

SERVICE MANUAL



No. OCH796
REVISED EDITION-A

Models

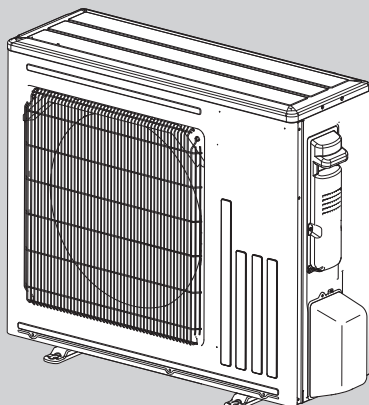
SUZ-SWM30VA.TH
SUZ-SHWM30VAH.TH
SUZ-SWM40VA2.TH
SUZ-SWM40VA2-SC.TH
SUZ-SHWM40VAH.TH
SUZ-SHWM40VAH-SC.TH
SUZ-SWM60VA2.TH
SUZ-SWM60VA2-SC.TH
SUZ-SHWM60VAH.TH
SUZ-SHWM60VAH-SC.TH

SUZ-SWM80VA2.TH
SUZ-SWM80VAH2.TH
SUZ-SWM100VA.TH
SUZ-SWM100VAH.TH

Revision:
 • Specification has been updated in REVISED EDITION-A.

OCH796 is void.

Indoor unit service manual
 EHST30D/ERST30D Series (OCH714)



SUZ-SWM30VA
SUZ-SHWM30VAH
SUZ-SWM40VA2
SUZ-SWM40VA2-SC
SUZ-SHWM40VAH
SUZ-SHWM40VAH-SC
SUZ-SWM60VA2
SUZ-SWM60VA2-SC

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PARTS CATALOG (OCB796)

Use the specified refrigerant only

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.

Correct refrigerant is specified in the manuals and on the spec labels provided with our products.

We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

<Preparation before the repair service>

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air to water heat pump, turn off the power-supply breaker and pull the power plug.
- Discharge the capacitor before the work involving the electric parts.

<Precautions during the repair service>

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigeration cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.

WARNING

- When the refrigeration circuit has a leak, do not execute pump down with the compressor.
- When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst if air etc. get into it.
- When opening or closing the valve below freezing temperatures, refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.

Servicing precautions for units using refrigerant R32



WARNING

This unit uses a flammable refrigerant.

If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire.

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.
- Pipe-work shall be protected from physical damage.
- The installation of pipe-work shall be kept to a minimum.
- Compliance with national gas regulations shall be observed.
- Keep any required ventilation openings clear of obstruction.
- Servicing shall be performed only as recommended by the manufacturer.
- The appliance shall be stored so as to prevent mechanical damage from occurring.

Basic work procedures are the same as those for conventional units using refrigerant R410A.

However, pay careful attention to the following points.

1. Information on servicing
 - ① Checks on the Area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.
 - ② Work Procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.
 - ③ General Work Area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.
 - ④ Checking for Presence of Refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
 - ⑤ Presence of Fire Extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
 - ⑥ No Ignition Sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.
 - ⑦ Ventilated Area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
 - ⑧ Checks on the Refrigeration Equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

 - The charge size is in accordance with the room size within which the refrigerant containing parts are installed.
 - The ventilation machinery and outlets are operating adequately and are not obstructed.
 - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
 - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
 - Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being corroded.
 - ⑨ Checks on Electrical Devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include that:

 - capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
 - no live electrical components and wiring are exposed while charging, recovering or purging the system;
 - there is continuity of earth bonding
2. Repairs to Sealed Components
 - ① During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
 - ② Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.
 - ③ Repair to intrinsically Safe Components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

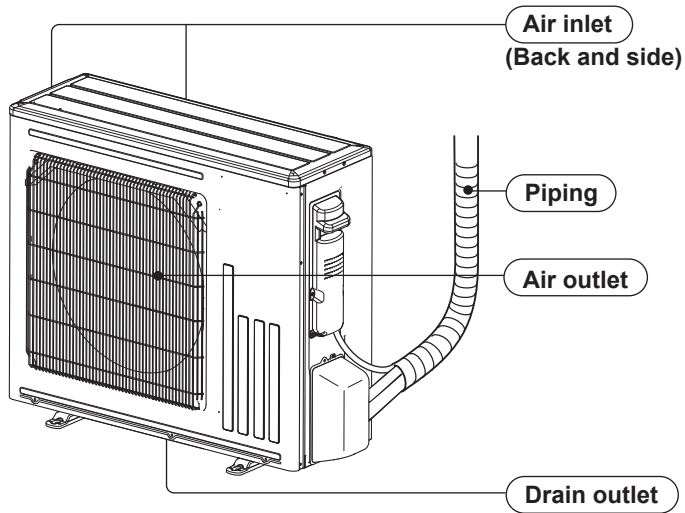
Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.
 - ④ Cabling

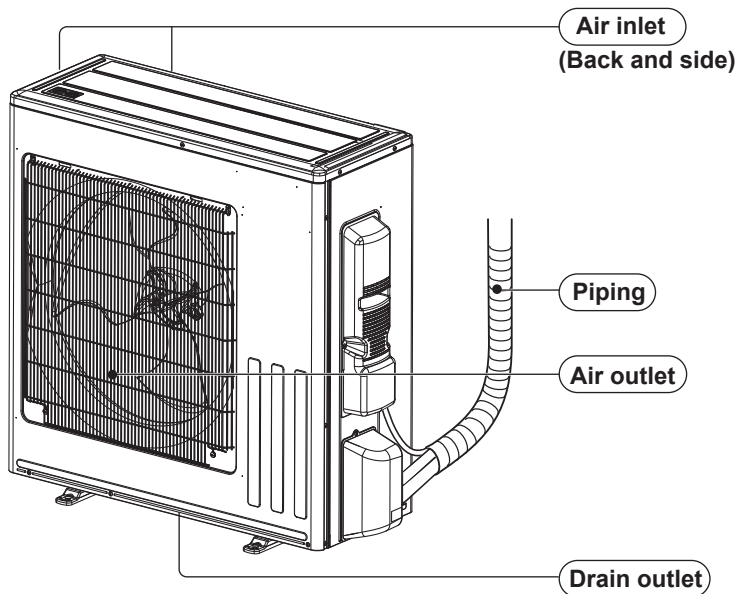
Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

- ⑤ **Detection of Flammable Refrigerants**
Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
- ⑥ **Leak Detection Methods**
Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
If a leak is suspected, all naked flames shall be removed/extinguished.
If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. For appliances containing flammable refrigerants, oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.
- ⑦ **Removal and Evacuation**
When breaking into the refrigerant circuit to make repairs - or for any other purpose conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:
- remove refrigerant
 - purge the circuit with inert gas
 - evacuate
 - purge again with inert gas
 - open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing flammable refrigerants, the system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. For appliances containing flammable refrigerants, flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.
Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.
- ⑧ **Charging Procedures**
In addition to conventional charging procedures, the following requirements shall be followed:
- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
 - Cylinders shall be kept upright.
 - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
 - Label the system when charging is complete (if not already).
 - Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.
- ⑨ **Decommissioning**
Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to reuse of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.
- a) Become familiar with the equipment and its operation.
 - b) Isolate system electrically.
 - c) Before attempting the procedure, ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
 - d) Pump down refrigerant system, if possible.
 - e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
 - f) Make sure that cylinder is situated on the scales before recovery takes place.
 - g) Start the recovery machine and operate in accordance with manufacturer's instructions.
 - h) Do not overfill cylinders. (no more than 80 % volume liquid charge).
 - i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
 - j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
 - k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.
- ⑩ **Labeling**
Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.
- ⑪ **Recovery**
When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

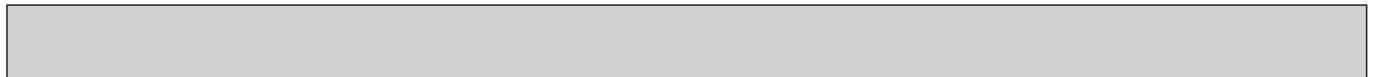
SUZ-SWM30VA
 SUZ-SHWM30VAH
 SUZ-SWM40VA2
 SUZ-SWM40VA2-SC
 SUZ-SHWM40VAH
 SUZ-SHWM40VAH-SC
 SUZ-SWM60VA2
 SUZ-SWM60VA2-SC



SUZ-SHWM60VAH
 SUZ-SHWM60VAH-SC
 SUZ-SWM80VA2
 SUZ-SWM80VAH2
 SUZ-SWM100VA
 SUZ-SWM100VAH



MODEL NAME			SUZ-SWM30VA	SUZ-SHWM30VAH	SUZ-SWM40VA2(-SC)	SUZ-SHWM40VAH(-SC)	SUZ-SWM60VA2(-SC)
POWER SUPPLY(Phase, cycle, voltage)			1ø, 230V, 50Hz				
	MAX. Current	A	13.5				
Breaker capacity			A				
Outer casing			Galvanized plate				
External finish			Munsell 3Y 7.8/1.1				
Refrigerant control			Linear expansion valve				
Compressor			Hermetic twin rotary				
	Model		SVB130FPBM1T			SVB172FPKM1T	
	Motor output	kW	0.9	0.9	0.9	1.2	1.2
	Start type		Inverter				
	Protection devices		Discharge thermo				
			Over current				
			Thermal Protector				
			High pressure cut (indoor unit)				
	Oil (Model)	L	0.6 (FW68CA)				
Base heater	Input	kW	-	0.060	-	0.060	-
Heat exchanger	Air		Plate fin coil				
	Water		Plate heat exchanger				
Fan	Fan (drive) × No.		Propeller fan ×1				
	Fan motor output	kW	0.050				
	Air flow	m ³ /min (CFM)	28.0 (989)	28.0 (989)	28.0 (989)	30.2 (1065)	30.2 (1065)
Defrost method			Reverse cycle				
Noize level (SPL)	Heating	dB	43	43	43	44	45
	Cooling	dB	45	45	46	47	47
Noize level (PWL)	Heating	dB	57	57	57	58	60
Dimensions	Width	mm (in)	800 (31-1/2)	800 (31-1/2)	800 (31-1/2)	800 (31-1/2)	800 (31-1/2)
	Depth	mm (in)	285 (11-1/4)	285 (11-1/4)	285 (11-1/4)	285 (11-1/4)	285 (11-1/4)
	Height	mm (in)	714 (28-1/8)	714 (28-1/8)	714 (28-1/8)	714 (28-1/8)	714 (28-1/8)
Weight		kg (lbs)	39 (86)	39.5 (87)	39 (86)	40 (88)	40 (88)
Refrigerant (GWP)			R32 (675)	R32 (675)	R32 (675)	R32 (675)	R32 (675)
	Chargeless	kg (lbs)	0.8 (1.8)	0.8 (1.8)	0.8 (1.8)	0.8 (1.8)	0.8 (1.8)
	MAX.	kg (lbs)	1.3 (2.9)	1.3 (2.9)	1.3 (2.9)	1.3 (2.9)	1.3 (2.9)
Pipe size O.D.	Liquid	mm (in)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)
	Gas	mm (in)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)
Connection mesod			Flared				
Between the indoor & outdoor unit	Height difference	m	Max. 26				
	Piping length	m	2 to 26	2 to 26	2 to 26	2 to 26	2 to 26
Guaranteed operating range (Outdoor)	Heating	°C	-25 to +24	-25 to +24	-25 to +24	-25 to +24	-25 to +24
	DHW	°C	-25 to +35	-25 to +35	-25 to +35	-25 to +35	-25 to +35
	Cooling	°C	+10 to +46	+10 to +46	+10 to +46	+10 to +46	+10 to +46
Outlet water temp. (Max in Heating, Min in Cooling)	Heating	°C	+60	+60	+60	+60	+60
	Cooling	°C	+5	+5	+5	+5	+5
Nominal return water temperature range	Heating	°C	Due to the water quantity of system. See the following graph about water flow rate and return temperature range.				
	Cooling	°C					
Water Flow rate range		L/min	6.5 to 11.4	6.5 to 11.4	6.5 to 11.4	7.2 to 17.2	7.2 to 17.2



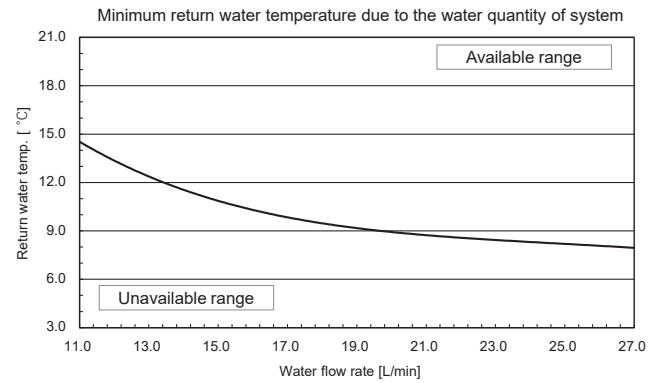
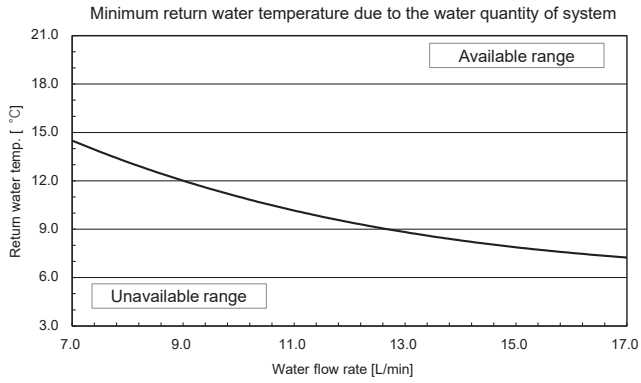
MODEL NAME			SUZ-SHWM60VAH(-SC)	SUZ-SWM80VA2	SUZ-SWM80VAH2	SUZ-SWM100VA	SUZ-SWM100VAH		
POWER SUPPLY(Phase, cycle, voltage)			1ø, 230V, 50Hz						
	MAX. Current	A	17.3						
Breaker capacity *1			A						
Outer casing			Galvanized plate						
External finish			Munsell 3Y 7.8/1.1						
Refrigerant control			Linear expansion valve						
Compressor			Hermetic twin rotary						
	Model		SVB220FUAM2T						
	Motor output	kW	1.5	1.5	1.5	1.5	1.5		
	Start type		Inverter						
	Protection devices		Discharge thermo						
			Over current						
			Thermal Protector						
			High pressure cut (indoor unit)						
	Oil (Model)	L	0.6 (FW68CA)						
Base heater			Input	kW	0.120	-	0.120	-	0.120
Heat exchanger			Air		Plate fin coil				
			Water		Plate heat exchanger				
Fan			Fan (drive) × No.		Propeller fan ×1				
	Fan motor output	kW	0.050						
	Air flow	m3/min (CFM)	41.7 (1471)	46.5 (1642)	46.5 (1642)	46.5 (1642)	46.5 (1642)		
Defrost method			Reverse cycle						
Noize level (SPL)	Heating	dB	45	46	46	47	47		
	Cooling	dB	47	47	47	47	47		
Noize level (PWL)	Heating	dB	60	60	60	62	62		
Dimensions	Width	mm (in)	840 (33-1/16)	840 (33-1/16)	840 (33-1/16)	840 (33-1/16)	840 (33-1/16)		
	Depth	mm (in)	330 (13)	330 (13)	330 (13)	330 (13)	330 (13)		
	Height	mm (in)	880 (34-5/8)	880 (34-5/8)	880 (34-5/8)	880 (34-5/8)	880 (34-5/8)		
Weight			kg (lbs)	53.5 (118)	53 (117)	53.5 (118)	53 (117)	53.5 (118)	
Refrigerant (GWP)			R32 (675)						
	Chargeless	kg (lbs)	1.1 (2.4)	1.1 (2.4)	1.1 (2.4)	1.1 (2.4)	1.1 (2.4)		
	MAX.	kg (lbs)	1.7 (3.7)	1.7 (3.7)	1.7 (3.7)	1.7 (3.7)	1.7 (3.7)		
Pipe size O.D.	Liquid	mm (in)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)	6.35 (1/4)		
	Gas	mm (in)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)	12.7 (1/2)		
Connection mesod			Flared						
Between the indoor & outdoor unit	Height difference	m	Max. 30						
	Piping length	m	2 to 46	2 to 46	2 to 46	2 to 46	2 to 46		
Guaranteed operating range (Outdoor)	Heating	°C	-25 to +24	-25 to +24	-25 to +24	-25 to +24	-25 to +24		
	DHW	°C	-25 to +35	-25 to +35	-25 to +35	-25 to +35	-25 to +35		
	Cooling	°C	+10 to +46	+10 to +46	+10 to +46	+10 to +46	+10 to +46		
Outlet water temp. (Max in Heating, Min in Cooling)	Heating	°C	+60	+60	+60	+60	+60		
	Cooling	°C	+5	+5	+5	+5	+5		
Nominal return water temperature range	Heating	°C	Due to the water quantity of system. See the following graph about water flow rate and return temperature range.						
	Cooling	°C							
Water Flow rate range			L/min	10.9 to 21.5	10.9 to 21.5	10.9 to 21.5	10.9 to 21.5		

*1 If jumper line JG on circuit board is cutted, 16A breaker can be used.

Cooling

SUZ-SWM30VA SUZ-SHWM30VAH
 SUZ-SWM40VA2 SUZ-SHWM40VAH
 SUZ-SWM60VA2

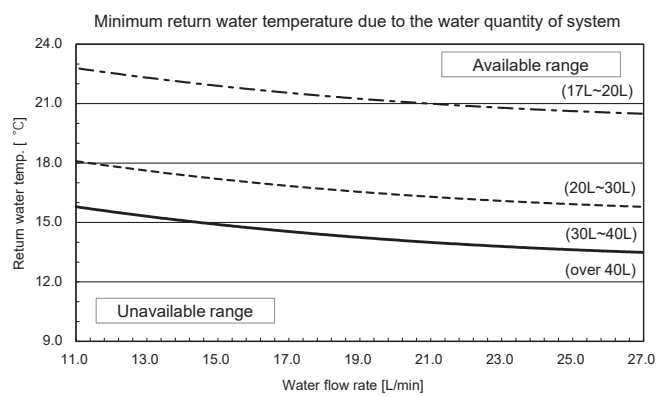
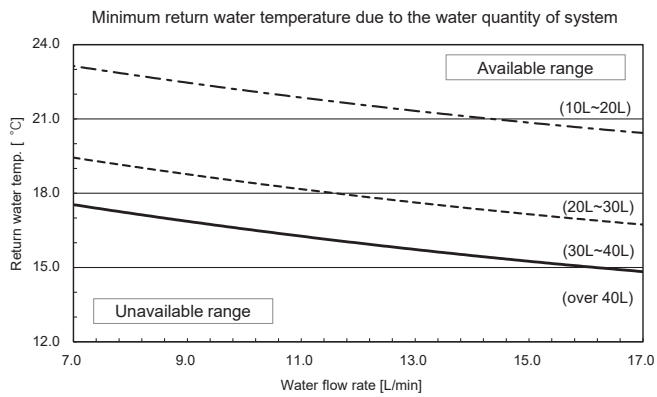
SUZ-SWM80VA(H)2
 SUZ-SWM100VA(H)
 SUZ-SHWM60VAH



