Method 2

Clearing all the indoor unit addresses on a refrigerate line at once from the outdoor unit.

## **1** Turn off the refrigerant line to reset to the factory default and set the header outdoor unit of the line as below.

- 1) Disconnect the relay connectors between the [U1, U2] and [U3, U4] terminals.  
(Leave them as they are if they have already been disconnected.)

- 2) Turn on dip switch 2 of SW30 on the interface P.C. board of the header outdoor unit if the switch is OFF. (Leave it as it is if it has already been set to ON.)



- 2** Turn on the indoor and outdoor units of the refrigerant line for which you want to initialize the addresses. About one minute after turning on the power, confirm that the 7-segment display on the header outdoor unit indicates “U.1. - - -” and operate the interface P.C. board on the header outdoor unit of the refrigerant line as follows.

SW01	SW02	SW03	SW04	Clearable addresses
2	1	2	Confirm that the 7-segment display indicates “A.d.buS” and turn SW04 ON for more than five seconds.	System/indoor unit/group address
2	2	2	Confirm that the 7-segment display indicates “A.d.nEt” and turn SW04 ON for more than five seconds.	Central control address

- 3** Confirm that the 7-segment display indicates “A.d. c.L.” and set SW01, SW02 and SW03 to 1, 1, 1 respectively.

- 4** After a time “U.1.L08” appears on the 7-segment display if the address clearing has been completed successfully. If the 7-segment display indicates “A.d. n.G.”, the outdoor unit may still be connected with other refrigerant lines. Check the connection of the relay connectors between [U1, U2] and [U3, U4].

#### NOTE

Take care to carry out the procedure above correctly; otherwise, addresses in other refrigerant lines may also be cleared.

- 5** Set the addresses again after finishing the clearance.

## ■ In the case of an increase in address-undefined indoor units (extension, etc.)

To set up the indoor address of a unit with an address that is undefined due to the extension of indoor units or replacement of PC board, etc., follow the methods below.

### Method 1

Set up an address individually from a wired remote controller.

(Line address, Indoor address, Group address, Central address)

For the setup method, refer to “Manual address setup from the remote controller.” above.

### Method 2

Set up an address from the outdoor unit.

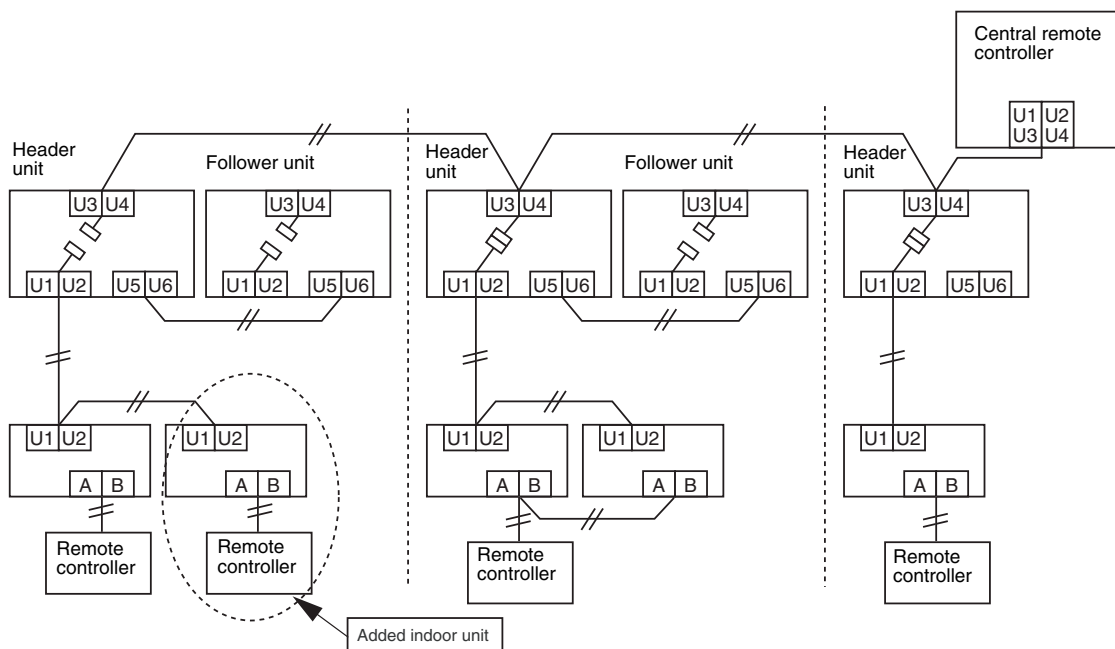
\* Leave the addresses of the units for which addresses have already been set up as they are. Set up an address only for the unit where the address is undefined.

Addresses are allocated from lower numbers.

### Setup procedure

Set up the outdoor header units in the refrigerant line to which indoor units have been added, as follows.

- 1 Remove the relay connector between U1/U2 and U3/U4.**
- 2 If it is off, turn on SW30-bit 2 on the interface PC board at outdoor header unit side.**
  - \* Turn off the power, and then execute the operation.



- 3 Turn on the indoor/outdoor power for the refrigerant line for which an address is to be set up.**  
After approximately 1 minute, check that “U.1. - - -” is displayed on the 7-segment display.

- 4 Execute the following operation on the interface PC board of the header unit.**

SW01	SW02	SW03	SW04
2	14	2	After checking that “In.At” is displayed on the 7-segment display, push SW04 for 5 seconds or more.

“AUTO1” → “AUTO2” → “AUTO3” → ... → “AUTO9” ... is counted and displayed on the 7-segment display.

- 5 When “U.1. - - -” is displayed on the 7-segment display, the setup operation finished.**

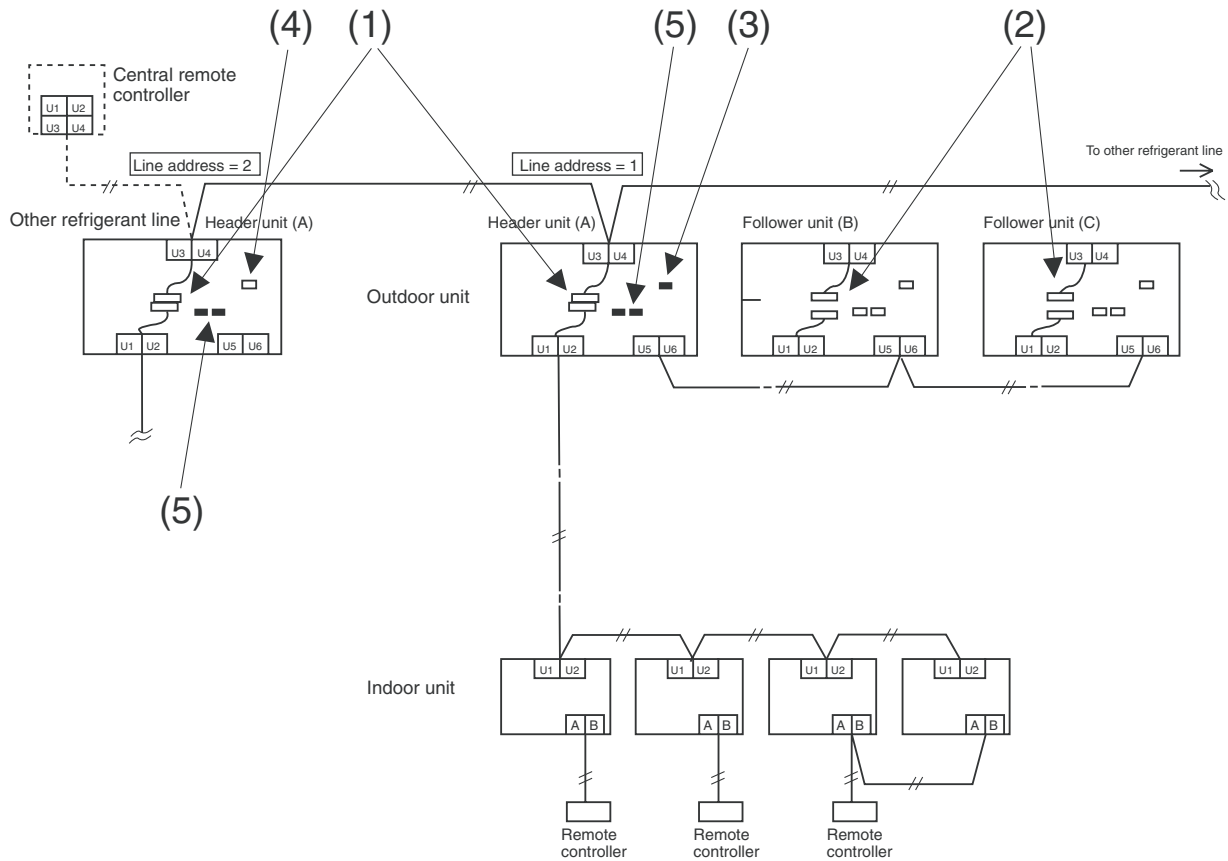
Turn off the indoor/outdoor power.

- 6 Return to the following setup as before.**

- Relay connector
- SW30-bit 2
- SW01, SW02, SW03

### 7-4-4. Check after Address Setup when Central Control System Is Connected

When the central control system is connected, check that the following setup has finished after address setup.



	Main check items	Check
Relay connector	(1) Is the relay connector of the header unit connected after address setup?	
	(2) Is the relay connector of the follower unit removed?	
Terminal resistance	(3) Is the end resistance (SW30-bit 2) of the header unit with the smallest line address number in the central control turned on? (Setup is unnecessary for follower units.)	
	(4) Is the terminal resistance (SW30-bit 2) of the header units, except for the line with the smallest central control line address, turned off? (Setup is unnecessary for follower units.)	
Line address	(5) Are addresses in the line address (SW13, SW14) not duplicated in each refrigerant line?	

#### NOTE

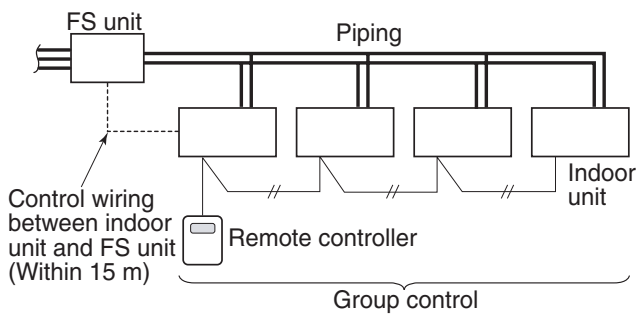
The figure above does not show all the electric wires.

For details, refer to the installation manuals for the outdoor unit, indoor unit, remote controller, or optional devices.

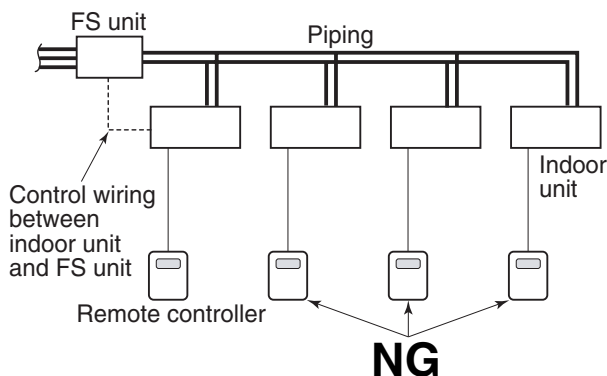
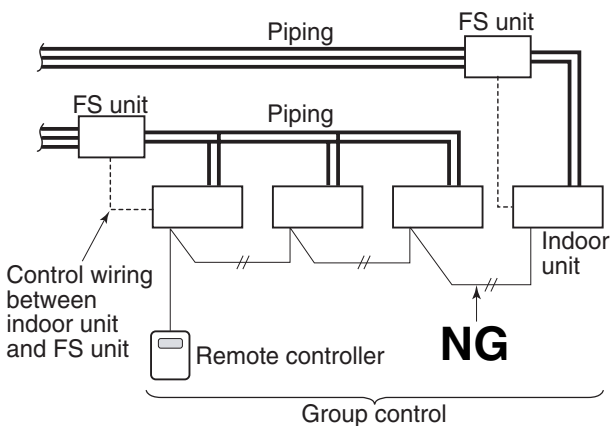
### 7-4-5. Setting when connecting multiple indoor units to a FS (Flow Selector) unit

#### ◆ Cautions to connection of indoor unit

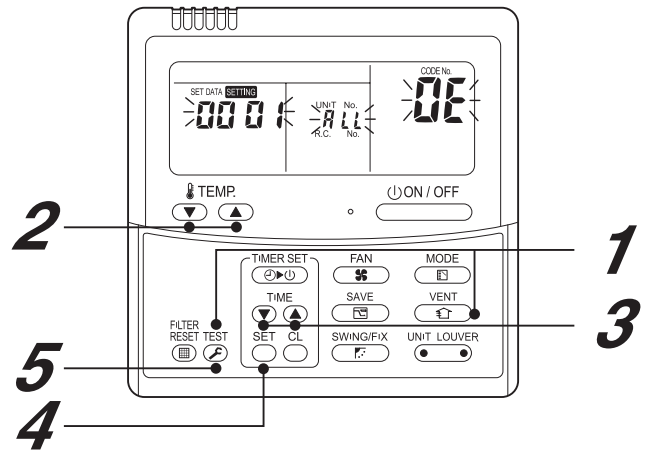
- When connecting the multiple indoor units to a single FS unit, it is necessary to set up the CODE No..  
Be sure to set up the CODE No. after setup of address.
- When connecting the multiple indoor units to a single FS unit, only group control is available. For the indoor unit, a remote controller cannot be individually connected.
- FS unit must be connected to one of the multiple indoor units which is under group control of a remote controller. The distance between FS unit and the indoor unit must be within 15 m.



#### Incorrect example of connection



#### ◆ How to set up CODE No.

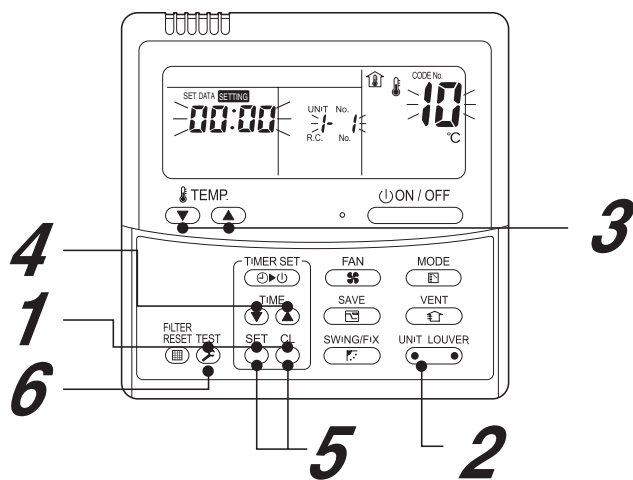


- 1 Push **VENT** + **TEST** buttons simultaneously for 4 seconds or more.
  - ALL is displayed in the UNIT No. window.
  - In this time, the fans of all the indoor units in the group control start the fan operation.
- 2 Using the set temperature buttons **▼** / **▲**, select the CODE No. "0E".
- 3 Change SET DATA to "0 !" by the timer buttons **▼** / **▲**.
- 4 Push **SET** button.
- 5 Push **TEST** button. Then the setup finished.

## 7-4-6. How to set up the cooling only indoor unit

When setting the specific indoor unit to Cooling Only unit without connecting to the flow selector unit, setup to the indoor unit to become the Cooling Only unit is necessary. Perform setup in the following procedure.

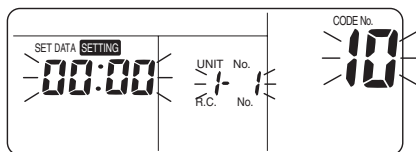
Setup to the indoor unit is performed by handling the wired remote controller. Even if a wired remote controller is not used, attach a wired remote controller for setup. Change the setup with the wired remote controller before using the air conditioner with a wireless remote controller. Change the setup during stop of the operation. (Be sure to stop operation of the air conditioner.)



**1** When pushing **SET** + **CL** + **TEST** buttons simultaneously for 4 seconds or more, after a while, the display part flashes as shown in the figure.

Check that the displayed CODE No. is [10].

- If the CODE No. indicates one other than [10], push **TEST** button to erase the display, and then retry the operation from the first step. (After pushing **TEST** button, the operation of remote controller cannot be accepted after a while.)

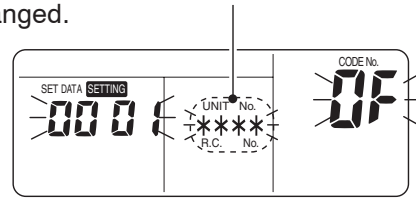


(\* The display changes according to the indoor unit model.)

**2** In a group control, the firstly displayed indoor unit No. becomes the header unit.

Every pushing **UNIT LOUVER** button (left side of the button), the indoor unit No. in the group control is displayed successively.

Select an indoor unit of which setting is to be changed.



In this time, the position of the indoor unit of which setup is to be changed can be confirmed because the fan and louver of the selected indoor unit work.

**3** Use **▼** or **▲** buttons of the set temperature to specify the CODE No. [0F].

**4** Use **▼** or **▲** buttons of the timer time to select the setup data [0001].

SET DATA	0000	0001
Cooling Only setup	Heat pump	Cooling Only

**5** Push **SET** button. In this time, if the display changes from flashing to lighting, the setup completes.

- To change the setup of an indoor unit other than the selected one, start operation from Procedure **2**.
- In a group control, setup change of all the indoor units in a group is necessary. To change the setup of the set other than the selected one, start again operation from Procedure **2**.

### **CAUTION**

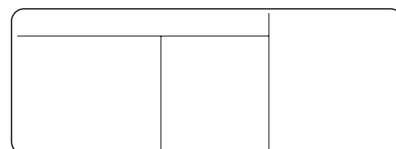
**Cooling Only and Heat pump cannot exist in the same group.**

- Pushing **CL** button clears the set up contents which have been already set. In this case, retry from Procedure **2**.

**6** When the setup finished, push **TEST** button. (The setup is determined.)

Pushing **TEST** button deletes the display and returns to normal stop status.


(For some time after **TEST** button has been pushed, the operation of the remote controller cannot be accepted.)



## 7-5. TROUBLESHOOTING IN TEST OPERATION

If there are phenomena such as the output of a check code or the remote controller is not accepted when powered on after wiring work or during address setup operation, the following causes are considered.


### 7-5-1. A Check Code Is Displayed on the Remote Controller

Check the code displayed on the indoor remote controller	Header unit 7-segment display	Cause	Countermeasures
E04	–	When outdoor power is off	Check that the header outdoor unit power is on
	L08	Address setup error <ul style="list-style-type: none"> <li>• Only line addresses of the connected indoor units are undefined.</li> <li>• The outdoor line address and the line addresses of all the indoor units do not match.</li> <li>• The indoor addresses are duplicated. (Units except those displaying E04 are duplicated.)</li> <li>• A header unit is not set up in group control (except groups displaying E04).</li> </ul>	Set up the address again.
	E08 ⇔ -XX Alternate blinking	Duplication of indoor addresses (address number in the subcode of the check code are duplicated).	Set up the address again.
	E07	There is no outdoor terminal resistance, or there are two or more resistances. (After address setup, when terminal resistance setup is changed after powering-on) 	Check SW30 bit 2 of the header unit. No connection between multiple refrigerant lines: SW30 bit 2 is on. Connection between multiple refrigerant lines: SW30 bit 2 of the connected header unit is turned on only for one line.
			Transmission circuit error at the interface side (PC board failure)
E06	After address setup, communication from all the indoor units is interrupted under the condition that a normal operation can be performed.	Check and correct disconnection of the indoor/outdoor communication line (the communication line between the header unit and the leading indoor unit). Check for the influence of communication noise.	
E16	E16 ⇔ -XX Alternate blinking	Exceeded the number or capacity of connected indoor units	Adjust the number or capacity of connected indoor units.
E23	E23	Communication between outdoor units has stopped.	Check the number of connected outdoor units. Check that outdoor unit power is on.
E25	E25	Duplication of outdoor addresses (only when an outdoor address was manually set up)	Do not use manual setup for outdoor addresses.
E26	E26 ⇔ -XX Alternate blinking	Number of connected outdoor units has decreased. <ul style="list-style-type: none"> <li>• When installing an outdoor backup</li> <li>• The power of a follower unit is not turned on.</li> </ul>	Correction of the cause of error occurrence <ul style="list-style-type: none"> <li>• If it occurs when installing a backup, clear the error after setup finishes.</li> <li>• If the power of a follower unit is not turned on, turn on the power.</li> </ul>
L04	L04	Duplication of outdoor line addresses <ul style="list-style-type: none"> <li>• Line address setup error (occurred after connection between U1/U2 and U3/U4 connectors)</li> </ul>	Modify the line address setup of the header unit between lines. (Set up SW13 and SW14 on the interface PC board.)
L05(*)	L06	Duplication of indoor units with priority	Set up priority only for one indoor unit.
L06(*)		There are two or more indoor units set up with priority.	Among indoor units indicating “L05,” set one unit with priority.
L08	L08	Address setup error <ul style="list-style-type: none"> <li>• Only indoor addresses of all the connected indoor units are undefined.</li> </ul>	Set up the addresses again. Modify the setup.

\* “L05”: Displayed on the indoor unit set up with priority

“L06”: Displayed on the indoor units except the one set up with priority

**7-5-2. Operation from the indoor remote controller is not accepted, and a check code is displayed on the 7-segment display of the interface PC board of the header unit.**

Indoor remote controller status	Header unit 7-segment display	Cause	Countermeasures
No response	L08	Line addresses and indoor addresses of all the connected indoor units are not set.	Set up addresses.
		There is no header unit of group control.	Set up a group address.
	E19 ⇔ -00 Alternate blinking	Indoor unit power is not turned on.	Turn on the power again. (In the order: indoor → outdoor)
		Indoor/outdoor communication line is not correctly connected to the U1/U2 terminal of the header unit ( Fig. 1). (Indoor/outdoor cannot communicate before address setup.)	Correct wiring
		There is no of outdoor terminal resistance, or there are two or more resistances (before address setup).	 Check SW30 bit 2 of the header unit. No connection between multiple refrigerant lines: SW30 bit 2 is on. Connection between multiple refrigerant lines: SW30 bit 2 of the connected header unit is turned on only for one line.
	E19 ⇔ -02 Alternate blinking	When connecting an indoor/outdoor communication line between outdoor units under the condition of a connected communication line between outdoor units ( Fig. 2).	Correct wiring
	E20 ⇔ -01 Alternate blinking	Address setup is performed with connecting an indoor/outdoor communication line between outdoor units ( Fig. 3).	Correct wiring
Address setup is performed under the condition of connecting multiple refrigerant lines ( Fig. 3).		Correct wiring	

**7-5-3. There is no display of a check code on the 7-segment display on the interface PC board of the header unit, although there is indoor unit that is not accepting operation from the indoor remote controller.**

Indoor remote controller status	Header unit 7-segment display	Cause	Countermeasures
No response	None	The communication line is not connected between indoor and outdoor (the unit that does not respond to the indoor remote controller).	Modify the wiring.
		Line address and indoor address are not set (the unit that does not respond to the indoor remote controller).	Set up the address.
		The power of the header unit of the group is not turned on in indoor group control (the unit that does not respond to the indoor remote controller).	Turn on the power.
		Group address is set to the follower unit for individual control (the unit that does not respond to the indoor remote controller).	Set the group address to "0" in the case of individual control.
No display on the indoor remote controller (no line is output.)	None	The power is not turned on (the unit that is not displayed on the indoor remote controller).	Turn on the power.
		The indoor remote controller is not connected with a wire (the unit that is not displayed on the indoor remote controller).	Modify the wiring.
		Miswiring of the indoor remote controller (the unit that is not displayed on the indoor remote controller)	Modify the wiring.
		Indoor remote controller communication circuit error (the unit that is not displayed on the indoor remote controller) If 220-240 V is incorrectly applied to the indoor remote controller terminal, the remote controller communication circuit fails.	Remove the fast-on terminal connected to indoor remote controller terminals A/B, and check the voltage. If voltage is not applied (normally 15 to 18 V), replace the PC board.

**7-5-4. In checking the number of connected outdoor units and connected indoor units after address setup, a lower number of connected units is displayed.  
(There are outdoor/indoor units that do not operate in a test operation.)**

<b>Status</b>	<b>Cause</b>	<b>Countermeasures</b>
The number of connected outdoor units is too few.	Miswiring of communication lines between outdoor units or an unconnected wire ( Fig. 4). (Address setup operation finished without recognizing a miswired follower unit.)	After modification of wiring, set up the addresses again and check the number of connected outdoor units.
The number of connected indoor units is too few.	Miswiring of communication lines between indoor units or an unconnected wire ( Fig. 5). (Address setup operation finished without recognizing a miswired indoor unit.)	After modification of wiring, set up the addresses again and check the number of connected indoor units.
The number of outdoor units connected to a group is too few in group operation from an indoor remote controller.	The indoor remote controller is not connected with wire. Miswiring of the indoor remote controller	Using the main indoor remote controller connected to a group, start a test operation, specify the unit that is not operating (the unit not connected to the group), and then check the wiring.
	Indoor remote controller communication circuit error If 220-240 V is incorrectly applied to the remote controller terminal, the remote controller communication circuit fails.	Using the main indoor remote controller connected to a group, start a test operation and then specify the unit that is not operating (the unit not connected to the group). Remove the fast-on terminal connected to remote controller terminals A/B, and check the voltage. If voltage is not applied (normally 15 to 18 V), replace the PC board.

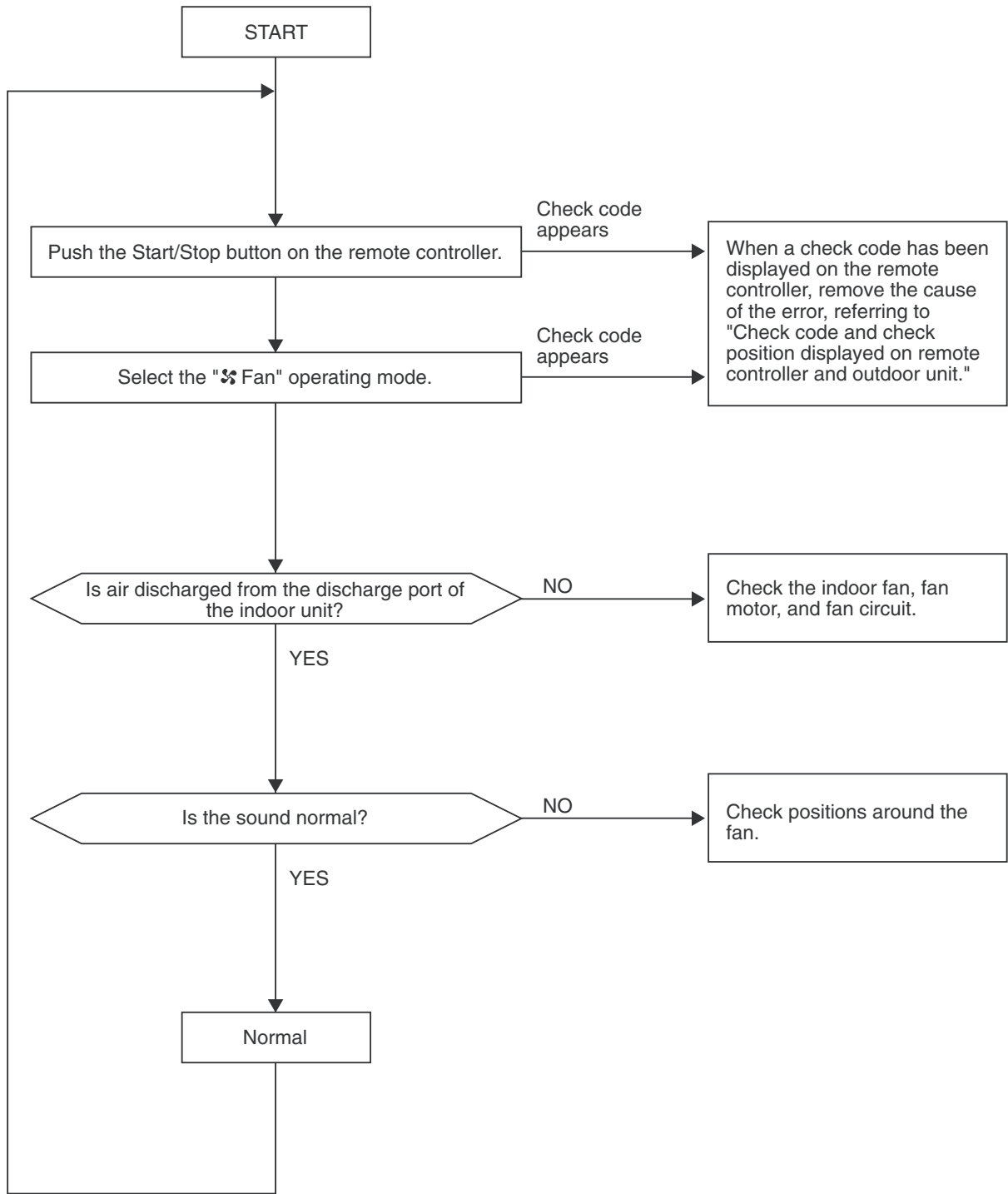
### Miswiring example

Figure	Remote controller status	Header unit 7-segment display	Miswiring example
Fig. 1	No response	E19-00	
Fig. 2	No response	E19-02	
Fig. 3	No response	E20-01	

Figure	Status	Miswiring example
Fig. 4	The number of connected outdoor units is too few.	
Fig. 5	The number of connected indoor units is too few.	

## 7-6. Test Operation Check

### 7-6-1. Fan Check



## 7-6-2. Single cooling/Single heating Test Operation Check

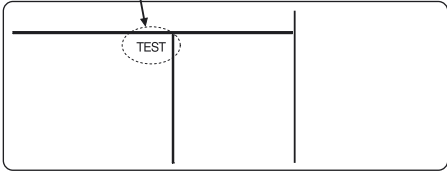

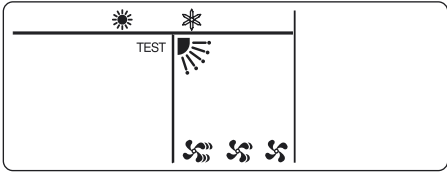


The Single cooling/Single heating test operation check can be performed on both the indoor remote controller and the outdoor header unit interface PC board.

### (1) Test operation start/stop operation

Test operation from the indoor remote controller

- Wired remote controller: Refer to the items below in “Test operation” of the wired remote controller.
- Wireless remote controller: Refer to the items below in “Test operation” of the wireless remote controller.
- Lite-Vision plus remote controller : Refer to the installation manual of RBC-AMS51E

#### ▼ Wired remote controller

Procedure	Operation content
1	When the Test button is pushed for 4 seconds or more, “TEST” is displayed in the display section, and the unit enters test operating mode. 
2	Push the  button.
3	Using the Select Mode button, select the “* COOL” or “* HEAT” operating mode. <ul style="list-style-type: none"> <li>• Do not use an operating mode other than “* COOL” or “* HEAT”.</li> <li>• Temperature adjustment is unavailable during test operation.</li> <li>• Error is detected as usual.</li> </ul> 
4	When the test operation has finished, push the  button to stop the operation. (The same display as in procedure 1 appears in the display section.)
5	Push the Test button to clear the test operating mode. (“TEST” disappears from the display section, and the status returns to the normal stopped status.) 

#### ▼ Wireless remote controller (Except the 4-way Cassette type and the Ceiling type)

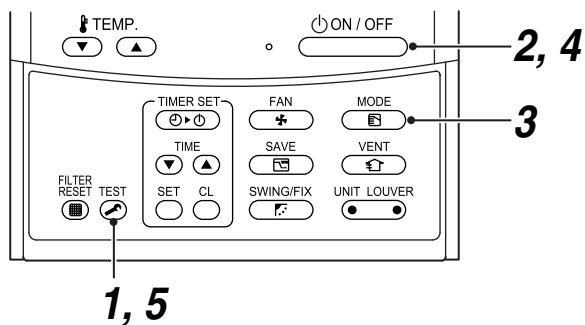
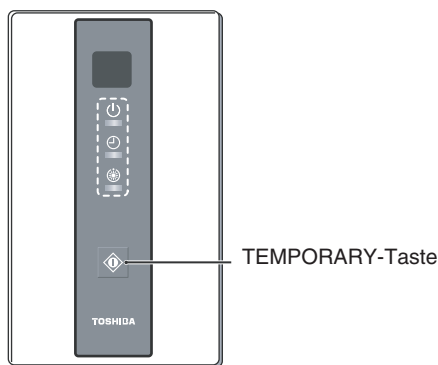
### Test run (Forced cooling operation)

#### Requirement:

- Finish the forced cooling operation in a short time because it applies excessive strength to the air conditioner.

#### How to perform forced cooling operation

1. When TEMPORARY button is pushed for 10 seconds or more, “Pi!” sound is heard and the operation changes to a forced cooling operation. After approx. 3 minutes, a cooling operation starts forcedly. Check cool air starts blowing. If the operation does not start, check wiring again.
2. To stop a test operation, push TEMPORARY button once again (Approx. 1 second).  
  - Check wiring / piping of the indoor and outdoor units in forced cooling operation.



▼ **Wireless remote controller  
(4-way Cassette type)**

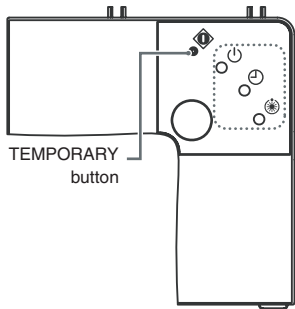
**Test run (Forced cooling operation)**

**Requirement:**

- Finish the forced cooling operation in a short time because it applies excessive strength to the air conditioner.

**How to perform forced cooling operation**

1. When TEMPORARY button is pushed for 10 seconds or more, “Pi!” sound is heard and the operation changes to a forced cooling operation. After approx. 3 minutes, a cooling operation starts forcedly. Check cool air starts blowing. If the operation does not start, check wiring again.
2. To stop a test operation, push TEMPORARY button once again (Approx. 1 second).
  - Check wiring / piping of the indoor and outdoor units in forced cooling operation.



▼ **Wireless remote controller  
(Ceiling type)**

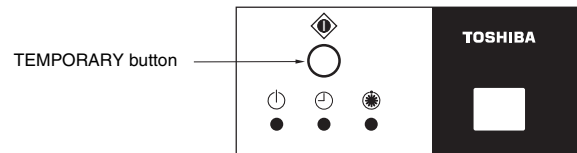
**Test run (Forced cooling operation)**

**Requirement:**

- Finish the forced cooling operation in a short time because it applies excessive strength to the air conditioner.

**How to perform forced cooling operation**

1. When TEMPORARY button is pushed for 10 seconds or more, “Pi!” sound is heard and the operation changes to a forced cooling operation. After approx. 3 minutes, a cooling operation starts forcedly. Check cool air starts blowing. If the operation does not start, check wiring again.
2. To stop a test operation, push TEMPORARY button once again (Approx. 1 second).
  - Check wiring / piping of the indoor and outdoor units in forced cooling operation.

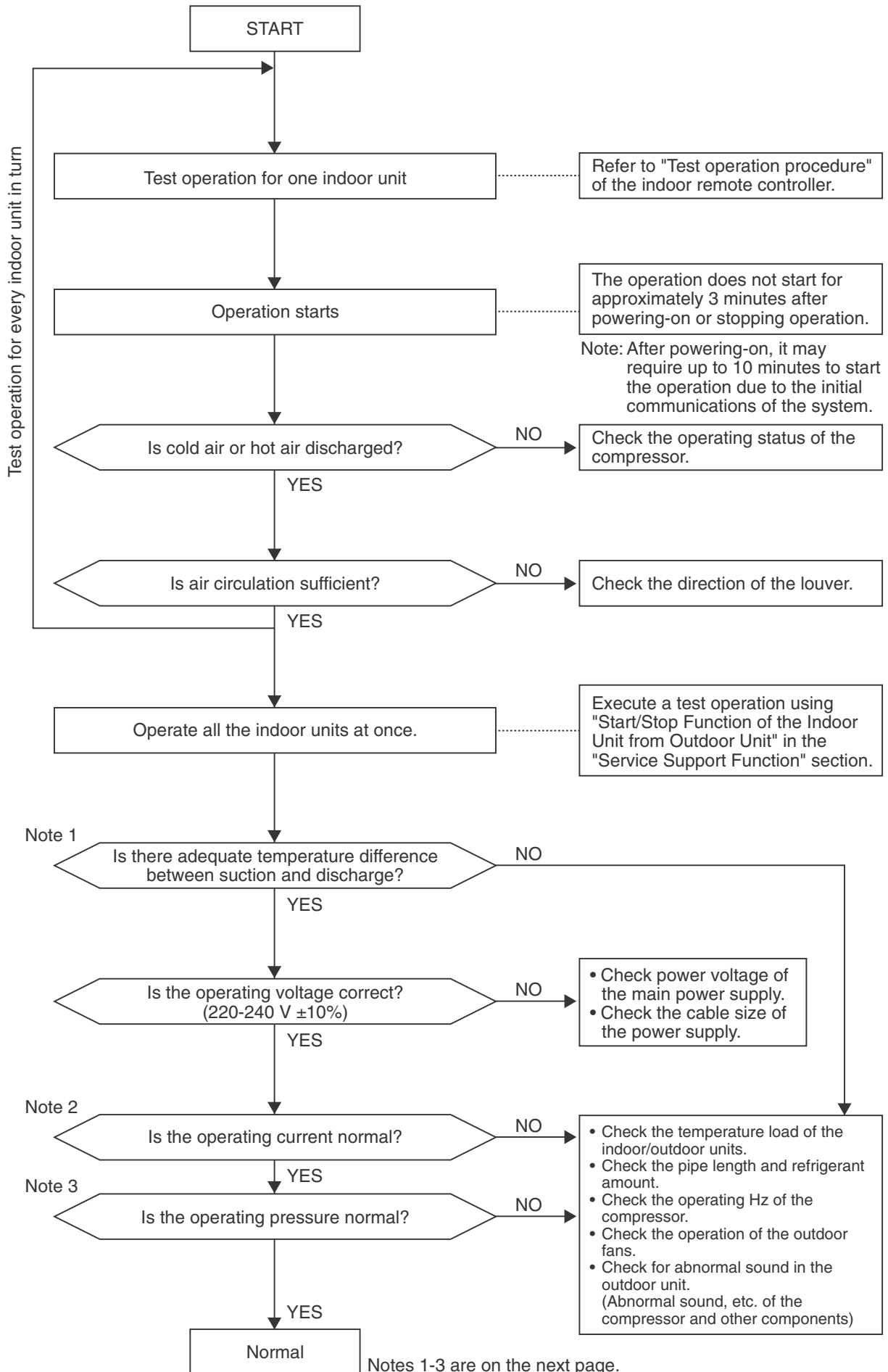


Test operation from the outdoor unit

- Refer to “7-7-2. Function to Start/Stop (ON/OFF) Indoor Unit from Outdoor Unit” in “7-7. Service Support Function.”

**Note:** The test operation returns to normal operating mode after 60 minutes.

(2) Test operation



### Note 1: Criteria for the difference between suction and discharge temperatures

(1) Individual cooling operation

After operating for a minimum of 30 minutes in “COOL” mode, if the  $\Delta T$  dry bulb temperature difference between suction and discharge air of the indoor unit is 8°C or more, it is normal.

(2) Individual heating operation

After operating for a minimum of 30 minutes in “HEAT” mode, if the  $\Delta T$  dry bulb temperature difference between suction and discharge air of the indoor unit is 15°C or more, it is normal.

\* If demand from the indoor unit on the outdoor unit is low because the difference between the temperature set by the remote controller and the temperature of the room is small, then the  $\Delta T$  temperature difference is small.

\* Consider that  $\Delta T$  temperature difference may diminish in cases of a system in which the connected indoor unit capacity exceeds the outdoor unit capacity, the pipe length is long, or a large difference exists among outdoor units.

### Note 2: Criteria for operating power current

The table below shows the maximum current for each outdoor unit. Under standard conditions, operating current is about 80% of the value shown in the table below.

Outdoor unit	MMY-MAP	0804*	1004*	1204*	1404*
Current value	(A)	23.5	25.5	28.5	33.2

### Note 3: Criteria for cycle status

(1) These data are based on operating a 4-way Cassette type air conditioner of 100% connection with standard piping length.

Data may vary depending on temperature conditions, installed pipe length, and room shape combinations, or indoor unit connection capacity.

For pressure criteria in different temperature conditions, refer to (2).

Outdoor unit MMY- MAP	Operating mode	Pressure (MPa)		Pipe surface temperature (°C)						Number of compressor rotations (rps)*			Indoor fan	Air temperature condition (DB/WB) (°C)	
		Pd	Ps	Discharge (TD)	Suction (TS1)	Suction (TS2)	Indoor heat exchanger (TC)	Outdoor heat exchanger (TE)	Liquid temperature (TL)	Compressor	Compressor	Compressor		Indoor	Outdoor
										1	2	3			
0804*	Single cooling	2.9	0.9	85	30	15	10	40	40	52	52	—	High	27/19	35/—
	Single heating	3.0	0.7	85	5	5	35	3	30	55	55	—	High	20/—	7/6
1004*	Single cooling	3.0	0.8	87	30	15	10	40	40	68	68	—	High	27/19	35/—
	Single heating	3.1	0.7	85	4	4	35	2	30	68	68	—	High	20/—	7/6
1204*	Single cooling	3.1	0.8	85	25	15	10	40	40	55	55	55	High	27/19	35/—
	Single heating	3.1	0.7	85	4	4	35	3	30	58	58	58	High	20/—	7/6
1404*	Single cooling	3.0	0.8	90	25	15	10	40	40	65	65	65	High	27/19	35/—
	Single heating	3.1	0.7	90	3	3	35	2	30	65	65	65	High	20/—	7/6

\* This compressor is driven with a 4-pole motor. The value of the compressor frequency (rps) measured with a clamp meter at the compressor lead line is two times the rotation count (rps) of the compressor.

\* Each compressor may have a different frequency as a measure against resonance.

\* The temperature of the indoor heat exchanger (TC) indicates TCJ sensor temperature when cooling, and TC2 sensor temperature when heating, respectively.

(2) Criteria for operating pressure

Operating mode		Single cooling	Single heating
Indoor temperature (°C)		18~32	15~25
Outdoor temperature (°C)		25~35	5~10
Pressure	High pressure (MPa)	2.0~3.3	2.5~3.3
	Low pressure (MPa)	0.5~0.9	0.5~0.7

\* Criteria after 15 minutes or more has passed since operating started.

(3) On rotations of outdoor fans

Outdoor fans may rotate slowly to control pressure when cooling with low outer air temperature or heating with excessive load. For control content, also refer to items in Section 5, “Control Outline: Outdoor Unit, Outdoor Fan Control.”

## 7-7. Confirmation of Test Operation

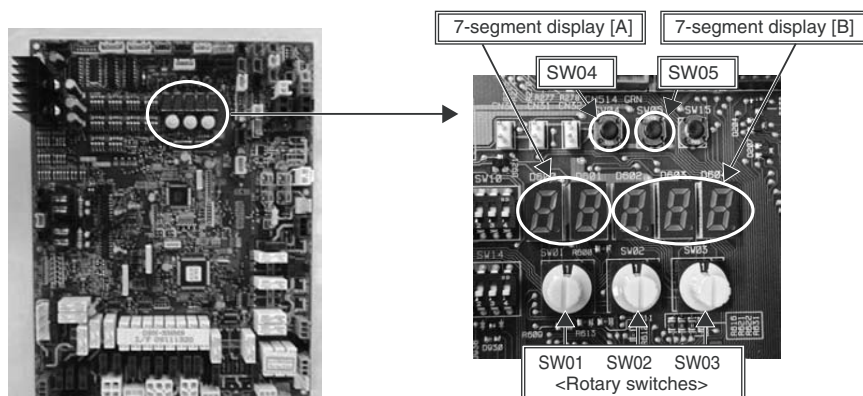
### 7-7-1. Function to Start/Stop (ON/OFF) Indoor Unit from Outdoor Unit

The following functions of the indoor unit can start or stop by the switches on the interface P.C. board of the header unit.

No.	Function	Outline	Setup/Release	7-segment display
1	Single cooling test operation	Changes the mode of all the connected indoor units collectively to cooling test operation. Note) Control operation same as usual test operation from remote control is performed.	[Setup] Set SW01/SW02/SW03 to [2/5/1], and push SW04 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [C. ]      Section B [ - C]
2	Single heating test operation	Changes the mode of all the connected indoor units collectively to heating test operation. Note) Control operation same as usual test operation from remote control is performed.	[Setup] Set SW01/SW02/SW03 to [2/6/1], and push SW04 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [H. ]      Section B [ - H]
3	Fan test operation	Changes operation mode of all the connected indoor units collectively to test operation mode. Note) Control operation same as usual test operation from remote control is performed.	[Setup] Set SW01/SW02/SW03 to [2/9/1], and push SW04 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [F. ]      Section B [ - F]
4	Batch start	Starts all the connected indoor units collectively. Note) The contents follow to the setup of remote controller.	[Setup] Set SW01/SW02/SW03 to [2/7/1], and push SW04 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1].	Section A [C.H]      Section B [ 11] [ 00] is displayed on Section B for 5 seconds.
	Batch stop	Stops all the connected indoor units collectively.	[Setup] Set SW01/SW02/SW03 to [2/7/1], and push SW05 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1].	Section A [C.H]      Section B [ 00] [ 00] is displayed on Section B for 5 seconds.
5	Individual start	Starts the specified indoor unit. Notes) • The contents follow to the setup of remote controller. • The other indoor units keep the status as they are.	[Setup] Set SW01 to [16], set SW02 and SW03 to address No. (1 to 48) to be started, and push SW04 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [ ]      Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [ 11] for 5 seconds from operation-ON.
	Individual stop	Stops the specified indoor unit. Note) The other indoor units keep the status as they are.	[Setup] Set SW01 to [16], set SW02 and SW03 to address No. (1 to 48) to be stopped, and push SW05 for 2 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [ ]      Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [ 00] for 5 seconds from operation-OFF.
	Individual test operation	Operates the specified indoor unit. Note) The other indoor units keep the status as they are.	[Setup] Set SW01 to [16], set SW02 and SW03 to address No. to be operated, and push SW04 for 10 seconds or more. [Release] Return SW01/SW02/SW03 to [1/1/1].	Section A [ ]      Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [ FF] for 5 seconds from test operation-ON.

**NOTE 1)** This start/stop function only sends the signals from the outdoor unit to the indoor unit, such as start, stop, operation mode, etc. It does not resend the signals even if the indoor unit does not follow the sent signals.

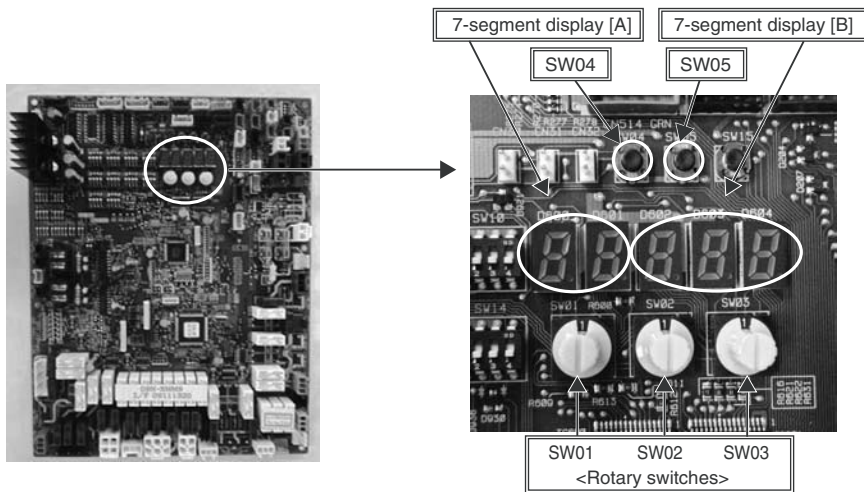
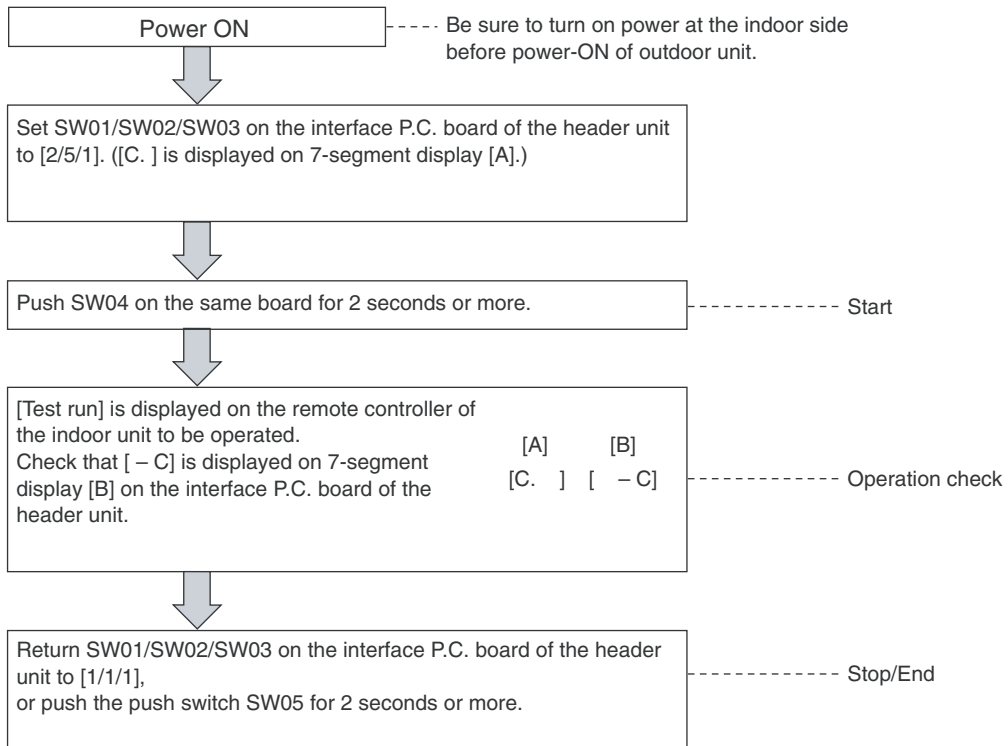
**NOTE 2)** The above controls are not used during abnormal stop.



(1) Single cooling test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for the cooling test operation mode, by using switches on the interface P.C. board of the header unit.

<Operation procedure>

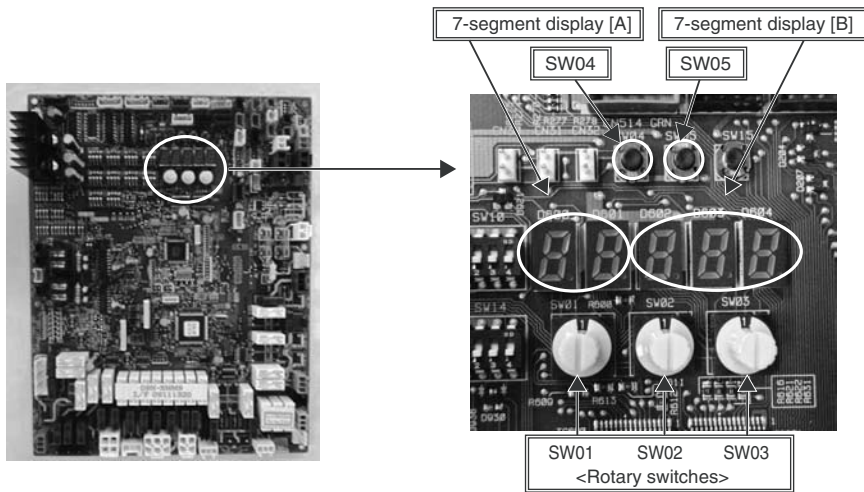
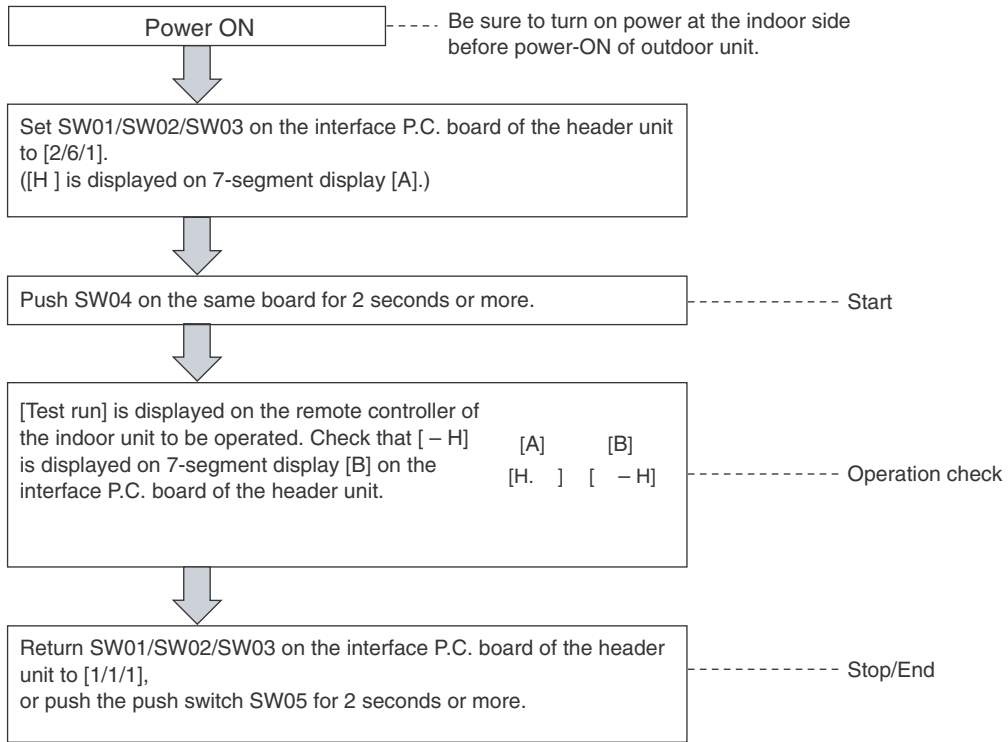


**NOTE)** The test operation returns to the normal operation after 60 minutes.

(2) Single heating test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for the heating test operation mode, by using switches on the interface P.C. board of the header unit.

<Operation procedure>

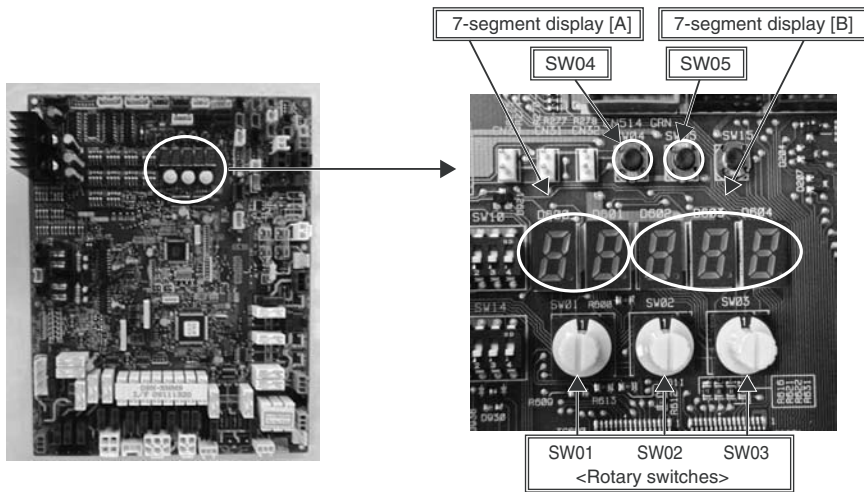
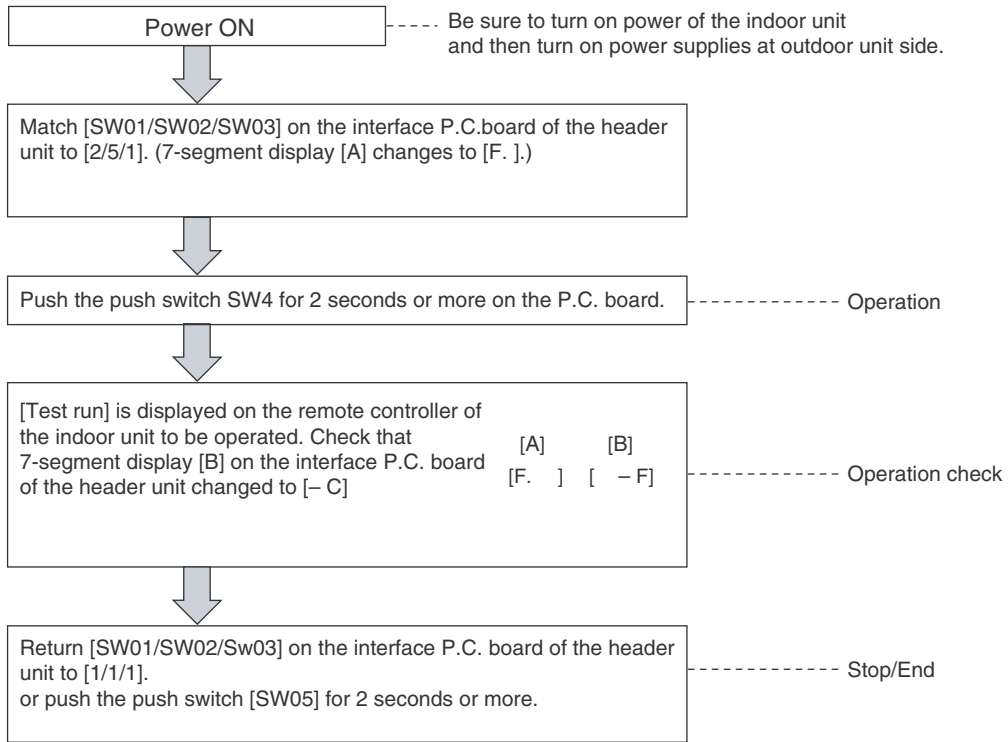


**NOTE)** The test operation returns to the normal operation after 60 minutes.

(3) Single fan test operation function

This function is provided to change collectively the mode of all the indoor units connected to the same system for the fan test operation mode by using switches on the interface P.C. board of the header unit.

<Operation procedure>

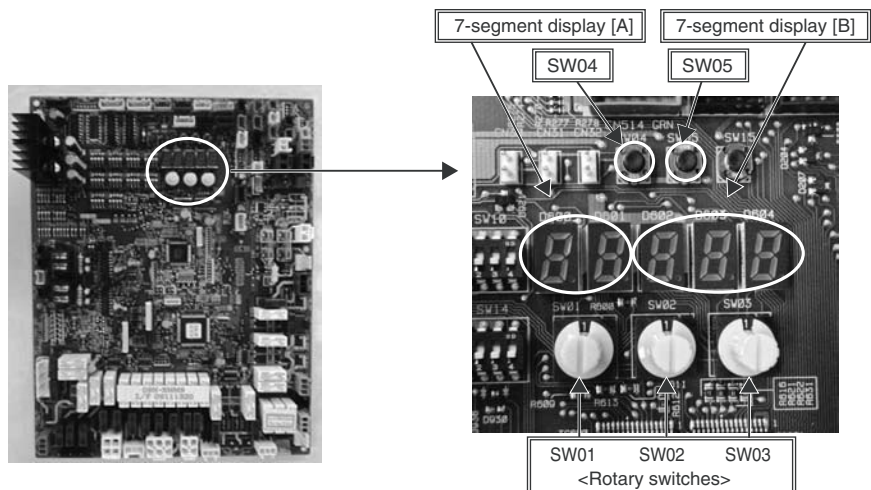
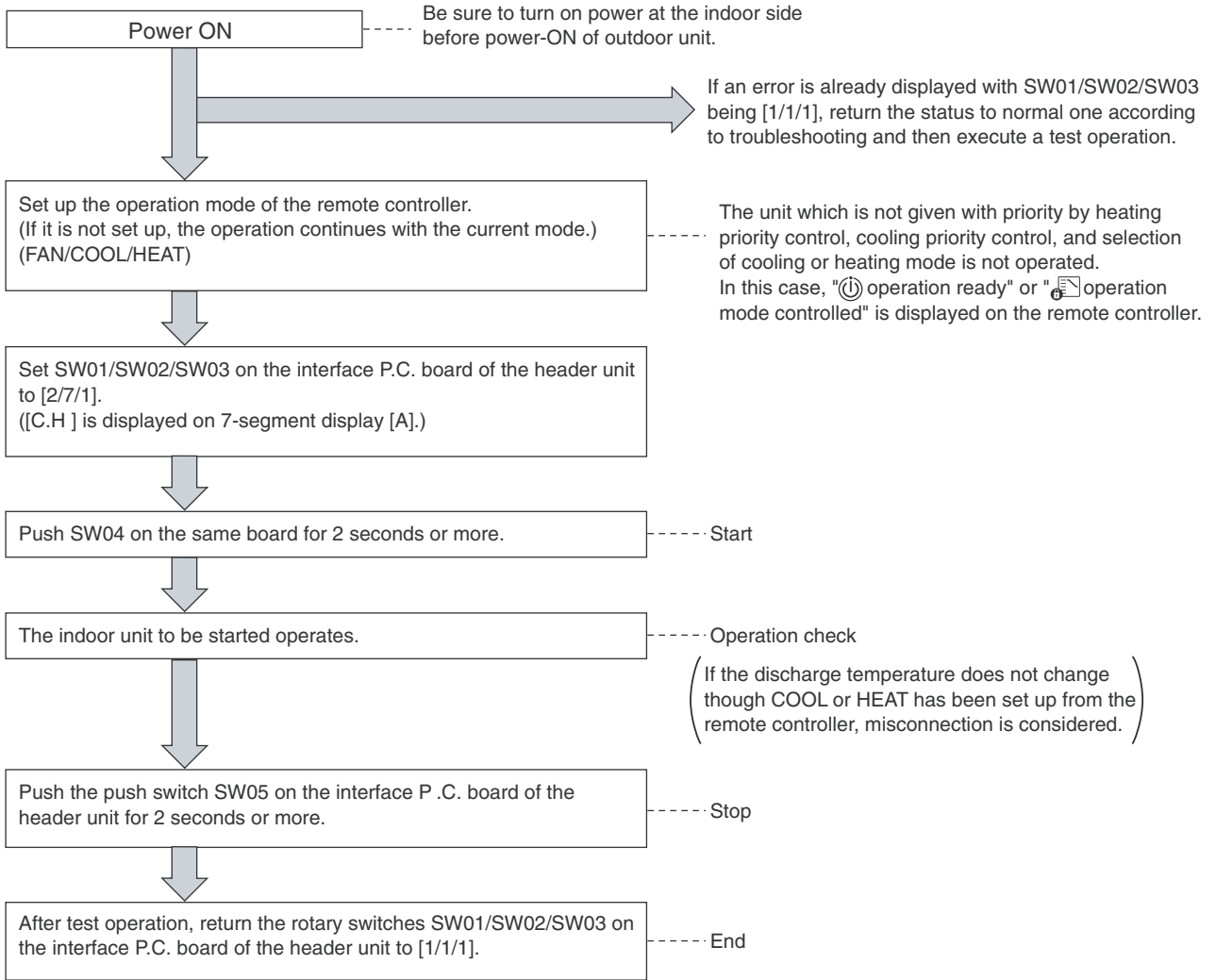


**NOTE)** The test operation ends after 60 minutes and the operation returns to normal status.

(4) Batch start/stop (ON/OFF) function

This function is provided to start/stop collectively all the indoor units connected to the same system by using switches on the interface P.C. board of the header unit.

<Operation procedure>



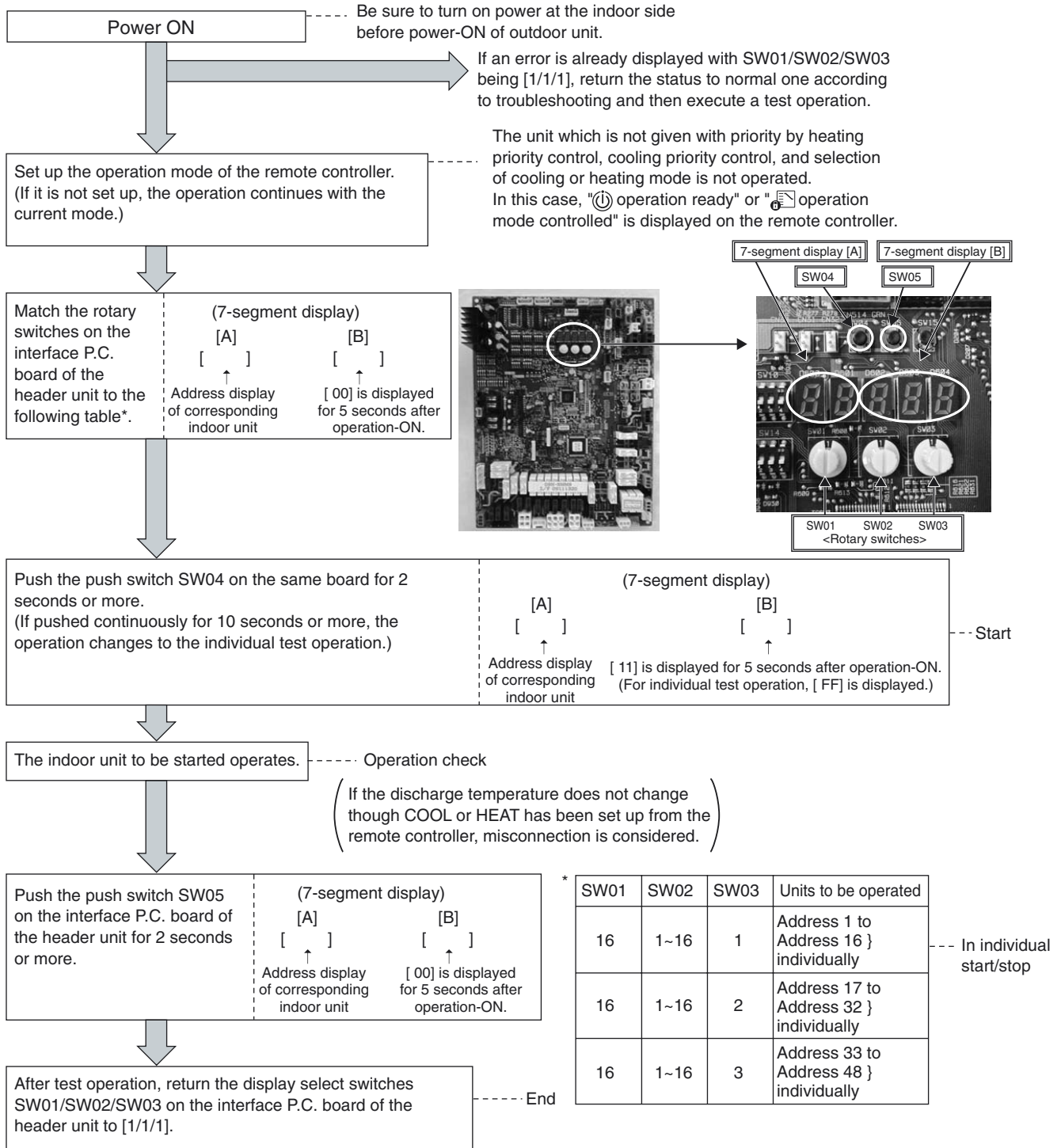
(5) Individual start/stop (ON/OFF) individual test operation function

This function is provided to start/stop (ON/OFF) individually each indoor unit connected to the same system by using switches on the interface P.C. board of the header unit.

Set SW01 [16] and set SW02, SW03 to indoor address No. (1 to 48) to be started (Refer to the following table\*) - only the setup indoor unit starts operation.

(In the rotary switches of the indoor unit which operates in a group by the remote controller, the follower unit cannot be individually started or stopped. In this case, [ - - ] is displayed on 7-segment display [B] on the interface P.C. board of the header unit.)

<Operation procedure>



**NOTE)** The individual test operation returns to the normal operation after 60 minutes.

## 7-7-2. Error Clearing Function

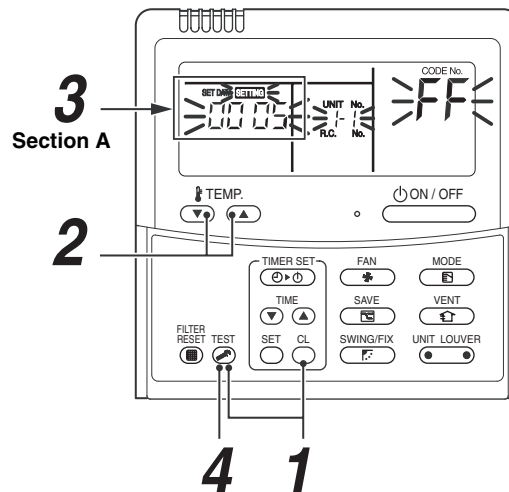
### (1) Clearing from the main remote controller

#### ▼ Error clearing in outdoor unit

Error of the outdoor unit currently detected is cleared by the unit of one refrigerant circuit system to which the indoor units operated by the remote controller is connected. (Error of the indoor unit is not cleared.)  
For clearing errors, the service monitor function of the remote controller is used.

#### <Method>

- 1 Change the mode to service monitor mode by pushing **CL** + **TEST** buttons simultaneously for 4 seconds or more.
- 2 Using **TEMP** buttons, set CODE No. to "FF".
- 3 The display in Section A in the following figure is counted with interval of 5 seconds as "0005" → "0004" → "0003" → "0002" → "0001" → "0000".  
When the count arrives "0000", the error is cleared.  
\* However, counting from "0005" is repeated on the display.
- 4 When **TEST** button is pushed, the status returns to the normal status.



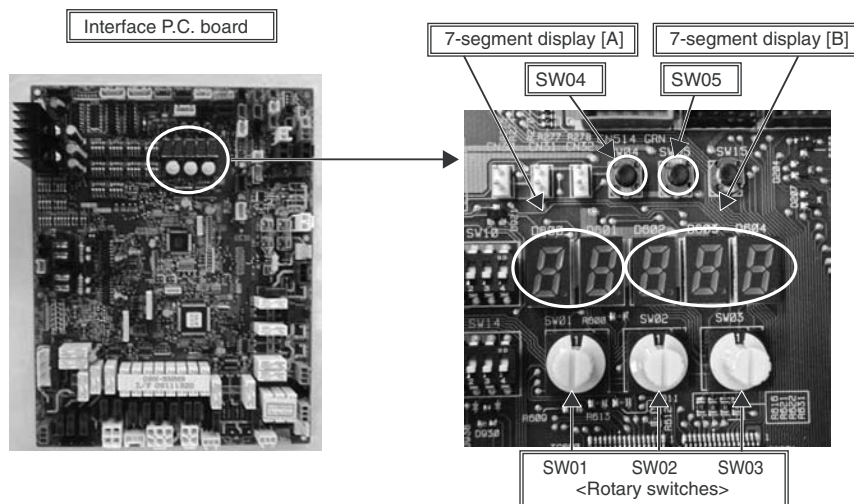
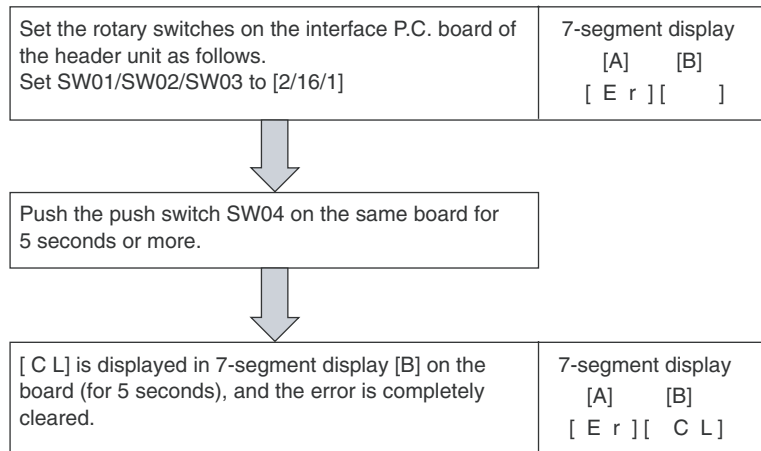
#### ▼ Error clearing in indoor unit

Error in the indoor unit is cleared by **ON / OFF** button on the remote controller.  
(Only error of the indoor unit connected with operating remote controller is cleared.)

## (2) Clearing error by using switches on the interface board of the header unit

Using the switches on the interface P.C. board of the header unit, this function is to clear the currently detected error for each refrigerant circuit system without resetting the power supply.

Errors in both outdoor and indoor units are once cleared, and error detection is performed again.



## (3) Clearing error by resetting power

This function is provided to clear error in a system by resetting the power of all the outdoor and the indoor units.

As same as the clearing method by the interface P.C. board, errors of both the outdoor and the indoor units are once cleared, and error detection is performed again.

### <Method>

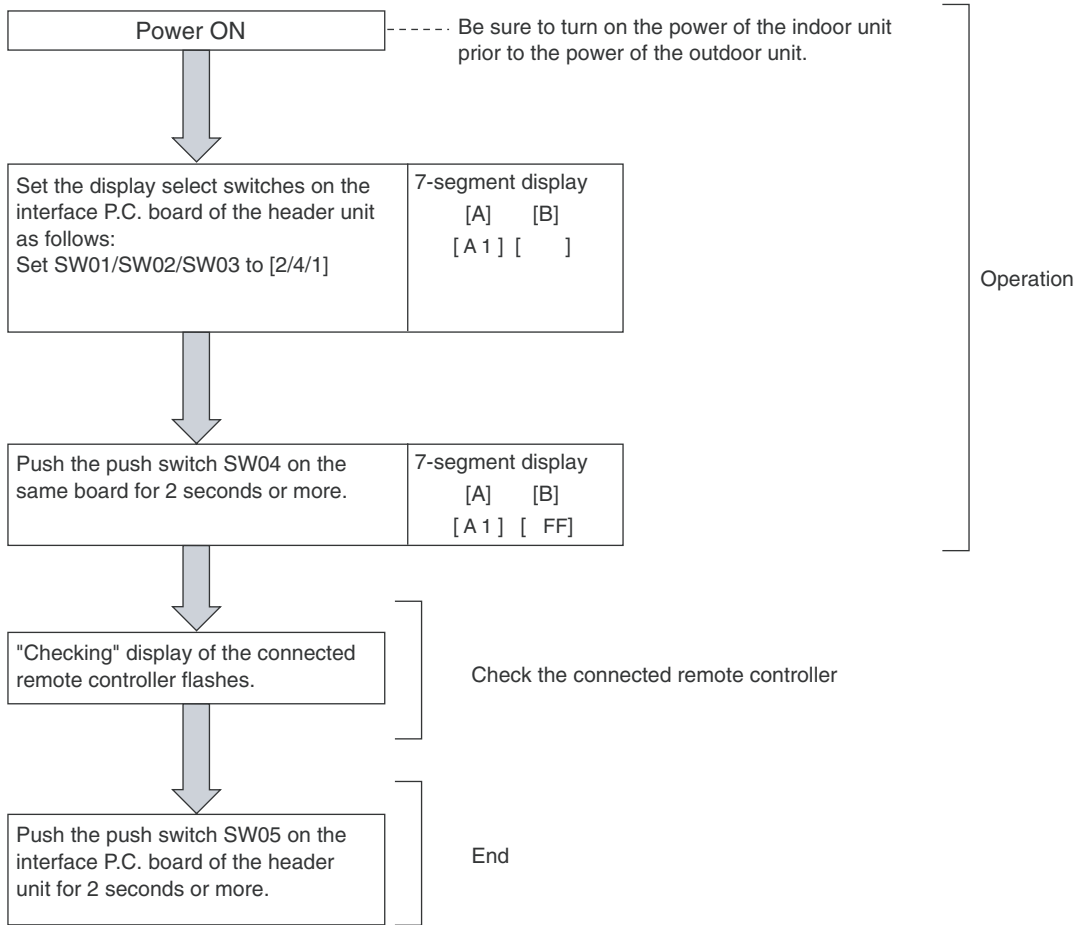
- (1) Be sure to reset power of both the outdoor and the indoor units.
- (2) Turn on the power of the indoor unit prior to the power of the outdoor unit.  
(If the power is turned on in reverse order, a check code [E19] (No. of header unit error) is output.)

**NOTE)** After power reset, it requires usually 3 minutes to power-on due to the initial communication of the system. In some cases, it requires max. 10 minutes.

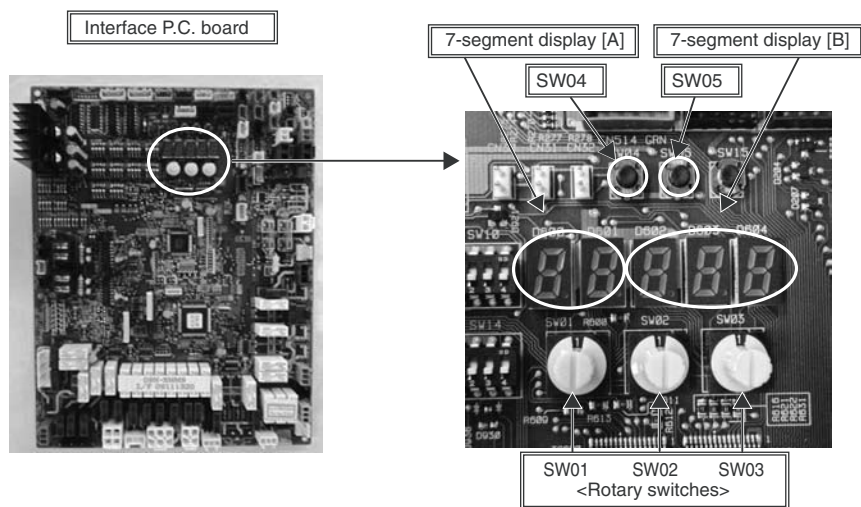
### 7-7-3. Remote Controller Distinction Function

This function is provided to distinguish the remote controller connected to the indoor unit from the outdoor unit for a refrigerant circuit system by using switches on the interface P.C. board of the header unit.

<Distinction procedure>



- Other end conditions:
1. 10 minutes has passed
  2. SW01, SW02, or SW03 changed to other position.



#### **7-7-4. Pulse Motor Valve (PMV) Forced Open/Close Function in Indoor Unit**

This function is provided to open or close forcedly PMV for 2 minutes in all the indoor units by the switch operation on the interface P.C. board of the header unit.

This function is also used to open PMV fully when turning off the power and executing an operation.

##### **<Operation>**

##### **[Open fully]**

Set the switches SW01/SW02/SW03 on the interface P.C. board of the header unit to [2/3/1], and push SW04 for 2 seconds or more.

(Display appears on 7-segment display for 2 minutes as follows.) [P ] [ FF]

##### **[Close fully]**

Set the switches SW01/SW02/SW03 on the interface P.C. board of the header unit to [2/3/1], and push SW05 for 2 seconds or more.

(Display appears on 7-segment display for one minute as follows.) [P ] [ 00]

##### **[Clear]**

After 2 minutes (1 minutes for “Close fully”) after setting up, the opening automatically returns to the normal opening.

#### **7-7-5. Pulse Motor Valve (PMV) Forced Open Fully/Close fully Function in Outdoor Unit**

This function is provided to forcedly open or close fully P.M.V. (PMV1/PMV2, PMV4) used in the outdoor unit for 2 minutes.

##### **[PMV1/PMV2 Open fully]**

On the interface P.C. board of the outdoor unit, set the dip switch [SW12-bit1] to [OFF], [SW12-bit2] to [OFF], and shortcircuit CN30.

##### **[PMV1/PMV2 Close fully]**

On the interface P.C. board of the outdoor unit, set the dip switch [SW12-bit1] to [OFF], [SW12-bit2] to [OFF], and shortcircuit CN31.

##### **[PMV4 Open fully]**

On the interface P.C. board of the outdoor unit, set the dip switch [SW12-bit1] to [OFF], [SW12-bit2] to [ON], and shortcircuit CN30.

##### **[PMV4 Close fully]**

On the interface P.C. board of the outdoor unit, set the dip switch [SW12-bit1] to [OFF], [SW12-bit2] to [ON], and shortcircuit CN31.

##### **[Clear]**

For both open fully and close fully, after 2 minutes, the opening returns to the normal opening.

Be sure to remove the cord used for short-circuit after confirmation, and set the dip switch [SW12-bit1] to [OFF] and [SW12-bit2] to [OFF].

### 7-7-6. Solenoid Valve Forced Open/Close Function in Outdoor Unit

This function is provided to forcedly open each solenoid valve mounted in the outdoor unit by the switch operation on the interface P.C. board in the outdoor unit. Use this function to check there is no refrigerant clogging with ON/OFF operation of the solenoid valve.

#### [Operation]

- (1) Set the switches SW01/SW02/SW03 on the interface P.C. board of the outdoor unit to [2/1/3].
- (2) When [H. r] is displayed in 7-segment display [A], keep pushing the switch SW04 for 2 seconds or more.
- (3) From when [ 2 ] is displayed in 7-segment display [B], SV2 is turned on.
- (4) After then, ON and OFF of each solenoid valve are exchanged by changing the setup number of the switch SW02.

(ON/OFF output pattern of each solenoid valve is as shown below.)

**NOTE 1)** Display in 7-segment display [B] is exchanged just when the number of SW02 has been changed; on the other hand, the solenoid valve output is exchanged when SW02 has been kept with the same number for 5 seconds or more.

**NOTE 2)** The mark [O] in the table indicates that the corresponding solenoid valve is forcedly turned on.

**NOTE 3)** The mark [-] in the table indicates that ON/OFF of the solenoid valve is controlled based upon the specifications of the air conditioner.

**NOTE 4)** The mark [×] in the table indicates that the corresponding solenoid valve is forcedly turned off with this operation.

**NOTE 5)** The case heater output is for both the compressor and accumulator heaters.

SW02	7-segment display [B]	Operation pattern of solenoid valve														Case heater output
		SV2	SV5	SV41	SV42	SV43	SV3A	SV3B	SV3C	SV3D	SV3E	SV3F	SV6	SV11	SV14	
1	[ 2 ]	O	—	—	—	—	—	—	—	—	O	—	—	—	—	O
2	[ 5 ]	—	O	—	—	—	—	—	—	—	O	—	—	—	—	O
3	[ 41 ]	—	—	O	—	—	—	—	—	—	O	—	—	—	—	O
4	[ 42 ]	—	—	—	O	—	—	—	—	—	O	—	—	—	—	O
5	[ 43 ]	—	—	—	—	O	—	—	—	—	O	—	—	—	—	O
6	[ 3A ]	—	—	—	—	—	O	—	—	—	O	—	—	—	—	O
7	[ 3b ]	—	—	—	—	—	—	O	—	—	O	—	—	—	—	O
8	[ 3C ]	—	—	—	—	—	—	—	O	×	O	O	—	—	—	O
9	[ 3d ]	—	—	—	—	—	—	—	—	O	×	O	—	—	—	O
10	[ 3- ]	—	—	—	—	—	O	O	O	×	O	×	—	—	—	O
11	[ 6 ]	—	—	—	—	—	—	—	—	—	O	—	O	—	—	O
12	[ ]	—	—	—	—	—	—	—	—	—	O	—	—	—	—	O
13	[ 11 ]	—	—	—	—	—	—	—	—	—	O	—	—	O	—	O
15	[ 14 ]	—	—	—	—	—	—	—	—	—	O	—	—	—	O	O
16	[ ALL ]	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

#### [Clear]

Return switches SW01/SW02/SW03 on the interface P.C. board to [1/1/1].

**NOTE)** As this function is not based on the specified general control, be sure to release this mode after checking.

## 7-7-7. Fan Operation Check in Outdoor Unit

This function is provided to check the fan operation of the outdoor unit by using switches on the interface P.C. board in the outdoor unit. The frequency of the fan speed can be controlled by setting of the switches. Use this function to check the operation or abnormal sound in the fan system. And, use this function while the system is stopped.

**NOTE)** Do not use this function during operation of the compressor. It may damage the compressor.

### [Operation]

- (1) Set the switches SW01/SW02/SW03 on the interface P.C. board of the outdoor unit to [2/1/4].
- (2) When [F. d] is displayed in 7-segment display [A], keep pushing the switch SW04 for 2 seconds or more.
- (3) When [ 63 ] is displayed in 7-segment display [B], the fan starts operation. (Max. mode operation)
- (4) After that, by changing the setup number of the switches SW02 and SW03, 7-segment display [B] and the fan mode are changed.  
(Mode output pattern of the fan is as follows.)

SW02	SW03	7-segment display [B]	Fan mode
1	4	[ 63 ]	63
2		[ 62 ]	62
3		[ 61 ]	61
4		[ 60 ]	60
5		[ 59 ]	59
6		[ 58 ]	58
7		[ 57 ]	57
8		[ 56 ]	56
9		[ 55 ]	55
10		[ 54 ]	54
11		[ 53 ]	53
12		[ 52 ]	52
13		[ 51 ]	51
14		[ 50 ]	50
15		[ 49 ]	49
16		[ 48 ]	48
1	5	[ 47 ]	47
2		[ 46 ]	46
3		[ 45 ]	45
4		[ 44 ]	44
5		[ 43 ]	43
6		[ 42 ]	42
7		[ 41 ]	41
8		[ 40 ]	40
9		[ 39 ]	39
10		[ 38 ]	38
11		[ 37 ]	37
12		[ 36 ]	36
13		[ 35 ]	35
14		[ 34 ]	34
15		[ 33 ]	33
16		[ 32 ]	32

SW02	SW03	7-segment display [B]	Fan mode
1	6	[ 31 ]	31
2		[ 30 ]	30
3		[ 29 ]	29
4		[ 28 ]	28
5		[ 27 ]	27
6		[ 26 ]	26
7		[ 25 ]	25
8		[ 24 ]	24
9		[ 23 ]	23
10		[ 22 ]	22
11		[ 21 ]	21
12		[ 20 ]	20
13		[ 19 ]	19
14		[ 18 ]	18
15		[ 17 ]	17
16		[ 16 ]	16
1	7	[ 15 ]	15
2		[ 14 ]	14
3		[ 13 ]	13
4		[ 12 ]	12
5		[ 11 ]	11
6		[ 10 ]	10
7		[ 9 ]	9
8		[ 8 ]	8
9		[ 7 ]	7
10		[ 6 ]	6
11		[ 5 ]	5
12		[ 4 ]	4
13		[ 3 ]	3
14		[ 2 ]	2
15		[ 1 ]	1
16		[ 0 ]	0

### [Clear]

This function is cleared by one of the following operations.

- (1) When SW01 setting number was changed to other number.
- (2) Push-switch SW05 was push for 2 seconds or more.

### 7-7-8. Abnormal Outdoor Unit Discrimination Method By Fan Operating Function

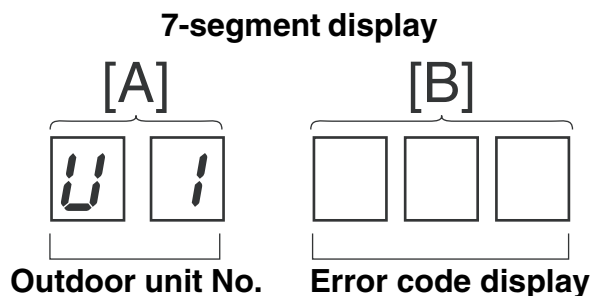
This function is provided to forcedly operate the fan of the outdoor unit in which an error occurred or the fan of the normal outdoor unit by the switch operation on the interface P.C. board in the header unit.

To specify which one of the follower units connected to the system was faulty, use this function for the system stop due to a follower unit fault (Check code [E28]).

#### [Operation]

<In case to operate the fan in the erroneous outdoor unit only>

(1) Check that the switches SW01/SW02/SW03 on the interface P.C. board in the header unit are set to [1/1/1].



(2) Push the push switch SW04 for 2 seconds or more.

(3) [E 1] is displayed on 7-segment display [A].

(4) The fan of the outdoor unit in which error occurred starts operation within approx. 10 seconds after [E 1] was displayed.

<In case to operate the fans in all the normal outdoor units>

(1) Check that the switches SW01/SW02/SW03 on the interface P.C. board in the header unit are set to [1/1/1].

(2) Push the push switches SW04 and SW05 at the same time for 2 seconds or more.

(3) [E 0] is displayed on 7-segment display [A].

(4) The fans of all the normal outdoor units start operation with the Max. fan speed within approx. 10 seconds after [E 0] was displayed.

#### [Release]

Push the push switch SW05 on the interface P.C. board in the header unit for 2 seconds or more.

The outdoor fan which was operated stops.

\* Check that [U. 1] is displayed on 7-segment display [A], and then finish the work.

### 7-7-9. Manual Adjustment Function of Outside Temperature (TO) Sensor

This function is provided to fix TO sensor value manually by the switch operation on the interface P.C. board in the outdoor unit. When the unit stops abnormally due to TO sensor failure, etc, an emergent operation is available by setting up the value manually to position near the current outside temperature.

#### [Operation]

- (1) Set the rotary switches on the interface P.C. board to numbers as follows:
  - SW01/SW02/SW03 to [2/1/15]
  - 7-segment display: [ t o ]
- (2) Keep pushing the push switch SW04 on the interface P.C. board for 1 second or more. The mode changes to the TO sensor value fix manual mode.
- (3) As shown in the following table, TO sensor value can be fixed by setting the rotary switch SW02 on the interface P.C. board.

#### [Clear]

Return SW01/SW02/SW03 on the interface P.C. board in the outdoor unit to [1/1/1].

SW02	7-segment display [B]	TO sensor value
1	[ 10 ]	10°C
2	[ 15 ]	15°C
3	[ 20 ]	20°C
4	[ 25 ]	25°C
5	[ 30 ]	30°C
6	[ 35 ]	35°C
7	[ 40 ]	40°C
8	[ 43 ]	43°C
9	[ 45 ]	45°C
10	[ -15 ]	-15°C
11	[ -10 ]	-10°C
12	[ - 5 ]	-5°C
13	[ 0 ]	0°C
14	[ 2 ]	2°C
15	[ 5 ]	5°C
16	[ 7 ]	7°C

**NOTE)** If operated with TO sensor fixed by this function, the system control operation of the air conditioner may not be based on the specification of the product. Therefore an emergent operation should be restricted to a day or so.

<Service support function list>

SW01	SW02	SW03	7-segment display [A]	Function contents
2		1	[J . C]	Refrigerant circuit and control communication line check function (Cooling operation)
			[J . H]	Refrigerant circuit and control communication line check function (Heating operation)
			[P . ]	Indoor PMV forced full open function
			[A . 1]	Indoor remote controller discriminating function
			[C . ]	Cooling test operation function
			[H . ]	Heating test operation function
			[C . H]	Indoor collective start/stop (ON/OFF) function
			[r . d]	Outdoor refrigerant recovery operation function (Pump down function)
			[E . r]	Error clear function

2	1~16	3	[H . r]	Solenoid valve forced open/close function
2		4~7	[F . d]	Fan forced operation function
2		15	[t . o]	Outside temperature sensor manual adjustment function

16	1~16	1	[0 1]~[1 6]	Indoor No. 1 to 16 unit	Indoor individual start/stop (ON/OFF) function
		2	[1 7]~[3 2]	Indoor No. 17 to 32 unit	
		34	[3 3]~[4 8]	Indoor No. 33 to 48 unit	

SW01	SW02	SW03	7-segment display [A/B]	Function contents
1	1	1	[U 1] [ E28 ]	Follower unit error / Corresponding unit fan operation function

## 7-7-10. Monitor Function of Remote Controller Switch

When using a remote controller with the model name RBC-AMT32E, the following monitor functions can be used.

### Calling of display screen

#### <Content>

The sensor temperature or operation status of the remote controller, indoor unit, or the outdoor unit can be known by calling up the service monitor mode from the remote controller.

#### [Procedure]

- 1** Push **TEST** + **CL** buttons simultaneously for 4 seconds or more to call up the service monitor mode.

The service monitor goes on, and temperature of the CODE No. **00** is firstly displayed.

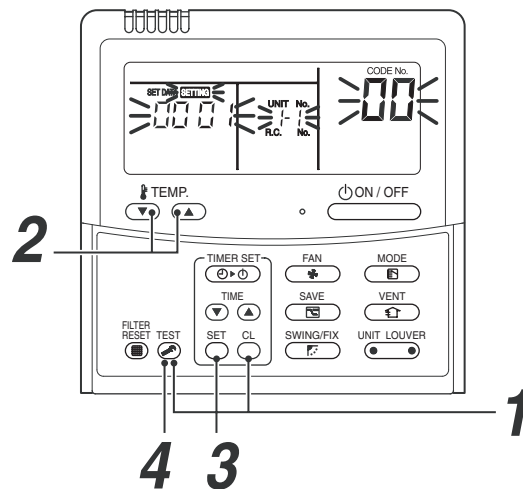
- 2** Push the temperature setup **TEMP** buttons to select the CODE No. to be monitored.

For displayed codes, refer to the table next page.

- 3** Push **SET** button to determine the item to be monitored.

Then monitor the sensor temperature or operation status of indoor unit and the outdoor unit in the corresponding refrigerant line.

- 4** Pushing **TEST** button returns the display to the normal display.



	CODE No.	Data name	Display format	Unit	Remote controller display example
Indoor unit data *1	00	Room temperature (During control) *1	×1	°C	[0024] = 24°C
	01	Room temperature (Remote controller)	×1	°C	
	02	Indoor suction temperature (TA)	×1	°C	
	03	Indoor coil temperature (TCJ)	×1	°C	
	04	Indoor coil temperature (TC2)	×1	°C	
	05	Indoor coil temperature (TC1)	×1	°C	
	06	Indoor discharge temperature (TF) *2	×1	°C	[0150] = 1500pls [2500] = 2500h
	08	Indoor PMV opening	×1/10	pls	
	F3	Filter sign time	×1	h	
	F9	Suction temperature of air to air heat exchanger (TSA) *2	×1	°C	
System data	FA	Outside air temperature (TOA) *2	×1	°C	[0024] = 24°C
	0A	No. of connected indoor units	×1	unit	[0048] = 48 units
	0B	Total horsepower of connected indoor units	×10	HP	[0415] = 41.5HP
	0C	No. of connected outdoor units	×1	unit	[0004] = 4 units
	0D	Total horsepower of outdoor units	×10	HP	[0420] = 42HP

	CODE No.			Data name	Display format	Unit	Remote controller display example
	U1	U2	U3				
Outdoor unit individual data 1 *3	10	20	30	High-pressure sensor detention pressure (Pd)	×100	MPa	[0123]=1.23MPa
	11	21	31	Low-pressure sensor detention pressure (Ps)	×100	MPa	
	12	22	32	Compressor 1 discharge temperature (Td1)	×1	°C	[0024]=24°C
	13	23	33	Compressor 2 discharge temperature (Td2)	×1	°C	
	14	24	34	Compressor 3 discharge temperature (Td3)	×1	°C	
	15	25	35	Suction temperature (TS1)	×1	°C	
	16	26	36	Outdoor coil temperature 1 (TE1)	×1	°C	
	17	27	37	Outdoor coil temperature 2 (TE2)	×1	°C	
	18	28	38	Temperature at liquid side (TL)	×1	°C	[0500]=500pls
	19	29	39	Outside ambient temperature (TO)	×1	°C	
	1A	2A	3A	PMV1 + 2 opening	×1	pls	
	1B	2B	3B	PMV4 opening	×1	pls	[0135]=13.5A
	1C	2C	3C	Compressor 1 current (I1)	×10	A	
	1D	2D	3D	Compressor 2 current (I2)	×10	A	
	1E	2E	3E	Compressor 3 current (I3)	×10	A	
		1F	2F	3F	Outdoor fan current (IFan)	×10	A

	CODE No.			Data name	Display format	Unit	Remote controller display example
	U1	U2	U3				
Outdoor unit individual data 2 *4	50	60	70	Compressor 1 revolutions	×10	rps	[0642]=64.2rps
	51	61	71	Compressor 2 revolutions	×10	rps	
	52	62	72	Compressor 3 revolutions	×10	rps	
	53	63	73	Outdoor fan mode	×1	mode	[0058]= 58 mode
	54	64	74	Compressor IPDU 1 heat sink temperature	×1	°C	[0024]=24 °C
	55	65	75	Compressor IPDU 2 heat sink temperature	×1	°C	
	56	66	76	Compressor IPDU 3 heat sink temperature	×1	°C	
	57	67	77	Outdoor fan IPDU heat sink temperature	×1	°C	
		58	—	—	Heating/cooling recovery controlled *5	0: Normal 1: Recovery controlled	[0010]=Heating recovery controlled [0001]=Cooling recovery controlled
		59	—	—	Pressure release *5	0: Normal 1: Release controlled	[0010]=Pressure release controlled
		5A	—	—	Discharge temperature release *5		[0001]=Discharge temperature release controlled
		5B	—	—	Follower unit release (U2/U2/U4 outdoor units) *5		[0100]=U2 outdoor unit release controlled [0010]=U3 outdoor unit release controlled [0001]=U4 outdoor unit release controlled
	5F	6F	7F	Outdoor unit horsepower	×1	HP	[0014]=14HP

- \*1 When the units are connected to a group, data of the header indoor unit only can be displayed.
- \*2 Only a part of indoor unit types is installed with the discharge temperature sensor. This temperature is not displayed for other types.
- \*3 The first digit of an CODE No. indicates the outdoor unit number.
- \*4 The upper digit of an CODE No. -4 indicates the outdoor unit number.  
1\* , 5\* ... U1 outdoor unit (Header unit)  
2\* , 6\* ... U2 outdoor unit (Follower unit 1)  
3\* , 7\* ... U3 outdoor unit (Follower unit 2)
- \*5 Only the CODE No. 5\* of U1 outdoor unit (Header unit) is displayed.