Heating

SUZ-SWM30VA SUZ-SHWM30VAH
 SUZ-SWM40VA2 SUZ-SHWM40VAH
 SUZ-SWM60VA2

SUZ-SWM80VA(H)2
 SUZ-SWM100VA(H)
 SUZ-SHWM60VAH





Specifications and rated conditions of main electric parts

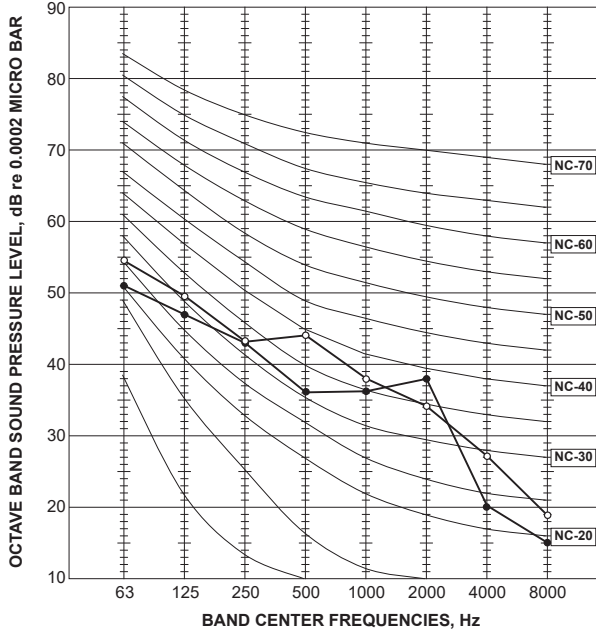
Item / Model		SUZ-SWM30VA	SUZ-SHWM30VAH
		SUZ-SWM40VA2	SUZ-SWM40VA2-SC
		SUZ-SHWM40VAH	SUZ-SHWM40VAH-SC
		SUZ-SWM60VA2	SUZ-SWM60VA2-SC
Smoothing capacitor	(C61, C62, C63)	620 μF 420 V	
Diode module	(DB61, DB65)	25 A 600 V	
Fuse	(F701, F801, F901)	T3.15AL250V	
	(F61)	25 A 250 V	
	(F62)	15 A 250 V	
Defrost heater *	(H)	230 V 60 W	
Power module	(IC700)	20A 600V	
	(IC932)	5 A 600 V	
Expansion valve coil	(LEV)	12 V DC	
Reactor	(L61)	23 mH	
Switching power transistor	(Q821)	30A/37A 600V	
Circuit protection	(PTC64, PTC65)	33 Ω	
Terminal block	(TB1)	5 P	
Relay	(X63)	3 A 250 V	
	(X64)	20 A 250 V	
	(X66)	3 A 250 V	
R.V. coil	(21S4)	220-240 V AC	
Heater protector *	(26H)	Open 45°C	

Item / Model		SUZ-SHWM60VAH	SUZ-SHWM60VAH-SC
		SUZ-SWM80VA2	SUZ-SWM80VAH2
		SUZ-SWM100VA	SUZ-SWM100VAH
Smoothing capacitor	(CB1, CB2, CB3)	560 μF 450 V	
Fuse	(F601, F880, F901)	T3.15AL250V	
	(F61)	25 A 250 V	
	(F62)	15A 250 V	
Switching power transistor	(Q3A, Q3B)	26 A 650 V	
Defrost heater *	(H)	230V 120 W	
Power module	(IC932)	5 A 600 V	
	(IC700)	20 A 600 V	
Expansion valve coil	(LEV)	12 V DC	
Reactor	(L)	282 μH	
Diode	(D3A, D3B)	20 A 600 V	
Diode module	(DB41)	20 A 600 V	
Circuit protection	(PTC64, PTC65)	33 Ω	
Terminal block	(TB1)	3 P	
	(TB2)	3 P	
Relay	(X64)	20 A 250 V	
	(X601)	3 A 250 V	
	(X602)	3 A 250 V	
R.V. coil	(21S4)	220-240 V AC	
Heater protector *	(26H)	Open 45°C	

* Only VAH model

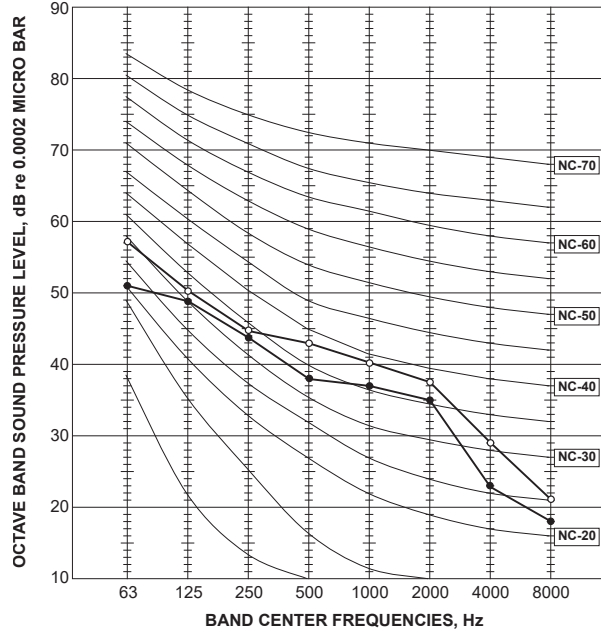
SUZ-S(H)WM30VA(H)

FUNCTION	SPL(dB(A))	LINE
COOLING	45	○—○
HEATING	43	●—●



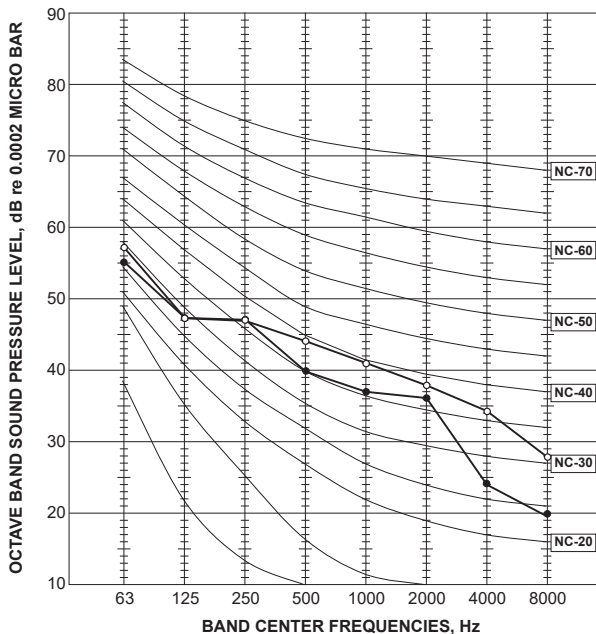
SUZ-SWM40VA2(-SC)

FUNCTION	SPL(dB(A))	LINE
COOLING	46	○—○
HEATING	43	●—●



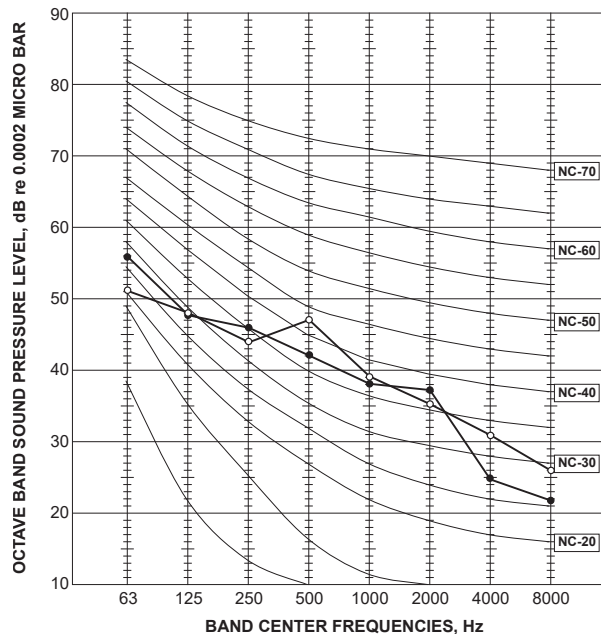
SUZ-SHWM40VAH(-SC)

FUNCTION	SPL(dB(A))	LINE
COOLING	47	○—○
HEATING	44	●—●



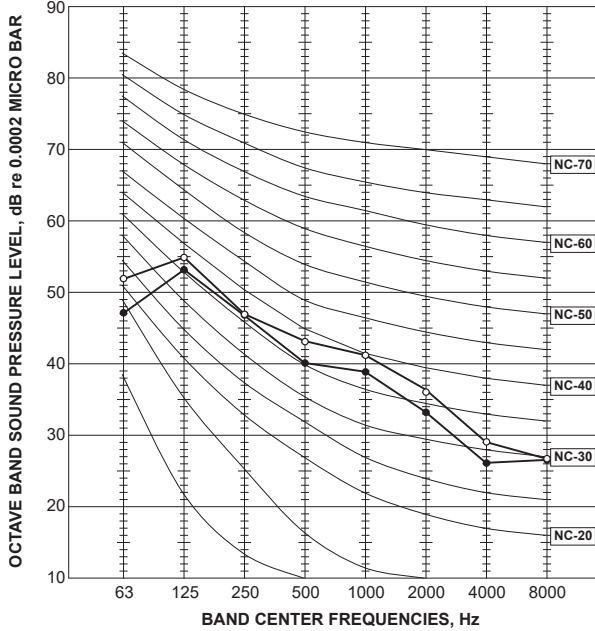
SUZ-SWM60VA2(-SC)

FUNCTION	SPL(dB(A))	LINE
COOLING	47	○—○
HEATING	45	●—●



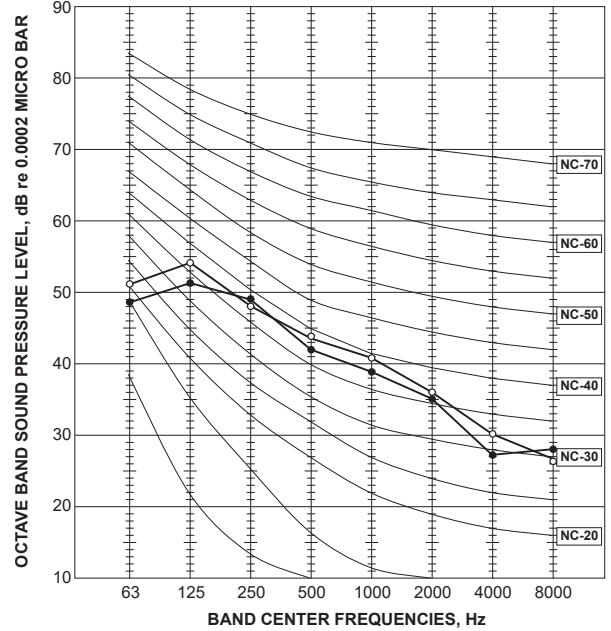
SUZ-SHWM60VAH(-SC)

FUNCTION	SPL(dB(A))	LINE
COOLING	47	○—○
HEATING	45	●—●



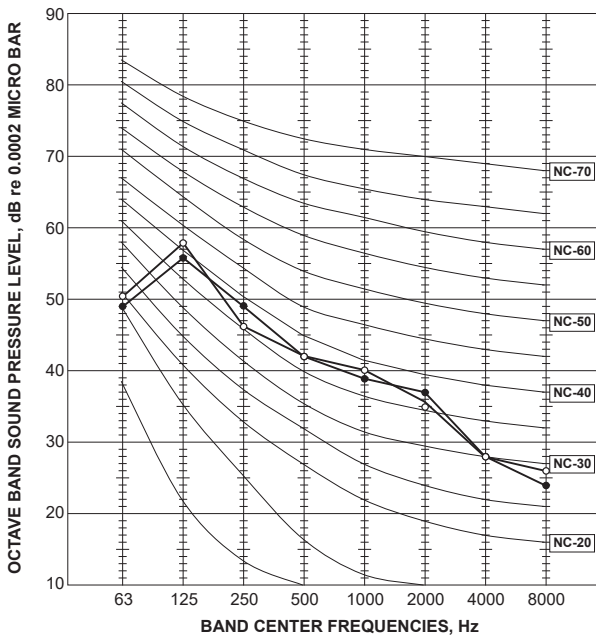
SUZ-SWM80VA(H)2

FUNCTION	SPL(dB(A))	LINE
COOLING	47	○—○
HEATING	46	●—●



SUZ-SWM100VA(H)

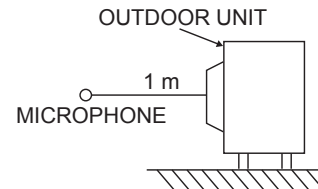
FUNCTION	SPL(dB(A))	LINE
COOLING	47	○—○
HEATING	47	●—●



Test conditions

Cooling: Dry-bulb temperature 35°C

Heating: Dry-bulb temperature 7°C Wet-bulb temperature 6°C

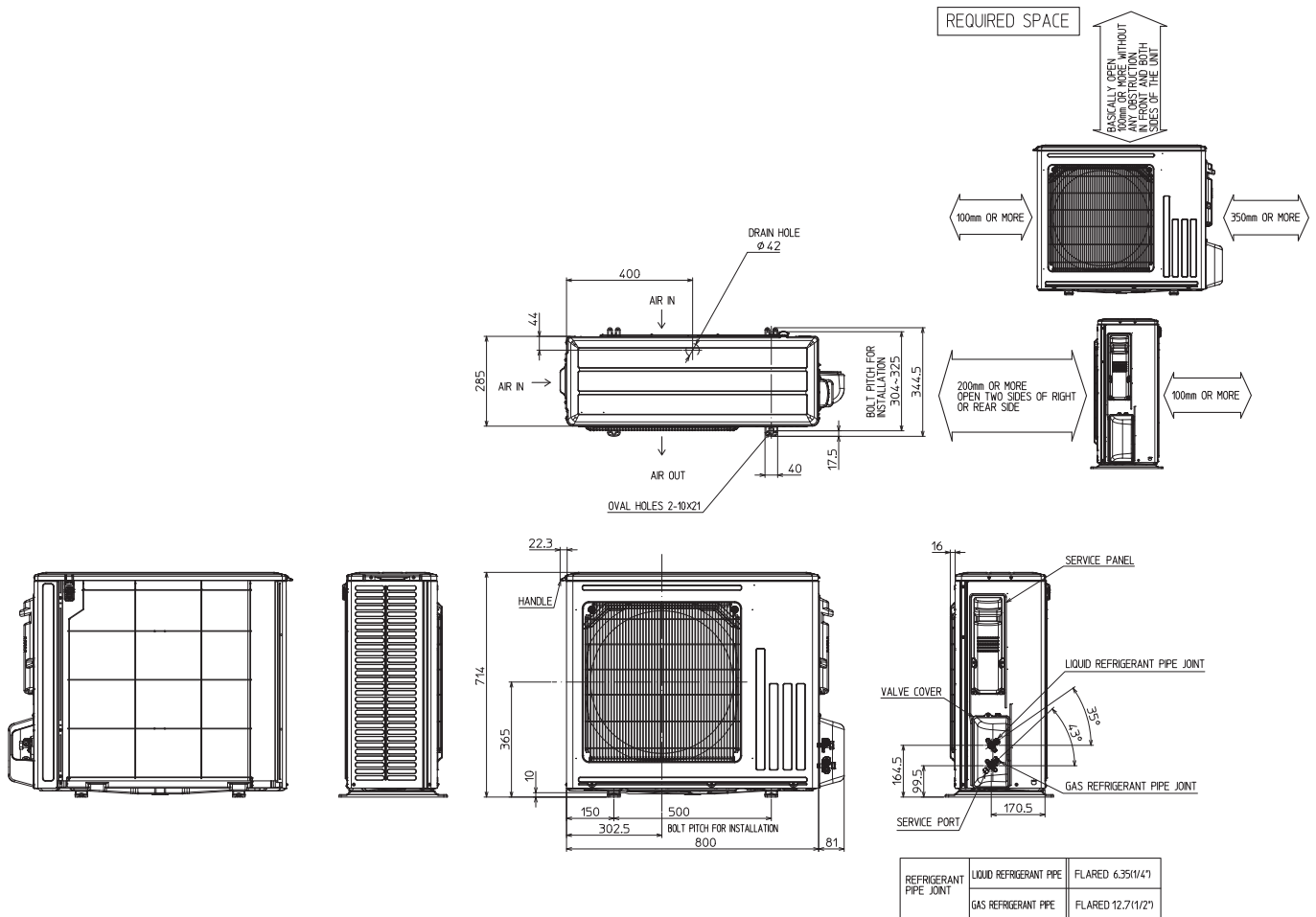


5

OUTLINES AND DIMENSIONS

- SUZ-SWM30VA
- SUZ-SHWM30VAH
- SUZ-SWM40VA2
- SUZ-SWM40VA2-SC
- SUZ-SHWM40VAH
- SUZ-SHWM40VAH-SC
- SUZ-SWM60VA2
- SUZ-SWM60VA2-SC

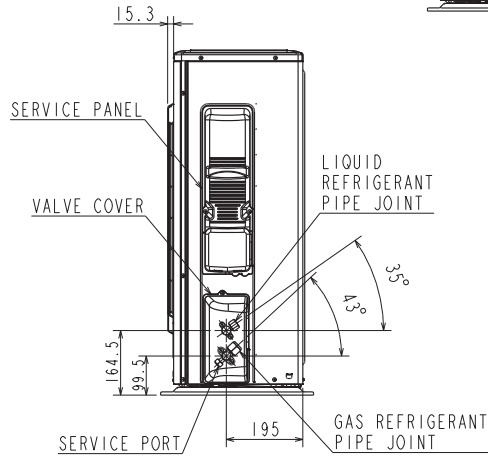
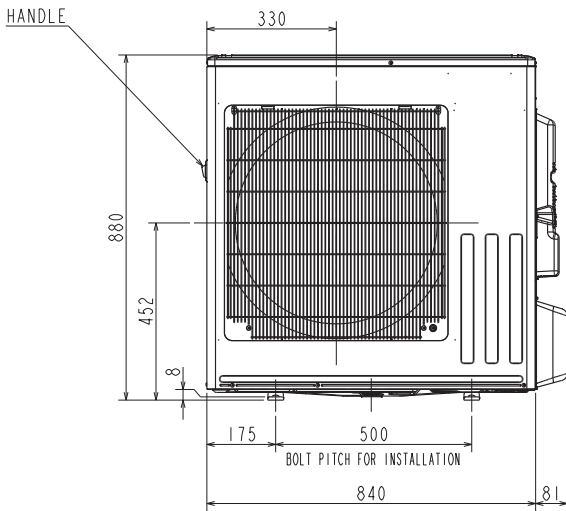
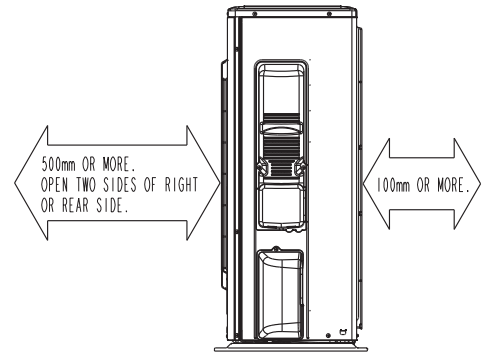
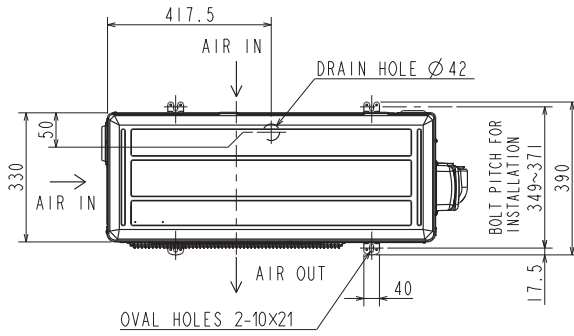
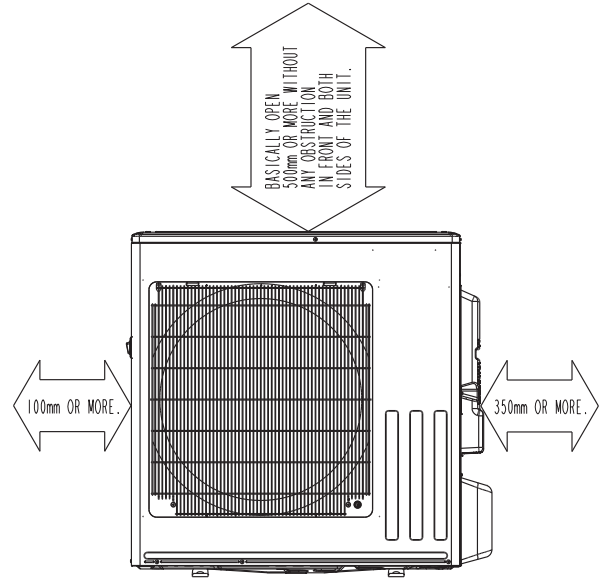
Unit: mm



SUZ-SHWM60VAH
SUZ-SHWM60VAH-SC
SUZ-SWM80VA2
SUZ-SWM80VAH2
SUZ-SWM100VA
SUZ-SWM100VAH

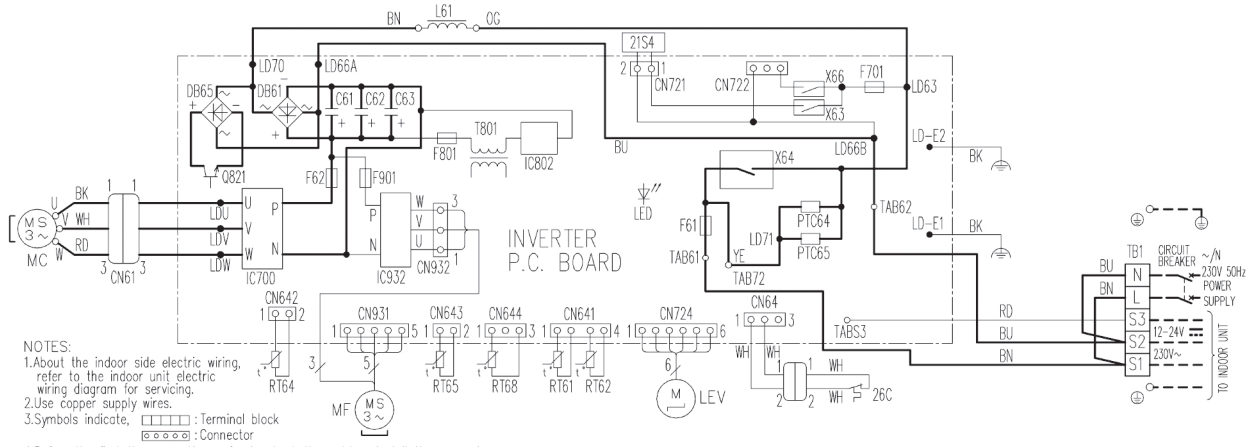
Unit: mm

REQUIRED SPACE



REFRIGERANT PIPE JOINT	LIQUID REFRIGERANT PIPE	FLARED ø6.35 (1/4")
	GAS REFRIGERANT PIPE	FLARED ø12.7 (1/2")

SUZ-SWM30VA
SUZ-SWM40VA2
SUZ-SWM40VA2-SC
SUZ-SWM60VA2
SUZ-SWM60VA2-SC

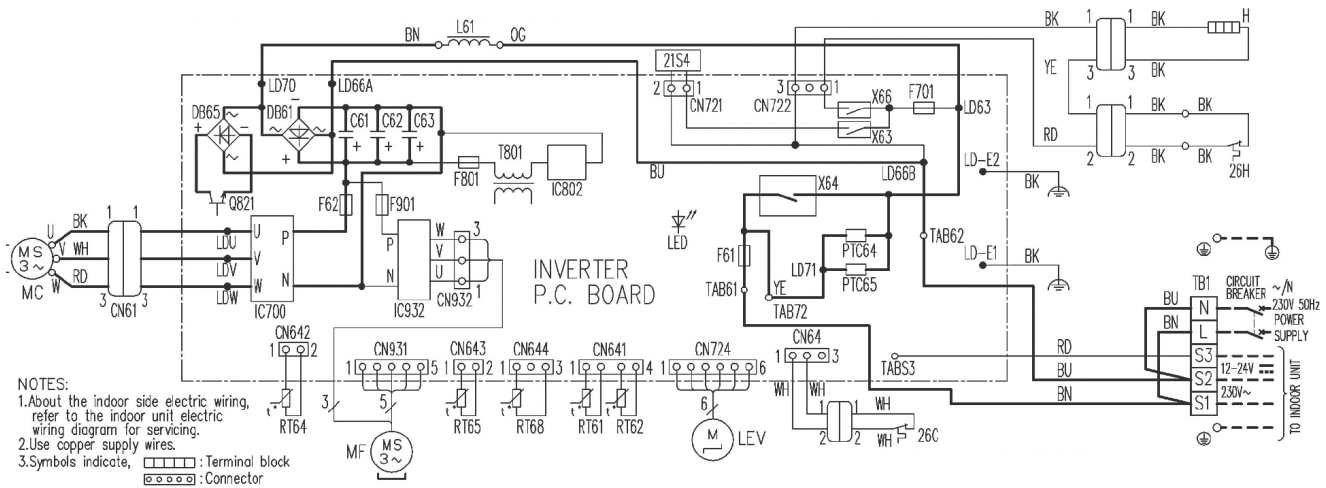


- NOTES:
- 1.About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
 - 2.Use copper supply wires.
 - 3.Symbols indicate, : Terminal block : Connector
 - 4.Before the first time operation, refer to check the outdoor installation manual.

[LEGEND]

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CN61	CONNECTOR	LEV	EXPANSION VALVE COIL	RT65	AMBIENT TEMP. THERMISTOR
C61, C62, C63	SMOOTHING CAPACITOR	L61	REACTOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
DB61, DB65	DIODE MODULE	MC	COMPRESSOR	TB1	TERMINAL BLOCK
F61	FUSE (25A 250V)	MF	FAN MOTOR	T801	TRANSFORMER
F62	FUSE (15A 250V)	PTC64, PTC65	CIRCUIT PROTECTION	T801	TRANSFORMER
F701, F801, F901	FUSE (13.15A/250V)	Q821	SWITCHING POWER TRANSISTOR	X63, X64, X66	RELAY
IC700, IC932	POWER MODULE	RT61	DEFROST THERMISTOR	21S4	REVERSING VALVE COIL
IC802	POWER DEVICE	RT62	DISCHARGE TEMP. THERMISTOR	21S4	COMPRESSOR PROTECTOR
LED	LED	RT64	FIN TEMP. THERMISTOR		

SUZ-SHWM30VAH
SUZ-SHWM40VAH
SUZ-SHWM40VAH-SC

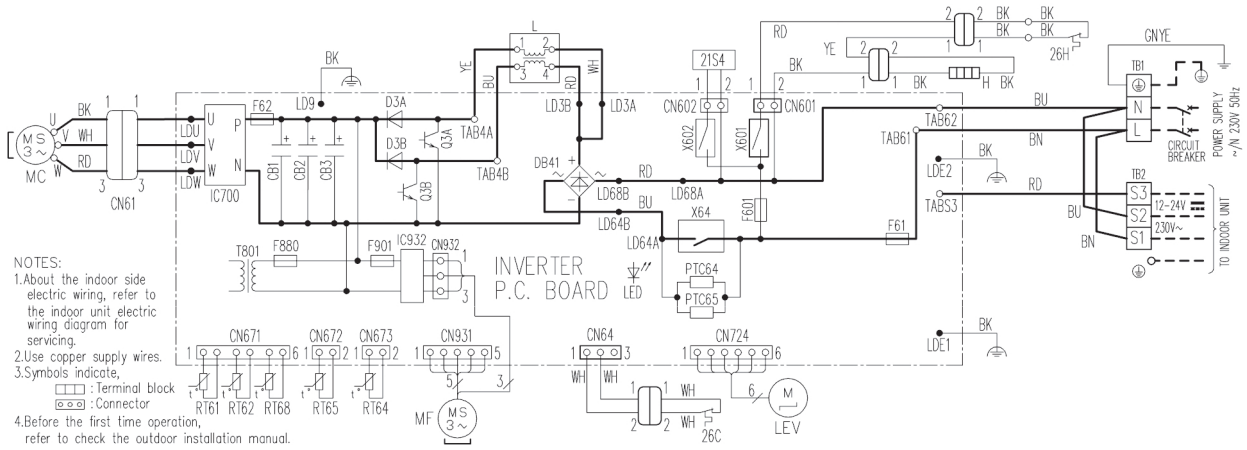


- NOTES:
- 1.About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
 - 2.Use copper supply wires.
 - 3.Symbols indicate, : Terminal block : Connector
 - 4.Before the first time operation, refer to check the outdoor installation manual.

[LEGEND]

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CN61	CONNECTOR	LEV	EXPANSION VALVE COIL	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
C61, C62, C63	SMOOTHING CAPACITOR	L61	REACTOR	TB1	TERMINAL BLOCK
DB61, DB65	DIODE MODULE	MC	COMPRESSOR	T801	TRANSFORMER
F61	FUSE (25A 250V)	MF	FAN MOTOR	T801	TRANSFORMER
F62	FUSE (15A 250V)	PTC64, PTC65	CIRCUIT PROTECTION	X63, X64, X66	RELAY
F701, F801, F901	FUSE (13.15A/250V)	Q821	SWITCHING POWER TRANSISTOR	21S4	REVERSING VALVE COIL
H	DEFROST HEATER	RT61	DEFROST THERMISTOR	21S4	COMPRESSOR PROTECTOR
IC700, IC932	POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR	26H	HEATER PROTECTOR
IC802	POWER DEVICE	RT64	FIN TEMP. THERMISTOR		
LED	LED	RT65	AMBIENT TEMP. THERMISTOR		

SUZ-SHWM60VAH
SUZ-SHWM60VAH-SC
SUZ-SWM80VAH2
SUZ-SWM100VAH

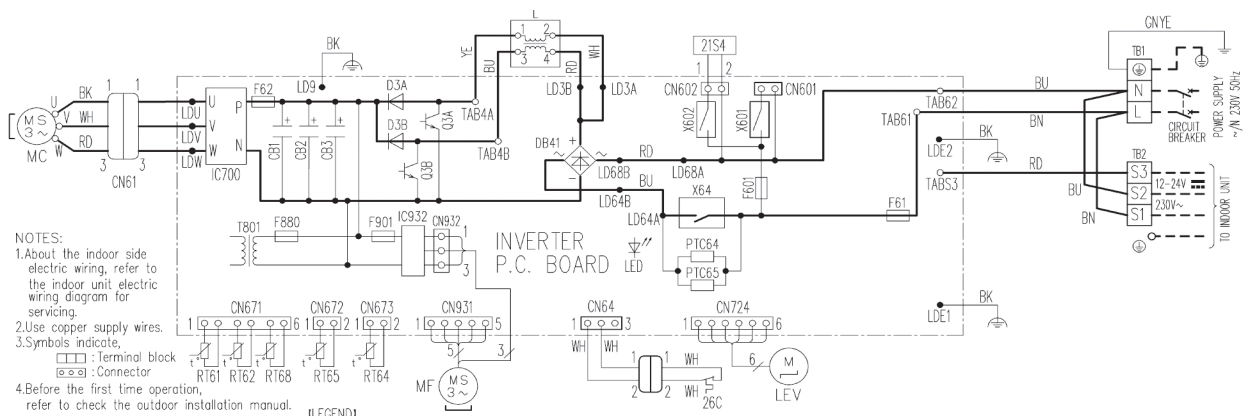


- NOTES:
 1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
 2. Use copper supply wires.
 3. Symbols indicate:
 □ : Terminal block
 ○ : Connector
 4. Before the first time operation, refer to check the outdoor installation manual.

LEGEND1

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1, CB2, CB3	SMOOTHING CAPACITOR	L	REACTOR	RT65	AMBIENT TEMP. THERMISTOR
CN61	CONNECTOR	LED	LED	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
DB41	DIODE MODULE	LEV	EXPANSION VALVE COIL	TB1, TB2	TERMINAL BLOCK
D3A, D3B	DIODE	MC	COMPRESSOR	T801	TRANSFORMER
F601	FUSE (T3.15A/250V)	MF	FAN MOTOR	X601, X602	RELAY
F61	FUSE (25A 250V)	PTC64, PTC65	CIRCUIT PROTECTION	X64	RELAY
F62	FUSE (15A 250V)	Q3A, Q3B	SWITCHING POWER TRANSISTOR	21S4	REVERSING VALVE COIL
F880, F901	FUSE (T3.15A/250V)	R161	DEFROST THERMISTOR	26C	COMPRESSOR PROTECTOR
IC700, IC932	POWER MODULE	R162	DISCHARGE TEMP. THERMISTOR	26H	HEATER PROTECTOR
		R164	FIN TEMP. THERMISTOR		

SUZ-SWM80VA2
SUZ-SWM100VA



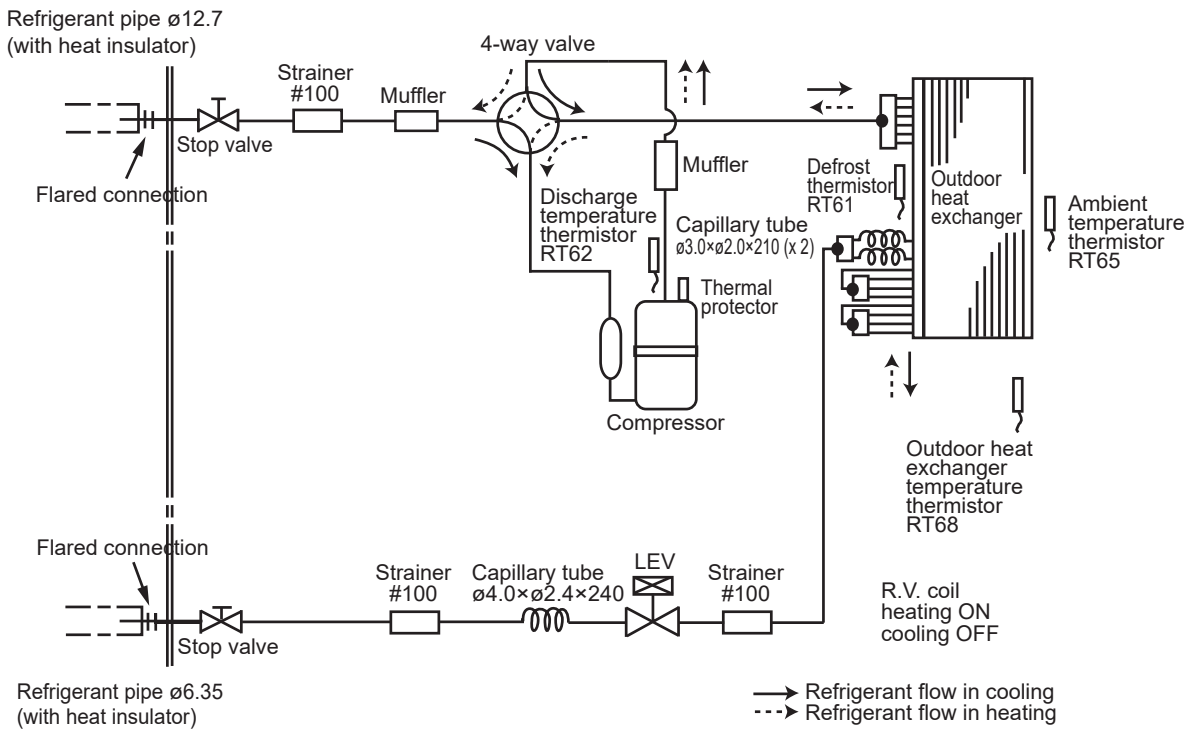
- NOTES:
 1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
 2. Use copper supply wires.
 3. Symbols indicate:
 □ : Terminal block
 ○ : Connector
 4. Before the first time operation, refer to check the outdoor installation manual.

LEGEND1

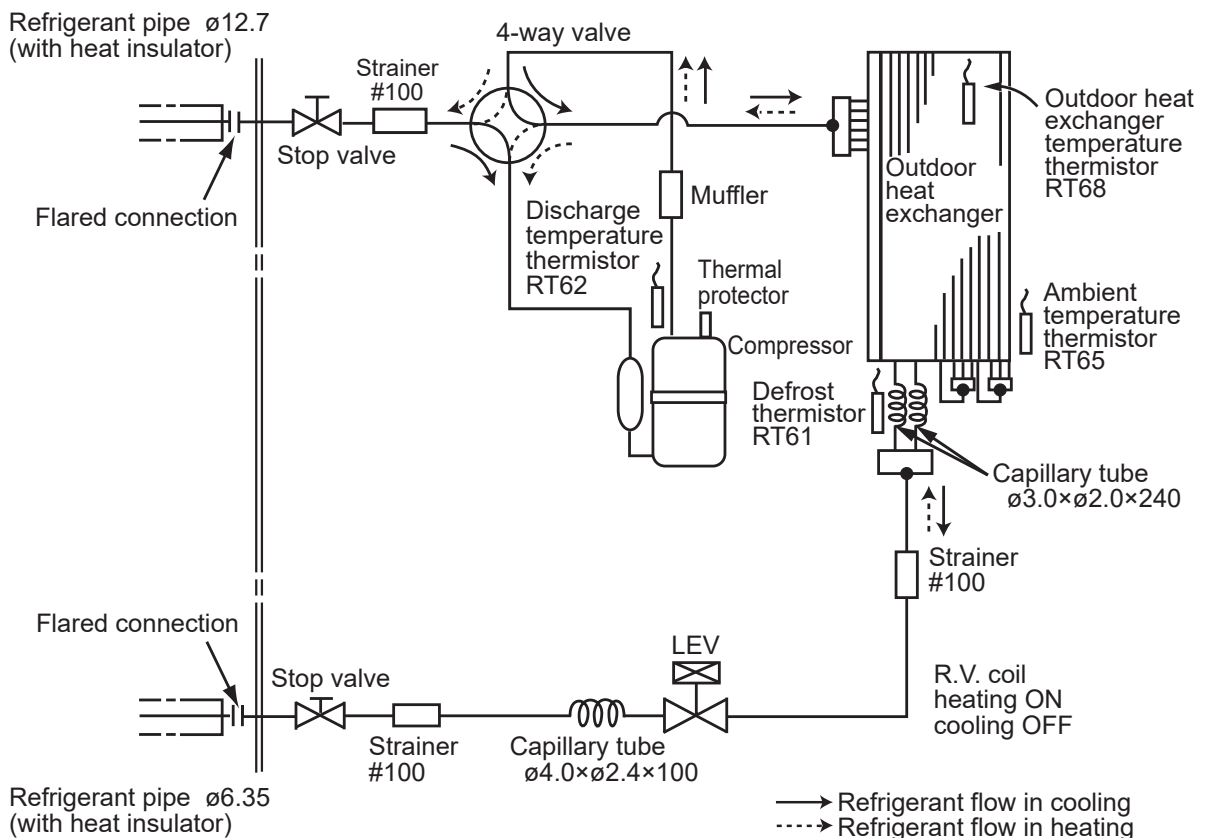
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1, CB2, CB3	SMOOTHING CAPACITOR	LED	LED	RT65	AMBIENT TEMP. THERMISTOR
CN61	CONNECTOR	LEV	EXPANSION VALVE COIL	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
DB41	DIODE MODULE	MC	COMPRESSOR	TB1, TB2	TERMINAL BLOCK
D3A, D3B	DIODE	MF	FAN MOTOR	T801	TRANSFORMER
F601	FUSE (T3.15A/250V)	PTC64, PTC65	CIRCUIT PROTECTION	X601, X602	RELAY
F61	FUSE (25A 250V)	Q3A, Q3B	SWITCHING POWER TRANSISTOR	X64	RELAY
F62	FUSE (15A 250V)	R161	DEFROST THERMISTOR	21S4	REVERSING VALVE COIL
F880, F901	FUSE (T3.15A/250V)	R162	DISCHARGE TEMP. THERMISTOR	26C	COMPRESSOR PROTECTOR
IC700, IC932	POWER MODULE	R164	FIN TEMP. THERMISTOR		
L	REACTOR				

Unit: mm

SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC
 SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC

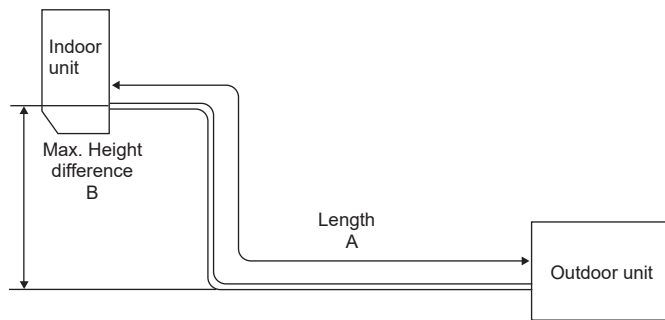


SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2
 SUZ-SWM100VA SUZ-SWM100VAH