# 8. TROUBLESHOOTING

## 8-1. Overview

(1) Before engaging in troubleshooting

(a) Applicable models

All Super Heat Recovery Multi (SHRM-i) models.  
(Indoor units: MMO-APOOO, Outdoor units: MMY-MAPOOO4F\*)

(b) Tools and measuring devices required

- Screwdrivers (Philips, flat head), spanners, long-nose pliers, nipper, pin to push reset switch, etc.
- Multimeter, thermometer, pressure gauge, etc.

(c) Things to check prior to troubleshooting (behaviors listed below are normal)

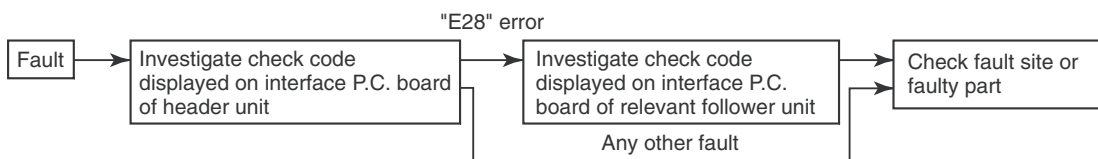
NO.	Behavior	Possible cause
1	A compressor would not start	<ul style="list-style-type: none"> <li>• Could it just be the 3-minute delay period (3 minutes after compressor shutdown)?</li> <li>• Could it just be the air conditioner having gone thermo OFF?</li> <li>• Could it just be the air conditioner operating in fan mode or put on the timer?</li> <li>• Could it just be the system going through initial communication?</li> <li>• Could it just be within range of use temperature? When outside temperature is 21°C or higher, heating operation is not available. When outside temperature is -10°C or lower, cooling operation is not available.</li> </ul>
2	An indoor fan would not start	<ul style="list-style-type: none"> <li>• Could it just be cold air discharge prevention control, which is part of heating?</li> </ul>
3	An outdoor fan would not start or would change speed for no reason	<ul style="list-style-type: none"> <li>• Could it just be cooling operation under low outside temperature conditions?</li> <li>• Could it just be defrosting operation?</li> </ul>
4	An indoor fan would not stop	<ul style="list-style-type: none"> <li>• Could it just be the elimination of residual heat being performed as part of the air conditioner shutdown process after heating operation?</li> </ul>
5	The air conditioner would not respond to a start/stop command from a remote controller	<ul style="list-style-type: none"> <li>• Could it just be the air conditioner operation under external or remote control?</li> </ul>

### CAUTION

The cooling performance may decline considerably when total operating capacity of cooling indoor units is less than 4 HP while ambient temperature is below 0 °C.

(2) Troubleshooting procedure

When a fault occurs, proceed with troubleshooting in accordance with the procedure shown below.



### NOTE

Rather than a genuine fault (see the List of Check Codes below), the problem could have been caused by a microprocessor malfunction attributable to a poor quality of the power source or an external noise. Check for possible noise sources, and shield the remote controller wiring and signal wires as necessary.

## 8-2. Troubleshooting Method

The remote controllers (main remote controller and central control remote controller) and the interface P.C. board of an outdoor unit are provided with an LCD display (remote controller) or a 7-segment display (outdoor interface P.C. board) to display operational status. Using this self-diagnosis feature, the fault site/faulty part may be identified in the event of a fault by following the method described below.

The list below summarizes check codes detected by various devices. Analyze the check code according to where it is displayed and work out the nature of the fault in consultation with the list.

- When investigating a fault on the basis of a display provided on the indoor remote controller or TCC-LINK central control remote controller - See the “TCC-LINK remote control or main remote controller display” section of the list.
- When investigating a fault on the basis of a display provided on an outdoor unit - See the “Outdoor 7-segment display” section of the list.
- When investigating a fault on the basis of a wireless remote controller-controlled indoor unit - See the “Light sensor indicator light block” section of the list.

### List of Check Codes (Indoor Unit)

(Error detected by indoor unit)

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)

○ : Lighting, ◎ : Flashing, ● : Goes off

ALT.: Flashing is alternately when there are two flashing LED

SIM: Simultaneous flashing when there are two flashing LED

\* Indicator light display of the receiving unit may be different from those in the following table. (Wall type 3 series, etc.)

Check code		Display of receiving unit		Typical fault site	Description of error	
Outdoor 7-segment display	TCC-LINK central control or main remote controller display	Indicator light block				
Sub-code		Operation Timer Ready ⏴ ⏵ ⏸	Flash			
—	—	E03	◎ ● ●	Indoor-remote controller periodic communication error	Communication from remote controller or network adaptor has been lost (so has central control communication).	
—	—	E04	● ● ◎	Indoor-outdoor periodic communication error	Signals are not being received from outdoor unit.	
E08	Duplicated indoor address	E08	◎ ● ●	Duplicated indoor address	Indoor unit detects address identical to its own.	
—	—	E10	◎ ● ●	Indoor inter-MCU communication error	MCU communication between main controller and motor microcontroller is faulty.	
—	—	E18	◎ ● ●	Error in periodic communication between indoor header and follower unit	Periodic communication between indoor header and follower units cannot be maintained.	
—	—	F01	◎ ◎ ●	ALT	Indoor heat exchanger temperature sensor (TCJ) error	Heat exchanger temperature sensor (TCJ) has been open/short-circuited.
—	—	F02	◎ ◎ ●	ALT	Indoor heat exchanger temperature sensor (TC2) error	Heat exchanger temperature sensor (TC2) has been open/short-circuited.
—	—	F03	◎ ◎ ●	ALT	Indoor heat exchanger temperature sensor (TC1) error	Heat exchanger temperature sensor (TC1) has been open/short-circuited.
—	—	F10	◎ ◎ ●	ALT	Ambient temperature sensor (TA/TSA) error	Ambient temperature sensor (TA) has been open/short-circuited.
—	—	F11	◎ ◎ ●	ALT	Discharge temperature sensor (TF) error	Discharge temperature sensor (TF) has been open/short-circuited.
—	—	F29	◎ ◎ ●	SIM	P.C. board or other indoor error	Indoor EEPROM is abnormal (some other error may be detected).
L02	—	L02	◎ ● ◎	SIM	Outdoor unit model unmatched error	In case that outdoor unit model is different (Not corresponded)
—	—	L03	◎ ● ◎	SIM	Duplicated indoor group header unit	There is more than one header unit in group.
—	—	L07	◎ ● ◎	SIM	Connection of group control cable to stand-alone indoor unit	There is at least one stand-alone indoor unit to which group control cable is connected.
L08	—	L08	◎ ● ◎	SIM	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at outdoor unit end).
—	—	L09	◎ ● ◎	SIM	Indoor capacity not set	Capacity setting has not been performed for indoor unit.
—	—	L20	◎ ○ ◎	SIM	Duplicated central control address	There is duplication in central control address setting.
L30	Detected indoor unit No.	L30	◎ ○ ◎	SIM	Indoor external error input (interlock)	Unit shutdown has been caused by external error input (CN80).
—	—	F17	◎ ◎ ○	ALT	Outside air suction temperature sensor (TOA) error	Open/Short of outside air suction temperature sensor (TOA) was detected.
—	—	F18	◎ ◎ ○	ALT	Indoor air suction temperature sensor (TRA) error	Open/Short of indoor air suction temperature sensor (TRA) was detected.
—	—	P01	● ◎ ◎	ALT	Indoor AC fan error	Indoor AC fan error is detected (activation of fan motor thermal relay).
P10	Detected indoor unit No.	P10	● ◎ ◎	ALT	Indoor overflow error	Float switch has been activated.
—	—	P12	● ◎ ◎	ALT	Indoor DC fan error	Indoor DC fan error (e.g. overcurrent or lock-up) is detected.
—	—	P31	◎ ● ◎	ALT	Other indoor unit error	Follower unit cannot be operated due to header unit alarm (E03/L03/L07/L08).

(Error detected by main remote controller)

Check code		Main remote controller	Display of receiving unit		Typical fault site	Description of error
Outdoor 7-segment display	Sub-code		Indicator light block			
			Operation Timer Ready ⏻ ⏪ ⏩ ⏹	Flash		
—	—	E01	⊙ ● ●		No master remote controller, faulty remote controller communication (reception)	Signals cannot be received from indoor unit; master remote controller has not been set (including two remote controller control).
—	—	E02	⊙ ● ●		Faulty remote controller communication (transmission)	Signals cannot be transmitted to indoor unit.
—	—	E09	⊙ ● ●		Duplicated master remote controller	Both remote controllers have been set as master remote controller in two remote controller control (alarm and shutdown for header unit and continued operation for follower unit)

(Error detected by central control device)

Check code		TCC-LINK central control	Display of receiving unit		Typical fault site	Description of error
Outdoor 7-segment display	Sub-code		Indicator light block			
			Operation Timer Ready ⏻ ⏪ ⏩ ⏹	Flash		
—	—	C05			Faulty central control communication (transmission)	Central control device is unable to transmit signal due to duplication of central control device.
—	—	C06	No indication (when main remote controller also in use)		Faulty central control communication (reception)	Central control device is unable to receive signal.
—	—	—			Multiple network adapters	Multiple network adapters are connected to remote controller communication line.
—	—	C12	—		Blanket alarm for general-purpose device control interface	Device connected to general-purpose device control interface for TCC-LINK is faulty.
—	—	P30	As per alarm unit (see above)		Group control follower unit error	Group follower unit is faulty (unit No. and above detail [***] displayed on main remote controller)

**Note:** The same error, e.g. a communication error, may result in the display of different check codes depending on the device that detects it. Moreover, check codes detected by the main remote controller/central control device do not necessarily have a direct impact on air conditioner operation.

## List of Check Codes (Outdoor Unit)

(Errors detected by SHRM-i outdoor interface - typical examples)

If "HELLO" is displayed on the outdoor 7-segment for 1 minute or more, turn off the power supply once and then turn on the power supply again after passage of 30 seconds or more. When the same symptom appears, it is considered there is a possibility of I/F board error.

IPDU: Intelligent Power Drive Unit (Inverter P.C. board)

○: Lighting, ⊙: Flashing, ●: Goes off

ALT.: Flashing is alternately when there are two flashing LED

SIM: Simultaneous flashing when there are two flashing LED

\* Indicator light display of the receiving unit may be different from those in the following table. (Wall type 3 series, etc.)

Check code		Display of receiving unit		Typical fault site	Description of error																																																								
Outdoor 7-segment display	TCC-LINK central control or main remote controller display	Indicator light block																																																											
Sub-code		Operation	Timer Ready	Flash																																																									
E06	Number of indoor units from which signal is received normally	E06	● ● ⊙		Dropping out of indoor unit	Indoor unit initially communicating normally fails to return signal (reduction in number of indoor units connected).																																																							
E07	—	(E04)	● ● ⊙		Indoor-outdoor communication circuit error	Signal cannot be transmitted to indoor units (→ indoor units left without communication from outdoor unit).																																																							
E08	Duplicated indoor address	(E08)	⊙ ● ●		Duplicated indoor address	More than one indoor unit is assigned same address (also detected at indoor unit end).																																																							
E12	01: Indoor-outdoor communication 02: Outdoor-outdoor communication	E12	⊙ ● ●		Automatic address starting error	<ul style="list-style-type: none"> <li>Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.</li> <li>Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.</li> </ul>																																																							
E15	—	E15	● ● ⊙		Indoor unit not found during automatic address setting	Indoor unit fails to communicate while automatic address setting for indoor units is in progress.																																																							
E16	00: Overloading 01: Number of units connected	E16	● ● ⊙		Too many indoor units connected/overloading	Combined capacity of indoor units is too large (more than 135% of combined capacity of outdoor units).																																																							
E19	00: No header unit 02: Two or more header units	E19	● ● ⊙		Error in number of outdoor header units	There is no or more than one outdoor header unit in one refrigerant line.																																																							
E20	01: Connection of outdoor unit from other refrigerant line 02: Connection of indoor unit from other refrigerant line	E20	● ● ⊙		Connection to other refrigerant line found during automatic address setting	Indoor unit from other refrigerant line is detected while indoor automatic address setting is in progress.																																																							
E23	—	E23	● ● ⊙		Outdoor-outdoor communication transmission error	Signal cannot be transmitted to other outdoor units.																																																							
E25	—	E25	● ● ⊙		Duplicated follower outdoor address	There is duplication in outdoor addresses set manually.																																																							
E26	Address of outdoor unit from which signal is not received normally	E26	● ● ⊙		Dropping out of outdoor unit	Follower outdoor unit initially communicating normally fails to do so (reduction in number of follower outdoor units connected).																																																							
E28	Detected outdoor unit No.	E28	● ● ⊙		Outdoor follower unit error	Outdoor header unit detects fault relating to follower outdoor unit (detail displayed on follower outdoor unit).																																																							
E31	<table border="1" style="font-size: small;"> <tr> <td>A3-IPDU</td> <td>Fan</td> <td>A3-IPDU</td> <td>Fan</td> <td>Sub</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>1</td> <td>2</td> </tr> <tr> <td>01</td> <td>○</td> <td>01</td> <td>○</td> <td>○</td> </tr> <tr> <td>02</td> <td>○</td> <td>02</td> <td>○</td> <td>○</td> </tr> <tr> <td>03</td> <td>○</td> <td>03</td> <td>○</td> <td>○</td> </tr> <tr> <td>04</td> <td>○</td> <td>04</td> <td>○</td> <td>○</td> </tr> <tr> <td>05</td> <td>○</td> <td>05</td> <td>○</td> <td>○</td> </tr> <tr> <td>06</td> <td>○</td> <td>06</td> <td>○</td> <td>○</td> </tr> <tr> <td>07</td> <td>○</td> <td>07</td> <td>○</td> <td>○</td> </tr> <tr> <td>08</td> <td>○</td> <td>08</td> <td>○</td> <td>○</td> </tr> <tr> <td>09</td> <td>○</td> <td>09</td> <td>○</td> <td>○</td> </tr> </table> 80: Communication error between MCU and Sub MCU	A3-IPDU	Fan	A3-IPDU	Fan	Sub	1	2	3	1	2	01	○	01	○	○	02	○	02	○	○	03	○	03	○	○	04	○	04	○	○	05	○	05	○	○	06	○	06	○	○	07	○	07	○	○	08	○	08	○	○	09	○	09	○	○	E31	● ● ⊙		IPDU communication error Sub MCU communication error	There is no communication between IPDUs (P.C. boards) in inverter box. Outdoor I/F board error When power supply was turned on within 30 seconds (before electric discharge of capacitor) after power supply was reset
A3-IPDU	Fan	A3-IPDU	Fan	Sub																																																									
1	2	3	1	2																																																									
01	○	01	○	○																																																									
02	○	02	○	○																																																									
03	○	03	○	○																																																									
04	○	04	○	○																																																									
05	○	05	○	○																																																									
06	○	06	○	○																																																									
07	○	07	○	○																																																									
08	○	08	○	○																																																									
09	○	09	○	○																																																									
F04	—	F04	⊙ ⊙ ○	ALT	Outdoor discharge temperature sensor (TD1) error	Outdoor discharge temperature sensor (TD1) has been open/short-circuited.																																																							
F05	—	F05	⊙ ⊙ ○	ALT	Outdoor discharge temperature sensor (TD2) error	Outdoor discharge temperature sensor (TD2) has been open/short-circuited.																																																							
F06	01: TE1 02: TE2	F06	⊙ ⊙ ○	ALT	Outdoor heat exchanger temperature sensor (TE1, TE2) error	Outdoor heat exchanger temperature sensors (TE1, TE2) have been open/short-circuited.																																																							
F07	—	F07	⊙ ⊙ ○	ALT	Outdoor liquid temperature sensor (TL) error	Outdoor liquid temperature sensor (TL) has been open/short-circuited.																																																							
F08	—	F08	⊙ ⊙ ○	ALT	Outdoor outside air temperature sensor (TO) error	Outdoor outside air temperature sensor (TO) has been open/short-circuited.																																																							
F12	01: TS1 02: TS2	F12	⊙ ⊙ ○	ALT	Outdoor suction temperature sensor (TS1, TS2) error	Outdoor suction temperature sensor (TS1, TS2) has been open/short-circuited.																																																							
F15	—	F15	⊙ ⊙ ○	ALT	Outdoor temperature sensor (TE1, TL) wiring error	Wiring error in outdoor temperature sensors (TE1, TL) has been detected.																																																							
F16	—	F16	⊙ ⊙ ○	ALT	Outdoor pressure sensor (Pd, Ps) wiring error	Wiring error in outdoor pressure sensors (Pd, Ps) has been detected.																																																							
F22	—	F22	⊙ ⊙ ○	ALT	Outdoor discharge temperature sensor (TD3) error	Outdoor discharge temperature sensor (TD3) has been open/short-circuited.																																																							

Check code		Display of receiving unit		Typical fault site	Description of error																																																					
Outdoor 7-segment display	TCC-LINK central control or main remote controller display	Indicator light block																																																								
Sub-code		Operation	Timer Ready	Flash																																																						
F23	—	F23	⊙ ⊙ ○	ALT	Low pressure sensor (Ps) error	Output voltage of low pressure sensor (Ps) is zero.																																																				
F24	—	F24	⊙ ⊙ ○	ALT	High pressure sensor (Pd) error	Output voltage of high pressure sensor (Pd) is zero or provides abnormal readings when compressors have been turned off.																																																				
F31	—	F31	⊙ ⊙ ○	SIM	Outdoor EEPROM error	Outdoor EEPROM is faulty (alarm and shutdown for header unit and continued operation for follower unit)																																																				
H05	—	H05	● ⊙ ●		Outdoor discharge temperature sensor (TD1) connection error	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD1) has been detected.																																																				
H06	—	H06	● ⊙ ●		Activation of low-pressure protection	Low pressure (Ps) sensor detects abnormally low operating pressure.																																																				
H07	—	H07	● ⊙ ●		Low oil level protection	Temperature sensor for oil level detection (TK1-5) detects abnormally low oil level.																																																				
H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error 05: TK5 sensor error	H08	● ⊙ ●		Error in temperature sensor for oil level detection (TK1-5)	Temperature sensor for oil level detection (TK1-5) has been open/short-circuited.																																																				
H15	—	H15	● ⊙ ●		Outdoor discharge temperature sensor (TD2) connection error	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD2) has been detected.																																																				
H16	01: TK1 oil circuit error 02: TK2 oil circuit error 03: TK3 oil circuit error 04: TK4 oil circuit error 05: TK5 oil circuit error	H16	● ⊙ ●		Oil level detection circuit error	No temperature change is detected by temperature sensor for oil level detection (TK1-5) despite compressor having been started.																																																				
H25	—	H25	● ⊙ ●		Outdoor discharge temperature sensor (TD3) connection error	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD3) has been detected.																																																				
L04	—	L04	⊙ ○ ⊙	SIM	Duplicated outdoor refrigerant line address	Identical refrigerant line address has been assigned to outdoor units belonging to different refrigerant piping systems.																																																				
L06	Number of priority indoor units (check code L05 or L06 depending on individual unit)	L05	⊙ ● ⊙	SIM	Duplicated priority indoor unit (as displayed on priority indoor unit)	More than one indoor unit has been set up as priority indoor unit.																																																				
		L06	⊙ ● ⊙	SIM	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	More than one indoor unit has been set up as priority indoor unit.																																																				
L08	—	(L08)	⊙ ● ⊙	SIM	Indoor group address not set	Address setting has not been performed for one or more indoor units (also detected at indoor end).																																																				
L10	—	L10	⊙ ○ ⊙	SIM	Outdoor capacity not set	Outdoor unit capacity has not been set (after P.C. board replacement).																																																				
L17	—	L17	⊙ ○ ⊙	SIM	Outdoor model incompatibility error	Old model outdoor unit (prior to 3 series) has been connected.																																																				
L18	—	L18	⊙ ○ ⊙	SIM	Cooling/heating selection unit error	Cooling/heating cycle error resulting from piping error is detected.																																																				
L28	—	L28	⊙ ○ ⊙	SIM	Too many outdoor units connected	More than 3 outdoor units have been connected.																																																				
L29	<table border="1"> <tr> <td>A3-IPDU</td> <td>Fan</td> <td>A3-IPDU</td> <td>Fan</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>1</td> </tr> <tr> <td>2</td> <td>3</td> <td>1</td> <td>2</td> </tr> <tr> <td>3</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>01</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>02</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>03</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>04</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>05</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>06</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>07</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>08</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>09</td> <td>○</td> <td>○</td> <td>○</td> </tr> </table>	A3-IPDU	Fan	A3-IPDU	Fan	1	2	3	1	2	3	1	2	3	1	2	3	01	○	○	○	02	○	○	○	03	○	○	○	04	○	○	○	05	○	○	○	06	○	○	○	07	○	○	○	08	○	○	○	09	○	○	○	L29	⊙ ○ ⊙	SIM	Error in number of IPDUs	There are insufficient number of IPDUs (P.C. boards) in inverter box.
A3-IPDU	Fan	A3-IPDU	Fan																																																							
1	2	3	1																																																							
2	3	1	2																																																							
3	1	2	3																																																							
01	○	○	○																																																							
02	○	○	○																																																							
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07	○	○	○																																																							
08	○	○	○																																																							
09	○	○	○																																																							
L30	Detected indoor unit No.	L30	⊙ ○ ⊙	SIM	Indoor external error input (interlock)	Indoor unit has been shut down for external error input in one refrigerant line (detected by indoor unit).																																																				
L31	—	—	—		Other IPDU error	—																																																				
P03	—	P03	⊙ ● ⊙	ALT	Outdoor discharge (TD1) temperature error	Outdoor discharge temperature sensor (TD1) has detected abnormally high temperature.																																																				
P05	00: Open phase detected	P05	⊙ ● ⊙	ALT	Open phase/power failure	Open phase is detected when power is turned on. Inverter DC voltage is too high (overvoltage) or too low (undervoltage).																																																				
	01: Compressor 1 02: Compressor 2 03: Compressor 3				Inverter DC voltage (Vdc) error MG-CTT error																																																					
P07	01: Compressor 1 02: Compressor 2 03: Compressor 3	P07	⊙ ● ⊙	ALT	Heat sink overheating error	Temperature sensor built into IGBT (TH) detects overheating.																																																				
P10	Indoor unit No. detected	(P10)	● ⊙ ⊙	ALT	Indoor unit overflow	Indoor unit has been shutdown in one refrigerant line due to detection of overflow (detected by indoor unit).																																																				

MG-CTT: Magnet contactor

Check code		Display of receiving unit		Typical fault site	Description of error
Outdoor 7-segment display	TCC-LINK central control or main remote controller display	Indicator light block			
Sub-code		Operation	Timer Ready	Flash	
P13	—	P13	● ○ ○	ALT	Outdoor liquid backflow detection error State of refrigerant cycle circuit indicates liquid backflow operation.
P15	01: TS condition 02: TD condition	P15	○ ● ○	ALT	Gas leak detection Outdoor suction temperature sensor (TS1) detects sustained and repeated high temperatures that exceed standard value.
P17	—	P17	○ ● ○	ALT	Outdoor discharge (TD2) temperature error Outdoor discharge temperature sensor (TD2) detects abnormally high temperature.
P18	—	P18	○ ● ○	ALT	Outdoor discharge (TD3) temperature error Outdoor discharge temperature sensor (TD3) detects abnormally high temperature.
P19	Outdoor unit No. detected	P19	○ ● ○	ALT	4-way valve reversing error Abnormality in refrigerating cycle is detected during heating operation.
P20	—	P20	○ ● ○	ALT	Activation of high-pressure protection High pressure (Pd) sensor detects high pressure that exceeds standard value.

(Errors detected by IPDU featuring in SMMS-i standard outdoor unit - typical examples)

Check code		Display of receiving unit		Typical fault site	Description of error
Outdoor 7-segment display	TCC-LINK central control or main remote controller display	Indicator light block			
Sub-code		Operation	Timer Ready	Flash	
F13	01: Compressor 1 02: Compressor 2 03: Compressor 3	F13	○ ○ ○	ALT	Error in temperature sensor built into indoor IGBT (TH) Temperature sensor built into indoor IGBT (TH) has been open/short-circuited.
H01	01: Compressor 1 02: Compressor 2 03: Compressor 3	H01	● ○ ●		Compressor breakdown Inverter current (Idc) detection circuit detects overcurrent.
H02	01: Compressor 1 02: Compressor 2 03: Compressor 3	H02	● ○ ●		Compressor error (lockup) Compressor lockup is detected
H03	01: Compressor 1 02: Compressor 2 03: Compressor 3	H03	● ○ ●		Current detection circuit error Abnormal current is detected while inverter compressor is turned off.
P04	01: Compressor 1 02: Compressor 2 03: Compressor 3	P04	○ ● ○	ALT	Activation of high-pressure SW High-pressure SW is activated.
P07	01: Compressor 1 02: Compressor 2 03: Compressor 3	P07	○ ● ○	ALT	Heat sink overheating error Temperature sensor built into IGBT (TH) detects overheating.
P22	0*: IGBT circuit 1*: Position detection circuit error 3*: Motor lockup error 4*: Motor current detection C*: TH sensor error D*: TH sensor error E*: Inverter DC voltage error (outdoor fan) <b>Note:</b> Although letters 0 to F appear at locations indicated by "*", please ignore them.	P22	○ ● ○	ALT	Outdoor fan IPDU error Outdoor fan IPDU detects error.
P26	01: Compressor 1 02: Compressor 2 03: Compressor 3	P26	○ ● ○	ALT	Activation of G-Tr (IGBT) short-circuit protection Short-circuit protection for compressor motor driver circuit components is activated (momentary overcurrent).
P29	01: Compressor 1 02: Compressor 2 03: Compressor 3	P29	○ ● ○	ALT	Compressor position detection circuit error Compressor motor position detection error is detected.

**Note:** The above check codes are examples only, and different check codes may be displayed depending on the outdoor unit configuration (e.g. a Super Modular multi system). For details, see the service manual for the outdoor unit.

### 8-3. Troubleshooting Based on Information Displayed on Remote Controller

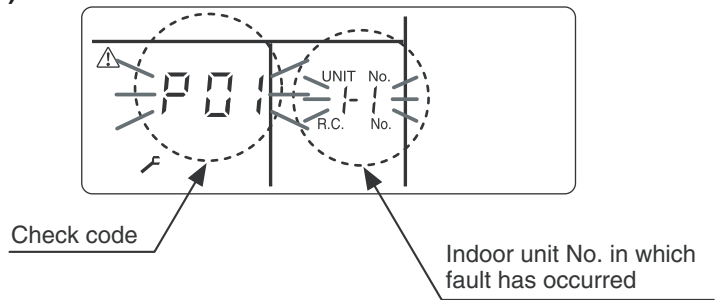
#### Using main remote controller (RBC-AMT32E)

##### (1) Checking and testing

When a fault occurs to an air conditioner, a check code and indoor unit No. are displayed on the display window of the remote controller.

Check codes are only displayed while the air conditioner is in operation.

If the display has already disappeared, access error history by following the procedure described below.



##### (2) Error history

The error history access procedure is described below (up to four errors stored in memory).

Error history can be accessed regardless of whether the air conditioner is in operation or shut down.

<Procedure> To be performed when system at rest

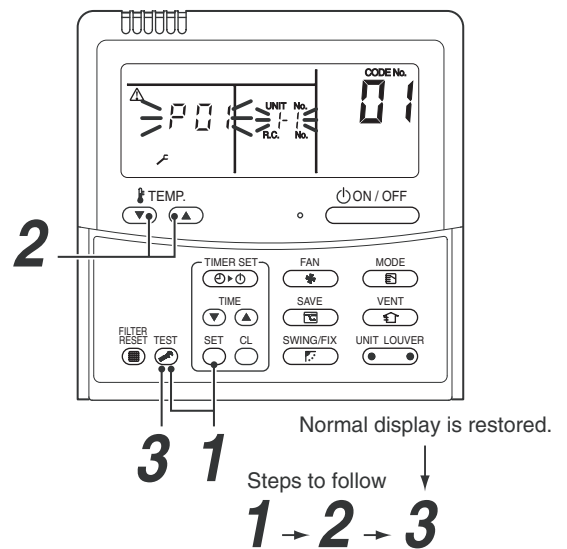
- 1 Invoke the **SERVICE CHECK** mode by pushing the **TEST** + **SET** buttons simultaneously and holding for at least **4 seconds**.

The letters "SERVICE CHECK" light up, and the check code "01" is displayed, indicating the error history. This is accompanied by the indoor unit No. to which the error history is related and a check code.

- 2 To check other error history items, push the **TEMP** button to select another check code.

Check code "01" (latest) → Check code "04" (oldest)  
Note: Error history contains four items.

- 3 When the **TEST** button is pushed, normal display is restored.



#### REQUIREMENT

Do not push the **CL** button as it would erase the whole error history of the indoor unit.

#### How to read displayed information

<7-segment display symbols>



<Corresponding alphanumerical letters>

0 1 2 3 4 5 6 7 8 9 A b C d E F H J L P

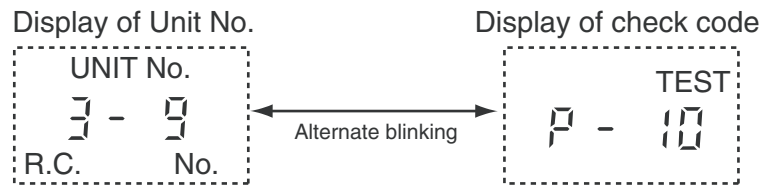
## Using TCC-LINK central control remote controller (TCB-SC642TLE2)

### (1) Checking and testing

When a fault occurs to an air conditioner, a check code and indoor unit No. are displayed on the display window of the remote controller.

Check codes are only displayed while the air conditioner is in operation.

If the display has already disappeared, access error history by following the procedure described below.



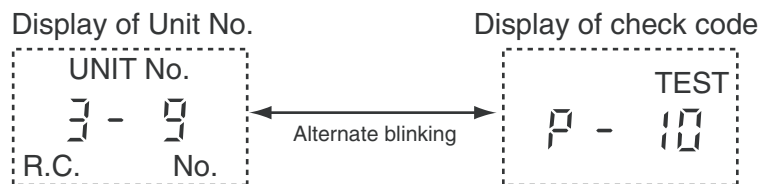
### (2) Error history

The error history access procedure is described below (up to four errors stored in memory).

Error history can be accessed regardless of whether the air conditioner is in operation or shut down.

- 1** Push the + buttons simultaneously and hold for at least 4 seconds.
- 2** The letters “ SERVICE CHECK” light up, and the check code “01” is displayed.
- 3** When a group No. is selected (blinking), if there is an error history, the UNIT No. and the latest error history information are displayed alternately.

\* During this procedure, the temperature setting feature is unavailable.



- 4** To check other error history items, push the button to select another check code (01-04.).
- 5** To check check code relating to another group, push (ZONE) and (GROUP) buttons to select a group No.  
Do not push the button as it would erase the whole error history of the selected group.
- 6** To finish off the service check, push the button.

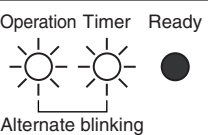
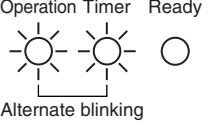
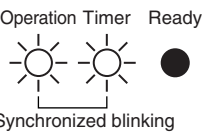
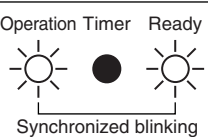
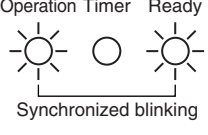
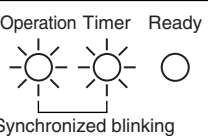
## Using indoor unit indicators (receiving unit light block) (wireless type)

To identify the check code, check the 7-segment display on the header unit. To check for check codes not displayed on the 7-segment display, consult the “List of Check Codes (Indoor Unit)” in “8-2. Troubleshooting Method”.



● : Goes off ○ : Lighting ☀ : Blinking (0.5 seconds)

Light block	Check code	Cause of fault		
Operation Timer Ready ● ● ● All lights out	—	Power turned off or error in wiring between receiving and indoor units		
Operation Timer Ready ☀ ● ● Blinking	E01	Faulty reception	Receiving unit	Error or poor contact in wiring between receiving and indoor units
	E02	Faulty transmission		
	E03	Loss of communication		
	E08	Duplicated indoor unit No. (address)	Setting error	
	E09	Duplicated master remote controller		
	E10	Indoor unit inter-MCU communication error		
	E12	Automatic address starting error		
E18	Error or poor contact in wiring between indoor units, indoor power turned off			
Operation Timer Ready ● ● ☀ Blinking	E04	Error or poor contact in wiring between indoor and outdoor units (loss of indoor-outdoor communication)		
	E06	Faulty reception in indoor-outdoor communication (dropping out of indoor unit)		
	E07	Faulty transmission in indoor-outdoor communication		
	E15	Indoor unit not found during automatic address setting		
	E16	Too many indoor units connected/overloading		
	E19	Error in number of outdoor header units		
	E20	Detection of refrigerant piping communication error during automatic address setting		
	E23	Faulty transmission in outdoor-outdoor communication		
	E25	Duplicated follower outdoor address		
	E26	Faulty reception in outdoor-outdoor communication, dropping out of outdoor unit		
	E28	Outdoor follower unit error		
	E31	IPDU communication error, Sub MCU communication error		
Operation Timer Ready ● ☀ ☀ Alternate blinking	P01	Indoor AC fan error		
	P10	Indoor overflow error		
	P12	Indoor DC fan error		
	P13	Outdoor liquid backflow detection error		
Operation Timer Ready ☀ ● ☀ Alternate blinking	P03	Outdoor discharge (TD1) temperature error		
	P04	Activation of outdoor high-pressure SW		
	P05	Open phase/power failure Inverter DC voltage (Vdc) error MG-CTT error		
	P07	Outdoor heat sink overheating error - Poor cooling of electrical component (IGBT) of outdoor unit		
	P15	Gas leak detection - insufficient refrigerant charging		
	P17	Outdoor discharge (TD2) temperature error		
	P18	Outdoor discharge (TD3) temperature error		
	P19	Outdoor 4-way valve reversing error		
	P20	Activation of high-pressure protection		
	P22	Outdoor fan IPDU error		
	P26	Outdoor G-Tr short-circuit error		
	P29	Compressor position detection circuit error		
	P31	Shutdown of other indoor unit in group due to fault (group follower unit error)		

MG-CTT: Magnet contactor

Light block	Check code	Cause of fault	
Operation Timer Ready  Alternate blinking	F01	Heat exchanger temperature sensor (TCJ) error	Indoor unit temperature sensor errors
	F02	Heat exchanger temperature sensor (TC2) error	
	F03	Heat exchanger temperature sensor (TC1) error	
	F10	Ambient temperature sensor (TA) error	
	F11	Discharge temperature sensor (TF) error	
Operation Timer Ready  Alternate blinking	F04	Discharge temperature sensor (TD1) error	Outdoor unit temperature sensor errors
	F05	Discharge temperature sensor (TD2) error	
	F06	Heat exchanger temperature sensor (TE1, TE2) error	
	F07	Liquid temperature sensor (TL) error	
	F08	Outside air temperature sensor (TO) error	
	F12	Suction temperature sensor (TS1) error	
	F13	Heat sink sensor (TH) error	
	F15	Wiring error in heat exchanger sensor (TE1) and liquid temperature sensor (TL) Outdoor unit temperature sensor wiring/installation error	
	F16	Wiring error in outdoor high pressure sensor (Pd) and low pressure sensor (Ps) Outdoor pressure sensor wiring error	
	F17	Outdoor suction temperature sensor (TOA) error	
	F18	Indoor suction temperature sensor (TRA) error	
	F22	Outdoor discharge temperature sensor (TD3) error	Outdoor unit pressure sensor errors
	F23	Low pressure sensor (Ps) error	
	F24	High pressure sensor (Pd) error	
F29	Fault in indoor EEPROM		
Operation Timer Ready  Synchronized blinking	H01	Compressor breakdown	Outdoor unit compressor-related errors
	H02	Compressor lockup	
	H03	Current detection circuit error	
	H05	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD1)	Protective shutdown of outdoor unit
	H06	Abnormal drop in low-pressure sensor (Ps) reading	
	H07	Abnormal drop in oil level	
	H08	Error in temperature sensor for oil level detection circuit (TK1, TK2, TK3, TK4 or TK5)	
	H15	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD2)	
	H16	Oil level detection circuit error - Error in outdoor unit TK1, TK2, TK3, TK4 or TK5 circuit	
	H25	Wiring/installation error or detachment of outdoor discharge temperature sensor (TD3)	
Operation Timer Ready  Synchronized blinking	L02	Outdoor unit model unmatched error	
	L03	Duplicated indoor group header unit	
	L05	Duplicated priority indoor unit (as displayed on priority indoor unit)	
	L06	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	
	L07	Connection of group control cable to stand-alone indoor unit	
	L08	Indoor group address not set	
	L09	Indoor capacity not set	
	L04	Duplicated outdoor refrigerant line address	
	L10	Outdoor capacity not set	
Operation Timer Ready  Synchronized blinking	L17	Outdoor model incompatibility error	
	L18	Flow selector units error	
	L20	Duplicated central control address	
	L28	Too many outdoor units connected	
	L29	Error in number of IPDUs	
	L30	Indoor external interlock error	
	Operation Timer Ready  Synchronized blinking	F31	Outdoor EEPROM error

**Other (indications not involving check code)**

Light block	Check code	Cause of fault
<p>Operation Timer Ready</p>  <p>Synchronized blinking</p>	<p>—</p>	<p>Test run in progress</p>
<p>Operation Timer Ready</p>  <p>Alternate blinking</p>	<p>—</p>	<p>Setting incompatibility (automatic cooling/heating setting for model incapable of it and heating setting for cooling-only model)</p>

## 8-4. Check Codes Displayed on Remote Controller and SMMS-i Outdoor Unit (7-Segment Display on I/F Board) and Locations to Be Checked

For other types of outdoor units, refer to their own service manuals.

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display	Sub-code					
	Check code						
E01	—	—	Remote controller	Indoor-remote controller communication error (detected at remote controller end)	Stop of corresponding unit	Communication between indoor P.C. board and remote controller is disrupted.	<ul style="list-style-type: none"> <li>• Check remote controller inter-unit tie cable (A/B).</li> <li>• Check for broken wire or connector bad contact.</li> <li>• Check indoor power supply.</li> <li>• Check for defect in indoor P.C. board.</li> <li>• Check remote controller address settings (when two remote controllers are in use).</li> <li>• Check remote controller P.C. board.</li> </ul>
E02	—	—	Remote controller	Remote controller transmission error	Stop of corresponding unit	Signal cannot be transmitted from remote controller to indoor unit.	<ul style="list-style-type: none"> <li>• Check internal transmission circuit of remote controller. --- Replace remote controller as necessary.</li> </ul>
E03	—	—	Indoor unit	Indoor-remote controller communication error (detected at indoor end)	Stop of corresponding unit	There is no communication from remote controller (including wireless) or network adaptor.	<ul style="list-style-type: none"> <li>• Check remote controller and network adaptor wiring.</li> </ul>
E04	—	—	Indoor unit	Indoor-outdoor communication circuit error (detected at indoor end)	Stop of corresponding unit	Indoor unit is not receiving signal from outdoor unit.	<ul style="list-style-type: none"> <li>• Check order in which power was turned on for indoor and outdoor units.</li> <li>• Check indoor address setting.</li> <li>• Check indoor-outdoor tie cable.</li> <li>• Check outdoor termination resistance setting (SW30, Bit 2).</li> </ul>
E06	E06	No. of indoor units from which signal is received normally	I/F	Dropping out of indoor unit	All stop	Indoor unit initially communicating normally fails to return signal for specified length of time.	<ul style="list-style-type: none"> <li>• Check power supply to indoor unit. (Is power turned on?)</li> <li>• Check connection of indoor-outdoor communication cable.</li> <li>• Check connection of communication connectors on indoor P.C. board.</li> <li>• Check connection of communication connectors on outdoor P.C. board.</li> <li>• Check for defect in indoor P.C. board.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
—	E07	—	I/F	Indoor-outdoor communication circuit error (detected at outdoor end)	All stop	Signal cannot be transmitted from outdoor to indoor units for 30 seconds continuously.	<ul style="list-style-type: none"> <li>• Check outdoor termination resistance setting (SW30, Bit 2).</li> <li>• Check connection of indoor-outdoor communication circuit.</li> </ul>
E08	E08	Duplicated indoor address	Indoor unit I/F	Duplicated indoor address	All stop	More than one indoor unit is assigned same address.	<ul style="list-style-type: none"> <li>• Check indoor addresses.</li> <li>• Check for any change made to remote controller connection (group/individual) since indoor address setting.</li> </ul>
E09	—	—	Remote controller	Duplicated master remote controller	Stop of corresponding unit	In two remote controller configuration (including wireless), both controllers are set up as master. (Header indoor unit is shut down with alarm, while follower indoor units continue operating.)	<ul style="list-style-type: none"> <li>• Check remote controller settings.</li> <li>• Check remote controller P.C. boards.</li> </ul>
E10	—	—	Indoor unit	Indoor inter-MCU communication error	Stop of corresponding unit	Communication cannot be established/maintained upon turning on of power or during communication.	<ul style="list-style-type: none"> <li>• Check for defect in indoor P.C. board</li> </ul>
E12	E12	01: Indoor-outdoor communication 02: Outdoor/outdoor communication	I/F	Automatic address starting error	All stop	<ul style="list-style-type: none"> <li>• Indoor automatic address setting is started while automatic address setting for equipment in other refrigerant line is in progress.</li> <li>• Outdoor automatic address setting is started while automatic address setting for indoor units is in progress.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform automatic address setting again after disconnecting communication cable to that refrigerant line.</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
E15	E15	—	I/F	Indoor unit not found during automatic address setting	All stop	Indoor unit cannot be detected after indoor automatic address setting is started.	<ul style="list-style-type: none"> <li>• Check connection of indoor-outdoor communication line.</li> <li>• Check for error in indoor power supply system.</li> <li>• Check for noise from other devices.</li> <li>• Check for power failure.</li> <li>• Check for defect in indoor P.C. board.</li> </ul>
E16	E16	00: Overloading 01:- No. of units connected	I/F	Too many indoor units connected	All stop	<ul style="list-style-type: none"> <li>• Combined capacity of indoor units exceeds 135% of combined capacity of outdoor units.</li> </ul> <p><b>Note:</b> If this code comes up after backup setting for outdoor unit failure is performed, perform "No overloading detected" setting. &lt;"No overloading detected" setting method&gt; Turn on SW09/Bit 2 on I/F P.C. board of outdoor header unit.</p> <ul style="list-style-type: none"> <li>• More than 48 indoor units are connected.</li> </ul>	<ul style="list-style-type: none"> <li>• Check capacities of indoor units connected.</li> <li>• Check combined HP capacities of indoor units.</li> <li>• Check HP capacity settings of outdoor units.</li> <li>• Check No. of indoor units connected.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
E18	—	—	Indoor unit	Error in communication between indoor header and follower units	Stop of corresponding unit	Periodic communication between indoor header and follower units cannot be maintained.	<ul style="list-style-type: none"> <li>• Check remote controller wiring.</li> <li>• Check indoor power supply wiring.</li> <li>• Check P.C. boards of indoor units.</li> </ul>
E19	E19	00: No header unit 02: Two or more header units	I/F	Error in number of outdoor header units	All stop	<ul style="list-style-type: none"> <li>• There is more than one outdoor header unit in one line.</li> <li>• There is no outdoor header unit in one line.</li> </ul>	<p>Outdoor header unit is outdoor unit to which indoor-outdoor tie cable (U1,U2) is connected.</p> <ul style="list-style-type: none"> <li>• Check connection of indoor-outdoor communication line.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
E20	E20	01: Connection of outdoor unit from other line 02: Connection of indoor unit from other line	I/F	Connection to other line found during automatic address setting	All stop	Equipment from other line is found to have been connected when indoor automatic address setting is in progress.	Disconnect inter-line tie cable in accordance with automatic address setting method explained in "Address setting" section.
E23	E23	—	I/F	Outdooroutdoor communication transmission error	All stop	Signal cannot be transmitted to other outdoor units for at least 30 seconds continuously.	<ul style="list-style-type: none"> <li>• Check power supply to outdoor units. (Is power turned on?)</li> <li>• Check connection of tie cables between outdoor units for bad contact or broken wire.</li> <li>• Check communication connectors on outdoor P.C. boards.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> <li>• Check termination resistance setting for communication between outdoor units.</li> </ul>
E25	E25	—	I/F	Duplicated follower outdoor address	All stop	There is duplication in outdoor addresses set manually.	<b>Note:</b> <b>Do not set outdoor addresses manually.</b>
E26	E26	Address of outdoor unit from which signal is not received normally	I/F	Dropping out of outdoor unit	All stop	Outdoor unit initially communicating normally fails to return signal for specified length of time.	<ul style="list-style-type: none"> <li>• Backup setting is being used for outdoor units.</li> <li>• Check power supply to outdoor unit. (Is power turned on?)</li> <li>• Check connection of tie cables between outdoor units for bad contact or broken wire.</li> <li>• Check communication connectors on outdoor P.C. boards.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> <li>• Check termination resistance setting for communication between outdoor units.</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)																																																																												
	Outdoor 7-segment display																																																																																		
	Check code	Sub-code																																																																																	
E28	E28	Detected outdoor unit No.	I/F	Outdoor follower unit error	All stop	Outdoor header unit receives error code from outdoor follower unit.	<ul style="list-style-type: none"> <li>Check check code displayed on outdoor follower unit.</li> <li>&lt;Convenient functions&gt;</li> <li>If SW04 is pushed and held for at least 1 second while [E28] is displayed on the 7-segment display of outdoor header unit, the fan of the outdoor unit that has been shut down due to an error comes on.</li> <li>If SW04 and SW05 are pushed simultaneously, the fans of normal outdoor units come on.</li> <li>To stop the fan or fans, push SW05 on its own.</li> </ul>																																																																												
E31	E31	<table border="1"> <thead> <tr> <th></th> <th>A3-IPDU</th> <th>Fan</th> <th>Sub</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> </tr> <tr> <th></th> <th>IPDU</th> <th>IPDU</th> <th>MCU</th> </tr> </thead> <tbody> <tr><td>01</td><td>O</td><td></td><td></td></tr> <tr><td>02</td><td>O</td><td></td><td></td></tr> <tr><td>03</td><td>O</td><td>O</td><td></td></tr> <tr><td>04</td><td></td><td>O</td><td></td></tr> <tr><td>05</td><td>O</td><td>O</td><td></td></tr> <tr><td>06</td><td>O</td><td>O</td><td></td></tr> <tr><td>07</td><td>O</td><td>O</td><td>O</td></tr> <tr><td>08</td><td></td><td></td><td>O</td></tr> <tr><td>09</td><td>O</td><td></td><td>O</td></tr> <tr><td>0A</td><td>O</td><td>O</td><td></td></tr> <tr><td>0B</td><td>O</td><td>O</td><td>O</td></tr> <tr><td>0C</td><td></td><td>O</td><td>O</td></tr> <tr><td>0D</td><td>O</td><td>O</td><td>O</td></tr> <tr><td>0E</td><td>O</td><td>O</td><td>O</td></tr> <tr><td>0F</td><td>O</td><td>O</td><td>O</td></tr> <tr><td>80</td><td></td><td></td><td>O</td></tr> </tbody> </table> <p>Symbol O signifies site of IPDU error.</p>		A3-IPDU	Fan	Sub		1	2	3		IPDU	IPDU	MCU	01	O			02	O			03	O	O		04		O		05	O	O		06	O	O		07	O	O	O	08			O	09	O		O	0A	O	O		0B	O	O	O	0C		O	O	0D	O	O	O	0E	O	O	O	0F	O	O	O	80			O	I/F	IPDU communication error Sub MCU communication error	All stop	Communication is disrupted between IPDUs (P.C. boards) in inverter box.	<ul style="list-style-type: none"> <li>Check wiring and connectors involved in communication between IPDU-I/F P.C. board for bad contact or broken wire.</li> <li>Check for defect in outdoor P.C. board (I/F, A3-IPDU or Fan IPDU).</li> <li>Check for external noise.</li> </ul>
	A3-IPDU	Fan	Sub																																																																																
	1	2	3																																																																																
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		80		Communication error between MCU and Sub MCU	All stop	Communication between MCU and Sub MCU stopped.	<ul style="list-style-type: none"> <li>Operation of power supply reset (OFF for 60 seconds or more)</li> <li>Outdoor I/F PC board error check</li> </ul>																																																																												
F01	—	—	Indoor unit	Indoor TCJ sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TCJ sensor connector and wiring.</li> <li>Check resistance characteristics of TCJ sensor.</li> <li>Check for defect in indoor P.C. board.</li> </ul>																																																																												
F02	—	—	Indoor unit	Indoor TC2 sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TC2 sensor connector and wiring.</li> <li>Check resistance characteristics of TC2 sensor.</li> <li>Check for defect in indoor P.C. board.</li> </ul>																																																																												
F03	—	—	Indoor unit	Indoor TC1 sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TC1 sensor connector and wiring.</li> <li>Check resistance characteristics of TC1 sensor.</li> <li>Check for defect in indoor P.C. board.</li> </ul>																																																																												
F04	F04	—	I/F	TD1 sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TD1 sensor connector.</li> <li>Check resistance characteristics of TD1 sensor.</li> <li>Check for defect in outdoor P.C. board (I/F).</li> </ul>																																																																												
F05	F05	—	I/F	TD2 sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TD2 sensor connector.</li> <li>Check resistance characteristics of TD2 sensor.</li> <li>Check for defect in outdoor P.C. board (I/F).</li> </ul>																																																																												
F06	F06	01: TE1 sensor error 02: TE2 sensor error	I/F	TE1/TE2 sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TE1/TE2 sensor connectors.</li> <li>Check resistance characteristics of TE1/TE2 sensors.</li> <li>Check for defect in outdoor P.C. board (I/F).</li> </ul>																																																																												
F07	F07	—	I/F	TL sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>Check connection of TL sensor connector.</li> <li>Check resistance characteristics of TL sensor.</li> <li>Check for defect in outdoor P.C. board (I/F).</li> </ul>																																																																												

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
F08	F08	—	I/F	TO sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TO sensor connector.</li> <li>• Check resistance characteristics of TO sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
F10	—	—	Indoor unit	Indoor TA, TSA sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TA, TSA sensor connector and wiring.</li> <li>• Check resistance characteristics of TA, TSA sensor.</li> <li>• Check for defect in indoor P.C. board.</li> </ul>
F11	—	—	Indoor unit	Indoor TF sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TF sensor connector and wiring.</li> <li>• Check resistance characteristics of TF sensor.</li> <li>• Check for defect in indoor P.C. board.</li> </ul>
F12	F12	—	I/F	01: TS1 sensor error 02: TS2 sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TS1, TS2 sensor connector.</li> <li>• Check resistance characteristics of TS1, TS2 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
F13	F13	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	TH sensor error	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Defect in IGBT built-in temperature sensor → Replace A3-IPDU P.C. board.</li> </ul>
F15	F15	—	I/F	Outdoor temperature sensor wiring error (TE1, TL)	All stop	During compressor operation in HEAT mode, TE1 continuously provides temperature reading higher than indicated by TL by at least specified margin for 3 minutes or more.	<ul style="list-style-type: none"> <li>• Check installation of TE1 and TL sensors.</li> <li>• Check resistance characteristics of TE1 and TL sensors.</li> <li>• Check for outdoor P.C. board (I/F) error.</li> </ul>
F16	F16	—	I/F	Outdoor pressure sensor wiring error (Pd, Ps)	All stop	Readings of high-pressure Pd sensor and lowpressure Ps sensor are switched. Output voltages of both sensors are zero.	<ul style="list-style-type: none"> <li>• Check connection of high-pressure Pd sensor connector.</li> <li>• Check connection of low-pressure Ps sensor connector.</li> <li>• Check for defect in pressure sensors Pd and Ps.</li> <li>• Check for error in outdoor P.C. board (I/F).</li> <li>• Check for deficiency in compressive output of compressor.</li> </ul>
F17	F17	—	Indoor unit	TOA sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero. (open/short circuit)	<ul style="list-style-type: none"> <li>• Check connection of TOA sensor connector.</li> <li>• Check resistance characteristics of TOA sensor.</li> <li>• Check for defect in outdoor I/F P.C. board</li> </ul>
F18	F18	—	Indoor unit	TRA sensor error	Stop of corresponding unit	Sensor resistance is infinity or zero. (open/short circuit)	<ul style="list-style-type: none"> <li>• Check connection of TRA sensor connector.</li> <li>• Check resistance characteristics of TRA sensor.</li> <li>• Check for defect in indoor P.C. board</li> </ul>
F22	F22	—	I/F	TD3 sensor error	All stop	Sensor resistance is infinity or zero. (open/short circuit)	<ul style="list-style-type: none"> <li>• Check connection of TD3 sensor connector.</li> <li>• Check resistance characteristics of TD3 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
F23	F23	—	I/F	Ps sensor error	All stop	Output voltage of Ps sensor is zero.	<ul style="list-style-type: none"> <li>• Check for connection error involving Ps sensor and Pd sensor connectors.</li> <li>• Check connection of Ps sensor connector.</li> <li>• Check for defect in Ps sensor.</li> <li>• Check for deficiency in compressive output of compressor.</li> <li>• Check for defect in 4-way valve.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> <li>• Check for defect in SV4, SV5 circuit.</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
F24	F24	—	I/F	Pd sensor error	All stop	Output voltage of Pd sensor is zero (sensor open-circuited). Pd > 4.15MPa despite compressor having been turned off.	<ul style="list-style-type: none"> <li>• Check connection of Pd sensor connector.</li> <li>• Check for defect in Pd sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
F29	—	—	Indoor unit	Other indoor error	Stop of corresponding unit	Indoor P.C. board does not operate normally.	<ul style="list-style-type: none"> <li>• Check for defect in indoor P.C. board (faulty EEPROM)</li> </ul>
F31	F31	—	I/F	Outdoor EEPROM error	All stop *1	Outdoor P.C. board (I/F) does not operate normally.	<ul style="list-style-type: none"> <li>• Check power supply voltage.</li> <li>• Check power supply noise.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
H01	H01	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor breakdown	All stop	Inverter current detection circuit detects overcurrent and shuts system down.	<ul style="list-style-type: none"> <li>• Check power supply voltage. (AC380-415V ± 10%).</li> <li>• Check for defect in compressor.</li> <li>• Check for possible cause of abnormal overloading.</li> <li>• Check for defect in outdoor P.C. board (A3-IPDU).</li> </ul>
H02	H02	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor error (lockup) MG-CTT error	All stop	Overcurrent is detected several seconds after startup of inverter compressor.	<ul style="list-style-type: none"> <li>• Check for defect in compressor.</li> <li>• Check power supply voltage. (AC380-415V ± 10%).</li> <li>• Check compressor system wiring, particularly for open phase.</li> <li>• Check connection of connectors/ terminals on A3-IPDU P.C. board.</li> <li>• Check conductivity of case heater. (Check for refrigerant entrapment inside compressor.)</li> <li>• Check for defect in outdoor P.C. board (A3-IPDU).</li> <li>• Check outdoor MG-CTT.</li> </ul>
H03	H03	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Current detection circuit error	All stop	Current flow of at least specified magnitude is detected despite inverter compressor having been shut turned off.	<ul style="list-style-type: none"> <li>• Check current detection circuit wiring.</li> <li>• Check defect in outdoor P.C. board (A3-IPDU).</li> </ul>
H05	H05	—	I/F	TD1 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of compressor 1 (TD1) does not increase despite compressor being in operation.	<ul style="list-style-type: none"> <li>• Check installation of TD1, TK1, TK2, TK3, TK4, TK5 sensor.</li> <li>• Check connection of TD1, TK1, TK2, TK3, TK4, TK5 sensor connector and wiring.</li> <li>• Check resistance characteristics of TD1 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
H06	H06	—	I/F	Activation of low-pressure protection	All stop	Low-pressure Ps sensor detects operating pressure lower than 0.02MPa.	<ul style="list-style-type: none"> <li>• Check service valves to confirm full opening (both discharge gas side, suction gas side and liquid sides).</li> <li>• Check outdoor PMVs for clogging (PMV1, 2).</li> <li>• Check for defect in SV2 or SV4 circuits.</li> <li>• Check for defect in lowpressure Ps sensor.</li> <li>• Check indoor filter for clogging.</li> <li>• Check valve opening status of indoor PMV.</li> <li>• Check refrigerant piping for clogging.</li> <li>• Check operation of outdoor fan (during In single heating, collective operation).</li> <li>• Check for insufficiency in refrigerant quantity.</li> <li>• Check clogging in circuit at auxiliary heat exchanger liquid side. (PMV4, Checked valve)</li> <li>• Check 4-way valve error (Reversal error)</li> <li>• Check miswiring of discharge/suction gas main piping.</li> <li>• Check Cool/Heat FS unit.</li> <li>• Check mispiping of discharge/suction gas piping to Cool/Heat FS unit.</li> <li>• Check piping between Cool/Heat FS unit and room.</li> <li>• Check miswiring of SVD/SVS valve, and mis mounting of coil.</li> <li>• Check opened status of SVS valve.</li> <li>• Check SV14 circuit error</li> </ul>

\*1 Total shutdown in case of header unit  
Continued operation in case of follower unit

MG-CTT: Magnet contactor

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
H07	H07	Detected outdoor unit No. Display of center unit only	I/F	Low oil level protection	All stop	Operating compressor detects continuous state of low oil level for about 2 hours.	<p>&lt;All outdoor units in corresponding line to be checked&gt;</p> <ul style="list-style-type: none"> <li>• Check balance pipe service valve to confirm full opening.</li> <li>• Check connection and installation of TK1, TK2, TK3, TK4, and TK5 sensors.</li> <li>• Check resistance characteristics of TK1, TK2, TK3, TK4, and TK5 sensors.</li> <li>• Check for gas or oil leak in same line.</li> <li>• Check for refrigerant entrapment inside compressor casing and check for liquid back.</li> <li>• Check SV3A, SV3B, SV3C, SV3D, SV3E, and SV3F valves for defect.</li> <li>• Check oil return circuit of oil separator for clogging.</li> <li>• Check oil equalizing circuit for clogging.</li> <li>• Check SV6 circuit leakage.</li> </ul>
H08	H08	01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error 04: TK4 sensor error 05: TK5 sensor error	I/F	Error in temperature sensor for oil level detection	All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TK1 sensor connector.</li> <li>• Check resistance characteristics of TK1 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
					All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TK2 sensor connector.</li> <li>• Check resistance characteristics of TK2 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
					All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TK3 sensor connector.</li> <li>• Check resistance characteristics of TK3 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
					All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TK4 sensor connector.</li> <li>• Check resistance characteristics of TK4 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
					All stop	Sensor resistance is infinity or zero (open/short circuit).	<ul style="list-style-type: none"> <li>• Check connection of TK5 sensor connector.</li> <li>• Check resistance characteristics of TK5 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>
H15	H15	—	I/F	TD2 sensor miswiring (incomplete insertion)	All stop	Discharge temperature of (TD2) does not increase despite compressor 2 being in operation.	<ul style="list-style-type: none"> <li>• Check installation of TD2, TK1, TK2, TK3 sensor.</li> <li>• Check connection of TD2, TK4, TK5 sensor connector and wiring.</li> <li>• Check resistance characteristics of TD2 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
H16	H16	01: TK1 oil circuit error 02: TK2 oil circuit error 03: TK3 oil circuit error 04: TK4 oil circuit error 05: TK5 oil circuit error	I/F	Oil level detection circuit error	All stop	No temperature change is detected by TK1 despite compressor 1 having been started.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK1 sensor.</li> <li>• Check resistance characteristics of TK1 sensor.</li> <li>• Check for connection error involving TD1, TD2, TD3, TK1, TK2, TK3, TK4, and TK5 sensors</li> <li>• Check for faulty operation in SV3E or SV3F valve.</li> <li>• Check for clogging in oil equalizing circuit capillary and faulty operation in check valve.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
						No temperature change is detected by TK2 despite compressor 2 having been started.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK2 sensor.</li> <li>• Check resistance characteristics of TK2 sensor.</li> <li>• Check for connection error involving TD1, TD2, TD3, TK1, TK2, TK3, TK4, and TK5 sensors</li> <li>• Check for faulty operation in SV3E or SV3F valve.</li> <li>• Check for clogging in oil equalizing circuit capillary and faulty operation in check valve.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
						No temperature change is detected by TK3 despite compressor 3 having been started.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK3 sensor.</li> <li>• Check resistance characteristics of TK3 sensor.</li> <li>• Check for connection error involving TD1, TD2, TD3, TK1, TK2, TK3, TK4, and TK5 sensors</li> <li>• Check for faulty operation in SV3E or SV3F valve.</li> <li>• Check for clogging in oil equalizing circuit capillary and faulty operation in check valve.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
						No temperature change is detected by TK4 despite compressor having been started.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK4 sensor.</li> <li>• Check resistance characteristics of TK4 sensor.</li> <li>• Check for connection error involving TD1, TD2, TD3, TK1, TK2, TK3, TK4, and TK5 sensors</li> <li>• Check for faulty operation in SV3E or SV3F valve.</li> <li>• Check for clogging in oil equalizing circuit capillary and faulty operation in check valve.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
						No temperature change is detected by TK5 despite compressor having been started. Or difference from other TK sensor changes within specified range only for over the specified period.	<ul style="list-style-type: none"> <li>• Check for disconnection of TK5 sensor.</li> <li>• Check resistance characteristics of TK5 sensor.</li> <li>• Check for connection error involving TD1, TD2, TD3, TK1, TK2, TK3, TK4, and TK5 sensors</li> <li>• Check for faulty operation in SV3E valve.</li> <li>• Check for clogging in oil equalizing circuit capillary and faulty operation in check valve.</li> <li>• Check for refrigerant entrapment inside compressor.</li> </ul>
H25	H25	—	I/F	TD3 sensor miswiring (incomplete insertion)	All stop	Discharge temperature (TD3) does not increase despite compressor 3 being in operation.	<ul style="list-style-type: none"> <li>• Check installation of TD3, TK1, TK2, TK3, TK4, TK5 sensor.</li> <li>• Check connection of TD3, TK1, TK2, TK3, TK4, TK5 sensor connector and wiring.</li> <li>• Check resistance characteristics of TD3 sensor.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)																																																																				
	Outdoor 7-segment display																																																																										
	Check code	Sub-code																																																																									
L02	L02	—	Indoor unit	Outdoor units model disagreement error	Stop of corresponding unit	In case of different outdoor unit (Not corresponded to Air to Air Heat Exchanger type)	• Check outdoor unit model. (Check whether the outdoor unit corresponds to Air to Air Heat Exchanger type or not.)																																																																				
L03	—	—	Indoor unit	Duplicated indoor header unit	Stop of corresponding unit	There is more than one header unit in group.	• Check indoor addresses. • Check for any change made to remote controller connection (group/individual) since indoor address setting.																																																																				
L04	L04	—	I/F	Duplicated outdoor line address	All stop	There is duplication in line address setting for outdoor units belonging to different refrigerant piping systems.	• Check line addresses.																																																																				
L05	—	—	I/F	Duplicated priority indoor unit (as displayed on priority indoor unit)	All stop	More than one indoor unit has been set up as priority indoor unit.	• Check display on priority indoor unit.																																																																				
L06	L06	No. of priority indoor units	I/F	Duplicated priority indoor unit (as displayed on indoor unit other than priority indoor unit)	All stop	More than one indoor unit have been set up as priority indoor unit.	• Check displays on priority indoor unit and outdoor unit.																																																																				
L07	—	—	Indoor unit	Connection of group control cable to stand-alone indoor unit	Stop of corresponding unit	There is at least one stand-alone indoor unit to which group control cable is connected.	• Check indoor addresses.																																																																				
L08	L08	—	Indoor unit	Indoor group / addresses not set	Stop of corresponding unit	Address setting has not been performed for indoor units.	• Check indoor addresses. <b>Note:</b> <b>This code is displayed when power is turned on for the first time after installation.</b>																																																																				
L09	—	—	Indoor unit	Indoor capacity not set	Stop of corresponding unit	Capacity setting has not been performed for indoor unit.	Set indoor capacity. (DN = 11)																																																																				
L10	L10	—	I/F	Outdoor capacity not set	All stop	Jumper wire provided on P.C. board for servicing I/F P.C. board has not been removed as required for given model.	Check model setting of P.C. board for servicing outdoor I/F P.C. board.																																																																				
L20	—	—	Indoor unit	Duplicated central control address	All stop	There is duplication in central control address setting.	• Check central control addresses.																																																																				
L28	L28	—	I/F	Too many outdoor units connected	All stop	There are more than 3 outdoor units.	• Check No. of outdoor units connected (Only up to 3 units per system allowed). • Check communication lines between outdoor units. • Check for defect in outdoor P.C. board (I/F).																																																																				
L29	L29	<table border="1"> <tr> <td></td> <td>A3-IPDU</td> <td>Fan</td> <td></td> </tr> <tr> <td></td> <td>1</td> <td>2</td> <td>3 IPDU</td> </tr> <tr> <td>01</td> <td>○</td> <td></td> <td></td> </tr> <tr> <td>02</td> <td>○</td> <td></td> <td></td> </tr> <tr> <td>03</td> <td>○</td> <td></td> <td></td> </tr> <tr> <td>04</td> <td></td> <td>○</td> <td></td> </tr> <tr> <td>05</td> <td>○</td> <td>○</td> <td></td> </tr> <tr> <td>06</td> <td>○</td> <td>○</td> <td></td> </tr> <tr> <td>07</td> <td>○</td> <td>○</td> <td></td> </tr> <tr> <td>08</td> <td></td> <td></td> <td>○</td> </tr> <tr> <td>09</td> <td>○</td> <td></td> <td>○</td> </tr> <tr> <td>0A</td> <td>○</td> <td></td> <td>○</td> </tr> <tr> <td>0B</td> <td>○</td> <td></td> <td>○</td> </tr> <tr> <td>0C</td> <td></td> <td>○</td> <td>○</td> </tr> <tr> <td>0D</td> <td>○</td> <td></td> <td>○</td> </tr> <tr> <td>0E</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>0F</td> <td>○</td> <td>○</td> <td>○</td> </tr> </table> <p>Symbol ○ signifies site of IPDU error.</p>		A3-IPDU	Fan			1	2	3 IPDU	01	○			02	○			03	○			04		○		05	○	○		06	○	○		07	○	○		08			○	09	○		○	0A	○		○	0B	○		○	0C		○	○	0D	○		○	0E	○	○	○	0F	○	○	○	I/F	Error in No. of IPDUs	All stop	Insufficient number of IPDUs are detected when power is turned on.	• Check model setting of P.C. board for servicing outdoor I/F P.C. board. • Check connection of UART communication connector. • Check A3-IPDU, fan IPDU, and I/F P.C. board for defect.
	A3-IPDU	Fan																																																																									
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L30	L30	Detected indoor address	Indoor unit	External interlock of indoor unit	Stop of corresponding unit	• Signal is present at external error input terminal (CN80) for 1 minute.	<b>When external device is connected to CN80 connector:</b> 1) Check for defect in external device. 2) Check for defect in indoor P.C. board. <b>When external device is not connected to CN80 connector:</b> 1) Check for defect in indoor P.C. board.																																																																				

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
—	L31	—	I/F	Extended IC error	Continued operation	There is part failure in P.C. board (I/F).	Check outdoor P.C. board (I/F).
P01	—	—	Indoor unit	Indoor fan motor error	Stop of corresponding unit		<ul style="list-style-type: none"> <li>• Check the lock of fan motor (AC fan).</li> <li>• Check wiring.</li> </ul>
P03	P03	—	I/F	Discharge temperature TD1 error	All stop	Discharge temperature (TD1) exceeds 115°C.	<ul style="list-style-type: none"> <li>• Check outdoor service valves (discharge gas side, suction gas side, liquid side) to confirm full opening.</li> <li>• Check outdoor PMVs (PMV1, 2, 4) for clogging.</li> <li>• Check resistance characteristics of TD1 sensor.</li> <li>• Check for insufficiency in refrigerant quantity.</li> <li>• Check for defect in 4-way valve.</li> <li>• Check for leakage of SV4 circuit.</li> <li>• Check SV4 circuit (wiring or installation error in SV41, SV42 or SV43).</li> <li>• Check SV5 circuit leakage.</li> <li>• Check SV6 circuit leakage.</li> <li>• (Capillary clogging, valve operation error)</li> <li>• Check mispiping of discharge/suction gas main pipes.</li> <li>• Check Cool/Heat FS unit. SVD valve, SVS valve leakage check (SVDD valve, SVSS leakage check)</li> <li>• Mispiping of FS unit connecting pipe (suction gas/discharge gas)</li> <li>• Check connection of connector between FS unit and indoor unit.</li> <li>• Check miswiring between SVS and SVD valve.</li> </ul>
P04	P04	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Activation of high-pressure SW	All stop	High-pressure SW is activated.	<ul style="list-style-type: none"> <li>• Check connection of highpressure SW connector.</li> <li>• Check for defect in Pd pressure sensor.</li> <li>• Check outdoor service valves (discharge gas side, suction gas side, liquid side) to confirm full opening.</li> <li>• Check for defect in outdoor fan.</li> <li>• Check for defect in outdoor fan motor.</li> <li>• Check outdoor PMVs (PMV1, 2, 4) for clogging.</li> <li>• Check indoor/outdoor heat exchangers for clogging.</li> <li>• Check for short-circuiting of outdoor suction/discharge air flows.</li> <li>• Check 4-way valve error.</li> <li>• Check SV11 circuit. (Valve operation error)</li> <li>• Check checked valve of discharge gas pipe for error.</li> <li>• Check SV2 circuit for clogging.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> <li>• Check for error in indoor fan system (possible cause of air flow reduction).</li> <li>• Check opening status of indoor PMV.</li> <li>• Check indoor-outdoor communication line for wiring error.</li> <li>• Check for faulty operation of check valve in discharge pipe convergent section.</li> <li>• Check gas balancing SV4 valve circuit.</li> <li>• Check SV5 valve circuit.</li> <li>• Check for refrigerant overcharging.</li> <li>• Check mispiping of discharging gas/suction gas main pipes.</li> <li>• Check circuit clogging at liquid side of auxiliary heat exchanger. (PMV4, checked valve)</li> <li>• Check FS unit. Check SVD valve clogging and operation error. Check wiring inside of FS unit. (SVD/SVS coil miswiring, etc.) Check wiring between FS unit and indoor unit. (Mistaken wiring, wire disconnection, wiring forgotten)</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P05	P05	00:	I/F	Detection of open phase/phase sequence	All stop	<ul style="list-style-type: none"> <li>Open phase is detected when power is turned on.</li> <li>Inverter DC voltage is too high (overvoltage) or too low (undervoltage).</li> </ul>	<ul style="list-style-type: none"> <li>Check for defect in outdoor P.C. board (I/F).</li> <li>Check wiring of outdoor power supply.</li> </ul>
		01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side		Inverter DC voltage (Vdc) error (compressor) MG-CTT error			
P07	P07	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU I/F	Heat sink overheating error	All stop	Temperature sensor built into IGBT (TH) is overheated.	<ul style="list-style-type: none"> <li>Check power supply voltage.</li> <li>Check outdoor fan system error.</li> <li>Check heat sink cooling duct for clogging.</li> <li>Check IGBT and heat sink for thermal performance for faulty installation. (e.g. mounting screws and thermal conductivity)</li> <li>Check for defect in A3-IPDU. (faulty IGBT built-in temperature sensor (TH))</li> </ul>
P10	P10	Detected indoor address	Indoor unit	Indoor overflow error	All stop	<ul style="list-style-type: none"> <li>Float switch operates.</li> <li>Float switch circuit is open-circuited or disconnected at connector.</li> </ul>	<ul style="list-style-type: none"> <li>Check float switch connector.</li> <li>Check operation of drain pump.</li> <li>Check drain pump circuit.</li> <li>Check drain pipe for clogging.</li> <li>Check for defect in indoor P.C. board.</li> </ul>
P12	—	—	Indoor unit	Indoor fan motor error	Stop of corresponding unit	<ul style="list-style-type: none"> <li>Motor speed measurements continuously deviate from target value.</li> <li>Overcurrent protection is activated.</li> </ul>	<ul style="list-style-type: none"> <li>Check connection of fan connector and wiring.</li> <li>Check for defect in fan motor.</li> <li>Check for defect in indoor P.C. board.</li> <li>Check impact of outside air treatment (OA).</li> </ul>
P13	P13	—	I/F	Outdoor liquid backflow detection error	All stop	<p>&lt;During cooling operation&gt; When system is in cooling operation, high pressure is detected in follower unit that has been turned off.</p> <p>&lt;During heating operation&gt; When system is in heating operation, outdoor PMV 1 or 2 continuously registers opening of 100p or less while under SH control.</p>	<ul style="list-style-type: none"> <li>Check full-close operation of outdoor PMV (1, 2, 4).</li> <li>Check for defect in Pd or Ps sensor.</li> <li>Check gas balancing circuit (SV2) for clogging.</li> <li>Check balance pipe.</li> <li>Check SV3B circuit for clogging.</li> <li>Check defect in outdoor P.C. board (I/F).</li> <li>Check capillary of oil separator oil return circuit for clogging.</li> <li>Check for leakage of check valve in discharge pipe convergent section.</li> <li>Check 4-way valve error.</li> <li>Check TS1, TS2 sensors. (TS1, TS2 miswiring and mismounting)</li> </ul>

MG-CTT: Magnet contactor

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P15	P15	01: TS condition	I/F	Gas leakdetection (TS1 condition)	All stop	Protective shutdown due to sustained suction temperature at or above judgment criterion for at least 10 minutes is repeated four times or more. <TS error judgment criterion> In cooling operation: 60°C In heating operation: 40°C	<ul style="list-style-type: none"> <li>• Check for insufficiency in refrigerant quantity.</li> <li>• Check outdoor service valves (discharge gas side, suction gas side, liquid side) to confirm full opening.</li> <li>• Check PMVs (PMV1, 2, 4) for clogging.</li> <li>• Check resistance characteristics of TS1 sensor.</li> <li>• Check for defect in 4-way valve.</li> <li>• Check SV4 circuit for leakage</li> <li>• Check SV5 circuit leakage.</li> <li>• Check mispiping of discharge gas/suction gas main pipes.</li> <li>• Check Cool/Heat FS unit. Check SVD valve, SVS valve leakage. (Check SVDD valve, SVSS valve leakage.)</li> <li>• Connecting piping to FS unit</li> <li>• Mispiping of (discharge gas/ suction gas)</li> </ul>
		02: TD condition	I/F	Gas leak detection (TD condition)	All stop	Protective shutdown due to sustained discharge temperature (TD1, TD2 or TD3) at or above 108°C for at least 10 minutes is repeated four times or more.	<ul style="list-style-type: none"> <li>• Check for insufficiency in refrigerant quantity.</li> <li>• Check PMVs (PMV 1, 2, 4) for clogging.</li> <li>• Check resistance characteristics of TD1, TD2 and TD3 sensors.</li> <li>• Check indoor filter for clogging.</li> <li>• Check piping for clogging.</li> <li>• Check SV4 circuit (for leakage or coil installation error).</li> <li>• Check mispiping of discharge gas/suction gas main pipes.</li> <li>• Check Cool/Heat FS unit. Check SVD valve, SVS valve leakage. (Check SVDD valve, SVSS valve leakage.)</li> <li>• Connecting piping to FS unit</li> <li>• Mispiping of (discharge gas/ suction gas)</li> <li>• Check wiring and connection of connectors between FS unit and indoor unit.</li> <li>• Check miswiring of SVS/SVD valves.</li> </ul>
P17	P17	—	I/F	Discharge temperature TD2 error	All stop	Discharge temperature (TD2) exceeds 115°C.	<ul style="list-style-type: none"> <li>• Check outdoor service valves (discharge gas side, suction gas side, liquid side) to confirm full opening.</li> <li>• Check outdoor PMVs (PMV1, 2, 4) for clogging.</li> <li>• Check resistance characteristics of TD2 sensor.</li> <li>• Check for defect in 4-way valve.</li> <li>• Check SV4 circuit for leakage.</li> <li>• Check SV4 circuit (for wiring or installation error involving SV41, SV42 and SV43).</li> <li>• Check SV5 valve circuit leakage.</li> <li>• Check SV6 circuit (Clogging, valve operation error)</li> <li>• Check mispiping of discharge gas/suction gas main pipes.</li> <li>• Check Cool/Heat FS unit. Check SVD valve, SVS valve leakage. (Check SVDD valve, SVSS valve leakage.)</li> <li>• Connecting piping to FS unit</li> <li>• Mispiping of (discharge gas/ suction gas)</li> <li>• Check wiring between FS unit and indoor unit, connection of connectors</li> <li>• Check miswiring of SVS/SVD valve.</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P18	P18	—	I/F	Discharge temperature TD3 error	All stop	Discharge temperature (TD3) exceeds 115°C.	<ul style="list-style-type: none"> <li>• Check outdoor service valves (discharge gas side, suction gas side, liquid side) to confirm full opening.</li> <li>• Check outdoor PMVs (PMV1, 2, 4) for clogging.</li> <li>• Check resistance characteristics of TD3 sensor.</li> <li>• Check for defect in 4-way valve.</li> <li>• Check SV4 circuit for leakage.</li> <li>• Check SV4 circuit (for wiring or installation error involving SV41, SV42 and SV43).</li> <li>• Check SV5 valve circuit leakage.</li> <li>• Check SV6 circuit. (Clogging, valve operation error)</li> <li>• Check mispiping of discharge gas/suction gas main pipes.</li> <li>• Check Cool/Heat FS unit. Check SVD valve, SVS valve leakage. (Check SVDD valve, SVSS valve leakage.)</li> <li>• Connecting piping to FS unit</li> <li>• Mispiping of (discharge gas/suction gas)</li> <li>• Check wiring between FS unit and indoor unit, connection of connectors.</li> <li>• Check miswiring of SVS/SVD valve.</li> </ul>
P19	P19	Detected outdoor unit No. * Display of center unit only	I/F	4-way valve reversing error	All stop	Abnormal refrigerating cycle data is collected during single heating operation.	<ul style="list-style-type: none"> <li>• It is necessary to check all the outdoor units in the identical refrigerant line.</li> <li>• Check for defect in main body of 4-way valve.</li> <li>• Check for coil defect in 4-way valve and loose connection of its connector.</li> <li>• Check clogging in 4-way valve capillary</li> <li>• Check resistance characteristics of TS1 and TE1 sensors.</li> <li>• Check output voltage characteristics of Pd and Ps pressure sensors.</li> <li>• Check for wiring error involving TE1 and TL sensors.</li> <li>• Check Cool/Heat FS unit. Check SVD valve, SVS valve leakage. (Check SVDD valve, AVSS valve leakage.)</li> <li>• Connecting piping of FS unit</li> <li>• Mispiping of (Discharge gas/suction gas)</li> <li>• SV14 valve body error (in heating operation)</li> <li>• SV 14valve coil error, Connector connection check (in heating operation)</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P20	P20	—	I/F	Activation of high-pressure protection	All stop	Pd sensor detects pressure equal to or greater than 3.6MPa.	<ul style="list-style-type: none"> <li>• Check for defect in Pd pressure sensor.</li> <li>• Check service valves (discharge gas side, suction gas side, liquid side) to confirm full opening.</li> <li>• Check for defect in outdoor fan.</li> <li>• Check for defect in outdoor fan motor.</li> <li>• Check outdoor PMVs (PMV1, 2, 4) for clogging.</li> <li>• Check indoor/outdoor heat exchangers for clogging.</li> <li>• Check for short-circuiting of outdoor suction/discharge air flows.</li> <li>• Check SV2 circuit for clogging.</li> <li>• Check 4-way valve operation error.</li> <li>• Check for defect in outdoor P.C. board (I/F).</li> <li>• Check for defect in indoor fan system (possible cause of air flow reduction).</li> <li>• Check opening status of indoor PMV.</li> <li>• Check indoor-outdoor communication line for wiring error.</li> <li>• Check for faulty operation of check valve in discharge pipe convergent section.</li> <li>• Check gas balancing SV4 valve circuit.</li> <li>• Check mispiping of suction gas/discharge gas main pipes.</li> <li>• Check discharge gas pipe checked valve operation error.</li> <li>• Check SV11 valve circuit. (Clogging, OFF at one side only)</li> <li>• Check clogging of circuit at auxiliary heat exchanger liquid side. (Miswiring, disconnection, wiring forgotten)</li> <li>• Check Cool/Heat FS unit. Clogging of SVD valve, operation error check Wiring check in FS unit (SVD/SVS coil miswiring, etc.) Wiring check between FS unit and inside of room (Miswiring, disconnection, wiring forgotten)</li> <li>• Check SV5 valve circuit.</li> <li>• Check for refrigerant overcharging.</li> </ul>
P22	P22	0*: IGBT circuit 1*: Position detection circuit error 3*: Motor lockup error 4*: Motor current detection C*: TH sensor temperature error D*: TH sensor error E*: Inverter DC voltage error (outdoor fan) <b>Note:</b> <b>Although letters 0 to F appear at locations indicated by “*”, please ignore them.</b>	IPDU	Outdoor fan IPDU error	All stop	(Auxiliary code: 0*) Fan IPDU overcurrent protective circuit A status that the current flows over the fixed amount when the fan was activated was detected.	<ul style="list-style-type: none"> <li>• Fan motor check</li> <li>• Check for fan IPDU board error</li> </ul>
					All stop	(Auxiliary code: 1*) Fan IPDU position detective circuit The position detection was not normally performed.	<ul style="list-style-type: none"> <li>• Fan motor check</li> <li>• Connection check for fan motor connectors</li> <li>• Check for fan IPDU board error</li> </ul>
					All stop	(Auxiliary code: 3*) External elements by gust, obstacles, etc. Velocity estimate was not correctly performed.	<ul style="list-style-type: none"> <li>• Fan motor check</li> <li>• Check for fan IPDU board error</li> </ul>
					All stop	(Auxiliary code: 4*) Fan IPDU overcurrent protective circuit A status that the current flows over the fixed amount when the fan operated was detected.	<ul style="list-style-type: none"> <li>• Fan motor check</li> <li>• Connection check for fan motor connectors</li> <li>• Check for fan IPDU board error</li> </ul>
					All stop	(Auxiliary code: C*) Temperature of TH sensor over the fixed value was detected during operation of the fan.	<ul style="list-style-type: none"> <li>• Fan motor check</li> <li>• Check for fan IPDU board error</li> </ul>
					All stop	(Auxiliary code: D*) The resistance value of the sensor is infinite. Or 0 (at Open / Short)	<ul style="list-style-type: none"> <li>• Check for fan IPDU board error</li> </ul>
					All stop	(Auxiliary code: E*) Protection for fan IPDU DC voltage DC voltage detected over the fixed value or below the fixed value.	<ul style="list-style-type: none"> <li>• Power supply voltage check</li> <li>• Check for fan IPDU board error</li> <li>• Connection check for fan IPDU connectors</li> </ul>

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
P26	P26	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	G-TR short-circuit protection error	All stop	Overcurrent is momentarily detected during startup of compressor.	<ul style="list-style-type: none"> <li>• Check connector connection and wiring on A3-IPDU P.C. board.</li> <li>• Check for defect in compressor (layer shortcircuit).</li> <li>• Check for defect in outdoor P.C. board (A3-IPDU).</li> </ul>
P29	P29	01: Compressor 1 side 02: Compressor 2 side 03: Compressor 3 side	IPDU	Compressor position detection circuit error	All stop	Position detection is not going on normally.	<ul style="list-style-type: none"> <li>• Check wiring and connector connection.</li> <li>• Check for compressor layer short-circuit.</li> <li>• Check for defect in A3-IPDU P.C. board.</li> </ul>
P31	—	—	Indoor unit	Other indoor error (group follower unit error)	Stop of corresponding unit	There is error in other indoor unit in group, resulting in detection of E07/L07/L03/L08.	<ul style="list-style-type: none"> <li>• Check indoor P.C. board.</li> </ul>

### Errors Detected by TCC-LINK Central Control Device

Main remote controller	Check code		Location of detection	Description	System status	Error detection condition(s)	Check items (locations)
	Outdoor 7-segment display						
	Check code	Sub-code					
C05	—		TCC-LINK	TCC-LINK central control device transmission error	Continued operation	Central control device is unable to transmit signal.	<ul style="list-style-type: none"> <li>• Check for defect in central control device.</li> <li>• Check for defect in central control communication line.</li> <li>• Check termination resistance setting.</li> </ul>
C06	—			TCC-LINK central control device reception error	Continued operation	Central control device is unable to receive signal.	<ul style="list-style-type: none"> <li>• Check for defect in central control device.</li> <li>• Check for defect in central control communication line.</li> <li>• Check termination resistance setting.</li> <li>• Check power supply for devices at other end of central control communication line.</li> <li>• Check defect in P.C. boards of devices at other end of central control communication line.</li> </ul>
C12	—		General-purpose device I/F	Blanket alarm for general-purpose device control interface	Continued operation	Error signal is input to control interface for general-purpose devices.	<ul style="list-style-type: none"> <li>• Check error input.</li> </ul>
P30	Differs according to nature of alarm-causing error		TCC-LINK	Group control follower unit error	Continued operation	Error occurs in follower unit under group control. ([P30] is displayed on central control remote controller.)	<ul style="list-style-type: none"> <li>• Check check code of unit that has generated alarm.</li> </ul>
	(L20 displayed.)			Duplicated central control address	Continued operation	There is duplication in central control addresses.	<ul style="list-style-type: none"> <li>• Check address settings.</li> </ul>

## Points to Note When Servicing Compressor

(1) When checking the outputs of inverters, remove the wiring from all the compressors.

### How to Check Inverter Output

(1) Turn off the power supply.

(2) Remove compressor leads from the IPDU P.C. board (A3-IPDU). (Be sure to remove all the leads.)

(3) Turn on the power supply and start cooling or heating operation.

Be careful not to make simultaneous contact with two or more faston connectors for compressor leads or a faston connector and some other object (e.g. the unit cabinet).

(4) Check the output voltage across each pair of inverter-side (CN703, 704, 705).

If the result is unsatisfactory according to the judgment criteria given in the table below, replace the IPDU P.C. board.

No.	Measured leads	Criterion
1	Red-White	380~580V
2	White-Black	380~580V
3	Black-Red	380~580V

\* When connecting the compressor leads back to the compressor terminals after checking the output, check the faston connectors thoroughly to ensure that they are not crooked. If there is any loose connector, tighten it with a pair of pliers, etc. before connecting the lead.

### How to Check Resistance of Compressor Winding

(1) Turn off the power supply.

(2) Remove compressor leads from the compressors.

(3) With each compressor, check the phase-to-phase winding resistances and winding-to-outdoor cabinet resistance using a multimeter.

- Earth fault?

→ It is normal if the winding-to-outdoor cabinet resistance is 20MΩ or more.

- Inter-winding short circuit?

→ It is normal if the phase-to-phase resistances are in the 0.6-1.0Ω range. (Use a digital multimeter.)

### How to Check Outdoor Fan Motor

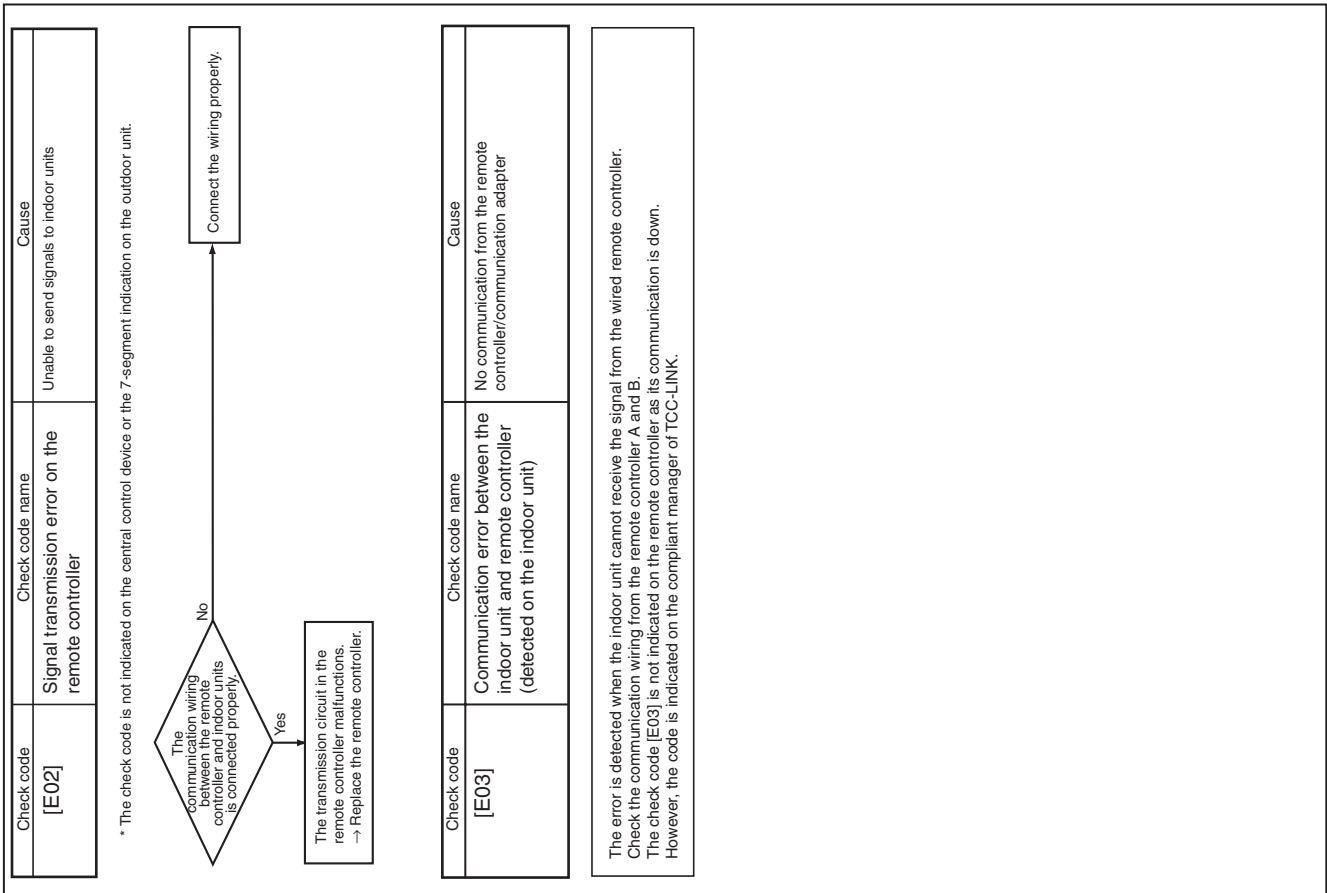
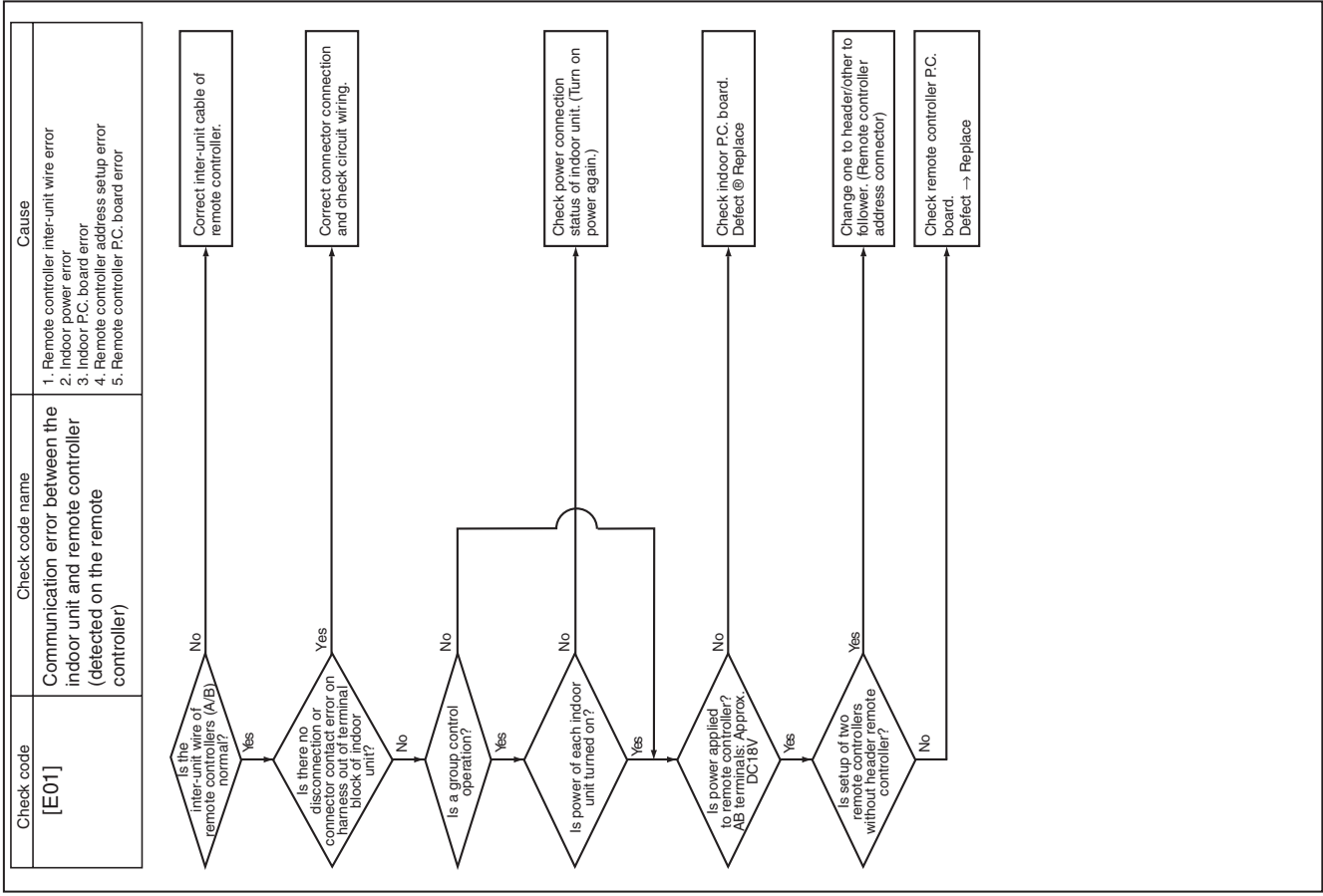
(1) Turn off the power supply.

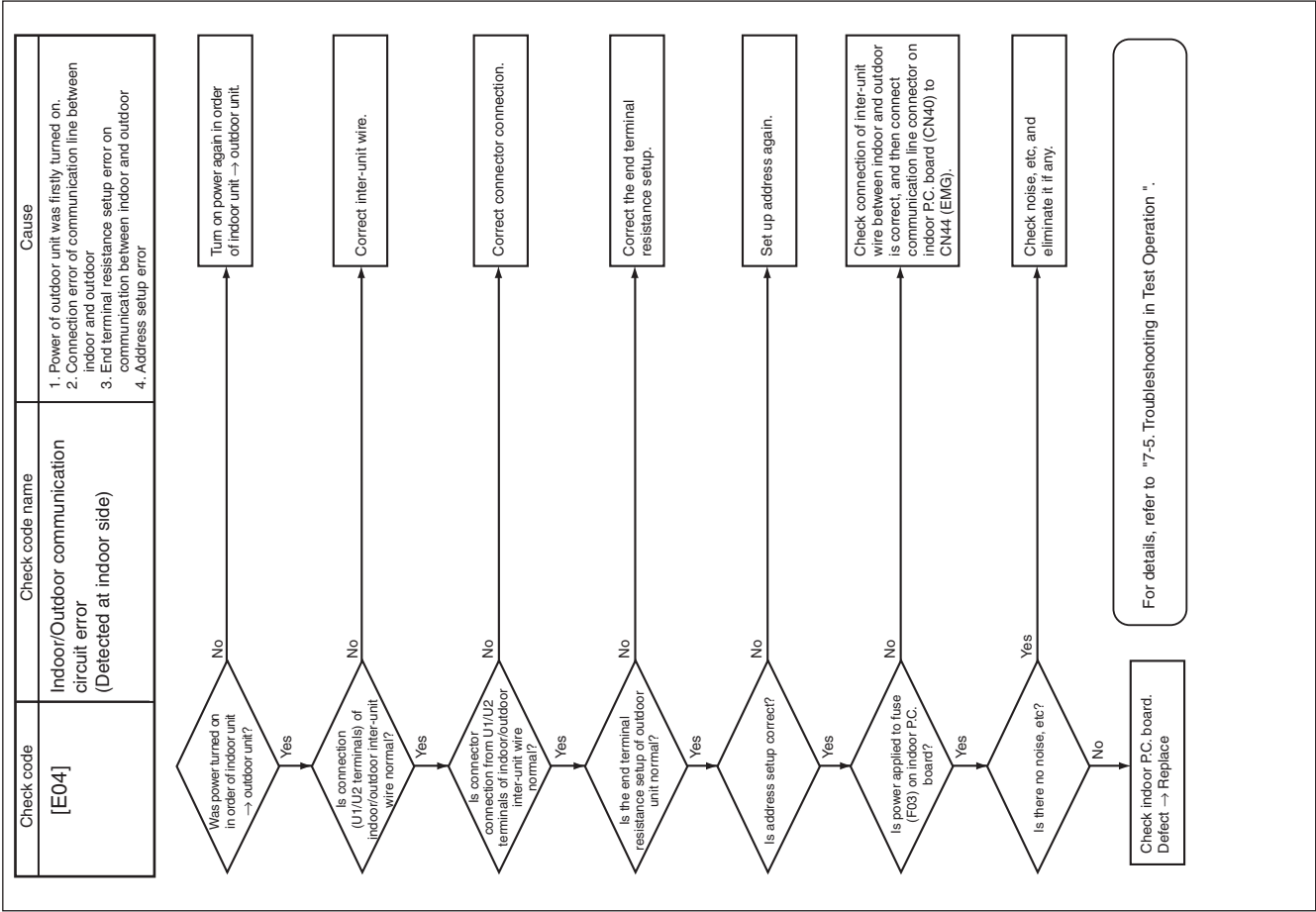
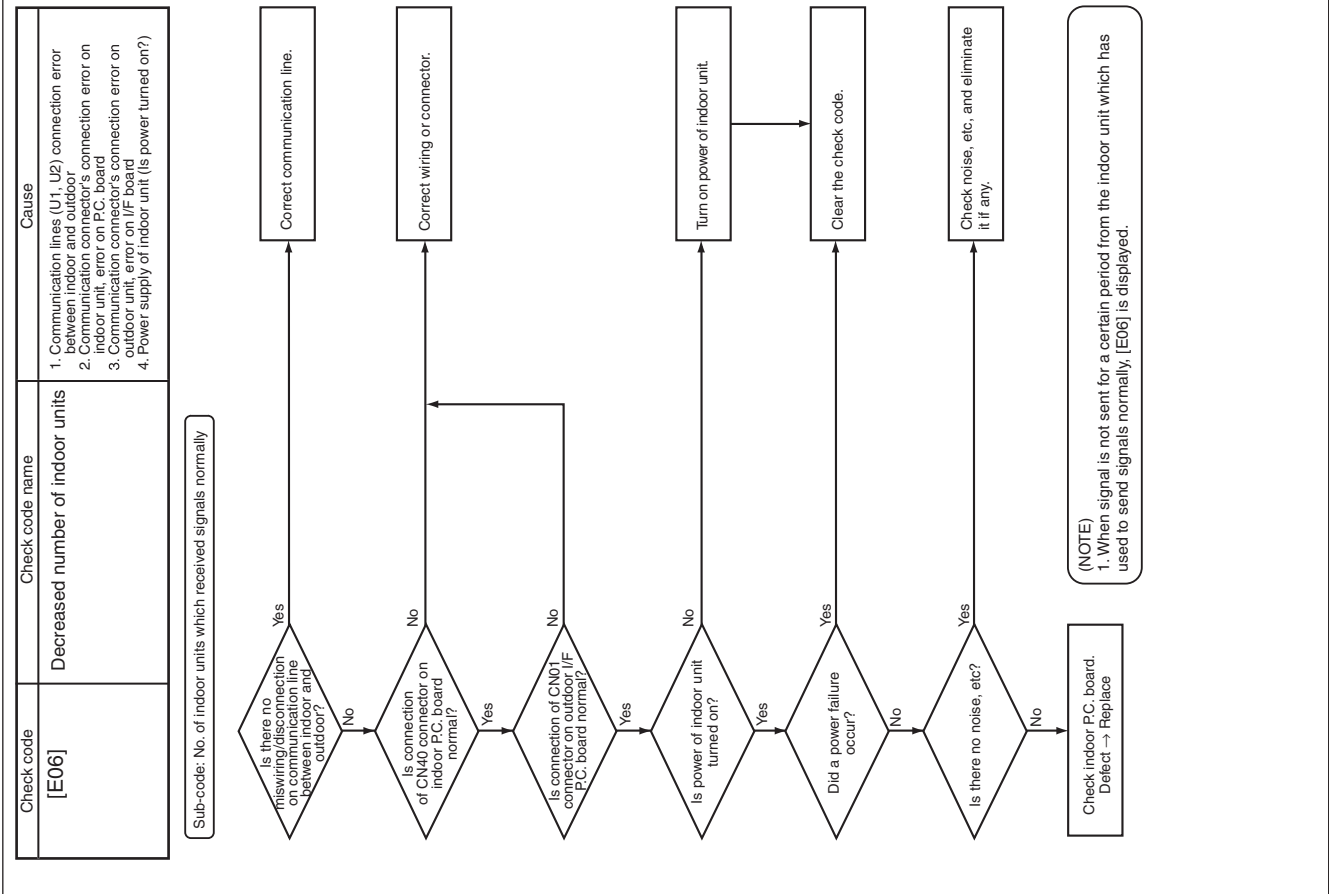
(2) Remove fan motor leads from the IPDU P.C. board for the outdoor fan (CN703-CN705).

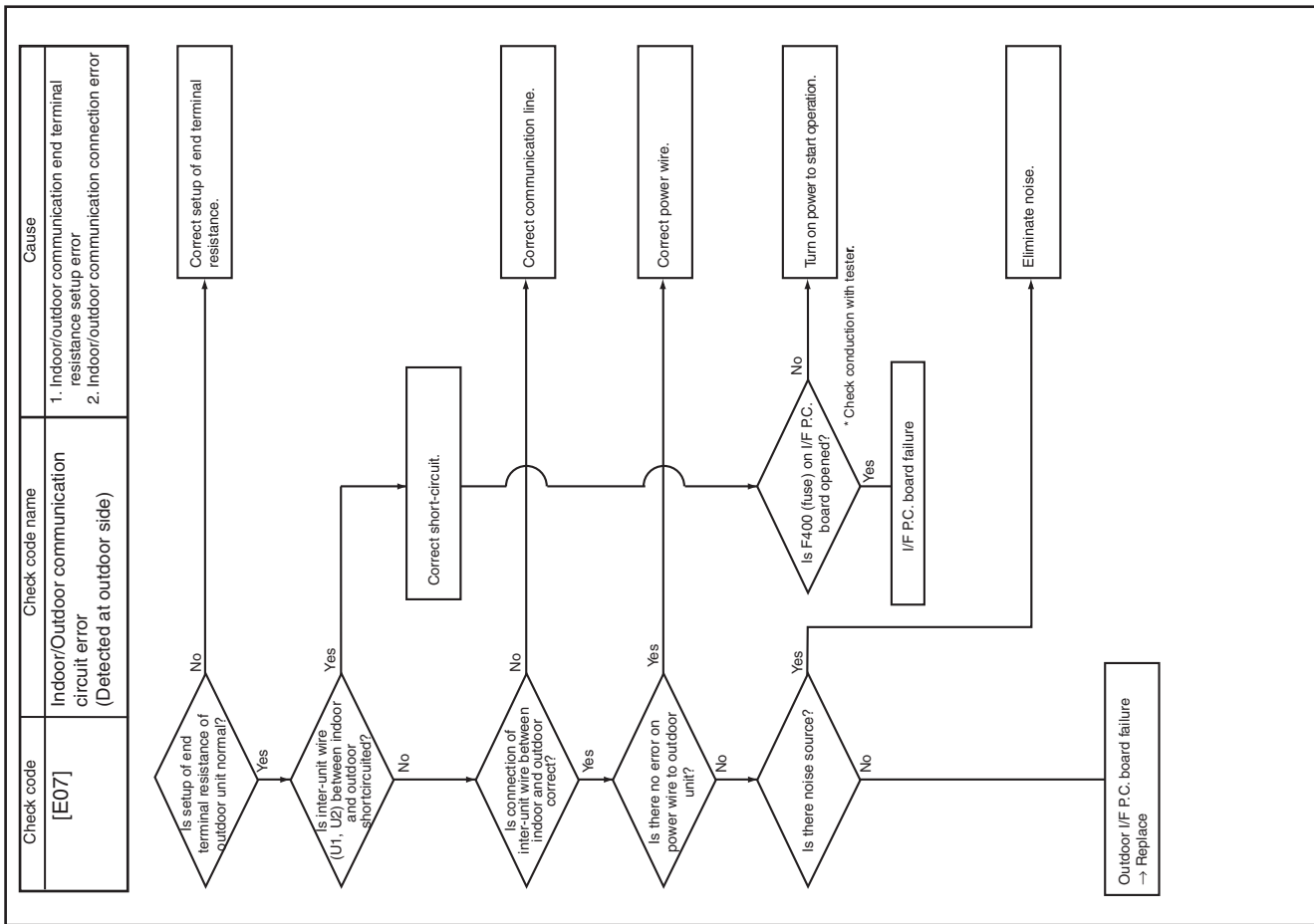
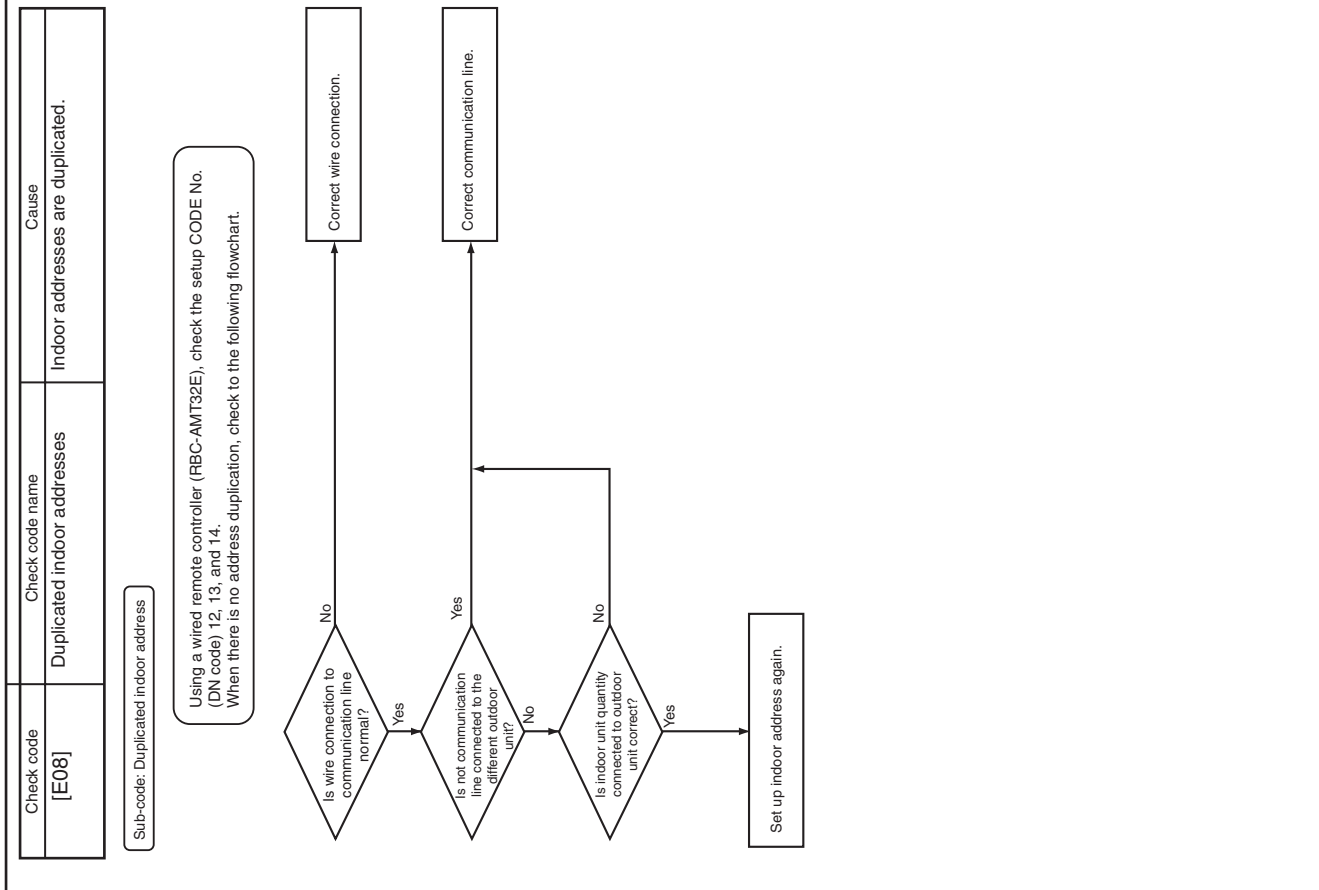
(3) Rotate the fan by hand. If the fan does not turn, the fan motor is faulty (locked up). Replace the fan motor.

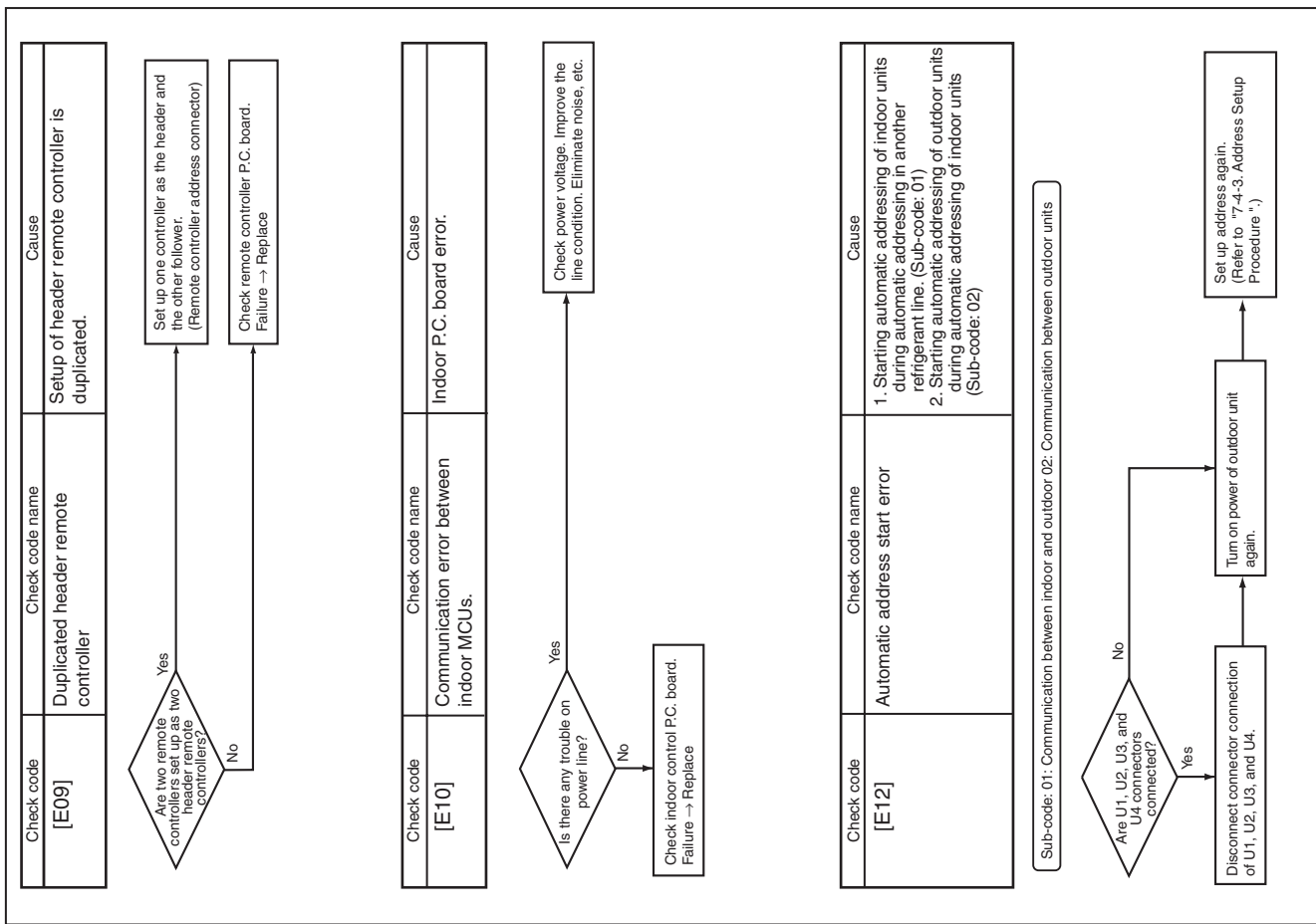
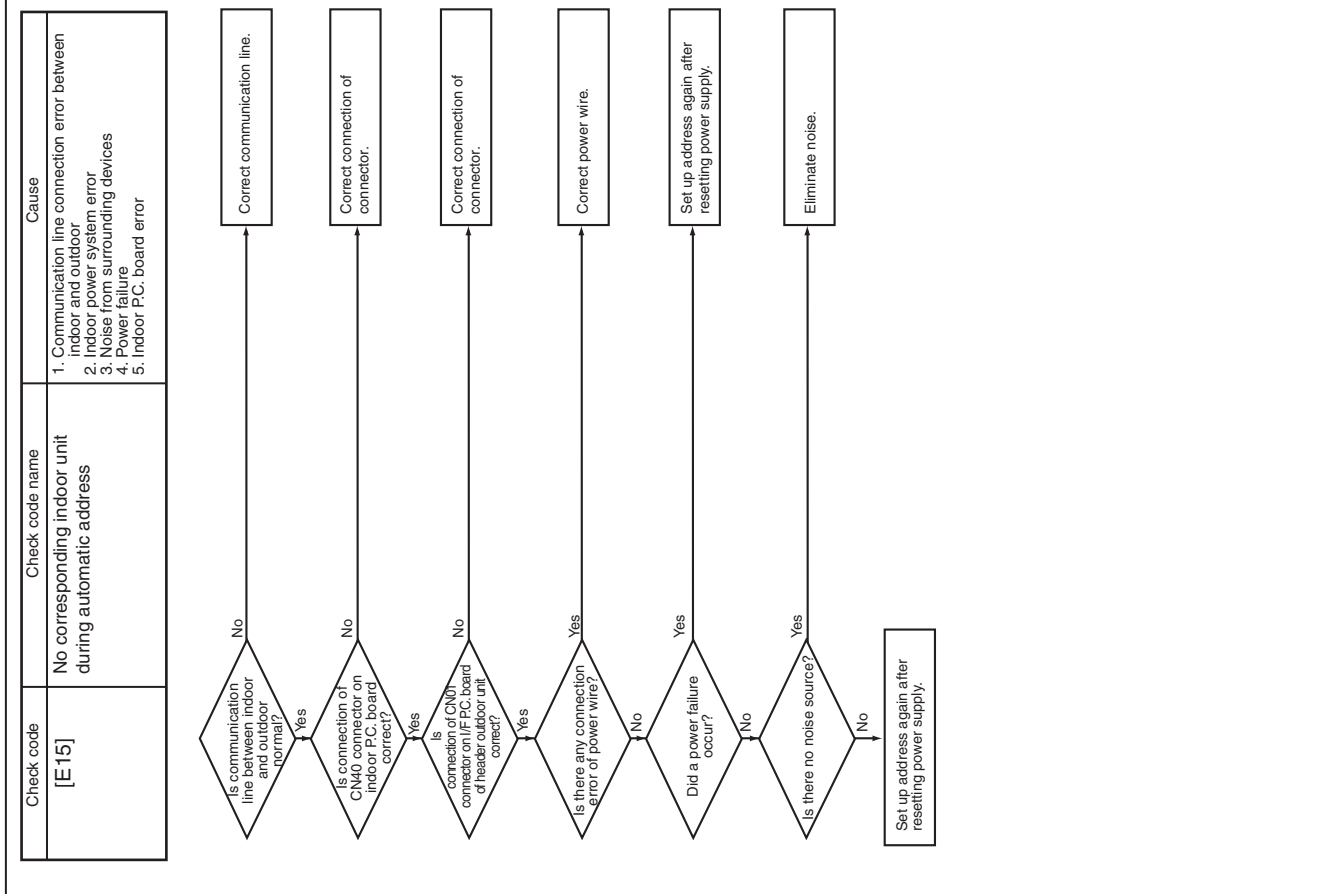
If the fan turns, measure the phase-to-phase winding resistances using a multimeter. It is normal if the measurements are in the 1.14-1.70Ω range. (Use a digital multimeter.)

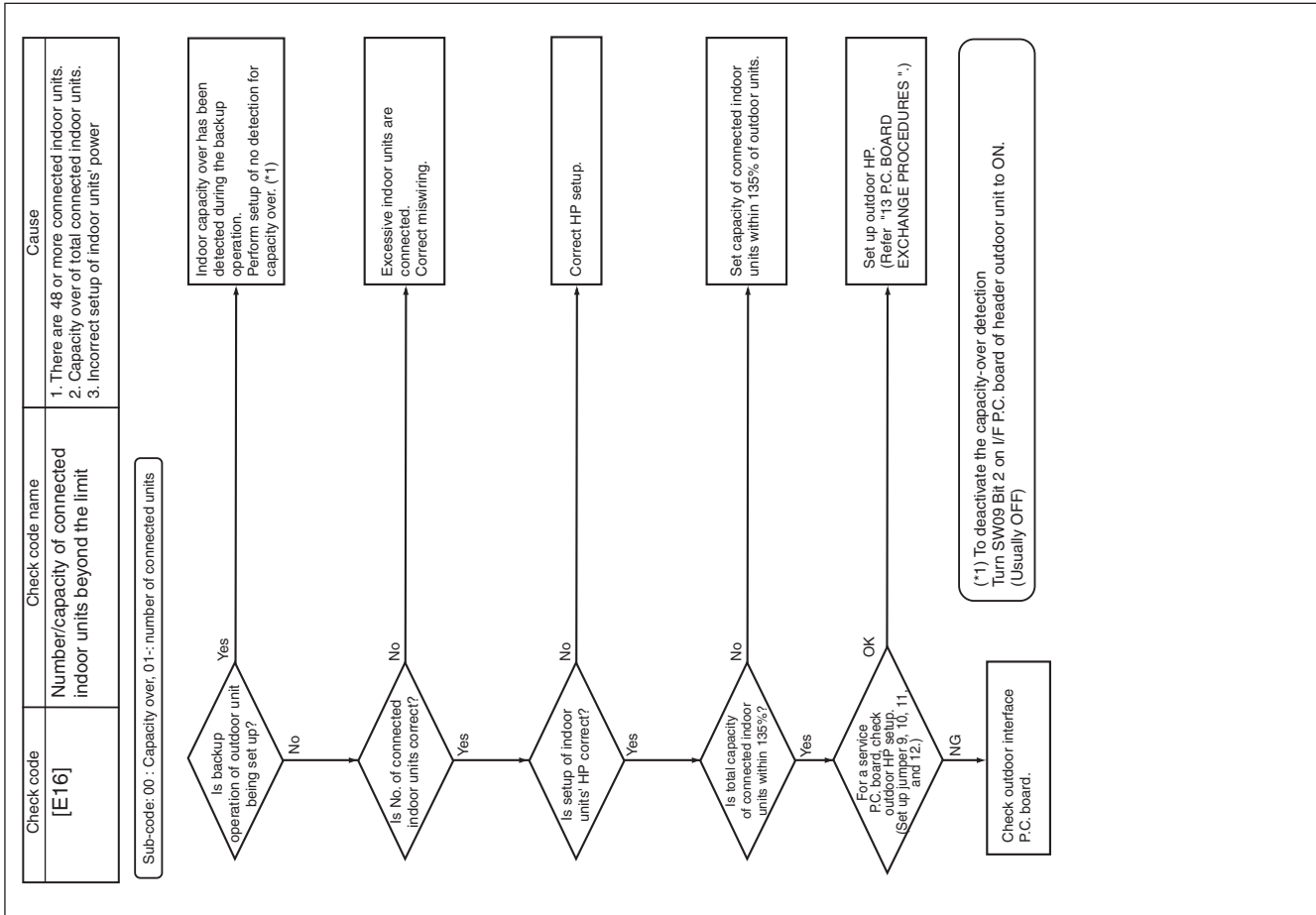
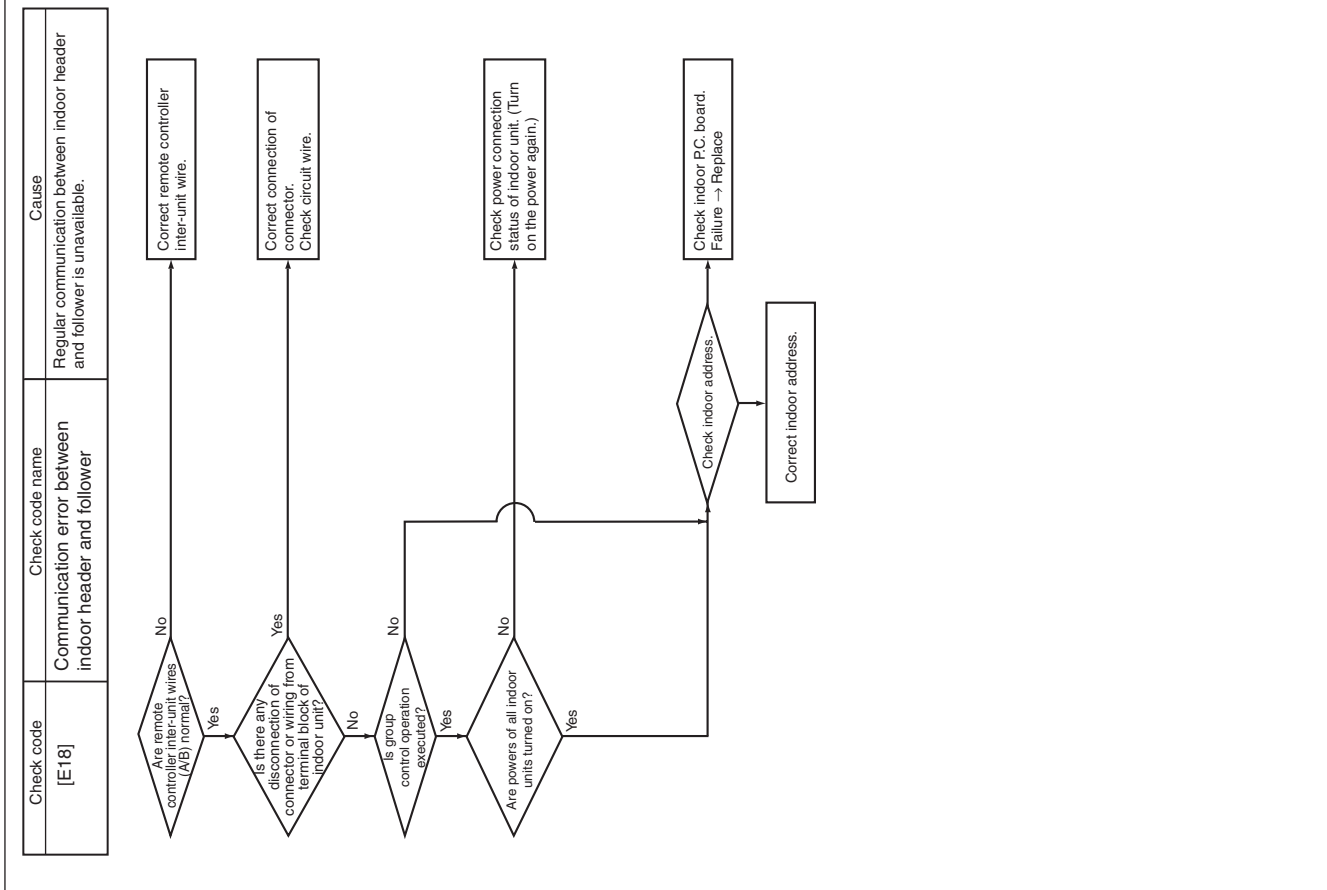
## 8-5. Diagnosis procedure for each check code

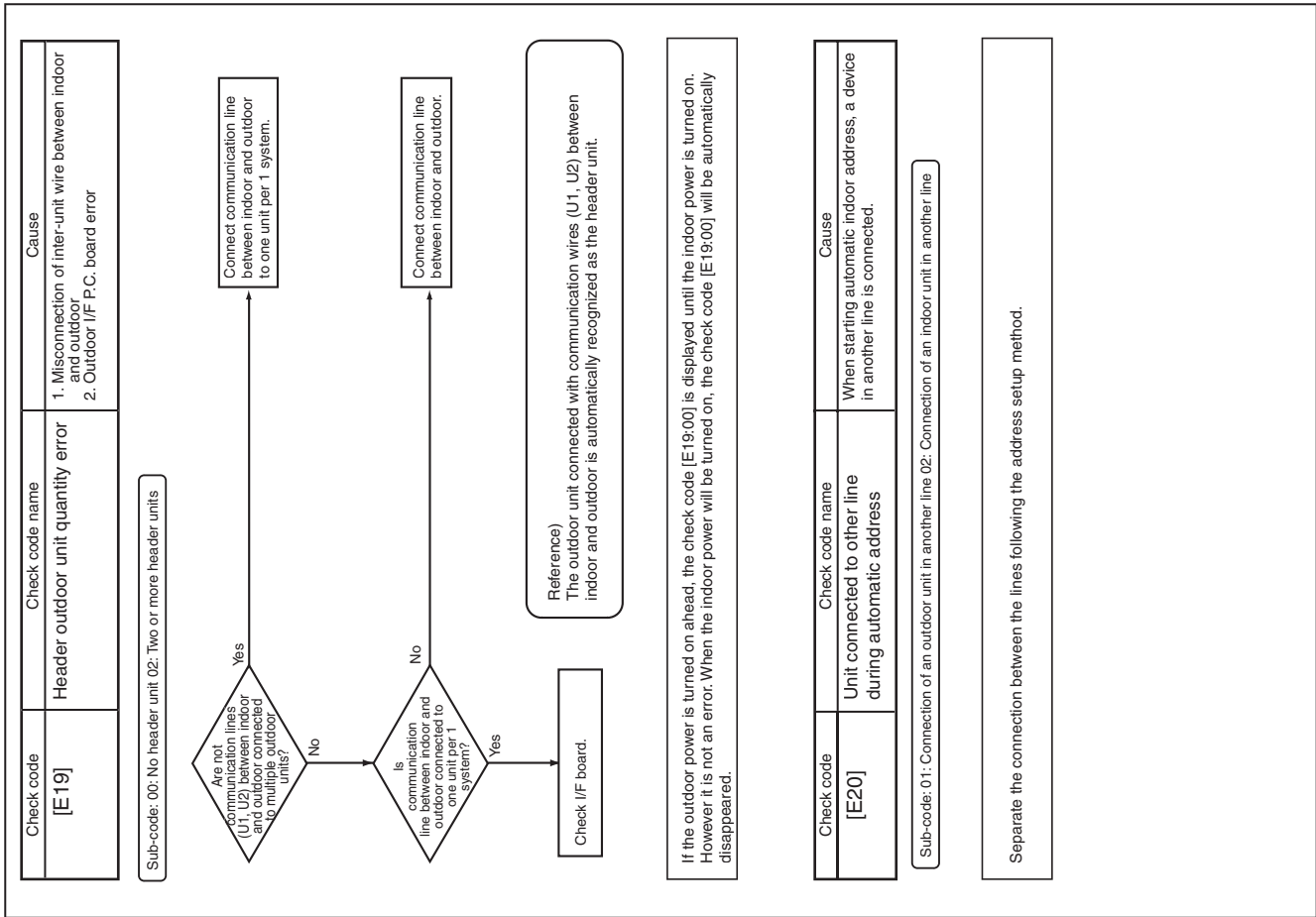
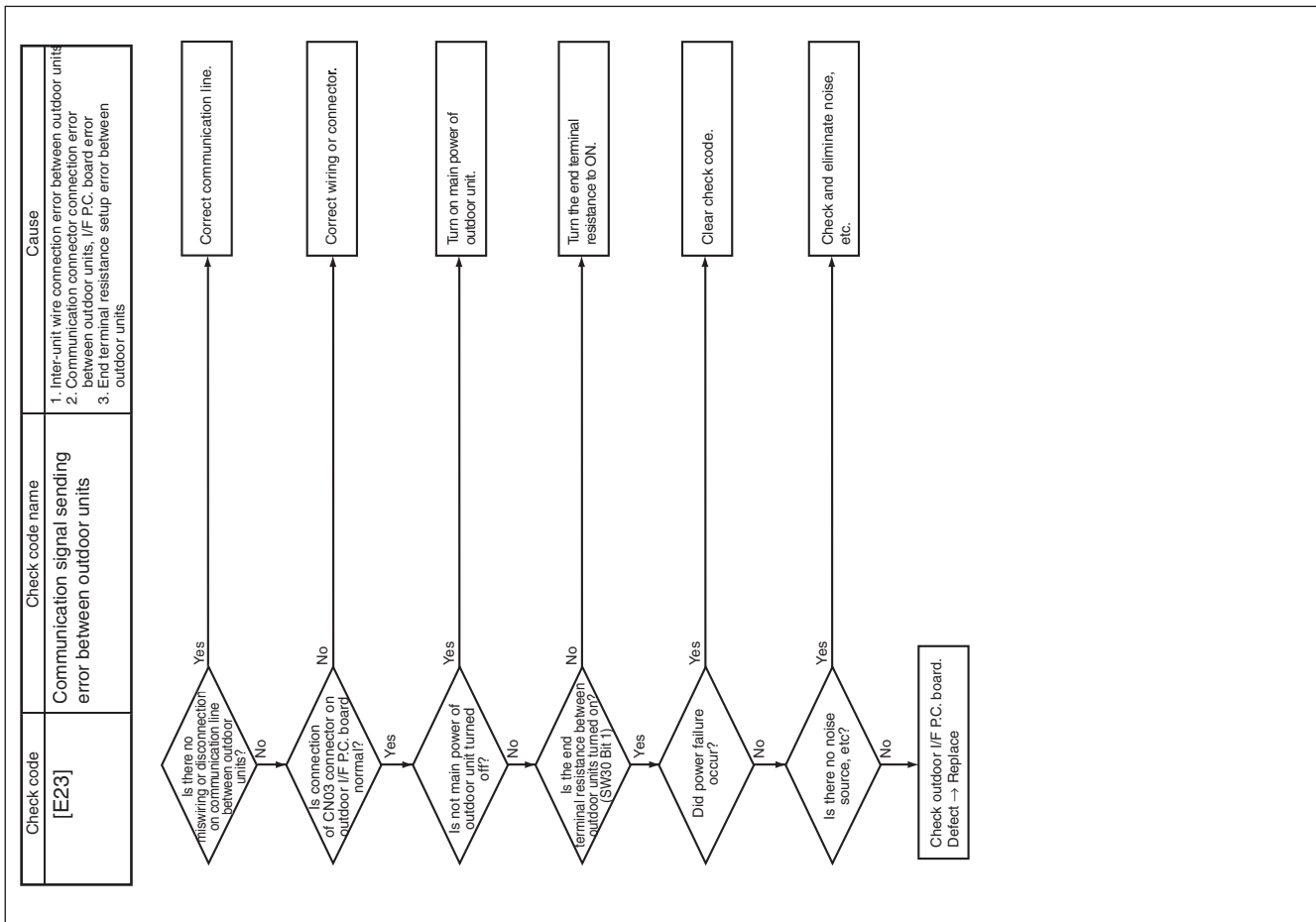


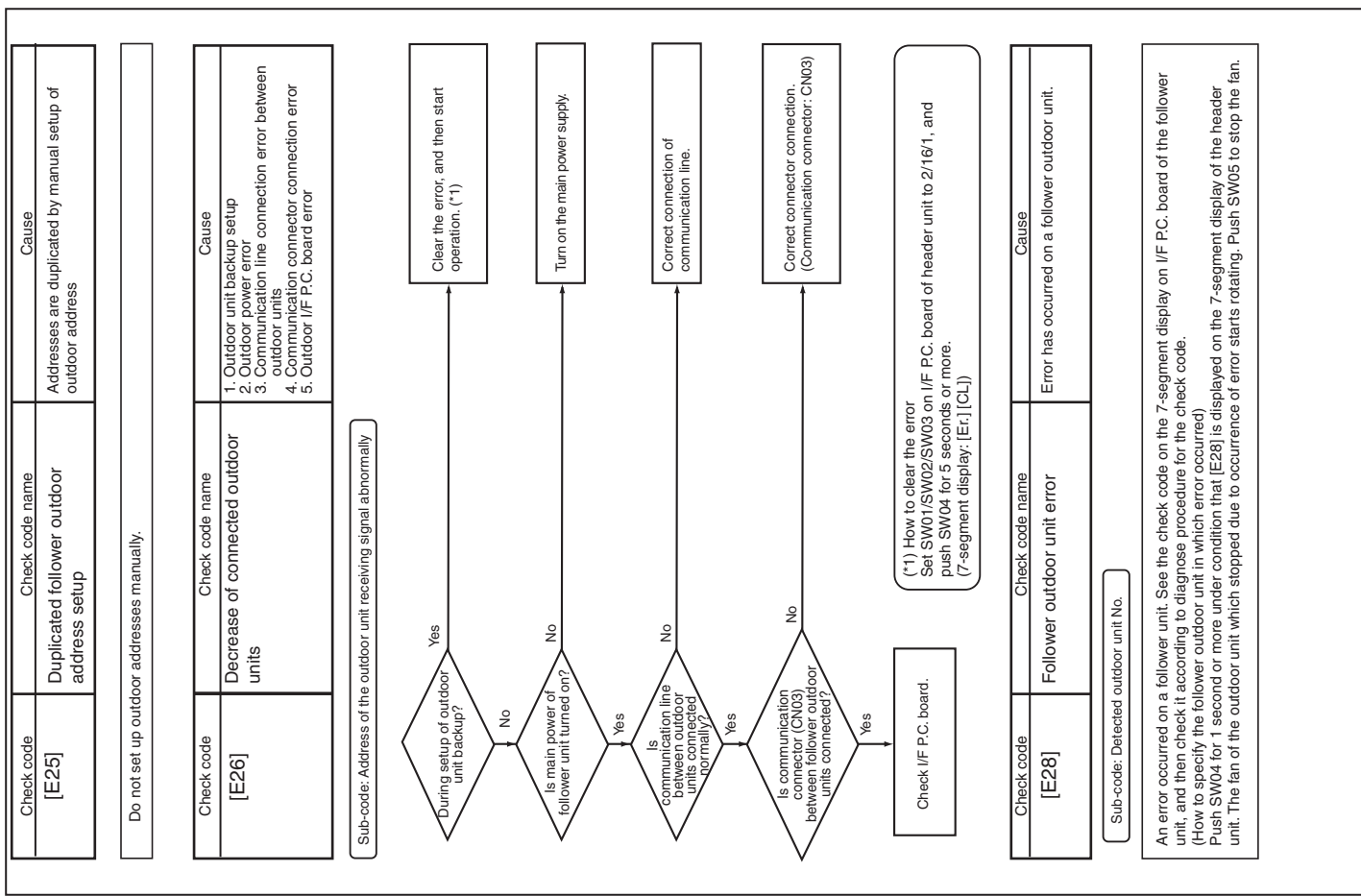
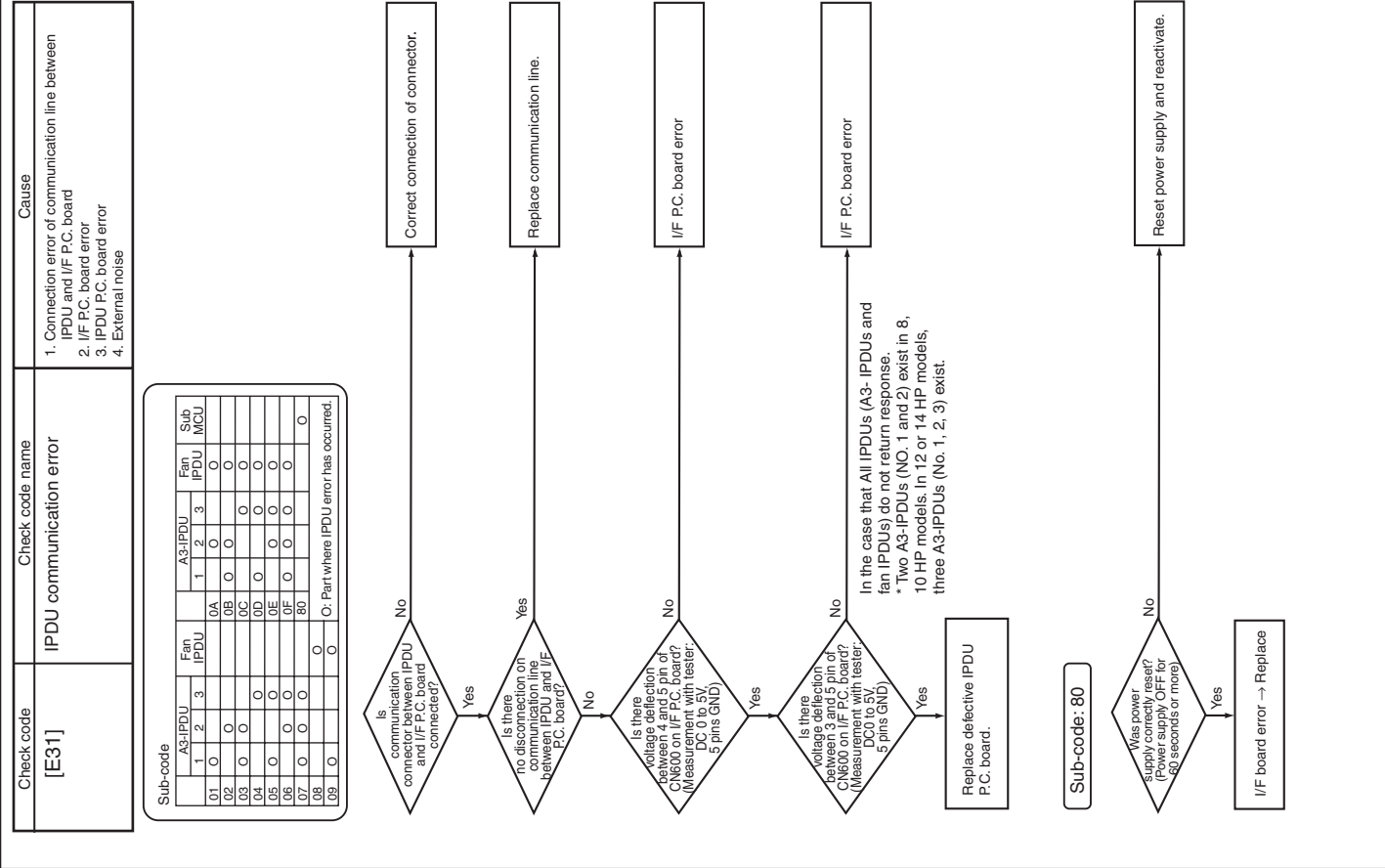


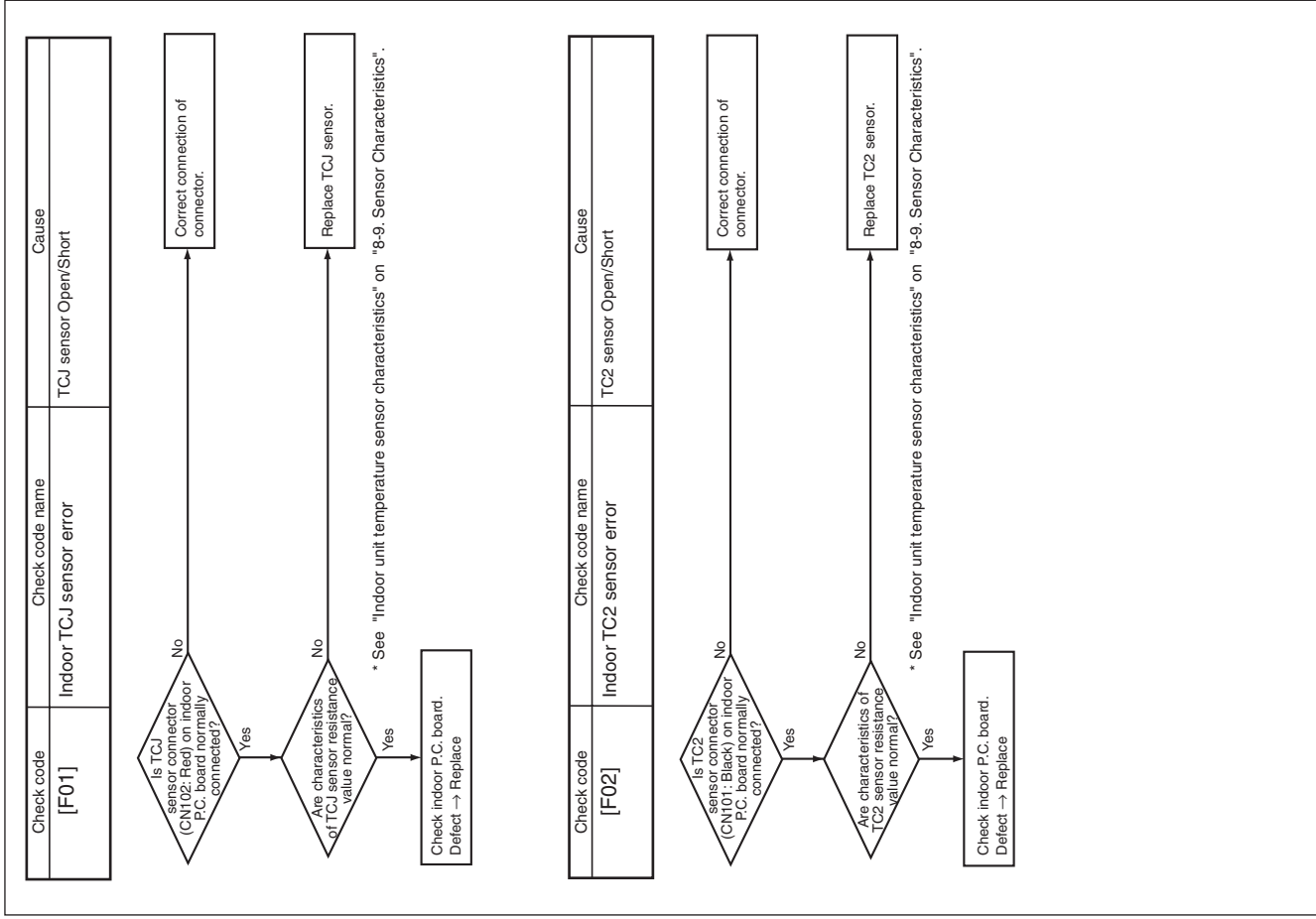
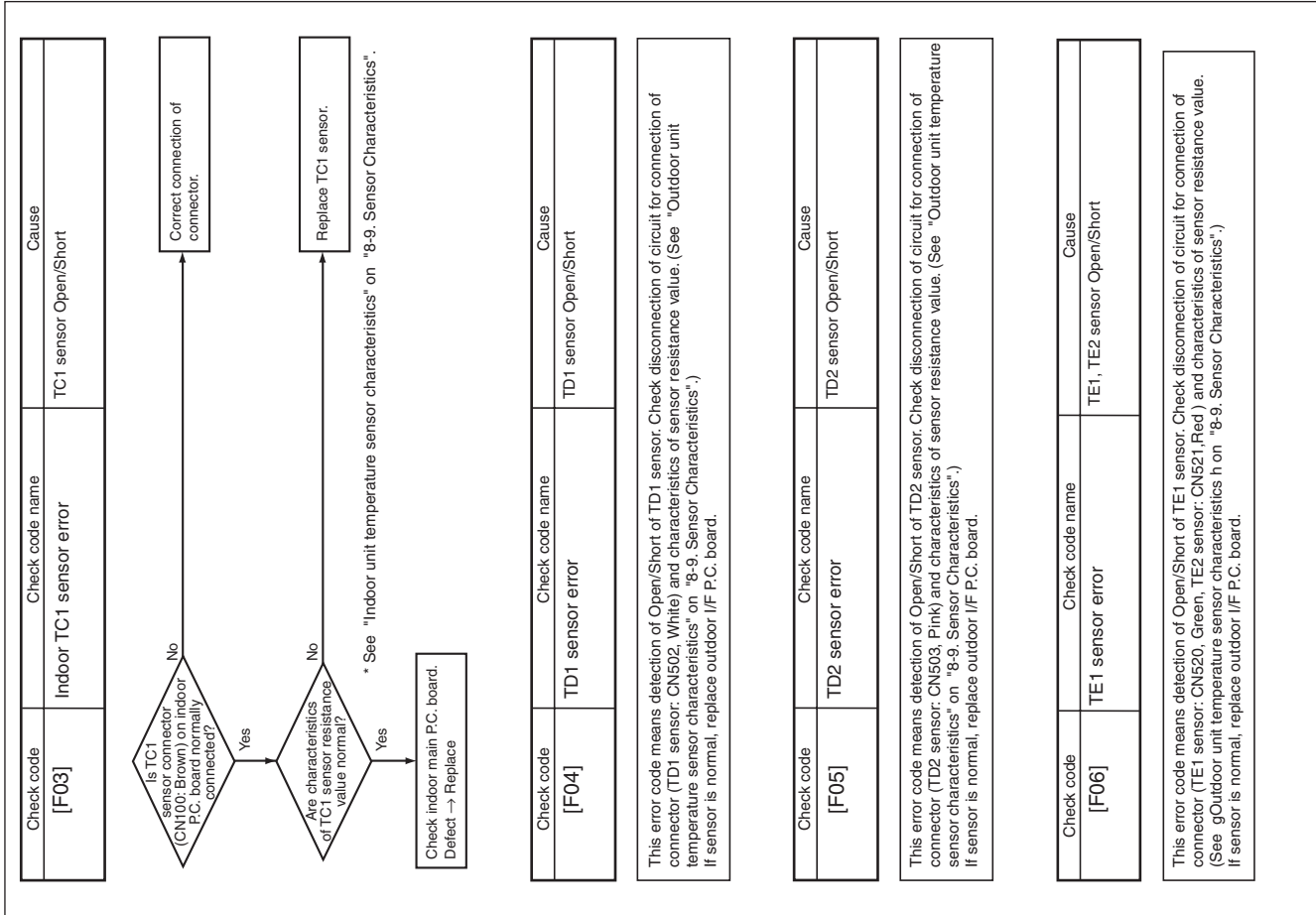


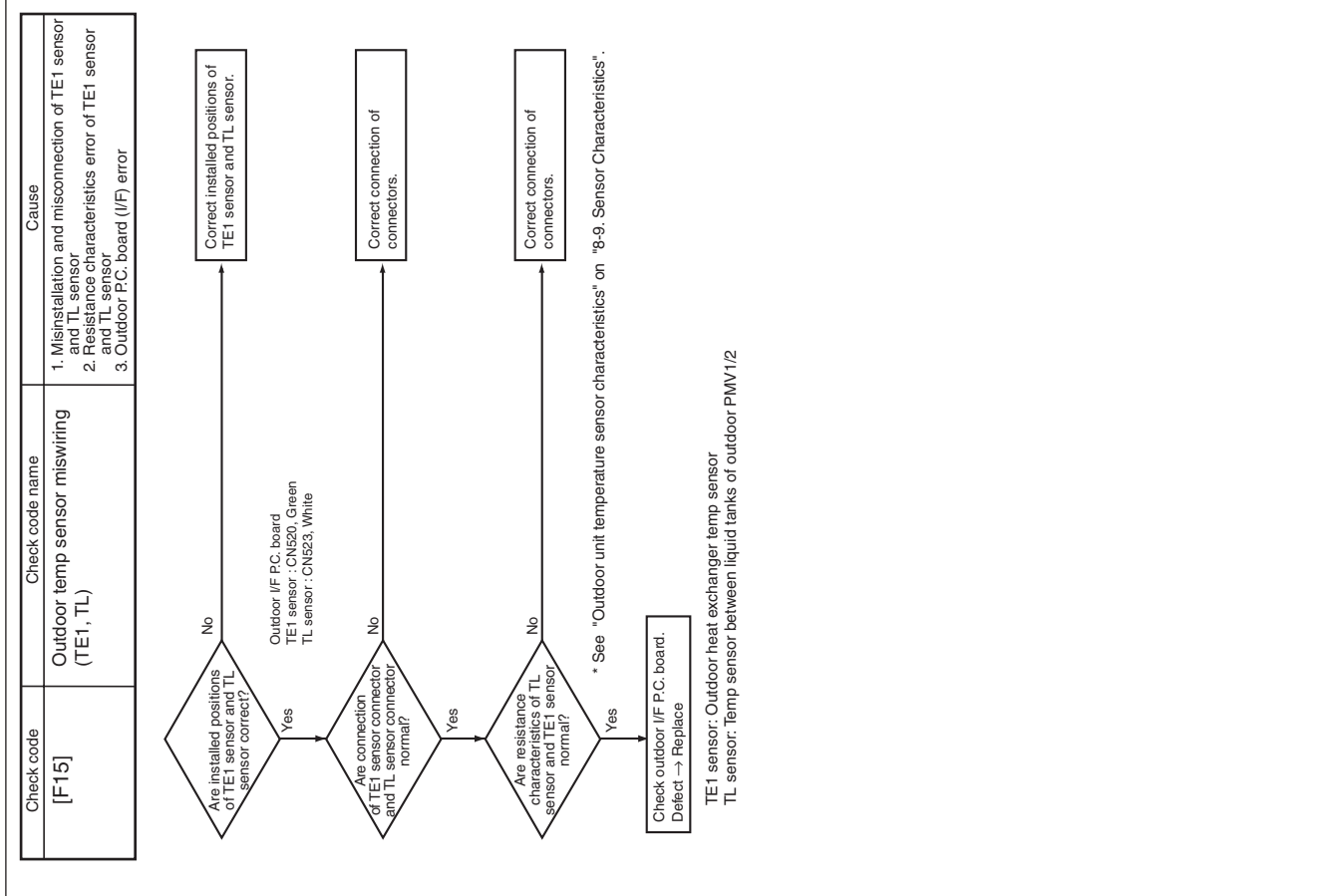






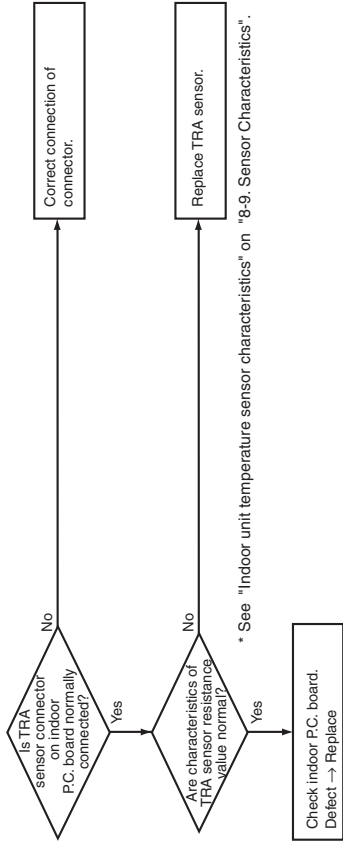






Check code	Check code name	Cause
[F07]	TL sensor error	TL sensor Open/Short
This error code means detection of Open/Short of TL sensor. Check disconnection of circuit for connection of connector (TL sensor: CN523, White) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "8-9. Sensor Characteristics".) If sensor is normal, replace outdoor I/F P.C. board.		
[F08]	TO sensor error	TO sensor Oper/Short
This error code means detection of Open/Short of TO sensor. Check disconnection of circuit for connection of connector (TO sensor: CN507, Yellow) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "8-9. Sensor Characteristics".) If sensor is normal, replace outdoor I/F P.C. board.		
[F10]	Indoor TA sensor error	TA sensor Open/Short
This error code means detection of Open/Short of TA sensor. Check disconnection of circuit for connection of connector (TA sensor: CN104, Yellow) and characteristics of sensor resistance value. (See "Indoor unit temperature sensor characteristics" on "8-9. Sensor Characteristics".) If sensor is normal, replace indoor P.C. board.		
[F11]	Indoor TF / TFA sensor error	TF / TFA sensor Open/Short
Open/short of TF / TFA sensor was detected. Check disconnection of connector connection (TFA sensor: CN103 yellowish green) circuit and resistance value characteristics of the sensor. (Refer to "8-9 Sensor Characteristics Indoor Unit Temperature Sensor Characteristics".) When the sensor is normal, replace the indoor P.C. board.		
[F12]	TS1 sensor error	TS1 sensor Open/Short
This error code means detection of Open/Short of TS1 sensor. Check disconnection of circuit for connection of connector (TS1 sensor: CN505, White) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "8-9. Sensor Characteristics".) If sensor is normal, replace outdoor I/F P.C. board.		
[F13]	TH sensor error	IGBT built-in sensor error in A3-IPDU
Sub-code: 01: Compressor 1, 02: Compressor 2, 03: Compressor 3		
This error code means IGBT built-in temperature sensor error. Check connection of connectors CN06 on IPDU P.C. board and CN600 on I/F P.C. board. If sensor is normal, replace IPDU P.C. board.		

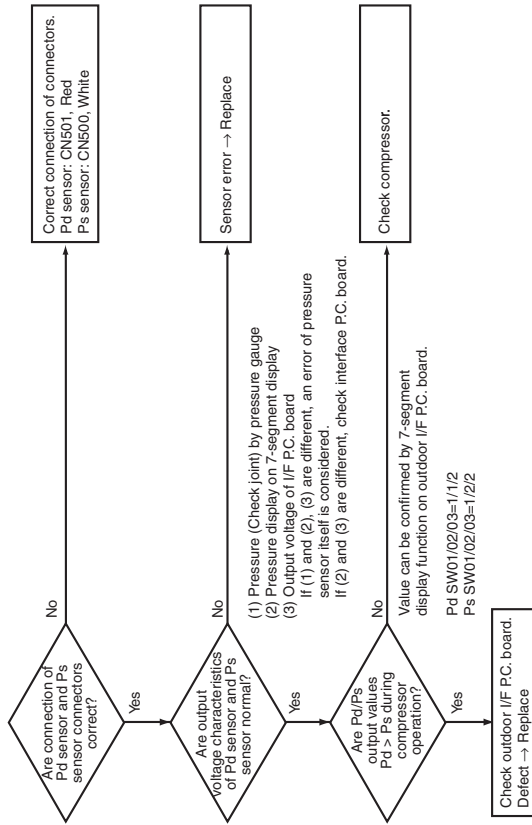
Check code	Check code name	Cause
[F18]	Indoor TRA sensor error	TRA sensor Open/Short



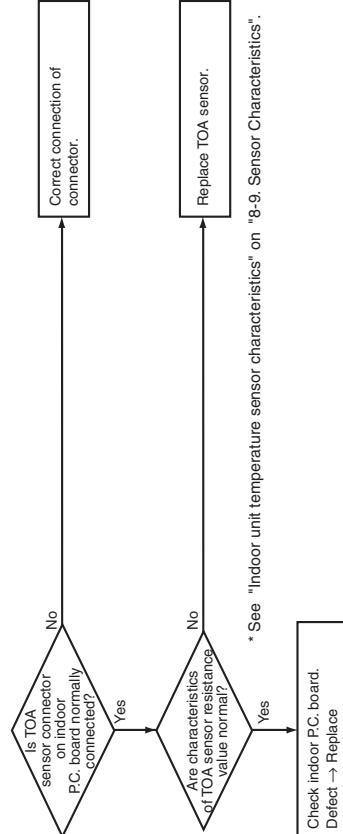
Check code	Check code name	Cause
[F22]	TD3 sensor error	TD3 sensor Open/Short

This error code means detection of Open/Short of TD3 sensor. Check disconnection of circuit for connection of connector (TD3 sensor: CN504, blue) and characteristics of sensor resistance value. (See "Outdoor unit temperature sensor characteristics" on "8-9. Sensor Characteristics".)  
If sensor is normal, replace outdoor I/F P.C. board.

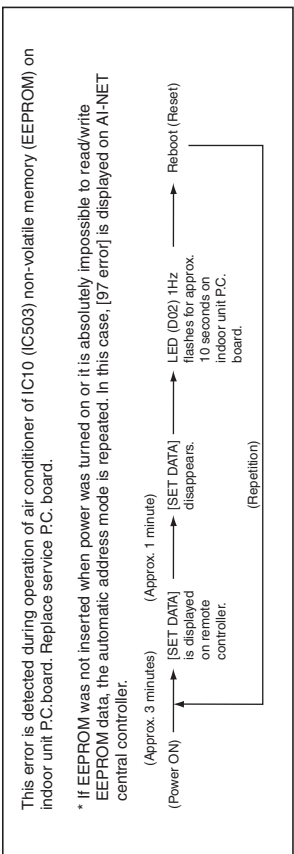
Check code	Check code name	Cause
[F16]	Outdoor pressure sensor miswiring (Pd, Ps)	1. High-pressure Pd sensor and low pressure sensor Ps are exchanged. 2. Output voltage of each sensor is zero.



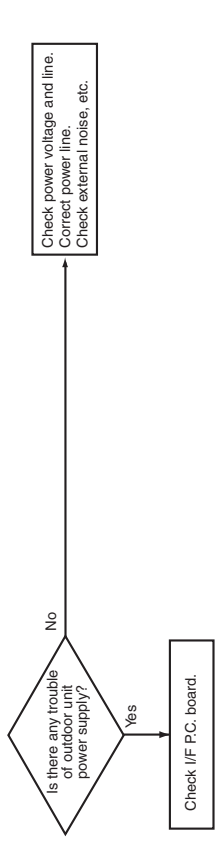
Check code	Check code name	Cause
[F17]	Indoor TOA sensor error	TOA sensor Open/Short



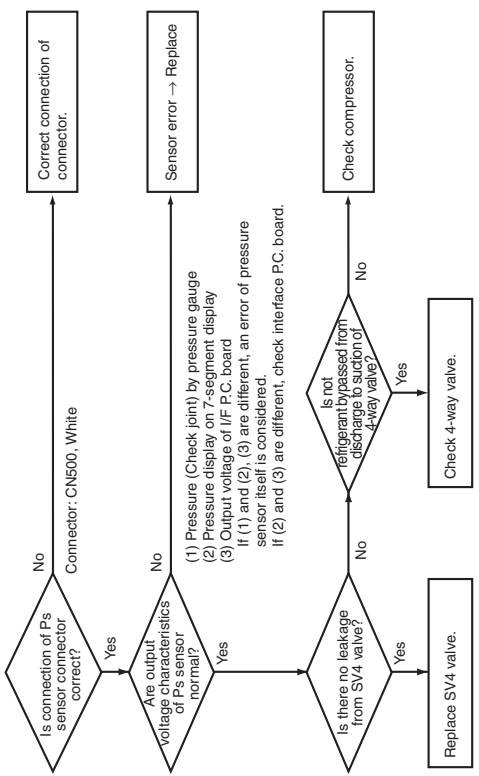
Check code	Check code name	Cause
[F29]	Indoor other error	Indoor P.C. board error



Check code	Check code name	Cause
[F31]	Outdoor EEPROM error	1. Outdoor unit power error (Voltage, noise, etc.) 2. Outdoor I/F P.C. board error

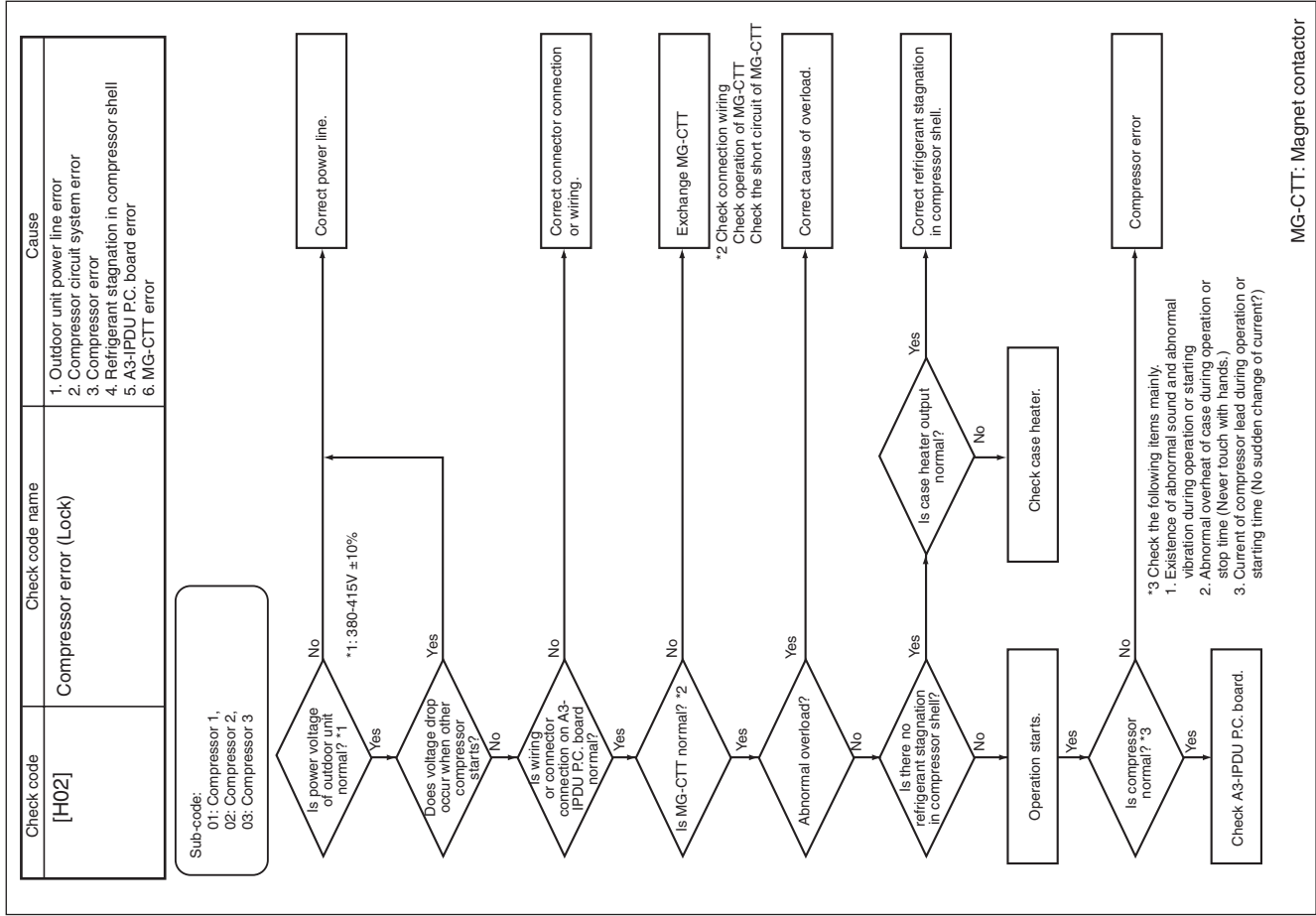


Check code	Check code name	Cause
[F23]	Ps sensor error	Output voltage error of Ps sensor

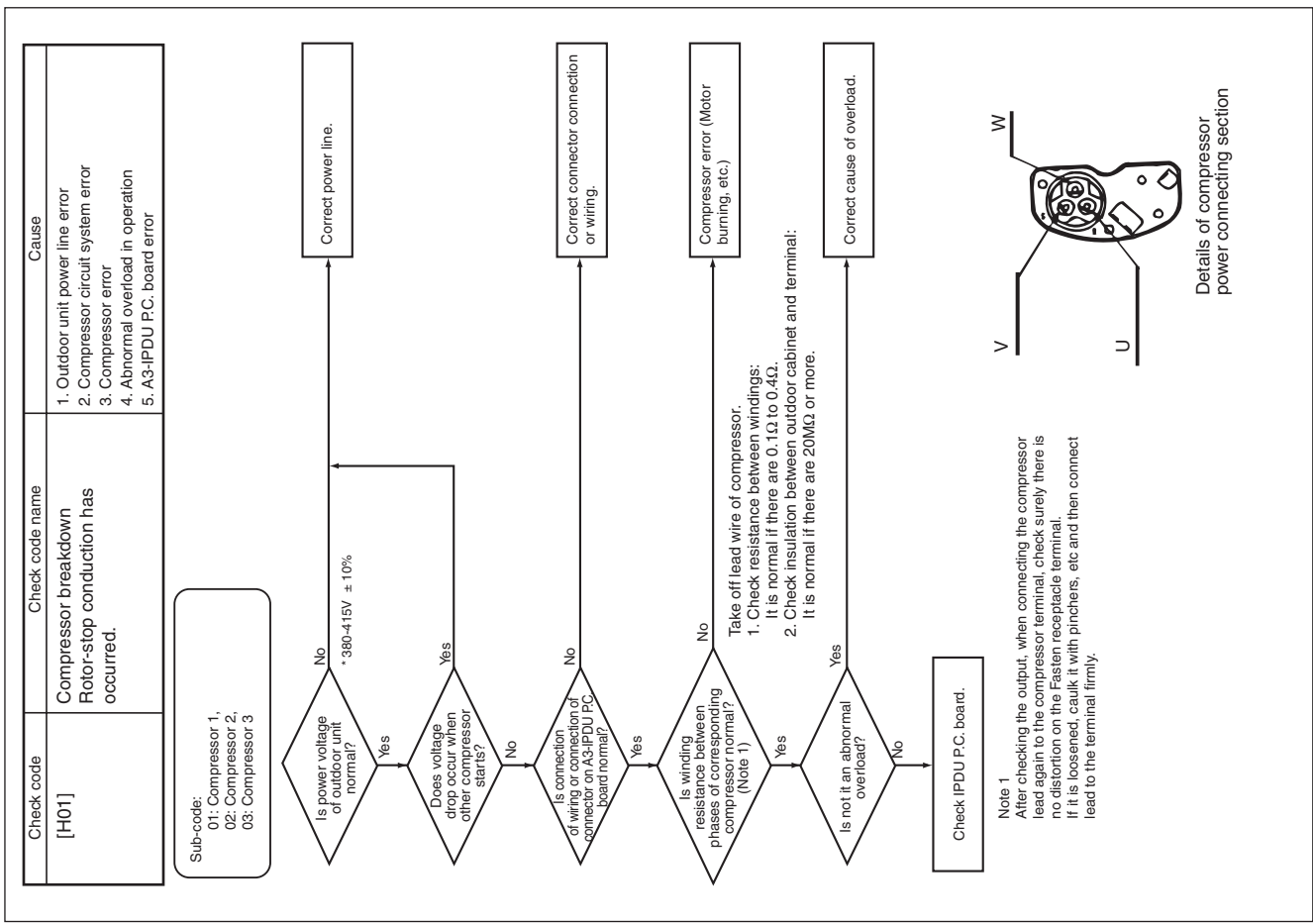


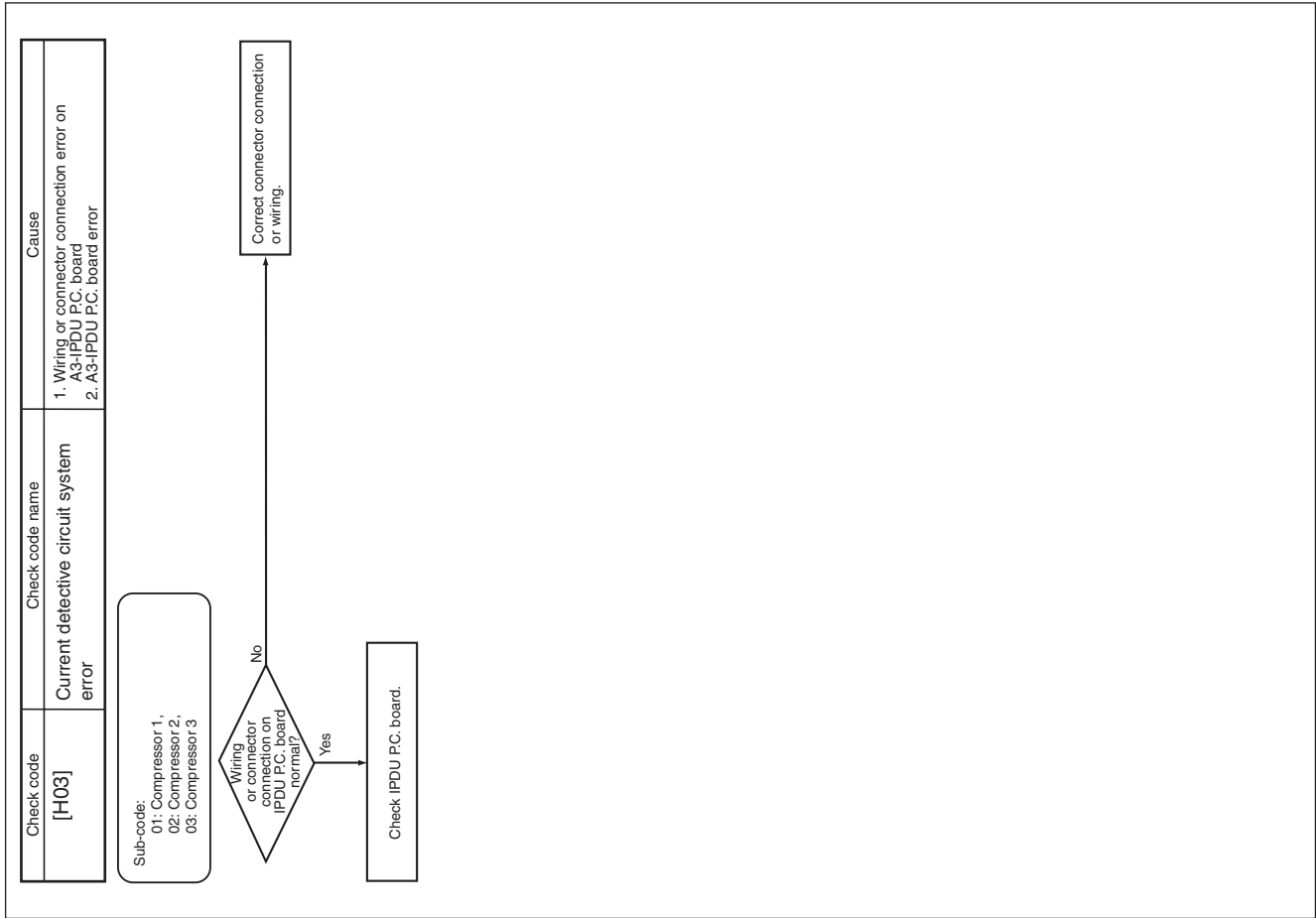
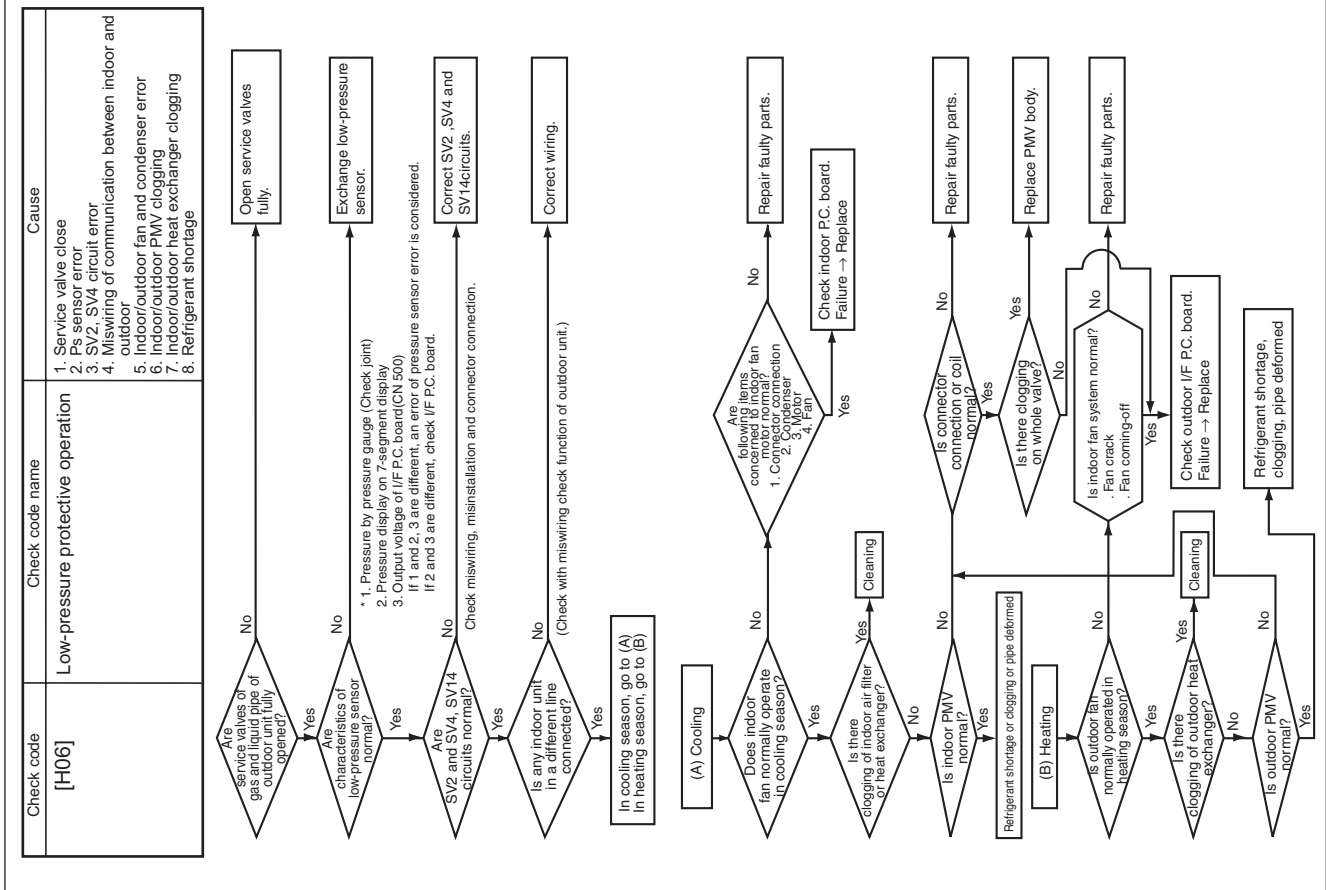
Check code	Check code name	Cause
[F24]	Pd sensor error	Output voltage error of Pd sensor

It is output voltage error of Pd sensor. Check disconnection of connection of connector (Pd sensor: CN501, red) circuit and output voltage of sensor.  
If the sensor is normal, replace outdoor I/F P.C. board.



MG-CTT: Magnet contactor



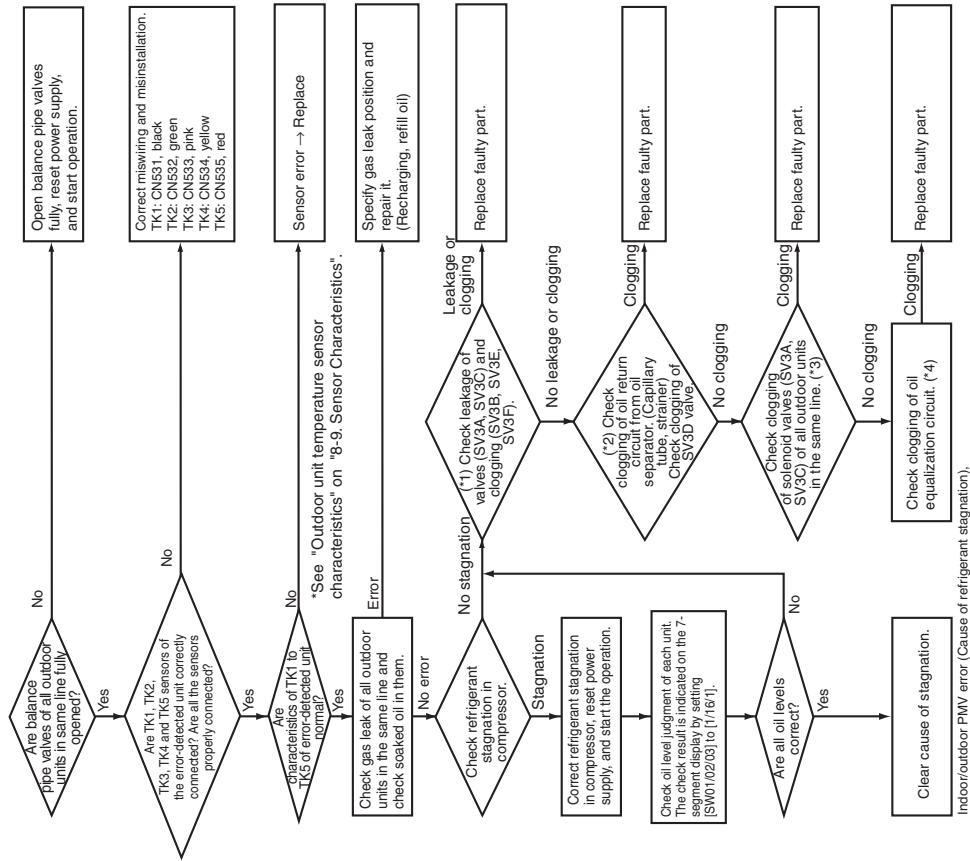


In some cases, it may be difficult to check the leakage of clogging in the following condition of refrigerant stagnation in low ambient temperature condition.  
(Criterion: Discharge temperature of TD1, TD2 and TD3 are 60°C or higher)

**(\*1) Checking leakage and clogging on solenoid valves**

- a) Leakage check for SV3A valve (For multiple outdoor unit system)**
- Turn off the power supply, take off connector of SV3A valve, and then start a test operation after power-ON.
  - Check the temperature change at secondary side of SV3A valve during operation. ((1) in the figure.)  
→ If temperature is raised, leakage occurs in the SV3A valve. Replace SV3A valve.
- b) Leakage check for SV3C valve**
- Turn off the power supply, take off connector of SV3C valve, and then start a test operation after power-ON.
  - After operation for several minutes, check temperature at secondary side of SV3C valve. ((2) in the figure.)  
→ If temperature is high (equivalent to discharge temperature TD), leakage occurs in the SV3C valve. Replace SV3C valve.  
(Even if leakage does not occur in the SV3C valve, temperature of SV3C valve at secondary side rises during operation. But the temperature is lower than TD when there is no leakage.)
- c) Leakage check for SV3F valve (For multiple outdoor unit system)**
- Turn off the power supply, take off connector of SV3F valve, and then start a test operation after power-ON.
  - Check the temperature change at secondary side of SV3F valve during operation. ((3) in the figure.)
  - If temperature is raised, leakage occurs in the SV3A valve. Replace SV3A valve.  
→ If temperature is raised, leakage occurs in the SV3A valve.
- d) Clogging check for SV3B valve (For multiple outdoor unit system)**
- While outdoor unit is operated, set up SW01/02/03 = [2] [1] [3] (7-segment display [Hr] [... ..]), and push SW04 for 2 seconds or more.
  - Set up SW02 = [10], and turn on SV3A, SV3C valves. (7-segment display [Hr] [... .. 3 -])
  - While outdoor units are operating, check temperature change at secondary side of SV3B valve. ((4) in the figure.)
  - If temperature does not rise (equivalent to suction temperature), it is a clogging of SV3B valve.  
→ Replace SV3B valve.
- e) Clogging for SV3E valve**
- Reset the power supply.
- Using "Valve forced open/close function" of the outdoor unit, check ON/OFF operation (Sound, coil surface temp up) of SV3E valve is performed.
- Start test operation in COOL or HEAT mode.
- After operation for several minutes, check the pipe temperature at the secondary side of SV3E valve whether temperature changes or not. If it is equivalent to outside temperature, clogging of SV3E is considered. ((5) in the figure.)  
(Reference)
- If SV3E valve is clogged, temperature does not change at all sensors (TK1, TK2, TK3, TK4 and TK5).
- f) Clogging check for SV3F valve**
- While outdoor unit is operated, set up SW01/02/03 = [2] [1] [3] (7-segment display [Hr] [... ..]), and push SW04 for 2 seconds or more.
  - Set up SW02 = [8], and turn on SV3C, SV3E, SV3F valves. (7-segment display [Hr] [... .. 3 C])
  - While outdoor units are operating, check temperature change at secondary side of SV3F valve. ((3) in the figure.)
  - If temperature does not rise (equivalent to suction temperature), it is a clogging of SV3F valve. Replace SV3F valve.

Check code	Check code name	Cause
[H07]	Oil level down detection protection	1. Valves of balance pipes closed. (On all outdoor units in a line) 2. Miswiring or misinstallation of TK1 to TK5 sensors 3. TK1 to TK5 sensor error 4. Gas leak or oil leak in a line 5. Refrigerant stagnation of compressor case 6. SV3A, 3B, 3C, 3D, 3E, 3F valve error 7. Clogging of oil return circuit from oil separator 8. Clogging of oil-equation circuit system



(Reference) When refrigerant stagnates in compressor shell, the oil level shortage may be

(\*3) Check for solenoid valve of all outdoor units in a line (For multiple outdoor unit system)

a) Clogging check for SV3A valve

- While outdoor unit is operating, set up SW01/02/03 = [2] [1] [3] (7-segment display [Hr] [... ..]), and push SW04 for 2 seconds or more.
- Set up SW02 = [6], and turn on SV3A valve. (7-segment display [Hr] [... 3 A])
- If temperature is low at secondary side of the valve or it does not change, clogging of valve or check valve is considered. ((1) in the figure.)

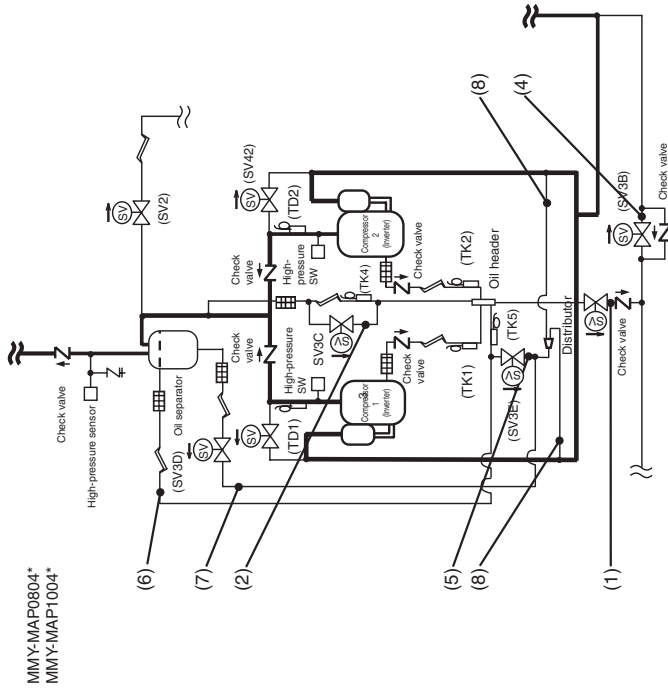
b) Leakage check for SV3C valve

- While outdoor unit is operating, set up SW01/02/03 = [2] [1] [3] (7-segment display [Hr] [... ..]), and push SW04 for 2 seconds or more.
- Set up SW02 = [8], and turn on SV3C valve. (7-segment display [Hr] [... 3 C])
- If temperature does not change (dp), clogging of valve or strainer is considered. ((2) in the figure.)

(\*4)

a) Clogging check for oil-equalization circuit

- Drive the outdoor unit. (Drive all compressors in the unit.)
- After driving for 10 minutes or more, check whether temperature of TK1, TK2 and TK3 sensors and temperature of oil-equalization circuit capillary ((8) in the figure) has increased. (Criterion)
- TK1, TK2, TK3=Td1, Td2, Td3 temperature - Approx. 10 to 30°C
- Oil-equalization capillary tubes should be higher sufficiently than outside air temperature and suction temperature.
- If temperature is low, a malfunction on check valves or clogging of capillary, strainer or distributor is considered. Repair the defective parts.



(\*2) Checking the oil return circuit from oil separator and clogging in SV3D valve

a) Oil return circuit

- While outdoor unit is operating, check temperature (secondary side of capillary) on oil return circuit. ((6) in the figure.)
- If temperature is low equivalent to suction temperature), a clogging of strainer of oil return circuit or capillary is considered. Replace the clogged part.

b) Clogging check for SV3D valve

- While outdoor unit is operated, set up SW01/02/03 = [2] [1] [3] (7-segment display [Hr] [... ..]), and push SW04 for 2 seconds or more.
- Set up SW02 = [9], and turn on SV3D valve. (7-segment display [Hr] [... 3 d])
- If temperature is low at secondary side of the valve or it does not change, clogging of valve, capillary, or strainer is considered. ((7) in the figure.) Replace the clogged part.

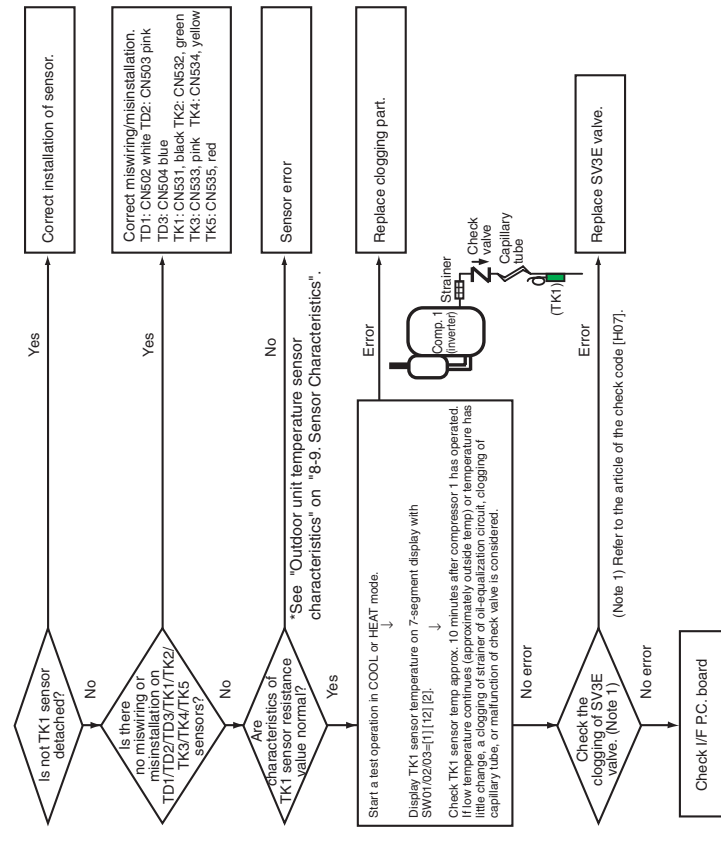
Check code	Check code name	Cause
[H08]	Oil level detective temperature sensor error	TK1 to TK5 sensor Open/Short

Sub-code:  
 01: TK1 sensor error 02: TK2 sensor error 03: TK3 sensor error  
 04: TK4 sensor error 05: TK5 sensor error

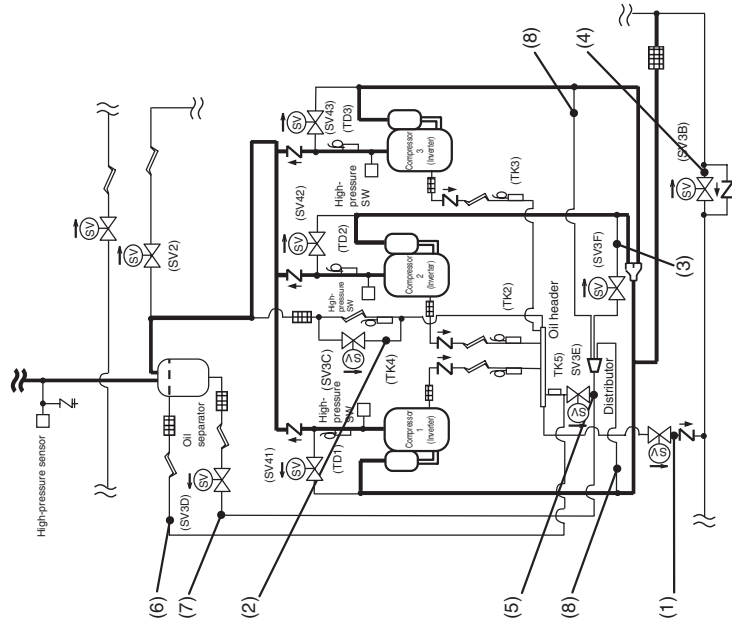
The detected error is an oil level detective temperature sensor error. Check disconnection of the wiring and resistance value of the sensor.  
 If the sensors are normal, replace the outdoor I/F P.C. board.