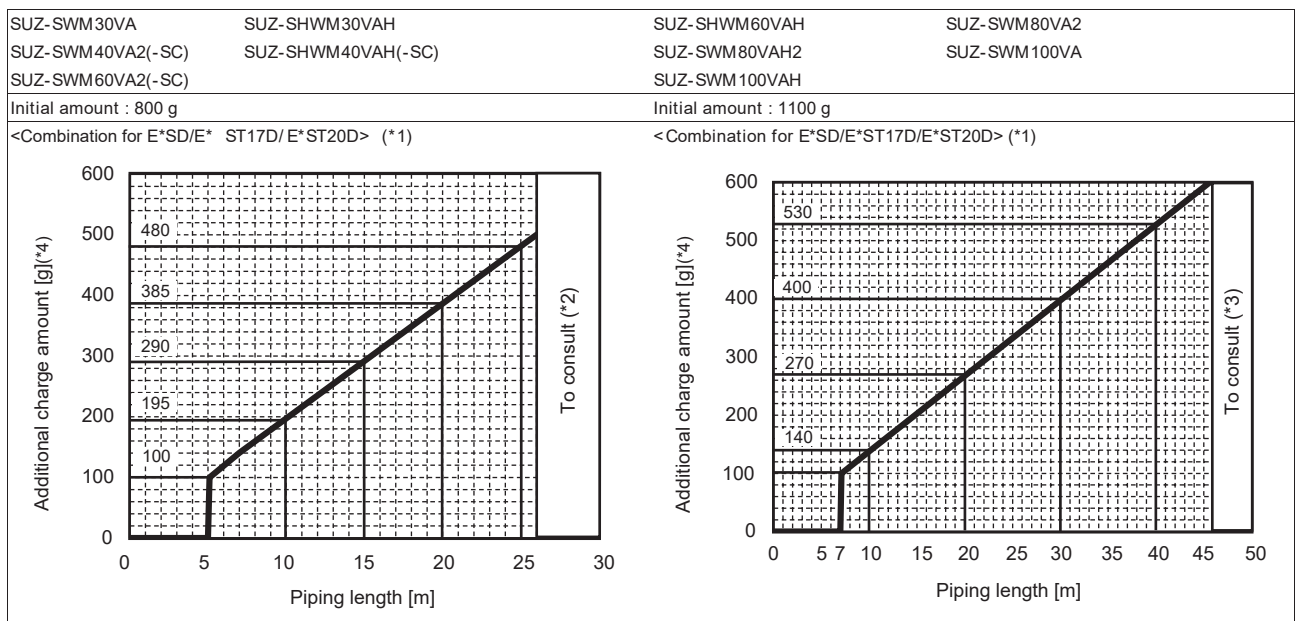


MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

Model	Refrigerant piping: m		Piping size O.D: mm	
	Length A	Max. Height difference B	Gas	Liquid
SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	2 – 26	26	12.7	6.35
SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH	2 – 46	30	12.7	6.35



ADDITIONAL REFRIGERANT CHARGE (R32: kg)

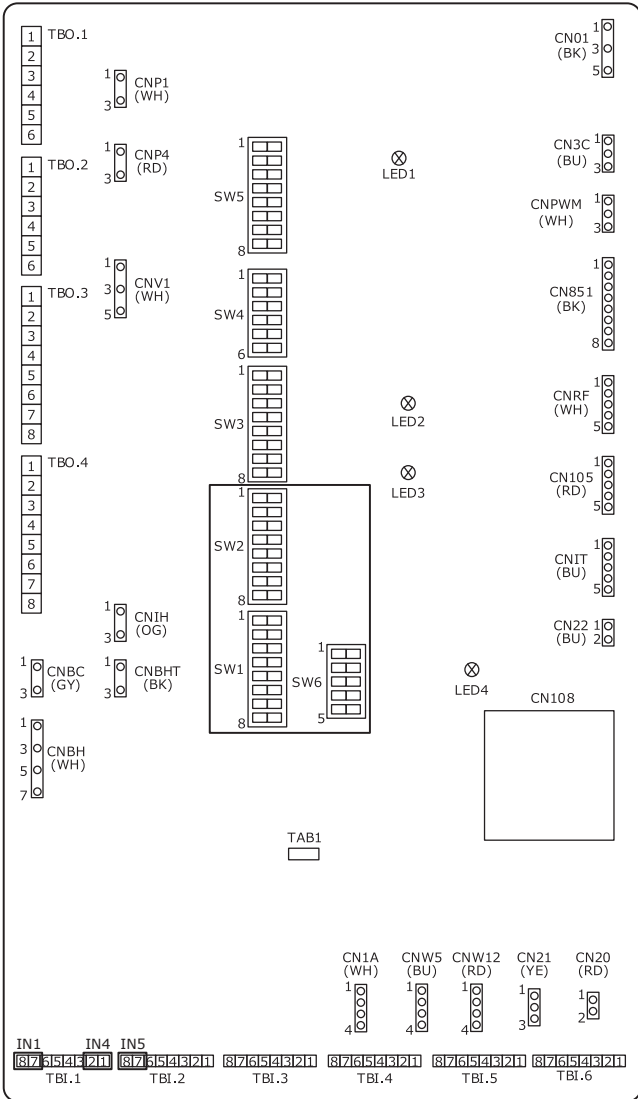


- *1. In case of connecting to E*ST30D, ALWAYS add 50 g on top of the additional charge according to the graphs.
- *2. For the piping length longer than 26 m, make sure to consult with our specialist.
- *3. For the piping length longer than 46 m, make sure to consult with our specialist.
- *4. In case of Full recharge; Initial + Additional charge amount.

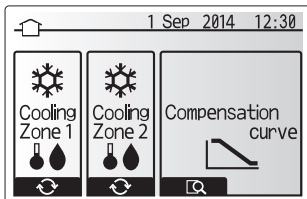
Pumping down

When relocating or disposing of the outdoor unit, pump down the system following the procedure below so that no refrigerant is released into the atmosphere.

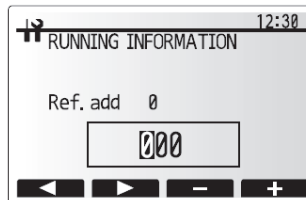
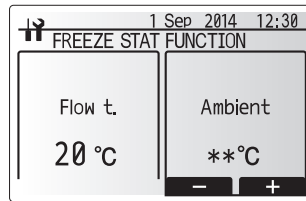
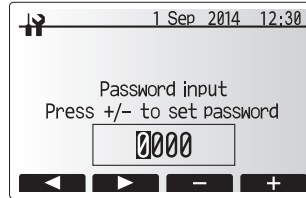
- ① Turn OFF all the supply circuit (including Indoor unit, Heater, Outdoor unit etc.)
- ② Connect the gauge manifold valve to the service port of the stop valve on the gas pipe side of the outdoor unit.
- ③ Fully close the stop valve on the liquid pipe side of the outdoor unit.
- ④ Change the settings on the indoor unit.
 - Set DIP switch SW1-3 to OFF, SW2-1 to OFF, SW2-4 to ON and SW6-3 to OFF on the indoor control board.
 - Disconnect the signal inputs IN1 (room thermostat 1 input), IN4 (Demand control input) and IN5 (Outdoor thermostat input).



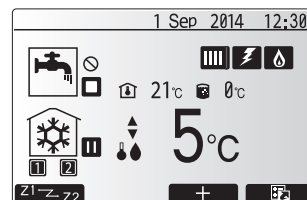
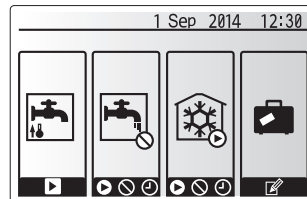
- ⑤ Turn ON all the supply circuit.
- ⑥ From the main menu on the main controller of the indoor unit, select "Heating/cooling mode" → "Cooling flow temp."



- ⑦ From the main menu, select "Service" and change the setting as below. You will be prompted to enter a password. THE FACTORY DEFAULT PASSWORD is "0000".
 - Select "Operation settings" → "Freeze stat function", and then set the minimum outdoor ambient temperature to *(asterisk).
 - Select "Running information", and then set Reference address to 351.



- ⑧ Perform the refrigerant collecting operation.
 - Push "ON/OFF" button on the main controller.
 - From the option menu, set "Cooling ON".
 - Set the target flow temperature to 5 °C. If the system is controlled by a room temperature thermostat, set the target room temperature to 10 °C.
 - Refrigerant collecting operation starts after 60 seconds.
 - For details or for other information about the main controller settings, refer to the installation manual or operation manual for indoor unit.



- ⑨ Fully close the stop valve on the gas pipe side of the outdoor unit when the pressure gauge shows 0.05 to 0 MPa [Gauge] (approx. 0.5 to 0 kgf/cm²) and quickly stop the outdoor unit.
- Push the "ON/OFF" button on the remote controller to stop the outdoor unit.
 - * Note that when the extension piping is very long with a large refrigerant amount, it may not be possible to perform a pump down operation. In this case, use refrigerant recovery equipment to collect all of the refrigerant in the system.
- ⑩ Set back the main controller setting changed at the procedure ⑨ above.
- ⑪ Push the "ON/OFF" button for about 3 seconds on the main controller of the indoor unit to stop the unit.
- ⑫ Set back the main controller settings changed at any other procedure except ⑨.
- * How to set back "Running information": Set Reference address to 350.
- ⑬ Turn OFF all the supply circuit and set back the DIP switch settings on the indoor circuit board as it were.
- ⑭ Remove the gauge manifold valve, and then disconnect the refrigerant pipes.

 **WARNING:**

When the refrigeration circuit has a leak, DO NOT execute pump down with the compressor.

When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes.

- If the refrigerant pipes are disconnected while the compressor is operating and the stop valve (ball valve) is open, the pressure in the refrigeration cycle could become extremely high if air is drawn in, causing the pipes to burst, personal injury, etc.

 **CAUTION:**

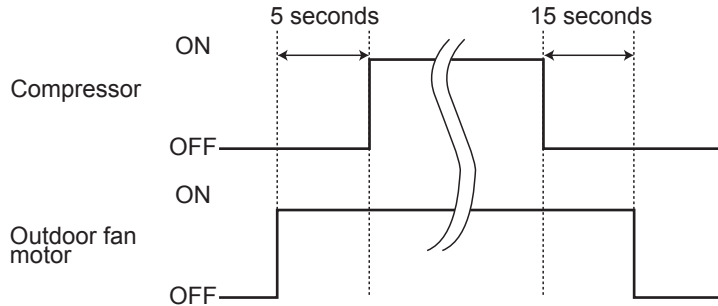
Do NOT use this COOLING mode when connecting to an indoor unit that does not allow COOLING mode for any purpose other than pumping down.

8-1. OUTDOOR FAN MOTOR CONTROL

The fan motor turns ON/OFF, interlocking with the compressor.

[ON] The fan motor turns ON 5 seconds before the compressor starts up.

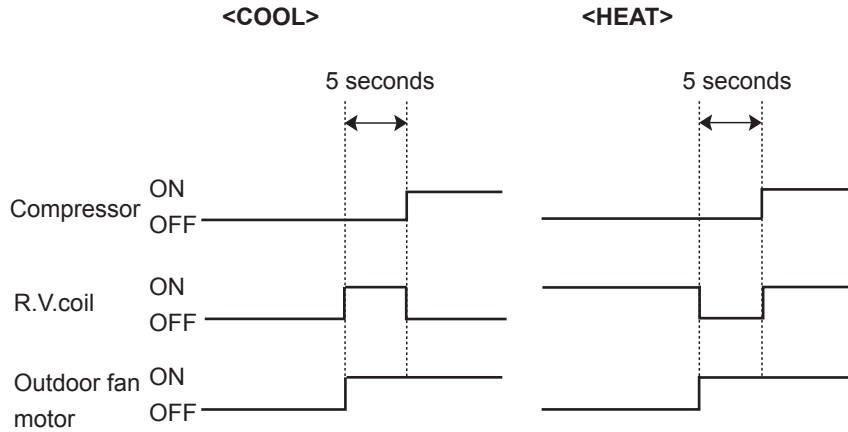
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



8-2. R.V. COIL CONTROL

- Heating ON
- Cooling OFF
- Dry OFF

NOTE: The 4-way valve reverses for 5 seconds right before startup of the compressor.



8-3. RELATION BETWEEN MAIN SENSOR AND ACTUATOR

Sensor	Purpose	Actuator				
		Compressor	LEV	Outdoor fan motor	R.V. coil	Defrost heater *Only VAH model
Discharge temperature thermistor	Protection	○	○			
Pressure sensor and plate heat exchanger thermistor in indoor unit	Cooling: Coil frost prevention and water freeze prevention	○				
	Heating: High pressure protection and water freeze prevention at defrosting	○	○			
Defrost thermistor	Heating: Defrosting	○	○	○	○	○
Fin temperature thermistor	Protection	○		○		
Ambient temperature thermistor	Cooling: Low ambient temperature operation	○	○	○		
	Heating: Start operation and defrosting (Heater)	○	○	○		○
Outdoor heat exchanger temperature thermistor	Cooling: Low ambient temperature operation	○	○	○		
	Cooling: High pressure protection	○	○	○		

9-1. CHANGE IN DEFROST SETTING

Changing defrost finish temperature

<JS> To change the defrost finish temperature, cut/solder the JS wire of the outdoor inverter P.C. board.
(Refer to 10-6)

		Defrost finish temperature (°C)	
		SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH
JS	Soldered (Initial setting)	8	10
	None (Cut)	13	18

9-2. CHANGE OF BREAKER SIZE SETTING

SUZ-SHWM60VAH/SUZ-SHWM60VAH-SC/SUZ-SWM80VA2/SUZ-SWM80VAH2/ SUZ-SWM100VA/SUZ-SWM100VAH

<JG> To use the 16A breaker, cut the JG wire of the outdoor inverter P.C. board. (Refer to 10-6)

		Breaker size (A)	
		SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH
JG	Soldered (Initial setting)	16	20
	None (Cut)	16	16

NOTE: When the inverter P.C. board is replaced, check the jumper wires, and cut/solder them if necessary.

9-3. OUTDOOR UNIT OPERATION MONITOR FUNCTION

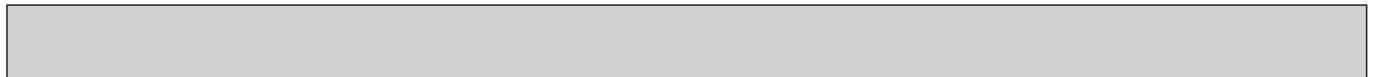
9-3-1. Request code list for SUZ

By using request codes function of indoor unit controller, it is possible to check operating status of outdoor unit.
Refer to indoor unit service manual for how to use the controllers and request codes for indoor unit.

Request code	Request content	"Description (Display range)"	Unit	Remarks
0	Operation state	Refer to "Detail Contents in Request Code"	-	
1	Compressor-Operating current (rms)	0-50	A	
2	Compressor-Accumulated operating time	0-9999	10 hours	
3	Compressor-Number of operation times	0-9999	100 times	
4	Discharge temperature (RT62)	-20-217	°C	
5	Outdoor unit -Liquid pipe temperature (RT61)	-40-90	°C	
6				
7				
8				
9	Outdoor unit -Outside air temperature (RT65)	-40-90	°C	
10	Outdoor unit -Heat sink pipe temperature (RT64)	-40-200	°C	
11				
12	Discharge superheat (Shd)	0-255	°C	
13	Sub-cool (SC)	0-130	°C	
14	Condensing temperature	-39-88	°C	Heating: Pressure sensor temperature Cooling: Outdoor unit -HEX pipe temperature
15				
16	Compressor-Operating frequency	0-255	Hz	
17	Compressor-Target operating frequency	0-255	Hz	
18				
19	Outdoor unit-Fan speed	0-1500	rpm	



20				
21				
22	LEV opening	0-500	Pulses	
23				
24				
25	Primary current	0-50	A	
26	DC bus voltage	180-370	V	
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48	Thermostat ON operating time	0-999	Minutes	
49				
50				
51	Outdoor unit-Control state	Refer to "Detail Contents in Request Code"	-	
52	Compressor-Frequency control state	Refer to "Detail Contents in Request Code"	-	
53				
54				
55				
56				
57				
58				
59				
60				
61				
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87				
88				
89				
90	Outdoor unit-Microprocessor version information	Example) Ver.9.00→"0900"	Ver	

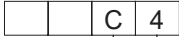


91				
92				
93	Outdoor unit-EEPROM check information	4 alphanumeric characters	-	
94				
95				
96				
97				
98				
99				
100				
101				
102				
103	Error history 1 (latest)	Displays error history. (""-"" is displayed if no history is present)	Code	
104	Error history 2 (second to last)	Displays error history. (""-"" is displayed if no history is present)	Code	
105	Error history 3 (third to latest)	Displays error history. (""-"" is displayed if no history is present)	Code	
106	Abnormal thermistor display (RT61/RT68/RT65/RT64)	3: RT61 6: RT68 7: RT65 8: RT64 0: No thermistor error"	Sensor number	
107	Operation mode at time of error	Displayed in the same way as request code "0".	-	
108	Compressor-Operating current at time of error	0-50	A	
109	Compressor-Accumulated operating time at time of error	0-9999	10 hours	
110	Compressor-Number of operation times at time of error	0-9999	100 times	
111	Discharge temperature at time of error	-20-217	°C	
112	Outdoor unit -Liquid pipe temperature (RT61) at time of error	-40-90	°C	
113				
114				
115				
116	Outdoor unit -Outside air temperature (RT65) at time of error	-40-90	°C	
117	Outdoor unit -Heat sink pipe temperature (RT64) at time of error	-40-200	°C	
118	Discharge superheat (Shd) at time of error	0-255	°C	
119	Sub-cool (SC) at time of error	0-130	°C	
120	Compressor-Operating frequency at time of error	0-255	Hz	
121				
122	Outdoor unit-Fan speed at time of error	0-1500	rpm	
123				
124				
125	LEV opening at time of error	0-500	Pulses	
126				
127				
128				
129				
130	Thermostat ON time until operation stops due to error	0-999	Minutes	

9-3-2. Detail contents in request code

[Operation state] (Request code : "0")

Data display



Relay output state
Operation mode

Operation mode

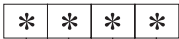
Display	Operation mode
0	STOP
C	COOL
H	HEAT
Display	DEFROST

Relay output state

Display	Power currently supplied to compressor	Compressor	4-way valve	Solenoid valve
0	—	—	—	—
1				ON
2			ON	
3			ON	ON
4		ON		
5		ON		ON
6		ON	ON	
7		ON	ON	ON
8	ON			
A	ON		ON	

[Outdoor unit – Control state] (Request code : "51")

Data display



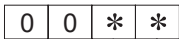
Operating state
Control state for Diesel explosion
Control state for Valve closing
Control state for Low outside air cooling

Relay output state

Display	Operating state	Control state for Diesel explosion	Control state for Valve closing	Control state for Low outside air cooling
0	Normal	Normal	Normal	Normal
1	Preparing for heating	Judging 1 Control	Control for cooling	Controlling
2	Defrost	Judging 2 Control	Control for heating	—
3	—	—	—	—

[Compressor – Frequency control state] (Request code : "52")

Data display



Frequency control state ②
Frequency control state ①

Frequency control state ①

Display	Current limit control
0	No Controlled
1	Level 1
2	Level 2
3	Level 3
4	Level 4
5	Level 5
6	Level 6

Frequency control state ②

Display	Discharge temperature overheat prevention	Condensation temperature overheat prevention	Anti-freeze protection control	Heatsink temperature overheat prevention
0				
1	Controlled			
2		Controlled		
3	Controlled	Controlled		
4			Controlled	
5	Controlled		Controlled	
6		Controlled	Controlled	
7	Controlled	Controlled	Controlled	
8				Controlled
9	Controlled			Controlled
A		Controlled		Controlled
b	Controlled	Controlled		Controlled
C			Controlled	Controlled
d	Controlled		Controlled	Controlled
E		Controlled	Controlled	Controlled
F	Controlled	Controlled	Controlled	Controlled

10-1. CAUTIONS ON TROUBLESHOOTING**1. Before troubleshooting, check the following**

- 1) Check the power supply voltage.
- 2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care of the following during servicing

- 1) Before servicing the air to water heat pump, be sure to turn OFF the main unit first with the remote controller, and then after confirming the horizontal vane is closed, turn OFF the breaker and/or disconnect the power plug.
- 2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
- 3) When removing the electrical parts, be careful of the residual voltage of smoothing capacitor.
- 4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 5) When connecting or disconnecting the connectors, hold the connector housing. DO NOT pull the lead wires.