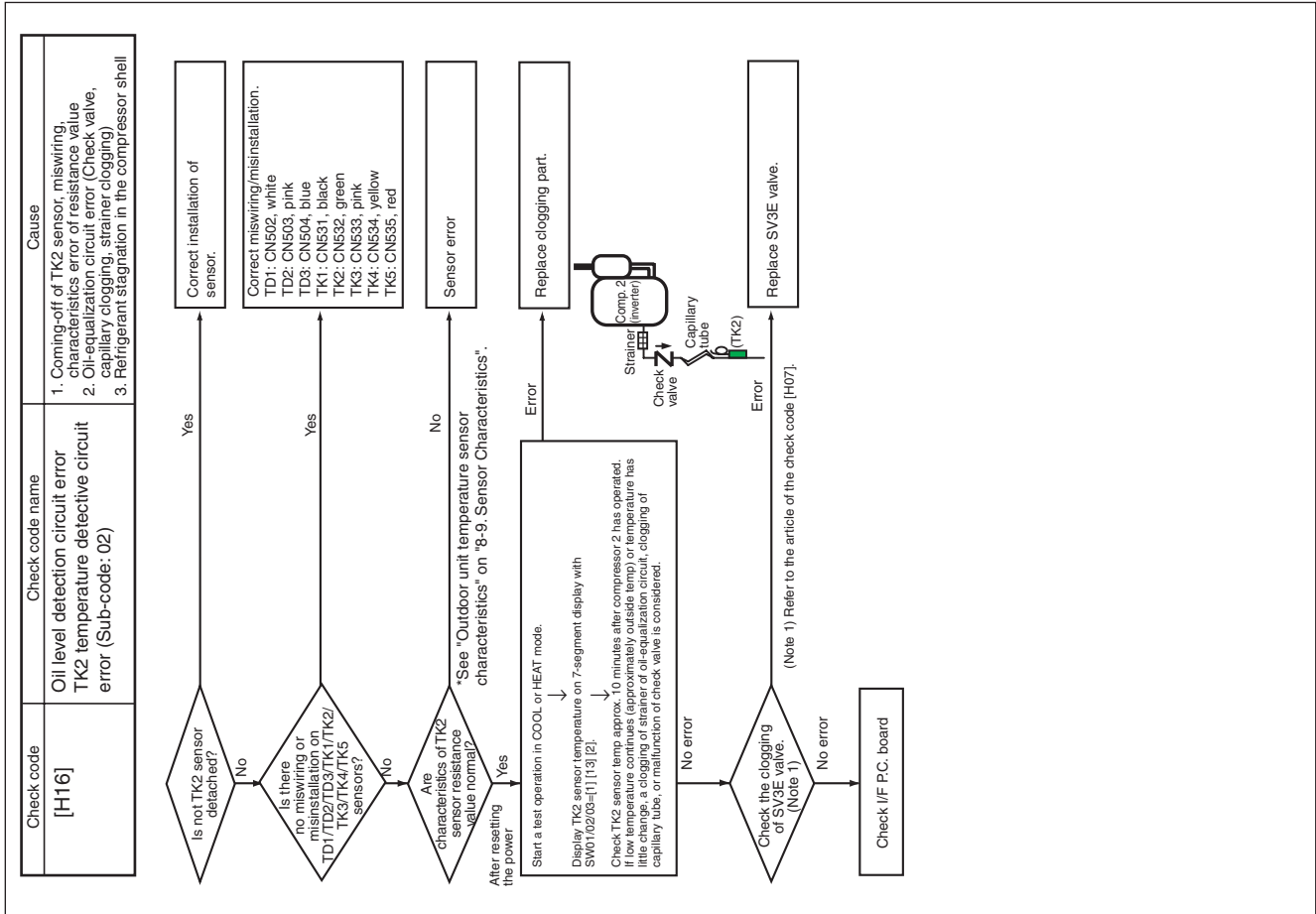
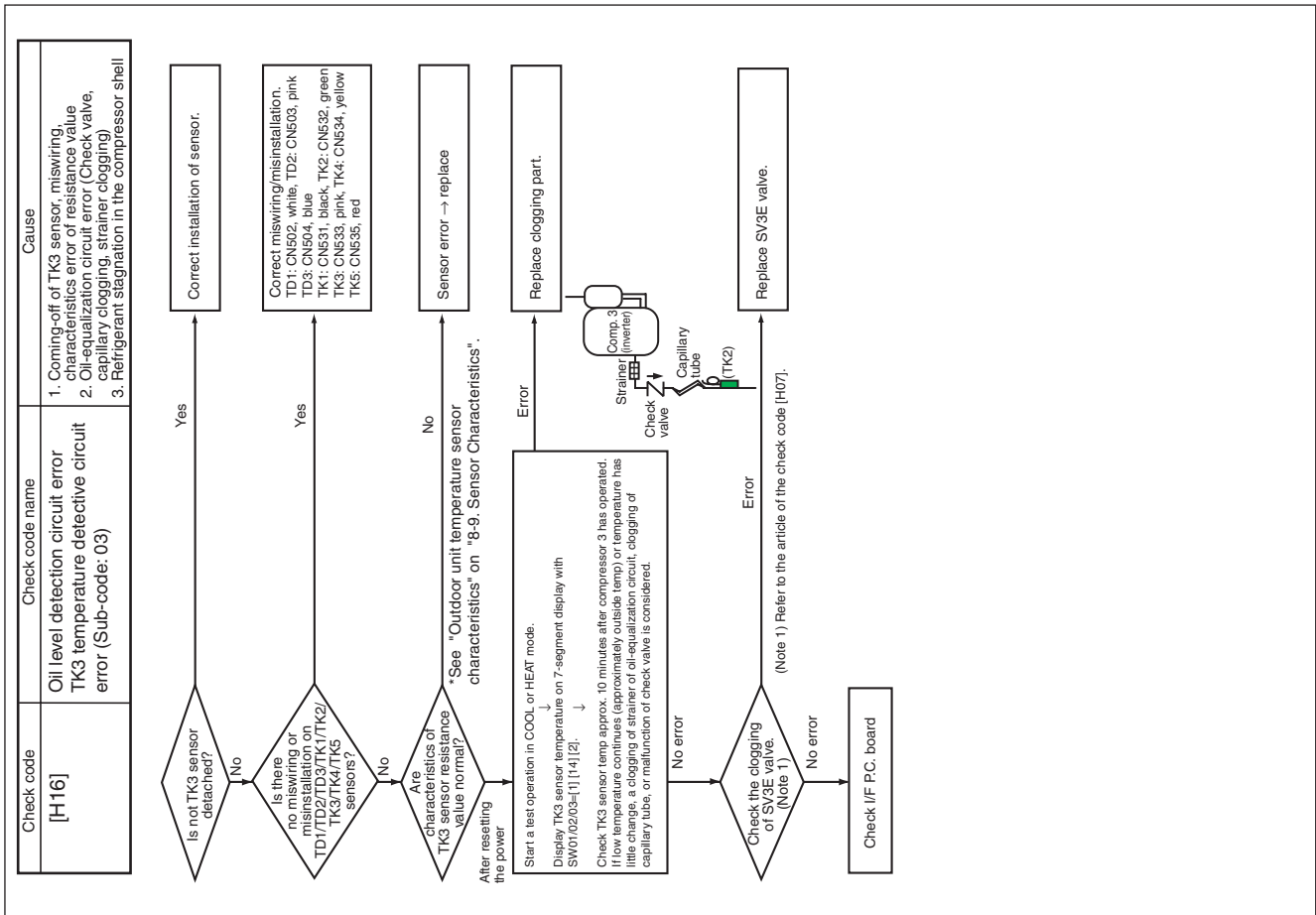
Circuit	Connector
TK1	CN531 (Black)
TK2	CN532 (Green)
TK3	CN533 (Pink)
TK4	CN534 (Yellow)
TK5	CN535 (Red)

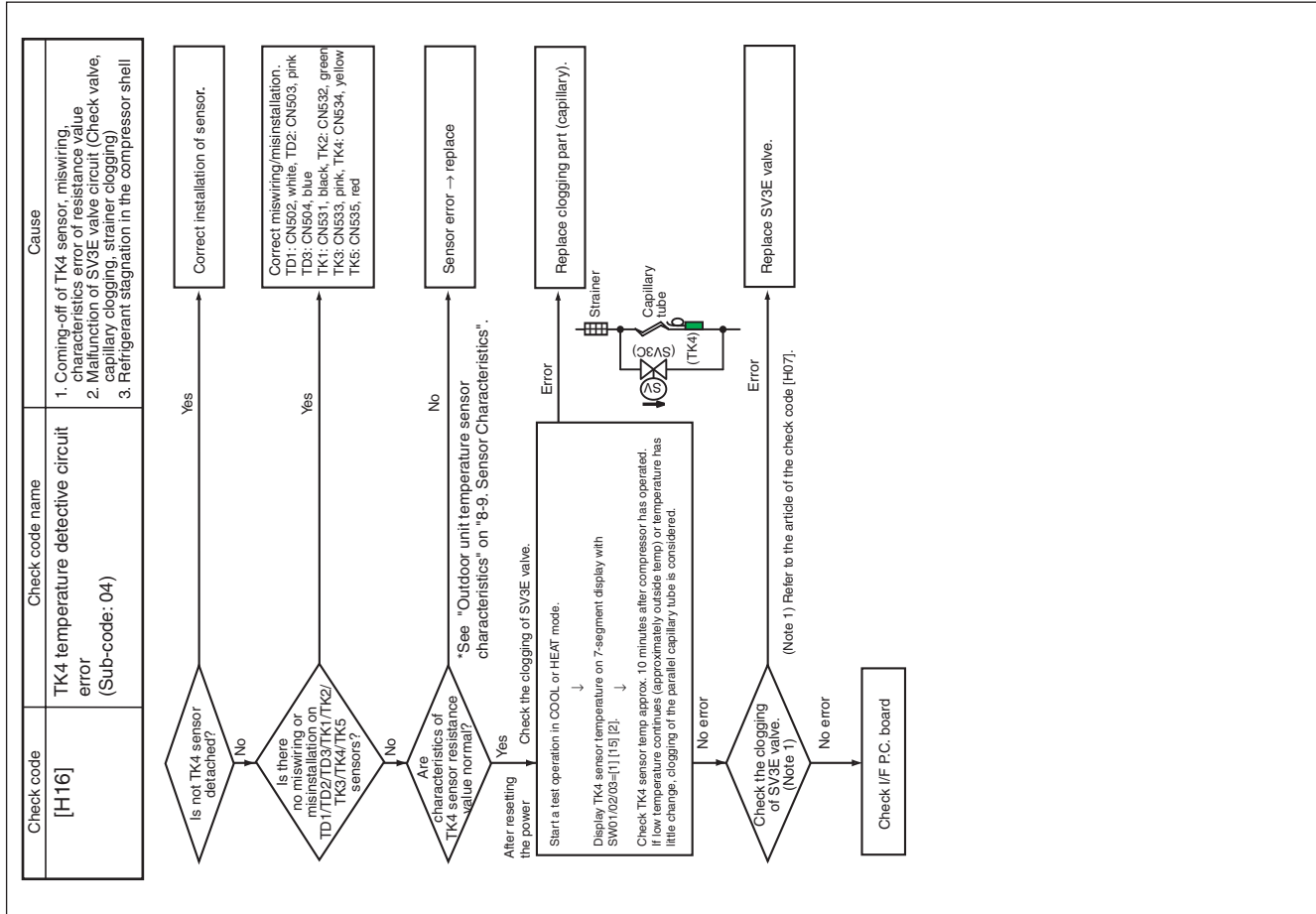
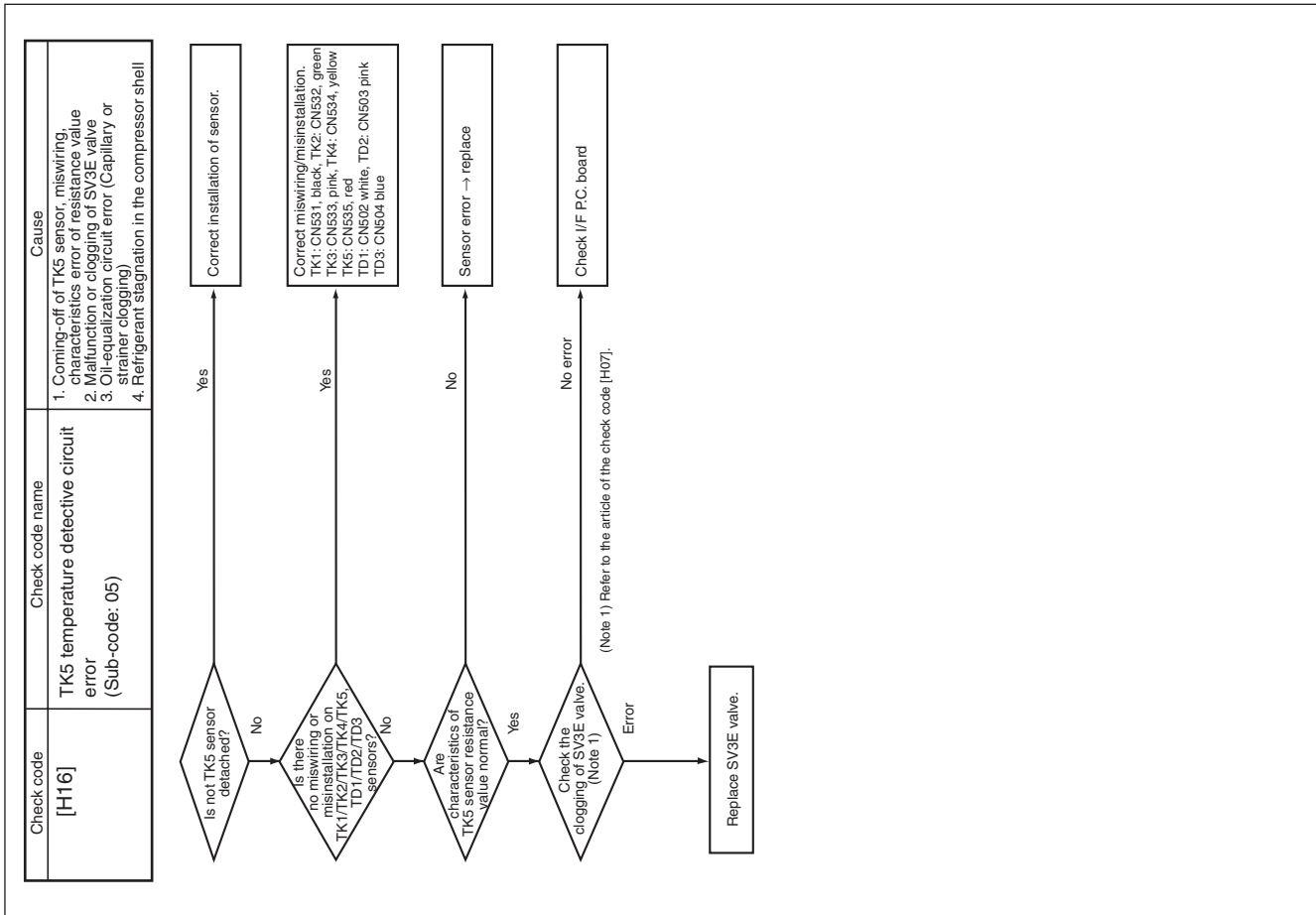
Check code	Check code name	Cause
[H16]	Oil level detection circuit error TK1 temperature detective circuit error (Sub-code: 01)	1. Coming-off of TK1 sensor, miswiring, characteristics error of resistance value 2. Oil-equalization circuit error (Check valve, capillary clogging, strainer clogging) 3. Refrigerant stagnation in the compressor shell



MMY-MAP1204\*  
 MMY-MAP1404\*







Check code	Check code name	Cause
[L05]	Duplicated indoor units with priority (Displayed on indoor unit with priority)	Two or more prior indoor units exist.

This check code is displayed on the indoor unit set as a prior one when two or more prior indoor units are detected.

- Priority setup with two or more units is not available. As only one indoor unit with priority is valid, change the setup.

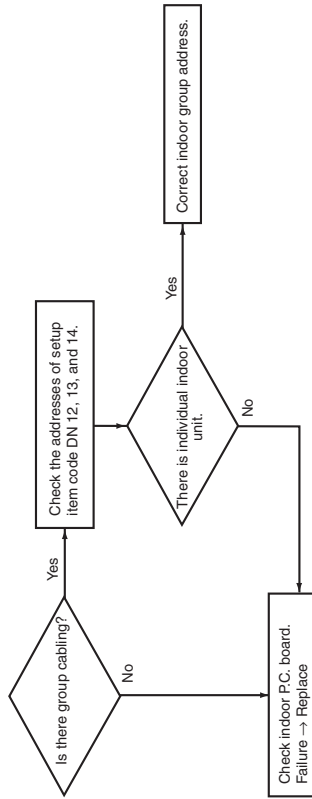
Check code	Check code name	Cause
[L06]	Duplicated indoor units with priority (Displayed on the indoor units other than ones with priority and on the outdoor unit)	Two or more indoor units with priority are duplicated.

Sub-code: amount of indoor units with priority

When priority is given to two or more indoor units, this check code is displayed on indoor units other than the units set as prior ones and the outdoor unit.

- As only one indoor unit with priority is valid, change the setup.

Check code	Check code name	Cause
[L07]	A group line exists in an individual indoor unit	A group line is connected to an individual indoor unit.



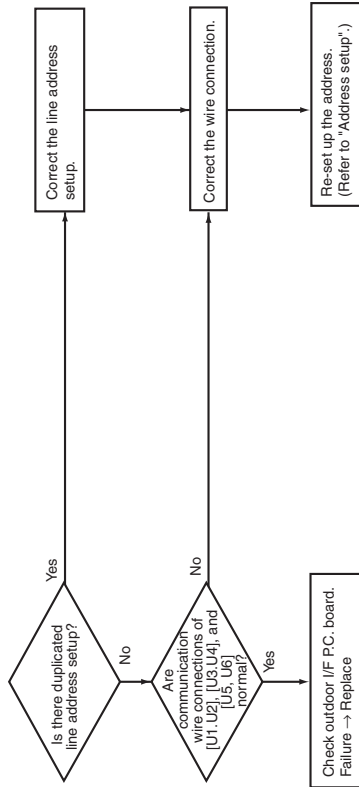
Check code	Check code name	Cause
[L02]	Outdoor units model disagreed error	1. Not corresponds to Air to Air Heat Exchanger type. 2. When outdoor unit is connected

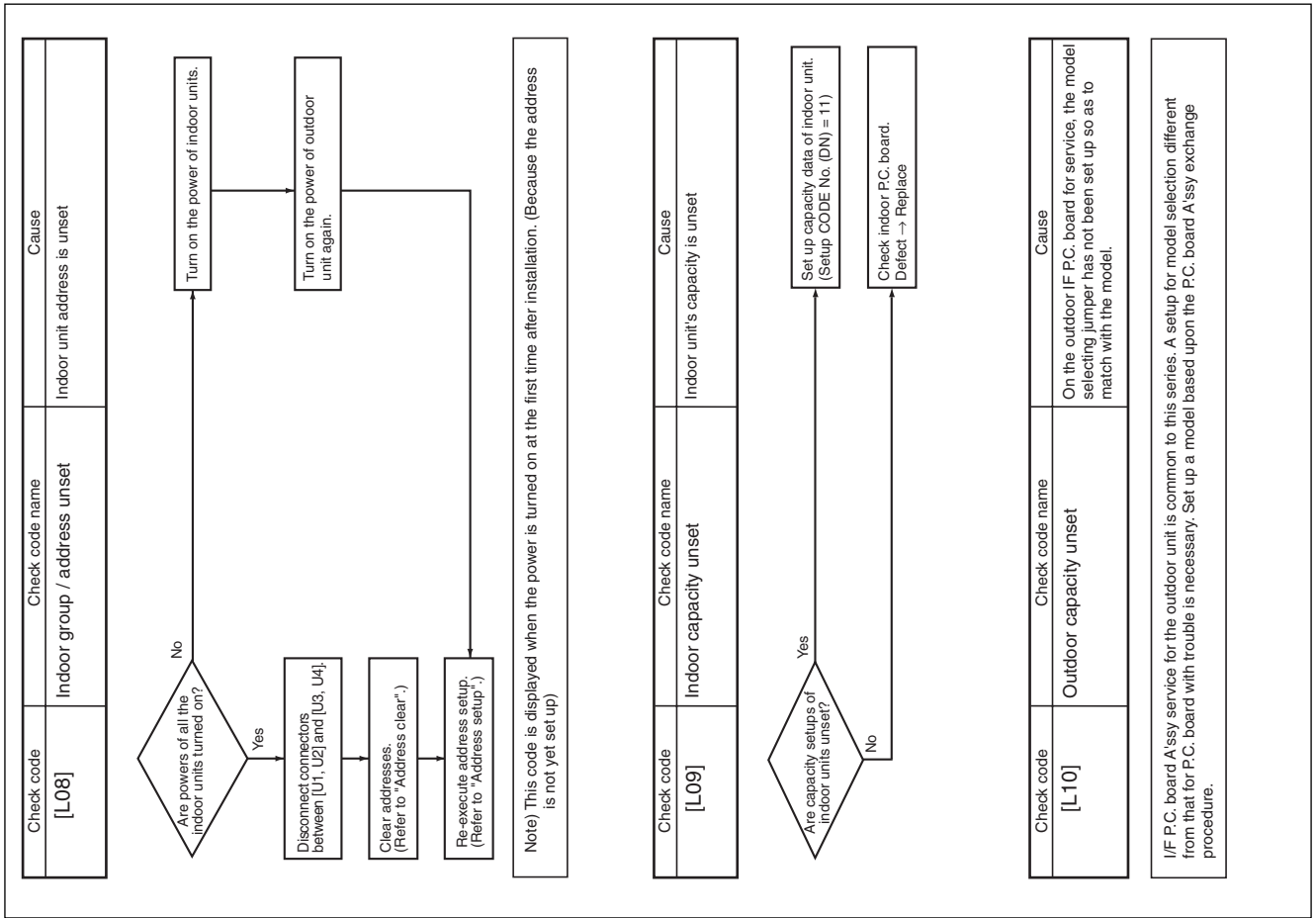
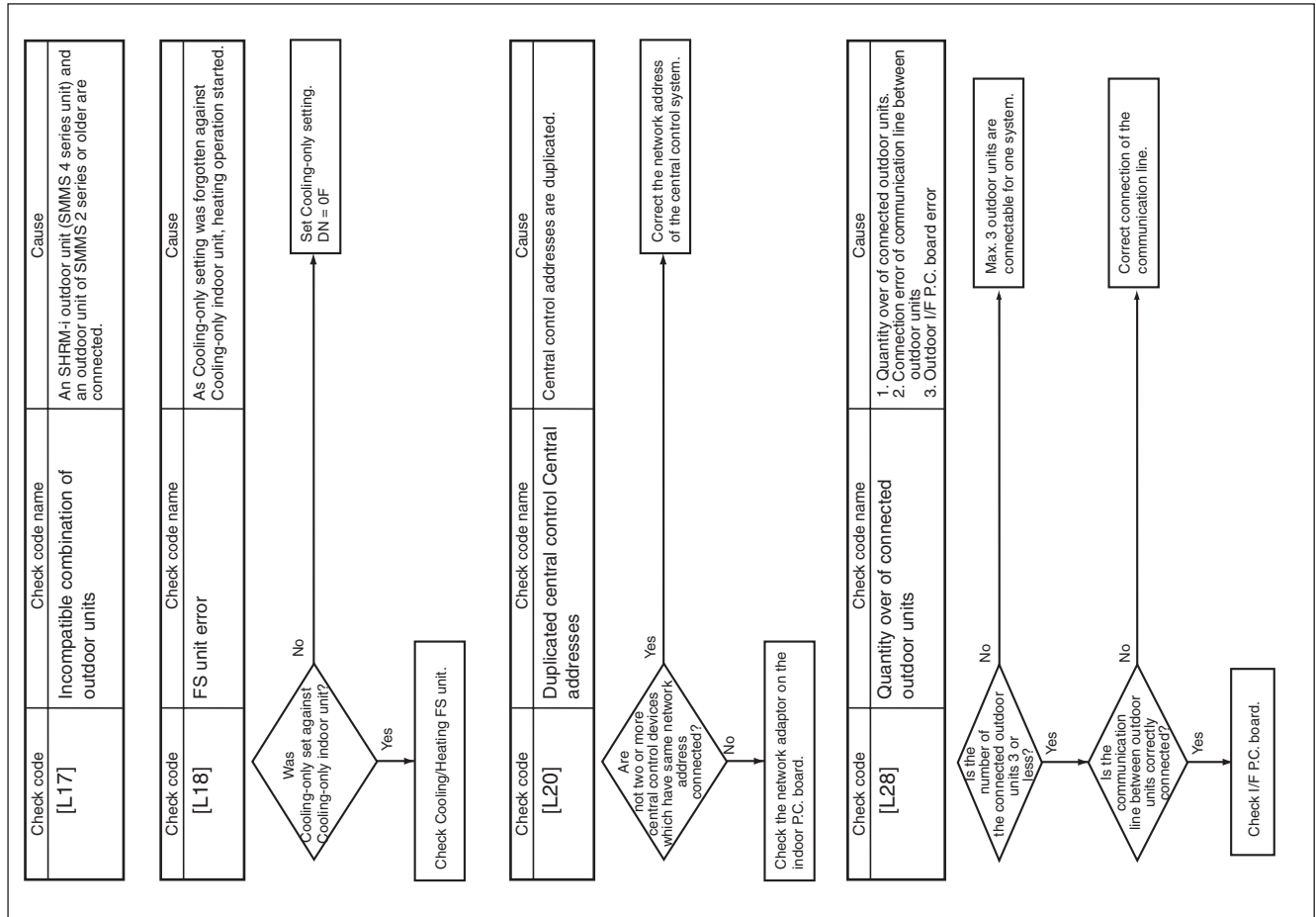
Check code	Check code name	Cause
[L03]	Duplicated indoor header units	There are two or more indoor header units in a group during group control.

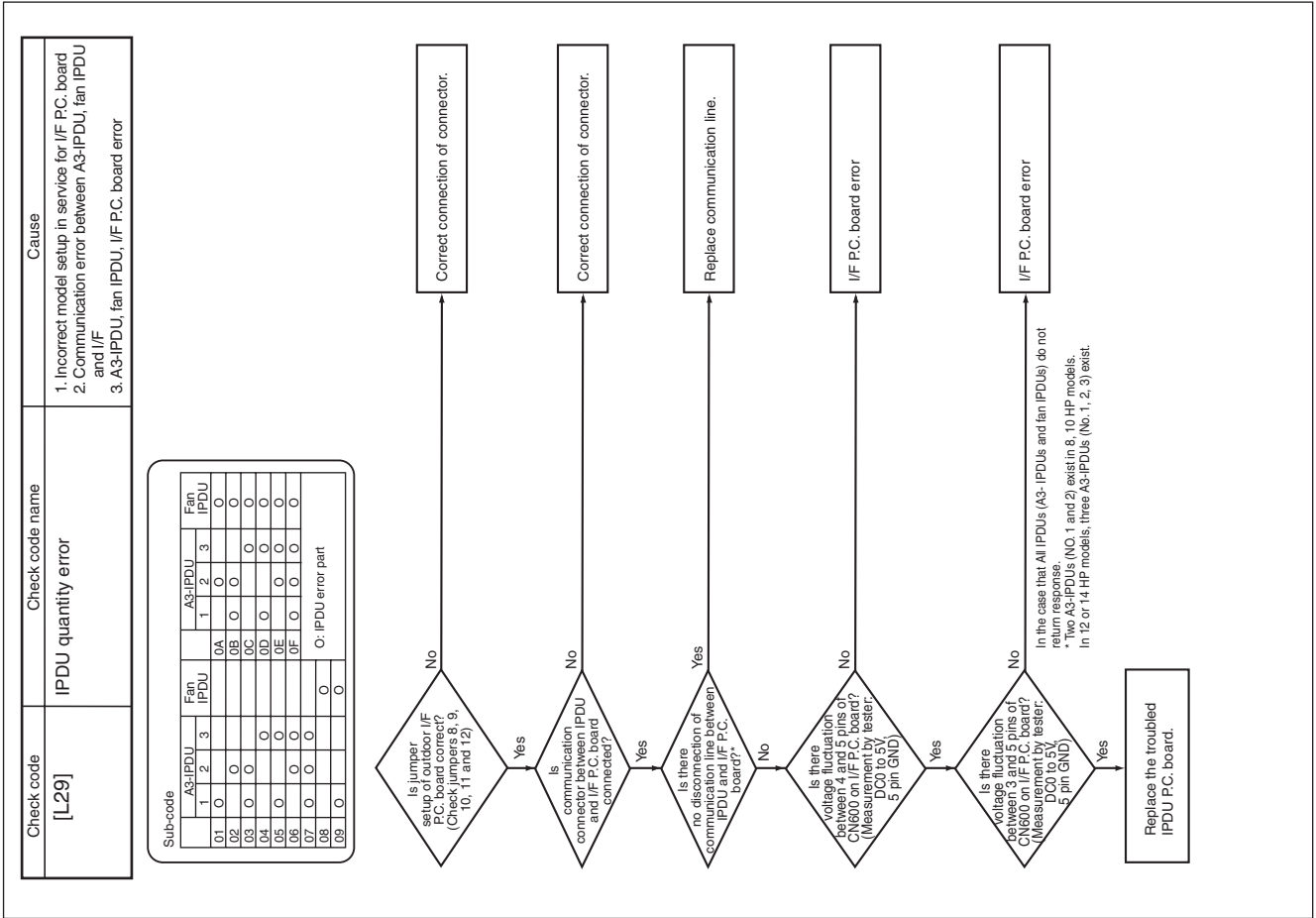
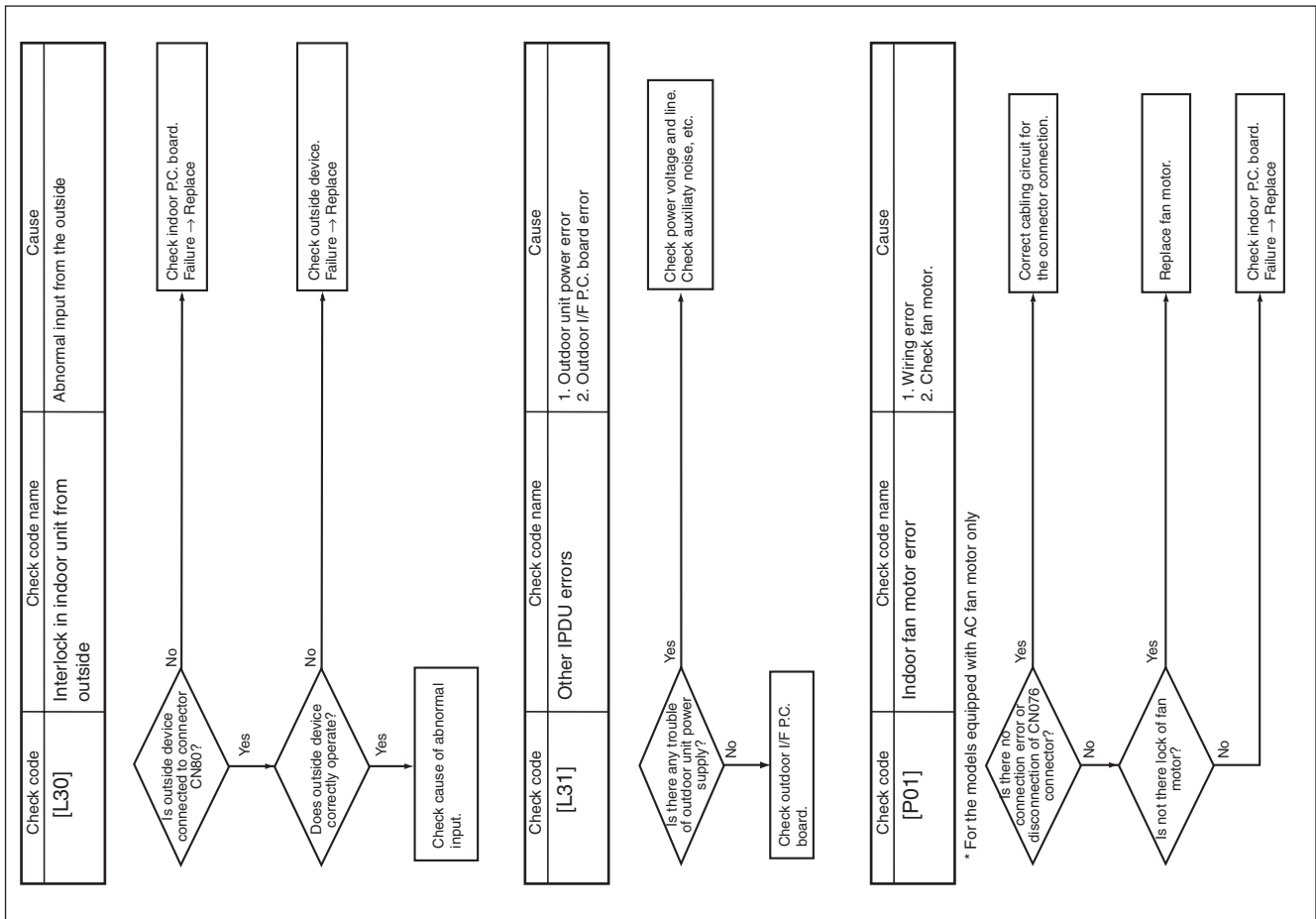
1) Check whether the connection on remote controllers (group and/or individual) has been changed since the group configuration and address checking on the remote controllers finished.

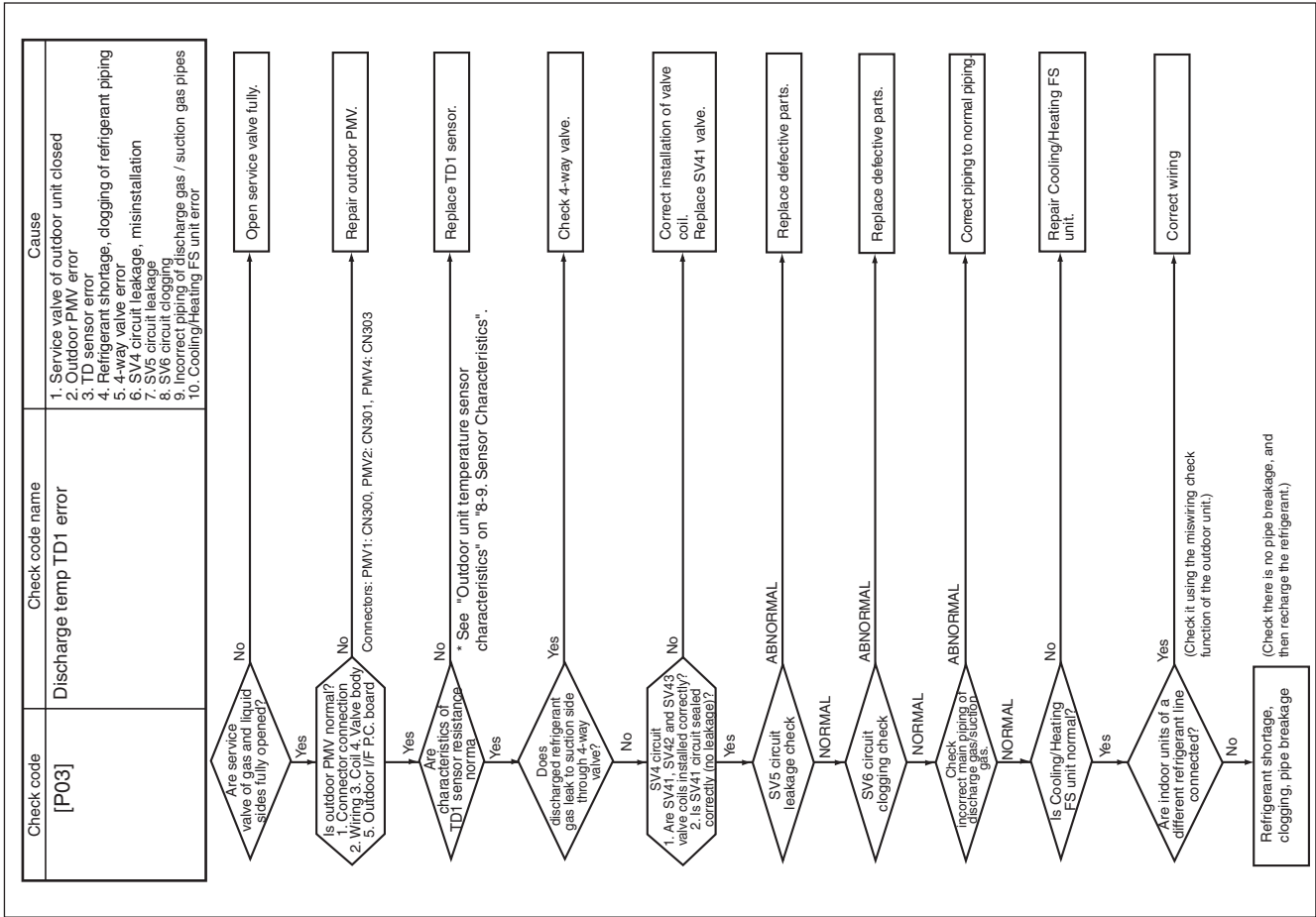
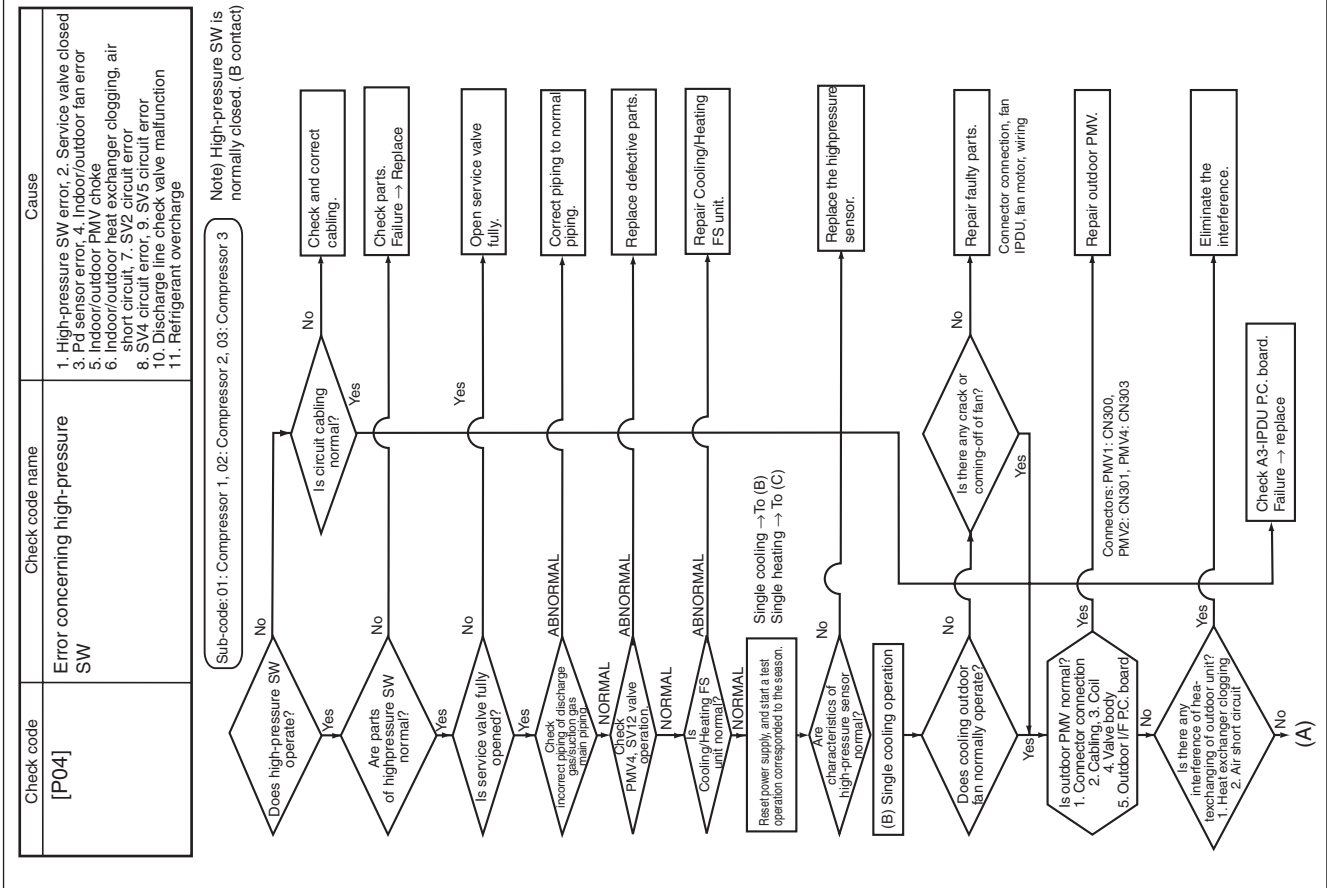
2) If the group configuration and address are normal when power has been turned on, the mode automatically shifts to address setup mode. For setting up addresses again, refer to "Address setup".

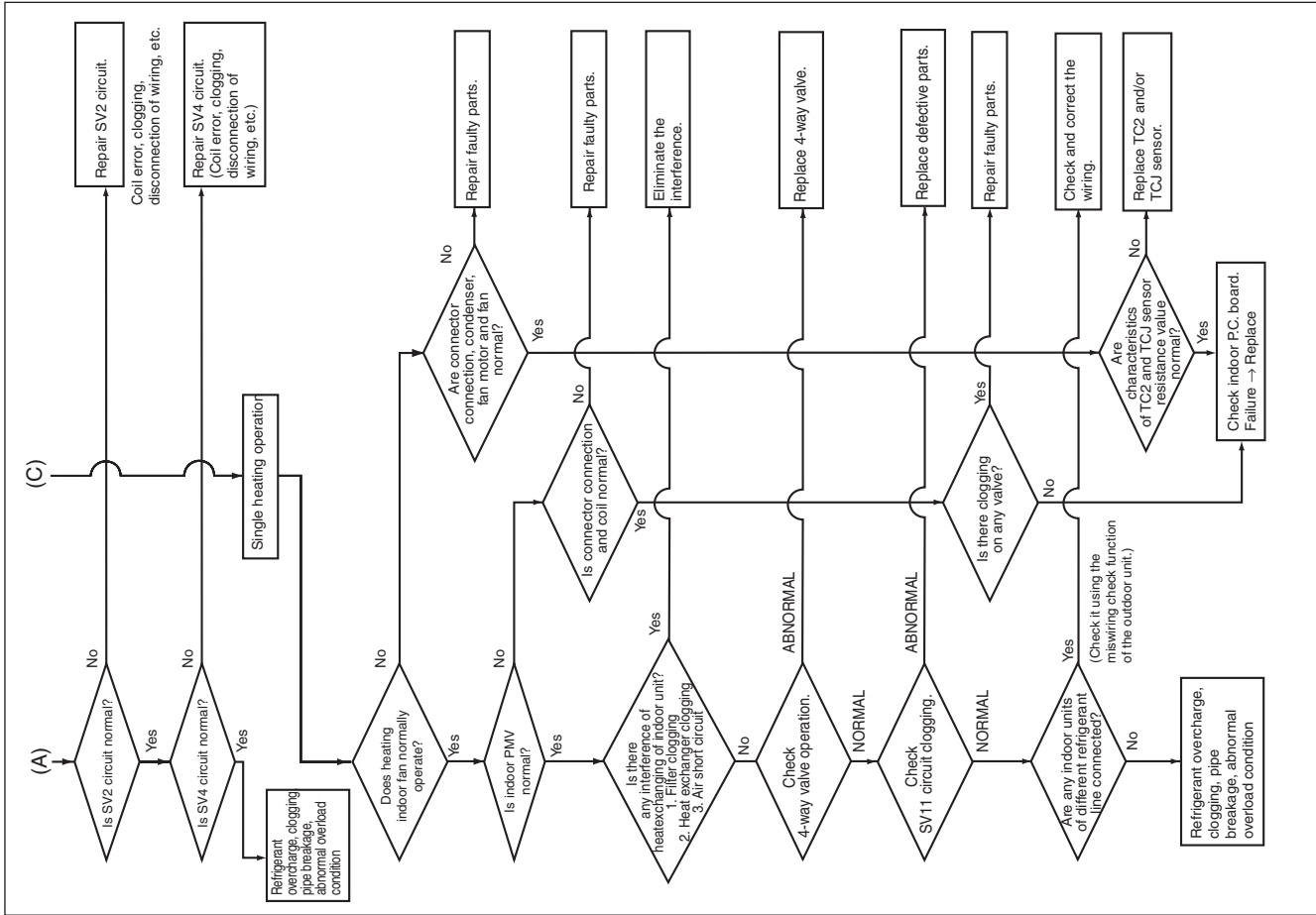
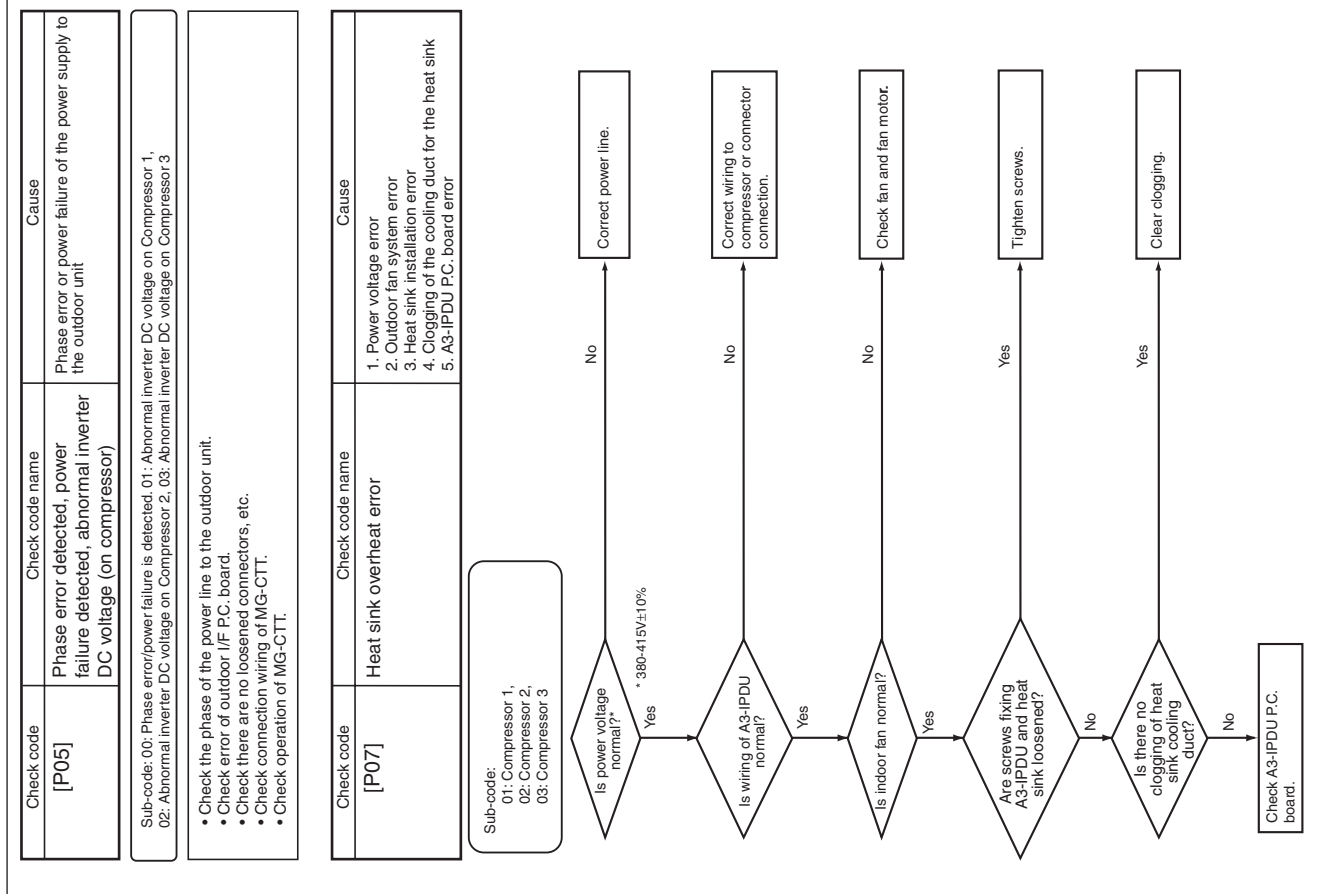
Check code	Check code name	Cause
[L04]	Duplicated setup of outdoor line address	Outdoor line addresses are duplicated.

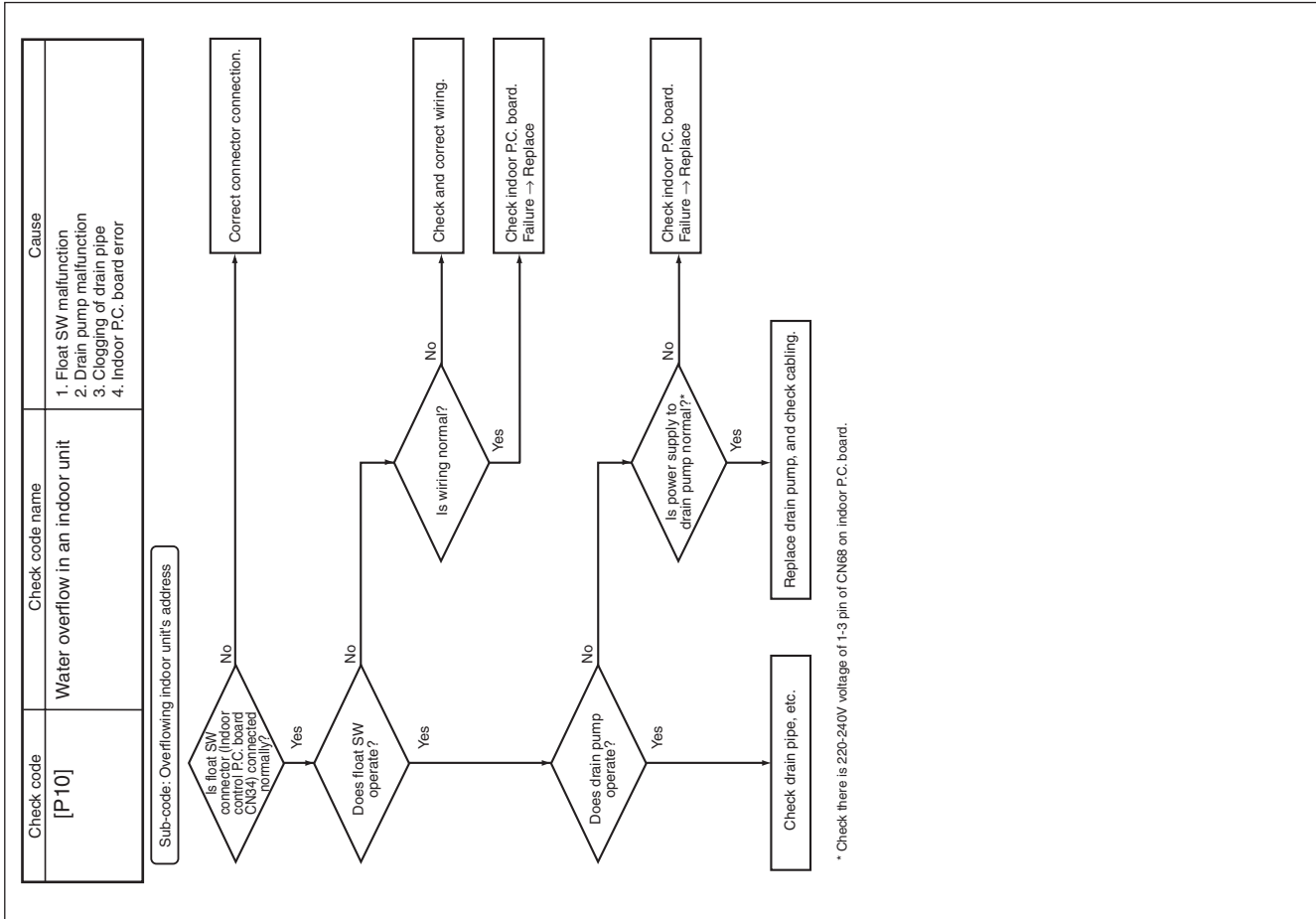
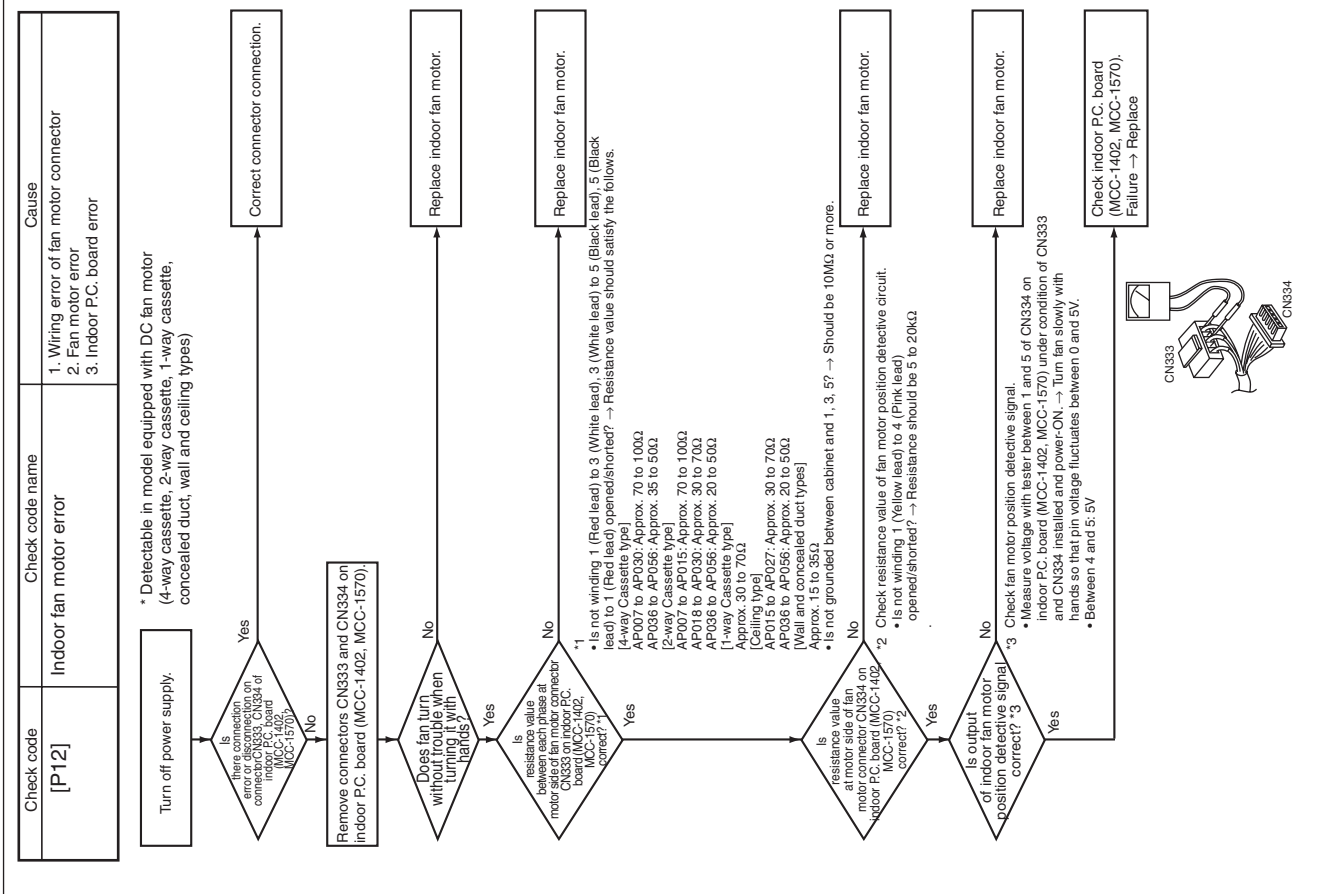


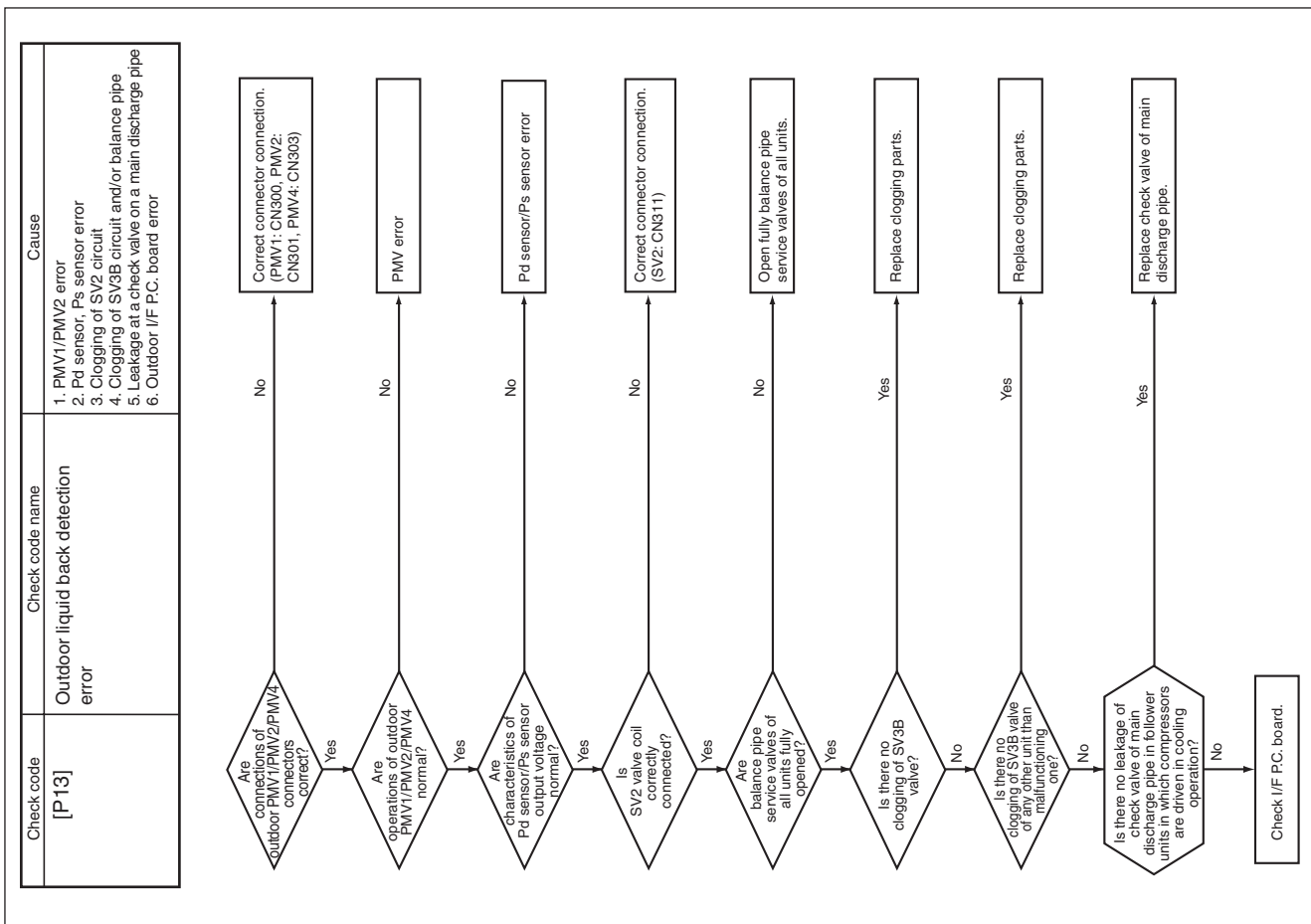
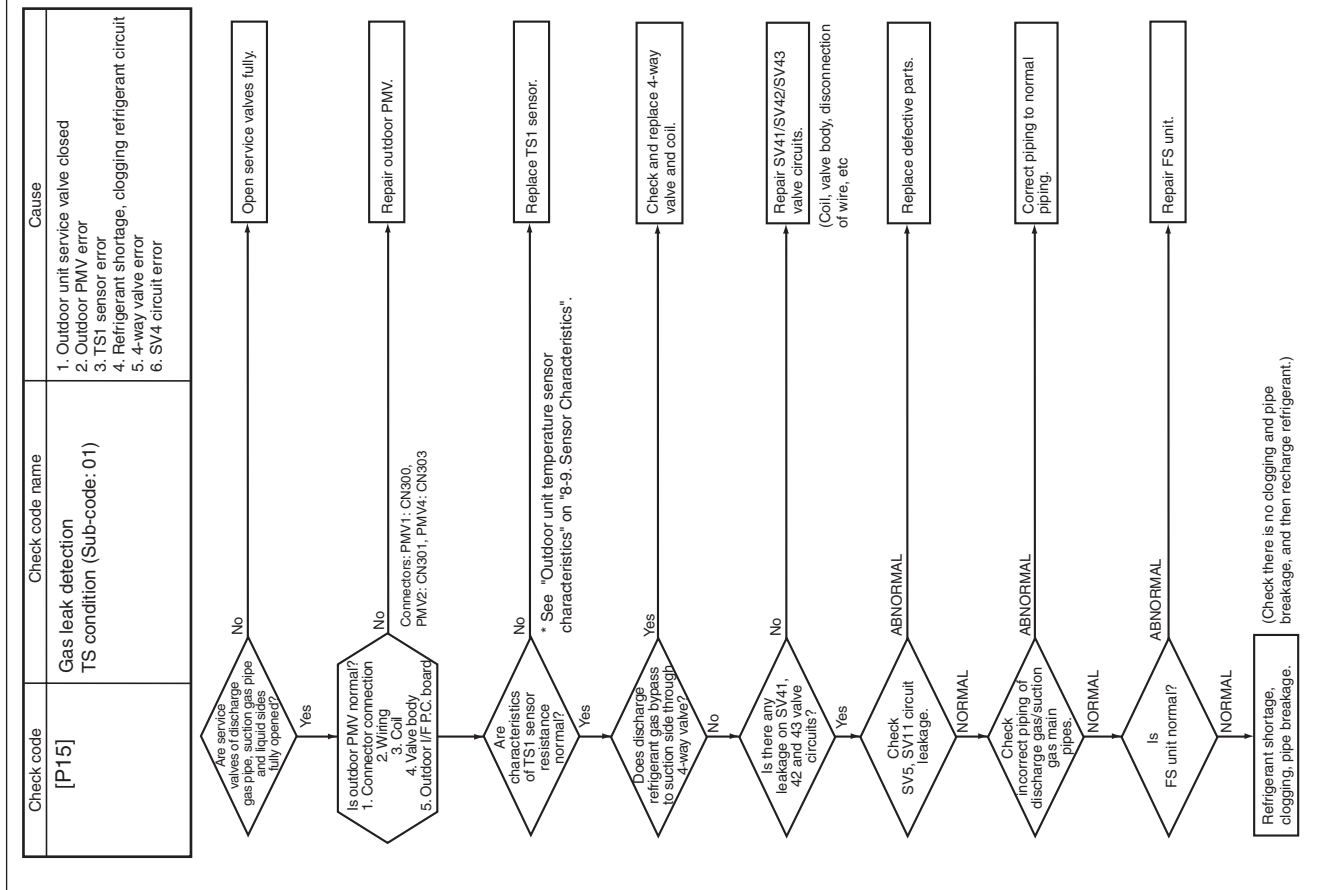


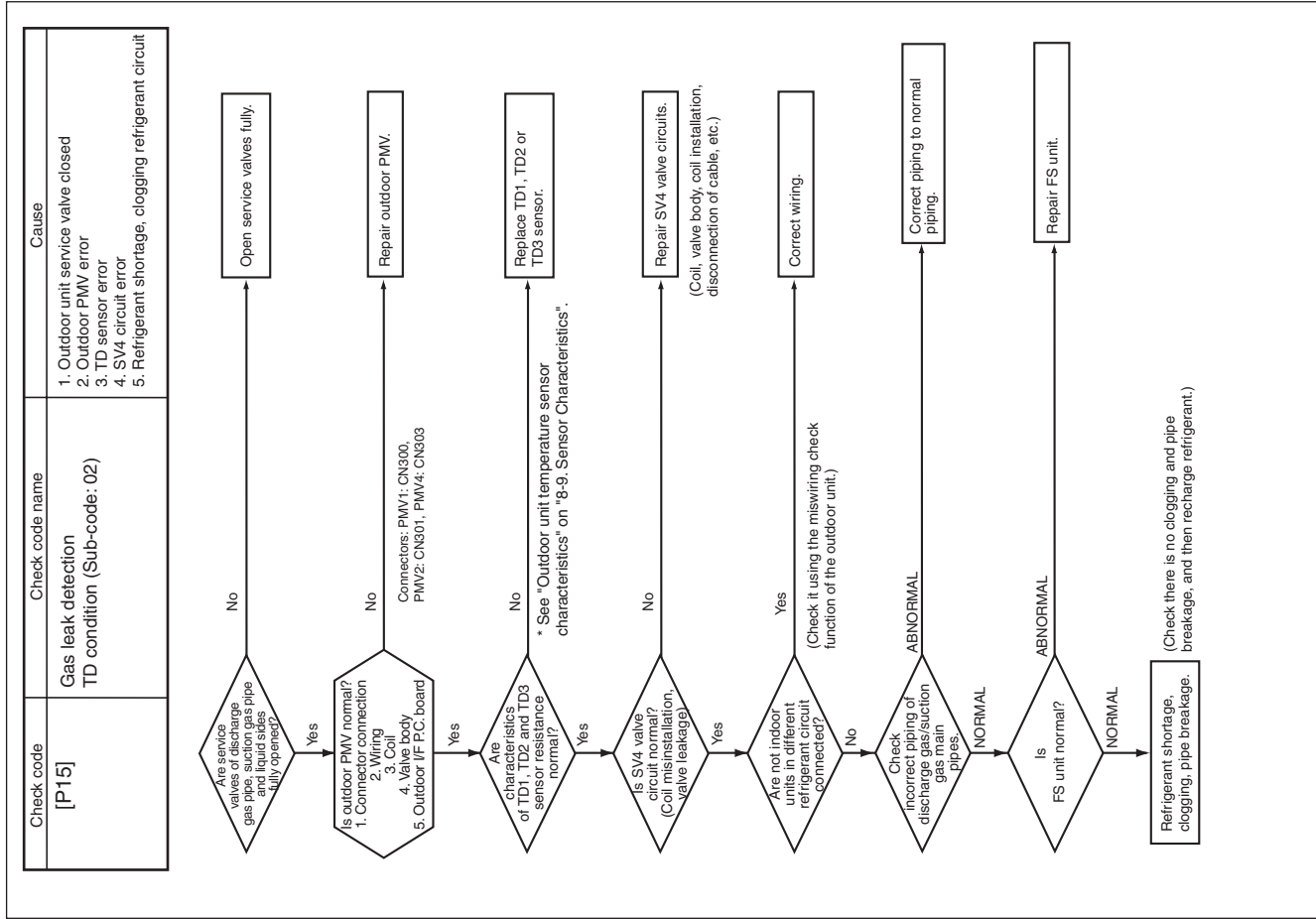
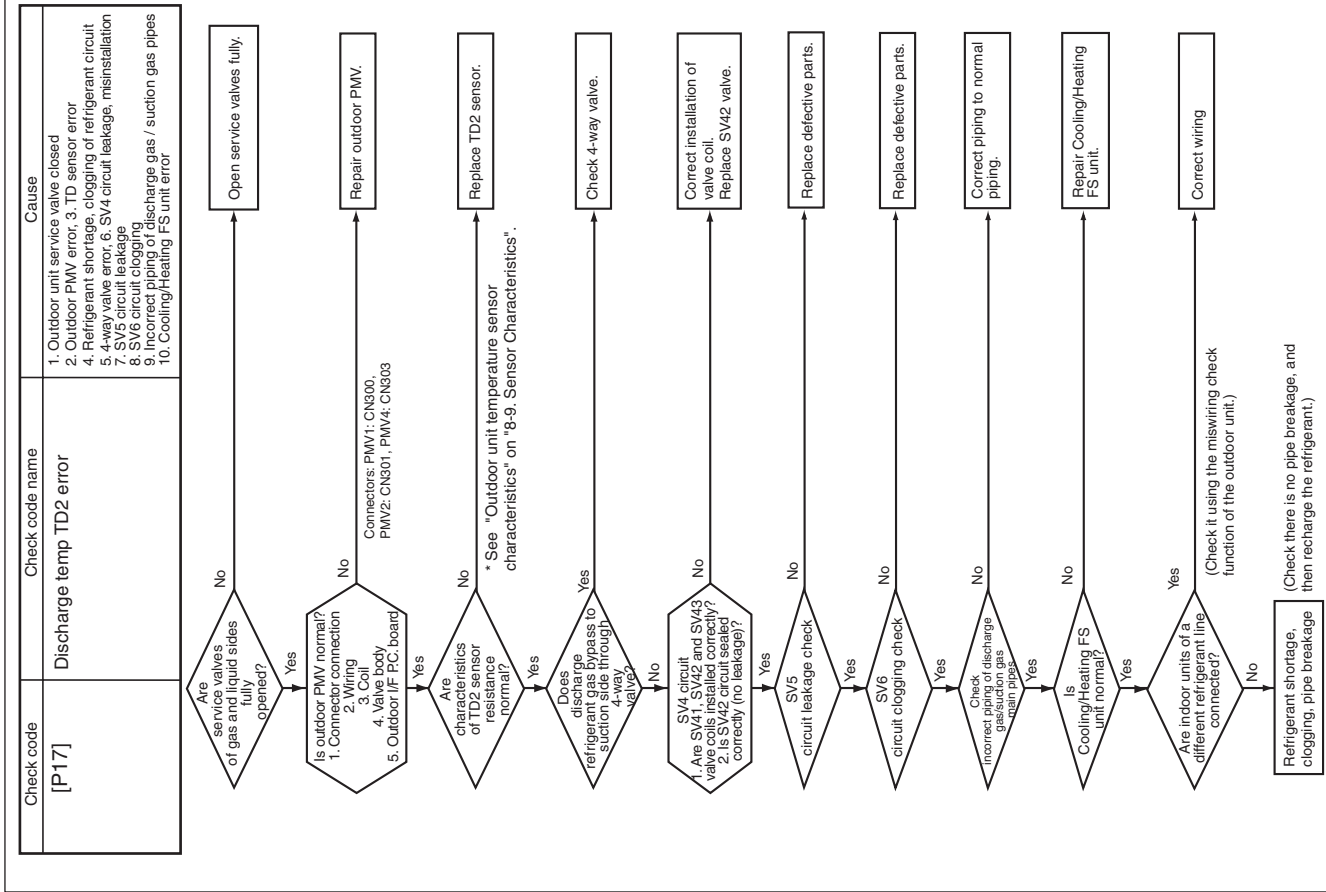


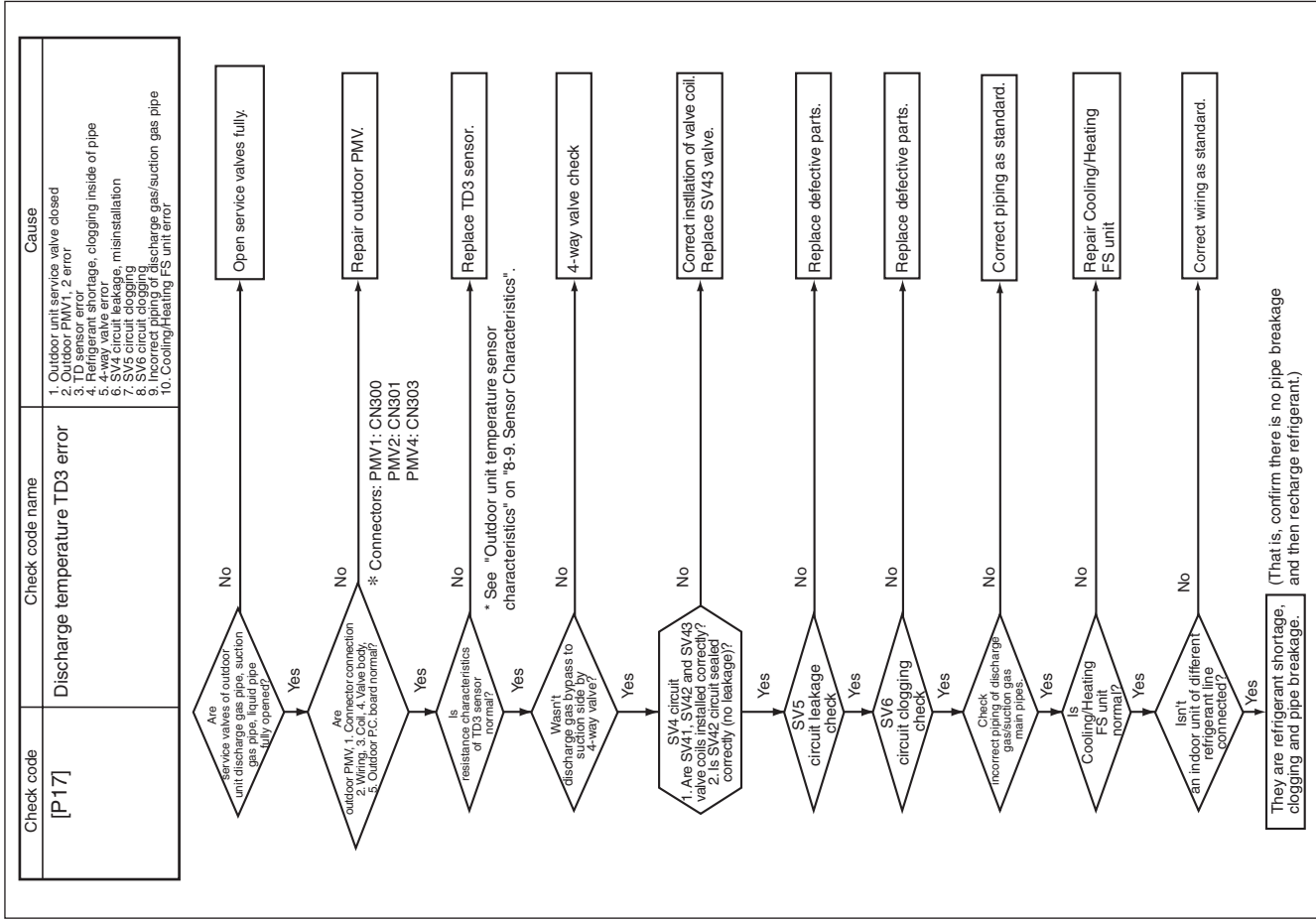
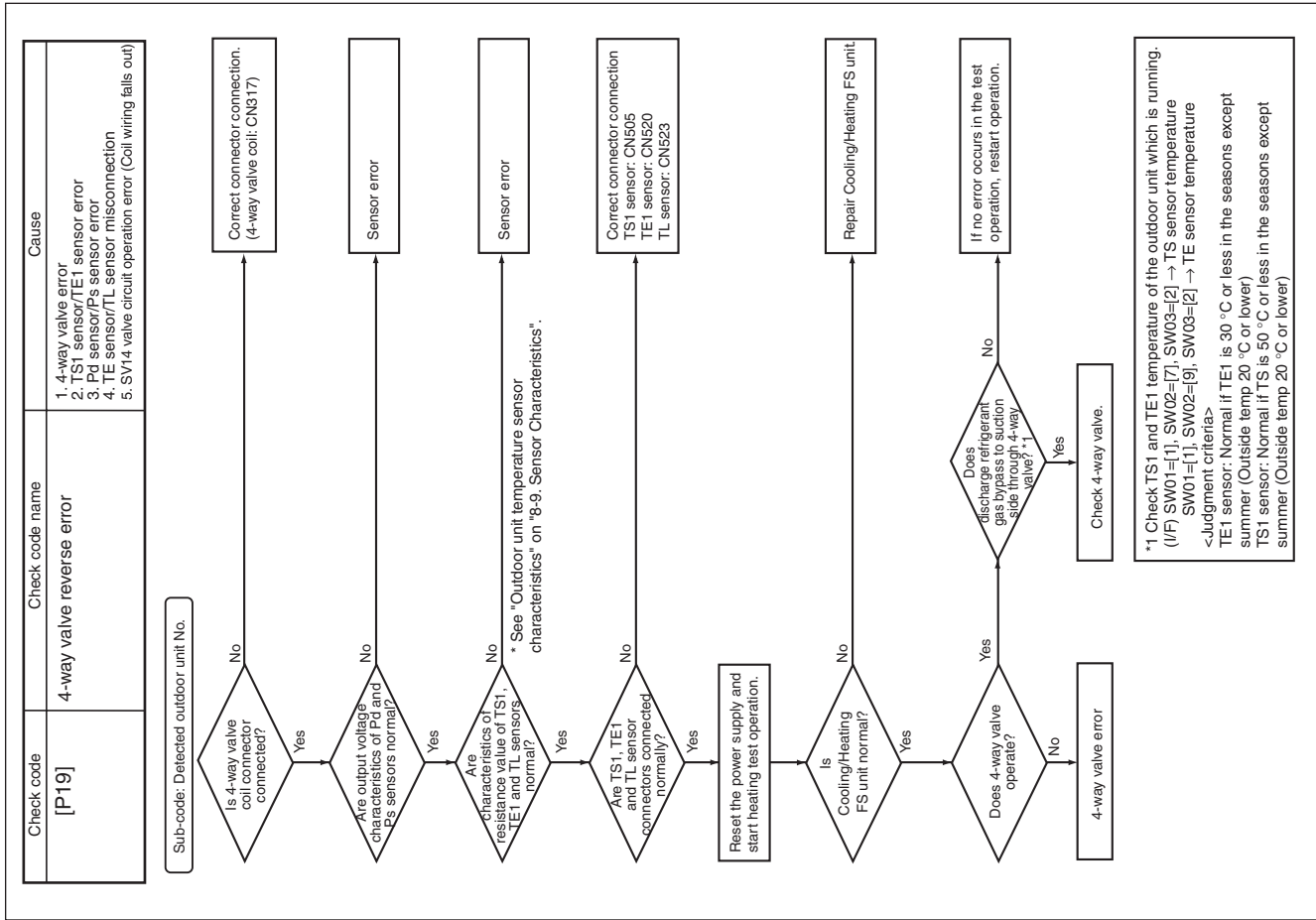


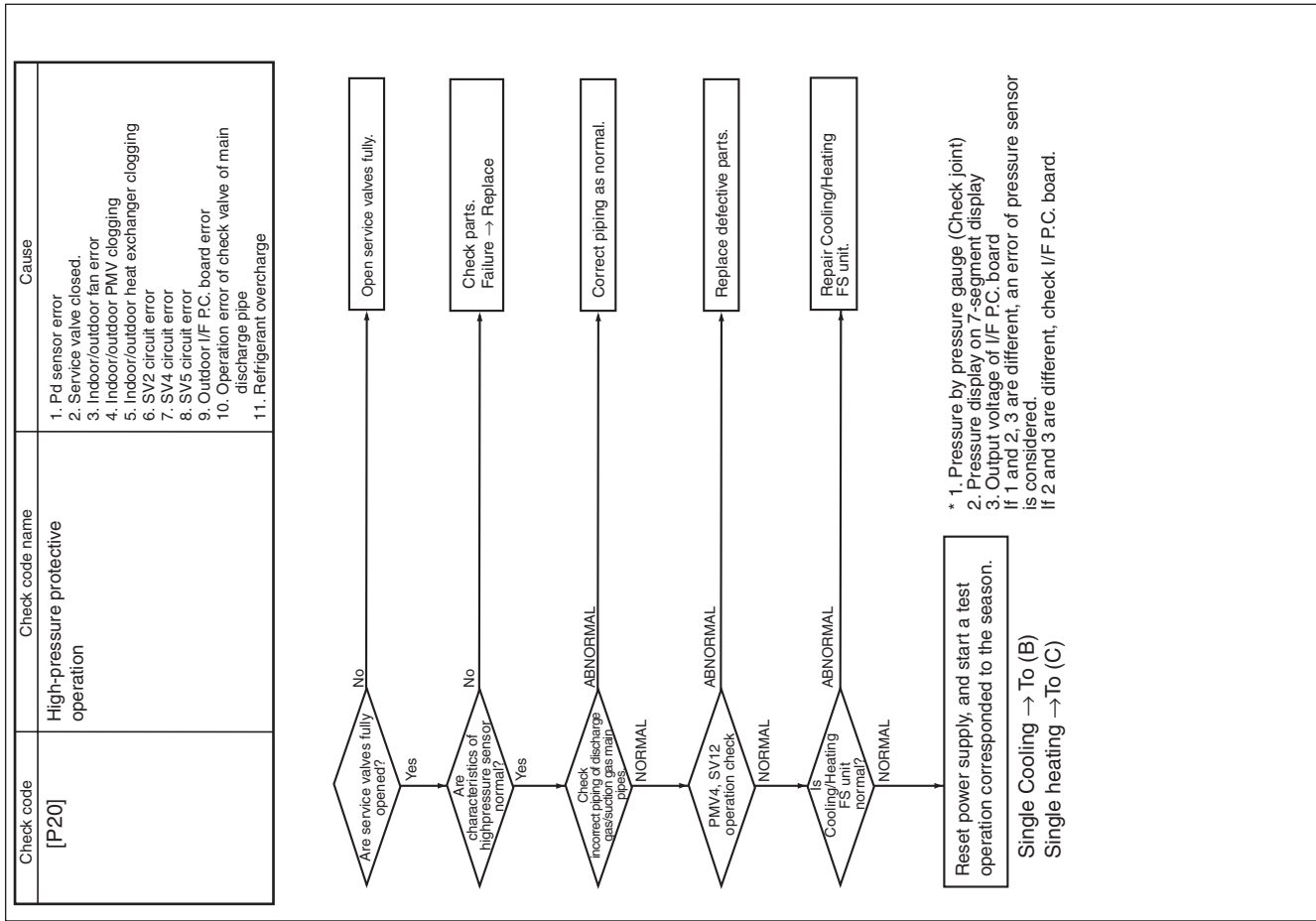
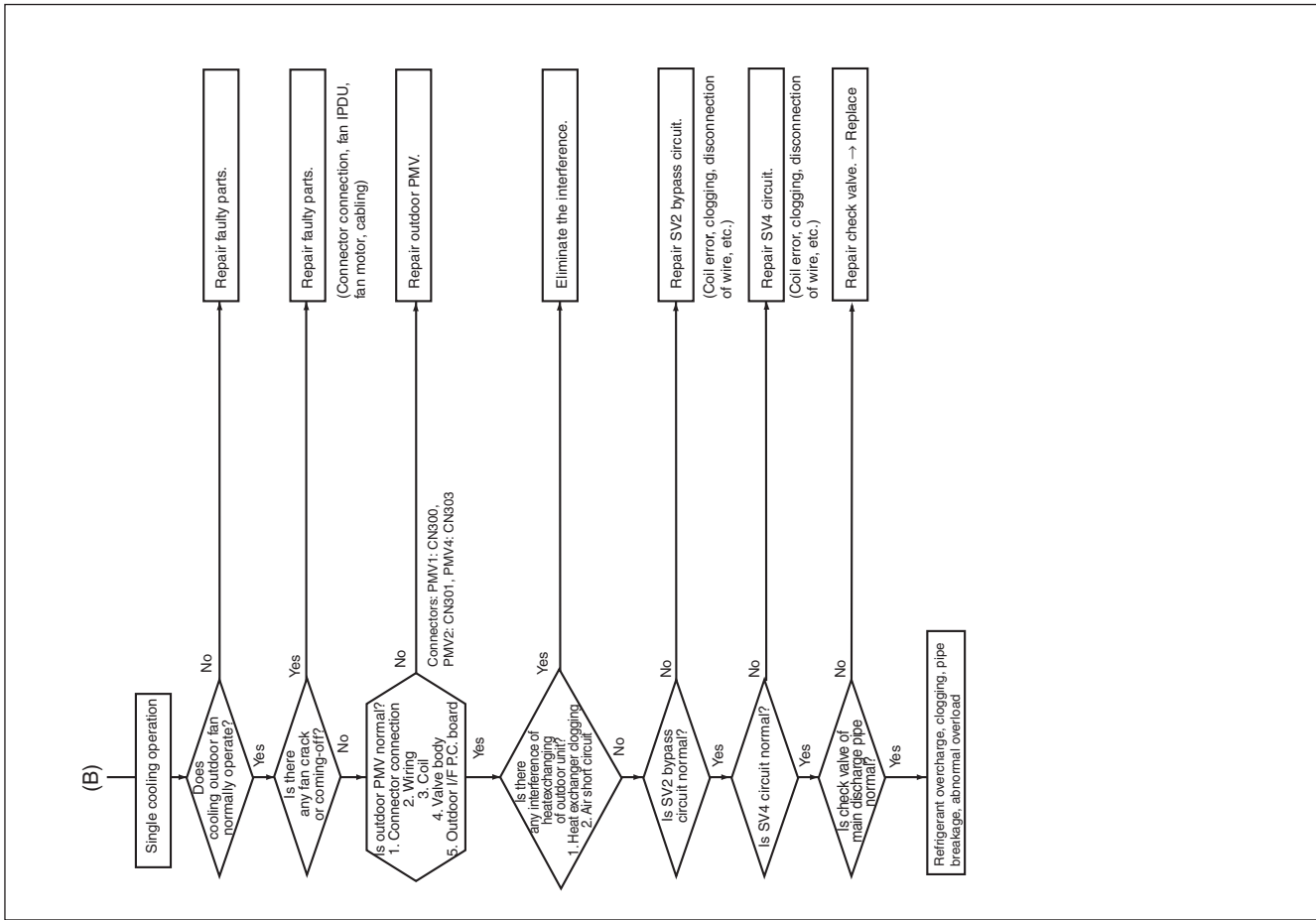


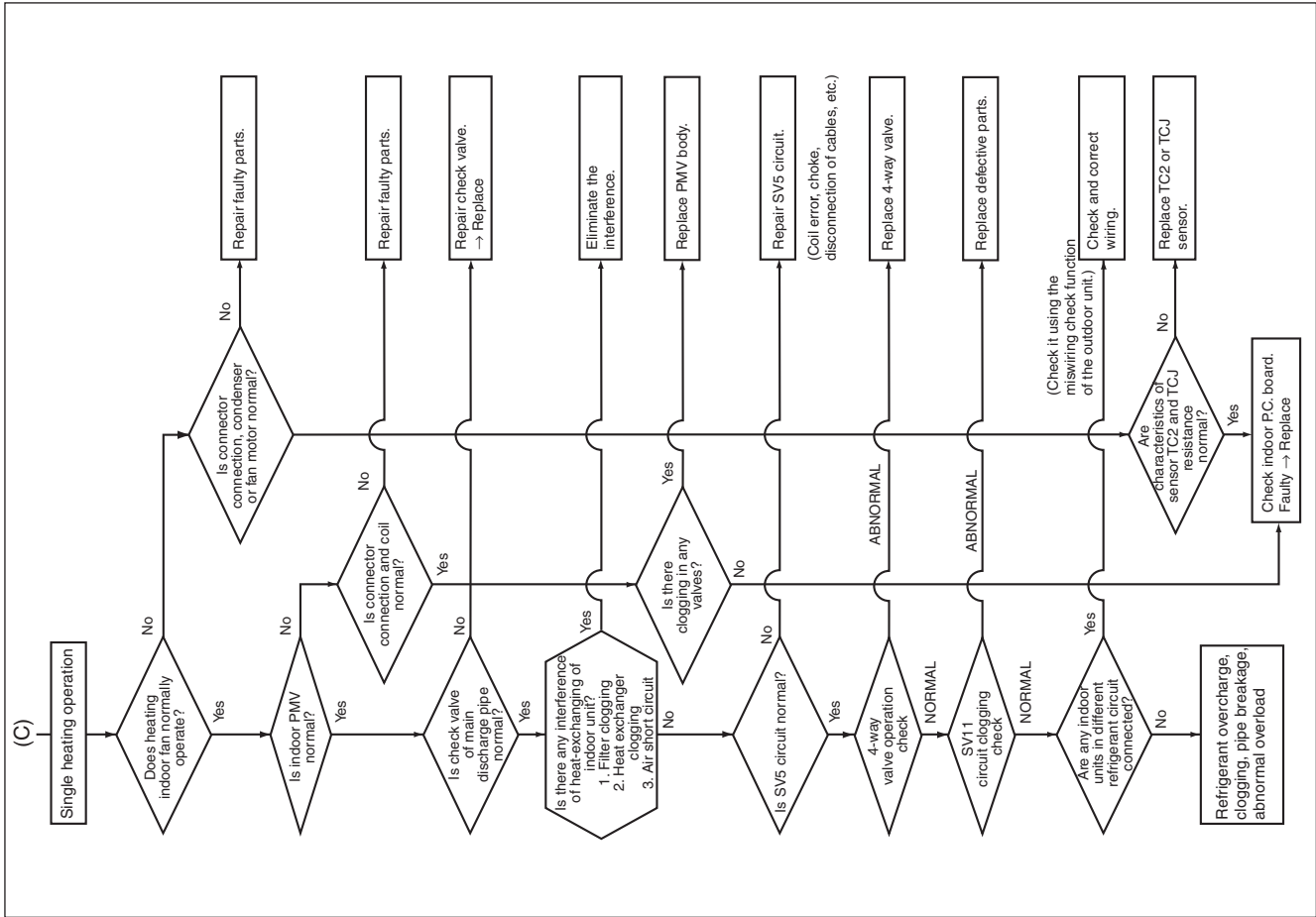
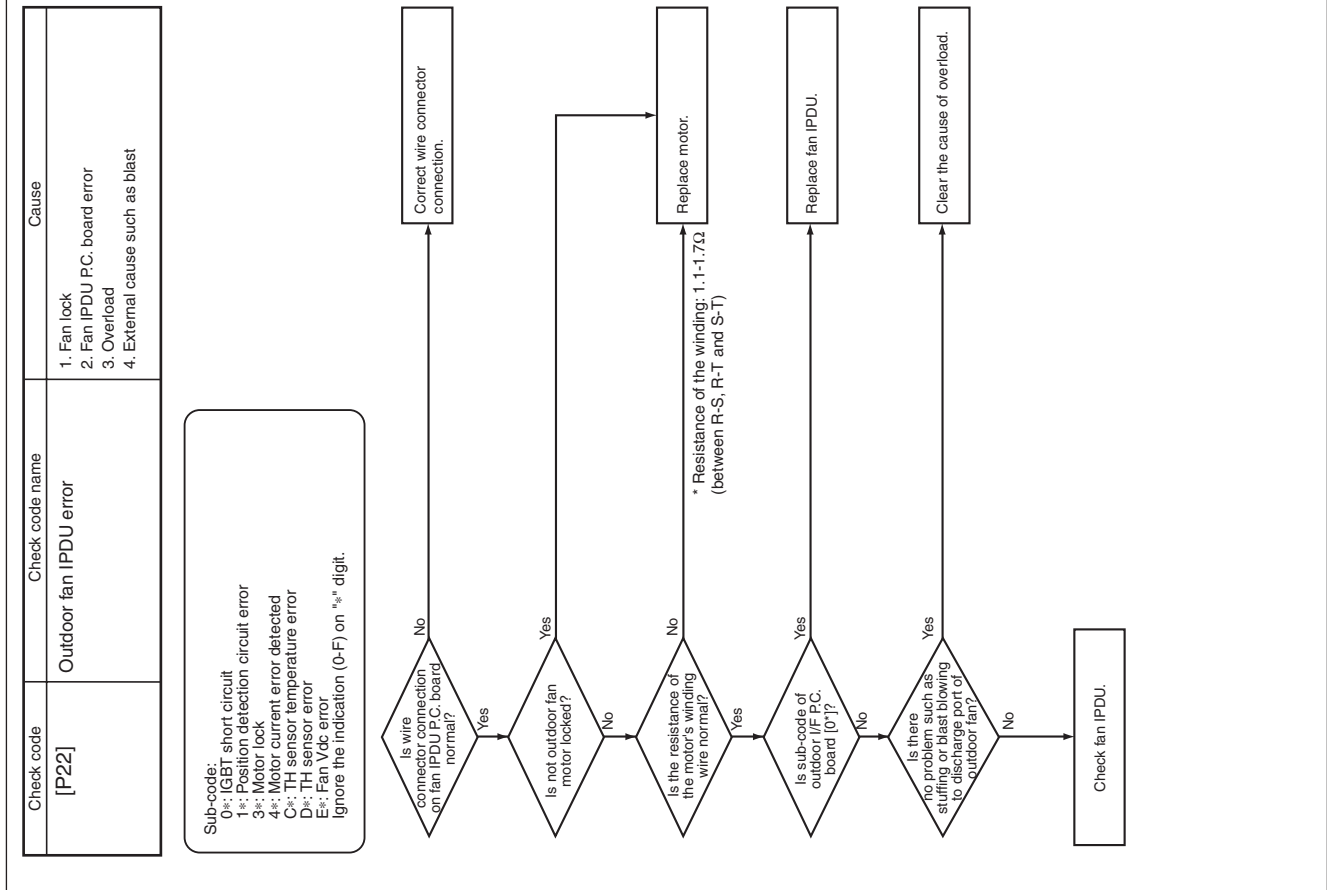


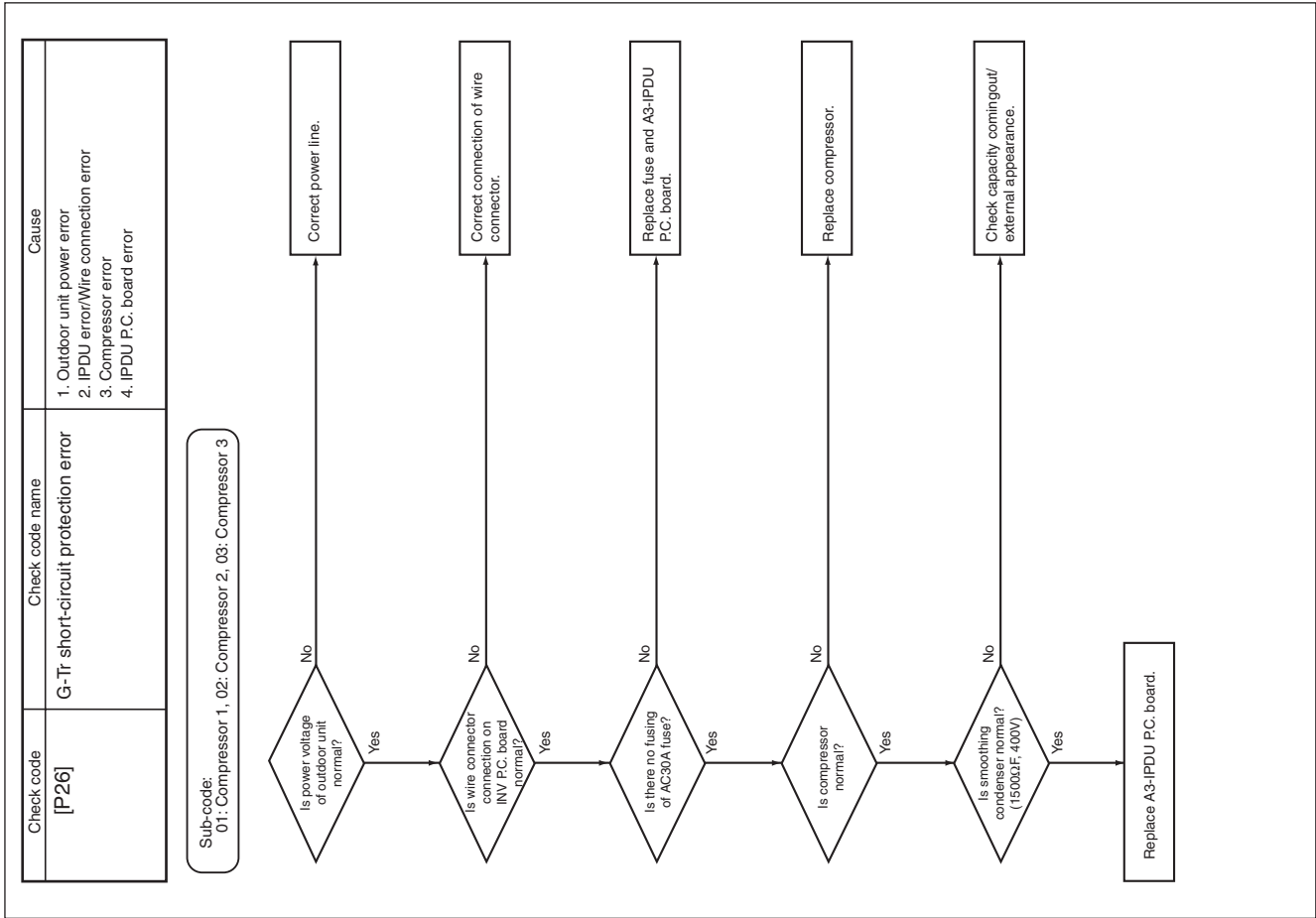
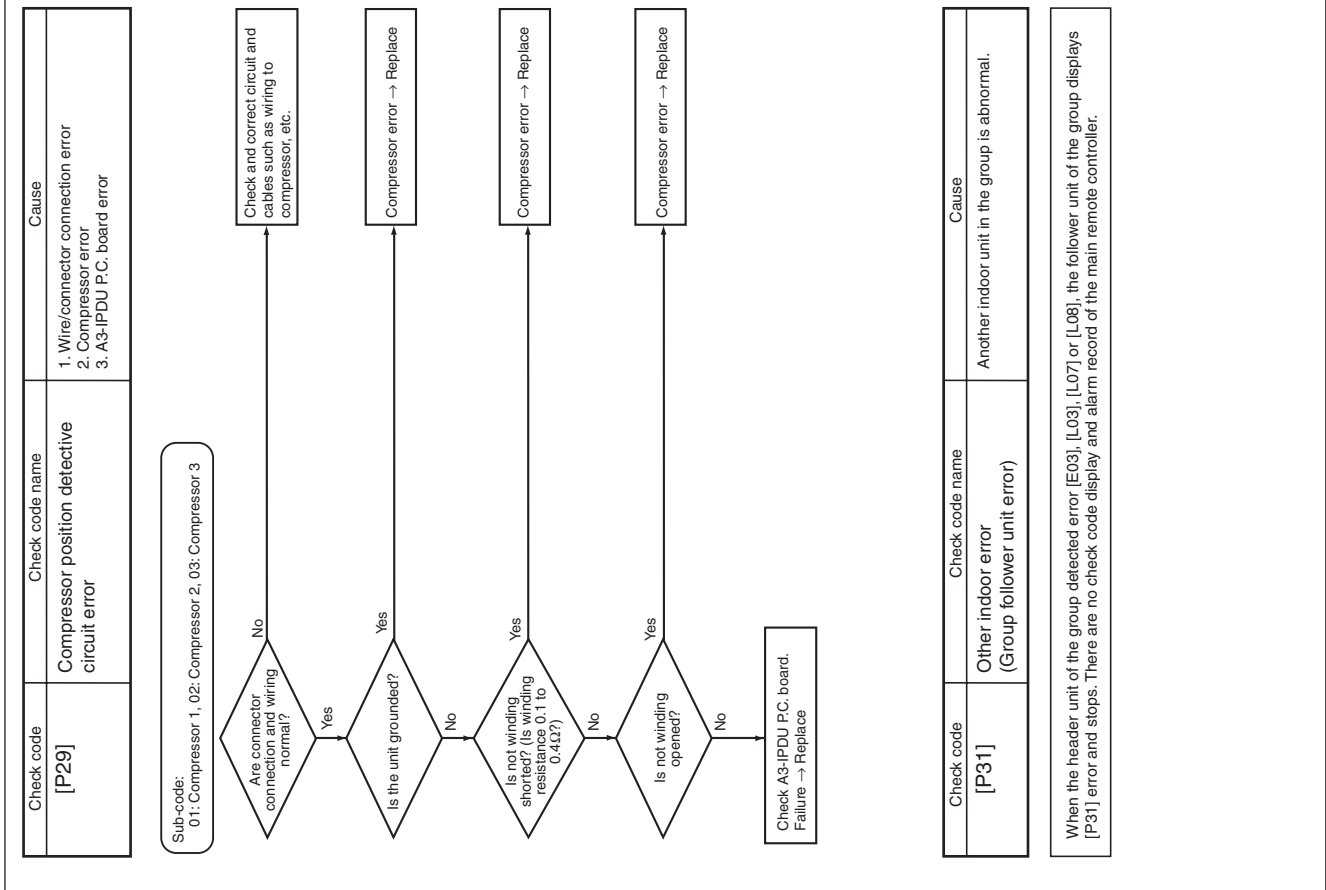








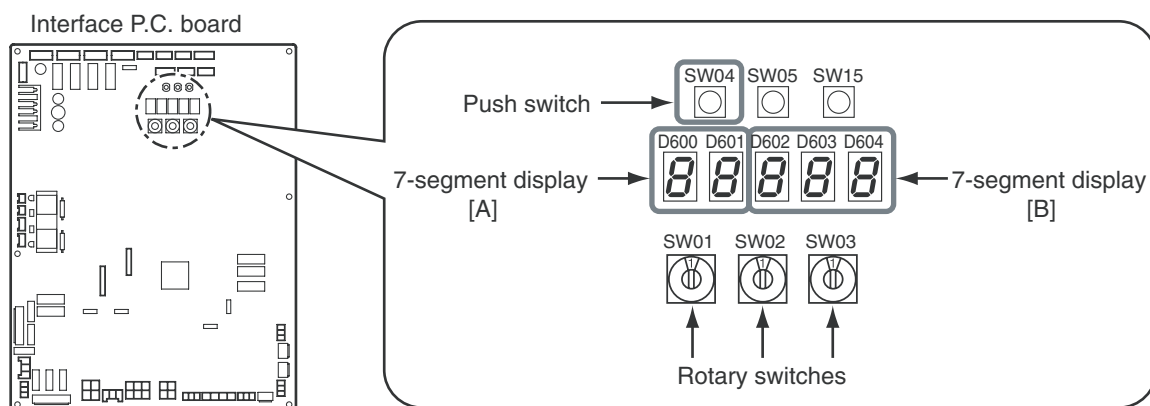




## 8-6. 7-Segment Display Function

### 7-segment display on outdoor unit (interface P.C. board)

The interface control P.C. board features a 7-segment LED display designed to check operational status. Display items can be changed by changing the combination of the number settings of rotary switches provided on the P.C. board (SW01, SW02 and SW03).



### ◆ Checking Procedure to Be Followed in Event of Abnormal Shutdown

If the system is shut down due to an error in the outdoor unit, perform checks in the following steps:

#### **1** Open the panel of the outdoor unit and inspection window of the electric parts box, and check the 7-segment display.

The check code is displayed in the right-hand section of the 7-segment display [B].  
[U1] [000] ([000]: Check code)

- \* To check the check code, set the rotary switches SW01/SW02/SW03 to [1/1/1].  
If there is a sub-code, the display alternates between the check code [000] (3 seconds) and the sub-code [000] (1 second).

#### **2** Check the check code and follow the applicable diagnostic procedure.

#### **3** If the 7-segment display shows [U1] [E28], there is an error in a follower unit.

Push the push switch SW04 on the header unit and hold for several seconds.

As the fan of the outdoor unit in which the error has occurred comes on, open the panel of the unit, and check the check code shown on the 7-segment display.

#### **4** Perform checks in accordance with the diagnostic procedure applicable to the check code.

**(1) Display of System Information (Displayed on Header Outdoor Unit Only)**

SW01	SW02	SW03	Display detail					
1	3	Unused			A	B		
			1	System capacity	A	[...8]~[42]:8 to 42 HP		
					B	[HP]		
			2	No. of outdoor units	A	[...1]~[...3]:1 to 3		
					B	[...P]		
			3	No. of indoor units connected / No. of units with cooling thermo ON	A	[...0]~[48]:0 to 48 (No. of units connected)		
					B	[C...0]~[C48]:0 to 48 (No. of units with cooling thermo ON)		
			4	No. of indoor units connected / No. of units with heating thermo ON	A	[...0]~[48]:0 to 48 (No. of units connected)		
					B	[H...0]~[H48]:0 to 48 (No. of units with heating thermo ON)		
			5	Amount of compressor command correction	A	Value displayed in hexadecimal format		
					B			
			6	Release control	A	Normal: [r. ...], During release control: [r.1]		
					B	—		
			7	Oil equalization control	Normal: [oiL-0]			
					During oil equalization control: [oiL-1]			
			8	Oil equalization request	A	Displayed through LED segment lighting pattern		
B	<p>If element F shown on sketch at right turned on: Header unit oil equalization request If element C shown on sketch at right turned on: Follower unit oil equalization request</p>							
9	Refrigerant/oil recovery operation	A	Oil recovery in cooling: [C1], Normal: [C ...]					
		B	Refrigerant recovery in heating: [H1], Normal: [H ...]					
10	Automatic addressing	A	[Ad]					
		B	During automatic addressing: [... FF], Normal: [... ... ...]					
11	Power pick-cut	A	[dU]					
		B	Normal: [... ... ...], During 50-90% capacity operation: [_50_90] While control is based on BUS line input: [E50-E90]					
12	Optional control (P.C. board input)	Displays optional control status		A	V			
		Operation mode selection: During priority heating (normal)		h.*	*.*.*			
		Heating only		H.*	*.*.*			
		Cooling only		C.*	*.*.*			
		External master ON/OFF: Normal		*....	*.*.*			
		Start input		*.1	*.*.*			
		Stop input		*.0	*.*.*			
		Night operation: Normal		*.*	...*.*			
		Start input		*.*	1.*.*			
		Snowfall operation: Normal		*.*	*...*.*			
Start input		*.*	*.1.*					
13	Optional control (BUS line input)	Same as above						
14	Unused							
15	—	A	—					
		B	—					

## (2) Display of Outdoor Unit Information (Displayed on Each Outdoor Unit)

SW01	SW02	SW03	Display detail				
1	1	1	Error data	A	Outdoor unit No.: [U1] to [U4]		
				B	Check code (only latest one displayed) If there is no check code, [---] is displayed. If there is sub-code, check code [***] and sub-code [-**] are displayed alternately, for 3 seconds and 1 second, respectively.		
			<p>&lt;SW04&gt; push SW function: Fan operation at outdoor unit with error. 7-segment display section A: [E.1]                      &lt;SW04 + SW05&gt; push SW function: Fan operation at outdoor unit without error. 7-segment display section A: [E.0]                      &lt;SW05&gt; push SW function: Fan operation function check mode is cancelled.</p>				
			2	A	—		
				B	—		
			3	Operation mode	A	Stop [... ...] Normal cooling: [... C], Normal heating: [... H], Normal defrosting: [... J] Simultaneous cooling: [Ch], Simultaneous heating: [Hc]	
					B	—	
			4	Outdoor unit HP capacity	A	8HP: [... 8], 10HP: [... 10], 12HP: [... 12], 14HP: [14]	
					B	[...HP]	
			5	Compressor operation command	* Operation data of each compressor is displayed in turn in 2 second intervals. If compressor No. 3 does not exist, [-.-] is displayed.		
					Normal: Compressor speed (rps) is displayed in decimal format. 7-segment display (A/B): [C1.***] ⇒ [C2.***] ⇒ [C3.***] ⇒ ...		
					<SW04> push SW function: Switches to display of operating current (decimal value). 7-segment display (A/B): [i1.***] ⇒ [i2.***] ⇒ [i3.***] ⇒ ... Pushing of <SW05> restores normal display.		
			6	Outdoor fan mode	A	[FP]	
					B	Mode 0 to 63: [... 0] to [63]	
			7	Compressor backup	A	[C.b.]	
					B	Displays compressor backup setting status Normal: [... ..] Compressor No. 1 backup: [1 ... ] Compressor No. 2 backup: [... 1 ... ] Compressor No. 3 backup: [... .. 1]	
8	—	A	—				
		B	—				
9	Control valve output data	Displays control output status of solenoid valve		A	B		
		4-way valve: ON		H. 1	... ..		
10	Control valve output data	4-way valve: OFF		H.0	... ..		
		SV2: ON / SV5: OFF / SV6: OFF		2. ...	1 0 0		
		SV2: OFF / SV5: ON / SV6: ON		2. ...	0 1 0		
		SV2: OFF / SV5: OFF / SV6: ON		2. ...	0 0 1		
11	Control valve output data	SV3A: ON / SV3B: OFF / SV3C: OFF / SV3D: OFF		3. 1	0 0 0		
		SV3A: OFF / SV3B: ON / SV3C: OFF / SV3D: OFF		3. 0	1 0 0		
		SV3A: OFF / SV3B: OFF / SV3C: ON / SV3D: OFF		3. 0	0 1 0		
		SV3A: OFF / SV3B: OFF / SV3C: OFF / SV3D: ON		3. 0	0 0 1		
12	Control valve output data	SV41: ON / SV42: OFF / SV43: OFF		4. ...	1 0 0		
		SV41: OFF / SV42: ON / SV43: OFF		4. ...	0 1 0		
		SV41: OFF / SV42: OFF / SV43: ON		4. ...	0 0 1		
13	Control valve output data	SV11 A, B : ON / SV14: OFF / SV3F: OFF		A. 1	... 0 0		
		SV11 A, B : OFF / SV14: ON / SV3F: OFF		A. 0	... 1 0		
		SV11 A, B : OFF / SV14: OFF / SV3F: ON		A. 0	... 0 1		
14	PMV1/PMV2 opening	Displays opening data in decimal format (total opening)		**	** .P		
15	PMV4 opening	Displays opening data in decimal format		... *	** .P		
16	Oil level judgment status	Normal					
		A	[o L.]				
		B	Initial display: [... ..], Oil level judgment result: [#.*.\$] Displayed letters #, * and \$ represent judgment results for compressor Nos. 1, 2 and 3, respectively ("0" for normal and "1" or "2" for low level).				
		<SW04> push SW function: Displays low level confirmed judgment result of each compressor.					
16	* Pushing of <SW05> restores normal display.	A	[L d.]				
		B	Compressor No. 1 low level being confirmed: [L ... ] Compressor No. 2 low level being confirmed: [... L ... ] Compressor No. 3 low level being confirmed: [... .. L]				

**(3) Display of Outdoor Cycle Data (Displayed at Each Outdoor Unit)**

SW01	SW02	SW03	Display detail				
1	1	2	Pd pressure data	Pd pressure (MPaG) is displayed in decimal format. (MPaG: Approx. 10 times magnitude of kg/cm <sup>2</sup> G)	A	B	
					P d.	*. * *	
			2	Ps pressure data	Ps pressure (MPaG) is displayed in decimal format.	P s.	*. * *
	3		PL pressure conversion data	Converted PL pressure (MPaG) is displayed in decimal format.	P L.	*. * *	
	4		TD1 sensor data	Temperature sensor reading (°C) is displayed in decimal format. • Letter symbol and data are displayed alternately, for 1 second and display for 3 seconds, respectively. • Data with negative value is displayed as [- *] [ * * *].	Letter symbol	t d	1 ... ..
					Data	* * * *	
	5		TD2 sensor data		Letter symbol	t d	2 ... ..
					Data	* * * *	
	6		TD3 sensor data		Letter symbol	t d	3 ... ..
					Data	* * * *	
	7		TS1 sensor data		Letter symbol	t S	1 ... ..
					Data	* * * *	
8	TS2 sensor data	Letter symbol	t S		2 ... ..		
		Data	* * * *				
9	TE1 sensor data	Letter symbol	t E		1 ... ..		
		Data	* * * *				
10	TE2 sensor data	Letter symbol	t E	2 ... ..			
		Data	* * * *				
11	TL sensor data	Letter symbol	t L	... ..			
		Data	* * * *				
12	TO sensor data	Letter symbol	t o	... ..			
		Data	* * * *				

SW01	SW02	SW03	Display detail			
1	1	5	TK1 sensor data	Temperature sensor reading (°C) is displayed in decimal format. • Letter symbol and data are displayed alternately, for 1 second and display for 3 seconds, respectively. • Data with negative value is displayed as [- *] [ * * *].	A	B
					Letter symbol	F 1
	2		TK2 sensor data		Data	* * * *
					Letter symbol	F 2
	3		TK3 sensor data		Data	* * * *
					Letter symbol	F 3
	4		TK4 sensor data		Data	* * * *
					Letter symbol	F 4
	5		TK5 sensor data		Data	* * * *
					Letter symbol	F 5
		Data	* * * *			

#### (4) Display of Outdoor Cycle Data (Displayed at Header Unit)

\* This method is used when displaying follower unit information on the 7-segment display of the header unit.

SW01	SW02	SW03	Display detail				
3	1	1~2	Error data	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)		
				B	Check code is displayed (latest one only). If there is no check code: [— —].		
	2		Type of compressor installed	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)		
				B			
	3		Outdoor unit HP capacity	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)		
				B	8HP: [... 8], 10HP: [... 10], 12HP: [... 12], 14HP: [14]		
	4		Compressor operation command	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)		
				B	Indicates which compressor is ON. * Any unconnected compressors is represented by “_”		
					When compressor No. 1 is ON	A	1 0 0
					When compressor No. 2 is ON		0 1 0
					When compressor No. 3 is ON		0 0 1
5	Fan operation mode	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	At rest: [F ... 0], In mode 63: [F 6 3]				
6	Release signal	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	Normal: [r ... ...], Upon receiving release signal: [r ... 1]				
7	Oil level judgment	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	Normal: [... ... ...], Low level: [... ... L]				
8	Compressor 1 operating current	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	[**.*], *.* is value of operating current in decimal format.				
9	Compressor 2 operating current	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	[**.*], *.* is value of operating current in decimal format.				
10	Compressor 3 operating current	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	[**.*], *.* is value of operating current in decimal format.				
11	Fan operating current	A	[U.*], *: SW03 setting No. + 1 (Outdoor unit No. U2 to U3)				
		B	[**.*], *.* is value of operating current in decimal format.				

**Note:** Follower unit is selected by setting SW03.

SW01	7-segment display section A
1	U2
2	U3

### (5) Display of Indoor Unit Information (Displayed on Header Unit Only)

SW01	SW02	SW03	Display detail		
4	1~16	1~3	Indoor BUS communication signal receiving status	B Upon receiving signal: [... .. 1], Other times: [... .. ]	
5			Indoor check code	B No check code: [ - - ]	
6			Indoor HP capacity	B 0. 2, 0. 5, 0. 8, ... 1, 1. 2, 1. 7, ... 2, 2. 5, ...3, 3. 2, ...4, ...5, ...6, ...8, 1 0, 1 6, 2 0	
7			Indoor request command (S code, operation mode)	B [ #. ... * ] # represents mode: COOL: [C. ... *], HEAT: [H. ... *] FAN: [F. ... *], OFF: [S. ... *] * represents S code: [#. ... 0] to [#. ... F]	
8			Indoor PMV opening data	Displayed in decimal format	
9			Indoor TA / TRA opening data	Displayed in decimal format	
10			11~13	Indoor TSA opening data	Displayed in decimal format
			1~3	Indoor TF / TFA opening data	Displayed in decimal format
11			11~13	Indoor TOA opening data	Displayed in decimal format
			1~3	Indoor TCJ opening data	B Displayed in decimal format
12			1~3	Indoor TC1 opening data	B Displayed in decimal format
13			1~3	Indoor TC2 opening data	B Displayed in decimal format

**Note:** Indoor address No. is selected by setting SW02 and SW03 and displayed on 7-segment display, section A.

SW02	SW03	Indoor address	7-segment display section A
1~16	1	SW02 setting number	[01]~[16]
	11		
	2	SW02 setting number +16	[17]~[32]
	12		
	3	SW02 setting number +32	[33]~[48]
	13		

### (6) Display of Outdoor EEPROM Writing Error Code (Displayed on Header Unit Only)

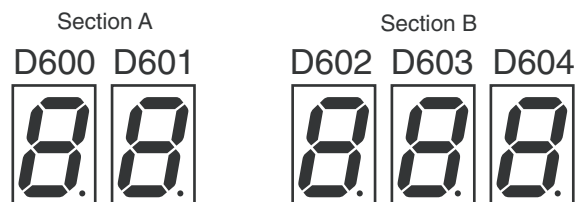
\* The latest error code written in the EEPROM of each outdoor unit is displayed.

(This function is used to check the error code after the resetting of the power supply.)

To display the error code, push SW04 and hold for at least 5 seconds after setting SW01 to 03 as shown in the table below.

SW01	SW02	SW03	Indoor address	7-segment display section A	
1	1	16	Latest error code of header unit (U1)	E. 1.	***
	2		Latest error code of follower unit No. 1 (U2)	E. 2.	***
	3		Latest error code of follower unit No. 2 (U3)	E. 3.	***

#### • 7-Segment Display



Set SW01/SW02/SW03 to [1/1/16] and push SW04 and hold for at least 5 seconds. The latest error code of the header unit (U1) will be displayed.

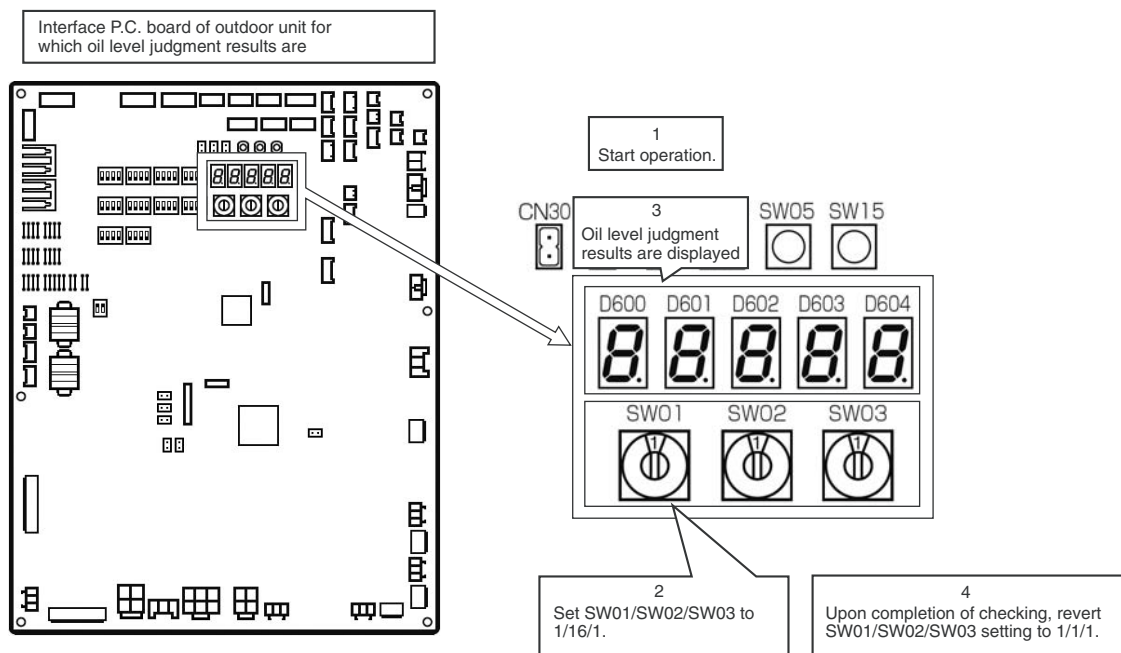
If the setting of SW02 is changed, the latest error code of a follow unit (U2-U3) will be displayed.

## 8-7. Oil Level Judgment Display

The current compressor oil level judgment results can be accessed by setting the switches provided on the interface P.C. board of an outdoor unit. Perform the checks in accordance with the procedure described below.

### 1 Operation Procedure

- (1) Start the operation.
- (2) Set the switches provided on the interface P.C. board of the outdoor unit for which oil level judgment results are required as follows:  
SW01/SW02/SW03 = 1/16/1
- (3) The oil level judgment result will be displayed on the 7-segment display.  
7-segment display: [oL] [#.#.\$]  
The letters #, \* and \$ are digits that represent judgment results for compressor Nos. 1, 2 and 3, respectively.  
(See the table below for the interpretation of the judgment results.)
- (4) When checking is completed, revert the SW01/SW02/SW03 setting to [1/1/1].



## 2 Oil Level Judgment Results

Displayed digit	Judgment result	Description
0	Normal	The amount of oil in the compressor is sufficient.
1	Low level	The amount of oil in the compressor is insufficient. (Both "1" and "2" stand for insufficiency.) If this result persists, the system will turn itself off in a protective shutdown.
2		

### Display example

7-segment display [oL] [0 0 0] Oil level is normal for compressors 1, 2 and 3.  
 [oL] [2 2 2] Oil level is low for compressors 1, 2 and 3.  
 [oL] [0 2 0] Oil level is low for compressor 2 and normal for compressors 1 and 3.

Judgment result for compressor 3  
 Judgment result for compressor 2  
 Judgment result for compressor 1

## SHRM-i Outdoor Interface P.C. Board Function Setting Exchange Table

### Switch/Function Setting Exchange

Part type		Exchange contents			Initial setting at shipment		
SW06	DIP SW 4 bit	bit 1	Compressor 1 backup	OFF: Normal, ON: Backup when compressor 1 was in trouble	OFF		
		bit 2	Compressor 2 backup	OFF: Normal, ON: Backup when compressor 2 was in trouble	OFF		
		bit 3	Compressor 3 backup	OFF: Normal, ON: Backup when compressor 3 was in trouble	OFF		
		All bit1, 2, and 3 are ON: Setup of outdoor unit backup			OFF		
SW07	DIP SW 4 bit	bit 1	Demand control 1 (Standard specifications) Exchange of upper limit regulation	OFF: 0 to 100% ON : Middle to 100%	OFF		
		bit 2	Demand control 2 (Expansion function) Exchange of 2 steps to 4 steps of upper limit	OFF: 2 steps (Standard) ON : 4 steps	OFF		
SW09	DIP SW 4 bit	In case of center outdoor unit					
		bit 2	Indoor connection capacity over Judgment of error	OFF: Error judgment ON : None (when backup setting for outdoor unit)	OFF		
		bit 4	Judgment of error for No. of connected indoor units	OFF: No error judgment ON : Error judgment	OFF		
		In case of terminal outdoor unit					
SW10	DIP SW 4 bit	bit 2	Outdoor fan high static pressure operation	OFF: Normal ON : High static pressure operation	OFF		
		bit 3	For low noise operation	OFF: Normal ON : INV frequency upper limit restriction	OFF		
		bit 4		OFF: Normal ON : Fan rpm upper limit restriction	OFF		
SW11	DIP SW 4 bit	bit 4	Operation switching when indoor water overflow error detected	OFF: Entire system stops ON : System operation continues (Room which trouble occurred only stops.)	OFF		
SW12	DIP SW 4 bit	bit 1	Selection of PMV open/close or manual operation	(According to the following setting contents)		OFF	
		bit 2				OFF	
		bit 1		bit 2			
		OFF		OFF	PMV1, 2 opens/closes by operation of CN30/CN31 (*3)		
		OFF	ON	PMV4 opens/closes by operation of CN30/CN31 (*3)			
SW13	DIP SW 4 bit	bit 4	Line address setup	(Used by combining with SW14)	OFF		
SW14	DIP SW 4 bit	bit 1	Line address setup		OFF		
		bit 2		OFF			
		bit 3		OFF			
		bit 4		OFF			
SW16	DIP SW 4 bit	bit 1	Option function Output exchange of external output P.C. boa	(According to the following setting contents)		OFF	
		bit 2				OFF	
		bit 1		bit 2			
		OFF		OFF	Compressor operation output		
		ON	OFF	Display of system operation ratio			
SW17	DIP SW 4 bit	bit 3	Clean converter connected	OFF: No connection, ON: Connection	OFF		
SW30	DIP SW 2 bit	bit 1	Communication termination resistance between outdoor units	OFF: No termination resistance ON : With termination resistance	ON		
		bit 2	Communication termination resistance between indoor and outdoor units	OFF: No termination resistance ON : With termination resistance	ON		
CN30	Check connector	Manual full opening operation for PMV opening operation		When released: Normal, When short-circuited: Open fully (*1)	Released		
CN31	Check connector	Manual full closing operation for PMV opening operation		When released: Normal, When short-circuited: Closed fully (*2)	Released		

\*1 Manual PMV full opening operation by short-circuit of CN30 returns to normal status (Original opening) for 2 minutes.

\*2 Manual PMV full closing operation by short-circuit of CN31 returns to normal status (Original opening) for 2 minutes.

\*3 PMV full open/full close operation by short-circuited CN30/CN31 is for PMV which was selected by setting of SW12.

## Switching of Jumper Wire/Function Setup

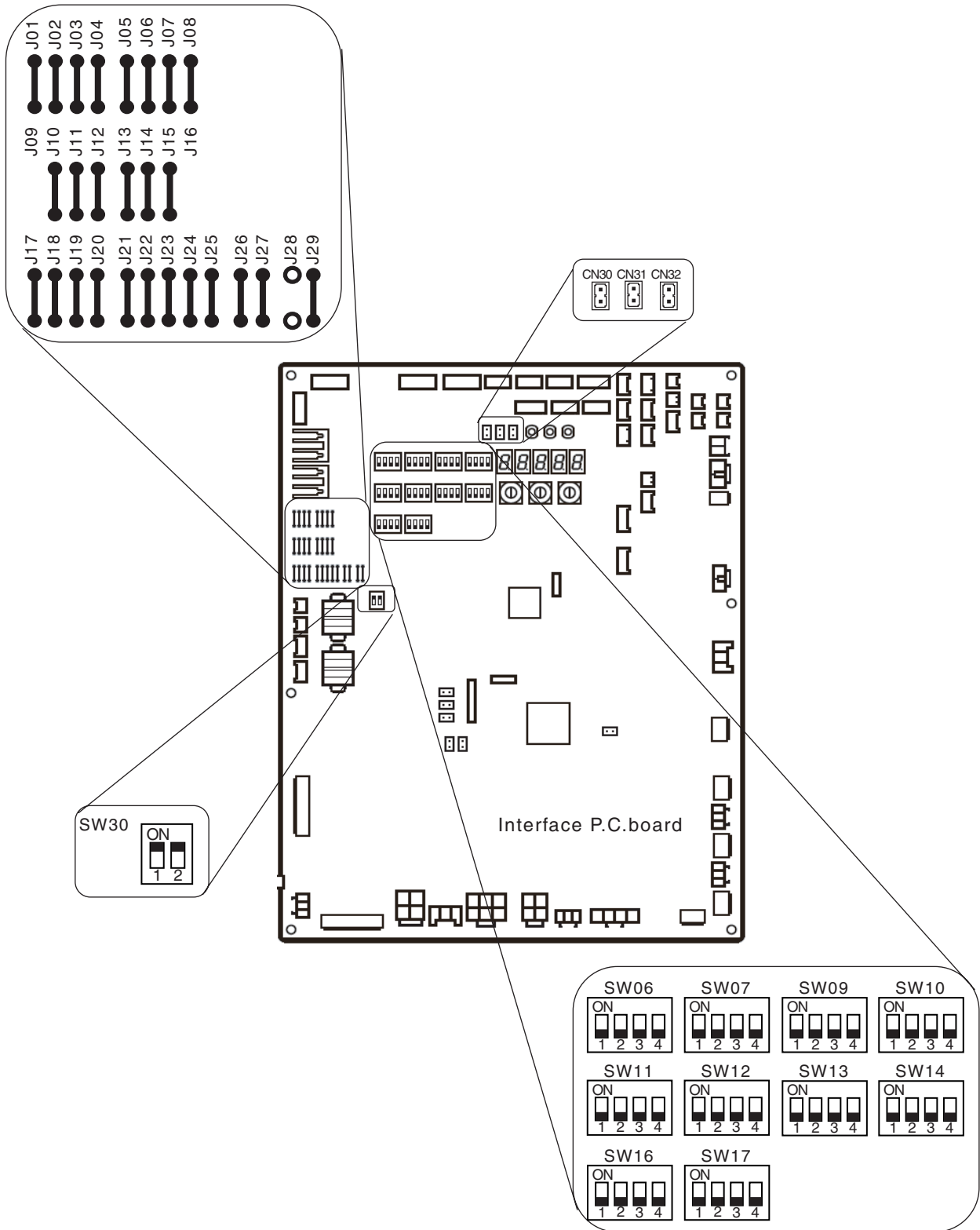
Function switching setup

○ : With jumper, × : Without jumper (Cut)

jumper	Part type	Exchange contents				Initial setting at shipment	
J01	Optional function Operation mode selection operation switching	○	Indoor unit at not selected side is kept with waiting status.				○
		×	The mode is changed a mode which selected the operation mode of the indoor unit at not selected side.				
J04	Upper limit setup of demand capacity command in corresponding indoor during saving operation in indoor	○	Approx. 75% (Normal)				○
		×	Approx. 60%				
J09	Setup for service P.C. board (Model setup)	J09	J10	J11	J12	At shipment from factory *4	○
		○	○	○	○		
J10		×	×	○	○	MMY-MAP2244F	○
		○	×	○	○	MMY-MAP2804F	
J11		×	×	×	×	MMY-MAP3354F	○
J12		○	×	×	×	MMY-MAP4004F	○
J16	Demand control 1 (Standard specification) Corresponds to 2-core wire	○	Normal (3-core wire <Successive MAKE signal> or 4-core wire <Successive MAKE or Pulse signal>)				○
		×	2-core wire <Successive MAKE signal>				

\*4 When you replace the board with a service board, be sure to cut the jumper wire matching with the outdoor unit model to be installed. (The jumper wires J09 to J12 which were mounted at shipment from the factory are provided to all the boards regardless of model type.)

**Interface Board Switches and jumper wire positions to be used in the Function setup switching table**



## 8-8. Leakage/Clogging of Refrigerating Cycle Circuit

### List of Check Codes Generated upon Occurrence of Leakage/Clogging in Outdoor Cycle or Oil Circuit Part (MMY-MAP0804\*, 1004\*,)

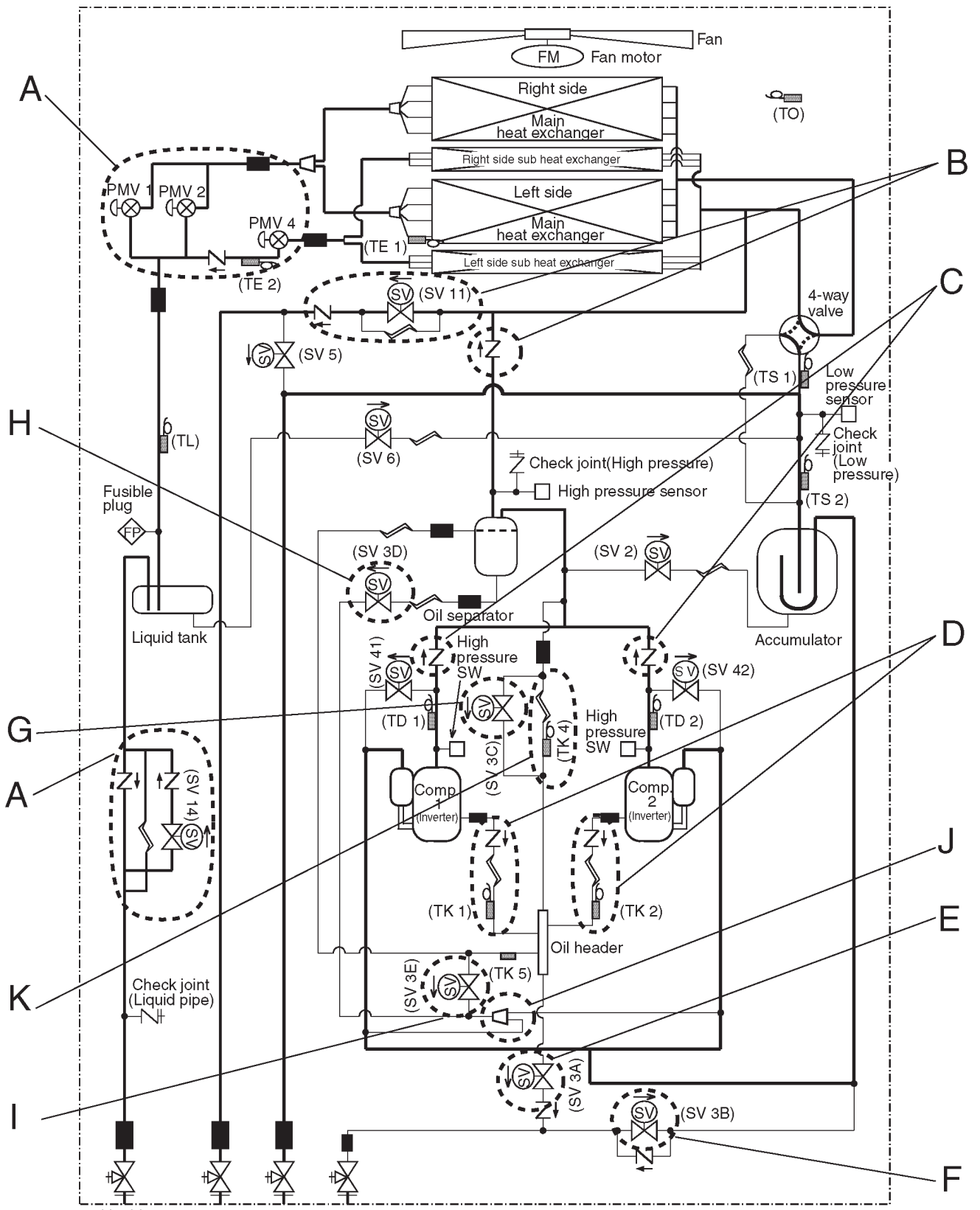
#### Clogging

Part	Site of fault (see next page)	Check target unit	Detected fault and check code		Symptom
Outdoor PMV1, 2, 4 Outdoor PMV4 circuit check valve SV14 valve SV14 valve circuit check valve	A	Corresponding unit	Activation of high-pressure protection Activation of low-pressure protection Discharge temp. error (TD1) Discharge temp. error (TD2)	P20 H06 P03 P17	Rise of abnormal pressure Fall of pressure Rise of discharge temp. (compressor 1) Rise of discharge temp. (compressor 2)
Check valve in discharge pipe convergent section SV11 valve SV11 valve circuit check valve	B	Corresponding unit	High-pressure protection operation High-pressure SW system error	P20 P04-XX	Abnormal rise of pressure
Check valve in discharge pipe	C	Corresponding unit	High-pressure SW system error	P04-XX	Abnormal rise of pressure
Check valve in oil-equalization circuit Capillary Strainer	D	Corresponding unit	Oil level detection circuit error Oil level low detection and protection	H16-XX H07-XX	Oil circuit error or oil shortage judgment
SV3A valve	E	Other connected unit	Oil level low detection and protection	H07-XX	Oil level low
SV3B valve	F	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3C valve	G	Other connected unit	Oil level low detection and protection	H07-XX	Oil level low
SV3D valve SV3D valve circuit capillary Strainer	H	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3E valve	I	Corresponding unit	Oil level detection circuit error Oil level low detection and protection	H16-05 H07-XX	Oil circuit error Oil level low Oil level low
Oil return distributor	J	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3C bypass capillary	K	Corresponding unit	Oil level detection circuit error	H16-04	Oil circuit error

#### Leakage

Part	Site of fault (see next page)	Check target unit	Detected fault and check code		Symptom
Outdoor PMV1, 2	A	Corresponding unit	Outdoor liquid backflow error Oil level low detection and protection	P13 H07-XX	Refrigerant entrapment
		Other connected unit	Discharge temp. error (TD1) Discharge temp. error (TD2)	P03 P17	Rise of discharge temp. (compressor 1) Rise of discharge temp. (compressor 2)
Check valve in discharge pipe convergent section	B	Corresponding unit	Oil level low detection and protection Compressor breakdown Compressor error (lockup)	H07-XX H01-XX H02-XX	Refrigerant entrapment
Check valve in discharge pipe	C	Corresponding unit	Oil level low detection and protection Compressor breakdown Compressor error (lockup)	H07-XX H01-XX H02-XX	Refrigerant entrapment
Check valve in oil-equalization circuit	D	Corresponding unit	Oil level low detection and protection	H07-XX	Excessive amount of oil (Leaking side) Insufficient amount of oil (Normal side)
SV3A valve	E	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3C valve	G	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low

**Note:** "XX" represents sub-code



- Liquid side serviec valve
- Discharge gas side serviec valve
- Suction gas side serviec valve
- Balance pipe serviec valve

Symbol							
Symbol	Solenoid valve	Capillary tube	Check valve	Check joint	Strainer	Tempe. sensor	Distributor

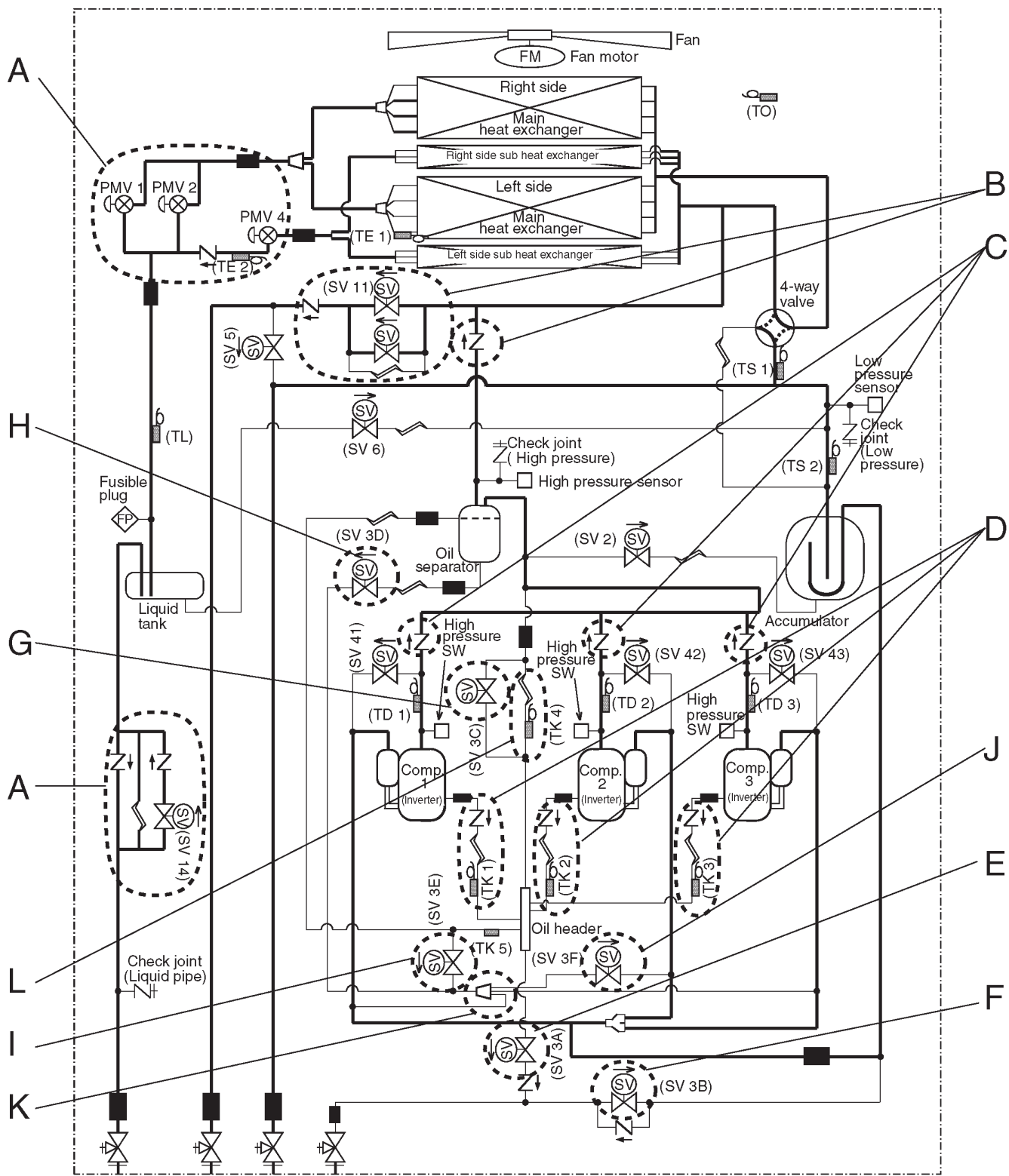
**List of Check Codes Generated upon Occurrence of Leakage/Clogging in Outdoor Cycle or Oil Circuit Part**  
**(MMY-MAP1204\*, 1404\*)**

**Clogging**

Part	Site of fault (see next page)	Check target unit	Detected fault and check code		Symptom
Outdoor PMV1, 2, 4 Outdoor PMV4 circuit check valve SV14 valve SV14 valve circuit check valve	A	Corresponding unit	Activation of high-pressure protection Activation of low-pressure protection Discharge temp. error (TD1) Discharge temp. error (TD2) Discharge temp. error (TD3)	P20 H06 P03 P17 P18	Rise of abnormal pressure Fall of pressure Rise of discharge temp. (compressor 1) Rise of discharge temp. (compressor 2) Rise of discharge temp. (compressor 3)
Check valve in discharge pipe convergent section SV11 valve SV11 valve circuit check valve	B	Corresponding unit	High-pressure protection operation High-pressure SW system error	P20 P04-XX	Abnormal rise of pressure
Check valve in discharge pipe	C	Corresponding unit	High-pressure SW system error	P04-XX	Abnormal rise of pressure
Check valve in oil-equalization circuit Capillary Strainer	D	Corresponding unit	Oil level detection circuit error Oil level low detection and protection	H16-XX H07-XX	Oil circuit error or oil shortage judgment
SV3A valve	E	Other connected unit	Oil level low detection and protection	H07-XX	Oil level low
SV3B valve	F	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3C valve	G	Other connected unit	Oil level low detection and protection	H07-XX	Oil level low
SV3D valve SV3D valve circuit capillary Strainer	H	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3E valve	I	Corresponding unit	Oil level detection circuit error Oil level low detection and protection	H16-05 H07-XX	Oil circuit error Oil level low Oil level low
SV3F valve	J	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
Oil return distributor	K	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3C bypass capillary	L	Corresponding unit	Oil level detection circuit error	H16-04	Oil circuit error

**Leakage**

Part	Site of fault (see next page)	Check target unit	Detected fault and check code		Symptom
Outdoor PMV1, 2	A	Corresponding unit	Outdoor liquid backflow error Oil level low detection and protection	P13 H07-XX	Refrigerant entrapment
		Other connected unit	Discharge temp. error (TD1) Discharge temp. error (TD2) Discharge temp. error (TD3)	P03 P17 P18	Rise of discharge temp. (compressor 1) Rise of discharge temp. (compressor 2) Rise of discharge temp. (compressor 3)
Check valve in discharge pipe convergent section	B	Corresponding unit	Oil level low detection and protection Compressor breakdown Compressor error (lockup)	H07-XX H01-XX H02-XX	Refrigerant entrapment
Check valve in discharge pipe	C	Corresponding unit	Oil level low detection and protection Compressor breakdown Compressor error (lockup)	H07-XX H01-XX H02-XX	Refrigerant entrapment
Check valve in oil-equalization circuit	D	Corresponding unit	Oil level low detection and protection	H07-XX	Excessive amount of oil (Leaking side) Insufficient amount of oil (Normal side)
SV3A valve	E	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low
SV3C valve	G	Corresponding unit	Oil level low detection and protection	H07-XX	Oil level low



Symbol							
Solenoid valve							
Capillary tube							
Check valve							
Check joint							
Strainer							
Tempe. sensor							
Distributor							

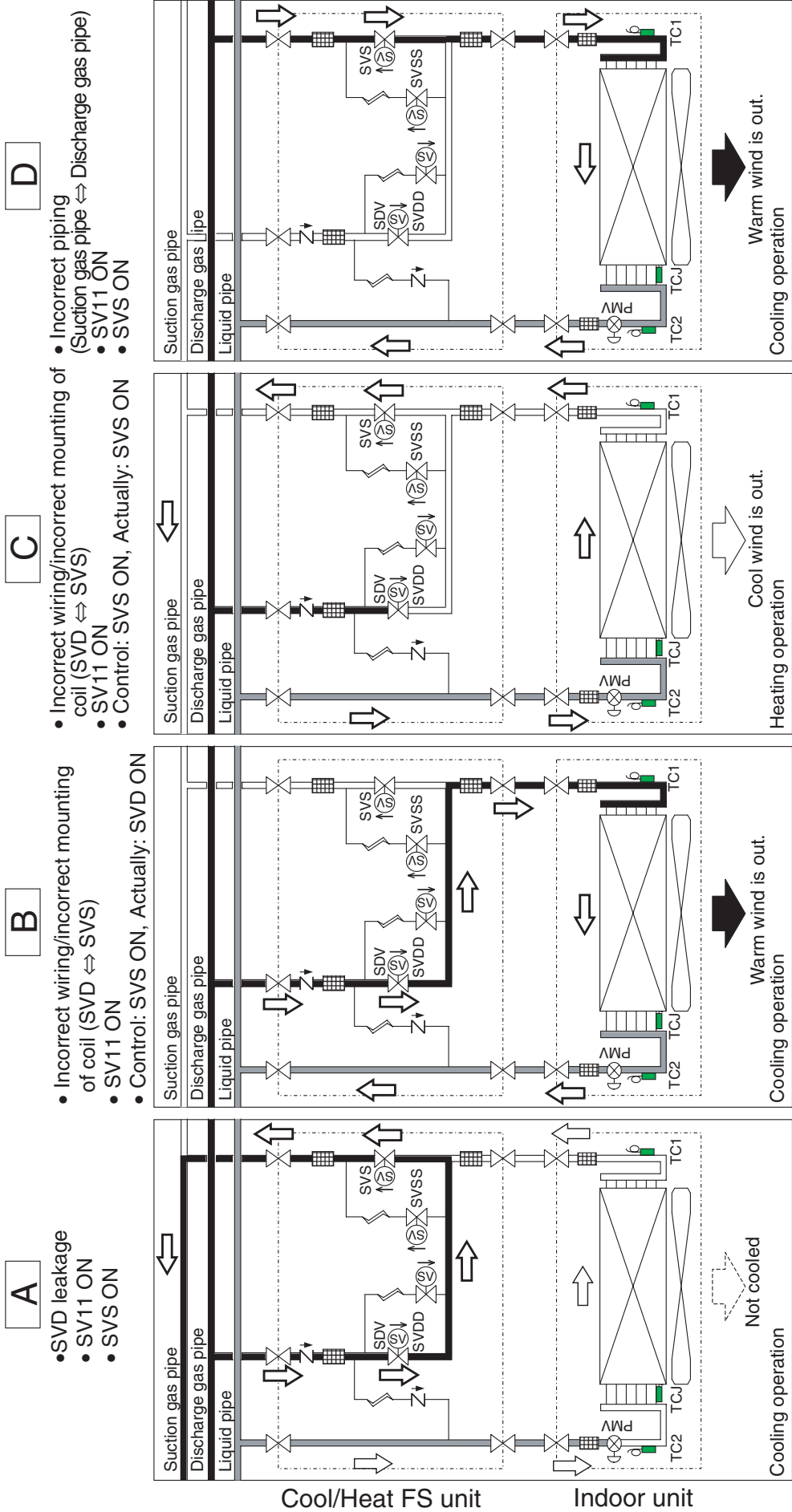
### 8-8-1. Flow Selector Unit (FS Unit)

Leakage of SVD valve or SVS valve, etc; Positions to be checked and check code when a trouble such as miswiring occurred.

Part name	Trouble mode	Operation mode	Phenomenon which appears as result (Corresponding indoor unit or flow selector unit)				Judgment and position to be checked	Example of refrigerant flow
			Not cooled	Not heated	May become almost normal capacity	Abnormal refrigerant sound ● Abnormal ○ Circulating sound		
SVD valve	Clogging	Single heating	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• TC1 is lower than normal indoor unit.</li> <li>• Temperature of gas pipe at indoor side of the flow selector unit is lower than that of normal FS unit.</li> </ul>	
		Simultaneous cooling (Room heating) Simultaneous heating (Room heating)	<input type="radio"/>	<input type="radio"/>				
	Leakage	Single cooling (SV11 ON)	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• Compared with normal indoor unit, TCJ is higher.</li> <li>• Suction gas pipe at outdoor side of the flow selector unit is hot.</li> <li>• Refrigerant circulating sound is heard in bypass from SVD valve to SVS valve.</li> </ul>	<b>A</b>
		Simultaneous cooling (Room cooling) Simultaneous heating (Room cooling)	<input type="radio"/>	<input type="radio"/>				
	Miswiring/ Misinstallation of coil SVD ↔ SVS	Single cooling (SV11 OFF)	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• TCJ is higher than normal indoor unit.</li> <li>• Gas pipe at indoor side of the flow selector unit is not cold.</li> <li>• Refrigerant circulating sound is heard from SVSS valve.</li> </ul>	
		Single cooling (SV11 ON) Simultaneous cooling (Room cooling) Simultaneous heating (Room cooling)	<input type="radio"/>	<input type="radio"/>				
SVS valve	Clogging	Single heating	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• Temperature of TCJ and TC1 become high similar to heating. (All heating circuit)</li> <li>• Discharge gas pipe at outdoor unit side of the flow selector unit is rather hot.</li> <li>• Refrigerant circulating sound is not heard from SVS valve, but it is heard from SVD valve.</li> </ul>	<b>B</b>
		Simultaneous cooling (Room heating) Simultaneous heating (Room heating)	<input type="radio"/>	<input type="radio"/>				
	Leakage	Single cooling	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• Gas pipe at indoor side of the flow selector unit is cold. (Cooling circuit, Liquid pack)</li> <li>• Refrigerant circulating sound is not heard from SVD valve, but it is heard from SVS valve.</li> </ul>	<b>C</b>
		Simultaneous cooling (Room cooling) Simultaneous heating (Room cooling)	<input type="radio"/>	<input type="radio"/>				
	Miswiring/ Misinstallation of coil SVD ↔ SVS	Single heating	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• TCJ is higher than normal indoor unit.</li> <li>• Gas pipe at indoor side of the flow selector unit is not cold.</li> <li>• Refrigerant circulating sound is heard from SVSS valve.</li> </ul>	
		Simultaneous cooling (Room heating) Simultaneous heating (Room heating)	<input type="radio"/>	<input type="radio"/>				
SVDD valve	Clogging	Single heating	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• Compared with normal indoor unit, TCJ is low.</li> <li>• Temperature of suction gas pipe at outdoor side of the flow selector unit is higher than that of normal flow selector unit.</li> <li>• Refrigerant circulating sound is heard from SVS valve circuit.</li> </ul>	
		Simultaneous cooling (Room heating) Simultaneous heating (Room heating)	<input type="radio"/>	<input type="radio"/>				
	Leakage	Single cooling (SV11 ON)	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• In start time, when exchanging mode from cooling to heating after defrost operation, refrigerant shock sound may be heard.</li> </ul>	
		Simultaneous cooling (Room cooling) Simultaneous heating (Room cooling)	<input type="radio"/>	<input type="radio"/>				
	Miswiring/ Misinstallation of coil SVD ↔ SVS	Single heating	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• Refrigerant circulating sound may be heard from SVDD valve circuit.</li> <li>• Suction gas pipe at outdoor unit side of the flow selector unit may be hot.</li> </ul>	
		Simultaneous cooling (Room heating) Simultaneous heating (Room heating)	<input type="radio"/>	<input type="radio"/>				
Miswiring/ Misinstallation of coil SVD ↔ SVS	Single cooling (SV11 ON)	<input type="radio"/>	<input type="radio"/>			<ul style="list-style-type: none"> <li>• Refrigerant circulating sound may be heard from SVDD valve circuit.</li> </ul>		
	Simultaneous cooling (Room cooling) Simultaneous heating (Room heating)	<input type="radio"/>	<input type="radio"/>					

Part name	Trouble mode	Operation mode	Phenomenon which appears as result (Corresponding indoor unit or flow selector unit)					Judgment and position to be checked	Example of refrigerant flow
			Not cooled	Not heated	May become almost normal capacity	Abnormal refrigerant sound <input type="radio"/> Circulating sound	Detection of check code		
SVSS valve	Clogging	Single cooling Simultaneous cooling (Indoor cooling) Simultaneous heating (Indoor cooling)			<input type="radio"/>	<input checked="" type="radio"/> Indoor unit, flow selector unit <input type="radio"/> Indoor unit, flow selector unit		<ul style="list-style-type: none"> <li>• Operation is changed from heating to cooling.</li> <li>• Refrigerant impact sound is heard at defrost time.</li> </ul>	
		Single heating Simultaneous cooling (Indoor heating) Simultaneous heating (Indoor heating)			<input type="radio"/>	<input checked="" type="radio"/> Indoor unit, flow selector unit <input type="radio"/> SVSS circuit		<ul style="list-style-type: none"> <li>• Refrigerant sound may be heard from SVSS valve circuit.</li> <li>• Temperature of suction gas pipe at outdoor side of the selector unit is higher than that of normal selector unit.</li> </ul>	
Discharge, Liquid bypass capillary, Check valve	Leakage	Single heating Simultaneous cooling (Indoor heating) Simultaneous heating (Indoor heating)			<input type="radio"/>			<ul style="list-style-type: none"> <li>• Gas short is observed and PD and PS may be lower than those in normal time.</li> <li>• TD and TS may be higher than those in normal time.</li> </ul>	
		Single cooling (SV11 ON) Simultaneous cooling (Indoor cooling) Simultaneous heating (Indoor cooling)	<input type="radio"/>				P15 [Gas leak detection]		
Piping Discharge pipe Liquid pipe Gas pipe	Check valve leakage	Single heating Simultaneous cooling (Indoor heating) Simultaneous heating (Indoor heating)		<input type="radio"/>		<input type="radio"/> Check valve circuit		<ul style="list-style-type: none"> <li>• Refrigerant sound may be heard from check valve.</li> <li>• Discharge gas pipe is cold or it may be frozen.</li> </ul>	
		Single cooling (SV11 OFF)	<input type="radio"/>		<input type="radio"/>			<ul style="list-style-type: none"> <li>• Impossible judgment</li> </ul>	
Communication line Power supply line	Incorrect piping Discharge pipe ↔ Suction gas pipe	Single cooling (SV11 OFF) Single cooling (SV11 ON) Simultaneous cooling (Indoor cooling) Simultaneous heating (Indoor cooling)			<input type="radio"/>			<ul style="list-style-type: none"> <li>• TCJ and TC1 are heated same as heating. (Heating circuit)</li> <li>• Suction gas pipe at outdoor side of selector unit is fairly heated.</li> </ul>	<b>D</b>
		Single heating Simultaneous cooling (Indoor heating) Simultaneous heating (Indoor heating)			<input type="radio"/>			<ul style="list-style-type: none"> <li>• Temperature of suction gas pipe at outdoor side of the FS unit is higher than that of the normal FS unit.</li> </ul>	
In some cases, phenomena such as above occur.									

<REFERENCE> An Example of Refrigerant Flow in FS Unit When Trouble Occurred



## 8-8-2. Troubleshooting when Multiple Indoor Units are Connected to Cool/Heat FS Unit

When multiple indoor units are connected to a Cool/Heat FS unit, it is necessary to set the Code No. [0E]. If this setting is forgotten, normal operation is impossible.

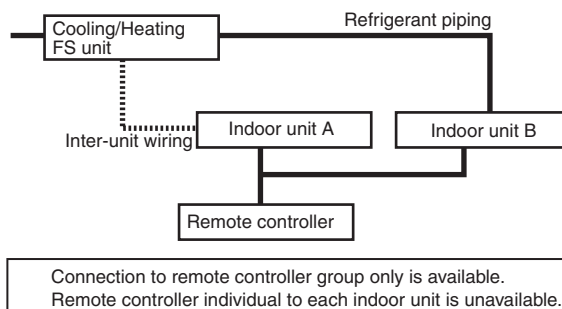
### [Case that Code No. [0E] is set]

All the indoor units which are connected to the identical Cool/Heat FS unit operate according to the operation mode of the center unit. The Cool/Heat FS unit keeps the operation mode until all the indoor units will be thermostat-OFF.

### [Case that Code No. [0E] is not set]

As the Cool/Heat FS unit is controlled by the indoor unit which is connected with inter-unit wiring, a normal operation is unavailable.

(In the right figure, operation follows to the indoor unit A.)



If Code No. [0E] is not set, the symptom below appears:

When the following trouble occurred, confirm the Code No. [0E] and then set the Code No. referring to item "How to connect multiple indoor units to a Cool/Heat FS unit".

[1] [Cool] is set on remote controller

	Indoor unit A	Indoor unit B	Cool/Heat FS unit				Symptom
			SVS	SVSS	SVD	SVDD	
1	Cooling operation	Cooling operation	ON	ON	OFF	OFF	Normal operation
2	Cooling operation	Cooling thermo-OFF	ON	ON	OFF	OFF	Normal operation
3	Cooling thermo-OFF	Cooling operation	OFF	ON	OFF	OFF	Cooling mode is not applied to the indoor unit B. (Fan status) [H06] An error (Low-pressure protective operation) may occur.

[2] [Heat] is set on remote controller

	Indoor unit A	Indoor unit B	Cool/Heat FS unit				Symptom
			SVS	SVSS	SVD	SVDD	
1	Heating operation	Heating operation	OFF	OFF	ON	OFF	Normal operation.
2	Heating operation	Heating thermo-OFF	OFF	OFF	ON	OFF	Normal operation.
3	Heating thermo-OFF	Heating operation	OFF	OFF	ON	OFF	Normal operation.

[3] [Cool/Heat Auto] is set on remote controller

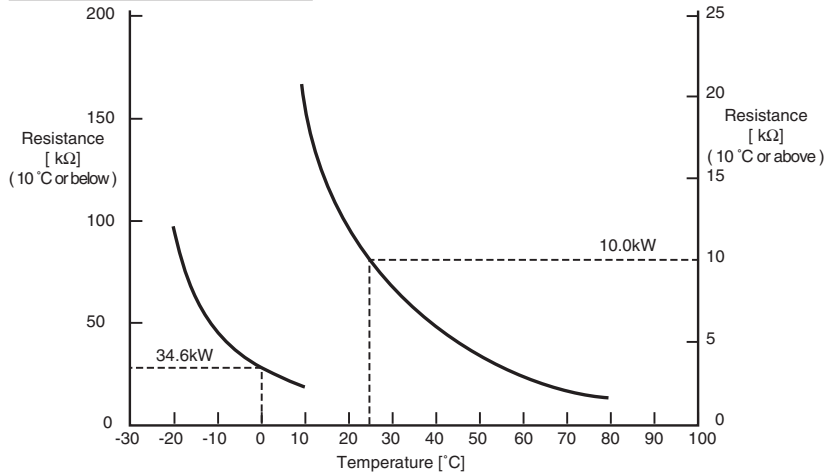
	Indoor unit A	Indoor unit B	Cool/Heat FS unit				Symptom
			SVS	SVSS	SVD	SVDD	
1	Cooling operation	Cooling operation	ON	ON	OFF	OFF	Normal operation.
2	Cooling operation	Cooling thermo-OFF	ON	ON	OFF	OFF	Normal operation.
3	Cooling operation	Heating operation	ON	ON	OFF	OFF	Indoor unit [L18] error (Cool/Heat FS unit line error)
4	Cooling thermo-OFF	Cooling operation	OFF	ON	OFF	OFF	Heating mode is not applied to the indoor unit B. (Fan status) [H06] An error (Low-pressure protective operation) may occur.
5	Cooling thermo-OFF	Heating operation	OFF	ON	OFF	OFF	Heating mode is not applied to the indoor unit B. (Fan or stop status) [P20] An error (High-pressure protective operation) may occur.
6	Heating operation	Heating operation	OFF	OFF	ON	OFF	Normal operation.
7	Heating operation	Heating thermo-OFF	OFF	OFF	ON	OFF	Normal operation.
8	Heating operation	Cooling operation	OFF	OFF	ON	OFF	Indoor unit B discharges warm wind.
9	Heating thermo-OFF	Heating operation	OFF	OFF	ON	OFF	Normal operation.
10	Heating thermo-OFF	Cooling operation	OFF	OFF	ON	OFF	Indoor unit B discharges warm wind.

## 8-9. Sensor Characteristics

### Outdoor Unit

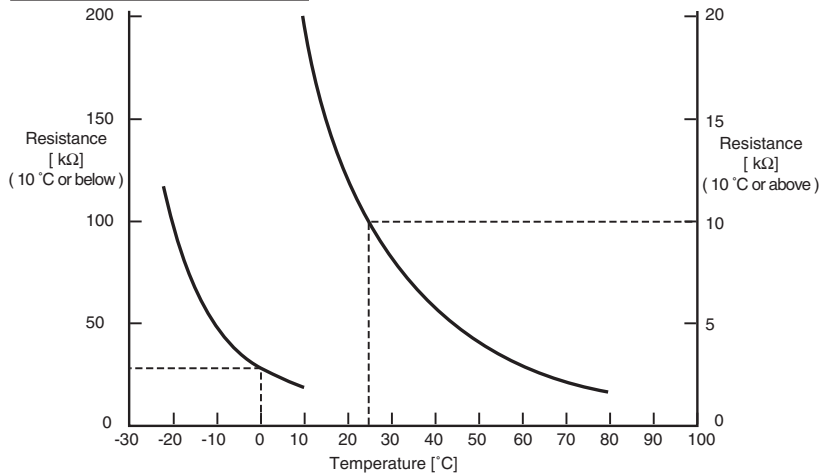
#### ▼ Temperature sensor characteristics

Outdoor TS1, TS2 and TL sensor



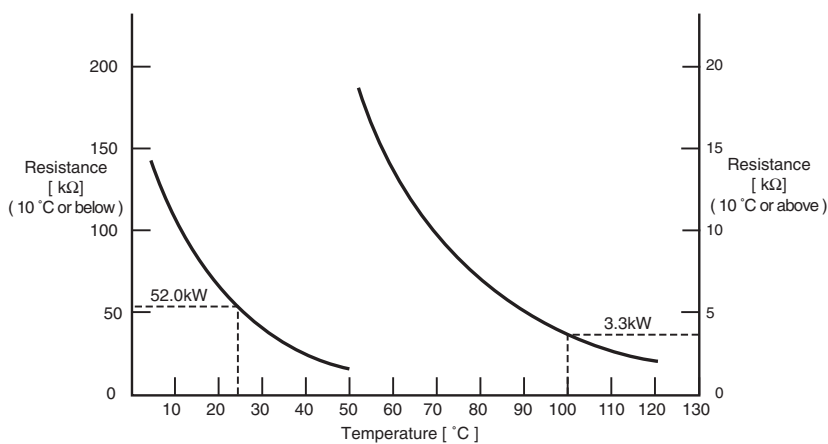
Temperature [°C]	Resistance [kΩ]
-20	108.1
-15	80.0
-10	59.8
-5	45.3
0	34.6
5	26.6
10	20.6
15	16.1
20	12.7
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.4
55	2.8
60	2.3
65	1.9
70	1.6
75	1.3
80	1.1

Outdoor TE1, TE2 and TO sensor



Temperature [°C]	Resistance [kΩ]
-20	102.9
-15	76.6
-10	57.8
-5	44.0
0	33.8
5	26.1
10	20.4
15	16.0
20	13.0
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3
65	1.9
70	1.6
75	1.4
80	1.1

Outdoor TD1,TD2,TD3,TK1,TK2,TK3,TK4 and TK5 sensor



Temperature [°C]	Resistance [kΩ]
0	159.2
5	124.5
10	98.1
15	77.8
20	62.1
25	49.9
30	40.3
35	32.7
40	26.7
45	21.9
50	18.1
55	15.0
60	12.5
65	10.4
70	8.8
75	7.4
80	6.3
85	5.3
90	4.5
95	3.9
100	3.4
105	2.9
110	2.5
115	2.2
120	1.9

## Outdoor Unit

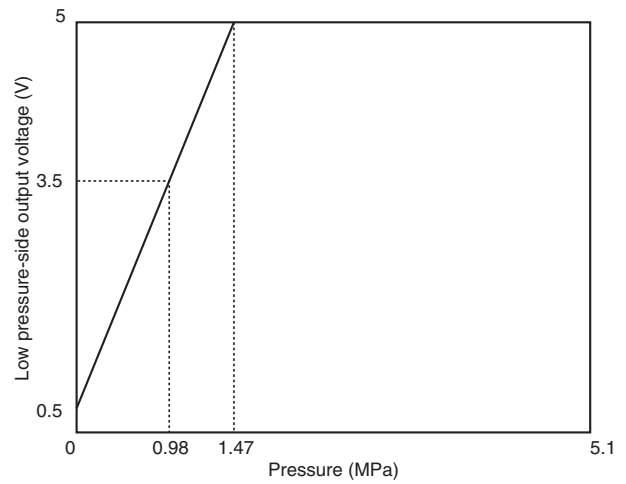
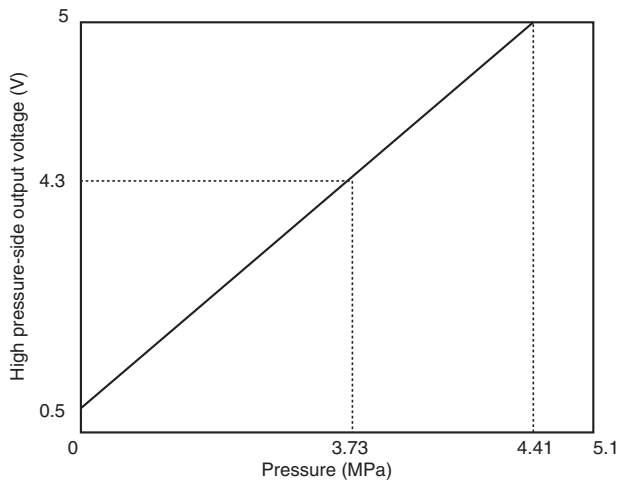
### ▼ Pressure sensor characteristics

- Input/output wiring summary

Pin No.	High pressure side (Pd)		Low pressure side (Ps)	
	Input/output name	Lead wire color	Input/output name	Lead wire color
1	OUTPUT	White	—	—
2	—	—	OUTPUT	White
3	GND	Black	GND	Black
4	+5V	Red	+5V	Red

- Output voltage vs. pressure

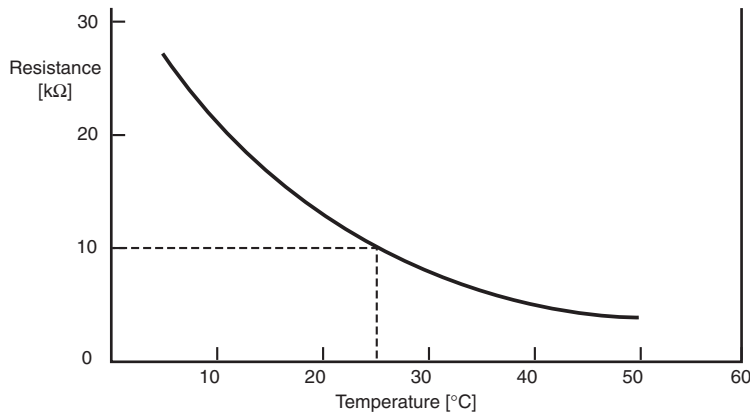
Input/output name	Input/output name
0.5~4.3V 0~3.73MPa	0.5~3.5V 0~0.98MPa



## Indoor Unit

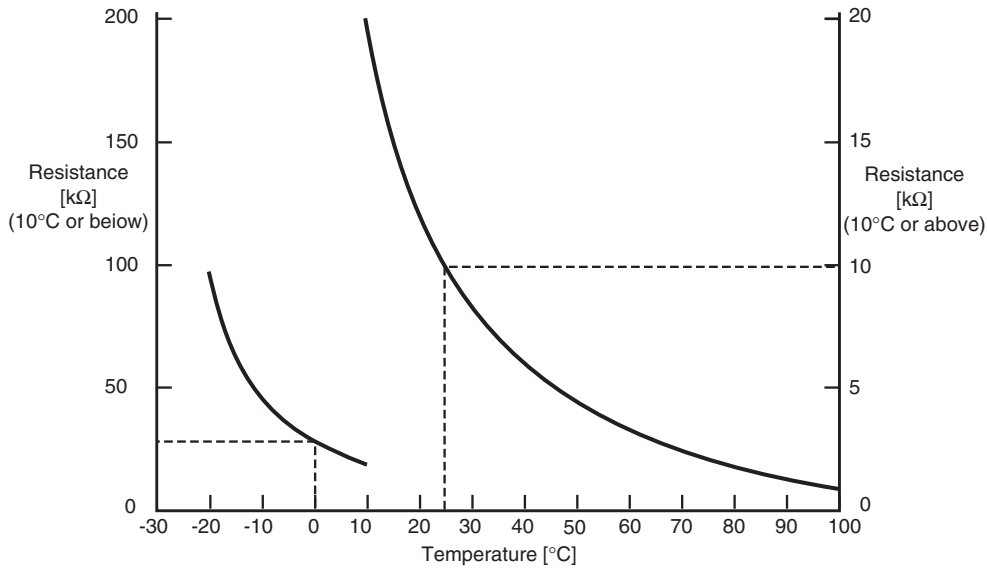
### ▼ Temperature sensor characteristics

Indoor TA(TSA), TRA,TF(TFA) sensor



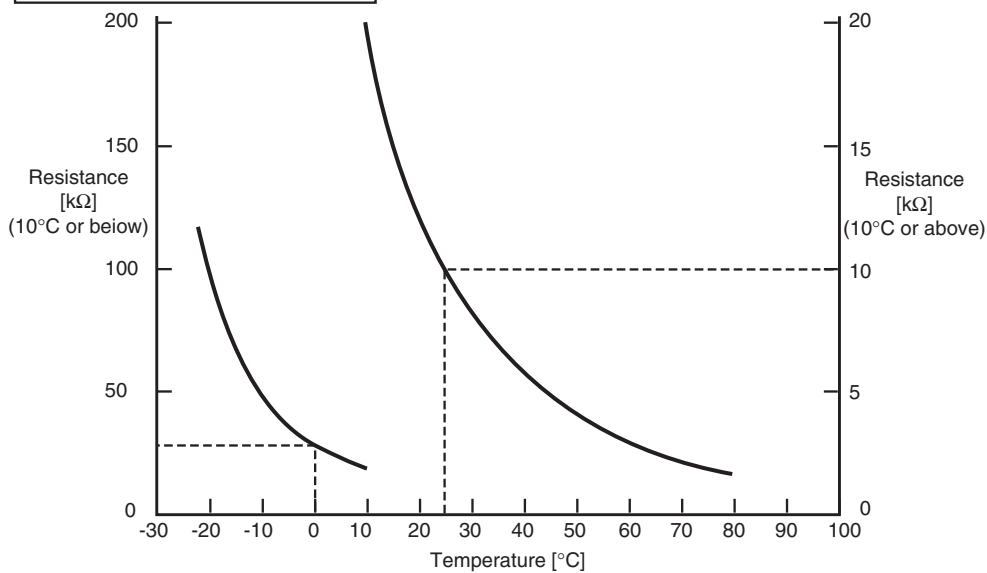
Temperature [°C]	Resistance [kΩ]
0	33.8
5	26.1
10	20.4
15	16.0
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3

Indoor TC1 sensor



Temperature [°C]	Resistance [kΩ]
-20	98.3
-15	73.7
-10	55.8
-5	42.6
0	32.8
5	25.5
10	20.0
15	15.7
20	12.5
25	10.0
30	8.1
35	6.5
40	5.3
45	4.4
50	3.6
55	3.0
60	2.5
65	2.1
70	1.7
75	1.5
80	1.2
85	1.1
90	0.9
95	0.8
100	0.7

Indoor TC2 and TCJ, TOA sensor



Temperature [°C]	Resistance [kΩ]
-20	102.9
-15	76.6
-10	57.7
-5	44.0
0	38.8
5	26.1
10	20.4
15	16.0
20	12.6
25	10.0
30	8.0
35	6.4
40	5.2
45	4.2
50	3.5
55	2.8
60	2.3
65	1.9
70	1.6
75	1.4
80	1.2

## 8-10. Pressure Sensor Output Check

### Outdoor Unit

#### ▼ Pd sensor characteristics

0 to 4.41 MPa (0.5 to 5V output for 0 to 4.41 MPa)

Voltage readings across pins 2 and 3 of CN501 on indoor unit main P.C. board (with negative-side probe of multimeter placed on pin 3)

VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )
0.00	0.00	0.0	1.00	0.49	5.0	1.99	1.46	14.9	2.99	2.44	24.9	3.98	3.42	34.8
0.02	0.00	0.0	1.02	0.51	5.2	2.01	1.48	15.1	3.01	2.46	25.1	4.00	3.44	35.0
0.04	0.00	0.0	1.04	0.53	5.4	2.03	1.50	15.3	3.03	2.48	25.3	4.02	3.45	35.2
0.06	0.00	0.0	1.06	0.54	5.5	2.05	1.52	15.5	3.05	2.50	25.5	4.04	3.48	35.4
0.08	0.00	0.0	1.07	0.56	5.7	2.07	1.54	15.7	3.07	2.52	25.7	4.06	3.49	35.6
0.10	0.00	0.0	1.09	0.58	5.9	2.09	1.56	15.9	3.09	2.54	25.9	4.08	3.51	35.8
0.12	0.00	0.0	1.11	0.60	6.1	2.11	1.58	16.1	3.11	2.56	26.1	4.10	3.53	36.0
0.14	0.00	0.0	1.13	0.62	6.3	2.13	1.60	16.3	3.13	2.57	26.3	4.12	3.55	36.2
0.16	0.00	0.0	1.15	0.64	6.5	2.15	1.62	16.5	3.15	2.59	26.4	4.14	3.57	36.4
0.18	0.00	0.0	1.17	0.66	6.7	2.17	1.64	16.7	3.16	2.61	26.6	4.16	3.59	36.6
0.20	0.00	0.0	1.19	0.68	6.9	2.19	1.66	16.9	3.18	2.63	26.8	4.18	3.61	36.8
0.22	0.00	0.0	1.21	0.70	7.1	2.21	1.67	17.1	3.20	2.65	27.0	4.20	3.63	37.0
0.23	0.00	0.0	1.23	0.72	7.3	2.23	1.69	17.3	3.22	2.67	27.2	4.22	3.65	37.2
0.25	0.00	0.0	1.25	0.74	7.5	2.25	1.71	17.5	3.24	2.69	27.4	4.24	3.67	37.4
0.27	0.00	0.0	1.27	0.76	7.7	2.27	1.73	17.7	3.26	2.71	27.6	4.26	3.69	37.6
0.29	0.00	0.0	1.29	0.77	7.9	2.29	1.75	17.9	3.28	2.73	27.8	4.28	3.70	37.8
0.31	0.00	0.0	1.31	0.79	8.1	2.31	1.77	18.0	3.30	2.75	28.0	4.30	3.72	38.0
0.33	0.00	0.0	1.33	0.81	8.3	2.32	1.79	18.2	3.32	2.77	28.2	4.32	3.74	38.2
0.35	0.00	0.0	1.35	0.83	8.5	2.34	1.81	18.4	3.34	2.79	28.4	4.34	3.76	38.4
0.37	0.00	0.0	1.37	0.85	8.7	2.36	1.83	18.6	3.36	2.80	28.6	4.36	3.78	38.6
0.39	0.00	0.0	1.39	0.87	8.9	2.38	1.85	18.8	3.38	2.82	28.8	4.38	3.80	38.8
0.41	0.00	0.0	1.41	0.89	9.1	2.40	1.87	19.0	3.40	2.84	29.0	4.40	3.82	38.9
0.43	0.00	0.0	1.43	0.91	9.3	2.42	1.89	19.2	3.42	2.86	29.2	4.41	3.84	39.1
0.45	0.00	0.0	1.45	0.93	9.5	2.44	1.90	19.4	3.44	2.88	29.4	4.43	3.86	39.3
0.47	0.00	0.0	1.47	0.95	9.6	2.46	1.92	19.6	3.46	2.90	29.6	4.45	3.88	39.5
0.49	0.00	0.0	1.48	0.97	9.8	2.48	1.94	19.8	3.48	2.92	29.8	4.47	3.90	39.7
0.51	0.01	0.1	1.50	0.99	10.0	2.50	1.96	20.0	3.50	2.94	30.0	4.49	3.92	39.9
0.53	0.03	0.3	1.52	1.00	10.2	2.52	1.98	20.2	3.52	2.96	30.2	4.51	3.93	40.1
0.55	0.05	0.5	1.54	1.02	10.4	2.54	2.00	20.4	3.54	2.98	30.4	4.53	3.95	40.3
0.57	0.07	0.7	1.56	1.04	10.6	2.56	2.02	20.6	3.56	3.00	30.5	4.55	3.97	40.5
0.59	0.08	0.9	1.58	1.06	10.8	2.58	2.04	20.8	3.57	3.02	30.7	4.57	3.99	40.7
0.61	0.10	1.1	1.60	1.08	11.0	2.60	2.06	21.0	3.59	3.03	30.9	4.59	4.01	40.9
0.63	0.12	1.3	1.62	1.10	11.2	2.62	2.08	21.2	3.61	3.05	31.1	4.61	4.03	41.1
0.65	0.14	1.4	1.64	1.12	11.4	2.64	2.10	21.4	3.63	3.07	31.3	4.63	4.05	41.3
0.66	0.16	1.6	1.66	1.14	11.6	2.66	2.12	21.6	3.65	3.09	31.5	4.65	4.07	41.5
0.68	0.18	1.8	1.68	1.16	11.8	2.68	2.13	21.8	3.67	3.11	31.7	4.67	4.09	41.7
0.70	0.20	2.0	1.70	1.18	12.0	2.70	2.15	22.0	3.69	3.13	31.9	4.69	4.11	41.9
0.72	0.22	2.2	1.72	1.20	12.2	2.72	2.17	22.2	3.71	3.15	32.1	4.71	4.13	42.1
0.74	0.24	2.4	1.74	1.21	12.4	2.73	2.19	22.3	3.73	3.17	32.3	4.73	4.15	42.3
0.76	0.26	2.6	1.76	1.23	12.6	2.75	2.21	22.5	3.75	3.19	32.5	4.75	4.16	42.5
0.78	0.28	2.8	1.78	1.25	12.8	2.77	2.23	22.7	3.77	3.21	32.7	4.77	4.18	42.7
0.80	0.30	3.0	1.80	1.27	13.0	2.79	2.25	22.9	3.79	3.23	32.9	4.79	4.20	42.9
0.82	0.31	3.2	1.82	1.29	13.2	2.81	2.27	23.1	3.81	3.25	33.1	4.81	4.22	43.0
0.84	0.33	3.4	1.84	1.31	13.4	2.83	2.29	23.3	3.83	3.26	33.3	4.82	4.24	43.2
0.86	0.35	3.6	1.86	1.33	13.6	2.85	2.31	23.5	3.85	3.28	33.5	4.84	4.26	43.4
0.88	0.37	3.8	1.88	1.35	13.8	2.87	2.33	23.7	3.89	3.30	33.7	4.86	4.28	43.6
0.90	0.39	4.0	1.90	1.37	13.9	2.89	2.35	23.9	3.89	3.32	33.9	4.88	4.30	43.8
0.92	0.41	4.2	1.91	1.39	14.1	2.91	2.36	24.1	3.91	3.34	34.1	4.90	4.32	44.0
0.94	0.43	4.4	1.93	1.41	14.3	2.93	2.38	24.3	3.93	3.36	34.3	4.92	4.34	44.2
0.96	0.45	4.6	1.95	1.43	14.5	2.95	2.40	24.5	3.95	3.38	34.5	4.94	4.36	44.4
0.98	0.47	4.8	1.97	1.44	14.7	2.97	2.42	24.7	3.97	3.40	34.7	4.96	4.38	44.6
												4.98	4.39	44.8

## Outdoor Unit

### ▼ Ps sensor characteristics

0 to 1.47 MPa (0.5 to 5V output for 0 to 1.47 MPa)

Voltage readings across pins 2 and 3 of CN500 on indoor unit main P.C. board (with negative-side probe of multimeter placed on pin 3)

VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )	VOLT	Pd (MPa)	Pd (kg/cm <sup>2</sup> )
0.00	0.00	0.0	1.00	0.16	1.7	1.99	0.49	5.0	2.99	0.81	8.3	3.98	1.14	11.6
0.02	0.00	0.0	1.02	0.17	1.7	2.01	0.49	5.0	3.01	0.82	8.4	4.00	1.15	11.7
0.04	0.00	0.0	1.04	0.18	1.8	2.03	0.50	5.1	3.03	0.83	8.4	4.02	1.15	11.7
0.06	0.00	0.0	1.06	0.18	1.8	2.05	0.51	5.2	3.05	0.83	8.5	4.04	1.16	11.8
0.08	0.00	0.0	1.07	0.19	1.9	2.07	0.51	5.2	3.07	0.84	8.6	4.06	1.17	11.9
0.10	0.00	0.0	1.09	0.19	2.0	2.09	0.52	5.3	3.09	0.85	8.6	4.08	1.17	11.9
0.12	0.00	0.0	1.11	0.20	2.0	2.11	0.53	5.4	3.11	0.85	8.7	4.10	1.18	12.0
0.14	0.00	0.0	1.13	0.21	2.1	2.13	0.53	5.4	3.13	0.86	8.8	4.12	1.18	12.1
0.16	0.00	0.0	1.15	0.21	2.2	2.15	0.54	5.5	3.15	0.86	8.8	4.14	1.19	12.1
0.18	0.00	0.0	1.17	0.22	2.2	2.17	0.55	5.6	3.16	0.87	8.9	4.16	1.20	12.2
0.20	0.00	0.0	1.19	0.23	2.3	2.19	0.55	5.6	3.18	0.88	8.9	4.18	1.20	12.3
0.22	0.00	0.0	1.21	0.23	2.4	2.21	0.56	5.7	3.20	0.88	9.0	4.20	1.21	12.3
0.23	0.00	0.0	1.23	0.24	2.4	2.23	0.56	5.8	3.22	0.89	9.1	4.22	1.22	12.4
0.25	0.00	0.0	1.25	0.25	2.5	2.25	0.57	5.8	3.24	0.90	9.1	4.24	1.22	12.5
0.27	0.00	0.0	1.27	0.25	2.6	2.27	0.58	5.9	3.26	0.90	9.2	4.26	1.23	12.5
0.29	0.00	0.0	1.29	0.26	2.6	2.29	0.58	6.0	3.28	0.91	9.3	4.28	1.24	12.6
0.31	0.00	0.0	1.31	0.26	2.7	2.31	0.59	6.0	3.30	0.92	9.3	4.30	1.24	12.7
0.33	0.00	0.0	1.33	0.27	2.8	2.32	0.60	6.1	3.32	0.92	9.4	4.32	1.25	12.7
0.35	0.00	0.0	1.35	0.28	2.8	2.34	0.60	6.1	3.34	0.93	9.5	4.34	1.25	12.8
0.37	0.00	0.0	1.37	0.28	2.9	2.36	0.61	6.2	3.36	0.94	9.5	4.36	1.26	12.9
0.39	0.00	0.0	1.39	0.29	3.0	2.38	0.62	6.3	3.38	0.94	9.6	4.38	1.27	12.9
0.41	0.00	0.0	1.41	0.30	3.0	2.40	0.62	6.3	3.40	0.95	9.7	4.40	1.27	13.0
0.43	0.00	0.0	1.43	0.30	3.1	2.42	0.63	6.4	3.42	0.95	9.7	4.41	1.28	13.0
0.45	0.00	0.0	1.45	0.31	3.2	2.44	0.64	6.5	3.44	0.96	9.8	4.43	1.29	13.1
0.47	0.00	0.0	1.47	0.32	3.2	2.46	0.64	6.5	3.46	0.97	9.9	4.45	1.29	13.2
0.49	0.00	0.0	1.48	0.32	3.3	2.48	0.65	6.6	3.48	0.97	9.9	4.47	1.30	13.2
0.51	0.00	0.0	1.50	0.33	3.3	2.50	0.65	6.7	3.50	0.98	10.0	4.49	1.31	13.3
0.53	0.01	0.1	1.52	0.34	3.4	2.52	0.66	6.7	3.52	0.99	10.1	4.51	1.31	13.4
0.55	0.02	0.2	1.54	0.34	3.5	2.54	0.67	6.8	3.54	0.99	10.1	4.53	1.32	13.4
0.57	0.02	0.2	1.56	0.35	3.5	2.56	0.67	6.9	3.56	1.00	10.2	4.55	1.32	13.5
0.59	0.03	0.3	1.58	0.35	3.6	2.58	0.68	6.9	3.57	1.01	10.2	4.57	1.33	13.6
0.61	0.03	0.4	1.60	0.36	3.7	2.60	0.69	7.0	3.59	1.01	10.3	4.59	1.34	13.6
0.63	0.04	0.4	1.62	0.37	3.7	2.62	0.69	7.1	3.61	1.02	10.4	4.61	1.34	13.7
0.65	0.05	0.5	1.64	0.37	3.8	2.64	0.70	7.1	3.63	1.02	10.4	4.63	1.35	13.8
0.66	0.05	0.5	1.66	0.38	3.9	2.66	0.71	7.2	3.65	1.03	10.5	4.65	1.36	13.8
0.68	0.06	0.6	1.68	0.39	3.9	2.68	0.71	7.3	3.67	1.04	10.6	4.67	1.36	13.9
0.70	0.07	0.7	1.70	0.39	4.0	2.70	0.72	7.3	3.69	1.04	10.6	4.69	1.37	14.0
0.72	0.07	0.7	1.72	0.40	4.1	2.72	0.72	7.4	3.71	1.05	10.7	4.71	1.38	14.0
0.74	0.08	0.8	1.74	0.41	4.1	2.73	0.73	7.4	3.73	1.06	10.8	4.73	1.38	14.1
0.76	0.09	0.9	1.76	0.41	4.2	2.75	0.74	7.5	3.75	1.06	10.8	4.75	1.39	14.2
0.78	0.09	0.9	1.78	0.42	4.3	2.77	0.74	7.6	3.77	1.07	10.9	4.77	1.39	14.2
0.80	0.10	1.0	1.80	0.42	4.3	2.79	0.75	7.6	3.79	1.08	11.0	4.79	1.40	14.3
0.82	0.11	1.1	1.82	0.43	4.4	2.81	0.76	7.7	3.81	1.08	11.0	4.81	1.41	14.3
0.84	0.11	1.1	1.84	0.44	4.5	2.83	0.76	7.8	3.83	1.09	11.1	4.82	1.41	14.4
0.86	0.12	1.2	1.86	0.44	4.5	2.85	0.77	7.8	3.85	1.09	11.2	4.84	1.42	14.5
0.88	1.12	1.3	1.88	0.45	4.6	2.87	0.78	7.9	3.89	1.10	11.2	4.86	1.43	14.5
0.90	0.13	1.3	1.90	0.46	4.6	2.89	0.78	8.0	3.89	1.11	11.3	4.88	1.43	14.6
0.92	0.14	1.4	1.91	0.46	4.7	2.91	0.79	8.0	3.91	1.11	11.4	4.90	1.44	14.7
0.94	0.14	1.5	1.93	0.47	4.8	2.93	0.79	8.1	3.93	1.12	11.4	4.92	1.45	14.7
0.96	0.15	1.5	1.95	0.48	4.8	2.95	0.80	8.2	3.95	1.13	11.5	4.94	1.45	14.8
0.98	0.16	1.6	1.97	0.48	4.9	2.97	0.81	8.2	3.97	1.13	11.5	4.96	1.46	14.9
												4.98	1.47	14.9

# 9. BACKUP OPERATION (EMERGENCY OPERATION)

This product offers backup modes of operation to tide over certain emergency situations. If a fault occurs in one of the compressors, it is possible to operate the system on an emergency basis by operating only the remaining compressor(s), (compressor backup operation).

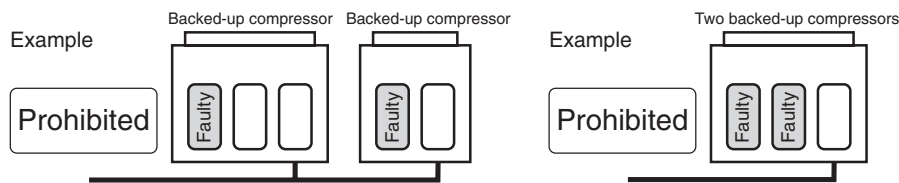
If one of the outdoor units fails in a combined outdoor unit system, the system can be operated on an emergency basis by keeping only the remaining outdoor unit(s), (outdoor unit backup operation). Perform backup operation setting in accordance with the procedure described below.

## 9-1. Note for Backup Operation

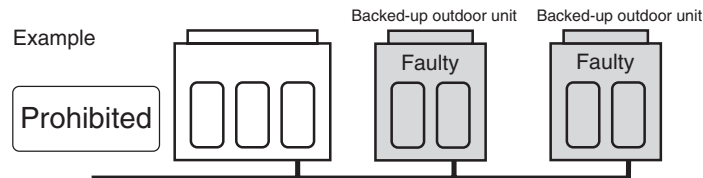
The method of backup operation differs according to the contents of fault as shown in the table below.

Contents of fault	Method of backup operation	Setting procedure
One of the compressors in the same unit fails (see Note 1)	Compressor backup (see Note 1)	Go to 10-2.
All the compressors in the same unit fail	Outdoor unit backup or cooling-season outdoor unit backup (see Notes 2, 3 and 4)	Go to 10-3
A fault occurs in a compressor motor coil (e.g. a layer short-circuit)		
A fault occurs in a refrigerating cycle part, fan or related part, or electrical part		
A fault occurs in a temperature sensor or pressure sensor		

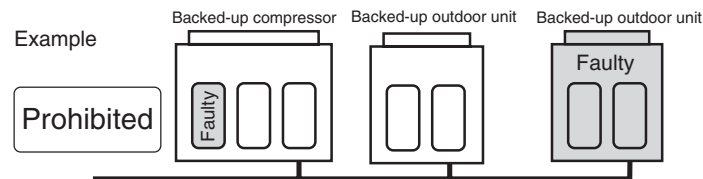
**Note 1:** Keep the number of backed-up outdoor units under compressor backup operation to one in the system (single refrigerant line). For a three-compressor model, the backing up of two faulty compressors is prohibited.



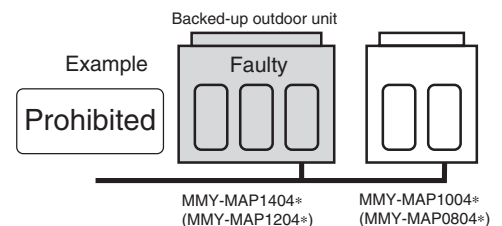
**Note 2:** Keep the number of backed-up outdoor units under outdoor unit backup operation to one in the system (single refrigerant line).



**Note 3:** It is prohibited to combine compressor backup operation and outdoor unit backup operation.



**Note 4:** With a two-outdoor unit system containing an MMYMAP1404\* (or MAP1204\*) and an MMY-MAP1004\* (or MMY-MAP0804\*), do not perform outdoor unit backup operation to back up the MMY-MAP1404\* (or MAP1204\*). It could lead to compressor failure due to the abnormal operation.



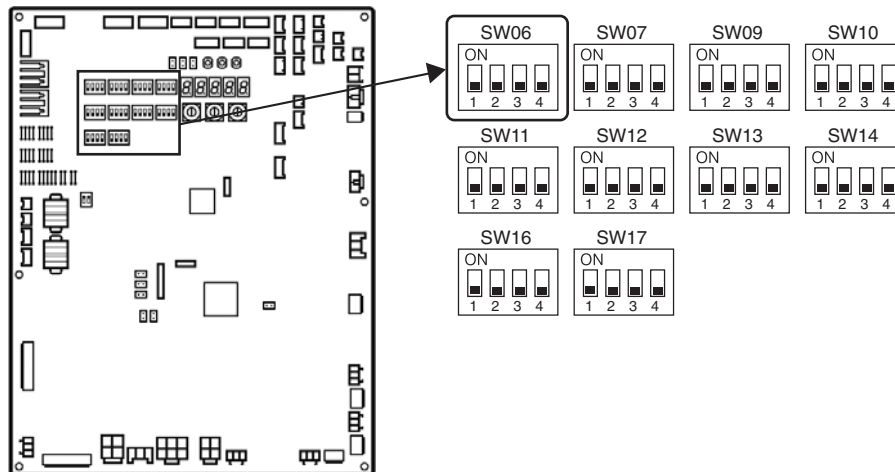
## 9-2. Compressor Backup Operation Setting

### <Outline>

If a fault occurs to one of the compressors installed in outdoor unit, follow the procedure described below to back up the faulty compressor by using the remaining, normal compressor(s).