<Incorrect>

**Lead wiring**

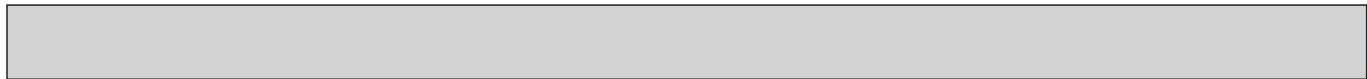
<Correct>

**Connector housing****3. Troubleshooting procedure**

- 1) Check if the OPERATION INDICATOR lamp on the indoor unit is blinking on and off to indicate an abnormality. To make sure, check how many times the OPERATION INDICATOR lamp is blinking on and off before starting service work.
- 2) Before servicing, verify that all connectors and terminals are connected properly.
- 3) When the electronic control P.C. board seems to be defective, check for disconnection of the copper foil pattern and burnt or discolored components.
- 4) Refer to 10-2 and 10-3.

10-2. TROUBLESHOOTING CHECK TABLE

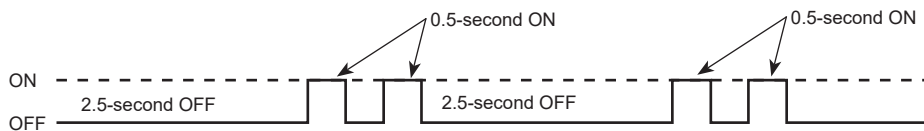
No.	Symptom	LED indication	check code	Abnormal point/ Condition	Condition	Remedy		
1	Outdoor unit does not operate.	1-time blink every 2.5 seconds	UP	Outdoor power system	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	<ul style="list-style-type: none"> Reconnect connector of compressor. Refer to 10-5. Ⓐ "How to check inverter/compressor". Check stop valve. 		
2			U3	Outdoor thermistors	Discharge temperature thermistor shorts, or opens during compressor running.	<ul style="list-style-type: none"> Refer to 10-5. Ⓒ "Check of outdoor thermistors". 		
			U4		Fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor, outdoor heat exchanger temperature thermistor or ambient temperature thermistor shorts, or opens during compressor running.			
3				FC	Outdoor control system	Nonvolatile memory data cannot be read properly.	<ul style="list-style-type: none"> Replace inverter P.C. board. 	
4			6-time blink 2.5 seconds OFF	E8/E9	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	<ul style="list-style-type: none"> Check indoor/outdoor connecting wire. Replace indoor or outdoor P.C. board if abnormality is displayed again. 	
5			11-time blink 2.5 seconds OFF	UE	Stop valve/ Closed valve	Closed valve is detected by compressor current.	<ul style="list-style-type: none"> Check stop valve. Check the amount of refrigerant filled. Check water volume and water flow rate in total system. See indoor unit IM for correct value. 	
6			16-time blink 2.5 seconds OFF	PL	Outdoor refrigerant system abnormality	A closed valve and air trapped in the refrigerant circuit are detected based on the temperature sensed by the indoor and outdoor thermistors and the current of the compressor.	<ul style="list-style-type: none"> Check for a gas leak in a connecting piping, etc. Check stop valve. Refer to 10-5. Ⓓ "Check of outdoor refrigerant circuit". 	
7	20-time blink 2.5 seconds OFF	EE	Combination error with indoor units	Abnormal if a connection of indoor unit and outdoor unit which uses different refrigerant is detected.	<ul style="list-style-type: none"> Connect a proper unit. Check a pressure sensor in indoor unit. 			
8	'Outdoor unit stops and re-starts 3 minutes later' is repeated.	2-time blink 2.5 seconds OFF		Overcurrent protection	Large current flows into power module (IC700).	<ul style="list-style-type: none"> Reconnect connector of compressor. Refer to 10-5. Ⓐ "How to check inverter/compressor". Check stop valve. 		
9		3-time blink 2.5 seconds OFF		Discharge temperature overheat protection	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	<ul style="list-style-type: none"> Check refrigerant circuit and refrigerant amount. Refer to 10-5. Ⓔ "Check of LEV". 		
10		4-time blink 2.5 seconds OFF		Fin temperature /P.C. board temperature thermistor overheat protection	Temperature of fin temperature thermistor on the heat sink exceeds 75 ~ 86°C (S(H)WM30/40, SWM60) /75 ~ 80°C (SHWM60, SWM80/100) or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 72 ~ 85°C (S(H)WM30/40, SWM60) /70 ~ 75°C (SHWM60, SWM80/100).	<ul style="list-style-type: none"> Check around outdoor unit. Check outdoor unit air passage. Refer to 10-5. Ⓘ "Check of outdoor fan motor". 		
11		5-time blink 2.5 seconds OFF		High pressure protection	Indoor plate heat exchanger thermistor exceeds 70°C in HEAT mode. Defrost thermistor exceeds 70°C in COOL mode.	<ul style="list-style-type: none"> Check refrigerant circuit and refrigerant amount. Check stop valve. 		
12		8-time blink 2.5 seconds OFF		Compressor synchronous abnormality	The waveform of compressor current is distorted.	<ul style="list-style-type: none"> Reconnect connector of compressor. Refer to 10-5. Ⓐ "How to check inverter/compressor". 		
13		10-time blink 2.5 seconds OFF		Outdoor fan motor	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan startup.	<ul style="list-style-type: none"> Refer to 10-5. Ⓣ "Check of outdoor fan motor. Refer to 10-5. Ⓢ "Check of inverter P.C. board. 		
14		12-time blink 2.5 seconds OFF		Each phase current of compressor	Each phase current of compressor cannot be detected normally.	<ul style="list-style-type: none"> Refer to 10-5. Ⓐ "How to check inverter/compressor". 		
15		13-time blink 2.5 seconds OFF		Bus-bar voltage (DC)	Bus-bar voltage of inverter cannot be detected normally.	<ul style="list-style-type: none"> It occurs with following case. Instantaneous power voltage drop. (Short time power failure) (SHWM60, SWM80/100) Refer to 10-5. Ⓢ "Check of power supply". (SHWM60, SWM80/100) Refer to 10-5. Ⓐ "How to check inverter/compressor". 		
16		Outdoor unit operates.	1-time blink 2.5 seconds OFF		Frequency drop by current protection	S(H)WM30/40, SWM60	When the input current exceeds approximately 13.2A, compressor frequency lowers.	<ul style="list-style-type: none"> The unit is normal, but check the following. Check if indoor filters are clogged. Check if refrigerant is short. Check if indoor/outdoor unit air circulation is short cycled.
						SHWM60 SWM80/100	When the input current exceeds approximately 17A, compressor frequency lowers.	
17		3-time blink 2.5 seconds OFF		Frequency drop by high pressure protection	Temperature of indoor plate heat exchanger thermistor exceeds 60°C in HEAT mode, compressor frequency lowers.			
					Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.		



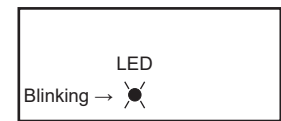
No.	Symptom	LED indication	Abnormal point/Condition	Condition	Remedy
18	Outdoor unit operates.	4-time blink 2.5 seconds OFF	Frequency drop by discharge temperature protection	Temperature of discharge temperature thermistor exceeds 111°C, compressor frequency lowers.	<ul style="list-style-type: none"> • Check refrigerant circuit and refrigerant amount. • Refer to 10-5. Ⓢ "Check of LEV". • Refer to 10-5. Ⓣ "Check of outdoor thermistors".
19		S(H)WM30/40, SWM60 5-time blink 2.5 seconds OFF	Outside temperature thermistor protection	When the outside temperature thermistor shorts or opens, protective operation without that thermistor is performed.	• Refer to 10-5. Ⓣ Check of outdoor thermistors.
20		7-time blink 2.5 seconds OFF	Low discharge temperature protection	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	<ul style="list-style-type: none"> • Refer to 10-5. Ⓢ "Check of LEV". • Check refrigerant circuit and refrigerant amount.
21		8-time blink 2.5 seconds OFF	S(H)WM30/40/ SWM60 PAM protection PAM: Pulse Amplitude Modulation	The overcurrent flows into IGBT(Q821) or the bus-bar voltage reaches 394 V or more, PAM stops and restarts.	This is not malfunction. PAM protection will be activated in the following cases: 1 Instantaneous power voltage drop. (Short time power failure) 2 When the power supply voltage is high.
			SHWM60 SWM80/100 Zero cross detecting circuit	Zero cross signal cannot be detected.	<ul style="list-style-type: none"> • It occurs with following cases. 1 Instantaneous power voltage drop. (Short time power failure) 2 Distortion of primary voltage • Refer to 10-5. Ⓣ "Check of power supply".
22	9-time blink 2.5 seconds OFF	Inverter check mode	The connector of compressor is disconnected, inverter check mode starts.	• Check if the connector of the compressor is correctly connected. Refer to 10-5. Ⓢ "How to check inverter/compressor".	

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 10-6.
2. LED is lit during normal operation.

The blinking frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the blinking frequency is "2".



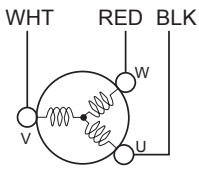
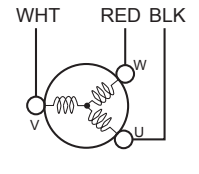
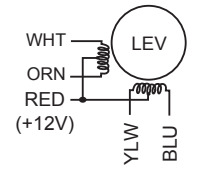
Inverter P.C. board



10-3. HOW TO PROCEED "SELF-DIAGNOSIS"

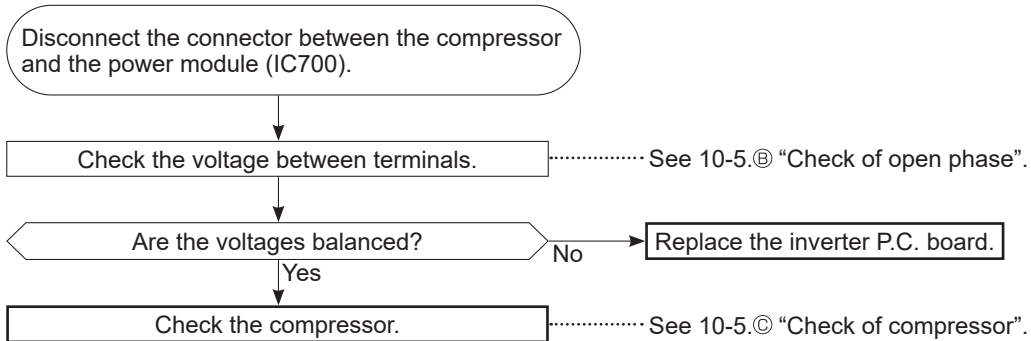
Refer to "TROUBLE SHOOTING" of the indoor unit service manual.

10-4. TROUBLESHOOTING CRITERION OF MAIN PARTS

Part name	Check method and criterion	Figure																				
Defrost thermistor (RT61) Fin temperature thermistor (RT64) Ambient temperature thermistor (RT65) Outdoor heat exchanger temperature thermistor (RT68)	Measure the resistance with a multimeter. Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.																					
Discharge temperature thermistor (RT62)	Measure the resistance with a multimeter. Before measurement, hold the thermistor with your hands to warm it up. Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.																					
Compressor	Measure the resistance between terminals using a multimeter. (Temperature: -10 to 40°C)																					
	<table border="1"> <thead> <tr> <th></th> <th colspan="3">Normal (Ω)</th> </tr> </thead> <tbody> <tr> <td></td> <td>SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC</td> <td>SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC</td> <td>SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH</td> </tr> <tr> <td>U-V</td> <td></td> <td></td> <td></td> </tr> <tr> <td>U-W</td> <td>0.82 - 1.11</td> <td>0.87 - 1.18</td> <td>1.45 - 1.79</td> </tr> <tr> <td>V-W</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Normal (Ω)				SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC	SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH	U-V				U-W	0.82 - 1.11	0.87 - 1.18	1.45 - 1.79	V-W				
	Normal (Ω)																					
	SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC	SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH																			
U-V																						
U-W	0.82 - 1.11	0.87 - 1.18	1.45 - 1.79																			
V-W																						
Outdoor fan motor	Measure the resistance between lead wires using a multimeter. (Temperature: -10 ~ 40°C)																					
	<table border="1"> <thead> <tr> <th></th> <th colspan="2">Normal (Ω)</th> </tr> </thead> <tbody> <tr> <td>Color of lead wire</td> <td>SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC</td> <td>SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH</td> </tr> <tr> <td>RED - BLK BLK - WHT WHT - RED</td> <td>32 - 43</td> <td>25 - 34</td> </tr> </tbody> </table>		Normal (Ω)		Color of lead wire	SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH	RED - BLK BLK - WHT WHT - RED	32 - 43	25 - 34												
	Normal (Ω)																					
Color of lead wire	SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH																				
RED - BLK BLK - WHT WHT - RED	32 - 43	25 - 34																				
R.V. coil (21S4)	Measure the resistance using a multimeter. (Temperature: -10 to 40°C)																					
	<table border="1"> <thead> <tr> <th></th> <th colspan="2">Normal (kΩ)</th> </tr> </thead> <tbody> <tr> <td></td> <td>SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC</td> <td>SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH</td> </tr> <tr> <td></td> <td>0.39 - 0.60</td> <td>1.19 - 1.78</td> </tr> </tbody> </table>		Normal (kΩ)			SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH		0.39 - 0.60	1.19 - 1.78												
	Normal (kΩ)																					
	SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2 SUZ-SWM100VA SUZ-SWM100VAH																				
	0.39 - 0.60	1.19 - 1.78																				
Expansion valve coil (LEV)	Measure the resistance using a multimeter. (Temperature: -10 to 40°C)																					
	<table border="1"> <thead> <tr> <th>Color of lead wire</th> <th>Normal (Ω)</th> </tr> </thead> <tbody> <tr> <td>RED - ORN</td> <td rowspan="4">37 - 54</td> </tr> <tr> <td>RED - WHT</td> </tr> <tr> <td>RED - BLU</td> </tr> <tr> <td>RED - YLW</td> </tr> </tbody> </table>	Color of lead wire	Normal (Ω)	RED - ORN	37 - 54	RED - WHT	RED - BLU	RED - YLW														
Color of lead wire	Normal (Ω)																					
RED - ORN	37 - 54																					
RED - WHT																						
RED - BLU																						
RED - YLW																						
Defrost heater	Measure the resistance using a multimeter. (Temperature: -10 to 40°C)																					
	<table border="1"> <thead> <tr> <th></th> <th colspan="2">Normal (Ω)</th> </tr> </thead> <tbody> <tr> <td></td> <td>SUZ-SHWM30VAH SUZ-SHWM40VAH SUZ-SHWM40VAH-SC</td> <td>SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VAH2 SUZ-SWM100VAH</td> </tr> <tr> <td></td> <td>802 - 990</td> <td>376 - 461</td> </tr> </tbody> </table>		Normal (Ω)			SUZ-SHWM30VAH SUZ-SHWM40VAH SUZ-SHWM40VAH-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VAH2 SUZ-SWM100VAH		802 - 990	376 - 461												
	Normal (Ω)																					
	SUZ-SHWM30VAH SUZ-SHWM40VAH SUZ-SHWM40VAH-SC	SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VAH2 SUZ-SWM100VAH																				
	802 - 990	376 - 461																				

10-5. TROUBLESHOOTING FLOW

A How to check inverter/compressor



B Check of open phase

- With the connector between the compressor and the power module (IC700) disconnected, activate the inverter and check if the inverter is normal by measuring the **voltage balance** between the terminals.

Output voltage is 50 - 130 V. (The voltage may differ according to the multimeter.)

<< Operation method >>

Start cooling or heating operation by pressing the emergency operation switch on the indoor unit. (TEST RUN OPERATION: Refer to 9-3.)

<< Measurement point >>

At 3 points

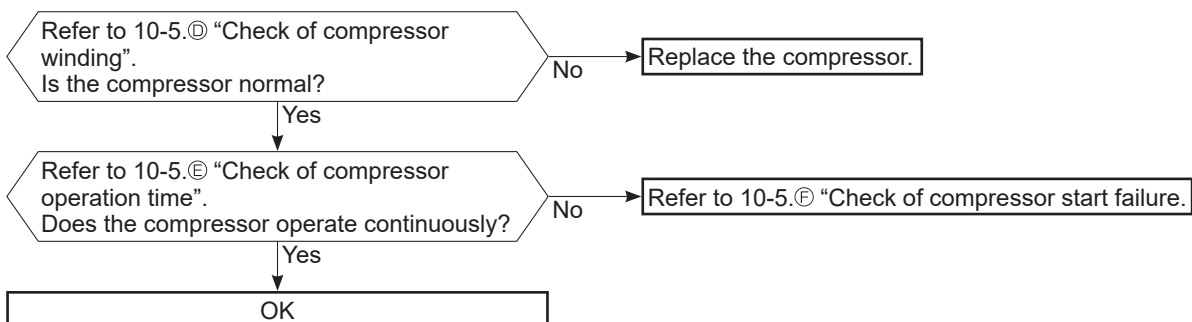
BLK (U)-WHT (V) * Measure AC voltage between the lead wires at 3 points.

BLK (U)-RED (W)

WHT(V)-RED (W)

- NOTE:**
1. Output voltage varies according to power supply voltage.
 2. Measure the voltage by analog type multimeter.
 3. During this check, LED of the inverter P.C. board blinks 9 times. (Refer to 10-6.)

C Check of compressor



D Check of compressor winding

- Disconnect the connector between the compressor and the power module (IC700), and measure the resistance between the compressor terminals.

<<Measurement point>>

At 3 points

BLK-WHT

BLK-RED

WHT-RED

* Measure the resistance between the lead wires at 3 points.

<<Judgement>>

Refer to 12-4.

0 [Ω] Abnormal [short]

Infinite [Ω] Abnormal [open]

NOTE: Be sure to zero the ohmmeter before measurement.

E Check of compressor operation time

- Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to overcurrent.

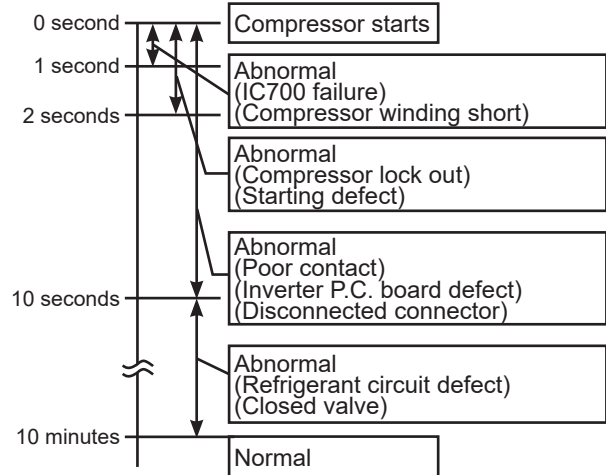
<<Judgement>>

<<Operation method>>

Start heating or cooling operation by pressing the emergency operation switch on the indoor unit. (Test run operation: Refer to 9-3.)

<<Measurement>>

Measure the time from the start of compressor to the stop of compressor due to overcurrent.



F Check of compressor start failure

Confirm that ①~④ is normal.

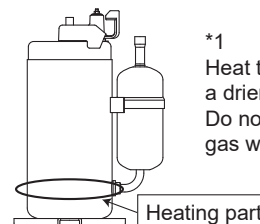
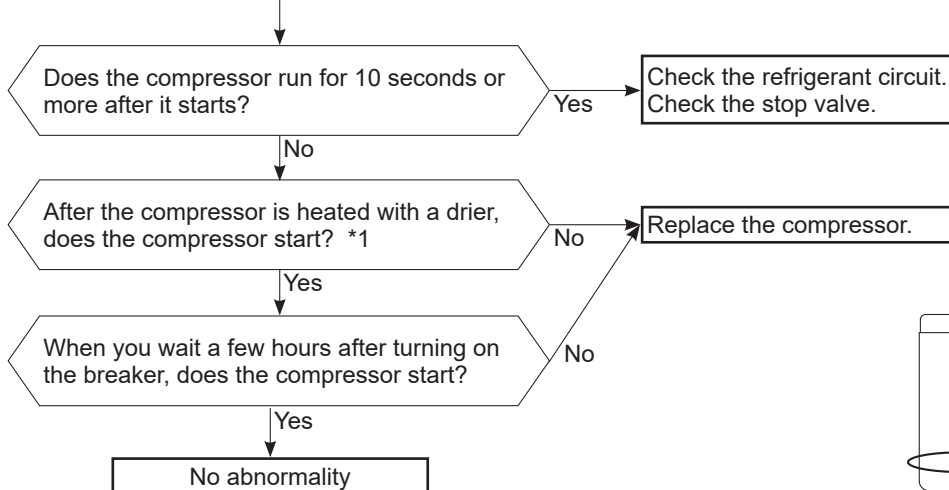
•Electrical circuit check

①. Contact of the compressor connector

②. Output voltage of inverter P.C. board and balance of them (See 12-5.③)

③. Direct current voltage between DB61(+) and (-) (SUZ-S(H)WM30/40, SWM60)/ IC700 (P) and (N) (SUZ-SHW60, SWM80/100) on the inverter P.C. board

④. Voltage between outdoor terminal block S1-S2



*1

Heat the compressor with a drier for about 20 minutes. Do not recover refrigerant gas while heating.

Ⓒ Check of outdoor thermistors

Disconnect the connector of thermistor in the inverter P.C. board (see below table), and measure the resistance of thermistor.

Is the resistance of thermistor normal?
(Refer to 12-6.1.)

No

Replace the thermistor except RT64.
When RT64 is abnormal, replace the inverter P.C. board.

Yes

Reconnect the connector of thermistor.
Turn ON the power supply and press the emergency operation switch.

Does the unit operate for 10 minutes or more
without showing thermistor abnormality?

No

Replace the inverter P.C. board.

Yes

OK (Cause is poor contact.)

SUZ-SWM30VA
SUZ-SWM40VA2
SUZ-SWM60VA2

SUZ-SHWM30VAH
SUZ-SWM40VA2-SC
SUZ-SWM60VA2-SC

SUZ-SHWM40VAH

SUZ-SHWM40VAH-SC

Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN641 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN641 pin3 and pin4	
Fin temperature	RT64	Between CN642 pin1 and pin2	
Ambient temperature	RT65	Between CN643 pin1 and pin2	
Outdoor heat exchanger temperature	RT68	Between CN644 pin1 and pin3	

SUZ-SHWM60VAH
SUZ-SWM80VA2
SUZ-SWM100VA

SUZ-SHWM60VAH-SC
SUZ-SWM80VAH2
SUZ-SWM100VAH

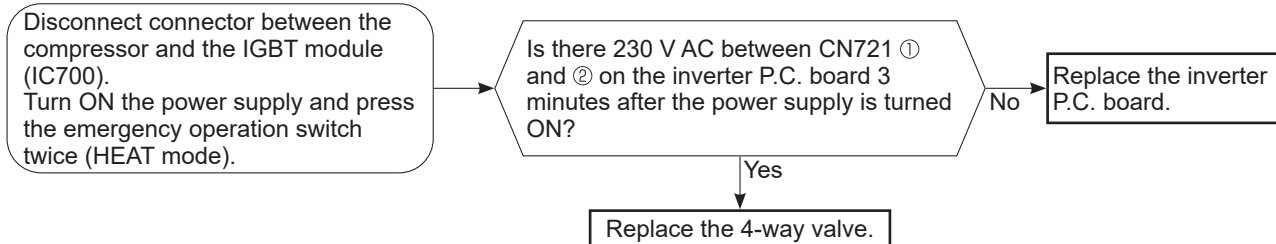
Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN671 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN671 pin3 and pin4	
Fin temperature	RT64	Between CN673 pin1 and pin2	
Ambient temperature	RT65	Between CN672 pin1 and pin2	
Outdoor heat exchanger temperature	RT68	Between CN671 pin5 and pin6	

H Check of R.V. coil

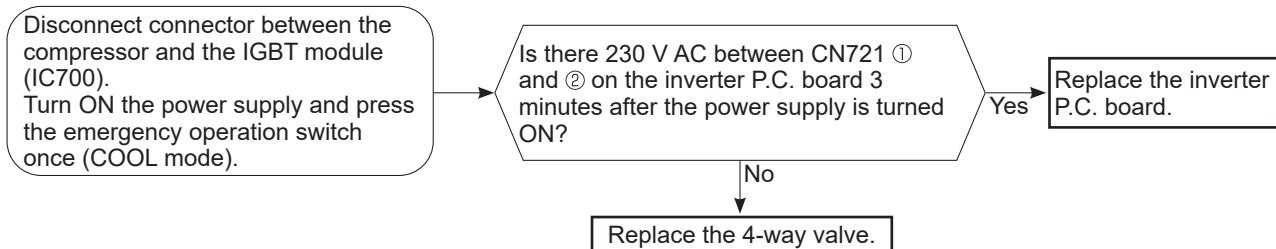
SUZ-S(H)WM30/40, SUZ-SWM60

- * First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 12-4.
- * In case CN721 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.
Check if CN721 is connected.

Unit operates in COOL mode even if it is set to HEAT mode.



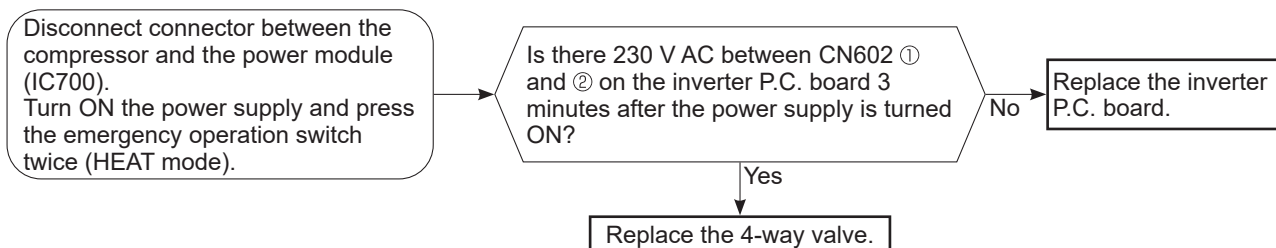
Unit operates in HEAT mode even if it is set to COOL mode.



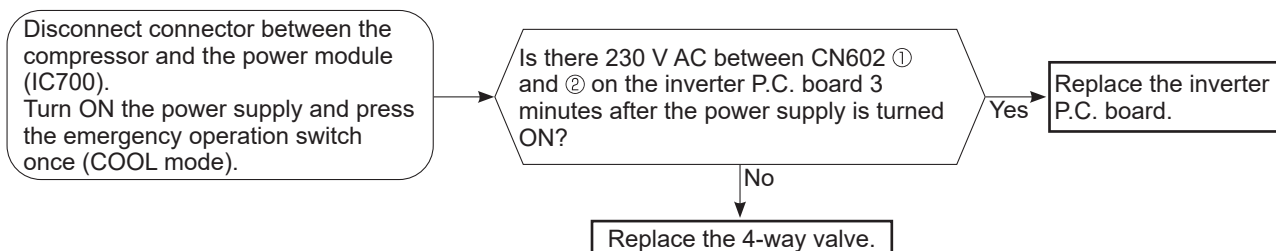
SUZ-SHWM60, SWM80/100

- * First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 12-4.
- * In case CN602 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.
Check if CN602 is connected.

Unit operates in COOL mode even if it is set to HEAT mode.



Unit operates in HEAT mode even if it is set to COOL mode.



① Check of outdoor fan motor

Disconnect the connectors CN931 and CN932 from the inverter P.C. board.
Check the connection between the connector CN931 and CN932.

Is the resistance between each terminal of outdoor fan motor normal?
(Refer to 12-4.)

No

Replace the outdoor fan motor.

Yes

Disconnect CN932 from the inverter P.C. board, and turn on the power supply.

Rotate the outdoor fan motor manually and measure the voltage of CN931.
Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)

(Fixed to either 5 or 0 V DC)

No

Does the voltage between each terminal become 5 and 0V DC repeatedly?

Yes

No

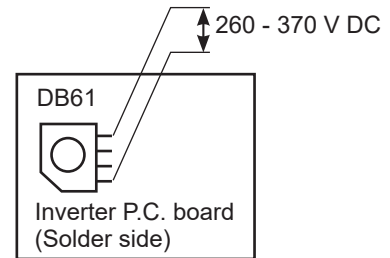
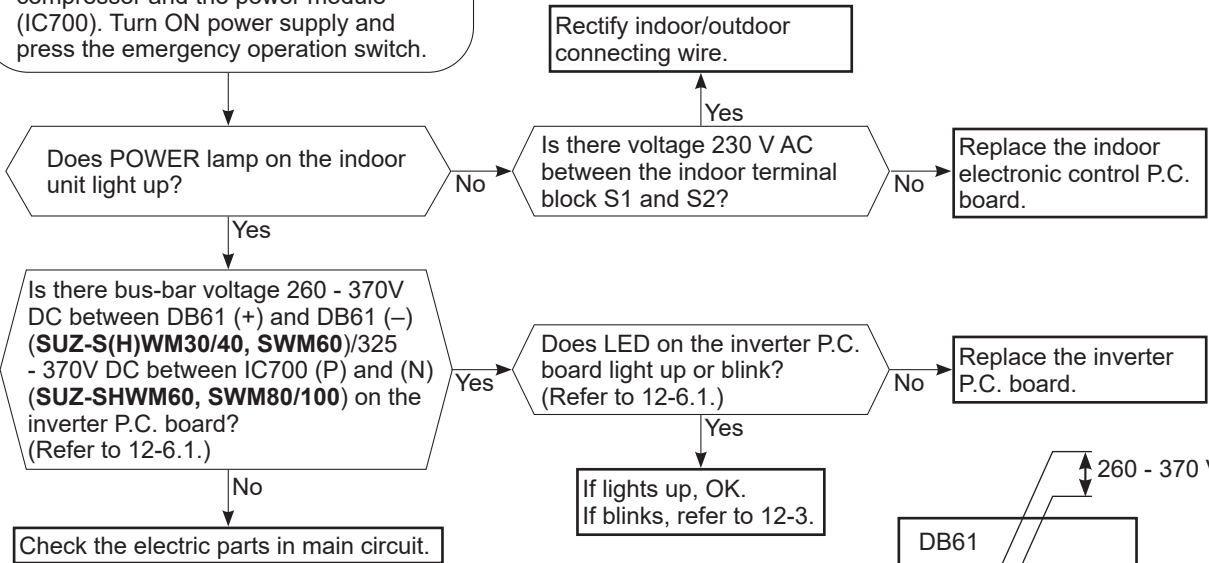
Does the outdoor fan motor rotate smoothly?

Yes

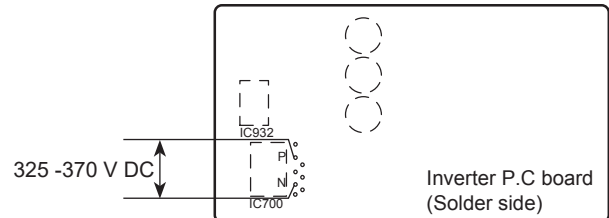
Replace the inverter P.C. board.

Ⓜ Check of power supply

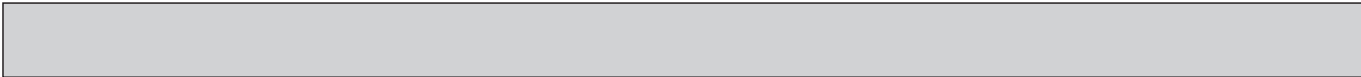
Disconnect the connector between the compressor and the power module (IC700). Turn ON power supply and press the emergency operation switch.



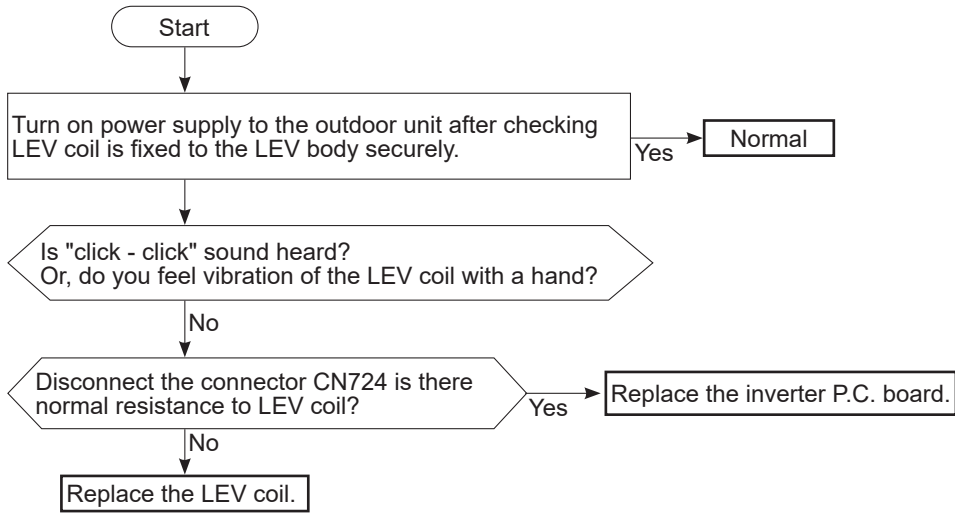
SUZ-S(H)WM30/40, SUZ-SWM60



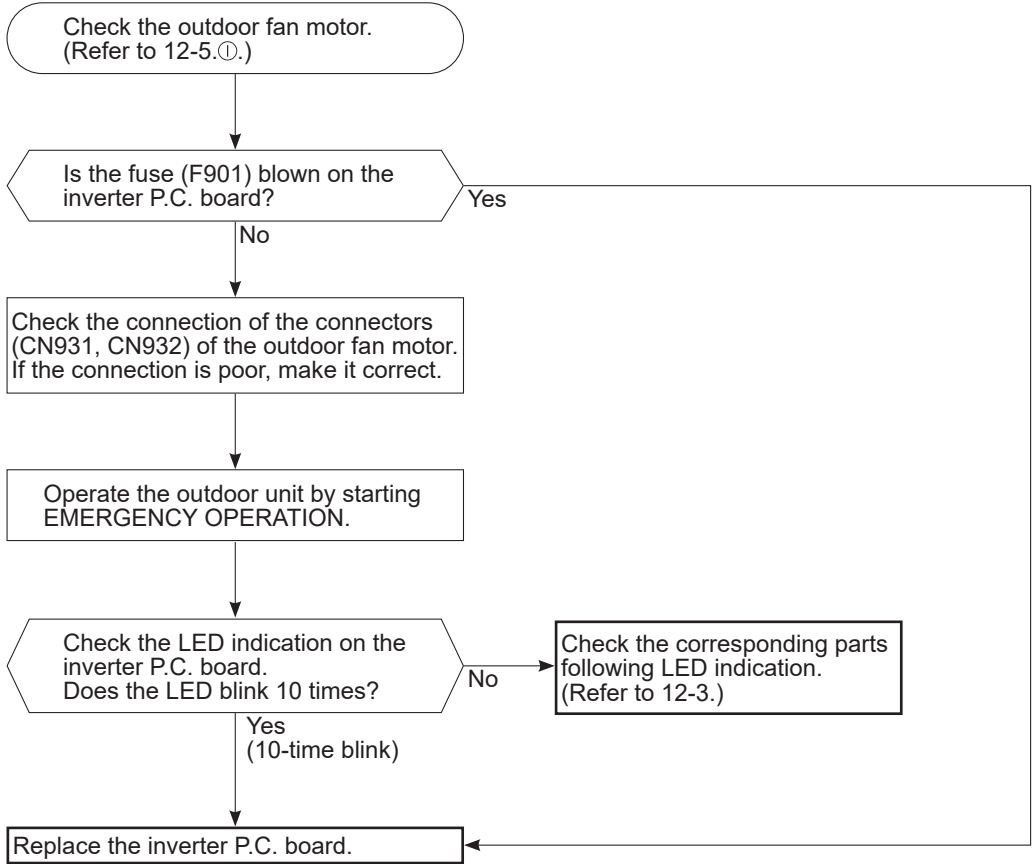
SUZ-SHWM60, SUZ-SWM80/100

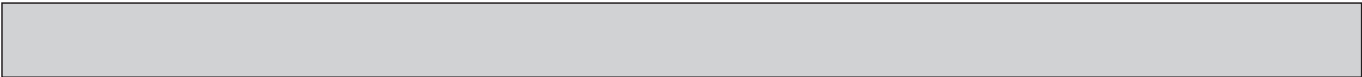


K Check of LEV



Ⓛ Check of inverter P.C. board





M Check of the outdoor refrigerant circuit

Has the operation stopped during pump down?

Yes

The operation has stopped to prevent the diesel explosion caused by air trapped in the refrigerant circuit. Close the stop valve, and disconnect the power plug or turn the breaker OFF.

CAUTION:
Do not start the operation again to prevent hazards.

No

Was the operation started with the stop valve closed, and was it opened during operation?

Yes

The unit occasionally stops when the stop valve is opened or closed during operation. Open the stop valve and start the cooling operation again.

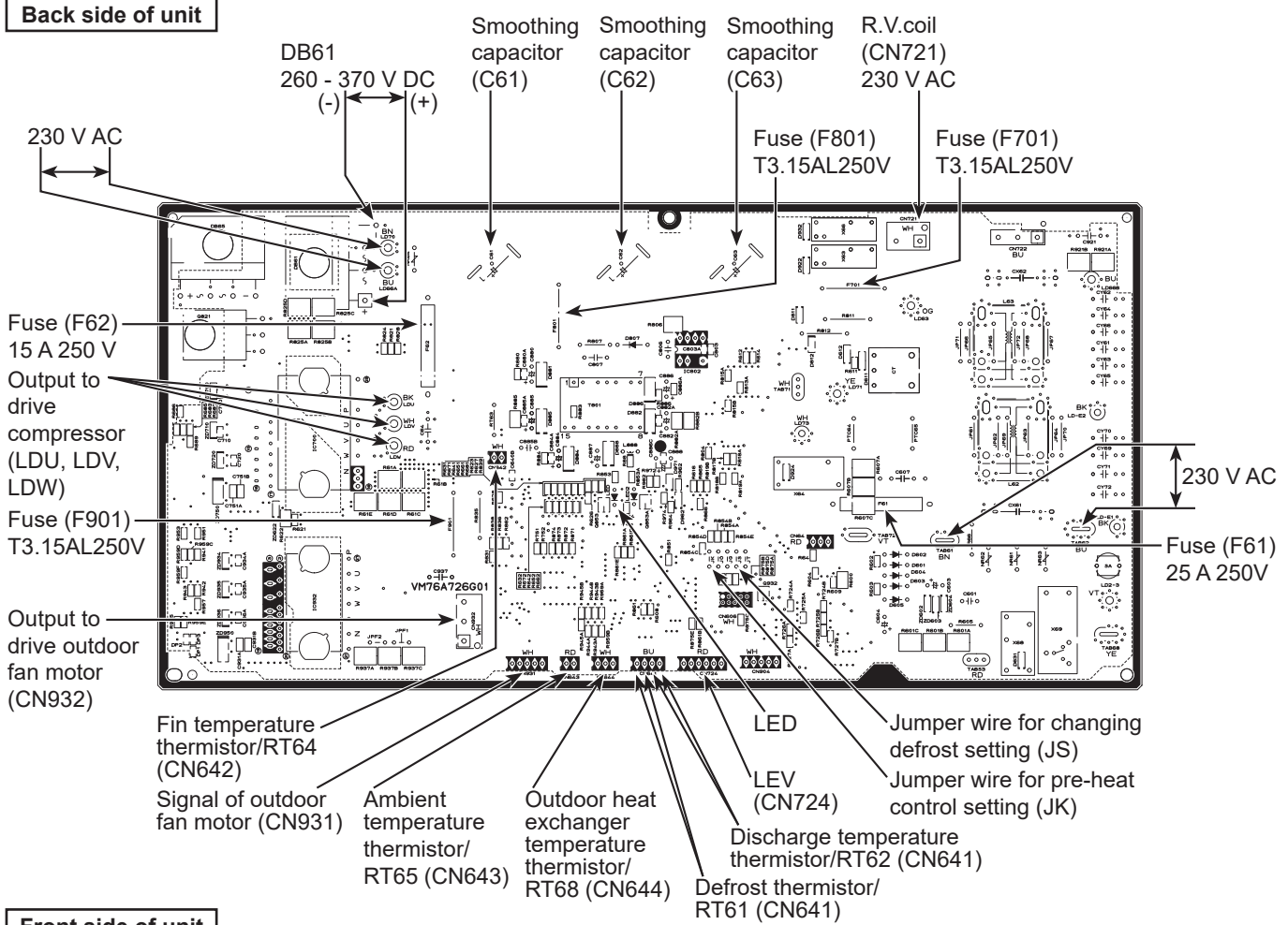
No

The refrigerant gas amount may be 60% or less than the normal amount. Identify where the gas is leaking from, and fix the leak.