### <Work Procedure>

- (1) Turn off the power supply to all the outdoor units connected to the system.
- (2) Set the DIP switches of SW06, provided on the interface P.C. board of the outdoor unit with the faulty compressor, as shown in the table below.



Three-compressor model	SW06			
	Bit 1	Bit 2	Bit 3	Bit 4
Factory default setting	OFF	OFF	OFF	OFF
When compressor No. 1 (front left) is faulty	ON	OFF	OFF	OFF
When compressor No. 2 (front center) is faulty	OFF	ON	OFF	OFF
When compressor No. 3 (front right) is faulty	OFF	OFF	ON	OFF

Two-compressor model	SW06			
	Bit 1	Bit 2	Bit 3	Bit 4
Factory default setting	OFF	OFF	OFF	OFF
When compressor No.1 (front left) is faulty	ON	OFF	OFF	OFF
When compressor No.2 (front right) is faulty	OFF	ON	OFF	OFF

- (3) Turn on the power supply to all the units connected to the system.

This is the end of compressor backup operation setting.

### 9-3. Backup Setup for Outdoor Unit

#### Outline

In this model, setup of the backup operation is available in either the header unit or the follower unit in a situation where the outdoor units are defective. In a system in which two or more outdoor units are connected, carry out the backup operation on the outdoor unit if the error modes described below occur.

- Compressor error (Rare short error or when one compressor cannot operate, etc.)
- Pressure sensor (Pd, Ps) / Temperature sensor (TD1, TD2, TD3, TS1, TS2, TE1, TE2, TK1, TK2, TK3, TK4, TK5, TL) error

Note only one outdoor unit within a given system can be subjected to the backup procedure.

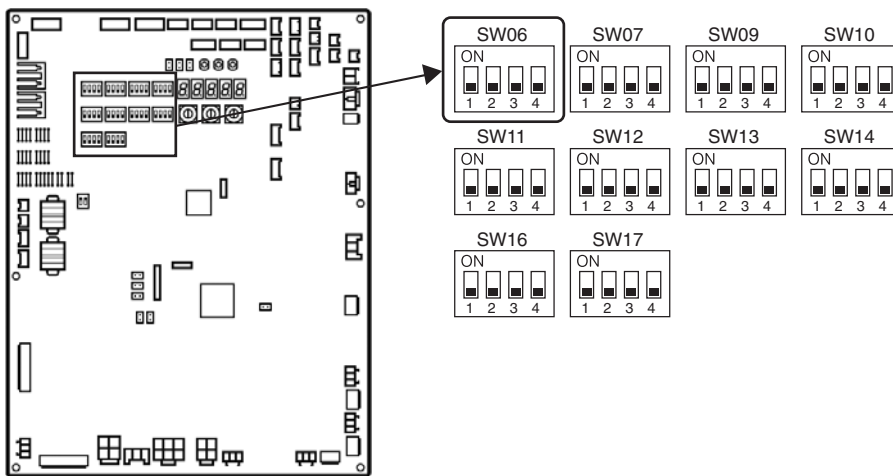
#### Procedure

(1) Turn off the main power supplies to all the units connected to the system.

#### [Set up procedure for the malfunctioning outdoor unit]

(The following work is common to the header unit and follower units in the system.)

(2) Set the DIP switches of SW06, provided on the interface P.C. board of the outdoor unit with the faulty compressor, as shown in the table below.



Three-compressor model	SW06			
	Bit 1	Bit 2	Bit 3	Bit 4
Factory default setting	OFF	OFF	OFF	OFF
Outdoor unit backup	ON	ON	ON	OFF

Two-compressor model	SW06			
	Bit 1	Bit 2	Bit 3	Bit 4
Factory default setting	OFF	OFF	OFF	OFF
Outdoor unit backup	ON	ON	OFF	OFF

(3) When there is leakage of outdoor PMV (does not close) or a trouble, close the liquid valve service valves fully.

(4) Turn on the power supply to all the units connected to the system.

When a trouble due to insufficient insulation, etc. occurred, remove in advance lead wire of the compressor. This is the end of compressor backup operation setting.

# 10. OUTDOOR UNIT REFRIGERANT RECOVERY METHOD

## 10-1. Refrigerant Recovery from Failed Outdoor Unit (Pump-Down)

This product supports refrigerant pump-down, a function which allows refrigerant to be recovered from an outdoor unit in need of repair using a normal outdoor unit in a system featuring multiple outdoor units.

### 10-1-1. Note for refrigerant recovery operation

When performing pump-down operation, take note of the following matters:

- Note 1:** The pump-down refrigerant recovery rate changes with outside temperature and other factors. After pump-down is completed, recover any residual gas using a refrigerant recovery device, etc., and be sure to measure the amount of recovered refrigerant. (The refrigerant recovery rate can be improved by heating the accumulator of the outdoor unit to be repaired during pump-down operation.)
- Note 2:** If pump-down has been performed, the system cannot be operated until the faulty outdoor unit is repaired.  
(Continued operation would be impossible due to a refrigerant overcharge.)
- Note 3:** If outdoor PMVs 1 and 2 both happen to be faulty (unable to open) or PMV 4 fails while fully closed, the refrigerant in the heat exchangers (or sub-heat exchangers) cannot be recovered. In that case, recover any residual gas in the heat exchangers (or sub-heat exchangers) using a tube piercing valve or some other tool. After a pump-down operation, do not perform any welding until the residual gas in the heat exchangers is recovered.

### 10-1-2. Refrigerant recovery procedure A (Case of no outdoor unit backup operation setting)

#### <Work procedure>

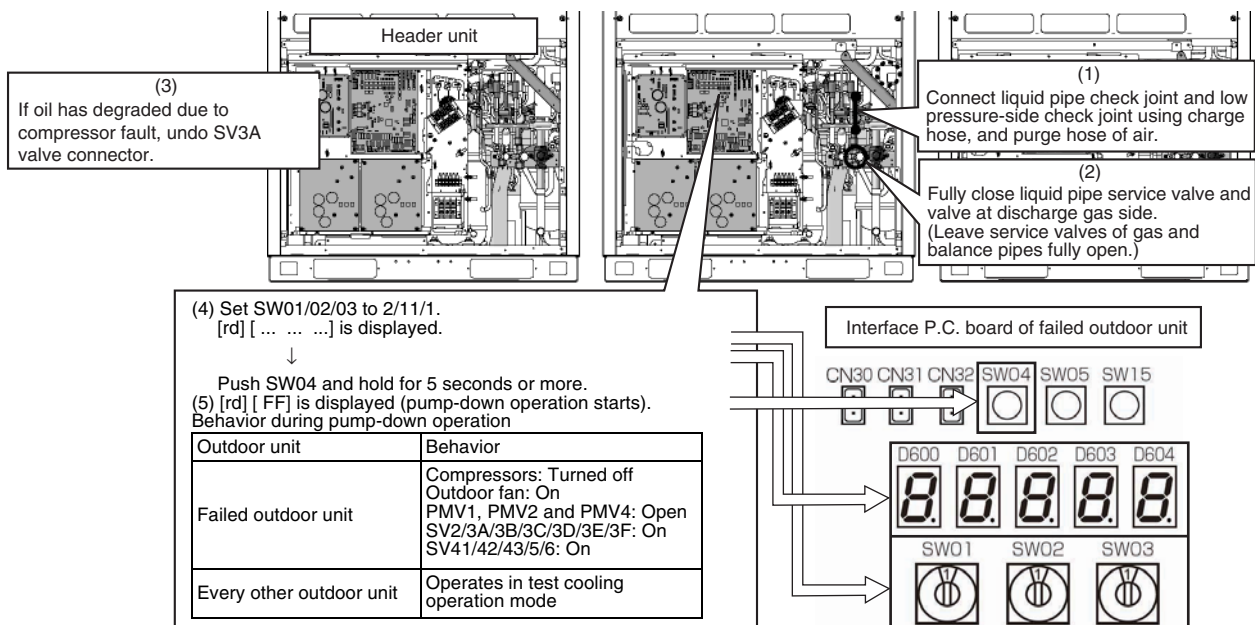
Turn on the power supply to the system at the source, but leave the system switched off.

If the fault involves poor insulation of a compressor motor, remove the motor leads before the power is turned on.

#### [Setup of failed outdoor unit]

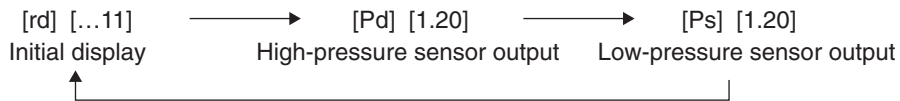
- (1) Connect the check joint of liquid pipe and the low pressure-side check joint using a charge hose, and purge the hose of air (to recover refrigerant from the liquid tank and heat exchangers).
- (2) Fully close the liquid pipe service valve and service valve at discharge gas side of the failed outdoor unit. (Leave the service valves of the suction gas and balance pipes fully open.)
- (3) If the oil is likely to have degraded due to a compressor fault, disconnect the SV3A valve connector of the failed outdoor unit (to prevent the degraded oil from flowing into other outdoor units).
- (4) Set SW01/02/03 on the interface P.C. board of the failed outdoor unit to 2/11/1. After [rd] [... ..] is displayed on the 7-segment display, push SW04 and hold for 5 seconds or more.
- (5) [rd] [... FF] will be displayed on the 7-segment display, and pump-down operation will start.

\* To put the operation on hold midway, turn off the power supply to all the outdoor units, or push SW05 on the interface P.C. board.



- (6) Approx. 10 minutes after the system starts up, fully close the gas pipe service valve of the failed outdoor unit.
- (7) Push SW04 of the failed outdoor unit to have pressure data (MPa) displayed.  
(The display switches each time SW04 is pushed.)

**Display Example**



**[Selection of outdoor unit for pressure adjustment]**

- (8) Of all outdoor units operating in the pump-down mode, select the one with the lowest unit No. as an outdoor unit for pressure adjustment.

Identifying Unit No.

The unit No. is the number displayed on the 7-segment display when SW01/02/03 are set to 1/1/1.  
([U#] [– – –]: # represents the unit No.)

**[Setup of outdoor units other than unit for pressure adjustment and failed unit]**

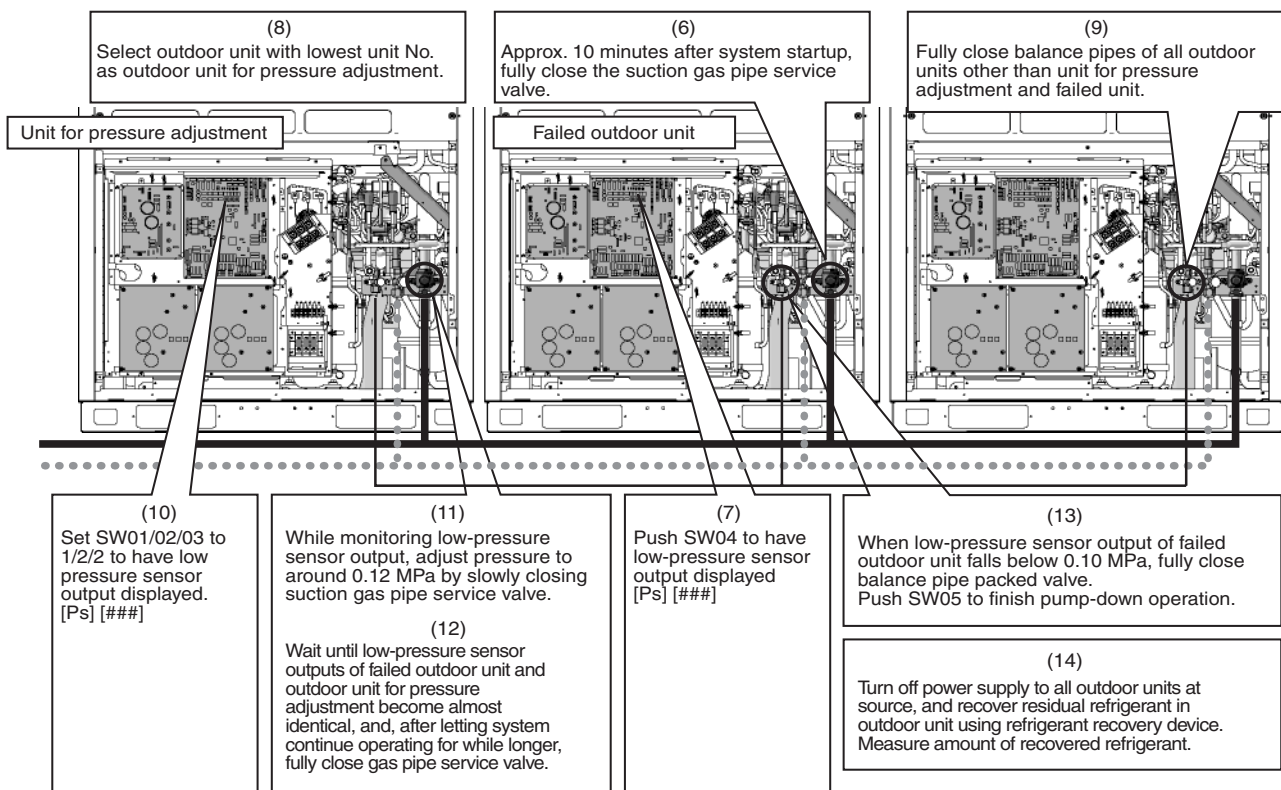
- (9) Leaving the balance pipes of the unit for pressure adjustment and the failed unit fully open, fully close the balance pipe service valves of all other outdoor units.

**[Setup of outdoor unit for pressure adjustment]**

- (10) Set SW01/02/03 on the interface P.C. board of the outdoor unit for pressure adjustment to 1/2/2.
- (11) As the low-pressure sensor output is displayed on the 7-segment display, adjust the pressure to around 0.12 MPa by slowly closing the gas pipe service valve, with checking pressure data.
- (12) Compare the low-pressure sensor outputs of the failed unit with that of the unit for pressure adjustment, and wait until the two pressure readings become almost the same. After letting the system continue operating for a while longer, fully close the gas pipe service valve of the unit for pressure adjustment.

**[Setup of failed outdoor unit]**

- (13) When the low-pressure sensor output of the failed outdoor unit falls below 0.10MPa, fully close the balance pipe packed valve, and push SW05 on the interface P.C. board to finish the pump-down operation.
- (14) Turn off the power supply to all the outdoor units, and recover the residual refrigerant in the outdoor unit using a refrigerant recovery device. Be sure to measure the amount of recovered refrigerant. (This is necessary to determine how much additional refrigerant will be needed after the completion of the repair.)



This is the end of the refrigerant recovery operation.

Set SW01/02/03 of the failed outdoor unit and the outdoor unit for pressure adjustment back to 1/1/1.

### [Setup of the power cannot be turned on the failed outdoor unit]

If the power cannot be turned on the failed outdoor unit, the solenoid valves and PMVs of the unit cannot be turned on, so that it reduces the amount of recovered refrigerant compared to a standard pump-down operation. Recover the residual gas in the unit using a refrigerant recovery device, and be sure to measure the amount of recovered refrigerant.

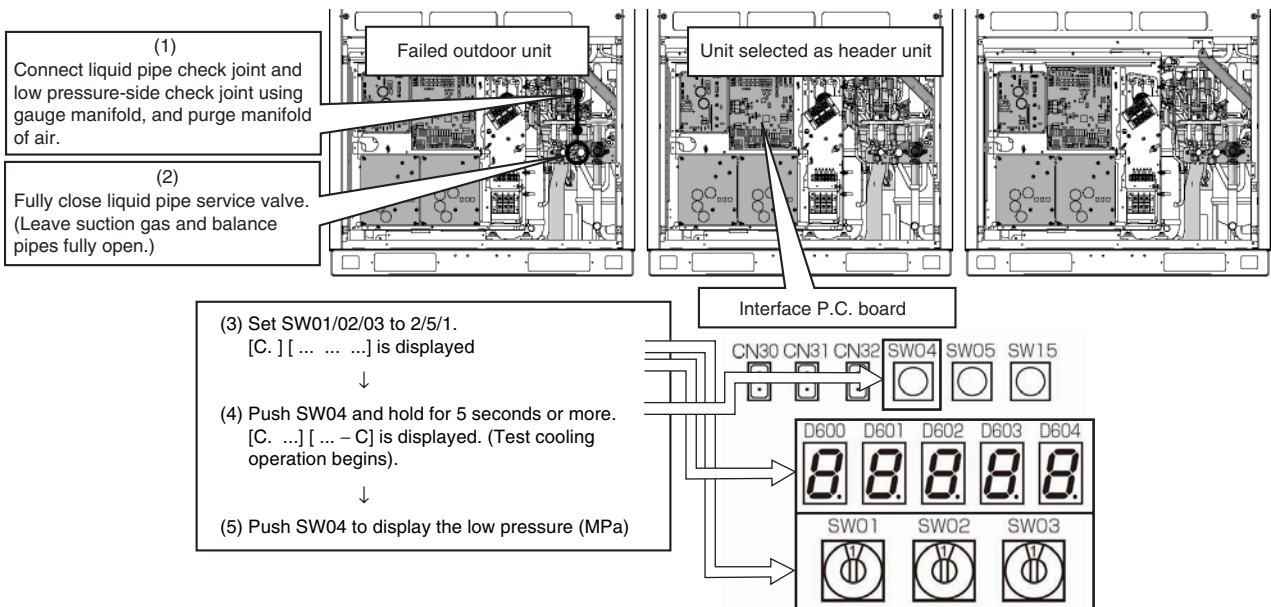
### <Work procedure>

#### [Setup of failed outdoor unit]

- (1) Connect the liquid pipe check joint and the low pressure-side check joint using a gauge manifold, and purge the manifold of air (to recover refrigerant from the liquid tank and heat exchangers).
- (2) Fully close the liquid pipe packed valve and service valve at discharge gas side of the failed outdoor unit. (Leave the service valve of the suction gas pipe and the packed valve of the balance pipe fully open.)

#### [Setup of unit selected as header unit (hereafter “header outdoor unit”)]

- (3) Set SW01/02/03 on the interface P.C. board of the header outdoor unit to 2/5/1. After [C.] [... ..] is displayed on the 7-segment display, push SW04 and hold for 5 seconds or more.
- (4) After [C. ...] [... – C] is displayed on the 7-segment display, the system starts operating in the test cooling operation mode.
- (5) Set SW01/02/03 on the interface P.C. board of the header outdoor unit to 1/2/2 to have the low-pressure sensor output (MPa) displayed on the 7-segment display.



- (6) Approx. 10 minutes after the system starts up, fully close the suction gas pipe service valve of the failed outdoor unit.

#### [Setup of outdoor unit for pressure adjustment]

- (7) Select the header unit as the unit for pressure adjustment.

#### [Setup of outdoor units other than header unit and failed unit]

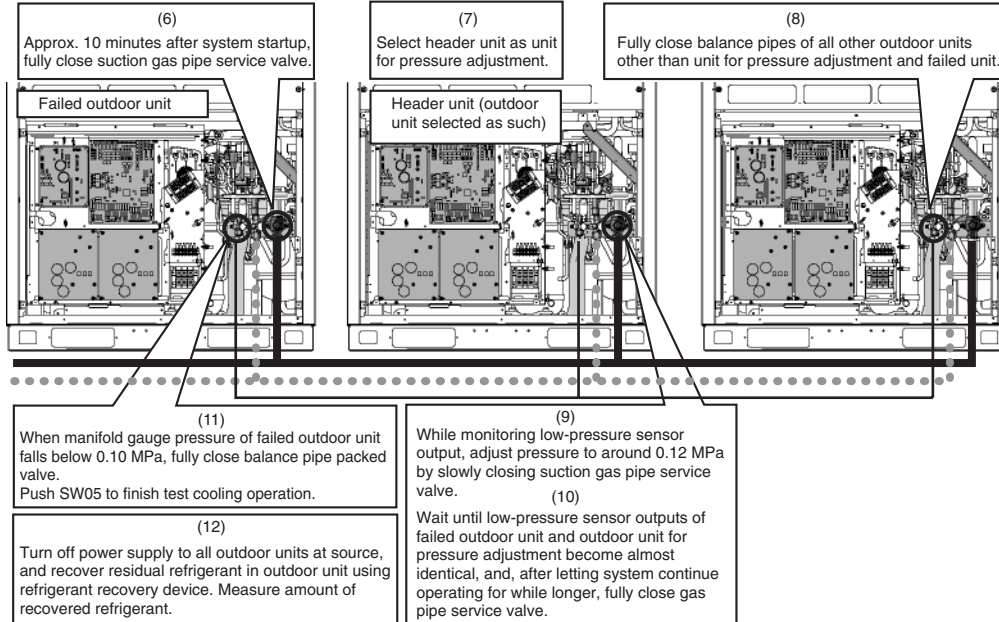
- (8) Leaving the balance pipes of the unit for pressure adjustment and the failed unit fully open, fully close the balance pipe packed valves of all other outdoor units.

#### [Setup of header unit]

- (9) While monitoring the low-pressure sensor output, adjust the pressure to around 0.12 MPa by slowly closing the suction gas pipe service valve.
- (10) Compare the manifold gauge pressure of the failed unit with the low-pressure sensor output of the header unit, and wait until the two pressure readings become almost identical. After letting the system continue operating for a while longer, fully close the suction gas pipe service valve of the unit for pressure adjustment.

**[Setup of failed outdoor unit]**

- (11) When the manifold gauge pressure of the failed outdoor unit falls below 0.10 MPa, fully close the balance pipe packed valve, and push SW05 on the interface P.C. board to finish the test cooling operation.
- (12) Turn off the power supply to all the outdoor units, and recover the residual refrigerant in the outdoor unit using a refrigerant recovery device. Be sure to measure the amount of recovered refrigerant. (This is necessary to determine how much additional refrigerant will be needed after the completion of the repair.)



This is the end of the refrigerant recovery operation.  
Set SW01/02/03 of the header unit back to 1/1/1.

## 10-2. How to Operate System While Failed Outdoor Unit Being Repaired

### <Outline>

After refrigerant is recovered from the failed outdoor unit through a pump-down operation, the overall amount of refrigerant held by the system becomes excessive, and this makes it impossible to operate the remaining outdoor units even though they are not faulty. However, operation is still possible if the system-wide amount of refrigerant is adjusted in accordance with the procedure described below.

### <Work procedure>

- (1) Follow the steps specified in “10-1. Refrigerant Recovery from Failed Outdoor Unit (Pump-Down)”.
- (2) Adjust the amount of refrigerant held by the system by removing some of it using a refrigerant recovery device, etc.  
Determine the amount of refrigerant to be removed according to the capacity of the failed outdoor unit. (See the table below.)

**Example:** If a 10HP outdoor unit is under repair in a 30HP system:

Amount of refrigerant required by system as it was initially (30HP in capacity) = 35.5kg

Amount of refrigerant required by system with available outdoor units only (20HP in capacity) = 25.5kg

Amount of refrigerant to be removed from system = 35.5 – 25.5 = 10kg

- (3) Set up the outdoor unit from which refrigerant has been recovered in the manner described in “9-3. Outdoor Unit Backup Operation Setting”.  
This completes the procedure.

System capacity (HP)	Outdoor unit combination			Amount of refrigerant (kg)
8	8			13.0
10	10			14.0
12	12			19.0
14	14			21.0
16	8	8		22.0
18	10	8		23.5
20	10	10		25.5
22	12	10		29.5
24	14	10		30.5
26	14	12		33.0
28	14	14		34.0
30	10	10	10	35.5
32	12	10	10	38.0
34	14	10	10	39.0
36	12	12	12	41.0
38	14	12	12	42.5
40	14	14	12	44.0
42	14	14	14	45.5

### 10-3. Work procedure after Repair

When vacuuming in the repaired outdoor unit, follow the procedure described below.

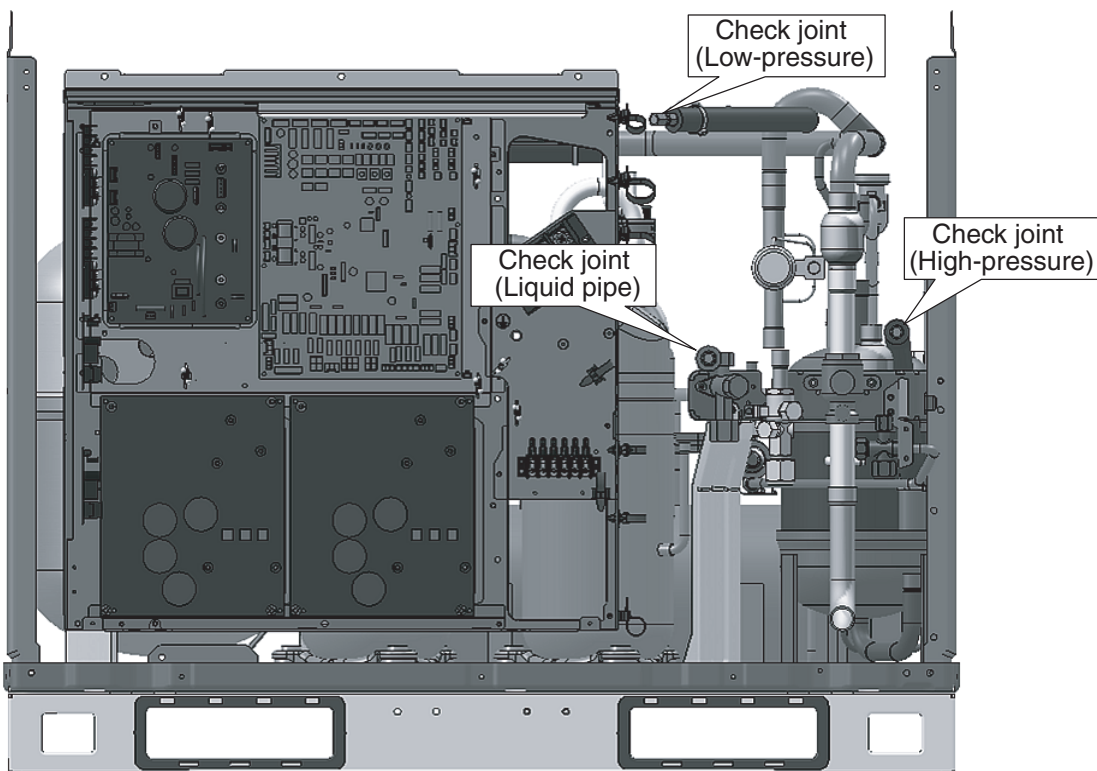
#### <Work procedure>

(1) Fully open PMV1 and 2 and PMV4 in accordance with the table below.

**Note:** PMV full-opening operation via short-circuiting of the CN30 pins is automatically undone after 2 minutes, causing the valves to fully close. To maintain fully open state, turn off the power switch of the outdoor unit within 2 minutes of the short-circuiting of the CN30 pins.

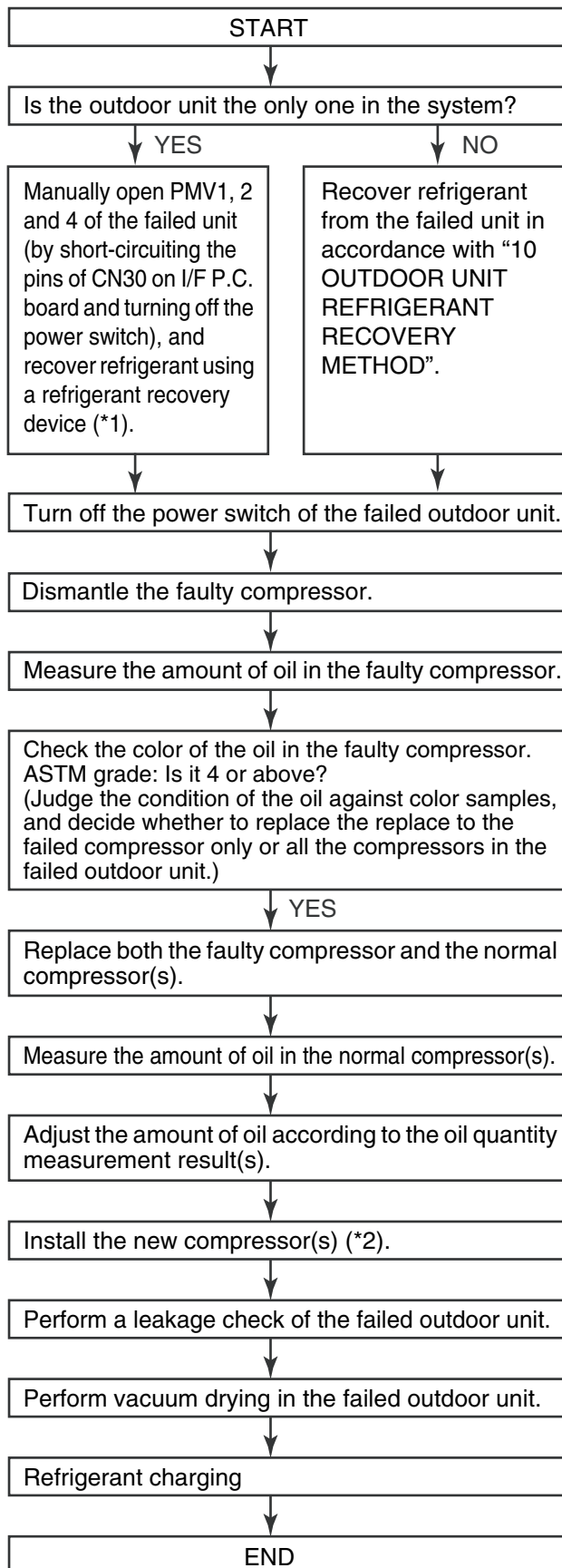
SW12				CN30	PMV operation
Bit 1	Bit 2	Bit 3	Bit 4		
OFF	OFF	OFF	OFF	Short-circuit	PMV1 and 2 fully open for 2 minutes.
OFF	ON	OFF	OFF	Short-circuit	PMV4 fully opens for 2 minutes.

(2) Be sure to perform vacuuming in from the three check joints shown in the diagram below (liquid pipe, discharge pipe and suction pipe).



# 11. REPLACING COMPRESSORS

## 11-1. Compressor Replacement Procedure (Outline)



### ⚠ WARNING

In situations such as indoor unit relocation and repairs, it is not possible to recover all the refrigerant held by the system in the outdoor units. It could cause a serious accident, such as blow out or injury. Be sure to perform refrigerant recovery using a refrigerant recovery device.

### ⚠ WARNING

When detaching a pipe by heating with a burner a welded joint, take care as any oil left in the piping may burn in a momentary flash of fire when the weld filler metal melts.

\*1 The full-opening of PMV1, 2 and 4 via short-circuiting of the CN30 pins is automatically undone after 2 minutes, causing the valves to fully close. To maintain fully open state, turn off the power switch of the outdoor unit within 2 minutes.

\*2 The SHRM-i (4 series) and the SHRM (2 series) use different types of compressors. Be sure to check the service part code.

This flowchart only shows the standard compressor

Replace the faulty compressor only.

replacement procedure. Since the situation can differ site by site, perform the task in accordance with the following judgment criteria:

- (1) New compressors are charged with 1900cc of oil per unit.
- (2) The amount of oil held by an outdoor unit is as shown below.
- (3) When a compressor is dismantled, it usually

	MAP0804*, 1004*	MAP1204*, 1404*
Amount of oil	4300cc	6700cc

contains 800-1400cc oil.

The amount of oil held by an oil separator is usually 0-1000cc for MAP0804\*, MAP1004\* and 0-1500cc for MAP1204\* and MAP1404\*.

## 11-2. Replacement of Compressors

### <Checking color of oil in faulty compressor>

- Lay the faulty compressor down, draw a small amount of oil via the oil equalization pipe, and check its color against color samples.
- Determine the number of compressors to be replaced according to the color checking result.  
ASTM grade: Below 4 → Replace the faulty compressor only.  
ASTM grade: 4 or above → Replace both the faulty compressor and the normal compressor(s).

### **WARNING**

---

When detaching a pipe by heating with a burner a welded joint, take care as any oil left in the piping may burn in a momentary flash of fire when the weld filler metal melts.

---

### [When replacing faulty compressor only]

#### <Adjusting amount of oil in new compressor> (1900cc at shipment)

- Perform the adjustment on the basis of how much oil the faulty compressor contained, A [cc], by following the steps below.

#### **1** Amount of oil in faulty compressor A [cc]: $0 \leq A < 1000$

(1) Adjust the amount of oil in the new compressor to 1000cc.

(Lay the new compressor down and draw 900 [cc] of oil via the oil-equalization pipe.)

#### **Notes:**

- Do not draw more than 900 [cc] of oil as it may cause damage to the compressor.

• If the faulty compressor contained 500cc or less, there may have been a problem with the oil equalization circuit, etc. Perform checks in accordance with “11-3. Check Procedure to Search Cause of Compressor Oil Shortage”.
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

#### **2** Amount of oil in faulty compressor A [cc]: $1000 \leq A < 1900$

(1) Adjust the amount of oil in the new compressor to A cc.

(Lay the new compressor down and draw (1900 - A) [cc] of oil via the oil equalization pipe.)

#### **3** Amount of oil in faulty compressor A [cc]: $1900 \leq A$

(1) Adjust the amount of oil in the new compressor to A cc.

(Insert a hose into the discharge pipe or oil equalization pipe of the new compressor and inject (A-1900) [cc] of oil using a funnel, etc.)

**[When replacing normal as well as faulty compressor] - applicable to MMY-MAP0804\* and 1004\***

**<Dismantling normal compressor>**

- Dismantle the normal compressor in the same way as the faulty compressor.

**Note:**

- Be sure to insulate the removed compressor leads using insulation tape, etc.

 **WARNING**

---

**When detaching a pipe by heating with a burner a welded joint, take care as any oil left in the piping may burn in a momentary flash of fire when the weld filler metal melts.**

---

**<Measuring amount of oil in normal compressor>**

- As was the case with the faulty compressor, measure the amount of oil contained by placing the compressor on a scale.

Amount of oil in normal compressor:  $B \text{ [cc]} = (\text{Weight of compressor as it was dismantled (kg)} - 22.7) \times 1042$   
(Specific volume of oil: 1042 [cc/kg])

**Note:**

- When a compressor is empty, it weighs 22.7kg.

**<Adjusting amount of oil in new compressors>**

- Perform the adjustment on the basis of how much oil the faulty compressor contained, A [cc], and how much oil the normal compressor contained, B [cc], by following the steps below.

**1 Combined amount of oil in faulty and normal compressors  $A+B$  [cc]:  $0 \leq A+B < 2000$**

(1) Adjust the amount of oil in the two new compressors to 1000cc each (total 2000cc).

- Lay the compressors down and draw 900 [cc] of oil from each of them via their oil equalization pipes.

**Notes:**

- Do not draw more than 900 [cc] of oil from a compressor as it may cause damage.

• If the faulty compressor contained 500cc or less, there may have been a problem with the oil equalization circuit, etc. Perform checks in accordance with "11-3. Check Procedure to Search Cause of Compressor Oil Shortage".

**2 Combined amount of oil in faulty and normal compressors  $A+B$  [cc]:  $2000 \leq A+B < 3800$**

(1) Adjust the amount of oil in the two new compressors to  $(A+B)/2$  cc each.

- Lay the compressors down and draw  $[3800-(A+B)]/2$  [cc] of oil from each of them via their oil equalization pipes.

**3 Combined amount of oil in faulty and normal compressors  $A+B$  [cc]:  $3800 \leq A+B$**

(1) Adjust the amount of oil in the two new compressors to  $(A+B)/2$  cc each.

(Insert a hose into the discharge pipe or oil equalization pipe of each compressor and inject  $(A+B)/2-1900$  [cc] of oil using a funnel, etc.)

## [When replacing normal as well as faulty compressors] - applicable to MMY-MAP1204\* and 1404\*

### <Dismantling normal compressors>

- Dismantle the normal compressors in the same way as the faulty compressor.

#### Note:

- Be sure to insulate the removed compressor leads using insulation tape, etc.

### WARNING

---

When detaching a pipe by heating with a burner a welded joint, take care as any oil left in the piping may burn in a momentary flash of fire when the weld filler metal melts.

---

### <Measuring amounts of oil in normal compressors>

- As was the case with the faulty compressor, measure the amount of oil contained by placing each compressor on a scale.

Amount of oil in normal compressor: B, C [cc] = (Weight of compressor as it was dismantled (kg) - 22.7) × 1042  
(Specific volume of oil: 1042 [cc/kg])

#### Note:

- When a compressor is empty, it weighs 22.7kg.

### <Adjusting amount of oil in new compressors>

- Perform the adjustment on the basis of how much oil the faulty compressor contained, A [cc], and how much oil the normal compressors contained, B and C [cc], by following the steps below.

## 1 Combined amount of oil in faulty compressor and two normal compressors

**A+B+C [cc]:  $0 \leq A+B+C < 3000$**

(1) Adjust the amount of oil in the three new compressors to 1000cc each (total 3000cc).

- Lay the compressors down and draw 900 [cc] of oil from each of them via their oil equalization pipes.

#### Notes:

- Do not draw more than 900 [cc] of oil from a compressor as it may cause damage.

• If the faulty compressor contained 500cc or less, there may have been a problem with the oil equalization circuit, etc. Perform checks in accordance with "11-3. Check Procedure to Search Cause of Compressor Oil Shortage".

## 2 Combined amount of oil in faulty compressor and two normal compressors

**A+B+C [cc]:  $3000 \leq A+B+C < 5700$**

(1) Adjust the amount of oil in the three new compressors to  $(A+B+C)/3$  cc each.

- Lay the compressors down and draw  $[5700-(A+B+C)]/3$  [cc] of oil from each of them via their oil equalization pipes.

## 3 Combined amount of oil in faulty compressor and two normal compressors

**A+B+C [cc]:  $5700 \leq A+B+C$**

(1) Adjust the amount of oil in the three new compressors to  $(A+B+C)/3$  cc each.

(Insert a hose into the discharge pipe or oil equalization pipe of each compressor and inject  $(A+B+C)/3-1900$  [cc] of oil using a funnel, etc.)

### <Installing compressor>

- Install a compressor by following the dismantling procedure in reverse.

### WARNING

---

The dismantling process may have loosened compressor leads and faston connectors. Prior to installation, therefore, tighten them a little with a pair of pliers, and verify that they are tight after reconnection.

---

#### Notes:

- Although a compressor is provided with only two hexagonal bolts, it is standard.
- The tightening torque of the hexagonal bolts, used to mount the compressor, is 200kg/cm.
- If oil has been drawn from the accumulator, repair the cut pipe through pinching and brazing.

### <Vacuum-pumping>

(Single outdoor unit system)

- Before performing vacuum-pumping, fully open PMV1, 2 and 4. If they are closed, the heat exchangers of the outdoor unit cannot be vacuum-pumped.
- Connect a vacuum pump consecutively to the check joints placed in the liquid and discharge pipes and on the high-pressure side of the suction pipe, and turn it on.
- Operate the vacuum drying until the vacuum gauge indicates 1 mmHg.

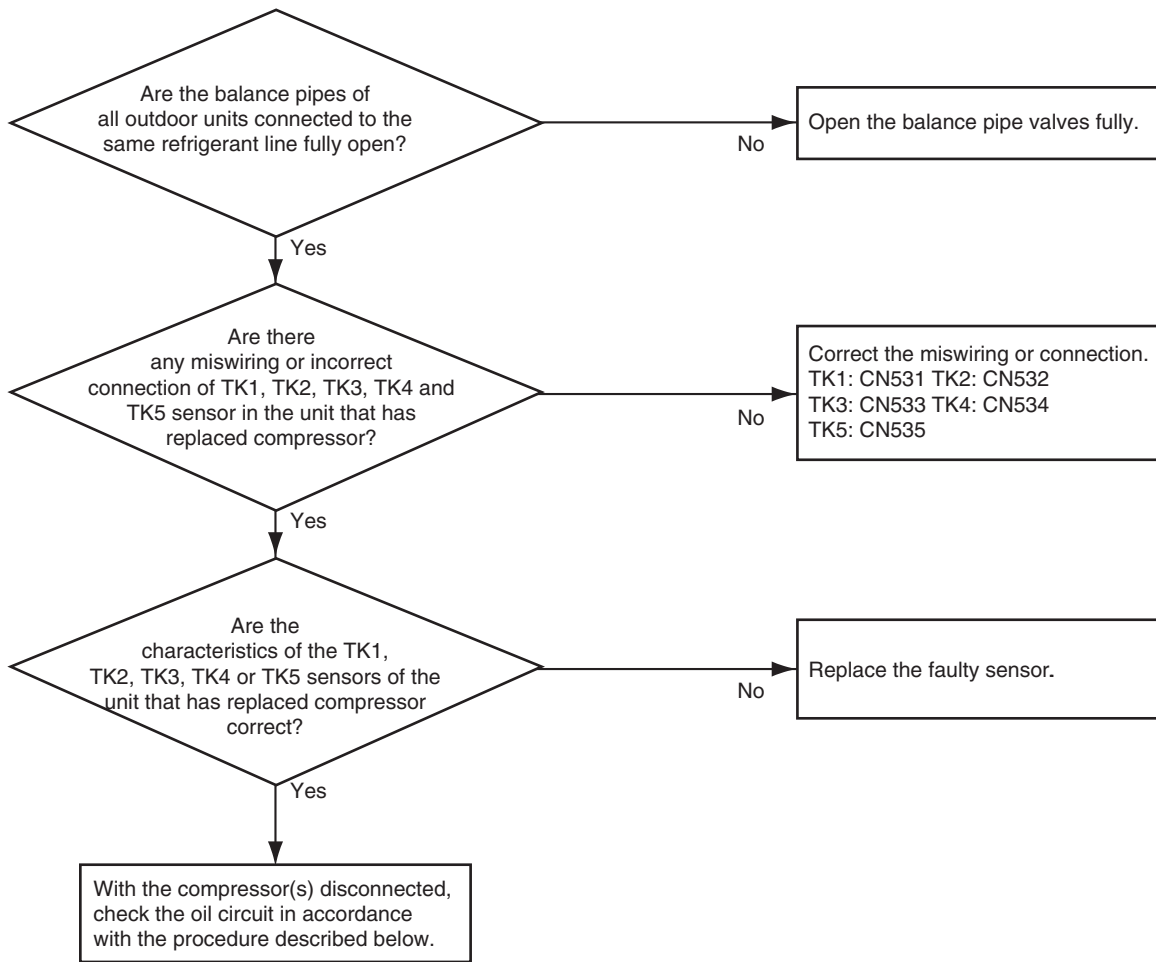
### <Method to fully open PMV manually>

- (1) Turn on the power switch of the outdoor unit.
- (2) With the Bits 1 and 2 of SW12 set to off, short-circuit the pins of CN30.
- (3) Disconnect the connectors of PMV1 and 2 from the I/F P.C. board.
- (4) With the Bits 1 and 2 of SW12 set to off and on, respectively, short-circuit the pins of CN30.
- (5) Disconnect the connector of PMV4 from the I/F P.C. board
- (6) Turn off the power switch of the outdoor unit.

### <Refrigerant charging>

- Inject the same amount of refrigerant as the recovered residual refrigerant via the charging port of the liquid-side service valve.

### 11-3. Check Procedure to Search Cause of Compressor Oil Shortage

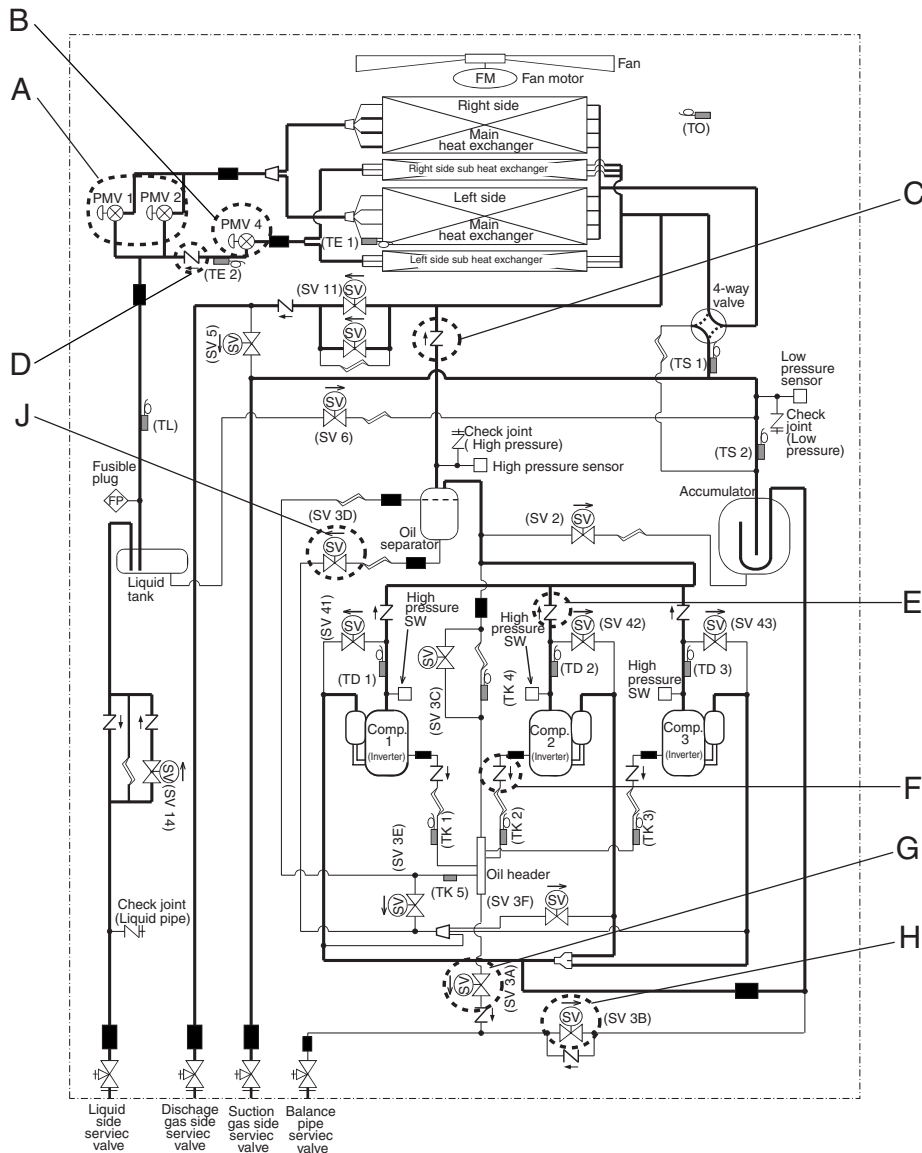


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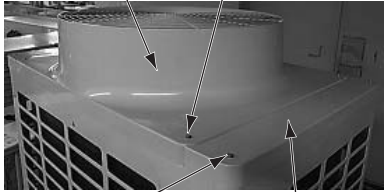



<MMY-MAP0804\*, MAP1004\*, MAP1204\* and MAP1404\*>

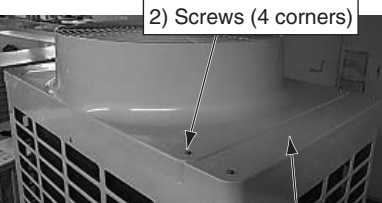




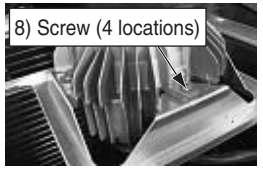
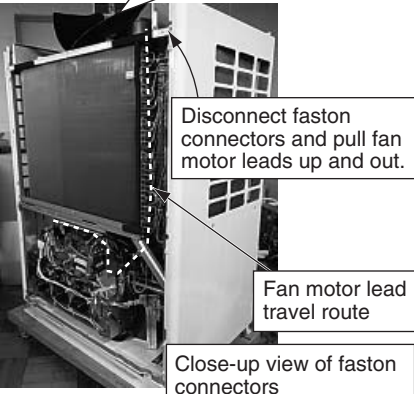
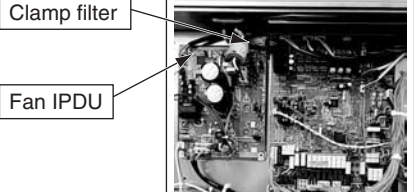
Check items and procedures to follow when checking oil circuit with compressor(s) disconnected

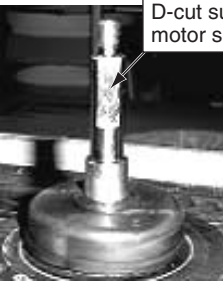
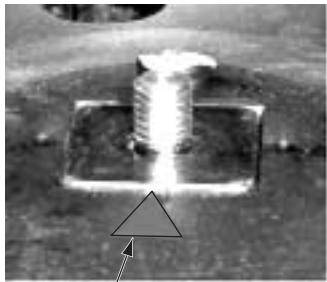
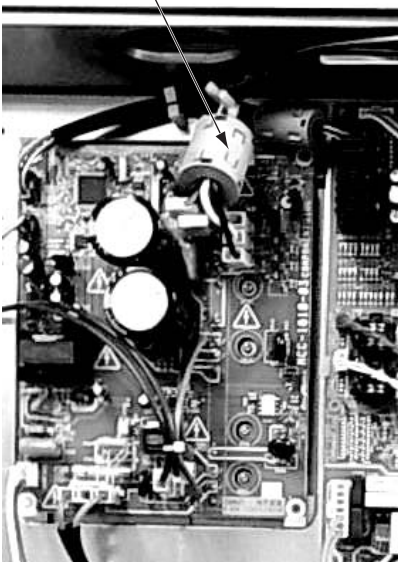
Check item	Location	Procedure
Leakage of outdoor PMV Leakage of check valve in discharge pipe convergent section	A, B C, D	1) Pressure nitrogen from check joint of the liquid pipe under condition that PMV1, 2 and 4 are fully closed, confirm the pressure using high-pressure check joint. If pressure of the high-pressure check joint rises, leakage from any of PMV1, 2, 4 (A, B), check valve (D) and discharge check valve (C) is considered. Therefore replace all PMV1, 2, 4 (A, B), check valve (D), discharge check valve (C). 2) If pressure did not rise, open PMV1, 2 fully and then confirm pressure of the high-pressure check joint. When pressure was up, open fully PMV4 only and confirm pressure of the high-pressure check joint again. 3) When pressure was up, there is leakage from check valve (D) and discharge check valve (C). Therefore replace them. If pressure did not rise, there is leakage from discharge check valve. Therefore replace them.
Leakage of check valve in discharge pipe	E	4) With pressure applied to the check joint of with nitrogen, if gas escapes from the discharge pipe section of the disconnected compressor, there is a leak from the check valve of discharge pipe (E). Replace the part.
Leakage of check valve in oil equalization circuit	F	5) With pressure applied to the check joint of with nitrogen, if gas escapes from the oil equalization pipe section of the disconnected compressor, there is a leak from the oil equalization pipe check valve (F). Replace the part.
Leakage of SV3A valve	G	6) With pressure applied to the check joint of with nitrogen, manually open the SV3B valve. If gas escapes from the suction pipe section of the disconnected compressor, there is a leak from the SV3A valve. Replace the part.
Leakage of SV3B valve	H	7) Then manually open the SV3A valve. If gas escapes from the suction pipe section of the disconnected compressor, there is a leak from the SV3B valve. Replace the part.
Clogging of SV3E valve Clogging of oil-return distributor	I	8) With pressure applied to the check joint of with nitrogen, manually open the SV3E valve. If gas does not escape from the suction pipe section of the disconnected compressor, the SV3E valve or oil-return distributor is clogged. Replace the part.
Clogging of SV3D valve Clogging of oil-return capillary Clogging of oil-return distributor	J	9) With pressure applied to the check joint of with nitrogen, manually open the SV3D valve. If gas does not escape from the suction pipe section of the disconnected compressor, the SV3D valve, oil-return capillary or oil-return distributor is clogged. Replace the part.



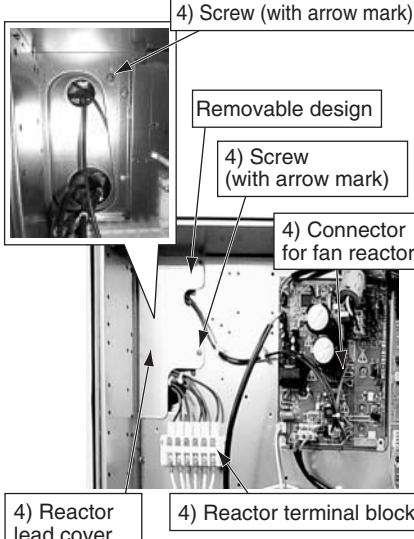
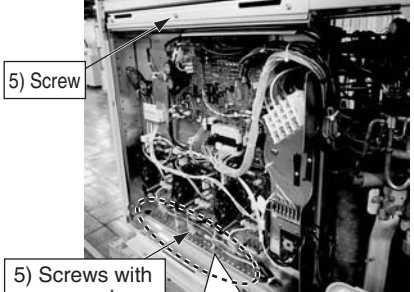
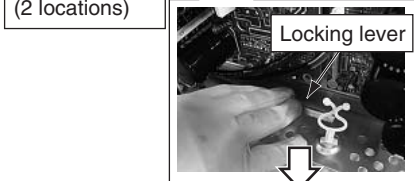
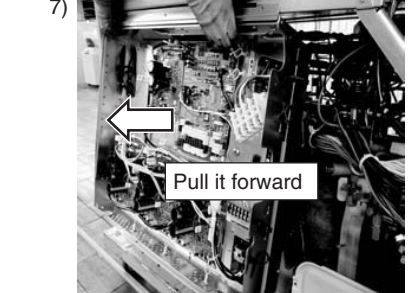
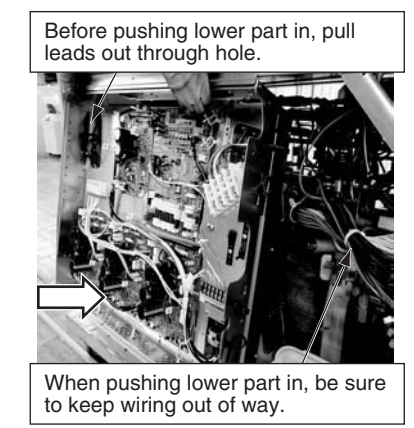
# 12. OUTDOOR UNIT PARTS REPLACEMENT METHODS

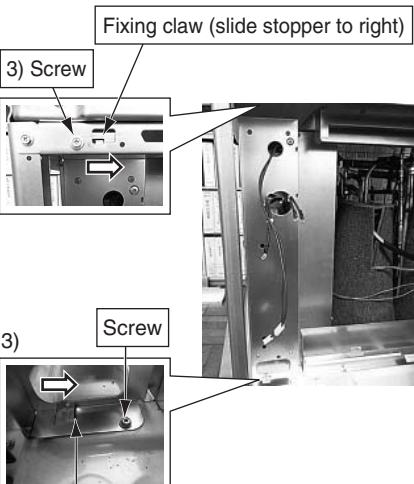
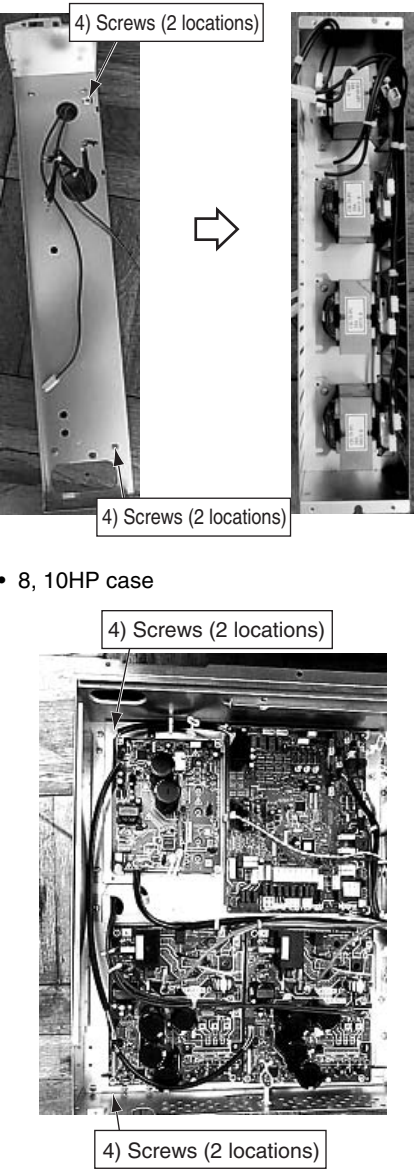
No.	Part to be replaced	Work procedure	Remarks
1	Cabinet	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <hr/> <p><b>1. Detachment</b></p> <p>1) Stop the air conditioner operation, and turn off the circuit breaker.</p> <p>2) Remove the screws for the discharge cabinet. (M5 × 16, 4 pcs.)</p> <div data-bbox="459 607 944 689" style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>With a 12, 14 HP unit, the discharge cabinet side covers need to be removed. Left and right: (M5 × 16, 2 pcs.) – 2 sets</p> </div> <p>3) Remove the screws for the lower cabinet. Front and rear: (M5 × 10, 7 pcs. for front and 6 pcs. for rear)</p> <p>4) Remove the screws for the service panel. (M5 × 10, 2 pcs.)</p> <p>5) Remove the screws for the suction cabinet. Front and rear: (M5 × 10, 4 pcs. each)</p> <div data-bbox="459 891 944 949" style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>In the case of a 12, 14HP unit: M5 × 10, 5 pcs. each</p> </div> <p>6) Remove the screws for the discharge cabinet side cabinet. Left and right: (M5 × 10, 6 pcs. each)</p> <p><b>2. Attachment</b></p> <p>Carry out installation by following the detachment procedure in reverse (6) → 1)). Be careful of the hooks provided on the suction cabinet, service panel and lower cabinet.</p>	<p>2) Discharge cabinet    Screws (4 corners)</p>  <p>Screws (4 corners)    Discharge cabinet side cover</p> <p>5) Suction cabinet (front and rear)</p>  <p>6) Side cabinet (left and right)</p> <p>4) Service panel</p> <p>3) Lower cabinet (front and rear)</p> <div data-bbox="1126 1167 1441 1435" style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Hook</p>  </div> <div data-bbox="1026 1469 1286 1693" style="border: 1px solid black; padding: 5px; margin: 5px 0;">  <p>Service panel</p> </div>

No.	Part to be replaced	Work procedure	Remarks
2	Propeller fan Fan motor	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <hr/> <p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Stop the air conditioner operation, and turn off the circuit breaker.</li> <li>2) Remove the screws for the discharge cabinet. (M5 × 16, 4 pcs.)</li> <li>3) Remove the heat exchanger partition plate (upper). (M5 × 10, 2 pcs.) * With a 12, 14HP unit, the fan motor can be replaced without removing the discharge cabinet side covers.</li> <li>4) Remove the flange nut securing the fan motor and propeller fan. (To loosen the nut, turn it clockwise.)</li> <li>5) Remove the square washer.</li> <li>6) Remove the propeller fan.</li> </ol> <p><b>⚠ CAUTION</b></p> <p><b>Lift it straight up. Do not forcibly pull it, or it may get stuck.</b></p> <hr/> <ol style="list-style-type: none"> <li>7) Disconnect the faston connectors for the fan motor leads (3 pieces) from the Fan IPDU, and pull the leads up and out.</li> <li>8) Remove the fan motor. (M6 × 20, 4 pcs.)</li> </ol>	 <p>2) Screws (4 corners)</p> <p>Discharge cabinet side cover</p>  <p>3) Heat exchanger partition plate (upper)</p>  <p>4) Flange nut</p>  <p>5) Square washer</p>  <p>6)</p>  <p>8) Screw (4 locations)</p>  <p>7)</p> <p>Disconnect faston connectors and pull fan motor leads up and out.</p> <p>Fan motor lead travel route</p> <p>Close-up view of faston connectors</p>  <p>Clamp filter</p> <p>Fan IPDU</p>

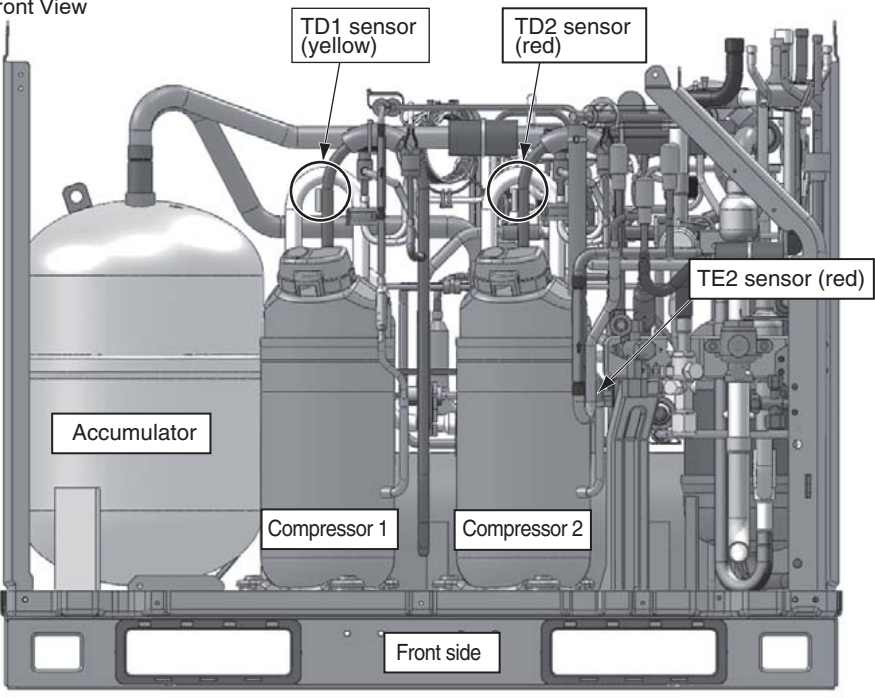
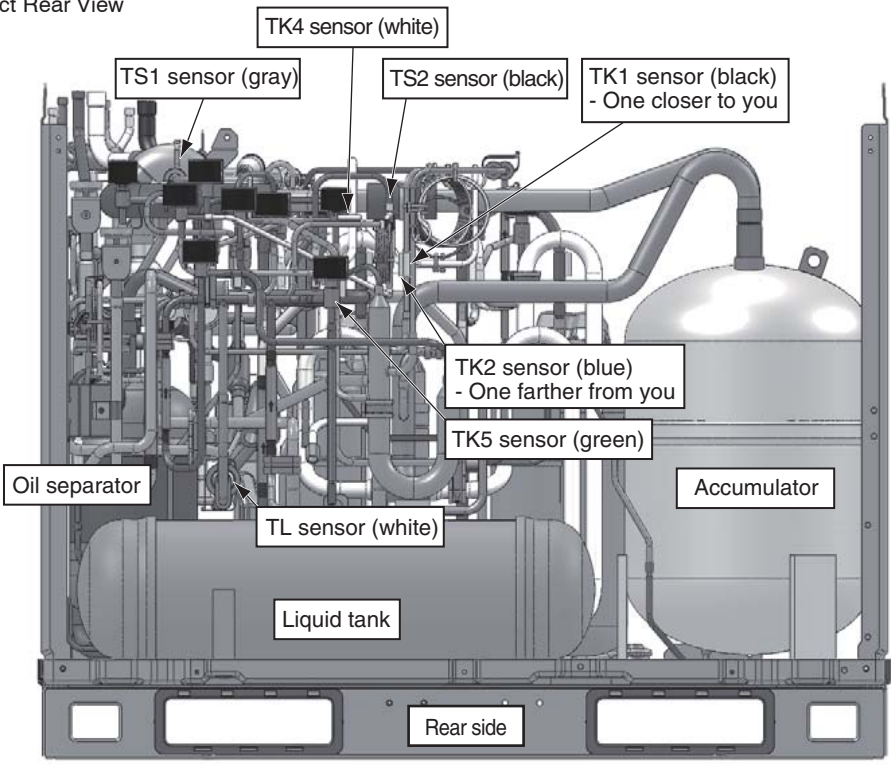
No.	Part to be replaced	Work procedure	Remarks
2	Propeller fan Fan motor (continued)	<p><b>2. CAUTION for replacement or attachment</b></p> <p>1) Insert the propeller fan while aligning the D-cut surface of the fan motor shaft with the arrow mark (△) on the fan. (If the propeller fan is tightly mounted on the shaft without securing alignment between the D-cut surface and the arrow mark (△), it may cause the fan to melt and fall off due to friction heat.)</p> <p>2) Be sure to put the square washer in place. (Otherwise, unusual noises and vibrations may result.)</p> <p>3) Tighten the flange nut at a torque of 15N•m (153kgf•cm). (To tighten the flange nut, turn it counterclockwise.)</p> <p>4) Remove the clamp filter from the fan motor with trouble, then attach the clamp filter to the substitution in the same way as before replacement. (Wind the fan motor lead once around the clamp filter.)</p>	 <p>D-cut surface of fan motor shaft</p>  <p>Arrow mark (△) of fan To be aligned with D-cut surface</p> <p>4) Clamp filter</p> 

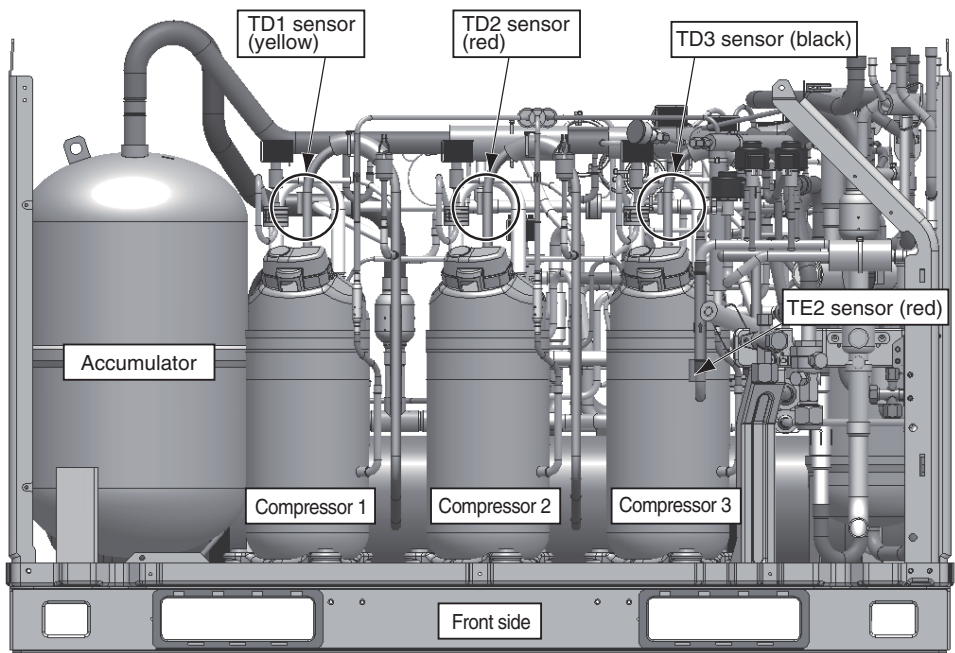
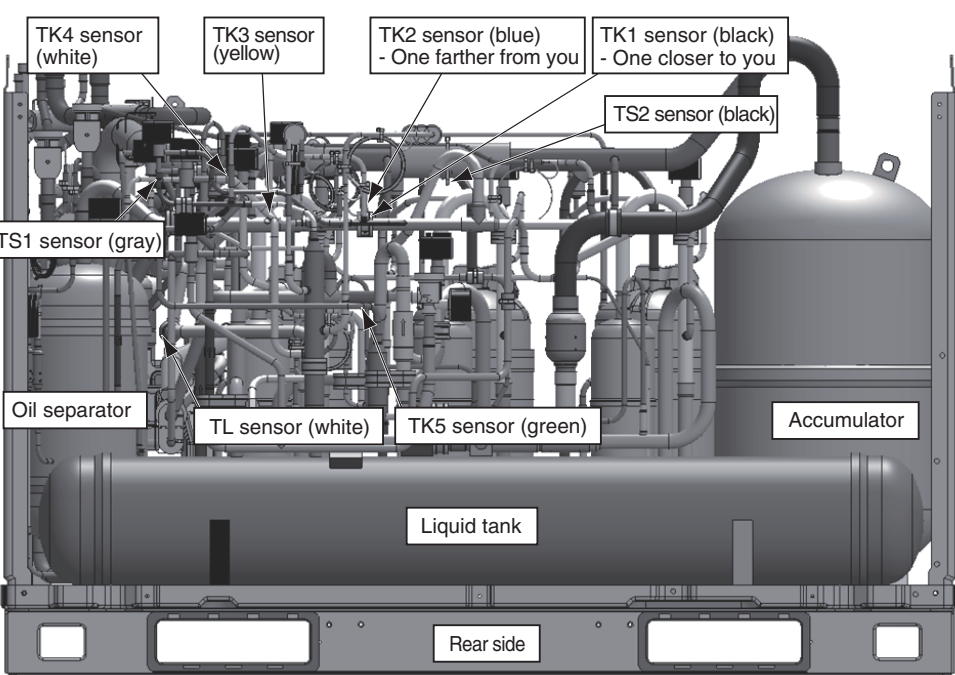
No.	Part to be replaced	Work procedure	Remarks
3	Heat exchanger	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <hr/> <p>Before the work, be sure to recover the refrigerant of outdoor unit into cylinders or another unit connected to the same system. (Refer to the chapter on “refrigerant recovery methods to be used during compressor replacement”.)</p> <p><b>1. Detachment (Right-Side Heat Exchanger as Example)</b></p> <ol style="list-style-type: none"> <li>1) Remove the cabinet.</li> <li>2) Remove the motor base. (M5 × 10, 6 pcs.) (Detach the fan motor leads as well.)</li> </ol> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>With a 12, 14HP unit, remove the discharge cabinet anchor plates. Left and right: (M5 × 10, 2 pcs.) – 2 sets</p> </div> <ol style="list-style-type: none"> <li>3) Remove the upper partition plate. (M5 × 10, 12 pcs.)</li> <li>4) Remove the screws for the support post. (M5 × 10, 3 pcs.) – 2 sets</li> <li>5) Remove the screws for the Heat exchanger partition plate. (M4 × 10, 2 pcs.)</li> <li>6) Remove the brazed joints of the piping connected (4 locations).</li> <li>7) Remove the screws for the heat exchanger partition plate (upper) and pull the heat exchanger out. (M5 × 10, 2 pcs.)</li> </ol>	<p>3) Discharge cabinet anchor plate</p> <p>2) Motor base</p> <p>Heat exchanger (left)</p> <p>Heat exchanger (right)</p> <p>4) Support post</p> <p>5) Heat exchanger partition plate (upper)</p> <p>6) Brazed joints (1 locations on header side)</p> <p>6) Brazed joints (1 locations on distributor side)</p> <p>6) Brazed joints (2 locations on piping connected side)</p> <p>7) Rear</p> <p>Support post</p> <p>Pull heat exchanger out of rear end. (Left-side heat exchanger is pulled out of front end.)</p>

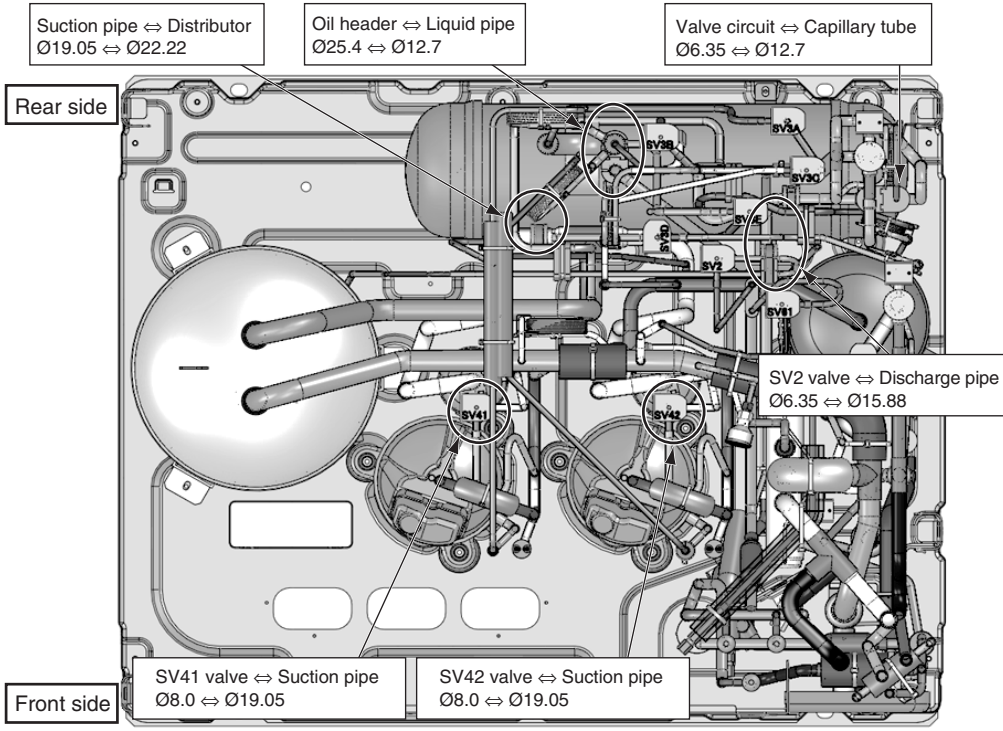
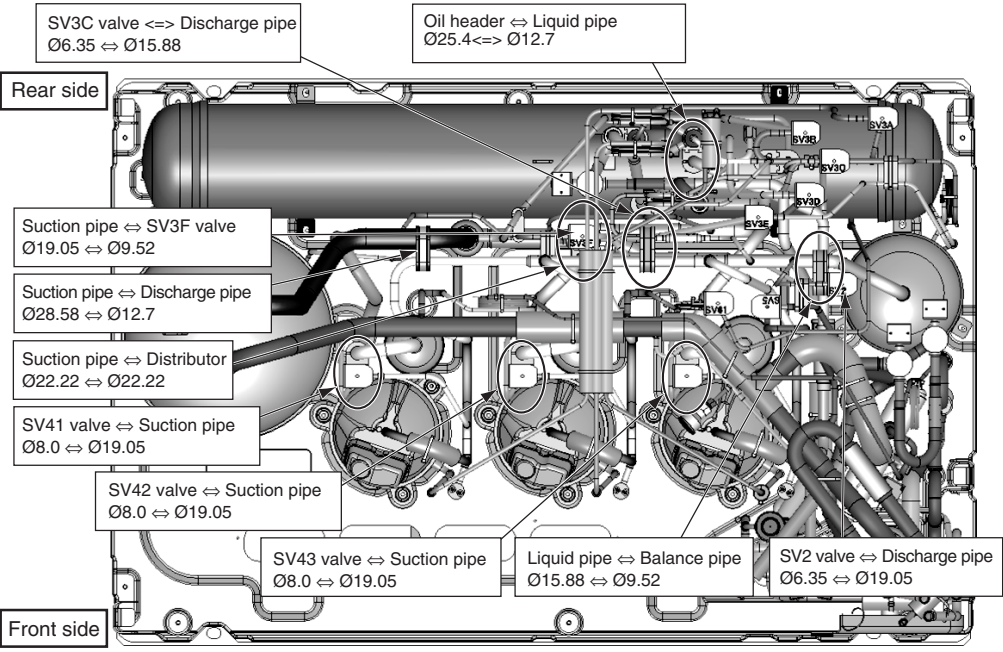
No.	Part to be replaced	Work procedure	Remarks
4	Inverter assembly	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Stop the air conditioner operation, and turn off the circuit breaker.</li> <li>2) Remove the inverter cover. (M4 × 10, 2 pcs.)</li> <li>3) Remove the wiring. (e.g. the power supply wire, compressor leads, coils, sensors and heaters)</li> </ol> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>4) Steps only applicable to a 12, 14HP unit</p> <ul style="list-style-type: none"> <li>• Remove the reactor lead cover. (M4 × 10, 1 pc.)</li> <li>• Remove the screws securing the box. (M4 × 10, 1 pc.)</li> <li>• Detach the reactor leads. (6 terminal block bolts and 2 faston connectors)</li> </ul> </div> <ol style="list-style-type: none"> <li>5) Remove the screws securing the box. (M5 × 10, 1 pc. each for top and bottom)</li> </ol> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>In the case of a 12, 14HP unit: M5 × 10, 1 pc. for top and 2 pcs for bottom</p> </div> <ol style="list-style-type: none"> <li>6) Disengage the hook by gently pushing down the locking lever with your finger. (The lower part of the box moves forward.)</li> <li>7) Hold the top board with both hands to disengage the top hook.</li> </ol> <p><b>2. Attachment</b></p> <p>Carry out installation by following the dismantling procedure in reverse (7 → 1)). Before pushing the lower part in, pull the reactor leads out. Take care so that the wiring does not get caught in the way. Reconnect all the wiring.</p>	    <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Before pushing lower part in, pull leads out through hole.</p> </div> 

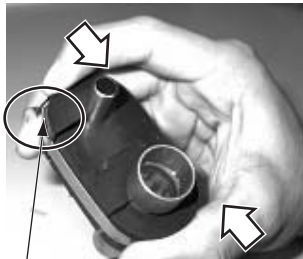


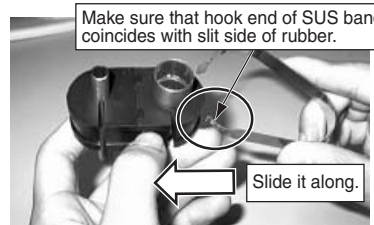

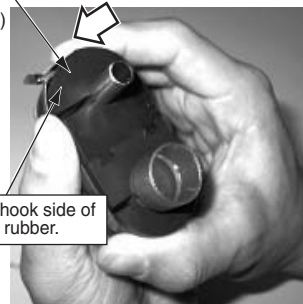
No.	Part to be replaced	Work procedure	Remarks
5	Reactor assembly	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <p><b>1. Detachment</b></p> <p>1) Stop the operation, and turn off the circuit breaker.</p> <p>2) Remove the inverter assembly. (See the inverter assembly dismantling method under item 4.)</p> <p>3) With a 12, 14HP unit, remove the separately mounted reactor box. To remove the reactor box, remove the screws at the top and bottom (M5 × 10) and unlock the box by sliding the stopper to the right. * Before pulling the reactor box, tilt it back to free the bottom.</p> <p>4) Remove the reactor box located at the back of the inverter assembly. (M4 × 6, 4 pcs.) * The screws can be removed from the front.</p> <p>With a 12, 14HP unit, remove the separately mounted anchor plate. (M4 × 6, 4 pcs.)</p> <p>5) Remove and replace the reactor. (M4 × 6, 1 pc.)</p>	<ul style="list-style-type: none"> <li>12, 14HP case</li> </ul>  <p>Fixing claw (slide stopper to right)</p> <p>3) Screw</p> <p>3) Screw</p> <p>Fixing claw (slide stopper to right)</p> <ul style="list-style-type: none"> <li>8, 10HP case</li> </ul>  <p>4) Screws (2 locations)</p> <p>4) Screws (2 locations)</p>

No.	Part to be replaced	Work procedure	Remarks
6	2-way valve coils Pressure sensors locations MAP0804FT* MAP1004FT*	<p><b>Rear</b></p> <p><b>Front</b></p>	
	MAP1204FT* MAP1404FT*	<p><b>Rear</b></p> <p><b>Front</b></p>	

No.	Part to be replaced	Work procedure	Remarks
7	Temperature sensors - locations and identification colors MAP0804FT* MAP1004FT*	<p>Product Front View</p>  <p>Product Rear View</p> 	

No.	Part to be replaced	Work procedure	Remarks
7	Temperature sensors - locations and identification colors (continued) MAP1204FT* MAP1404FT*	<p>Product Front View</p>  <p>Product Rear View</p> 	

No.	Part to be replaced	Work procedure	Remarks
8	Pipe fixing rubber - detachment/ attachment MAP0804FT* MAP1004FT*	<p>This product employs pipe fixing rubber (eyeglass type), combined with a SUS band, to restrain pipes subject to vibration to improve reliability. &lt;Use of SUS band - total 5 locations&gt;</p> 	
	MAP1204FT* MAP1404FT*	<p>This product employs pipe fixing rubber (eyeglass type), combined with a SUS band, to restrain pipes subject to vibration to improve reliability. &lt;Use of SUS band - total 10 locations&gt;</p> 	

No.	Part to be replaced	Work procedure	Remarks
8	Pipe fixing rubber - detachment/ attachment (common)	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Hold the pipe fixing rubber in such a manner that your fingers and thumb are in contact with the two longitudinal ends of the piece, and squeeze it a little to create a small gap between the rubber and the SUS band wrapped around it.</li> <li>2) Push the hook end of the SUS band down to disengage the hook from the square hole.</li> </ol> <p><b>2. Attachment</b></p> <ol style="list-style-type: none"> <li>1) The pipe fixing rubbers use a two-segment design to accommodate a wide range of pipe combinations. When installing them, therefore, it is recommended to first split them up into segments and pair the segments up only after placing them on pipes of matching sizes separately. In this regard, make sure that the mating tooth and slit of pairing segments face each other.</li> <li>2) When placing an SUS band around pipe fixing rubber, make sure that the hook end of the SUS band coincides with the slit side of the rubber. (The band can be placed the other way around, but only at the expense of work efficiency.)</li> <li>3) Place the SUS band tightly around the pipe fixing rubber so that there is no gap between them. Take utmost care not to create a gap over the curved section of the rubber where the hairpin side of the band is located.</li> <li>4) While holding the rubber, push down the base of the hook lightly against the rubber, and engage the hook with the square hole by squeezing the curved section of the rubber where the square hole side of the band is located (see the arrow). (If the hook does not engage with the square hole, recheck whether there is a gap between the band and rubber.)</li> </ol>	<p>1)  Squeeze rubber to create small gap.</p> <p>2)  Push band down in arrow direction.</p> <p>Place two segments of damper on pipes of matching sizes separately, making sure tooth and slit of pairing segments face each other.</p> <p>1)  Align tooth and slit and push two segments towards each other.</p> <p>2)  Make sure that hook end of SUS band coincides with slit side of rubber. Slide it along.</p> <p>3)  Push square hole end of tape in arrow direction by squeezing rubber.</p> <p>4)  Press down hook side of tape against rubber.</p>

No.	Part to be replaced	Work procedure	Remarks
9	4-way valve - detachment/ attachment MAP0804FT* MAP1004FT*	<p><b>⚠ WARNING</b></p> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> <hr/> <p>Before starting the work, be sure to recover the refrigerant of outdoor unit by removing it with a refrigerant recovery device.</p> <p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Remove the lower cabinet (front side).</li> <li>2) Remove the inverter box in accordance with the dismantling instructions.</li> <li>3) Disconnect the 4-way valve coil and PMV coils (3 pieces) and get all wiring located near the 4-way valve out of the way.</li> <li>4) Remove brazed points (3 locations) for the PMV assembly, which is placed in front of the 4-way valve. <ul style="list-style-type: none"> <li>* Provide adequate cover for the PMV to protect it from overheating.</li> </ul> </li> <li>5) Take off screws (2 pcs) which are fixing the valve of the discharge gas valve assembly at the front side of 4-way valve and also remove the brazed section (1 point).</li> <li>6) For upper pipes of 4-way valve (2 pcs at front side), use a saw, or so on and cut at lower side of the brazed section at upper brazed section of 4-way valve.</li> <li>7) Remove the brazed section (1 point) of the pipe at left side of 4-way valve.</li> <li>8) Remove the brazed section (1 point) of the lower pipe of 4-way valve.</li> <li>9) Take off the pipe remained when pipe was cut off in item 6).</li> <li>10) Move the bypass assembly removed from the old 4-way valve to a new 4-way valve.</li> <li>11) Mount a new 4-way valve. <ul style="list-style-type: none"> <li>* Be sure to cure sufficiently so that overheat of 4-way valve is avoided.</li> </ul> <p>In this time, insert the connecting pipes surely into 4-way valve; otherwise wax choking or leakage is caused.</p> </li> <li>12) Mount the discharge gas assembly removed in item 5).</li> <li>* Cure sufficiently so that gas valve is not heated.</li> <li>13) Mount PMV assembly removed in item 4).</li> <li>* Cure sufficiently so that PMV is not heated.</li> <li>14) Return the coil removed in item 3) to the original position and then return various wiring to original position. <ul style="list-style-type: none"> <li>* When mounting PMV, refer to the right figure so that there is no miss-mounting.</li> </ul> </li> <li>15) According to section, How to mount inverter box (p.282), mount the inverter box.</li> <li>16) Attach the lower cabinet.</li> </ol>	<p>PMV</p> <p>4) Brazed point</p> <p>4) Brazed point</p> <p>5) Screw</p> <p>5) Brazed point</p> <p>7) Brazed point</p> <p>6) Cutting line (2 pieces at front side)</p> <p>4-way valve</p> <p>5) Brazed point</p> <p>10) Bypass assembly</p> <p>New 4-way valve</p> <p>4-way valve for pilot</p> <p>14) PMV4</p> <p>Front side</p>
		<p>Remove the brazed sections at 2 positions at the left side of strainer.</p> <p>Cut off the upper pipe of 4-way valve at 2 positions. Remove one pipe at the brazed section.</p> <p>Remove a brazed section at rear side of PMV assembly.</p> <p>4-way valve</p> <p>Remove a brazed section of pipe at the lower side of 4-way valve</p> <p>5) Discharge gas assembly</p>	<p>PMV assembly</p> <p>5) Discharge gas assembly</p>

No.	Part to be replaced	Work procedure	Remarks
9	4-way valve - detachment/ attachment (continued) MAP1204FT* MAP1404FT*	<div data-bbox="414 212 638 257" style="border: 1px solid black; padding: 2px;"> <p><b>⚠ WARNING</b></p> </div> <div data-bbox="414 268 989 358" style="border: 1px solid black; padding: 2px;"> <p><b>Wear a pair of gloves. Otherwise, you will risk an injury involving a replacement part or some other object.</b></p> </div> <hr/> <p>Before starting the work, be sure to recover the refrigerant of outdoor unit by removing it with a refrigerant recovery device.</p> <p><b>1. Detachment</b></p> <ol style="list-style-type: none"> <li>1) Remove the lower cabinet (front side).</li> <li>2) Remove the inverter box in accordance with the dismantling instructions.</li> <li>3) Disconnect the 4-way valve coil and PMV coils (3 pieces) and get all wiring located near the 4-way valve out of the way.</li> <li>4) Remove brazed points (2 locations) for the PMV assembly, which is placed in front of the 4-way valve.             <ul style="list-style-type: none"> <li>* Provide adequate cover for the PMV proper to protect it from overheating.</li> </ul> </li> <li>5) Take off screws (2 pcs) which are fixing the valve of the discharge gas valve assembly at the front side of 4-way valve and also remove the brazed section (1 point).</li> <li>6) For upper pipes of 4-way valve (2 pcs at front side), use a saw, or so on and cut at lower side of the brazed section at upper brazed section of 4-way valve.</li> <li>7) Remove brazed section (1 point) of the pipe of bypass circuit which arranged at left side of 4-way valve. Insert a torch into the right side of the front side of the outdoor unit and then carry out welding work.</li> <li>8) Remove the brazed section (1 point) of the lower pipe of 4-way valve.</li> <li>9) Take off the pipe remained when pipe was cut off in item 6).</li> <li>10) Move the bypass assembly removed from the old 4-way valve to a new 4-way valve.</li> <li>11) Mount a new 4-way valve.             <ul style="list-style-type: none"> <li>* Be sure to cure sufficiently so that overheat of 4-way valve is avoided.</li> </ul> <p>In this time, insert the connecting pipes surely into 4-way valve; otherwise wax choking or leakage is caused.</p> </li> <li>12) Mount the discharge gas valve assembly removed in item 5).</li> <li>13) Mount PMV assembly removed in item 4).</li> <li>14) Return the coil removed in item 3) to the original position and then return various wiring to original position.             <ul style="list-style-type: none"> <li>* When mounting PMV, refer to the right figure so that there is no miss-mounting.</li> </ul> </li> <li>15) According to section, How to mount inverter box (p.282), mount the inverter box.</li> <li>16) Attach the lower cabinet.</li> </ol>	

# 13. P.C. BOARD EXCHANGE PROCEDURES

## Indoor Unit

### 13-1. Replacement of Indoor P.C. Boards

Part code	Model type	P.C. board type
431-6V-437	MMU-AP**4MH series MMU-AP**4SH series MMC-AP**4H series MMD-AP**4SPH series	MCC-1402
431-6V-438	MMD-AP**4BH series	MCC-1402
431-6V-444	MMU-AP**4YH series MMD-AP**4H series MMF-AP**4H series MML-AP**4BH series	MCC-1403
431-6V-469	MML-AP**4H series	MCC-1403

#### Points to Note When Replacing Indoor P.C. Board Assembly

The electrically erasable programmable read-only memory (hereinafter EEPROM, IC10) mounted on an indoor P.C. board holds important setting data, including the type and capacity codes intrinsic to the model (set at the factory), as well as the line/indoor/group addresses, high ceiling adjustment setting and the like (during installation, either automatically or manually). Proceed with the replacement of an indoor P.C. board assembly in accordance with the procedure described below.

After completion of the work, check the settings again, including the indoor unit No. and group header/follower designation, and confirm the integrity of the refrigerating cycle by conducting a test operation, etc.

#### <Replacement procedure>

##### Method 1

If it is possible to turn on the indoor unit and read the setting data from the P.C. board to be replaced via a wired remote controller -

Reading EEPROM data: **Procedure 1**



Replacing P.C. board and turning on power: **Procedure 2**



Writing EEPROM data in new EEPROM: **Procedure 3**



Resetting power supply (applicable to all indoor units connected to remote controller in case of group operation)

## Method 2

If it is not possible to turn on the indoor unit or read the setting data from the P.C. board to be replaced via a wired remote controller or operate the remote controller due to the failure of its power supply circuit -

Replacing EEPROM (IC10) (For the location of this component and the method to replace it, see the "EEPROM Location Diagram" section.)

- The EEPROM on the P.C. board to be replaced needs to be removed and mounted on the service P.C. board.



Replacing P.C. board and turning on power: **Procedure 2**



Reading EEPROM data: **Procedure 1**

- If data cannot be read, go to **Method 3**.



Replacing EEPROM (IC10) again (For the location of this component and the method to replace it, see the "EEPROM Location Diagram" section.)

- The old EEPROM, supplied with the P.C. board to be replaced and now mounted on the service P.C. board, needs to be replaced with the new EEPROM, supplied with the service P.C. board.



Replacing P.C. board and turning on power: **Procedure 2**



Writing EEPROM data in new EEPROM: **Procedure 3**



Resetting power supply (applicable to all indoor units connected to remote controller in case of group operation)

## Method 3

If it is not possible to read the setting data due to the failure of the EEPROM itself -

Replacing P.C. board and turning on power: **Procedure 2**










Writing EEPROM data on basis of information supplied by customer (e.g. high ceiling adjustment setting and optional connection setting): **Procedure 3**



Resetting power supply (applicable to all indoor units connected to remote controller in case of group operation)

### Procedure 1: Reading Setting Data from EEPROM

(Read the setting data from EEPROM, including both the factory settings and any modifications made to them on site.)

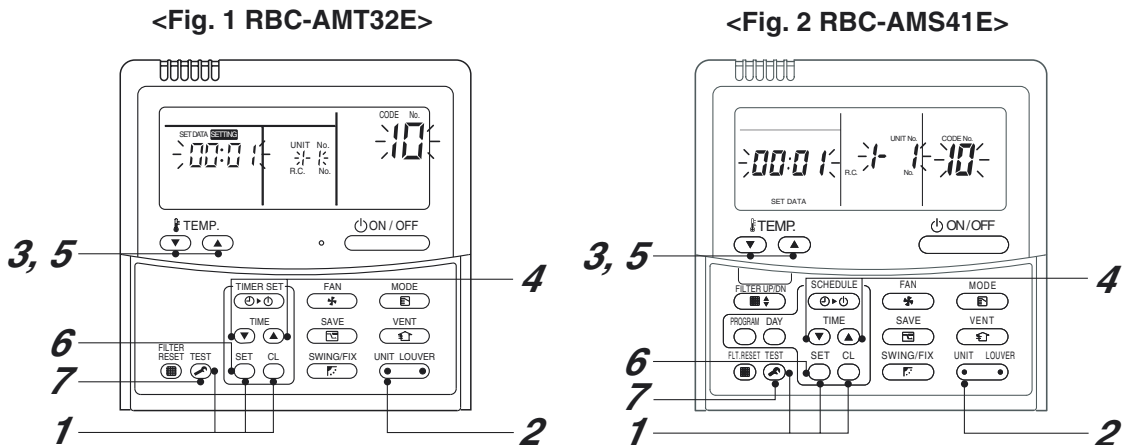
- 1** Push the  +  +  buttons simultaneously and hold for at least 4 seconds. **1** (This number corresponds to the same number shown on the Remote Controller Operation Diagram.)
  - \* In the case of group control, the unit No. displayed first is the indoor unit No. of the header unit. At the same time, the CODE No. (DN code) 10 is displayed, and the fan of the selected indoor unit comes on, with the louver swinging, depending on the model.
- 2** Each time the  button (left side of the button.) is pushed, one of the indoor unit No. under group control is displayed in turn. **2**
  - \* The fan of the selected indoor unit comes on, with the flaps swinging, depending on the model.
- 3** The  button allows you to move the CODE No. (DN code) up/down by one place. **3**
- 4** First, change the CODE No. (DN code) from 10 to 01. (To set filter sign lighting time) Jot down the setting data displayed.
- 5** Change the CODE No. (DN code) using the  button. Again, jot down the setting data displayed.
- 6** Repeat step 5 until all the setting data has been jotted down. (See the CODE No. list.)
  - \* CODE No. (DN code) go from 01 to FF with a few gaps along the way.
- 7** When finished, push the  button to bring the system back to normal off state. **6** (It takes the system about 1 minute to become responsive to remote controller operation.)

### CODE No. (DN code) necessary at minimum

DN	Contents
10	Type
11	Indoor unit capacity
12	Line address
13	Indoor address
14	Group address

The type and capacity of the indoor unit are necessary for fan speed setting.

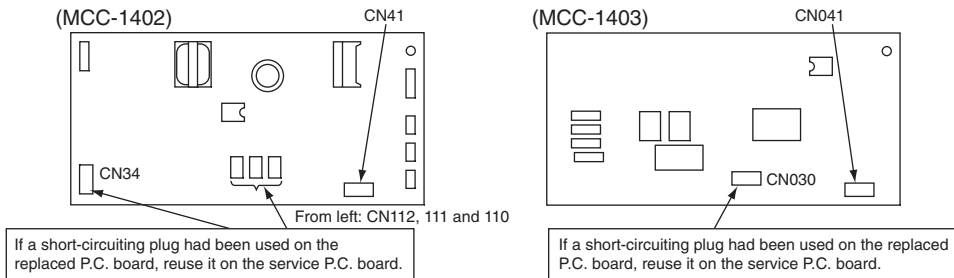
### Remote Controller Operation Diagram



## Procedure 2: Replacing P.C. Board

### 1 Replace the faulty P.C. board with a service P.C. board.

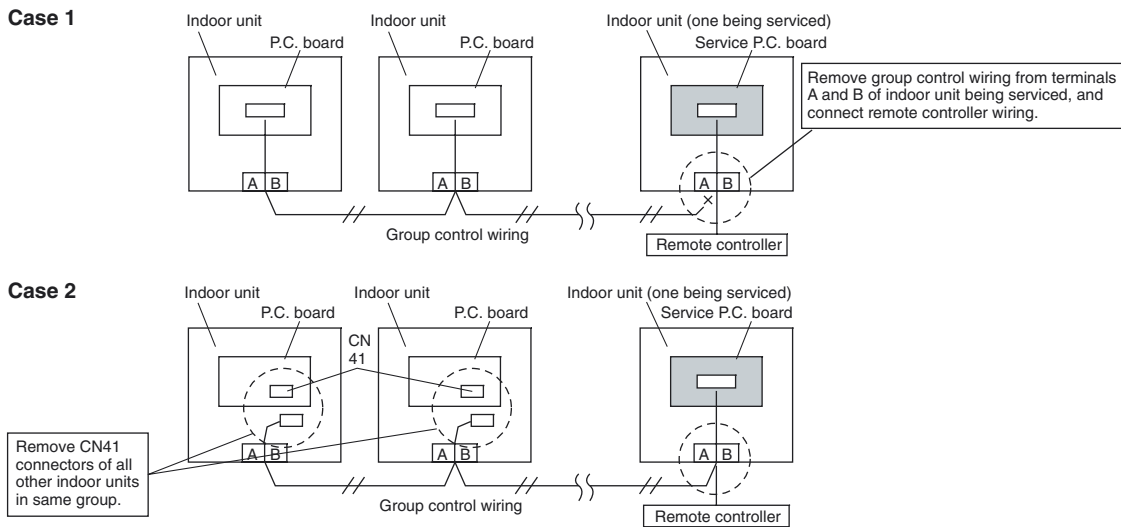
Be sure to replicate the old jumper setting (removal), switch setting (SW501), and connector short-circuit setting (Ex. CN34) on the service P.C. board. (See the diagram at below.)



### 2 It is necessary to establish a one-to-one correspondence between the indoor unit being serviced and the remote controller.

Turn on the indoor unit using one of the methods described below according to the system configuration.

- (1) Single (stand-alone) operation  
Turn on the indoor unit and proceed to **Procedure 3**.
- (2) Group operation
  - A) If it is possible to selectively turn on the indoor unit being serviced  
Turn on the indoor unit being serviced and proceed to **Procedure 3**.
  - B) If it is not possible to selectively turn on the indoor unit being serviced (**Case 1**)
    - a) Temporarily disconnect the group control wiring from terminals A and B of the indoor unit being serviced.
    - b) Connect the remote controller wiring to the terminals, turn on the indoor unit, and proceed to **Procedure 3**.  
\* If this method cannot be used, proceed to the alternative method described below (**Case 2**).
  - C) If it is not possible to selectively turn on the indoor unit being serviced (**Case 2**)
    - a) Remove the CN41 connectors of all other indoor units in the same group.
    - b) Turn on the indoor unit and proceed to **Procedure 3**.



\* Be sure to restore the temporarily removed group control wiring and CN41 connectors to their initial states after Procedure 3 has been completed.


### Procedure 3: Writing Setting Data in EEPROM

(The EEPROM of the service P.C. board has been set to the factory default values.)

**1 Push the  +  +  buttons simultaneously and hold for at least 4 seconds. 1 (This number corresponds to the same number shown on the Remote Controller Operation Diagram.)**

(Under UNIT No., ALL is displayed.)

At the same time, the CODE No. (DN code) 10 is displayed, and the fan of the indoor unit comes on, with the louver swinging, depending on the model.


**2 Push the  button (left side of the button.) to display the indoor unit No. one by one in the group control. Specify the indoor unit No. whose service PC board was replaced. (This operation is not available if the UNIT No. shows ALL.)**

**3 The  button allows you to moved the CODE No. (DN code) up/down by one place. 3**


**4 First, set the type and capacity codes of the indoor unit.**


(Changing the type and capacity codes in EEPROM overwrites the factory default settings.)


(1) Set the CODE No. (DN code) to 10 (no change)

(2) Use the  button to select the type. 4


(For example, 0001 is for the 4-way air discharge cassette type.) - See the CODE No. list.

(3) Push the  button. (The display should change from flashing to steady.) 5


(4) Use the  button to set the CODE No. (DN code) to 11.

(5) Use the  button to set the capacity code.

(For example, 0012 is for the 027 type.) - See the CODE No. list.

(6) Push the  button. (The display should change from flashing to steady.)


\* Setting 4-way Air Discharge Cassette indoor unit model only

(7) Push the  button to bring the system back to normal off state. 6

**5 Next, write any setting changes made on-site after installation, such as address settings, in the EEPROM. Perform the tasks specified in step 1 again.**

**6 Use the  button to set the CODE No. (DN code) to 01 (To set filter sign lighting time)**

**7 Check the value displayed with the value jotted down in Procedure 1 and information proved by the customer.**

(1) If there is a discrepancy, change the setting in accordance with the jotted-down value, and push the  button.

(The display should change from flashing to steady.)

(2) If there is no discrepancy, do nothing.

**8 Use the  button to change the CODE No. (DN code).**

Again, check the value, and change the setting if necessary.



**9 Repeat steps 6 and 7 until all the settings are checked.**

**10 When finished, push the  button to bring the system back to normal off state. 6**

In the case of group operation, turn the unit off, reconnect the indoor-indoor group control wiring and CN41 connectors, and turn on all the indoor units.

(It takes the system about 1 minute to become responsive to remote controller operation.)

\* CODE No. (DN code) go from 01 to FF with a few gaps along the way.

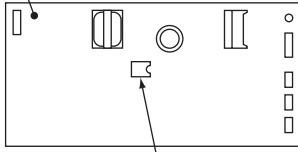
If you realize you have wrongly corrected a certain setting after pushing the  button, you can recover the initial value by pushing the  button, provided that the CODE No. (DN code) is yet to be changed.

## EEPROM Location Diagram

The EEPROM (IC10) is mounted on an IC socket. Use a pair of tweezers, etc. to remove it. When installing it, adjust its orientation as shown in the diagram below.

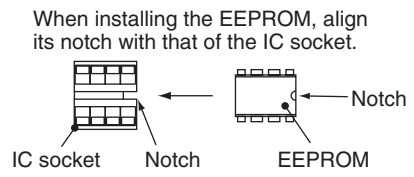
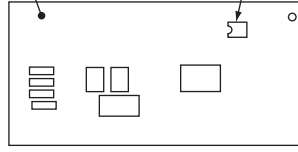
During EEPROM removal/installation, take care not to bend IC leads.

P.C. board (MCC-1402)



EEPROM(IC10)

P.C. board (MCC-1403) EEPROM(IC10)



## CODE No. list (Example)

CODE No. (DN)	Item	Setting data	Factory-set value
01	Filter sign lighting time		Depending on Type
02	Filter pollution leve		0000: standard
03	Central control address		0099: Not determined
06	Heating suction temperature shift		0002: +2°C (Floor standing type: 0)
0d	Existence of automatic COOL/HEAT mode		0001: No auto mode cooling/heating
0F	Cooling only		0000: Heat pump
10	Type		Depending on model type
11	Indoor unit capacity		Depending on capacity type
12	System address		0099: Not determined
13	Indoor unit address		0099: Not determined
14	Group address		0099: Not determined
19	Louver type (wind direction adjustment)		Depending on Type.
1E	Temperature range of cooling/heating automatic SW control point		0003: 3 deg (Ts ± 1.5)
28	Power failure automatic recovery		0000: None
2A	Option / Abnormal input (CN70) switch		0002 : Humidifier input
2E	HA terminal (T10) switch		0000 : Normal (HA terminal)
32	Sensor SW (Selection of static pressure)		0000: Body sensor
40	Humidifier type setting		0000 : No humidifier
47	Ventilation fan speed during nighttime heat purge operation		0000 : Low fixed
48	Unbalanced fan speed ventilation		0000 : Invalid
4C	Nighttime heat purge setting		0000 : Invalid
4E	Linkage with external devices		0000 : ON / OFF linked
5C	Damper output		0000 : Normal
5d	High ceiling select		0000: Standard
60	Timer setting (wired remote controller)		0000: Available
BB	Humidity judgment by outdoor temperature		0000 : Not judged
BD	Continuous humidifying time		0006 : 6 hours
BE	Delay after drainage		0015 : 15 minutes
C9	Air to Air intake temperature correction (Cool)		0004 : - 2.0°C
CA	Air to Air intake temperature correction (Heat)		0005 : 2.5°C
D0	Power saving mode		0001 : Valid
EA	Current ventilation mode		0002 : Automatic mode
EB	Current ventilation fan speed		0002 : High
ED	Operation output		0000 : Normal operation only
EE	Abnormal signal / Bypass mode signal switch		0000 : Abnormal signal output
F0	Swing mode		0001: Standard
F1	Louver fixing position (Flap No. 1)		0000: Not fixed (4-way type only)
F2	Louver fixing position (Flap No. 2)		0000: Not fixed (4-way type only)
F3	Louver fixing position (Flap No. 3)		0000: Not fixed (4-way type only)
F4	Louver fixing position (Flap No. 4)		0000: Not fixed (4-way type only)

**Type  
Code No. [10]**

Setup data	Type	Model abb. name
0000	1-way Cassette	MMU-AP***SH
0001 *1, *2	4-way Cassette	MMU-AP***2H
0002	2-way Cassette	MMU-AP***WH
0003	1-way Cassette (Compact type)	MMU-AP***YH
0004	Concealed Duct Standard	MMD-AP***BH
0005	Slim Duct	MMD-AP***SPH MMD-AP***SH
0006	Concealed Duct High Static Pressure	MMD-AP***H
0007	Ceiling	MMC-AP***H
0008	High Wall	MMK-AP***H
0009	—	—
0010	Floor Standing Cabinet	MML-AP***H
0011	Floor Standing Concealed	MML-AP***BH
0012	—	—
0013	Floor Standing (Below 6HP)	MMF-AP***H
0014	Compact 4-way Cassette	MMU-AP***MH
0050	Air to Air Heat Exchanger with DX Coil Unit (Ceiling-embedded duct)	MMD-VN(K)***HEXE

**Indoor unit capacity  
CODE No. [11]**

Setup data	Model	Setup data	Model
0000*	Invalid	0016	—
0001	007 type	0017	048 type
0002	—	0018	056 type
0003	009 type	0019	—
0004	—	0020	—
0005	012 type	0021	072 type
0006	—	0022	—
0007	015 type	0023	096 type
0008	—	0024	—
0009	018 type	0025	—
0010	—	0026	—
0011	024 type	0027	—
0012	027 type	0028	—
0013	030 type	~	—
0014	—	0034	—
0015	036 type		

\*1 The initial setup value of EEPROM installed on the service P.C. board

\*2 <Model Name: **MMU-AP \*\*\* 2H**>

For the above models, set CODE No. to “**CE**” and the setting data 0000 (initial) to “0001”.

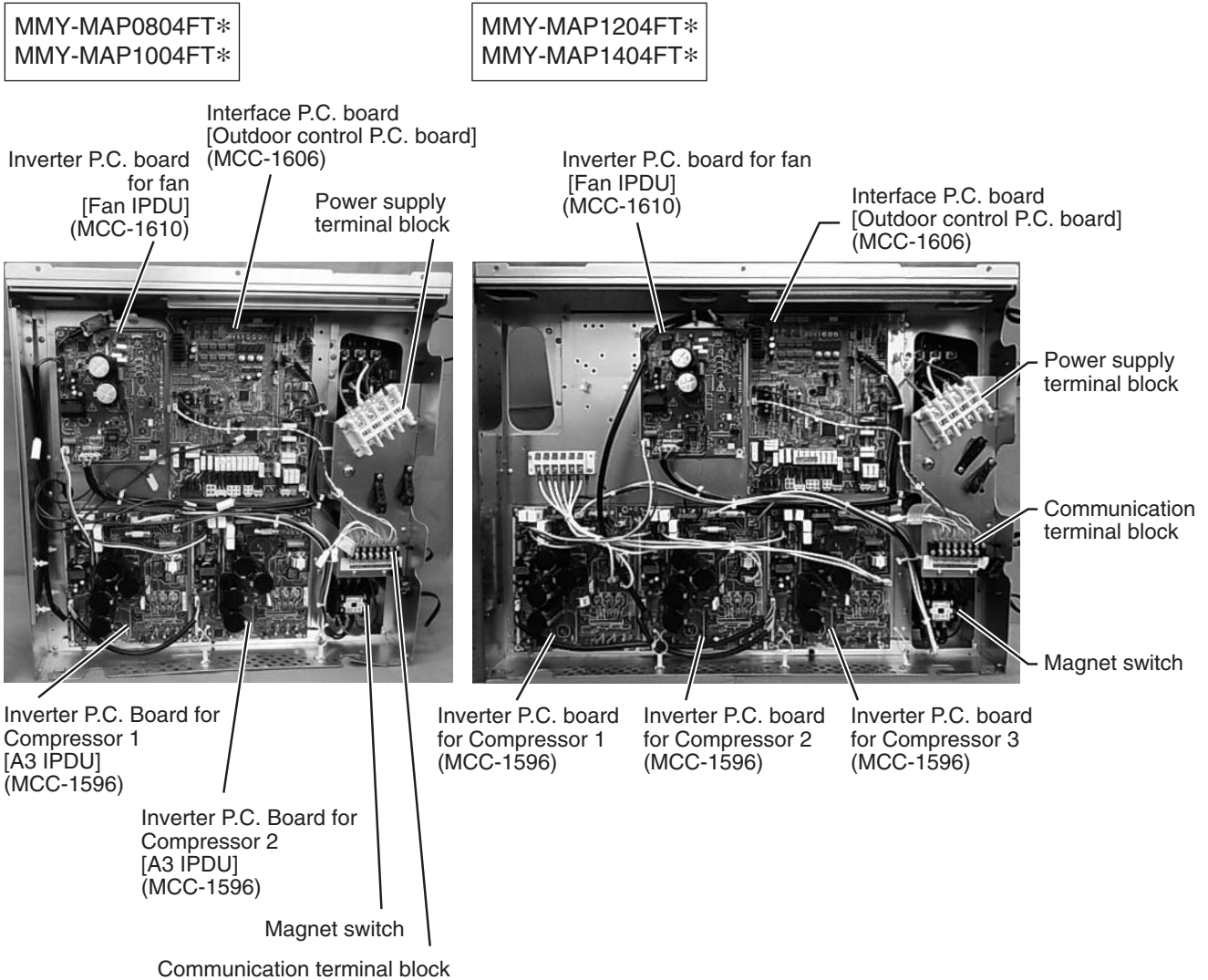
# Outdoor Unit

## 13-2. Replacement of Outdoor P.C. Boards

### 13-2-1. List of service P.C. boards

Part code	Description	Applicable model	P.C. board type code	Product code
431 6V 503	Interface P.C. board	MMY-MAP0804FT*	MCC-1606	ASM-PCB(I/F)
431 6V 441	Comp-IPDU P.C. board	MMY-MAP1004FT*	MCC-1596	ASM-PCB(A3IPDU)
431 6V 512	Fan IPDU P.C. board	MMY-MAP1204FT*	MCC-1610	ASM-PCB(FANIPDU)
431 6V 440	Noise filter P.C. board	MMY-MAP1404FT*	MCC-1608-A,B	ASM-PCB(N/F)

### 13-2-2. Configuration of inverter assembly



### 13-2-3. Interface board (MCC-1606) replacement method

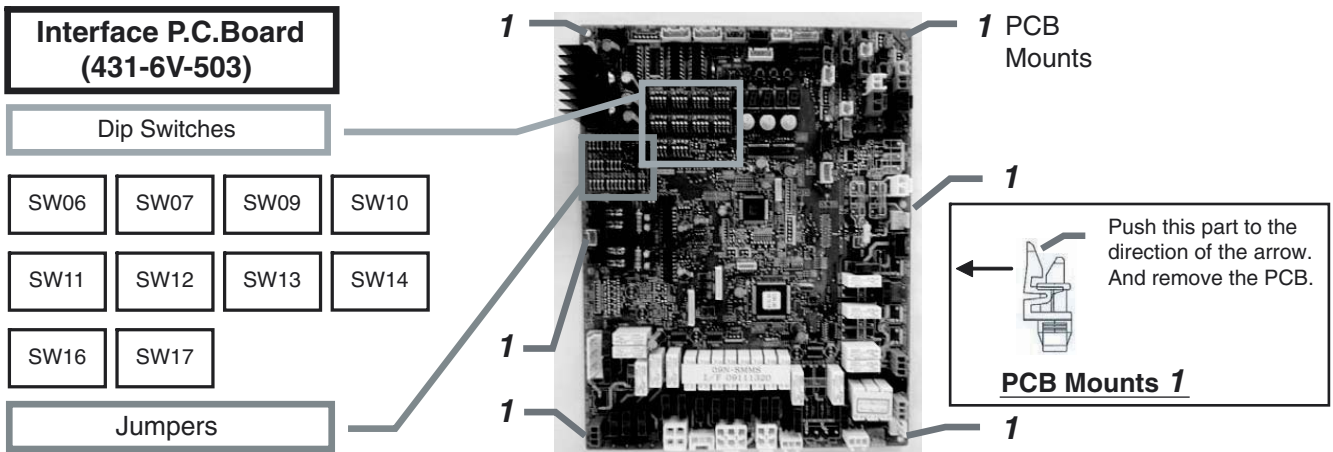
This Interface board is commonly installed in different models before shipment. When the board assembly is to be replaced, check the displayed inspection contents below and replace the board in accordance with the model, following the below procedure.

#### Replacement steps:

- (1) Turn off the power supply of the outdoor unit.
- (2) Remove all of the connectors and fast-on terminals connected to the interface board. (Remove the connectors and fast-on terminals by pulling the connector body. Do not pull the wire).
- (3) Remove the interface board from the six PCB mounts (1).
- (4) Cut the jumper wires of the service board, as instructed in the table below.  
The jumper setting differs from original supplied PCB, therefore be sure to configure the Jumpers as in the table below.  
If the model is not specified, inspection code "L10" is displayed and the equipment will not operate.

Model name	J12	J11	J10	J09	J22
Service P.C. Board	Yes	Yes	Yes	Yes	Yes
MMY-MAP0804FT8(Z)(ZG) *	—	—	Cut	Cut	Cut
MMY-MAP0804FT7(Z)(ZG) *	—	—	Cut	—	Cut
MMY-MAP1004FT8(Z)(ZG) *	—	—	Cut	—	Cut
MMY-MAP1004FT7(Z)(ZG) *	—	—	Cut	—	Cut
MMY-MAP1204FT8(Z)(ZG) *	Cut	Cut	Cut	Cut	Cut
MMY-MAP1204FT7(Z)(ZG) *	Cut	Cut	Cut	—	Cut
MMY-MAP1404FT8(Z)(ZG) *	Cut	Cut	Cut	—	Cut
MMY-MAP1404FT7(Z)(ZG) *	Cut	Cut	Cut	—	Cut
MMY-MAP0804FT5(Z)(ZG)	—	—	Cut	Cut	—
MMY-MAP1004FT5(Z)(ZG)	—	—	Cut	—	—
MMY-MAP1204FT5(Z)(ZG)	Cut	Cut	Cut	Cut	—
MMY-MAP1404FT5(Z)(ZG)	Cut	Cut	Cut	—	—

\* The following characters can be attached to the end of model name in according with the destination;  
-E, -TR, TR, -SG, -C, -K.



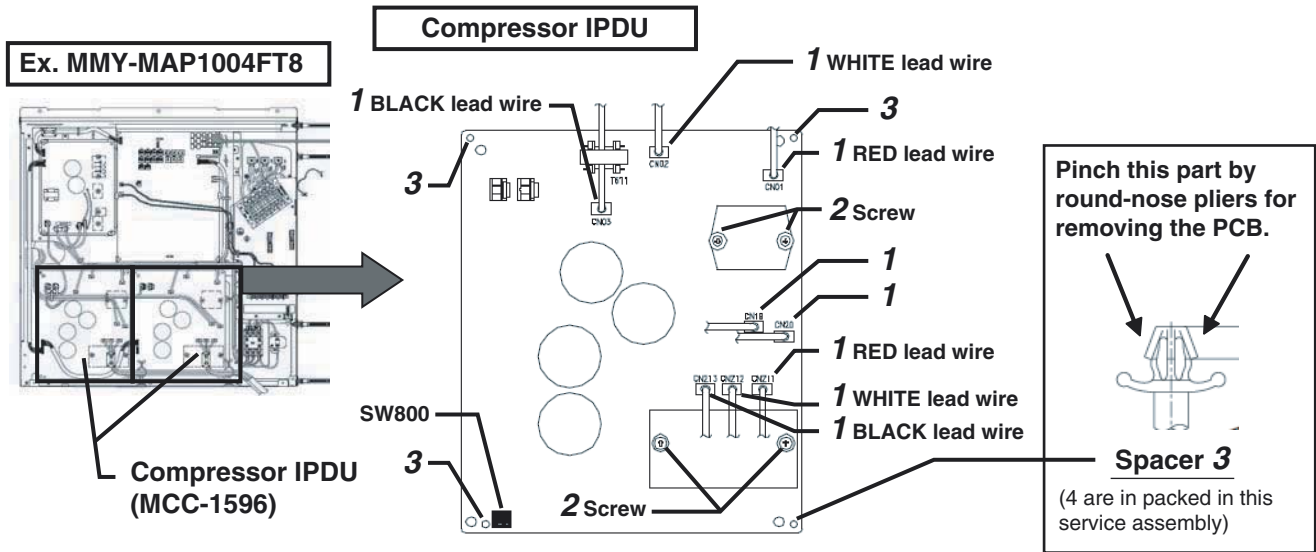
- (5) Set the dip switch settings of the service board to match the switch settings of the PCB being replaced.
- (6) Install the service board to the outdoor control unit (Confirm that it is securely fixed to the PCB Mounts).
- (7) Connect the connectors and fast-on terminals (Confirm that they are correctly and securely inserted).
- (8) If a component on the board is bent during board replacement, adjust it manually ensuring that it is not short or contact other parts.
- (9) Install the cover, then turn on the power supply. Check the operation.

### 13-2-4. Comp-IPDU P.C. Board (MCC-1596) Replacement Procedure

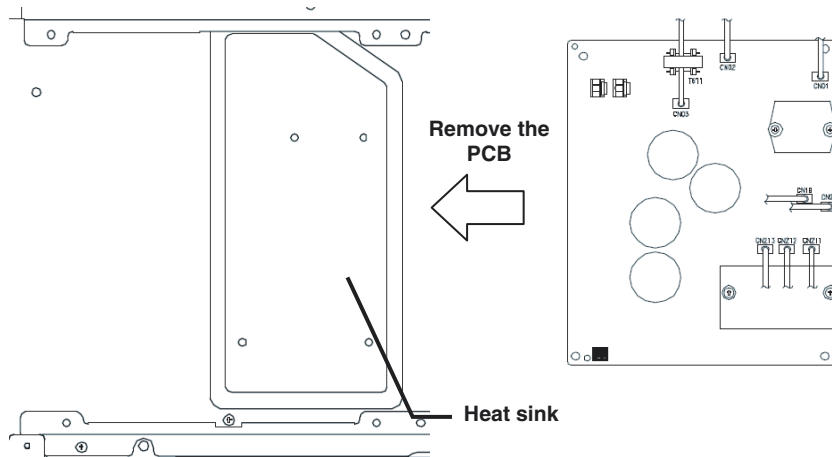
This board is commonly installed in different models before shipment. Set the dip switch (SW800) setting of the service board to the switch setting before replacement.

#### Replacement Steps:

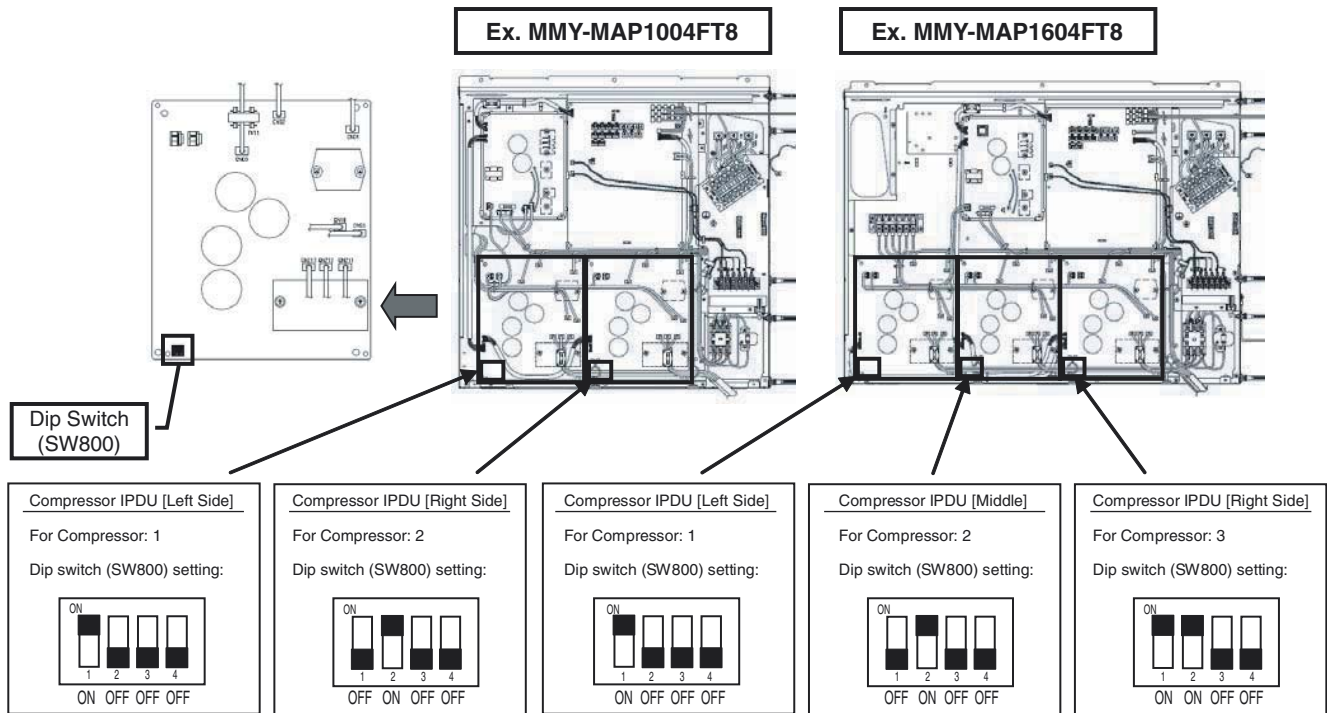
- (1) Turn off the power supply of the outdoor unit and allow at least 3 minute for the capacitor to discharge.
- (2) Remove all the connectors and the fast-on terminals (1) connected to the Compressor IPDU. (Remove the connectors and fast-on terminals by pulling the connector body. Do not pull the wire).
- (3) Remove all the four screws(2) which secures the Compressor IPDU to the Heat sink. (These screws are to be re-used after procedure.)
- (4) Remove the Compressor IPDU from the four spacers (3) by pinching the top of the spacers by round-nose pliers.



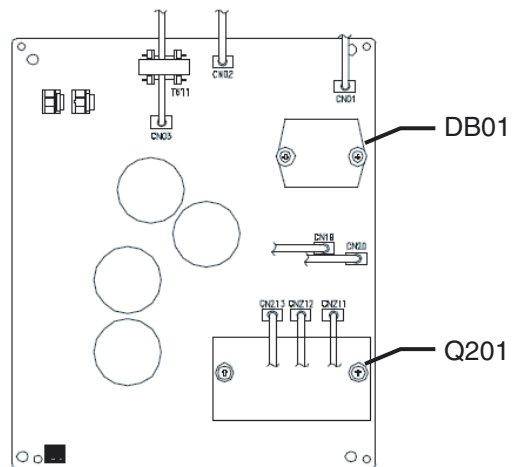
- (5) Confirm that no dirt or damage is on the heat sink. As it can reduce the heat transfer efficiency, and can cause a breakdown.



- (6) Set the dip switch (SW800) setting of the service board to match the switch setting from the original PCB.  
 - Set the dip switch (SW800) depending on the position of the IPDU within the electrical box, as shown in the following diagram.



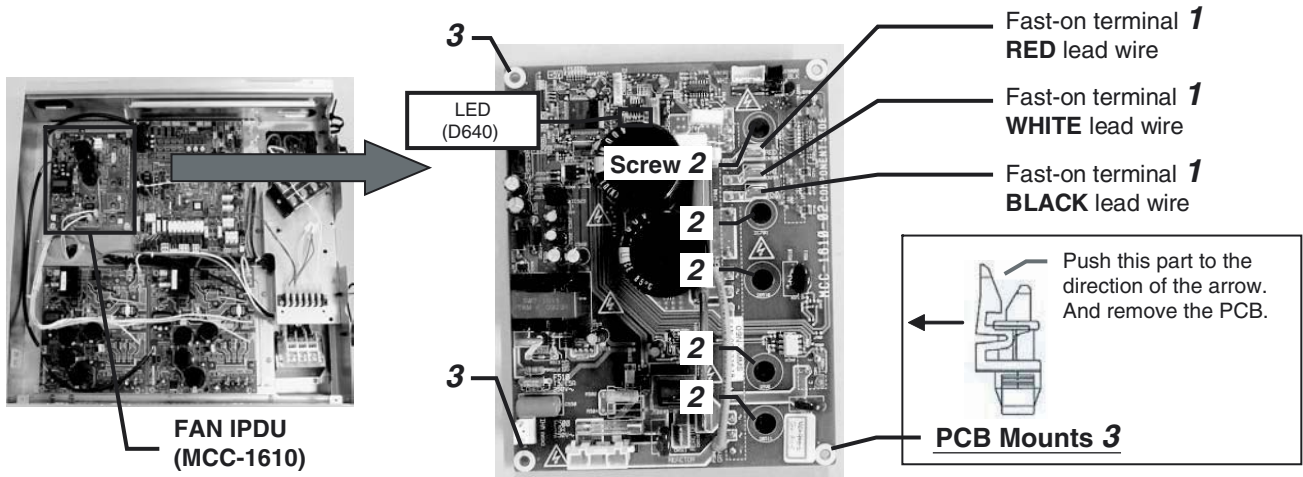
- (7) Align the heat sink with the screw holes on the heat sink and the mounting holes on the PCB with the PCB mounts. And fix the Compressor IPDU to the outdoor control unit by the spacers (3).
- (8) Screw the Compressor IPDU to the heat sink by the four screws that were removed in step (3). If the screws are loose, the effect component will generate heat, and cause it to breakdown. Do not use an electric driver or an air driver. As it can cause component damage. The torque of the screws for DB01 is "0.55N•m" and it for Q201 is "1.2N•m".
- (9) Re-connect the connectors and fast-on terminals (1). Be sure that all the connectors and the fast-on terminals are connected correctly and securely inserted.
- (10) If the components on the PCB were bent during this procedure, straighten them so they do not touch other parts.
- (11) Install the cover, then turn on the supply. Check the operation.



### 13-2-5. Fan IPDU P.C. Board (MCC-1610) Replacement Procedure

#### Replacement steps:

- (1) Turn off the power supply of the outdoor unit and allow at least one minute for the capacitor to discharge. Confirm that the light of the LED (D640) fades away.
- (2) Remove all the connectors and the fast-on terminals (1) connected to the FAN IPDU. (Remove the connectors and fast-on terminals by pulling the connector body. Do not pull the wire).
- (3) Remove all the five screws (2) which secures the FAN IPDU to the Heat sink. (These screws are to be re-used after procedure.)
- (4) Remove the Fan IPDU from the three PCB Mounts (3).



- (5) Confirm that no dirt or damage is on the sub heat sink. As it can reduce the heat transfer efficiency, and cause a breakdown.



- (6) Align the PCB mount holes on the PCB with the PCB mounts, and fix the FAN IPDU to the outdoor control unit by clipping the PCB into the PCB mounts (3).
- (7) Screw the FAN IPDU to the heat sink by the five screws that were removed in step (3). If the screws are loose, the effected component will generate heat, and cause in to breakdown. Do not use an electric driver or an air driver, as it can cause component damage. The torque of 5 screws (IC701, DB509, DB510 and Q590) is "0.55N·m".
- (8) Re-connect the connectors and fast-on terminals(1). Be sure that all the connectors and the fast-on terminals are connected correctly and securely inserted.
- (9) If the components on the PCB were bent during this procedure, straighten them so they do not to touch other parts.
- (10) Install the cover, then turn on the supply. Check the operation.

## 13-2-6. Noise Filter P.C. Board (MCC-1608 A, B) Replacement Procedure

### <1. Preparation (model selection)>

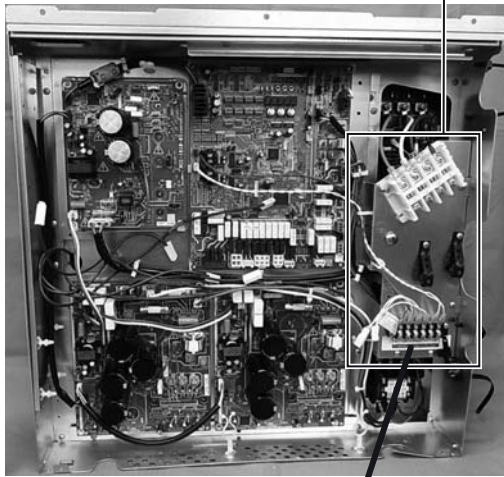
All P.C. boards of this type leave the factory with default settings that are common to all applicable models. When replacing a P.C. board assembly on site, follow the procedure described below.

### <2. Replacement steps>

- (1) Turn off the power to the outdoor unit.
- (2) Remove the terminal block sub-assembly (1).
  - Remove the screws on the power supply terminal block (4) and the screws (3) securing the terminal block subassembly (1).
  - The screws will be reused during the installation of the service P.C. board, so keep them in a safe place.

Ex: MMY-MAP1004FT8\*(Z)(ZG)

Noise filter P.C. board (MCC-1608)



9 Line filter  
7 Card edge spacer

Noise filter P.C. board (431 6V 440)

3  
8  
8  
5 Screw

Noise filter P.C. board (A) (MMC-1608)

8  
8  
7

Remove terminal block sub-assembly (1).

2 Screw  
Lead (black)

2 Lead (white)

2 Lead (gray)

4 Power supply terminal block

3 Screw

2 Lead (red)

3

Noise filter P.C. board (B) (MMC-1608)

7

6 Screw

7

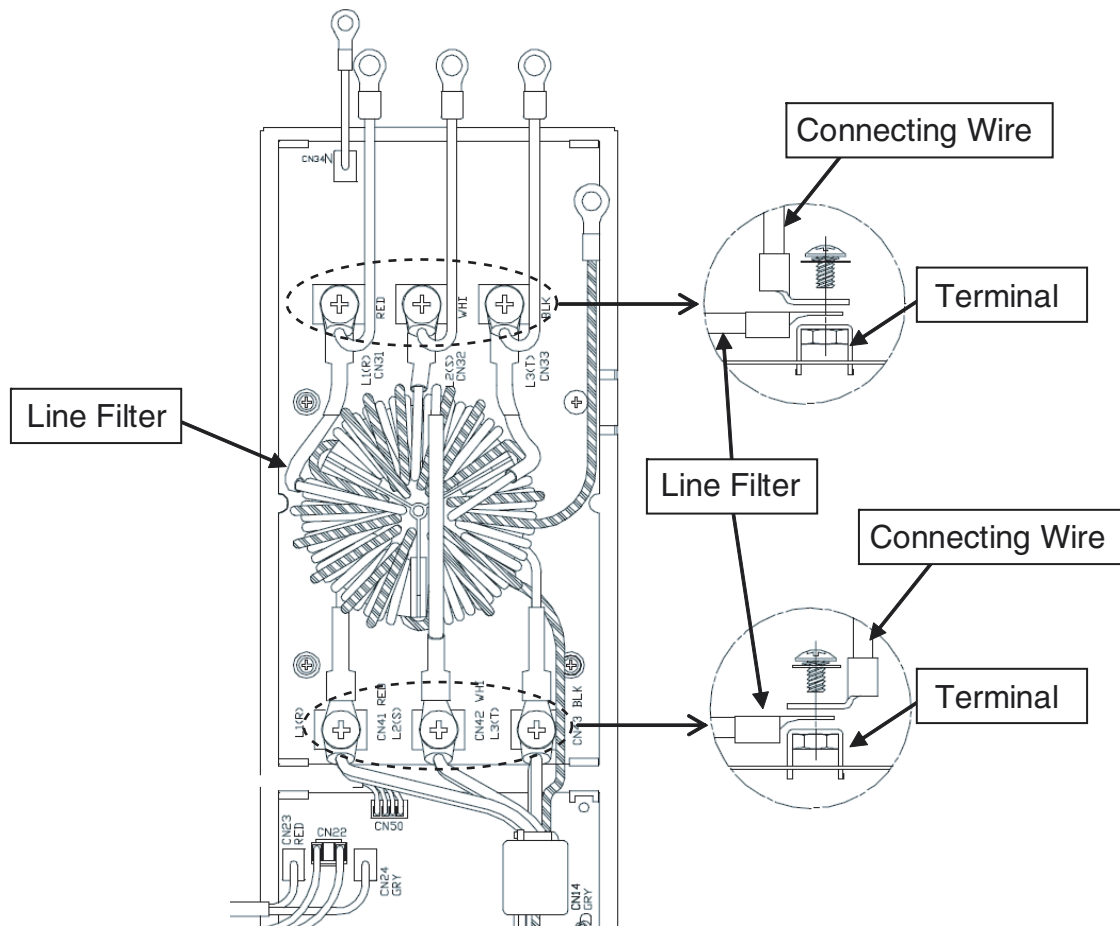
- (3) Disconnect all the connectors and fastons used to connect wiring to the noise filter P.C. board.
  - The line filter (9) and its leads, both connected to the screw-on terminals (8) of the noise filter P.C. board (A) will be removed in step 6.
  - Disconnect all the connectors and fastons.
- (4) Remove the earthing screws (5), (6).
  - The removed earthing screws (5), (6) will be reused during the installation of the service P.C. board, so keep them in a safe place.
- (5) Remove the noise filter P.C. board assembly by unlocking the four card edge spacers used to secure the P.C. board (7).
- (6) Remove the line filter (9) and its leads, both connected to the screw-on terminals (8) of the just-removed noise filter P.C. board (A), and reinstall them on the service P.C. board (A) by firmly connecting them to the screw-on terminals (8) in the same manner as before.

**Line Filter installation:**

Screw the line filter and the connecting wires together to the terminals as below.  
 The torque of 6 screws of the line filter is “2.5N•m”.

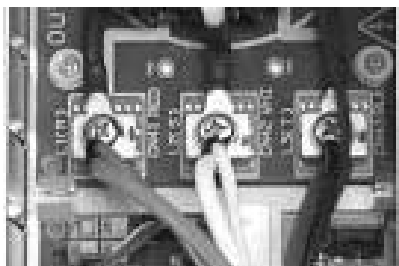
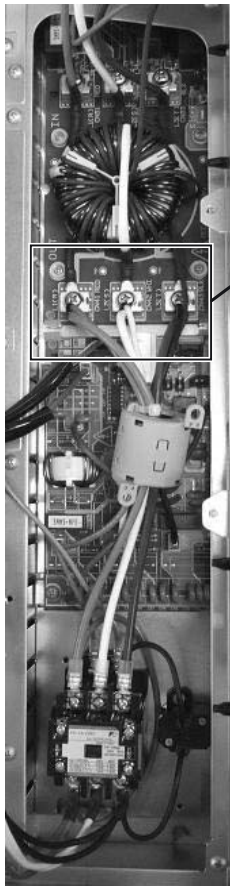
Please check that the screws connecting the line filter are not loose.  
 If the screw is loose, the screw will generate heats, and cause the line filter to breakdown.

Do not use an electric driver or an air driver, as this can cause damage to the line filter.



Connect the wires according to the wiring diagram.

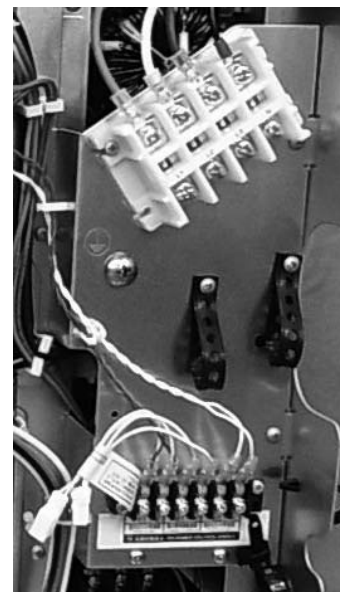
- (7) Install the service P.C. boards (A) and (B) in the outdoor unit controller.  
(Make sure that they are firmly secured to the card edge spacers (7).)
- (8) Securely connect the service P.C. boards to the chassis using the earthing screws (5), (6) removed in step 4.  
If either of the screws is loose, it will pose a risk of device failure by degrading noise control, so take care while engaging in the work.  
Nevertheless, do not use an electric or pneumatic screwdriver under any circumstances as it may lead to component damage.
- (9) Connect the wiring using the connectors and fastons removed in step 3.  
Make sure that the connectors and fastons are connected correctly and securely.
- (10) If any component on the P.C. board becomes crooked during replacement, straighten it without touching any other component.
- (11) Mount the terminal block sub-assembly (1) and firmly secure it using the screws (3).
- (12) Securely connect the red, white and black leads from the service P.C. board (A) to the power supply terminal block (4) using the screws (2).
- (13) Put the cover on, turn on the power, and check operation.



Close-up view of screw-on terminals (8)

Screw tightening torque (N•m)

Screw diameter	Torque (N•m)
M6	2.5±0.1
M4	1.2±0.1
M3	0.5±0.1



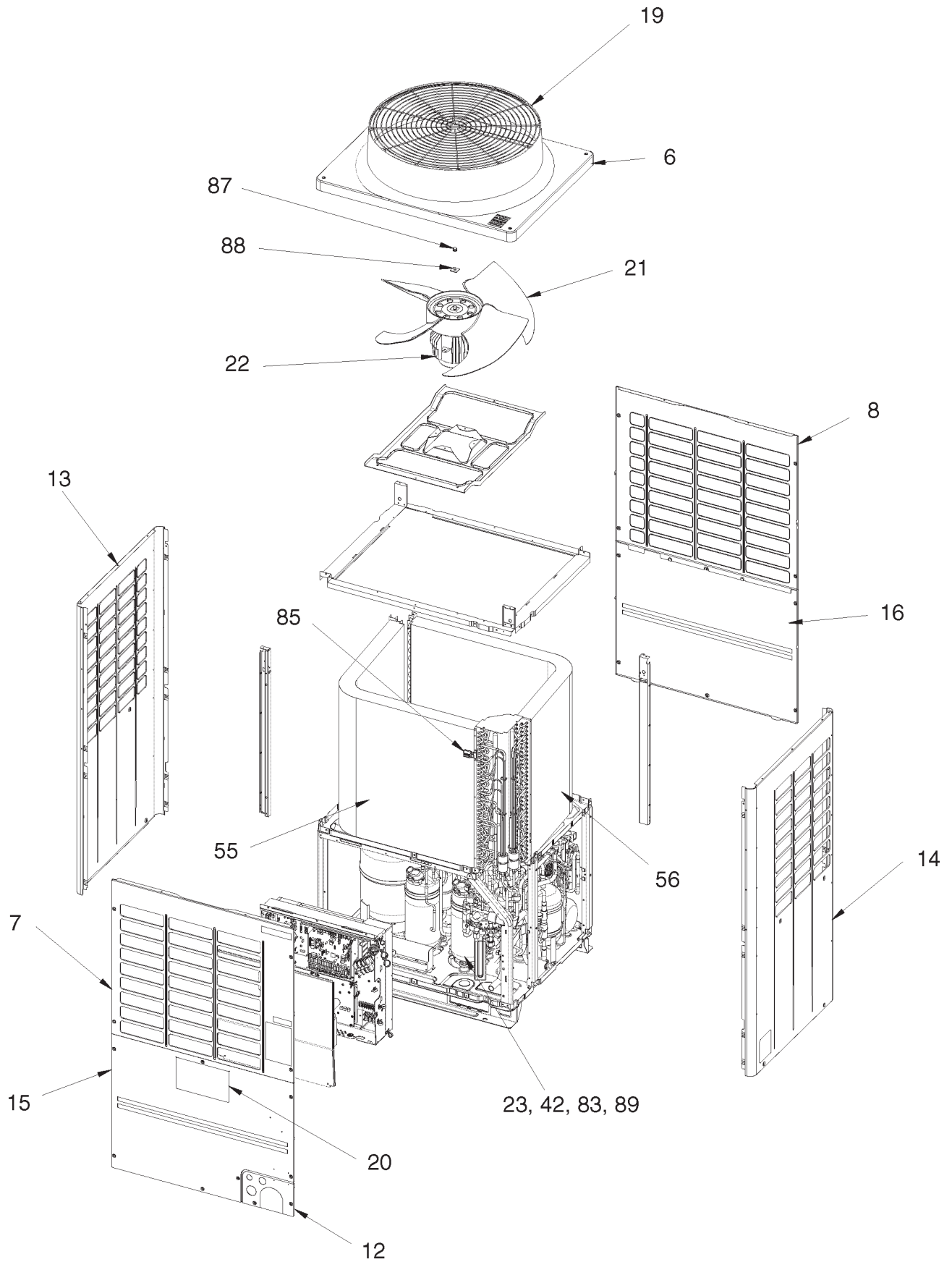
Close-up view of terminal block sub-assembly

# 14. EXPLODED DIAGRAM/PARTS LIST

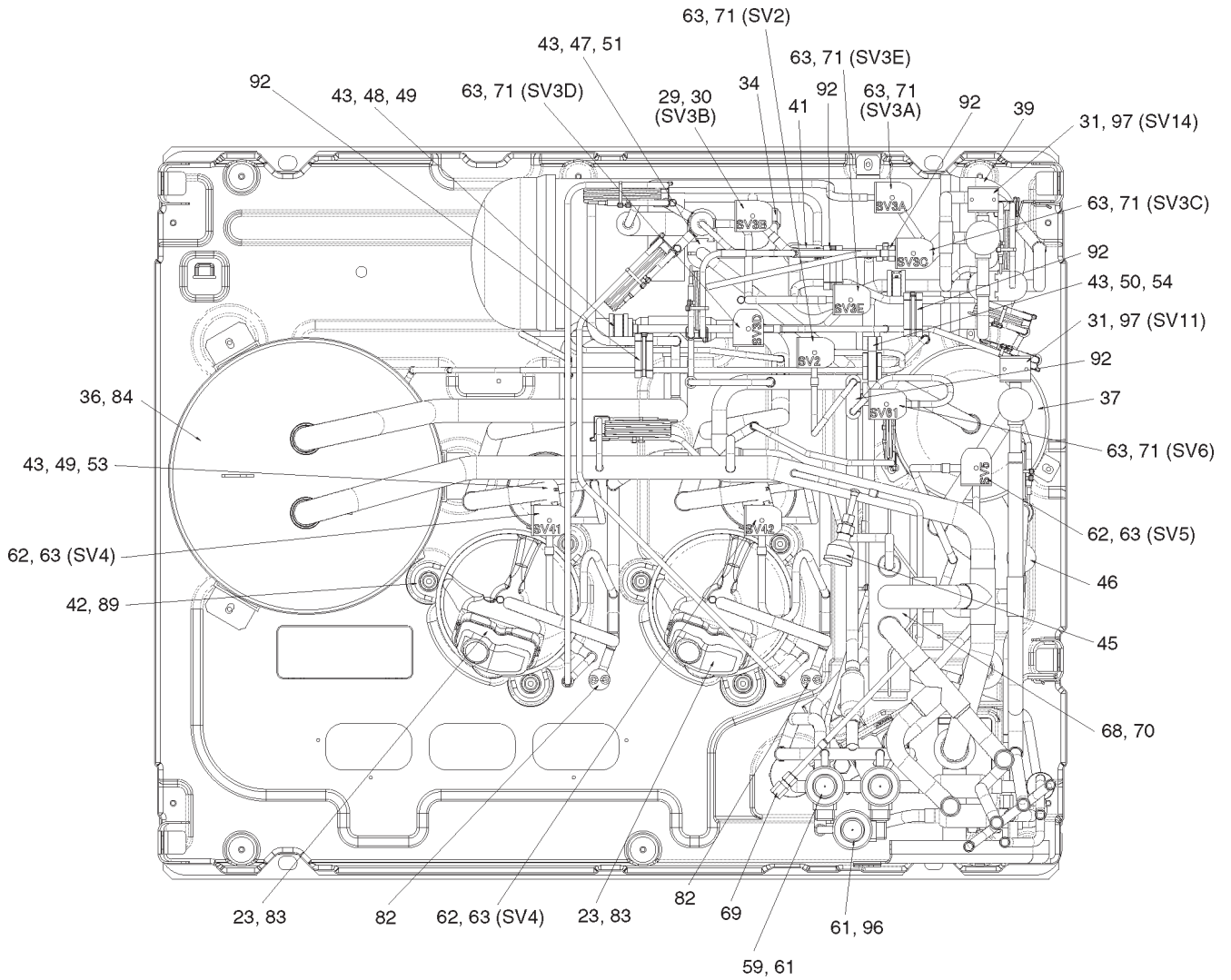
Outdoor unit

MMY-MAP0804FT8(Z)(ZG)-E

MMY-MAP1004FT8(Z)(ZG)-E



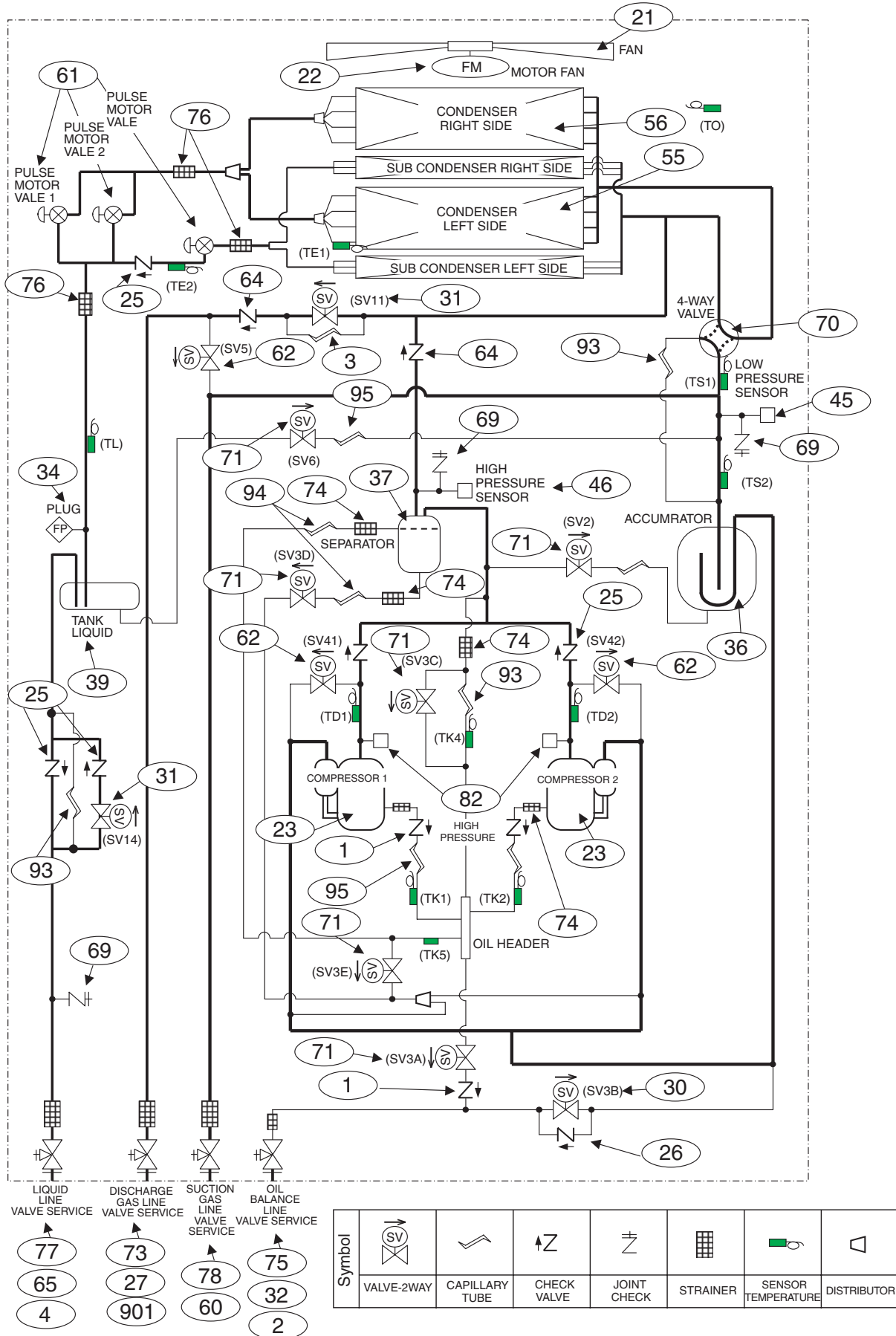
MMY-MAP0804FT8(Z)(ZG)-E  
 MMY-MAP1004FT8(Z)(ZG)-E



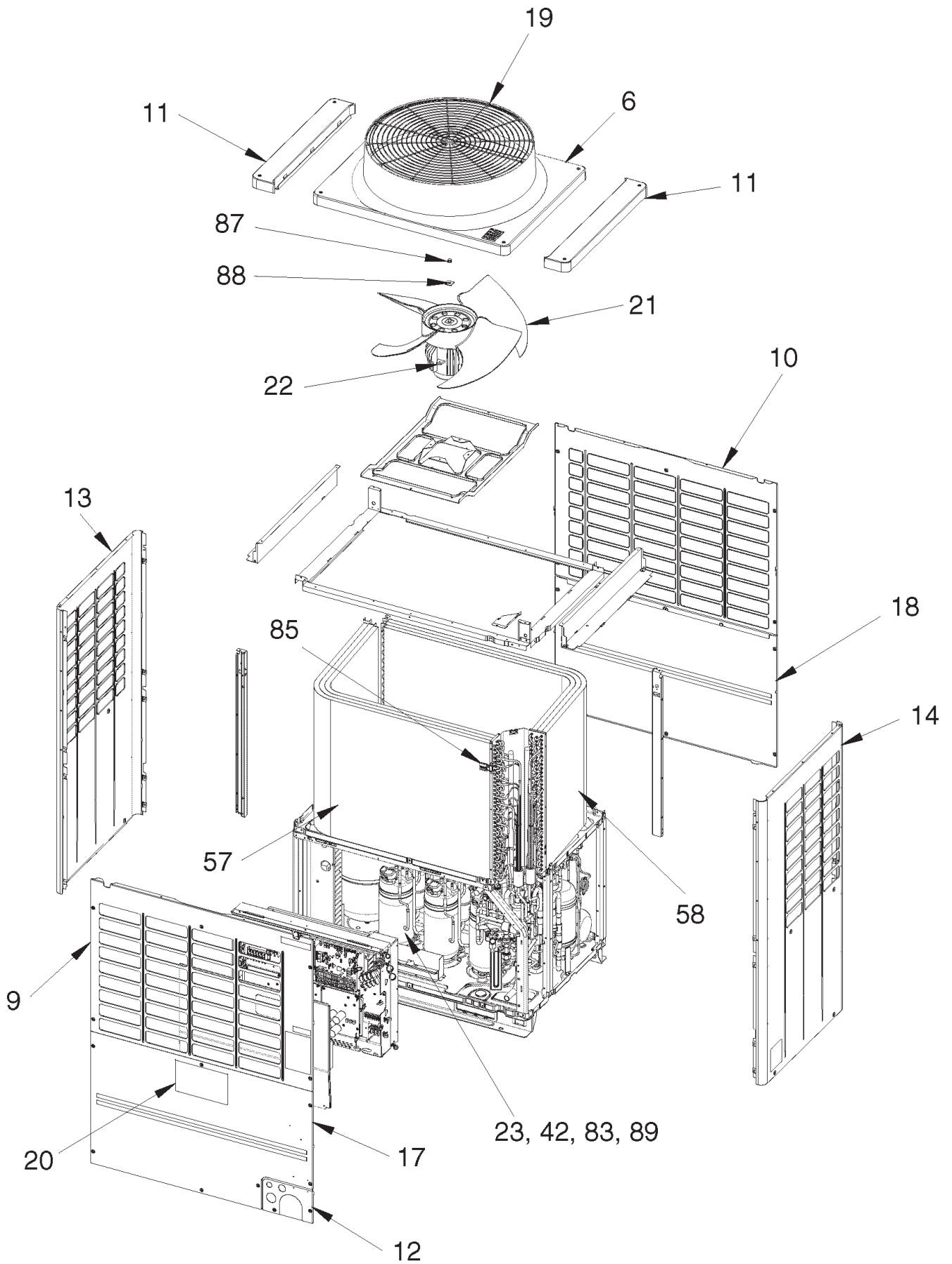
# Refrigeration Circuit diagram

MMY-MAP0804FT8(Z)(ZG)-E

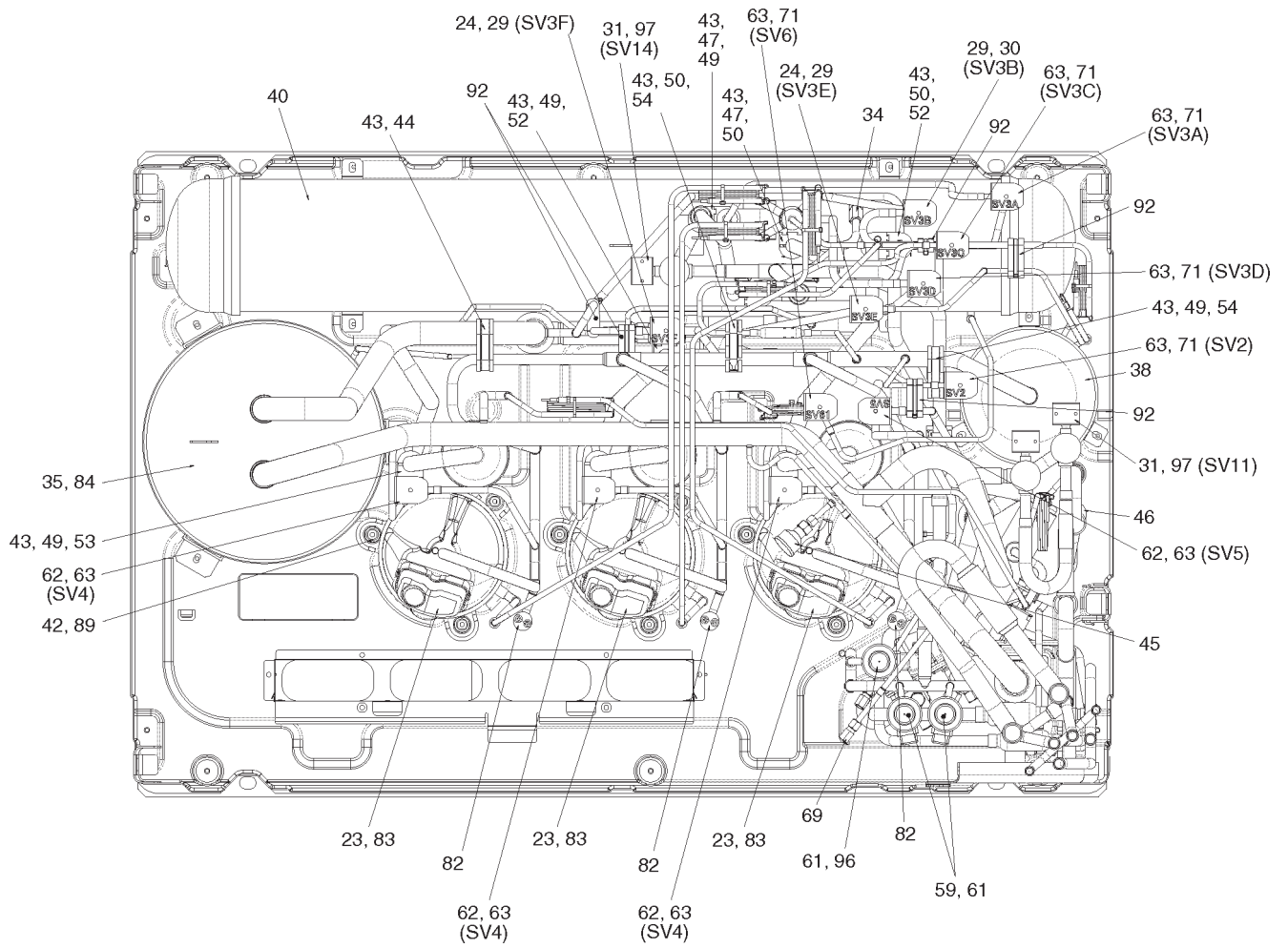
MMY-MAP1004FT8(Z)(ZG)-E



MMY-MAP1204FT8(Z)(ZG)-E  
 MMY-MAP1404FT8(Z)(ZG)-E



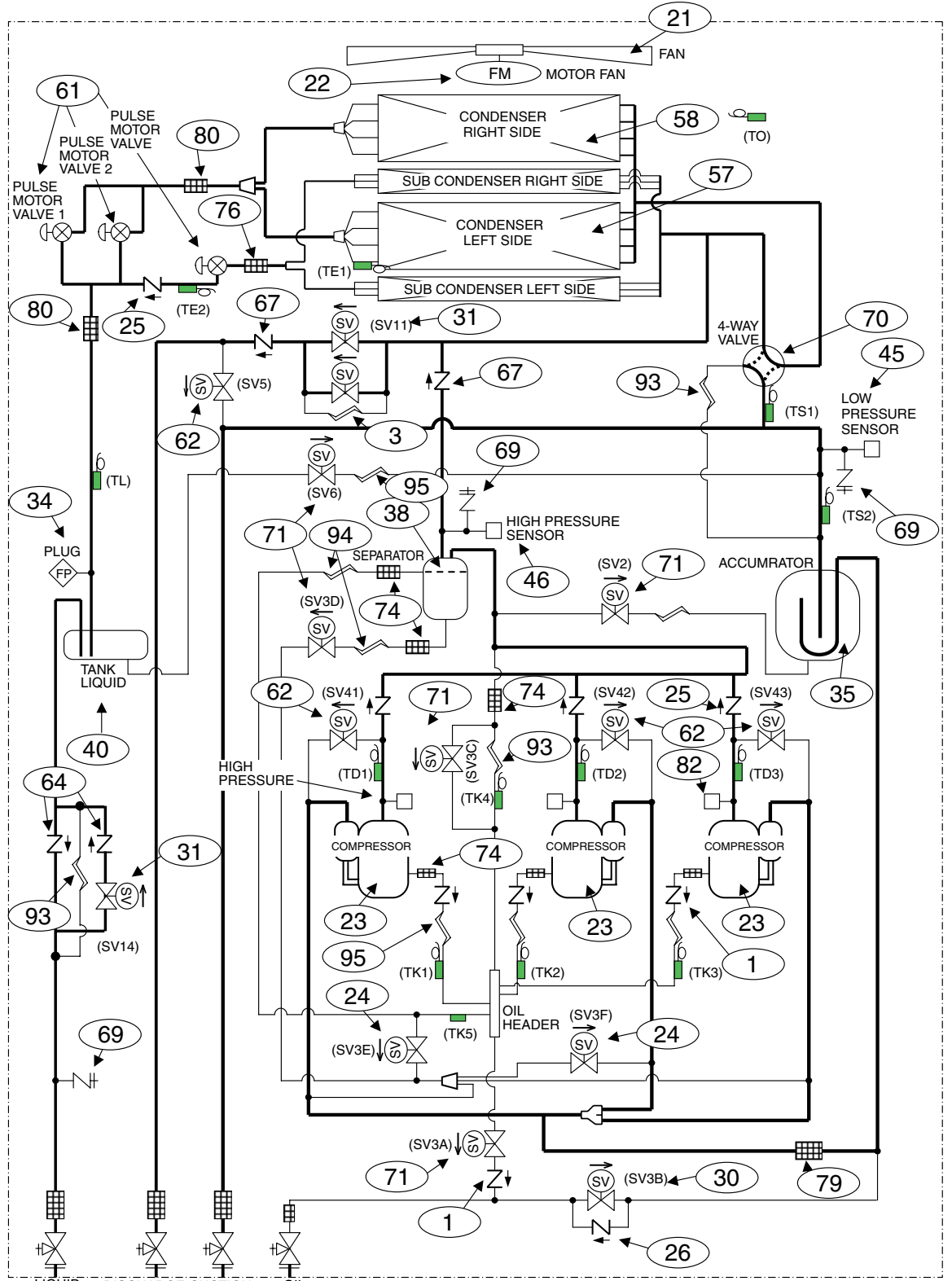
MMY-MAP1204FT8(Z)(ZG)-E  
 MMY-MAP1404FT8(Z)(ZG)-E



# Refrigeration Circuit diagram

MMY-MAP1204FT8(Z)(ZG)-E

MMY-MAP1404FT8(Z)(ZG)-E



Symbol							
Symbol	VALVE-2WAY	CAPILLARY TUBE	CHECK VALVE	JOINT CHECK	STRAINER	SENSOR TEMPERATURE	DISTRIBUTOR

LIQUID LINE VALVE SERVICE	DISCHARGE GAS LINE VALVE SERVICE	SUCTION GAS LINE VALVE SERVICE	OIL BALANCE LINE SERVICE
81	72	79	75
66	28	60	32
901	33		2

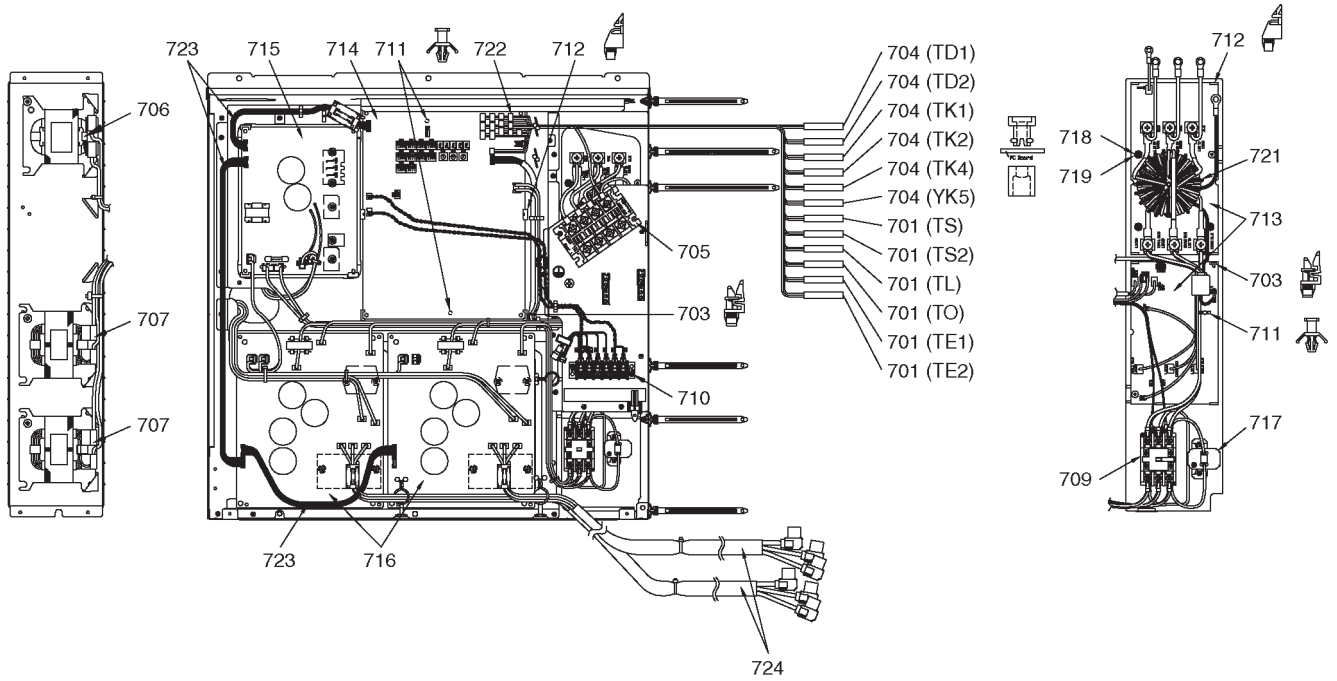
Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)-E			
			0804	1004	1204	1404
1	37547751	VALVE, CHECKED	3	3	4	4
2	43F47246	BONNET, 3/8 IN	1	1	1	1
3	43F47491	TUBE, CAPILLARY, I.D 1.5	1	1	1	1
4	43047692	BONNET	1	1		
5	43194029	BONNET, 5/8 IN	1	1	1	1
6	43100471	CABINET, AIR OUTLET	1	1	1	1
7	43100472	CABINET, AIR INLET, FRONT	1	1		
8	43100473	CABINET, AIR INLET, BACK	1	1		
9	43100474	CABINET, AIR INLET, FRONT			1	1
10	43100475	CABINET, AIR INLET, BACK			1	1
11	43100476	CABINET, SIDE, UP			2	2
12	43100477	PANEL	1	1	1	1
13	43100481	CABINET ASSY, SIDE, LEFT	1	1	1	1
14	43100482	CABINET ASSY, SIDE, RIGHT	1	1	1	1
15	43100483	CABINET ASSY, FRONT, DOWN	1	1		
16	43100484	CABINET ASSY, BACK, DOWN	1	1		
17	43100485	CABINET ASSY, FRONT, DOWN			1	1
18	43100486	CABINET ASSY, BACK, DOWN			1	1
19	43119525	GUARD, FAN	1	1	1	1
20	4311M675	MARK, TOSHIBA	1	1	1	1
21	43120252	FAN, PROPELLER	1	1	1	1
22	4312C101	MOTOR, FAN, DC280V	1	1	1	1
23	43141518	COMPRESSOR, DA421A3FB-29M	2	2	3	3
24	43146712	VALVE, 2WAY			2	2
25	43146715	VALVE, CHECKED	5	5	4	4
26	43146721	VALVE, CHECK	1	1	1	1
27	43146724	VALVE, BALL, SBV-JA5GTC-1, ROHS	1	1		
28	43146725	VALVE, BALL, SBV-JA6GTC-1, ROHS			1	1
29	4314N038	COIL, SOLENOID, AC220-240 50HZ	1	1	3	3
30	43146730	VALVE , 2WAY	1	1	1	1
31	4314N087	VALVE, 2WAY	2	2	3	3
32	43146741	VALVE, PACKED, 9.52	1	1	1	1
33	43147451	BONNET, 3/4 IN			1	1
34	43148220	PLUG, FUSIBLE	1	1	1	1
35	43148245	ACCUMULATOR			1	1
36	43148246	ACCUMULATOR	1	1		
37	43148241	SEPARATOR	1	1		
38	43148249	SEPARATOR			1	1
39	43148264	TANK, LIQUID	1	1		
40	43148265	TANK, LIQUID			1	1
41	43149323	RUBBER, SUPPORTER, PIPE	2	2		
42	43149324	RUBBER, CUSHION	6	6	9	9
43	43149325	BAND, FIX	5	5	9	9
44	43149388	RUBBER, SUPPORTER, PIPE			1	1
45	43149389	SENSOR ASSY, LOW PRESSURE	1	1	1	1
46	43149390	SENSOR ASSY, HIGH PRESSURE	1	1	1	1
47	43149403	RUBBER, SUPPORTER, PIPE	1	1	2	2
48	43149402	RUBBER, SUPPORTER, PIPE	1	1	2	2
49	43149404	RUBBER, SUPPORTER, PIPE	3	3	6	6
50	43149405	RUBBER, SUPPORTER, PIPE	1	1	5	5

Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)-E			
			0804	1004	1204	1404
51	43149406	RUBBER, SUPPORTER, PIPE	4	4		
52	43149407	RUBBER, SUPPORTER, PIPE			3	3
53	43149408	RUBBER, SUPPORTER, PIPE	2	2	3	3
54	43149409	RUBBER, SUPPORTER, PIPE	2	2	3	3
55	4314G309	CONDENSER ASSY, THREE ROW, LEFT	1	1		
56	4314G310	CONDENSER ASSY, THREE ROW, RIGHT	1	1		
57	4314G312	CONDENSER ASSY, THREE ROW, LEFT			1	1
58	4314G311	CONDENSER ASSY, THREE ROW, RIGHT			1	1
59	4314N028	COIL, PMV	2	2	2	2
60	4314N041	VALVE, BALL, 25.4	1	1	1	1
61	4314N043	VALVE, PMV	3	3	3	3
62	4314N044	VALVE, 2WAY	3	3	4	4
63	4314N047	COIL, VALVE, 2WAY	9	9	9	9
64	4314N065	VALVE, CHECK	2	2	2	2
65	4314N073	VALVE, PACKED, 12.7	1	1		
66	4314N074	VALVE, PACKED, 15.88			1	1
67	4314N075	VALVE, CHECK			2	2
68	4314N080	COIL, SOLENOID, STF-H01AJ1736A1	1	1	1	1
69	43146676	JOINT,CHECK	3	3	3	3
70	4314N078	VALVE, 4WAY	1	1	1	1
71	4314N079	VALVE, 2WAY	6	6	5	5
72	4314Q052	STRAINER			1	1
73	4314Q053	STRAINER	1	1		
74	4314Q054	STRAINER	5	5	6	6
75	4314Q055	STRAINER	1	1	1	1
76	4314Q056	STRAINER	3	3	1	1
78	4314Q057	STRAINER	1	1		
79	4314Q093	STRAINER	1	1		
80	4314Q094	STRAINER			2	2
81	4314Q095	STRAINER			2	2
82	4314Q096	STRAINER			1	1
83	43151283	SWITCH, PRESSURE ACB-4UB32W	2	2	3	3
84	43157276	HEATER, CASE, 29W 240V	2	2	3	3
85	43157290	HEATER, CASE, 55W 240V	1	1	1	1
86	43163063	HOLDER, SENSOR, TO	1	1	1	1
87	43197175	NUT, FLANGE	1	1	1	1
88	43197176	WASHER	1	1	1	1
89	43197184	BOLT, COMPRESSOR	6	6	9	9
90	431S8262	OWNER'S MANUAL	1	1	1	1
91	43F19904	HOLDER, SENSOR (TS)	11	11	13	13
92	43F49683	BAND	5	5	6	6
93	44246235	TUBE, CAPILLARY, BYPASS	1	1	1	1
94	44246236	TUBE, CAPILLARY, BYPASS, 1.0X2.0X2000L	1	1	1	1
95	44246239	TUBE, CAPILLARY, ID 1.2	1	1	1	1
96	4314N090	ASM-PMV(4)	1	1	1	1
97	4314N089	COIL, SOLENOID, AC240V, 50HZ	2	2	3	3

## Inverter assembly

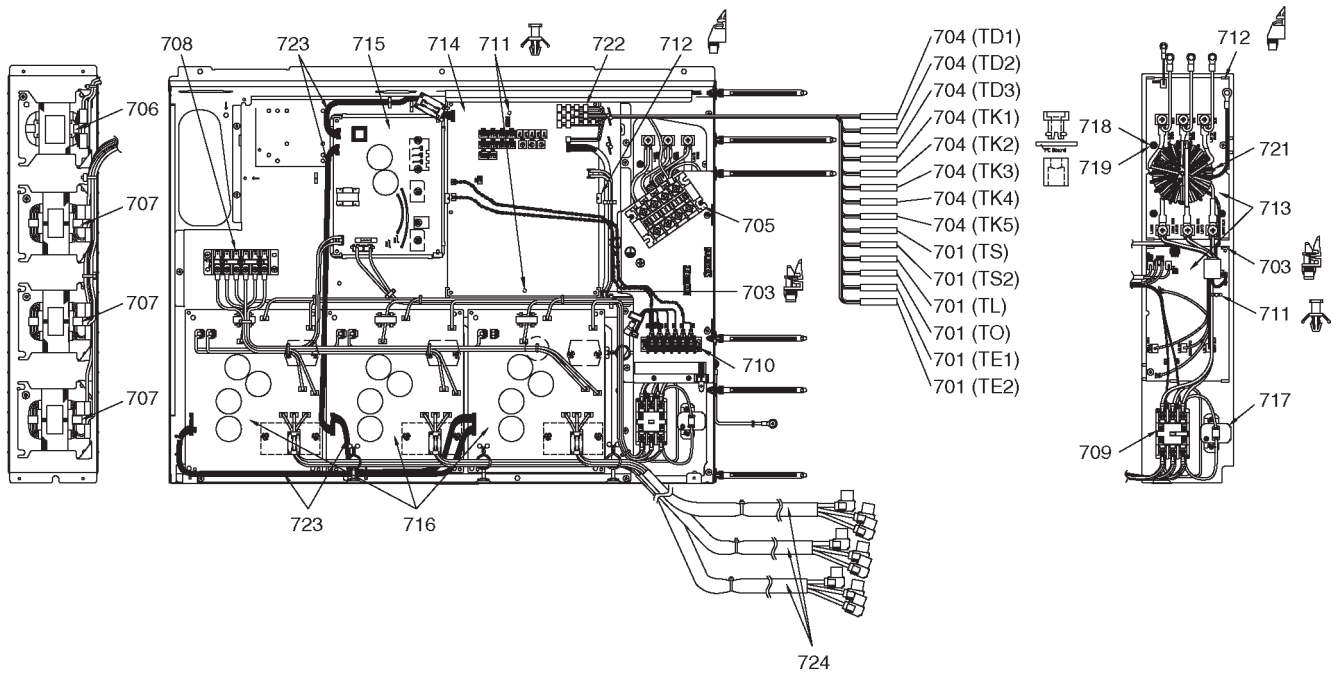
MMY-MAP0804FT8(Z)(ZG)-E

MMY-MAP1004FT8(Z)(ZG)-E



MMY-MAP1204FT8(Z)(ZG)-E

MMY-MAP1404FT8(Z)(ZG)-E

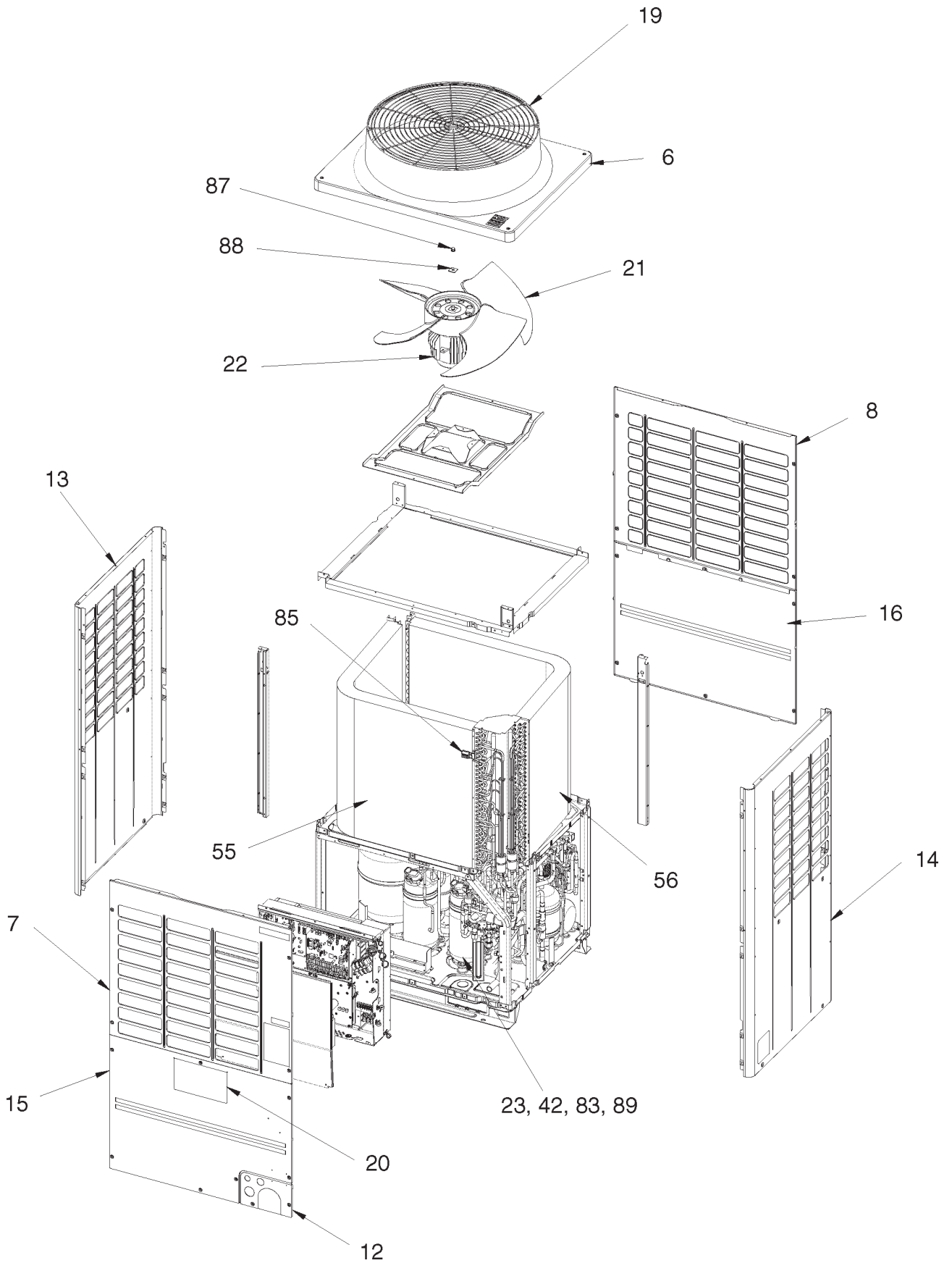


Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)-E			
			0804	1004	1204	1404
701	43050425	SENSOR ASSY, SERVICE	6	6	6	6
703	43F63248	SUPPORTER, ASSY	2	2	2	2
704	43150315	SENSOR,TD(F6)	6	6	8	8
705	43160620	TERMINAL, 4P	1	1	1	1
706	43158228	REACTOR	1	1	1	1
707	43158229	REACTOR, CH-79	2	2	3	3
708	43160621	TERMINAL, 6P			1	1
709	43152519	CONTACTOR, MAGNETIC	1	1	1	1
710	43160583	TERMINAL, 6P	1	1	1	1
711	43F69524	SUPORT, SPACER	3	3	3	3
712	43182011	SPACER(EDGE)	10	10	10	10
713	4316V440	PC BOARD ASSY, NOISE FILTER, MCC-1608	1	1	1	1
714	4316V503	PC BOARD ASSY INTERFACE, MCC-1606	1	1	1	1
715	4316V512	PC BOARD ASSY FAN IPDU, MCC-1610	1	1	1	1
716	4316V441	PC BOARD ASSY, COMP-IPDU, MCC-1596	2	2	3	3
717	43153007	THERMISTOR, PTC	1	1	1	1
718	43282001	BUSHING	3	3	3	3
719	43183020	COLLAR	3	3	3	3
721	43155222	FILTER, LINE	1	1	1	1
722	43160618	CONNECTOR ASSY	4	4	5	5
723	43160619	WIRE ASSY	1	1	1	1
724	43160638	LEAD ASSY, COMPRESSOR	2	2	3	3

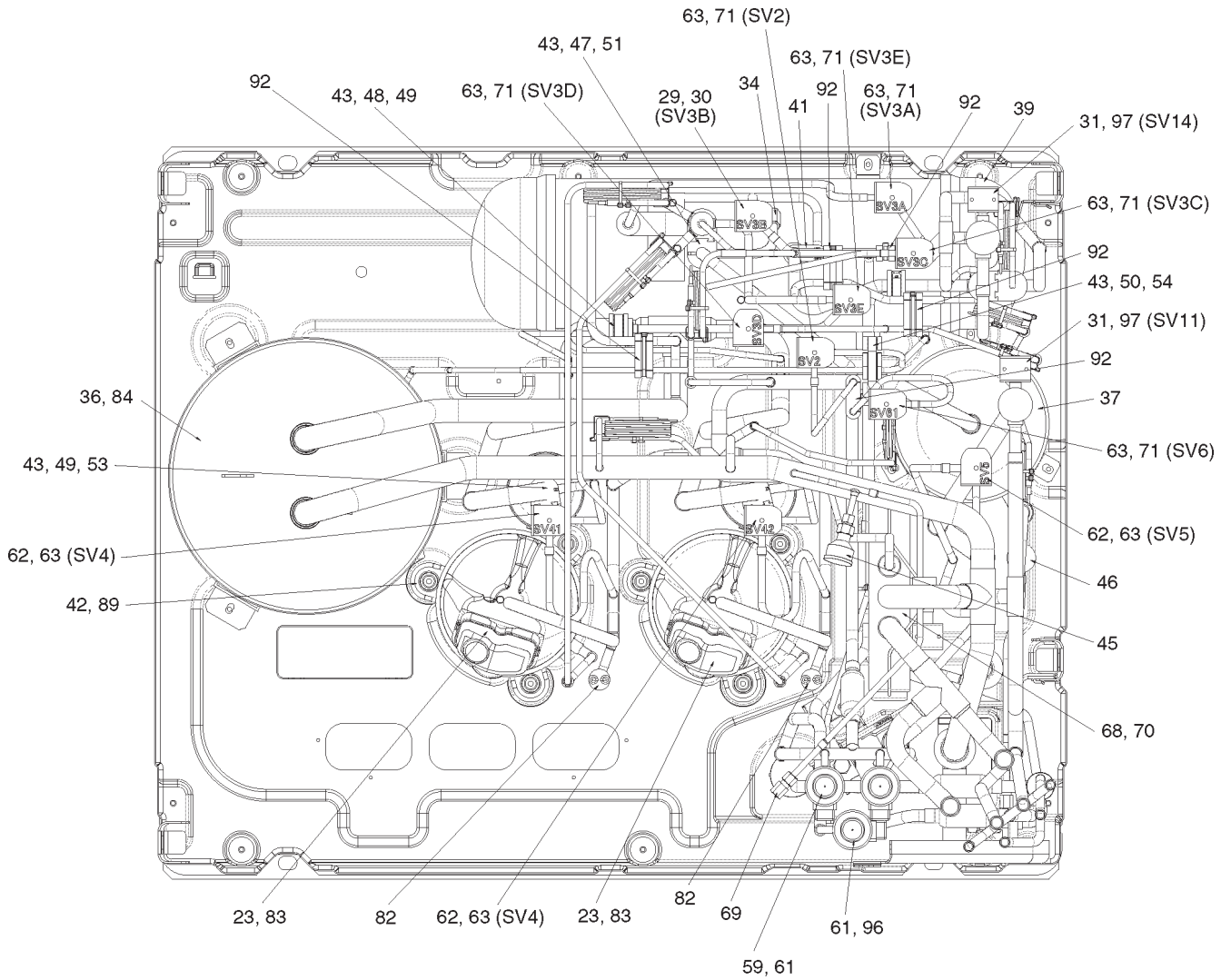
**Outdoor unit**

**MMY-MAP0804FT8(Z)(ZG)-TR**

**MMY-MAP1004FT8(Z)(ZG)-TR**



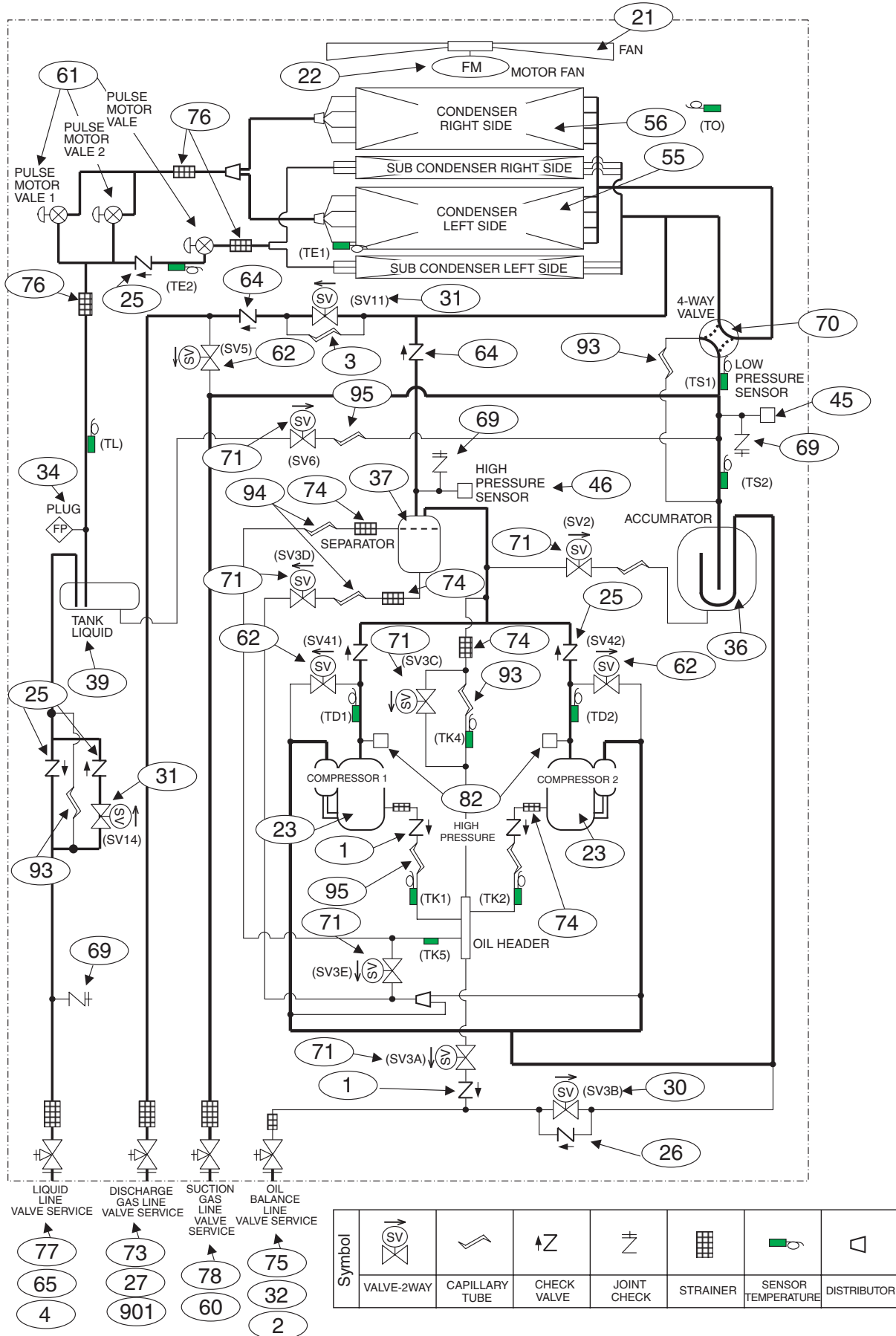
MMY-MAP0804FT8(Z)(ZG)-TR  
 MMY-MAP1004FT8(Z)(ZG)-TR



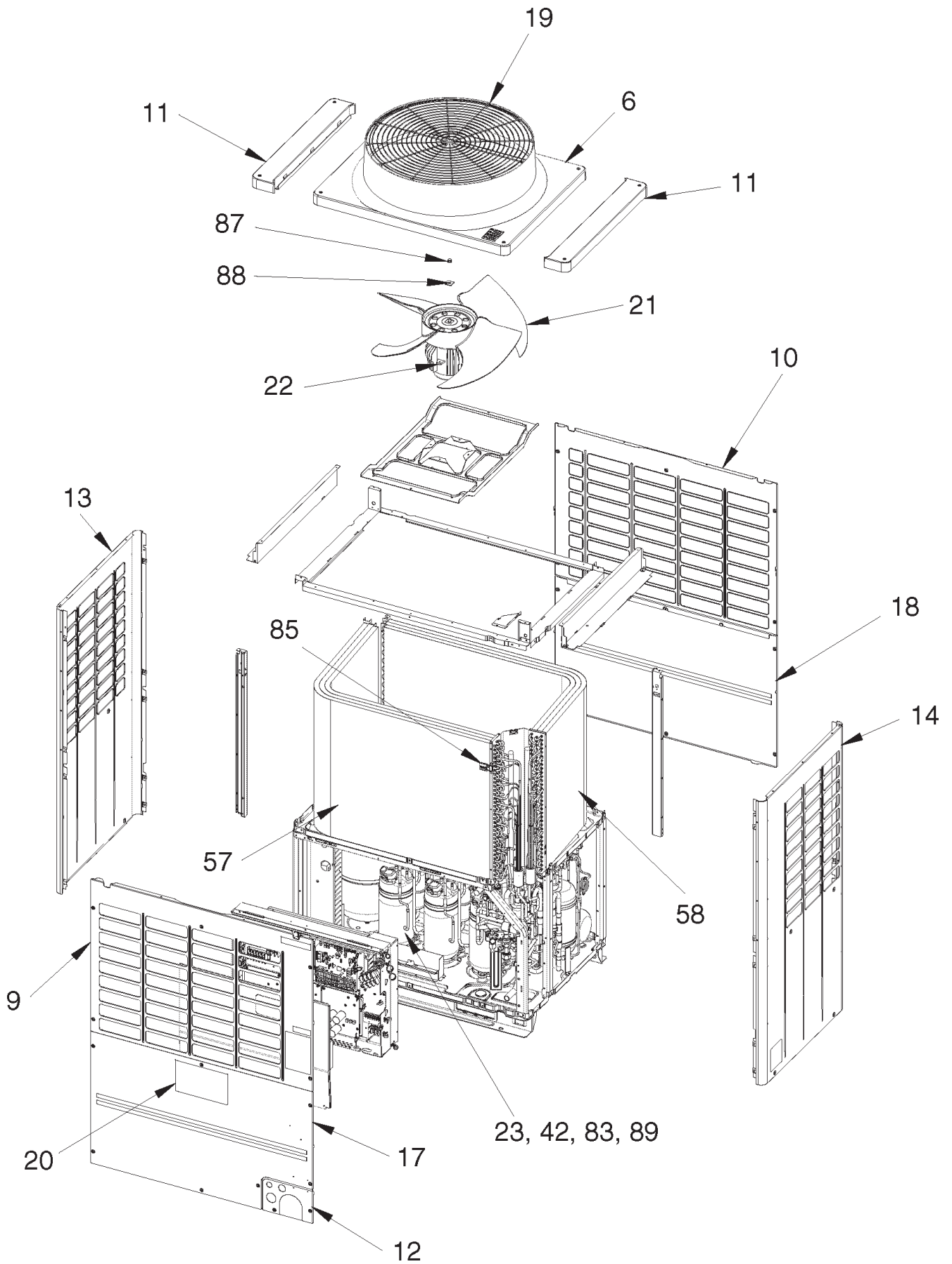
# Refrigeration Circuit diagram

MMY-MAP0804FT8(Z)(ZG)-TR

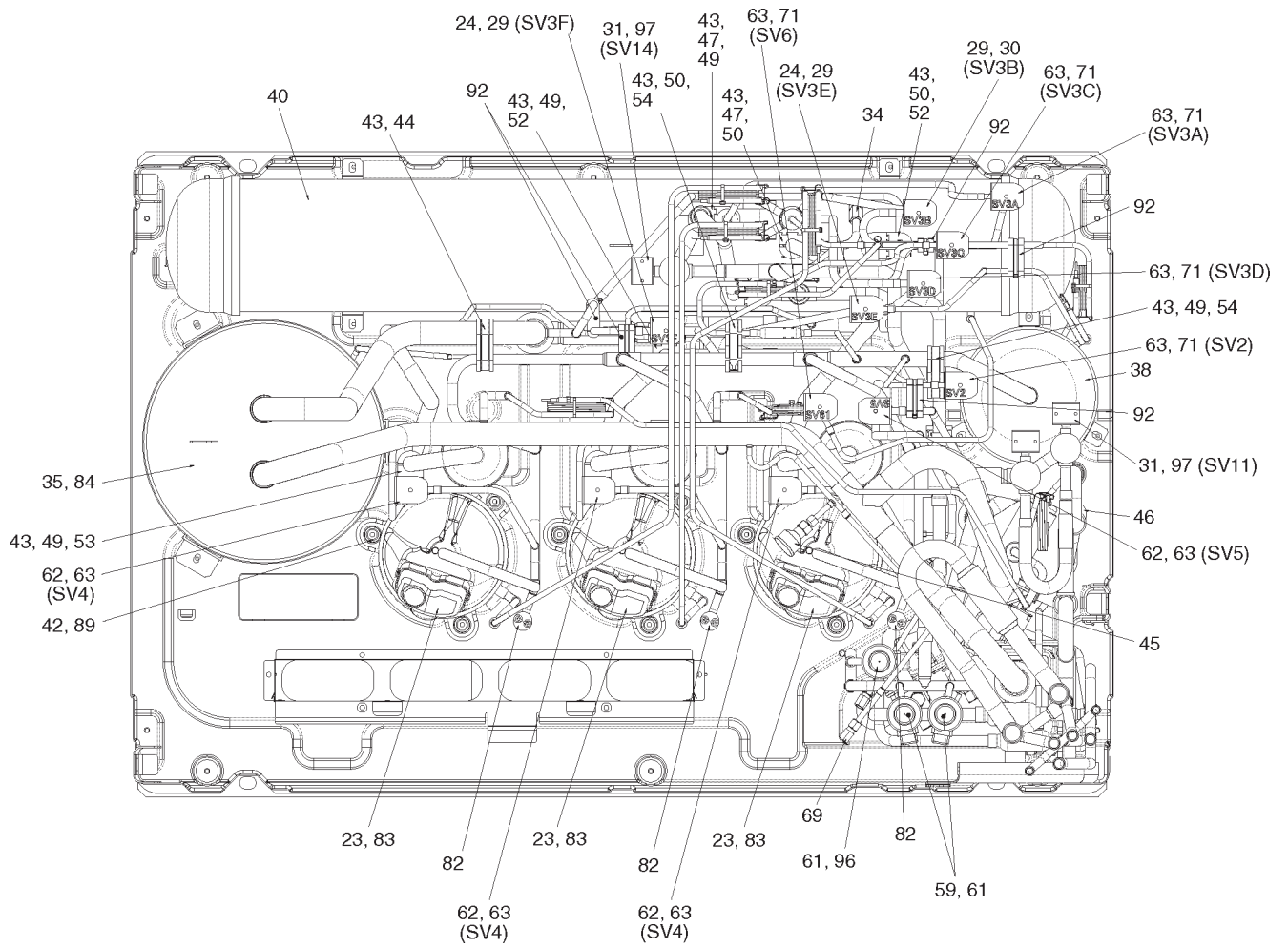
MMY-MAP1004FT8(Z)(ZG)-TR



MMY-MAP1204FT8(Z)(ZG)-TR  
MMY-MAP1404FT8(Z)(ZG)-TR



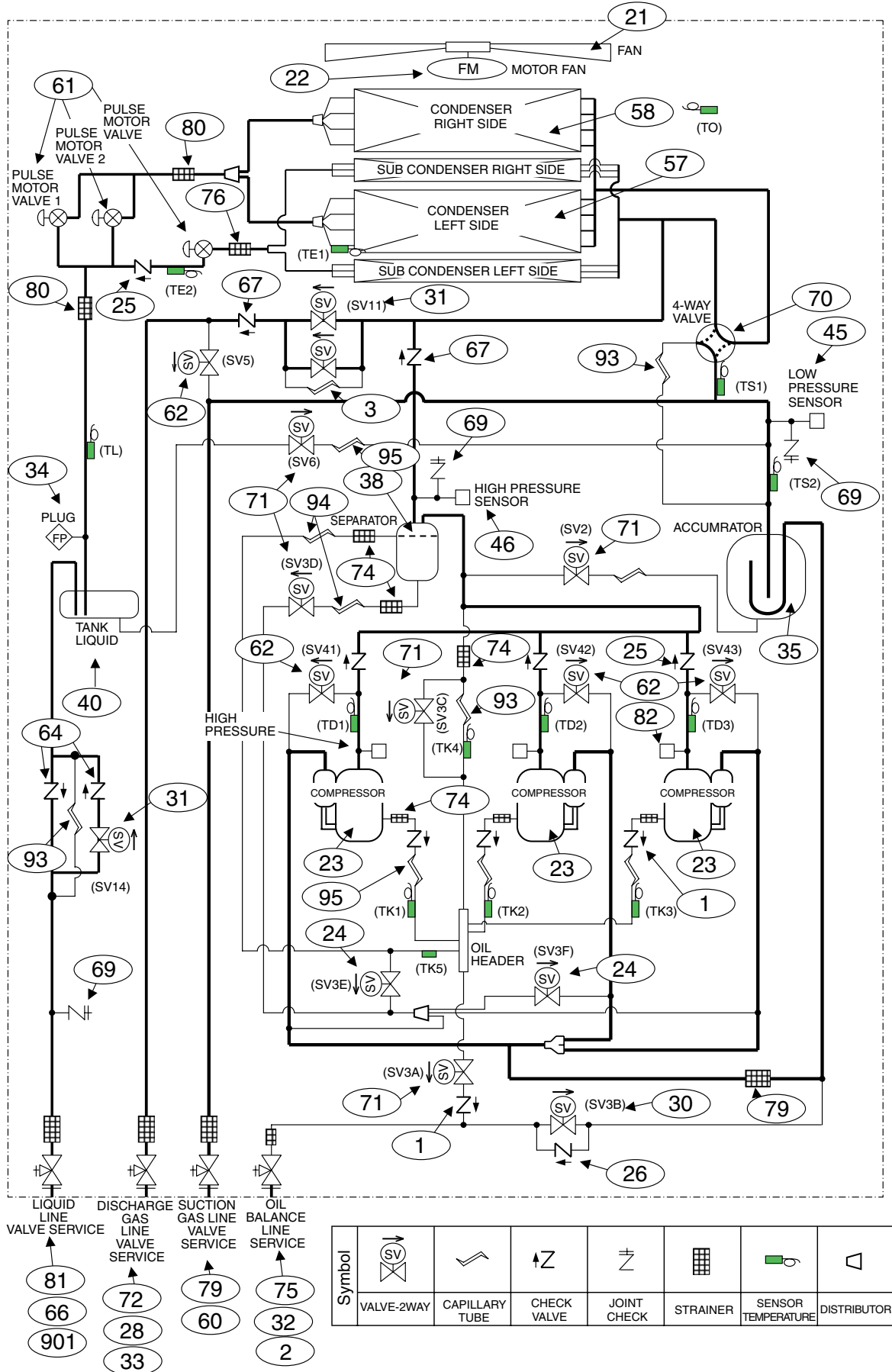
MMY-MAP1204FT8(Z)(ZG)-TR  
 MMY-MAP1404FT8(Z)(ZG)-TR