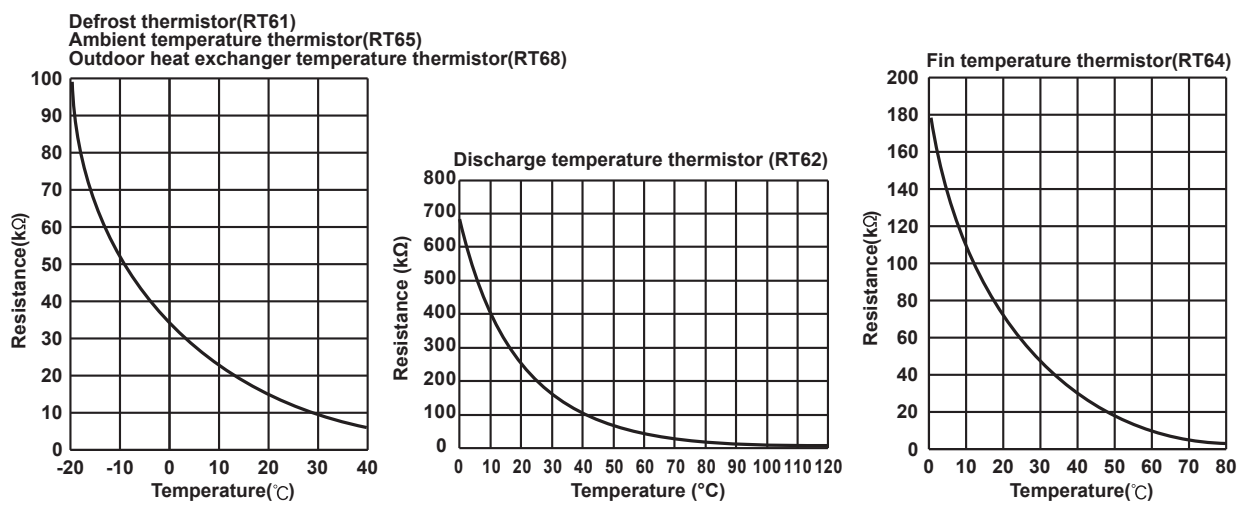
10-6. TEST POINT DIAGRAM AND VOLTAGE

1. Inverter P.C. board

SUZ-SWM30VA SUZ-SHWM30VAH SUZ-SWM40VA2 SUZ-SWM40VA2-SC
SUZ-SHWM40VAH SUZ-SHWM40VAH-SC SUZ-SWM60VA2 SUZ-SWM60VA2-SC



Front side of unit



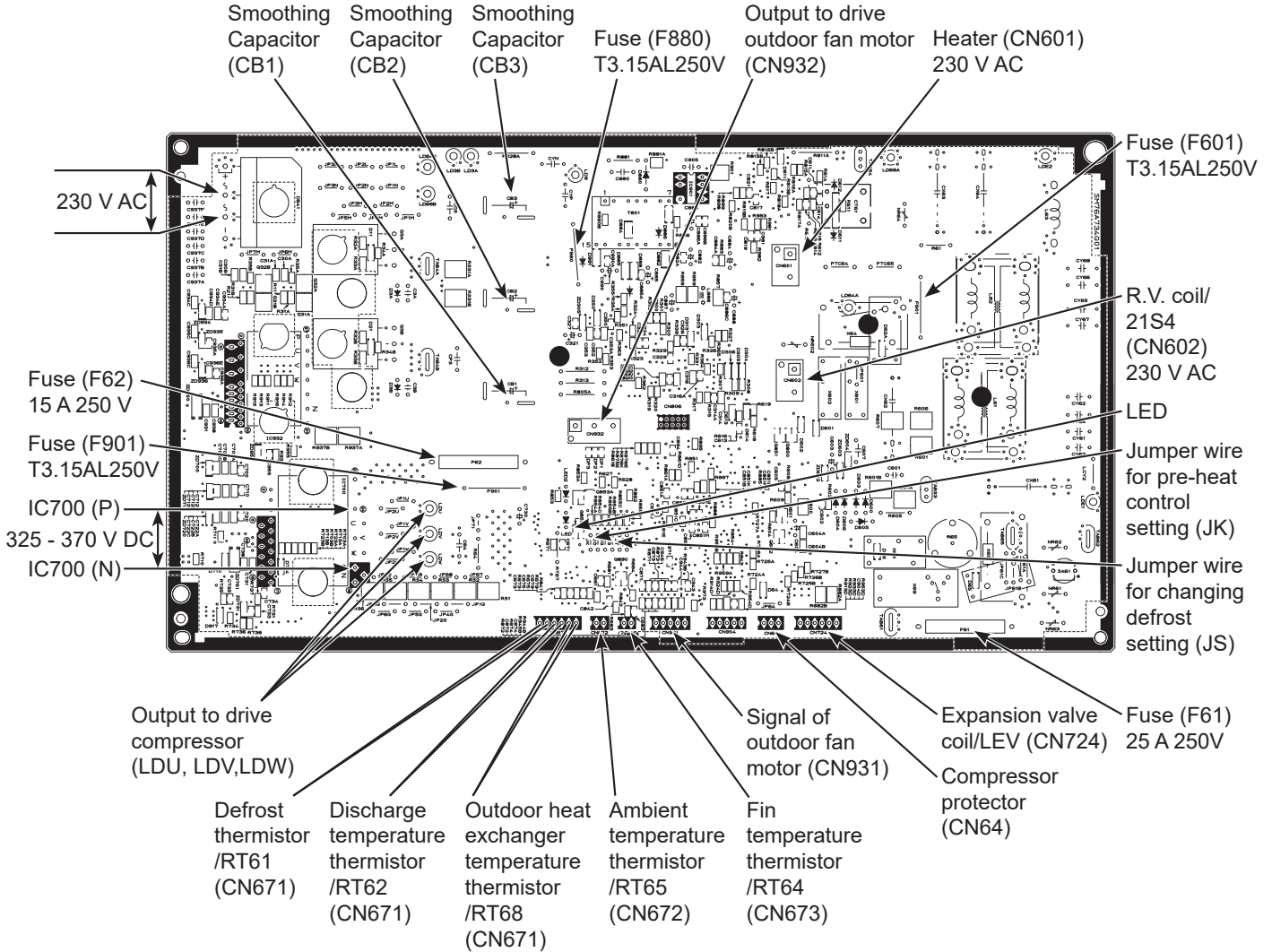
SUZ-SHWM60VAH
SUZ-SWM100VA

SUZ-SHWM60VAH-SC
SUZ-SWM100VAH

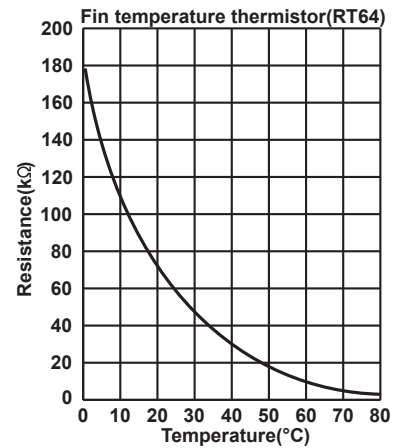
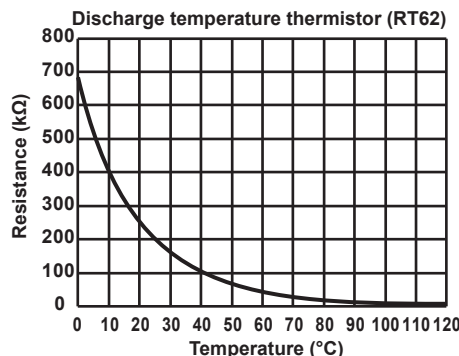
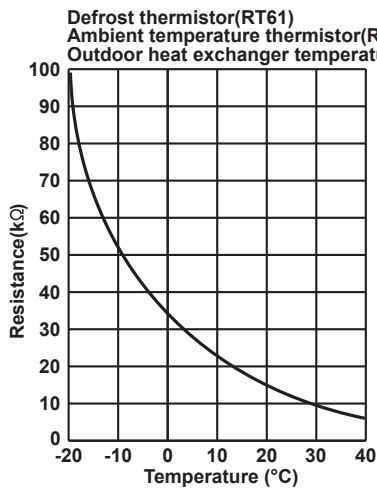
SUZ-SWM80VA2

SUZ-SWM80VAH2

Back side of unit



Front side of unit



<Detaching method of the terminal with locking mechanism>

The terminal which has the locking mechanism can be detached as shown below.

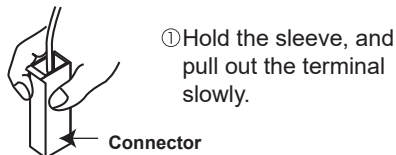
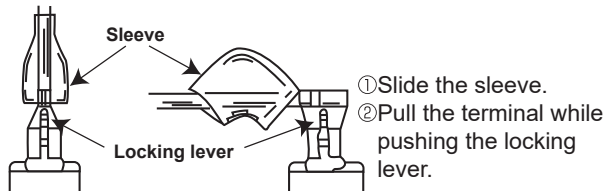
There are 2 types of the terminal with locking mechanism.

The terminal without locking mechanism can be detached by pulling it out.

Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.

(2) The terminal with this connector shown below has the locking mechanism.



**11-1. SUZ-SWM30VA
SUZ-SHWM40VAH**

**SUZ-SHWM30VAH
SUZ-SHWM40VAH-SC**

**SUZ-SWM40VA2
SUZ-SWM60VA2**

**SUZ-SWM40VA2-SC
SUZ-SWM60VA2-SC**

NOTE: Turn OFF the power supply before disassembly.

→ : Indicates the visible parts in the photos/figures.
---→ : Indicates the invisible parts in the photos/figures.

OPERATING PROCEDURE	PHOTOS/FIGURES
<p>1. Removing the cabinet</p> <ol style="list-style-type: none"> (1) Remove the screws of the service panel. (2) Remove the screws of the top panel. (3) Remove the screw of the valve cover. (4) Remove the service panel. (5) Remove the top panel. (6) Remove the valve cover. (7) Disconnect the power supply cord and indoor/outdoor connecting wire. (8) Remove the screws of the cabinet. (9) Remove the cabinet. (10) Remove the screws of the back panel. (11) Remove the back panel. <p>Photo 2</p>	<p>Photo 1</p>

OPERATING PROCEDURE

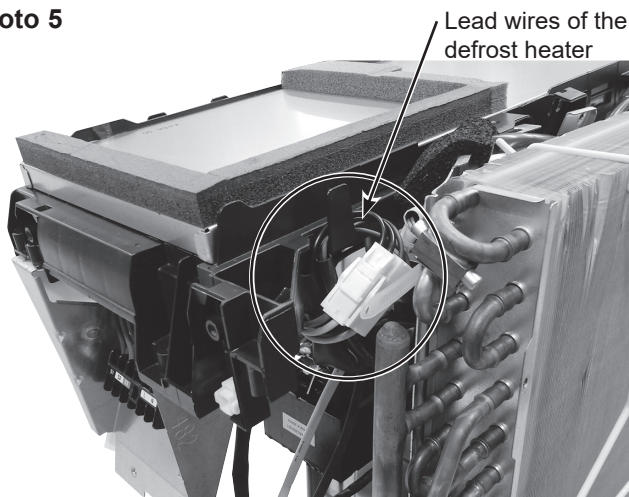
2. Removing the inverter assembly and inverter P.C. board

- (1) Remove the cabinet and panels (refer to section 1).
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN721 (R.V. coil)
CN931, CN932 (Fan motor)
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN644 (Outdoor heat exchanger temperature thermistor)
CN724 (LEV)
CN722 (Defrost heater and heater protector)
CN64 (Compressor protector)
- (3) Remove the compressor connector (CN61).
- (4) Remove the screws fixing the heat sink support and the separator.
- (5) Remove the fixing screw of the P.B. support and the separator.
- (6) Remove the fixing screws of the terminal block support and the back panel.
- (7) Remove the inverter assembly.
- (8) Remove the screws of the earth wires.
- (9) Remove the heat sink support from the P.C. board support.
- (10) Remove the screw of the inverter P.C. board and remove the inverter P.C. board from the P.C. board support.

* Connection procedure when attaching the inverter P.C. board (Photo 4)

1. Connect the lead wires of the heat exchanger temperature thermistor, the defrost thermistor and discharge temperature thermistor to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the right hook on the P.C. board support.
2. Connect the lead wires of the LEV to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the right hook on the P.C. board support.
3. Connect the lead wires of the ambient temperature thermistor to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the left hook on the P.C. board support so that the fan motor lead wires are bundled up as shown in Photo 4.
4. Hook the lead wires of the defrost heater and the heater protector. (Photo 5)

Photo 5



Lead wires of the defrost heater

PHOTOS/FIGURES

Photo 3

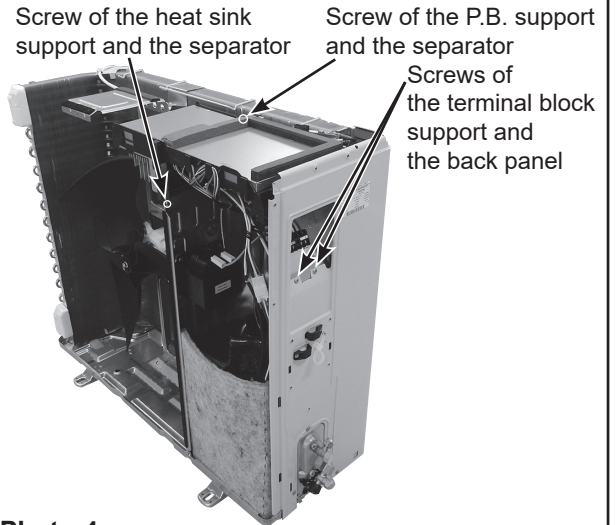


Photo 4

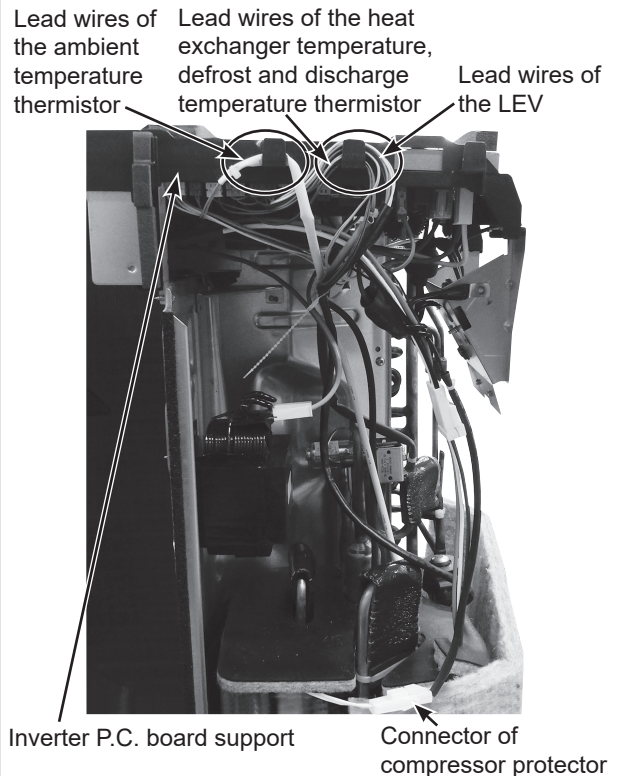
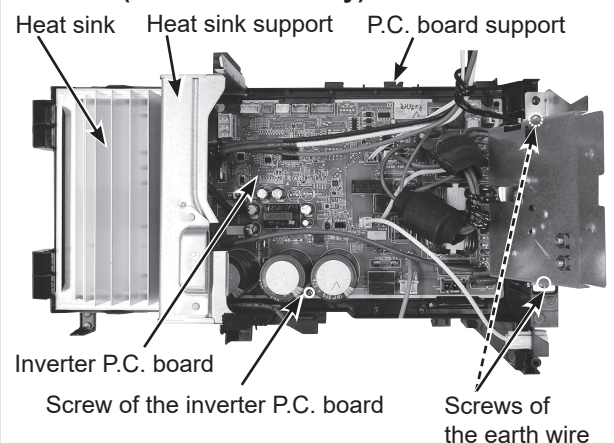


Photo 6 (Inverter assembly)



OPERATING PROCEDURE

3. Removing R. V. coil

- (1) Remove the cabinet and panels (refer to section 1).
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN721 (R.V. coil)
- (3) Remove the R.V. coil.

PHOTOS/FIGURES

Photo 7

Screw of the R.V. coil
Discharge temperature thermistor
Compressor protector

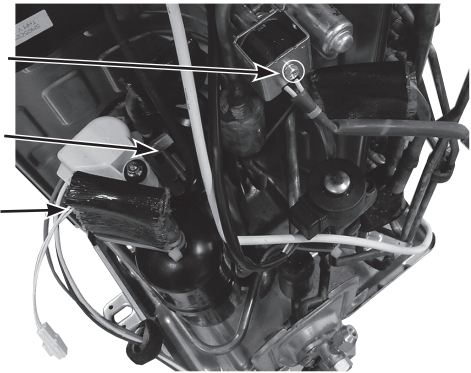
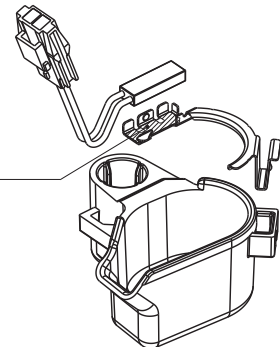


Figure 1

Attach the compressor protector to the protector holder with the surface on which the model name is printed facing the area hatched in the figure.



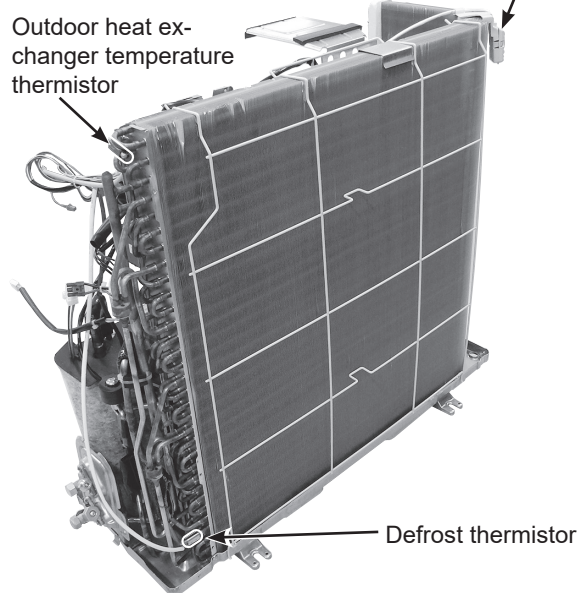
4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the cabinet and panels (refer to section 1).
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN644 (Outdoor heat exchanger temperature thermistor)
- (3) Pull out the discharge temperature thermistor from its holder.
- (4) Pull out the defrost thermistor from its holder.
- (5) Pull out the outdoor heat exchanger temperature thermistor from its holder.
- (6) Pull out the ambient temperature thermistor from its holder.

Photo 8

Outdoor heat exchanger temperature thermistor

Ambient temperature thermistor



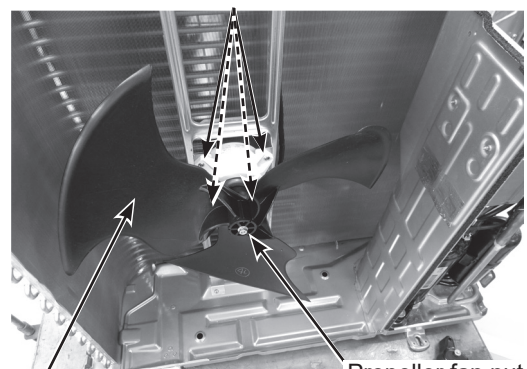
Defrost thermistor

5. Removing outdoor fan motor

- (1) Remove the cabinet and panels (refer to section 1).
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN931, CN932 (Fan motor)
- (3) Remove the propeller fan nut.
- (4) Remove the propeller fan.
- (5) Remove the screws fixing the fan motor.
- (6) Remove the fan motor.

Photo 9

Screws of the outdoor fan motor



Propeller fan

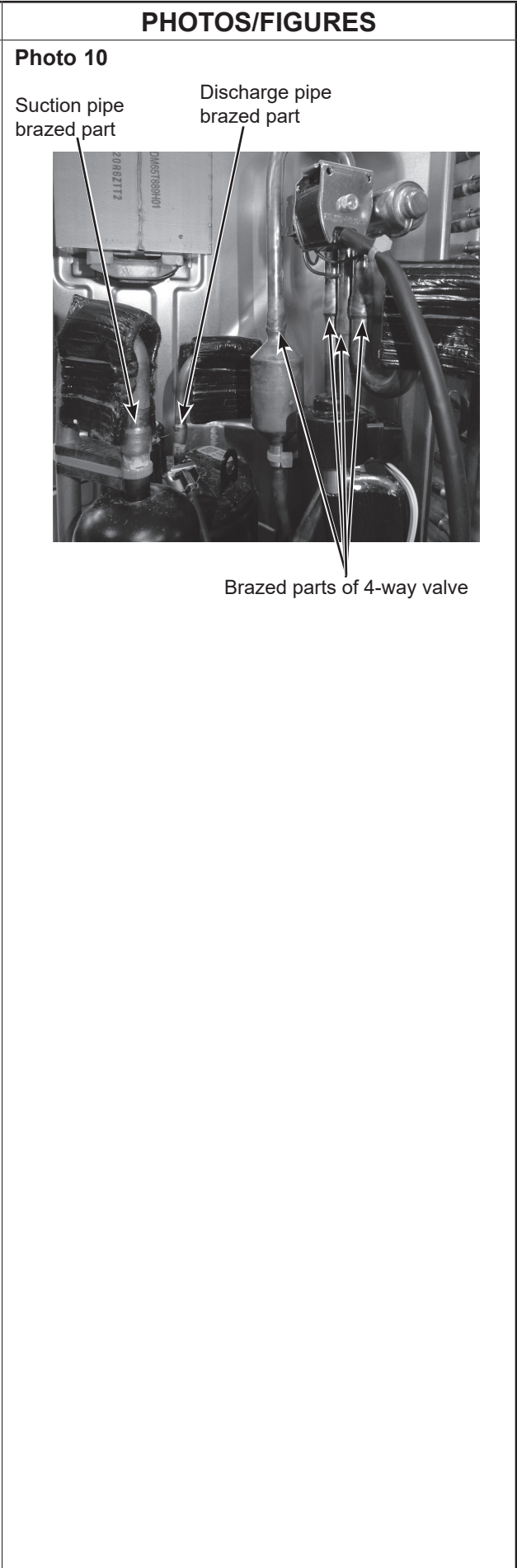
Propeller fan nut



OPERATING PROCEDURE

6. Removing the compressor and 4-way valve

- (1) Remove the cabinet and panels (refer to section 1).
- (2) Remove the inverter assembly (refer to section 2).
- (3) Recover gas from the refrigerant circuit.
NOTE: Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa).
- (4) Detach the brazed part of the suction and the discharge pipe connected with compressor.
- (5) Remove the compressor nuts.
- (6) Remove the compressor.
- (7) Detach the brazed part of pipes connected with 4-way valve.



**11-2. SUZ-SHWM60VAH SUZ-SHWM60VAH-SC SUZ-SWM80VA2 SUZ-SWM80VAH2
SUZ-SWM100VA SUZ-SWM100VAH**

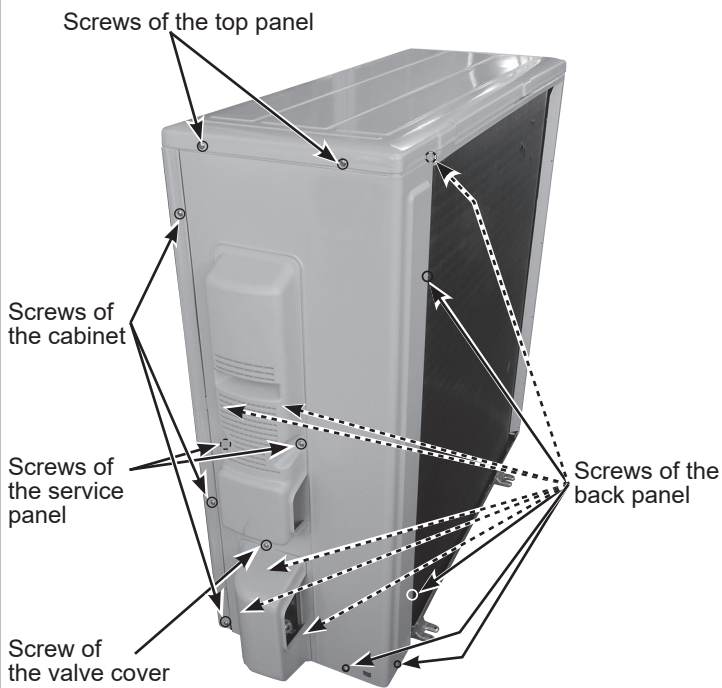
NOTE: Turn OFF the power supply before disassembly.

OPERATING PROCEDURE

1. Removing the cabinet

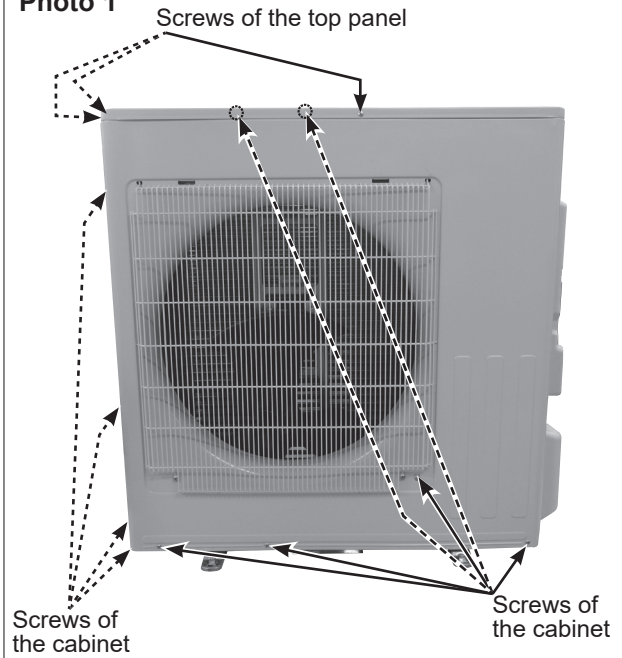
- (1) Remove the screws of the service panel.
- (2) Remove the screws of the top panel.
- (3) Remove the screw of the valve cover.
- (4) Remove the service panel.
- (5) Remove the top panel.
- (6) Remove the valve cover.
- (7) Disconnect the power supply and indoor/outdoor connecting wire.
- (8) Remove the screws of the cabinet.
- (9) Remove the cabinet.
- (10) Remove the screws of the back panel.
- (11) Remove the back panel.

Photo 2



PHOTOS/FIGURES

Photo 1



OPERATING PROCEDURE

2. Removing the inverter assembly and inverter P.C. board

- (1) Remove the cabinet and panels. (Refer to section 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
 - <Inverter P.C. board>
 - CN602 (R.V. coil)
 - CN931, CN932 (Fan motor)
 - CN671 (Defrost thermistor, discharge temperature thermistor and outdoor heat exchanger temperature thermistor)
 - CN672 (Ambient temperature thermistor)
 - CN724 (LEV)
 - CN601 (Defrost heater and heater protector)
 - CN64 (Compressor protector)
- (3) Remove the compressor connector (CN61).
- (4) Remove the screws fixing the heat sink support and the separator.
- (5) Remove the screws fixing the P.C. board support and the motor support.
- (6) Remove the fixing screws of the terminal block support and the back panel.
- (7) Remove the inverter assembly.
- (8) Remove the screws of the earth wire.
- (9) Remove the screw of the heat sink support, and the heat sink support from the P.C. board support.
- (10) Remove the screws of the terminal block support, and the screws of the earth wires and the terminal block support. (Photo 5)
- (11) Remove the terminal block support.

PHOTOS/FIGURES

Photo 3

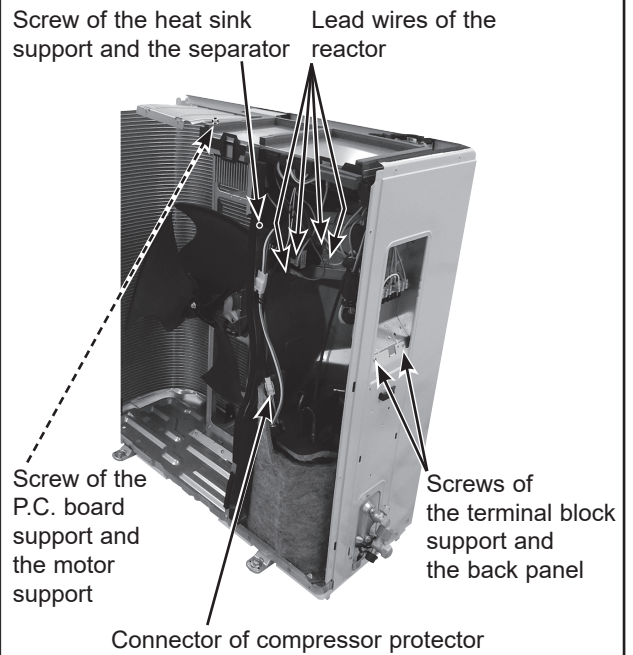
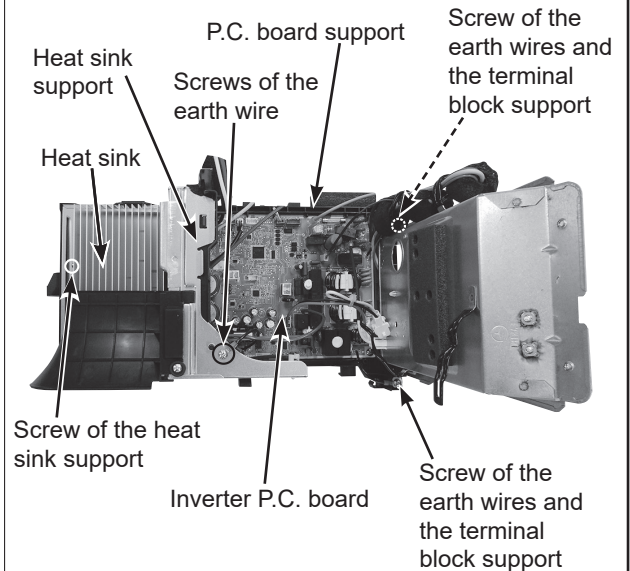


Photo 4 (Inverter assembly)

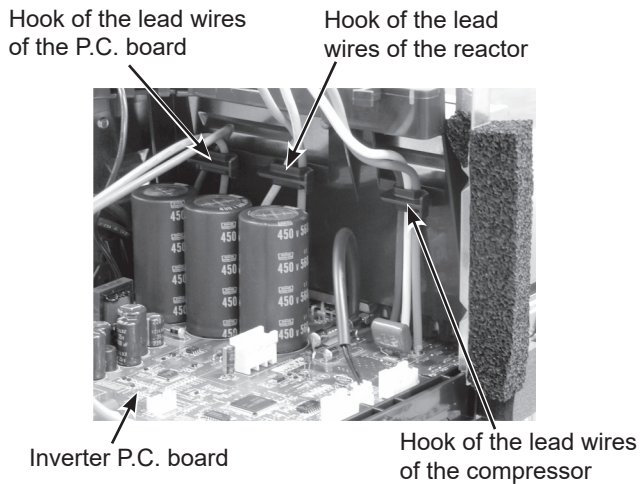


OPERATING PROCEDURE

* Connection procedure when attaching the inverter P.C. board (Photo 6, 7)

1. Attach the heat sink support to the P.C. board support.
2. Hook the lead wires of the compressor, the reactor and the P.C. board to each hooks on the heat sink support as shown Photo 7.
3. Connect the lead wires of the expansion valve coil to the connector on the inverter P.C. board. Pull the lead wires of the expansion valve coil toward you and put them on the left hook on the P.C. board support as shown in Photo 6.

Photo 7



PHOTOS/FIGURES

Photo 5

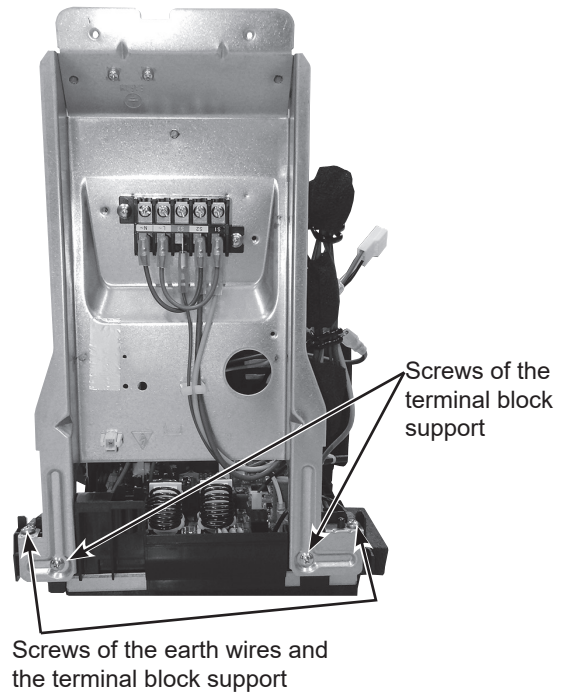
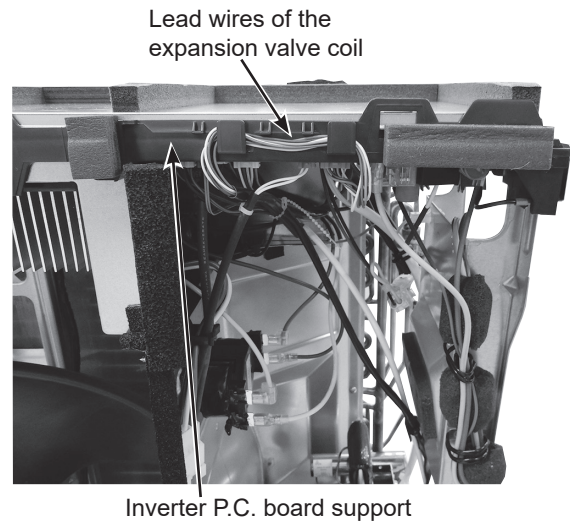
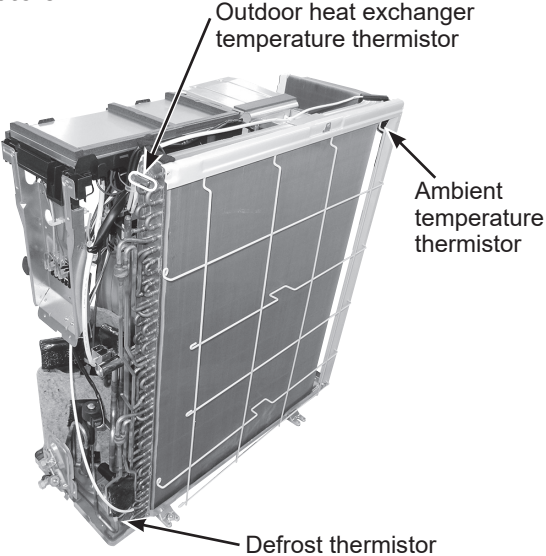
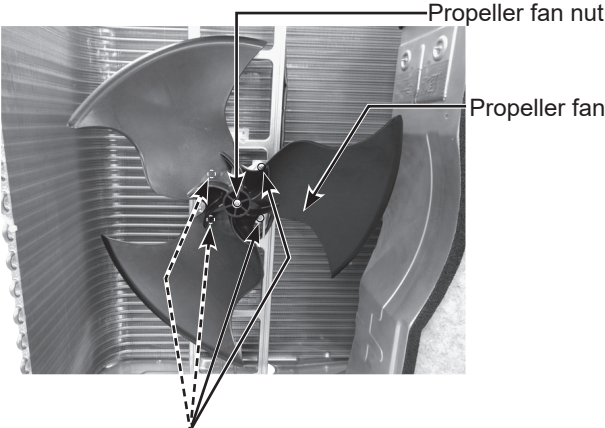


Photo 6





OPERATING PROCEDURE	PHOTOS/FIGURES
<p>3. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor</p> <p>(1) Remove the cabinet and panels. (Refer to section 1.)</p> <p>(2) Disconnect the lead wire to the reactor and the following connectors: <Inverter P.C. board> CN671 (Defrost thermistor, discharge temperature thermistor and outdoor heat exchanger temperature thermistor) CN672 (Ambient temperature thermistor)</p> <p>(3) Pull out the discharge temperature thermistor from its holder. (Photo 10)</p> <p>(4) Pull out the defrost thermistor from its holder.</p> <p>(5) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 8)</p> <p>(6) Pull out the ambient temperature thermistor from its holder.</p>	<p>Photo 8</p>  <p>Outdoor heat exchanger temperature thermistor</p> <p>Ambient temperature thermistor</p> <p>Defrost thermistor</p>
<p>4. Removing outdoor fan motor</p> <p>(1) Remove the top panel, cabinet and service panel. (Refer to section 1.)</p> <p>(2) Disconnect the following connectors: <Inverter P.C. board> CN931, CN932 (Fan motor)</p> <p>(3) Remove the propeller fan nut.</p> <p>(4) Remove the propeller fan.</p> <p>(5) Remove the screws fixing the fan motor.</p> <p>(6) Remove the fan motor.</p>	<p>Photo 9</p>  <p>Propeller fan nut</p> <p>Propeller fan</p> <p>Screws of the outdoor fan motor</p>

OPERATING PROCEDURE

5. Removing the compressor and 4-way valve

- (1) Remove the top panel, cabinet and service panel. (Refer to section 1.)
- (2) Remove the back panel. (Refer to section 1.)
- (3) Remove the inverter assembly. (Refer to section 2.)
- (4) Recover gas from the refrigerant circuit.

NOTE: Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa).

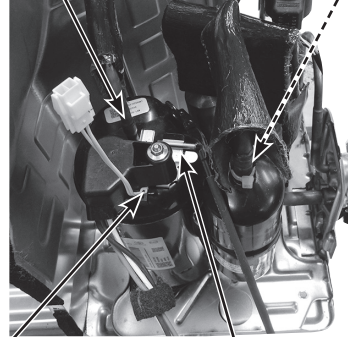
- (5) Detach the brazed part of the suction and the discharge pipe connected with compressor.
- (6) Remove the compressor nuts.
- (7) Remove the compressor.
- (8) Detach the brazed parts of 4-way valve and pipe. (Photo 11)

PHOTOS/FIGURES

Photo 10

Brazed part of the discharge pipe

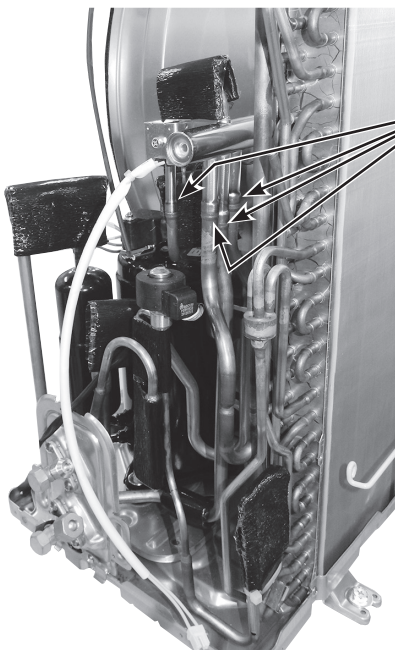
Brazed part of the suction pipe



Compressor protector

Discharge temperature thermistor

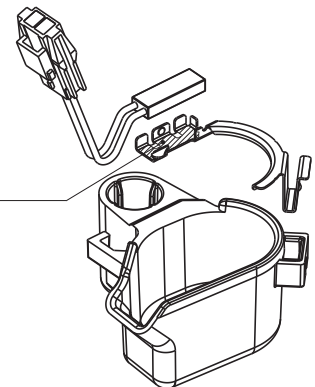
Photo 11



Brazed parts of 4-way valve

Figure 1

Attach the compressor protector to the protector holder with the surface on which the model name is printed facing the area hatched in the figure.



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