# Refrigeration Circuit diagram

MMY-MAP1204FT8(Z)(ZG)-TR

MMY-MAP1404FT8(Z)(ZG)-TR



Symbol							
	VALVE-2WAY	CAPILLARY TUBE	CHECK VALVE	JOINT CHECK	STRAINER	SENSOR TEMPERATURE	DISTRIBUTOR

- LIQUID LINE VALVE SERVICE: 81, 66, 901
- DISCHARGE GAS LINE VALVE SERVICE: 72, 28, 33
- SUCTION GAS LINE VALVE SERVICE: 79, 60
- OIL BALANCE LINE SERVICE: 75, 32, 2

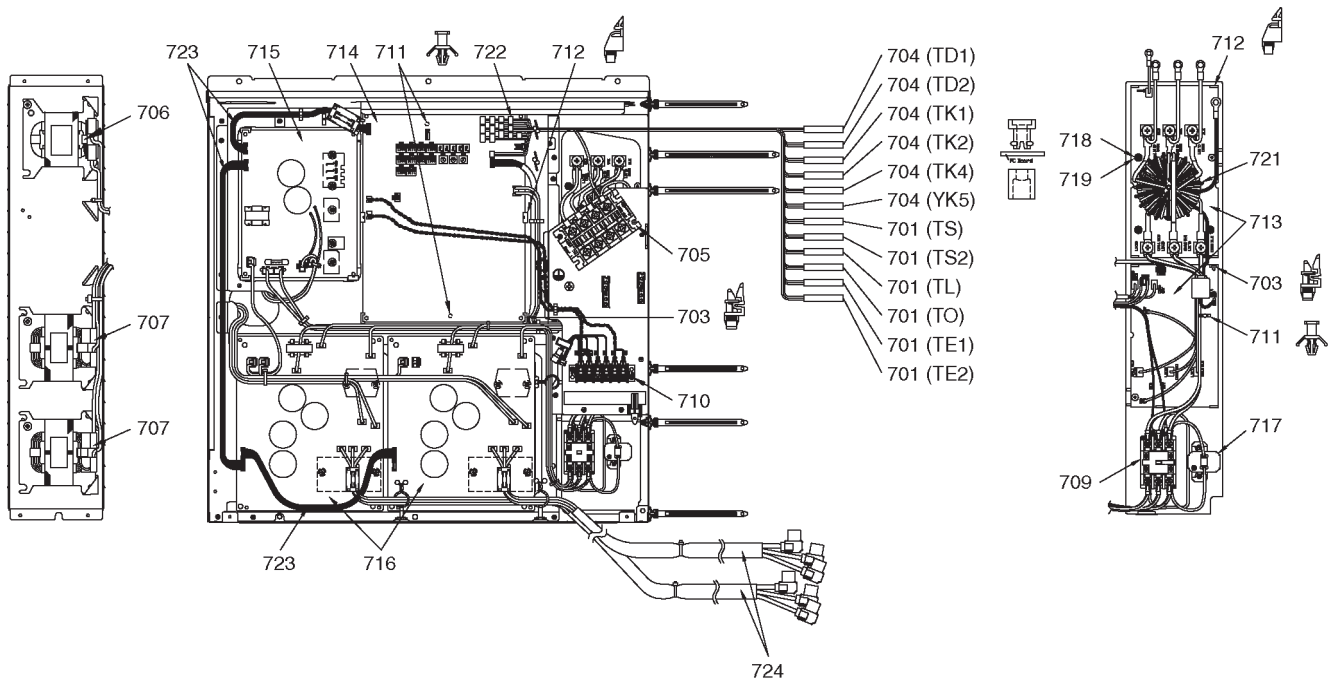
Ref.No.	Part No.	Description	MMY-MAP*****FT8(Z)(ZG)-TR			
			0804	1004	1204	1404
1	37547751	VALVE, CHECKED	3	3	4	4
2	43F47246	BONNET, 3/8 IN	1	1	1	1
3	43F47491	TUBE, CAPILLARY, I.D 1.5	1	1	1	1
4	43047692	BONNET	1	1		
5	43194029	BONNET, 5/8 IN	1	1	1	1
6	43100471	CABINET, AIR OUTLET	1	1	1	1
7	43100472	CABINET, AIR INLET, FRONT	1	1		
8	43100473	CABINET, AIR INLET, BACK	1	1		
9	43100474	CABINET, AIR INLET, FRONT			1	1
10	43100475	CABINET, AIR INLET, BACK			1	1
11	43100476	CABINET, SIDE, UP			2	2
12	43100477	PANEL	1	1	1	1
13	43100481	CABINET ASSY, SIDE, LEFT	1	1	1	1
14	43100482	CABINET ASSY, SIDE, RIGHT	1	1	1	1
15	43100483	CABINET ASSY, FRONT, DOWN	1	1		
16	43100484	CABINET ASSY, BACK, DOWN	1	1		
17	43100485	CABINET ASSY, FRONT, DOWN			1	1
18	43100486	CABINET ASSY, BACK, DOWN			1	1
19	43119525	GUARD, FAN	1	1	1	1
20	4311M675	MARK, TOSHIBA	1	1	1	1
21	43120252	FAN, PROPELLER	1	1	1	1
22	4312C101	MOTOR, FAN, DC280V	1	1	1	1
23	43141518	COMPRESSOR, DA421A3FB-29M	2	2	3	3
24	43146712	VALVE, 2WAY			2	2
25	43146715	VALVE, CHECKED	5	5	4	4
26	43146721	VALVE, CHECK	1	1	1	1
27	43146724	VALVE, BALL, SBV-JA5GTC-1, ROHS	1	1		
28	43146725	VALVE, BALL, SBV-JA6GTC-1, ROHS			1	1
29	4314N038	COIL, SOLENOID, AC220-240 50HZ	1	1	3	3
30	43146730	VALVE , 2WAY	1	1	1	1
31	4314N087	VALVE, 2WAY	2	2	3	3
32	43146741	VALVE, PACKED, 9.52	1	1	1	1
33	43147451	BONNET, 3/4 IN			1	1
34	43148220	PLUG, FUSIBLE	1	1	1	1
35	43148245	ACCUMULATOR			1	1
36	43148246	ACCUMULATOR	1	1		
37	43148241	SEPARATOR	1	1		
38	43148249	SEPARATOR			1	1
39	43148264	TANK, LIQUID	1	1		
40	43148265	TANK, LIQUID			1	1
41	43149323	RUBBER, SUPPORTER, PIPE	2	2		
42	43149324	RUBBER, CUSHION	6	6	9	9
43	43149325	BAND, FIX	5	5	9	9
44	43149388	RUBBER, SUPPORTER, PIPE			1	1
45	43149389	SENSOR ASSY, LOW PRESSURE	1	1	1	1
46	43149390	SENSOR ASSY, HIGH PRESSURE	1	1	1	1
47	43149403	RUBBER, SUPPORTER, PIPE	1	1	2	2
48	43149402	RUBBER, SUPPORTER, PIPE	1	1	2	2
49	43149404	RUBBER, SUPPORTER, PIPE	3	3	6	6
50	43149405	RUBBER, SUPPORTER, PIPE	1	1	5	5

Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)-TR			
			0804	1004	1204	1404
51	43149406	RUBBER, SUPPORTER, PIPE	4	4		
52	43149407	RUBBER, SUPPORTER, PIPE			3	3
53	43149408	RUBBER, SUPPORTER, PIPE	2	2	3	3
54	43149409	RUBBER, SUPPORTER, PIPE	2	2	3	3
55	4314G309	CONDENSER ASSY, THREE ROW, LEFT	1	1		
56	4314G310	CONDENSER ASSY, THREE ROW, RIGHT	1	1		
57	4314G312	CONDENSER ASSY, THREE ROW, LEFT			1	1
58	4314G311	CONDENSER ASSY, THREE ROW, RIGHT			1	1
59	4314N028	COIL, PMV	2	2	2	2
60	4314N041	VALVE, BALL, 25.4	1	1	1	1
61	4314N043	VALVE, PMV	3	3	3	3
62	4314N044	VALVE, 2WAY	3	3	4	4
63	4314N047	COIL, VALVE, 2WAY	9	9	9	9
64	4314N065	VALVE, CHECK	2	2	2	2
65	4314N073	VALVE, PACKED, 12.7	1	1		
66	4314N074	VALVE, PACKED, 15.88			1	1
67	4314N075	VALVE, CHECK			2	2
68	4314N080	COIL, SOLENOID, STF-H01AJ1736A1	1	1	1	1
69	43146676	JOINT,CHECK	3	3	3	3
70	4314N078	VALVE, 4WAY	1	1	1	1
71	4314N079	VALVE, 2WAY	6	6	5	5
72	4314Q052	STRAINER			1	1
73	4314Q053	STRAINER	1	1		
74	4314Q054	STRAINER	5	5	6	6
75	4314Q055	STRAINER	1	1	1	1
76	4314Q056	STRAINER	3	3	1	1
78	4314Q057	STRAINER	1	1		
79	4314Q093	STRAINER	1	1		
80	4314Q094	STRAINER			2	2
81	4314Q095	STRAINER			2	2
82	4314Q096	STRAINER			1	1
83	43151283	SWITCH, PRESSURE ACB-4UB32W	2	2	3	3
84	43157276	HEATER, CASE, 29W 240V	2	2	3	3
85	43157290	HEATER, CASE, 55W 240V	1	1	1	1
86	43163063	HOLDER, SENSOR, TO	1	1	1	1
87	43197175	NUT, FLANGE	1	1	1	1
88	43197176	WASHER	1	1	1	1
89	43197184	BOLT, COMPRESSOR	6	6	9	9
90	431S8264	OWNER'S MANUAL	1	1	1	1
91	43F19904	HOLDER, SENSOR (TS)	11	11	13	13
92	43F49683	BAND	5	5	6	6
93	44246235	TUBE, CAPILLARY, BYPASS	1	1	1	1
94	44246236	TUBE, CAPILLARY, BYPASS, 1.0X2.0X2000L	1	1	1	1
95	44246239	TUBE, CAPILLARY, ID 1.2	1	1	1	1
96	4314N090	ASM-PMV(4)	1	1	1	1
97	4314N089	COIL, SOLENOID, AC240V, 50HZ	2	2	3	3

## Inverter assembly

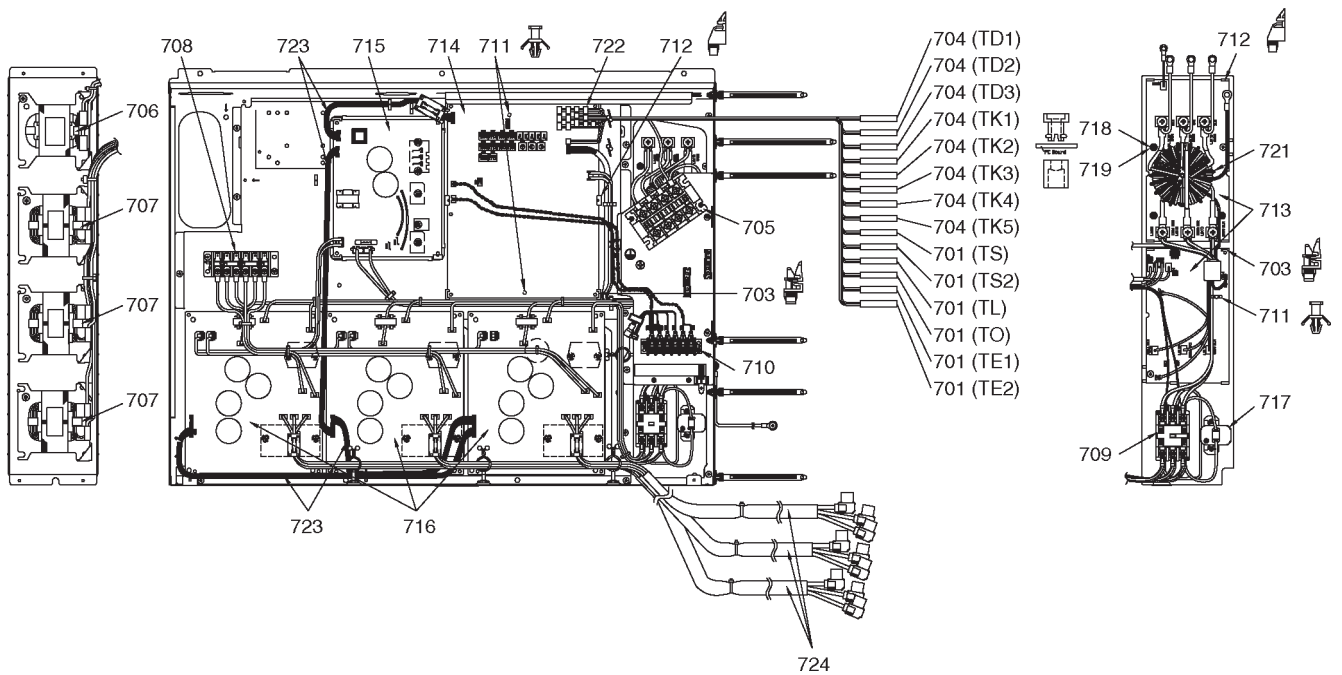
MMY-MAP0804FT8(Z)(ZG)-TR

MMY-MAP1004FT8(Z)(ZG)-TR



\MMY-MAP1204FT8(Z)(ZG)-TR

MMY-MAP1404FT8(Z)(ZG)-TR

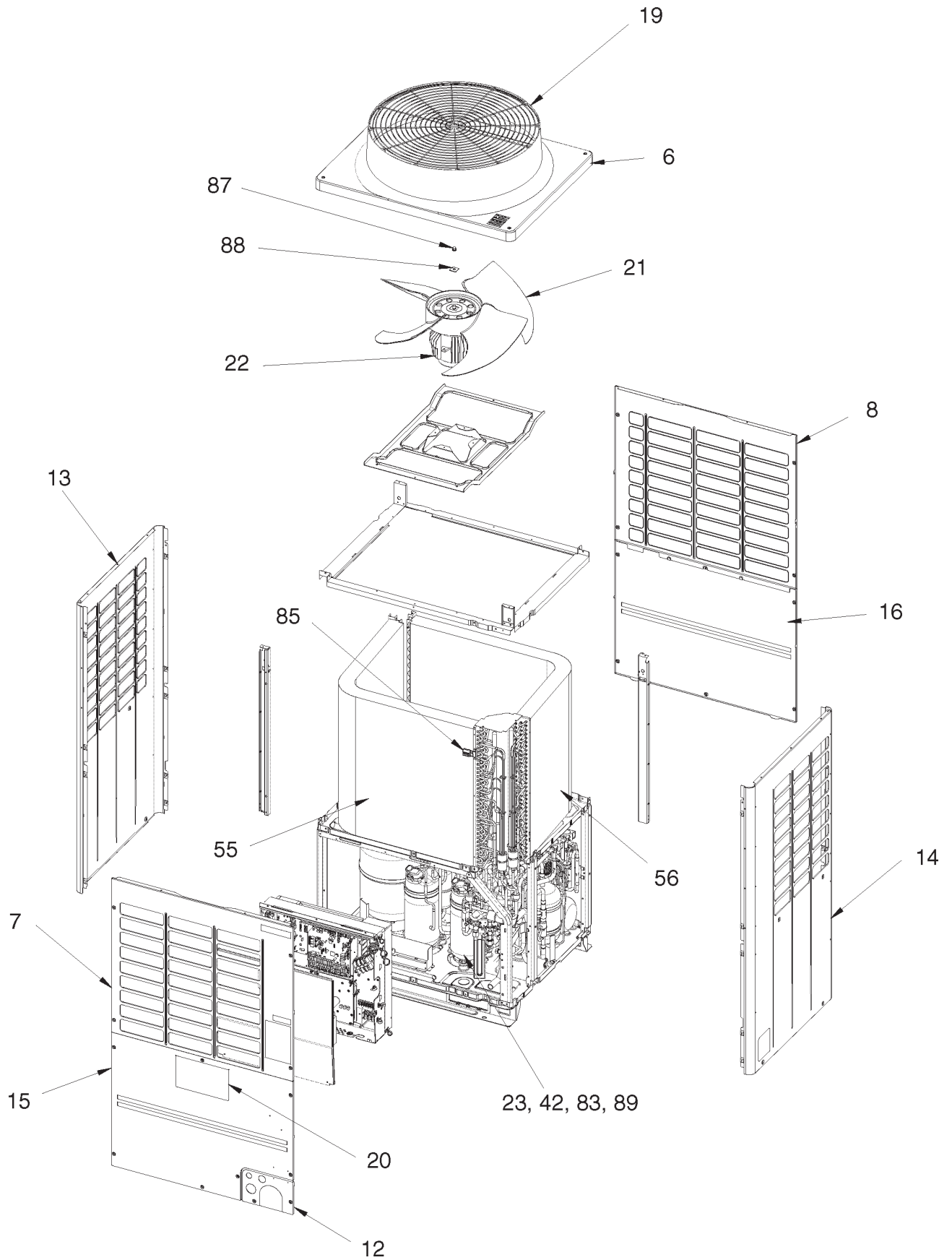


Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)-TR			
			0804	1004	1204	1404
701	43050425	SENSOR ASSY, SERVICE	6	6	6	6
703	43F63248	SUPPORTER, ASSY	2	2	2	2
704	43150315	SENSOR,TD(F6)	6	6	8	8
705	43160620	TERMINAL, 4P	1	1	1	1
706	43158228	REACTOR	1	1	1	1
707	43158229	REACTOR, CH-79	2	2	3	3
708	43160621	TERMINAL, 6P			1	1
709	43152519	CONTACTOR, MAGNETIC	1	1	1	1
710	43160583	TERMINAL, 6P	1	1	1	1
711	43F69524	SUPPORT, SPACER	3	3	3	3
712	43182011	SPACER(EDGE)	10	10	10	10
713	4316V440	PC BOARD ASSY, NOISE FILTER, MCC-1608	1	1	1	1
714	4316V503	PC BOARD ASSY INTERFACE, MCC-1606	1	1	1	1
715	4316V512	PC BOARD ASSY FAN IPDU, MCC-1610	1	1	1	1
716	4316V441	PC BOARD ASSY, COMP-IPDU, MCC-1596	2	2	3	3
717	43153007	THERMISTOR, PTC	1	1	1	1
718	43282001	BUSHING	3	3	3	3
719	43183020	COLLAR	3	3	3	3
721	43155222	FILTER, LINE	1	1	1	1
722	43160618	CONNECTOR ASSY	4	4	5	5
723	43160619	WIRE ASSY	1	1	1	1
724	43160638	LEAD ASSY, COMPRESSOR	2	2	3	3

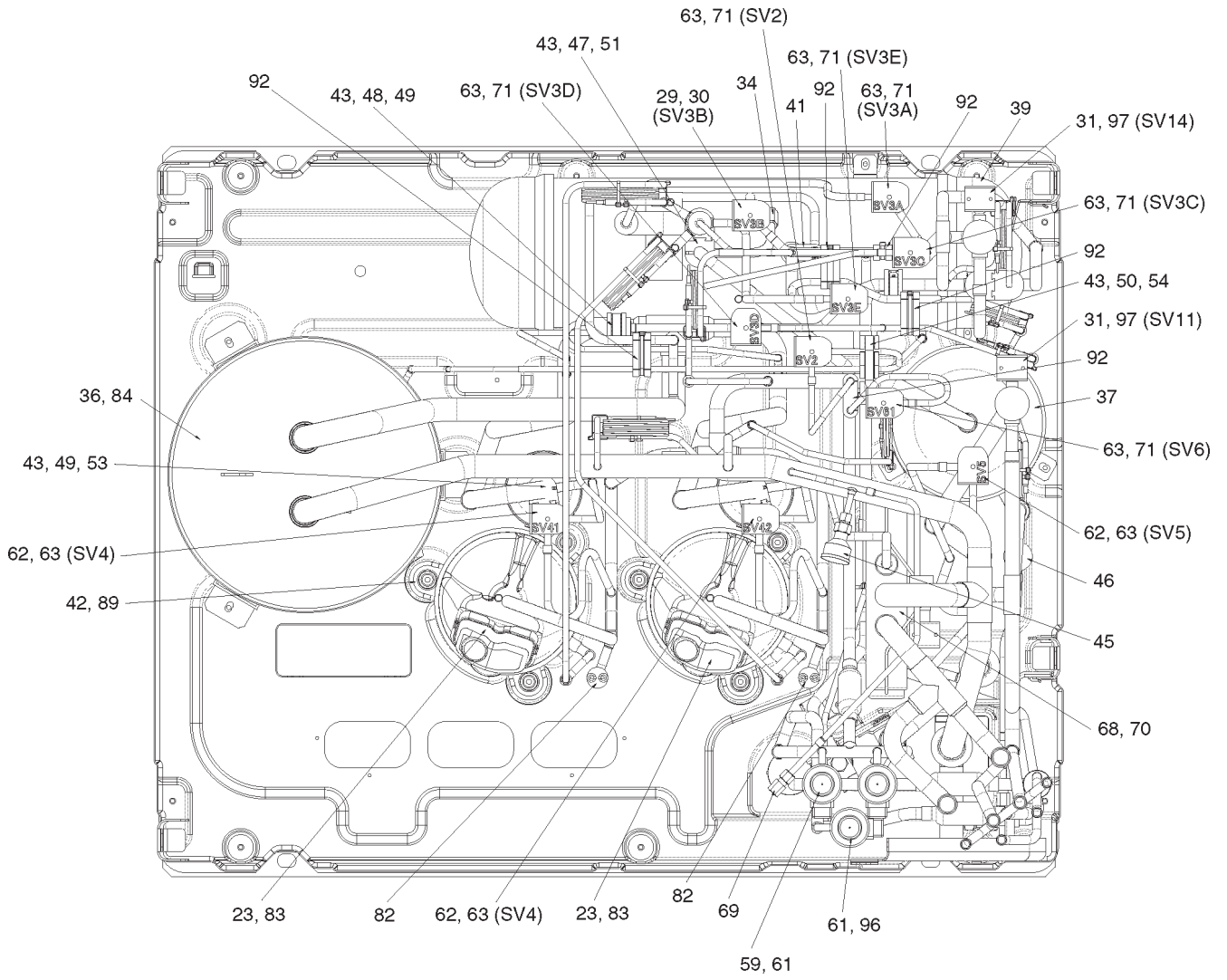
**Outdoor unit**

**MMY-MAP0804FT8(Z)(ZG)**

**MMY-MAP1004FT8(Z)(ZG)**



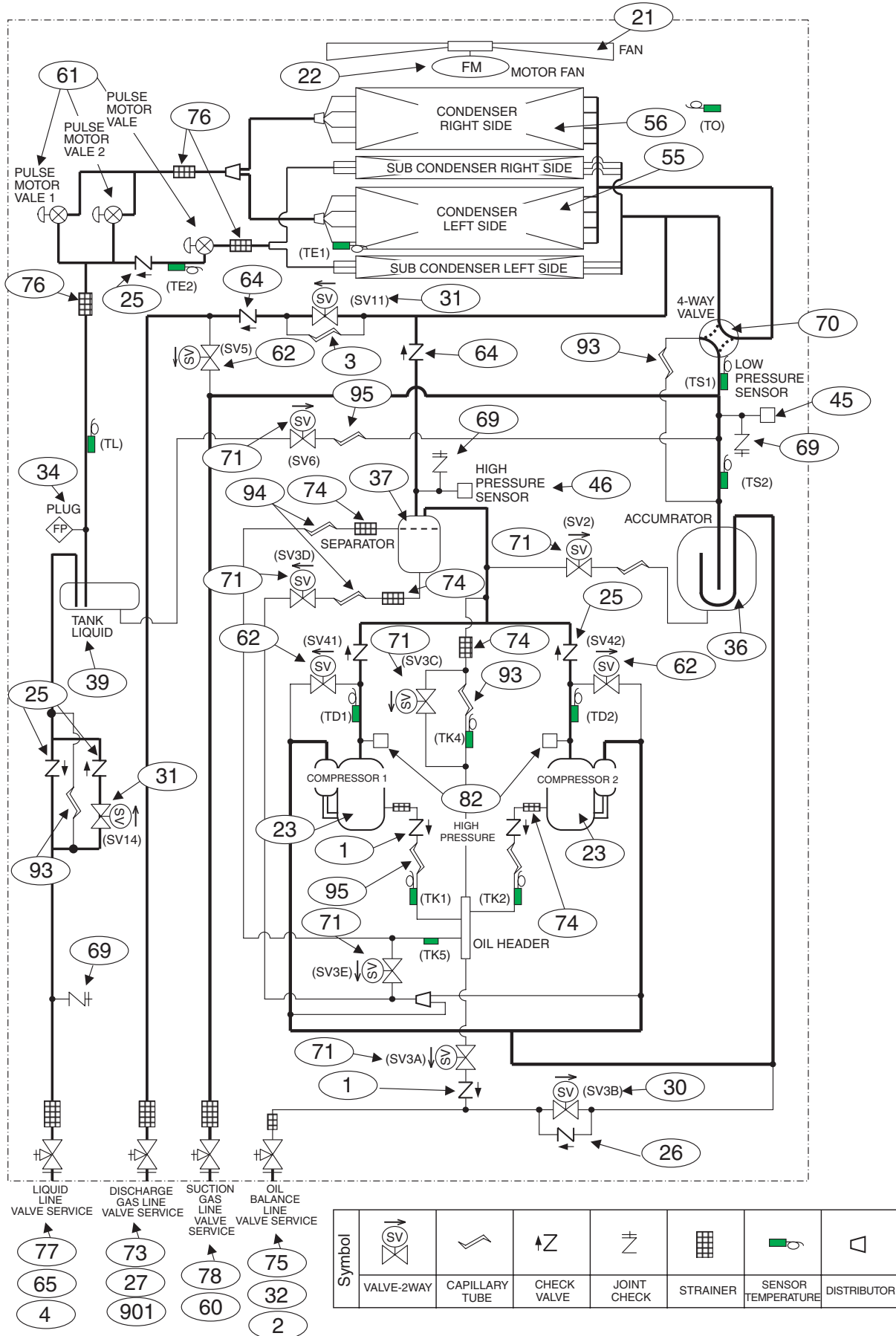
MMY-MAP0804FT8(Z)(ZG)  
 MMY-MAP1004FT8(Z)(ZG)



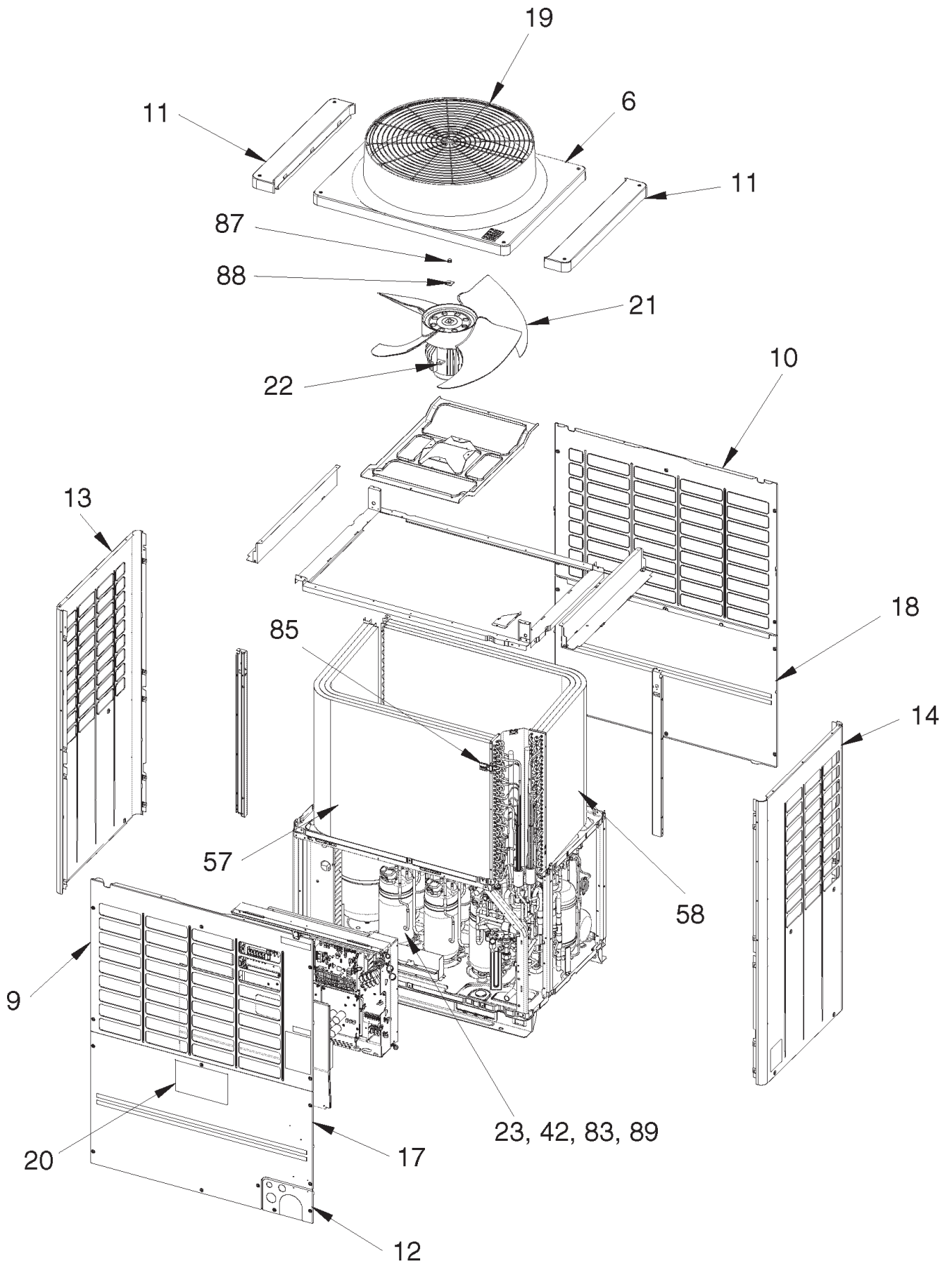
# Refrigeration Circuit diagram

MMY-MAP0804FT8(Z)(ZG)

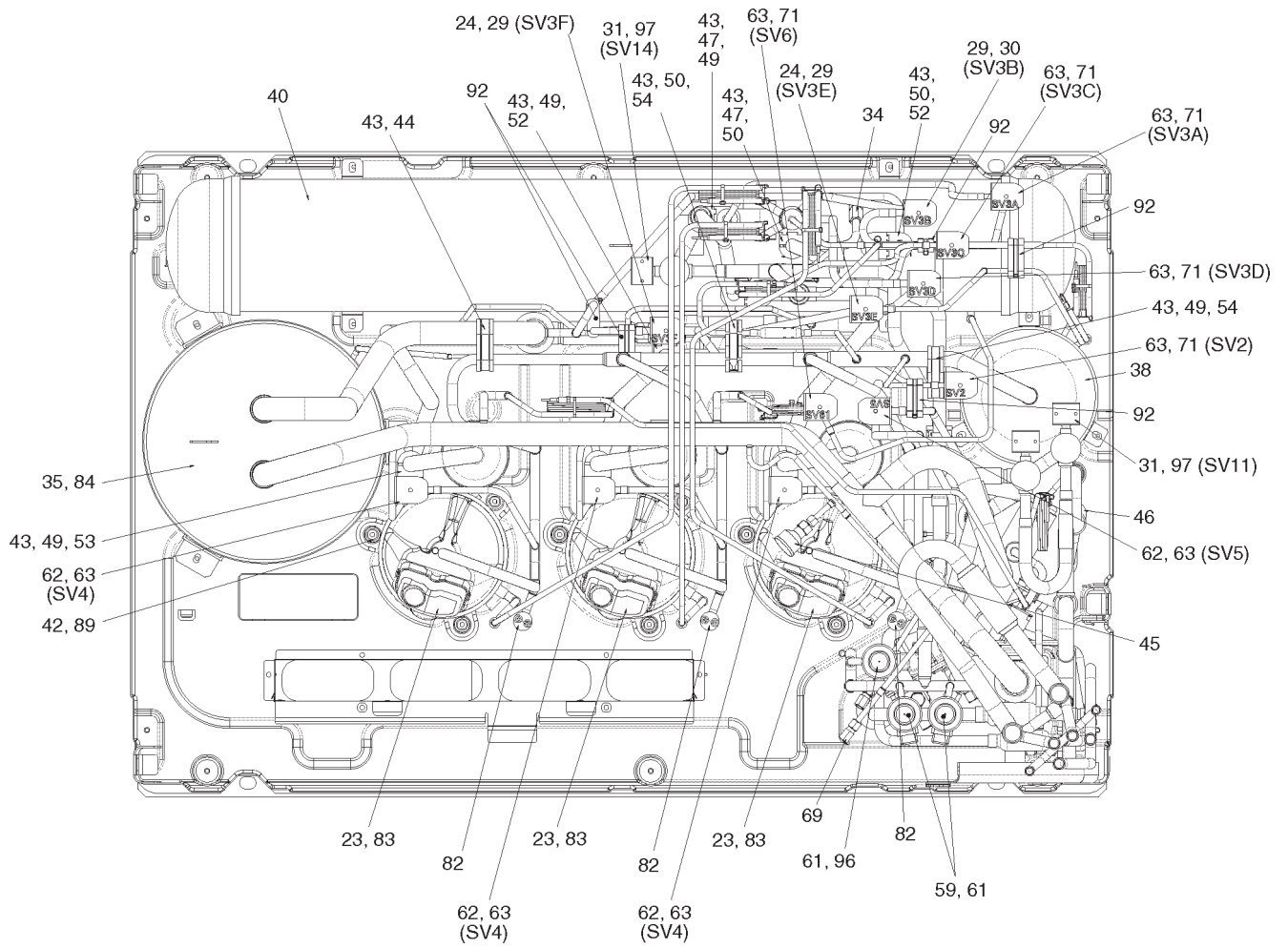
MMY-MAP1004FT8(Z)(ZG)



MMY-MAP1204FT8(Z)(ZG)  
 MMY-MAP1404FT8(Z)(ZG)



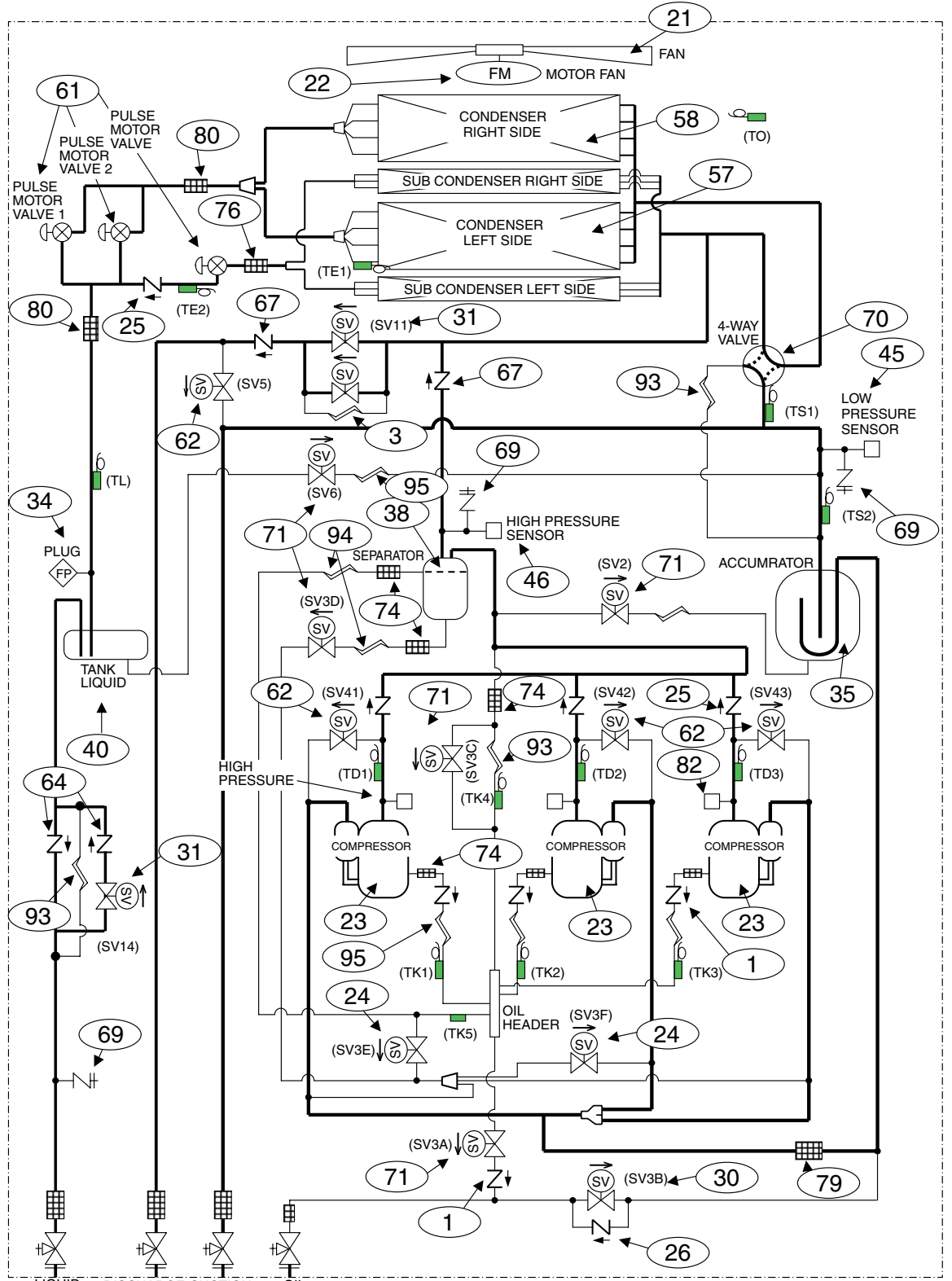
**MMY-MAP1204FT8(Z)(ZG)**  
**MMY-MAP1404FT8(Z)(ZG)**



# Refrigeration Circuit diagram

MMY-MAP1204FT8(Z)(ZG)

MMY-MAP1404FT8(Z)(ZG)



Symbol							
Symbol	VALVE-2WAY	CAPILLARY TUBE	CHECK VALVE	JOINT CHECK	STRAINER	SENSOR TEMPERATURE	DISTRIBUTOR

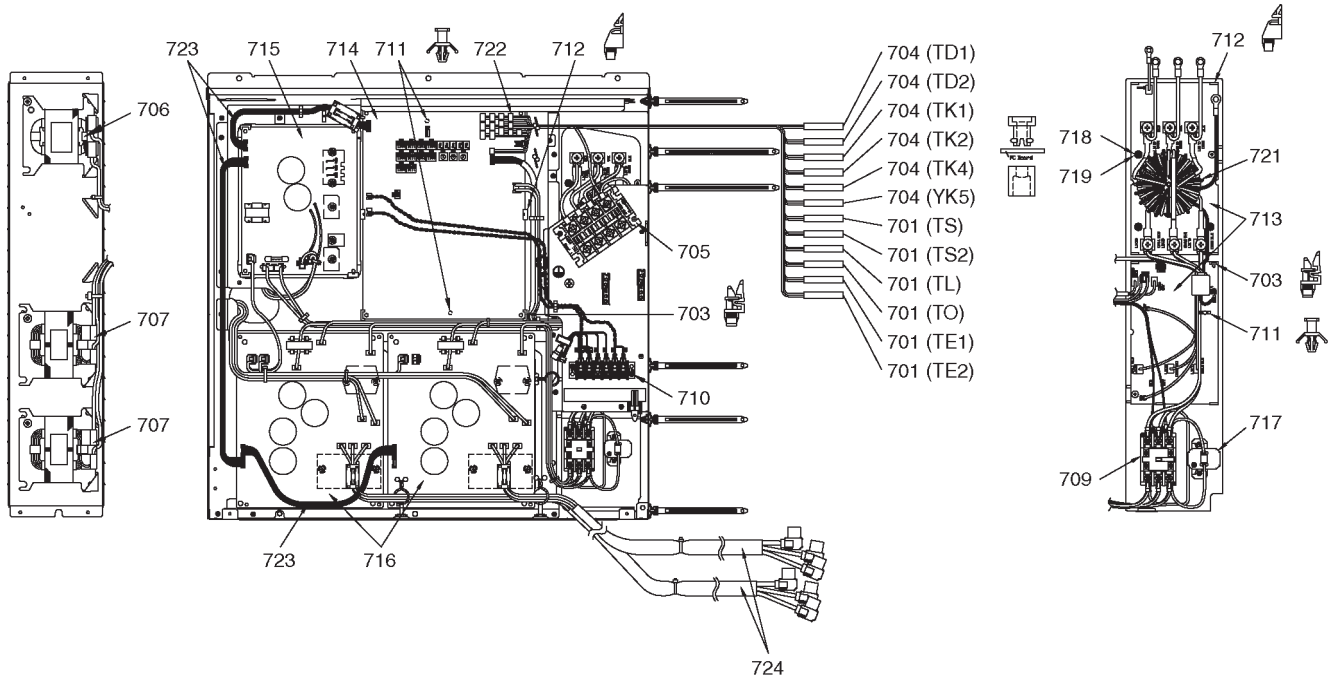
Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)			
			0804	1004	1204	1404
1	37547751	VALVE, CHECKED	3	3	4	4
2	43F47246	BONNET, 3/8 IN	1	1	1	1
3	43F47491	TUBE, CAPILLARY, I.D 1.5	1	1	1	1
4	43047692	BONNET	1	1		
5	43194029	BONNET, 5/8 IN	1	1	1	1
6	43100471	CABINET, AIR OUTLET	1	1	1	1
7	43100472	CABINET, AIR INLET, FRONT	1	1		
8	43100473	CABINET, AIR INLET, BACK	1	1		
9	43100474	CABINET, AIR INLET, FRONT			1	1
10	43100475	CABINET, AIR INLET, BACK			1	1
11	43100476	CABINET, SIDE, UP			2	2
12	43100477	PANEL	1	1	1	1
13	43100481	CABINET ASSY, SIDE, LEFT	1	1	1	1
14	43100482	CABINET ASSY, SIDE, RIGHT	1	1	1	1
15	43100483	CABINET ASSY, FRONT, DOWN	1	1		
16	43100484	CABINET ASSY, BACK, DOWN	1	1		
17	43100485	CABINET ASSY, FRONT, DOWN			1	1
18	43100486	CABINET ASSY, BACK, DOWN			1	1
19	43119505	GUARD, FAN	1	1	1	1
20	4311M675	MARK, TOSHIBA	1	1	1	1
21	43120252	FAN, PROPELLER	1	1	1	1
22	4312C101	MOTOR, FAN, DC280V	1	1	1	1
23	43141518	COMPRESSOR, DA421A3FB-29M	2	2	3	3
24	43146712	VALVE, 2WAY			2	2
25	43146715	VALVE, CHECKED	5	5	4	4
26	43146721	VALVE, CHECK	1	1	1	1
27	43146724	VALVE, BALL, SBV-JA5GTC-1, ROHS	1	1		
28	43146725	VALVE, BALL, SBV-JA6GTC-1, ROHS			1	1
29	4314N038	COIL, SOLENOID, AC220-240 50HZ	1	1	3	3
30	43146730	VALVE , 2WAY	1	1	1	1
31	4314N087	VALVE, 2WAY	2	2	3	3
32	43146741	VALVE, PACKED, 9.52	1	1	1	1
33	43147451	BONNET, 3/4 IN			1	1
34	43148220	PLUG, FUSIBLE	1	1	1	1
35	43148245	ACCUMULATOR			1	1
36	43148246	ACCUMULATOR	1	1		
37	43148241	SEPARATOR	1	1		
38	43148249	SEPARATOR			1	1
39	43148264	TANK, LIQUID	1	1		
40	43148265	TANK, LIQUID			1	1
41	43149323	RUBBER, SUPPORTER, PIPE	2	2		
42	43149324	RUBBER, CUSHION	6	6	9	9
43	43149325	BAND, FIX	5	5	9	9
44	43149388	RUBBER, SUPPORTER, PIPE			1	1
45	43149389	SENSOR ASSY, LOW PRESSURE	1	1	1	1
46	43149390	SENSOR ASSY, HIGH PRESSURE	1	1	1	1
47	43149403	RUBBER, SUPPORTER, PIPE	1	1	2	2
48	43149402	RUBBER, SUPPORTER, PIPE	1	1	2	2
49	43149404	RUBBER, SUPPORTER, PIPE	3	3	6	6
50	43149405	RUBBER, SUPPORTER, PIPE	1	1	5	5

Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)			
			0804	1004	1204	1404
51	43149406	RUBBER, SUPPORTER, PIPE	4	4		
52	43149407	RUBBER, SUPPORTER, PIPE			3	3
53	43149408	RUBBER, SUPPORTER, PIPE	2	2	3	3
54	43149409	RUBBER, SUPPORTER, PIPE	2	2	3	3
55	4314G309	CONDENSER ASSY, THREE ROW, LEFT	1	1		
56	4314G310	CONDENSER ASSY, THREE ROW, RIGHT	1	1		
57	4314G312	CONDENSER ASSY, THREE ROW, LEFT			1	1
58	4314G311	CONDENSER ASSY, THREE ROW, RIGHT			1	1
59	4314N028	COIL, PMV	2	2	2	2
60	4314N041	VALVE, BALL, 25.4	1	1	1	1
61	4314N043	VALVE, PMV	3	3	3	3
62	4314N044	VALVE, 2WAY	3	3	4	4
63	4314N047	COIL, VALVE, 2WAY	9	9	9	9
64	4314N065	VALVE, CHECK	2	2	2	2
65	4314N073	VALVE, PACKED, 12.7	1	1		
66	4314N074	VALVE, PACKED, 15.88			1	1
67	4314N075	VALVE, CHECK			2	2
68	4314N080	COIL, SOLENOID, STF-H01AJ1736A1	1	1	1	1
69	43146676	JOINT,CHECK	3	3	3	3
70	4314N078	VALVE, 4WAY	1	1	1	1
71	4314N079	VALVE, 2WAY	6	6	5	5
72	4314Q052	STRAINER			1	1
73	4314Q053	STRAINER	1	1		
74	4314Q054	STRAINER	5	5	6	6
75	4314Q055	STRAINER	1	1	1	1
76	4314Q056	STRAINER	3	3	1	1
78	4314Q057	STRAINER	1	1		
79	4314Q093	STRAINER	1	1		
80	4314Q094	STRAINER			2	2
81	4314Q095	STRAINER			2	2
82	4314Q096	STRAINER			1	1
83	43151283	SWITCH, PRESSURE ACB-4UB32W	2	2	3	3
84	43157276	HEATER, CASE, 29W 240V	2	2	3	3
85	43157290	HEATER, CASE, 55W 240V	1	1	1	1
86	43163063	HOLDER, SENSOR, TO	1	1	1	1
87	43197175	NUT, FLANGE	1	1	1	1
88	43197176	WASHER	1	1	1	1
89	43197184	BOLT, COMPRESSOR	6	6	9	9
90	431S8266	OWNER'S MANUAL	1	1	1	1
91	43F19904	HOLDER, SENSOR (TS)	11	11	13	13
92	43F49683	BAND	5	5	6	6
93	44246235	TUBE, CAPILLARY, BYPASS	1	1	1	1
94	44246236	TUBE, CAPILLARY, BYPASS, 1.0X2.0X2000L	1	1	1	1
95	44246239	TUBE, CAPILLARY, ID 1.2	1	1	1	1
96	4314N090	ASM-PMV(4)	1	1	1	1
97	4314N089	COIL, SOLENOID, AC240V, 50HZ	2	2	3	3

## Inverter assembly

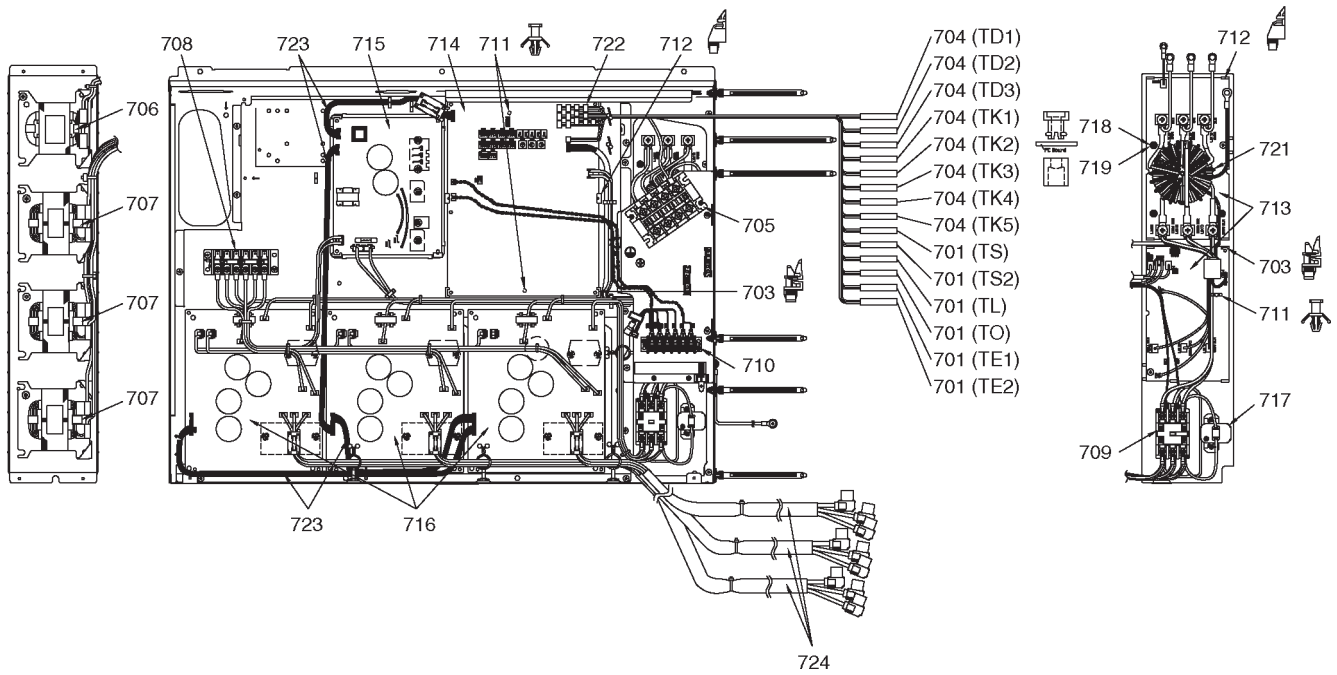
MMY-MAP0804FT8(Z)(ZG)

MMY-MAP1004FT8(Z)(ZG)



MMY-MAP1204FT8(Z)(ZG)

MMY-MAP1404FT8(Z)(ZG)

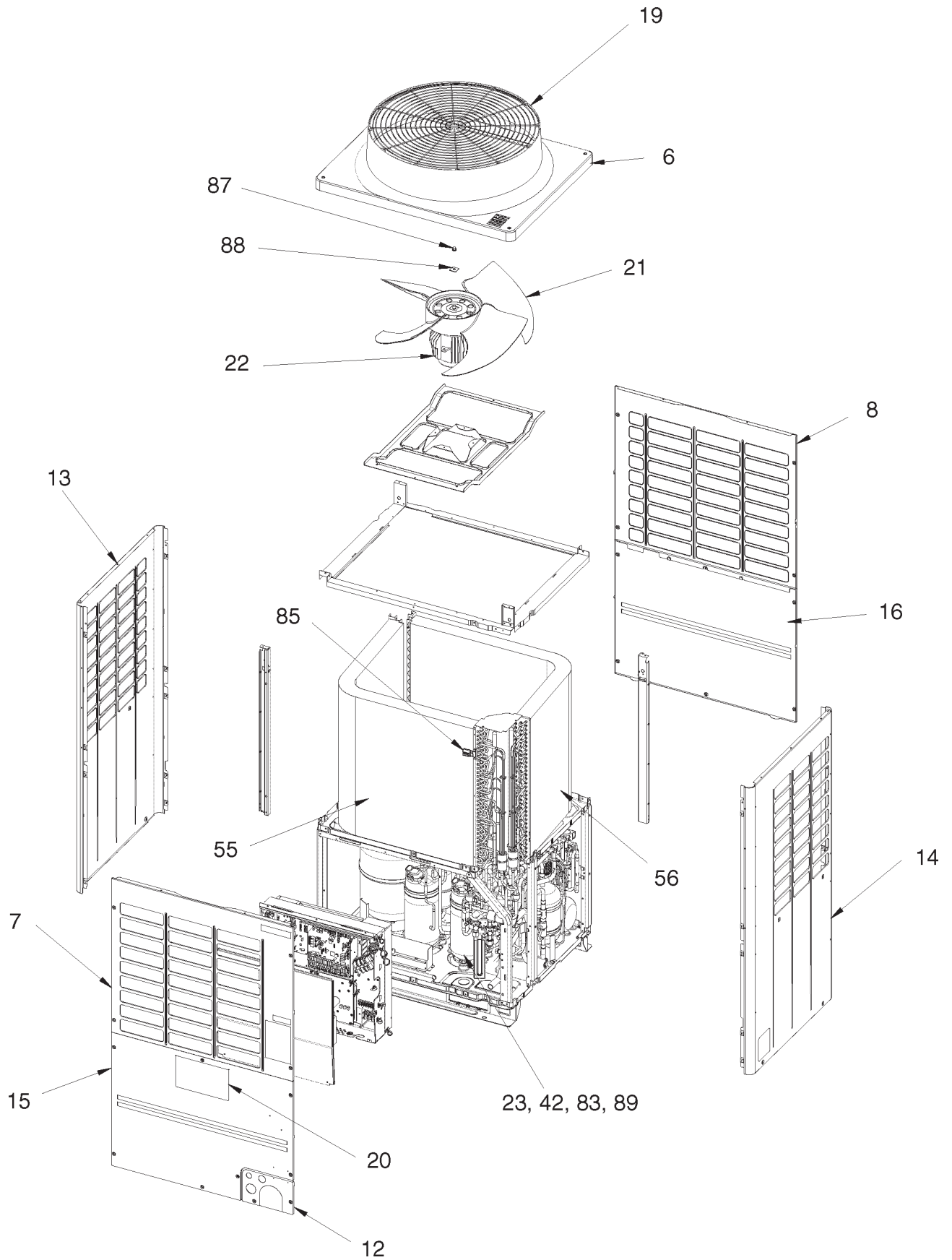


Ref.No.	Part No.	Description	MMY-MAP****FT8(Z)(ZG)			
			0804	1004	1204	1404
701	43050425	SENSOR ASSY, SERVICE	6	6	6	6
703	43F63248	SUPPORTER, ASSY	2	2	2	2
704	43150315	SENSOR,TD(F6)	6	6	8	8
705	43160620	TERMINAL, 4P	1	1	1	1
706	43158228	REACTOR	1	1	1	1
707	43158229	REACTOR, CH-79	2	2	3	3
708	43160621	TERMINAL, 6P			1	1
709	43152519	CONTACTOR, MAGNETIC	1	1	1	1
710	43160583	TERMINAL, 6P	1	1	1	1
711	43F69524	SUPORT, SPACER	3	3	3	3
712	43182011	SPACER(EDGE)	10	10	10	10
713	4316V440	PC BOARD ASSY, NOISE FILTER, MCC-1608	1	1	1	1
714	4316V503	PC BOARD ASSY INTERFACE, MCC-1606	1	1	1	1
715	4316V512	PC BOARD ASSY FAN IPDU, MCC-1610	1	1	1	1
716	4316V441	PC BOARD ASSY, COMP-IPDU, MCC-1596	2	2	3	3
717	43153007	THERMISTOR, PTC	1	1	1	1
718	43282001	BUSHING	3	3	3	3
719	43183020	COLLAR	3	3	3	3
721	43155222	FILTER, LINE	1	1	1	1
722	43160618	CONNECTOR ASSY	4	4	5	5
723	43160619	WIRE ASSY	1	1	1	1
724	43160638	LEAD ASSY, COMPRESSOR	2	2	3	3

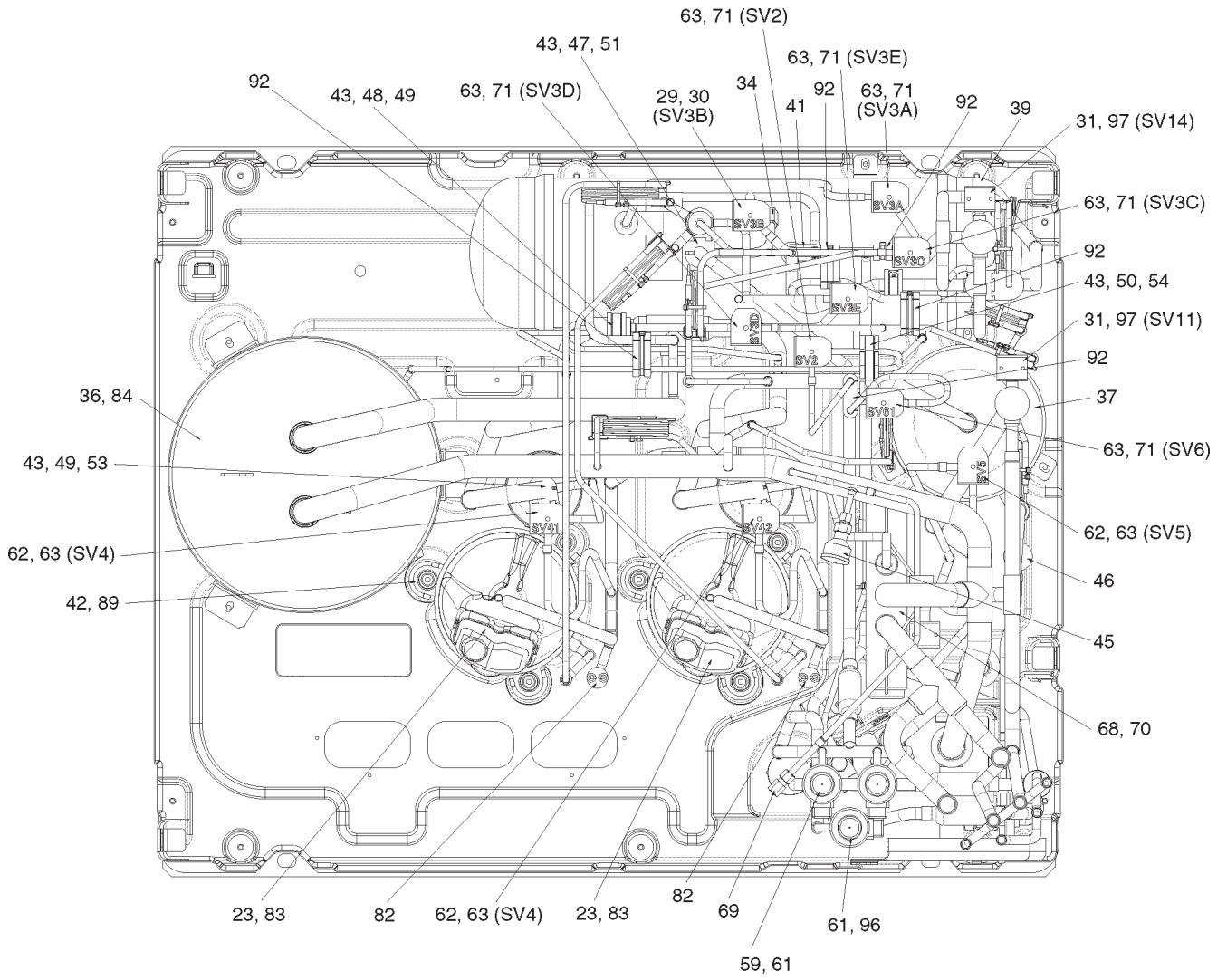
**Outdoor unit**

**MMY-MAP0804FT7(Z)(ZG)**

**MMY-MAP1004FT7(Z)(ZG)**



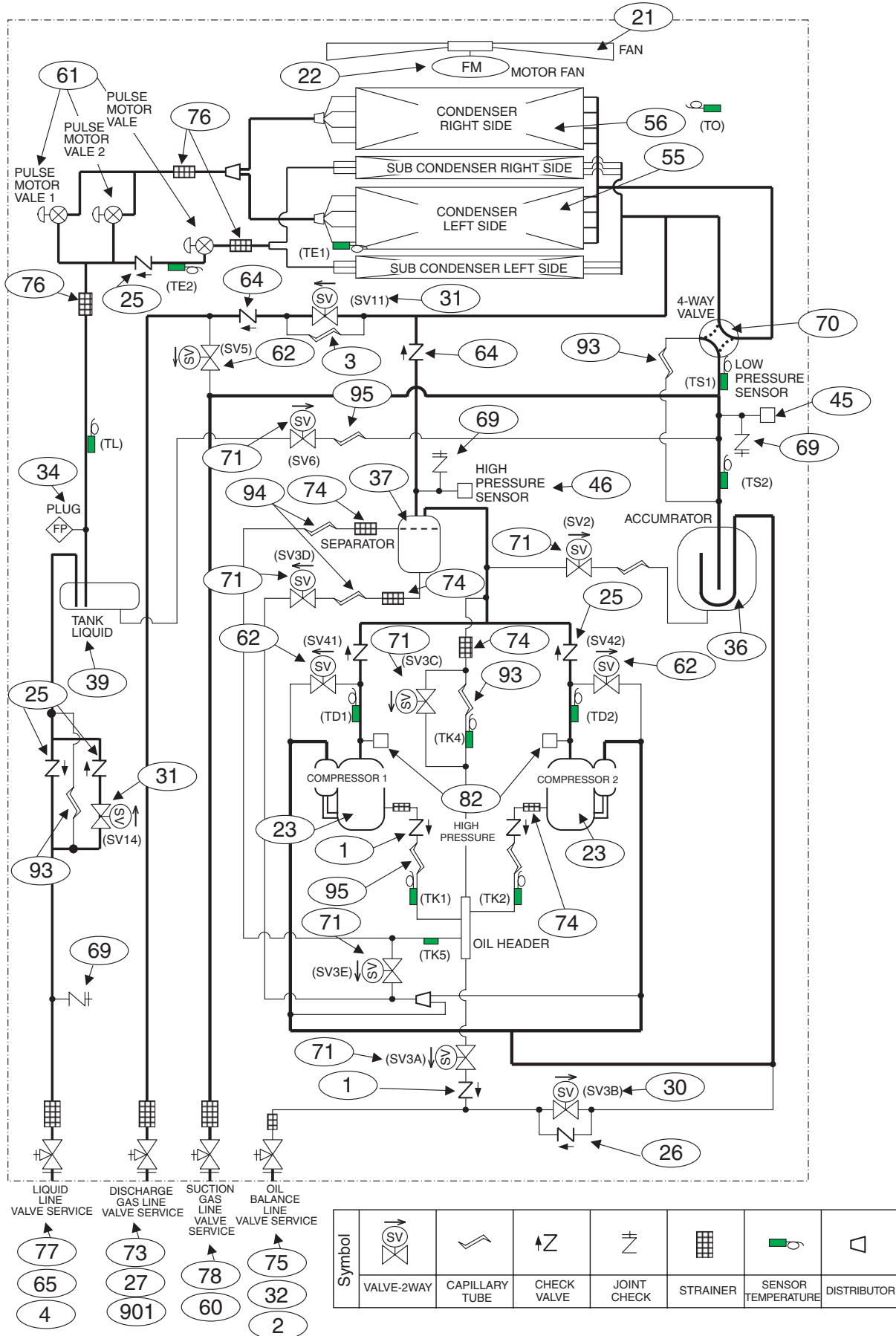
MMY-MAP0804FT7(Z)(ZG)  
 MMY-MAP1004FT7(Z)(ZG)



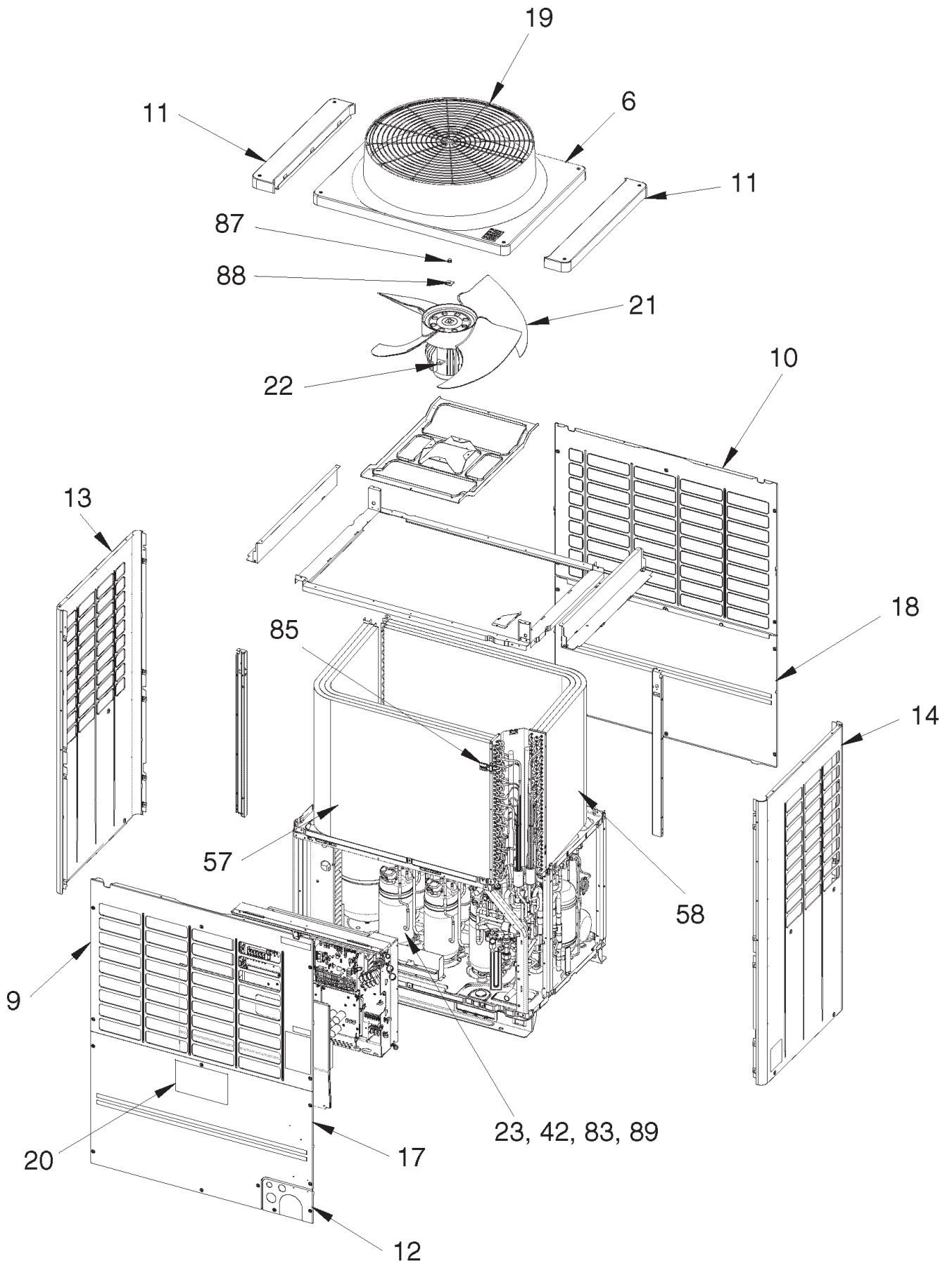
# Refrigeration Circuit diagram

MMY-MAP0804FT7(Z)(ZG)

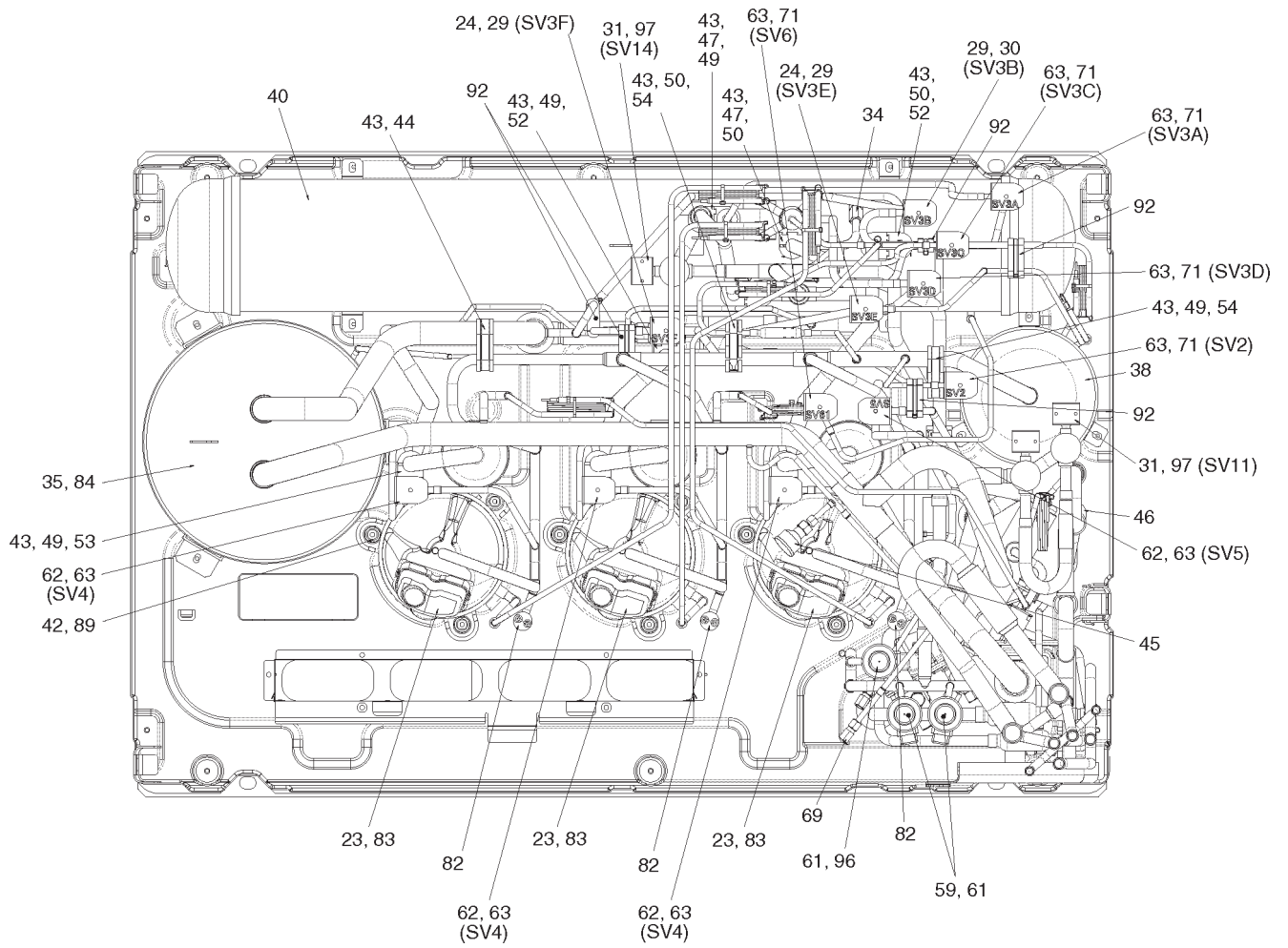
MMY-MAP1004FT7(Z)(ZG)



MMY-MAP1204FT7(Z)(ZG)  
 MMY-MAP1404FT7(Z)(ZG)



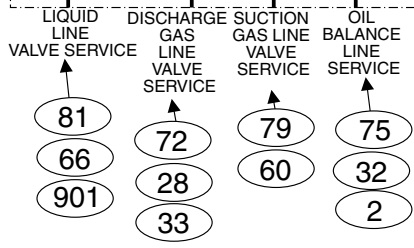
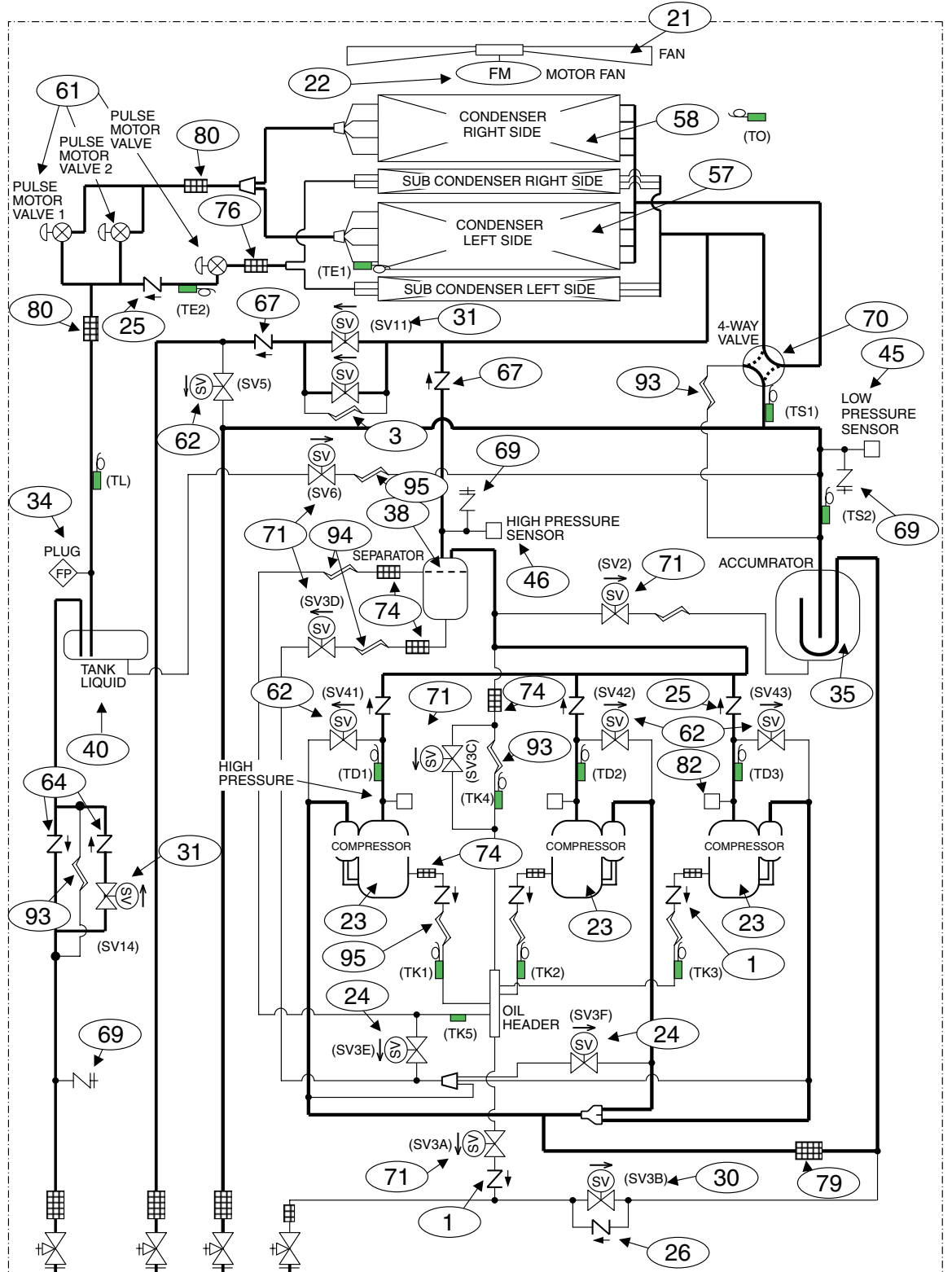
**MMY-MAP1204FT7(Z)(ZG)**  
**MMY-MAP1404FT7(Z)(ZG)**



# Refrigeration Circuit diagram

MMY-MAP1204FT7(Z)(ZG)

MMY-MAP1404FT7(Z)(ZG)



Symbol							
	VALVE-2WAY	CAPILLARY TUBE	CHECK VALVE	JOINT CHECK	STRAINER	SENSOR TEMPERATURE	DISTRIBUTOR

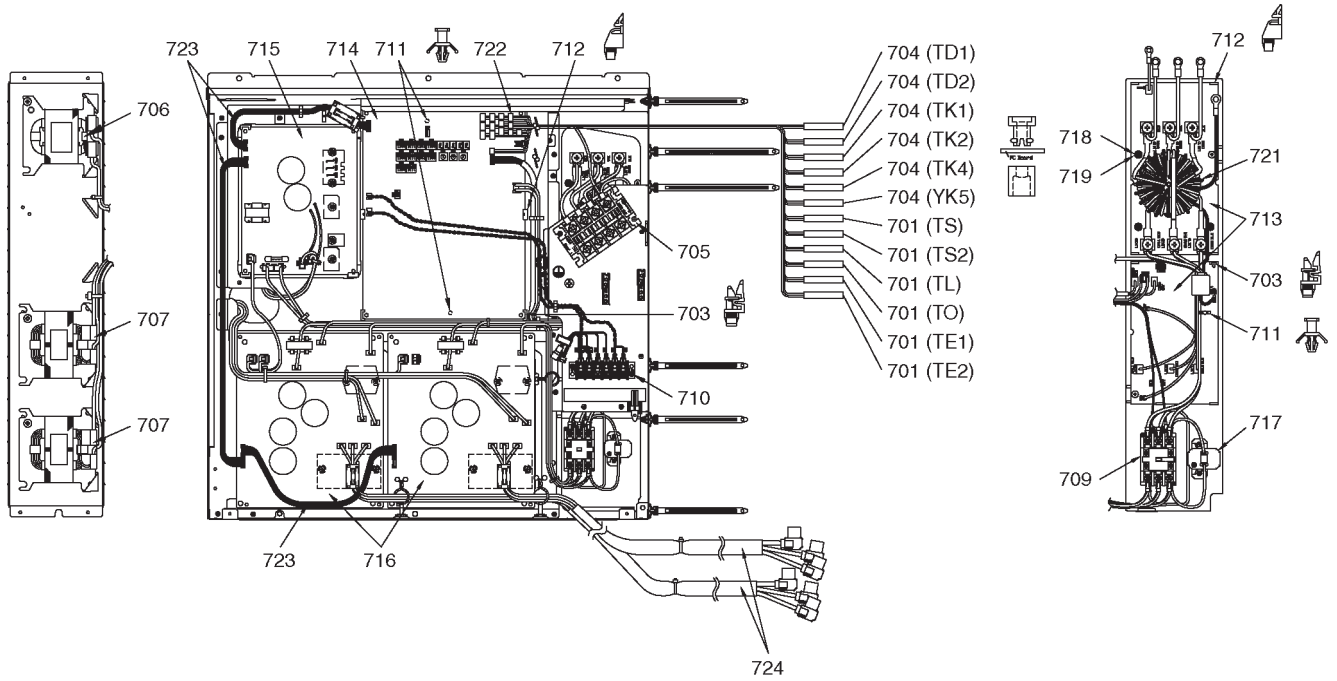
Ref.No.	Part No.	Description	MMY-MAP****FT7(Z)(ZG)			
			0804	1004	1204	1404
1	37547751	VALVE, CHECKED	3	3	4	4
2	43F47246	BONNET, 3/8 IN	1	1	1	1
3	43F47491	TUBE, CAPILLARY, I.D 1.5	1	1	1	1
4	43047692	BONNET	1	1		
5	43194029	BONNET, 5/8 IN	1	1	1	1
6	43100471	CABINET, AIR OUTLET	1	1	1	1
7	43100472	CABINET, AIR INLET, FRONT	1	1		
8	43100473	CABINET, AIR INLET, BACK	1	1		
9	43100474	CABINET, AIR INLET, FRONT			1	1
10	43100475	CABINET, AIR INLET, BACK			1	1
11	43100476	CABINET, SIDE, UP			2	2
12	43100477	PANEL	1	1	1	1
13	43100481	CABINET ASSY, SIDE, LEFT	1	1	1	1
14	43100482	CABINET ASSY, SIDE, RIGHT	1	1	1	1
15	43100483	CABINET ASSY, FRONT, DOWN	1	1		
16	43100484	CABINET ASSY, BACK, DOWN	1	1		
17	43100485	CABINET ASSY, FRONT, DOWN			1	1
18	43100486	CABINET ASSY, BACK, DOWN			1	1
19	43119505	GUARD, FAN	1	1	1	1
20	4311M675	MARK, TOSHIBA	1	1	1	1
21	43120252	FAN, PROPELLER	1	1	1	1
22	4312C101	MOTOR, FAN, DC280V	1	1	1	1
23	43141518	COMPRESSOR, DA421A3FB-29M	2	2	3	3
24	43146712	VALVE, 2WAY			2	2
25	43146715	VALVE, CHECKED	5	5	4	4
26	43146721	VALVE, CHECK	1	1	1	1
27	43146724	VALVE, BALL, SBV-JA5GTC-1, ROHS	1	1		
28	43146725	VALVE, BALL, SBV-JA6GTC-1, ROHS			1	1
29	4314N046	COIL, SOLENOID, AC208-230 60HZ	1	1	3	3
30	43146730	VALVE , 2WAY	1	1	1	1
31	4314N087	VALVE, 2WAY	2	2	3	3
32	43146741	VALVE, PACKED, 9.52	1	1	1	1
33	43147451	BONNET, 3/4 IN			1	1
34	43148220	PLUG, FUSIBLE	1	1	1	1
35	43148245	ACCUMULATOR			1	1
36	43148246	ACCUMULATOR	1	1		
37	43148241	SEPARATOR	1	1		
38	43148249	SEPARATOR			1	1
39	43148264	TANK, LIQUID	1	1		
40	43148265	TANK, LIQUID			1	1
41	43149323	RUBBER, SUPPORTER, PIPE	2	2		
42	43149324	RUBBER, CUSHION	6	6	9	9
43	43149325	BAND, FIX	5	5	9	9
44	43149388	RUBBER, SUPPORTER, PIPE			1	1
45	43149389	SENSOR ASSY, LOW PRESSURE	1	1	1	1
46	43149390	SENSOR ASSY, HIGH PRESSURE	1	1	1	1
47	43149403	RUBBER, SUPPORTER, PIPE	1	1	2	2
48	43149402	RUBBER, SUPPORTER, PIPE	1	1	2	2
49	43149404	RUBBER, SUPPORTER, PIPE	3	3	6	6
50	43149405	RUBBER, SUPPORTER, PIPE	1	1	5	5

Ref.No.	Part No.	Description	MMY-MAP****FT7(Z)(ZG)			
			0804	1004	1204	1404
51	43149406	RUBBER, SUPPORTER, PIPE	4	4		
52	43149407	RUBBER, SUPPORTER, PIPE			3	3
53	43149408	RUBBER, SUPPORTER, PIPE	2	2	3	3
54	43149409	RUBBER, SUPPORTER, PIPE	2	2	3	3
55	4314G309	CONDENSER ASSY, THREE ROW, LEFT	1	1		
56	4314G310	CONDENSER ASSY, THREE ROW, RIGHT	1	1		
57	4314G312	CONDENSER ASSY, THREE ROW, LEFT			1	1
58	4314G311	CONDENSER ASSY, THREE ROW, RIGHT			1	1
59	4314N028	COIL, PMV	2	2	2	2
60	4314N041	VALVE, BALL, 25.4	1	1	1	1
61	4314N043	VALVE, PMV	3	3	3	3
62	4314N044	VALVE, 2WAY	3	3	4	4
63	4314N048	COIL, SOLENOID, AC208-230, 60HZ	9	9	9	9
64	4314N065	VALVE, CHECK	2	2	2	2
65	4314N073	VALVE, PACKED, 12.7	1	1		
66	4314N074	VALVE, PACKED, 15.88			1	1
67	4314N075	VALVE, CHECK			2	2
68	4314N081	COIL, SOLENOID, STF-H01AQ1956A1	1	1	1	1
69	43146676	JOINT,CHECK	3	3	3	3
70	4314N078	VALVE, 4WAY	1	1	1	1
71	4314N079	VALVE, 2WAY	6	6	5	5
72	4314Q052	STRAINER			1	1
73	4314Q053	STRAINER	1	1		
74	4314Q054	STRAINER	5	5	6	6
75	4314Q055	STRAINER	1	1	1	1
76	4314Q056	STRAINER	3	3	1	1
78	4314Q057	STRAINER	1	1		
79	4314Q093	STRAINER	1	1		
80	4314Q094	STRAINER			2	2
81	4314Q095	STRAINER			2	2
82	4314Q096	STRAINER			1	1
83	43151283	SWITCH, PRESSURE ACB-4UB32W	2	2	3	3
84	43157276	HEATER, CASE, 29W 240V	2	2	3	3
85	43157290	HEATER, CASE, 55W 240V	1	1	1	1
86	43163063	HOLDER, SENSOR, TO	1	1	1	1
87	43197175	NUT, FLANGE	1	1	1	1
88	43197176	WASHER	1	1	1	1
89	43197184	BOLT, COMPRESSOR	6	6	9	9
90	431S8265	OWNER'S MANUAL	1	1	1	1
91	43F19904	HOLDER, SENSOR (TS)	11	11	13	13
92	43F49683	BAND	5	5	6	6
93	44246235	TUBE, CAPILLARY, BYPASS	1	1	1	1
94	44246236	TUBE, CAPILLARY, BYPASS, 1.0X2.0X2000L	1	1	1	1
95	44246239	TUBE, CAPILLARY, ID 1.2	1	1	1	1
96	4314N090	ASM-PMV(4)	1	1	1	1
97	4314N088	COIL, SOLENOID, AC200V	2	2	3	3

## Inverter assembly

MMY-MAP0804FT7(Z)(ZG)

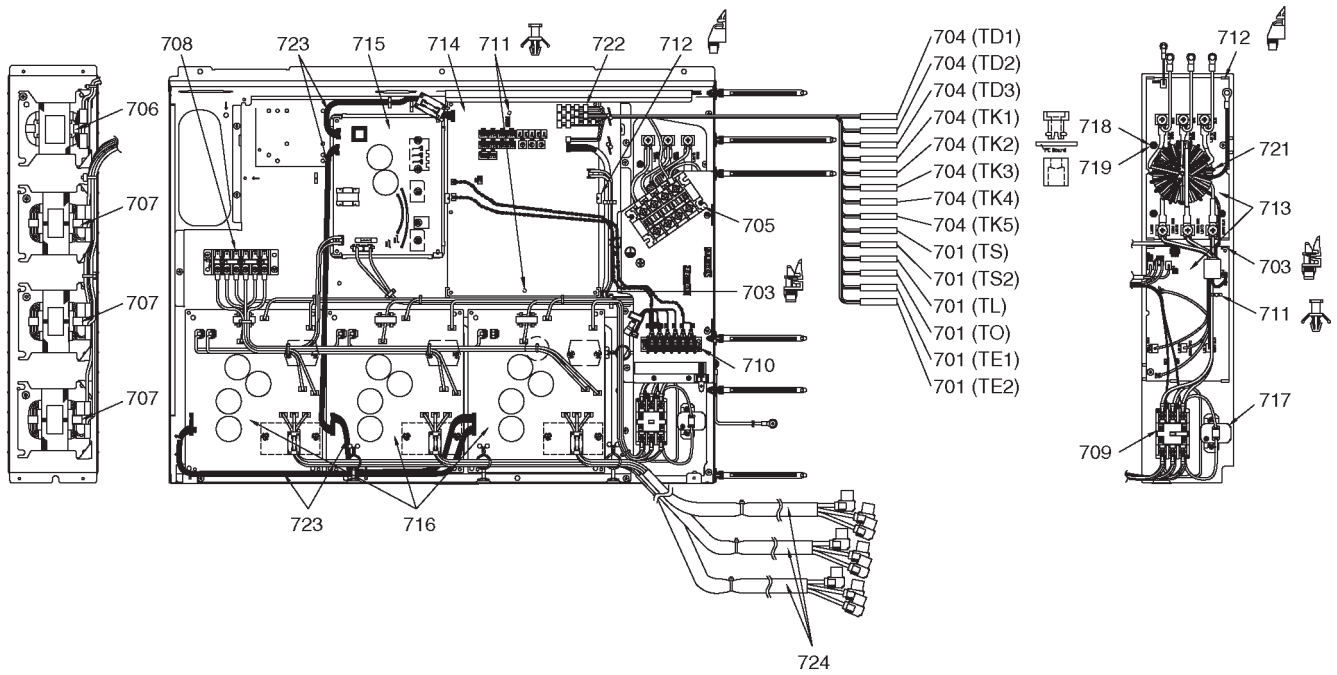
MMY-MAP1004FT7(Z)(ZG)



## Inverter assembly

MMY-MAP1204FT7(Z)(ZG)

MMY-MAP1404FT7(Z)(ZG)



Ref.No.	Part No.	Description	MMY-MAP****FT7(Z)(ZG)			
			0804	1004	1204	1404
701	43050425	SENSOR ASSY, SERVICE	6	6	6	6
703	43F63248	SUPPORTER, ASSY	2	2	2	2
704	43150315	SENSOR,TD(F6)	6	6	8	8
705	43160620	TERMINAL, 4P	1	1	1	1
706	43158228	REACTOR	1	1	1	1
707	43158229	REACTOR, CH-79	2	2	3	3
708	43160621	TERMINAL, 6P			1	1
709	43152395	CONTACTOR, MAGNETIC	1	1	1	1
710	43160583	TERMINAL, 6P	1	1	1	1
711	43F69524	SUPPORT, SPACER	3	3	3	3
712	43182011	SPACER(EDGE)	10	10	10	10
713	4316V440	PC BOARD ASSY, NOISE FILTER, MCC-1608	1	1	1	1
714	4316V503	PC BOARD ASSY INTERFACE, MCC-1606	1	1	1	1
715	4316V512	PC BOARD ASSY FAN IPDU, MCC-1610	1	1	1	1
716	4316V441	PC BOARD ASSY, COMP-IPDU, MCC-1596	2	2	3	3
717	43153007	THERMISTOR, PTC	1	1	1	1
718	43282001	BUSHING	3	3	3	3
719	43183020	COLLAR	3	3	3	3
721	43155222	FILTER, LINE	1	1	1	1
722	43160618	CONNECTOR ASSY	4	4	5	5
723	43160619	WIRE ASSY	1	1	1	1
724	43160638	LEAD ASSY, COMPRESSOR	2	2	3	3

# **TOSHIBA CARRIER CORPORATION**

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