

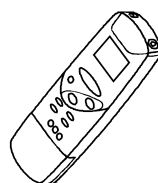
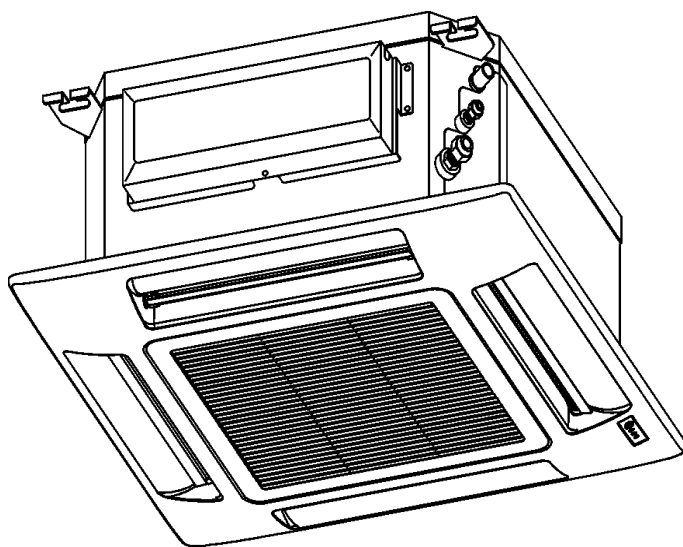
TECHNICAL DATA & SERVICE MANUAL

Euro-Line®

INDOOR UNIT: ASR609CL
ASR612CL

SPLIT SYSTEM AIR CONDITIONER

Model No.	Product Code No.
ASR609CL	387006970
ASR612CL	387006971



IMPORTANT!

Please read before installation

This air conditioning system meets strict safety and operating standards.

For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.
- The unit must be supplied with a dedicated electrical line.



WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If necessary, get help

These instructions are all you need for most installation sites and maintenance conditions.

If you require help for a special problem, contact our sale/service outlet or your certified dealer for additional instructions.

In case of improper installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

- During installation, connect before the refrigerant system and then the wiring one; proceed in the reverse order when removing the units.

WARNING

When wiring



ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY QUALIFIED, EXPERIENCED ELECTRICIANS SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury and death.**

- **Ground the unit** following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- Do not use multi-core cable when wiring the power supply and control lines. Use separate cables for each type of line.

When transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminium fins on the air conditioner can cut your fingers.

When installing...

... In a ceiling

Make sure the ceiling is strong enough to hold the unit-weight. It may be necessary to build a strong wooden or metal frame to provide added support.

... In a room

Properly insulate any tubing run inside a room to prevent "sweating", which can cause dripping and water damage to walls and floors.

... In moist or uneven locations

Use a raised concrete base to provide a solid level foundation for the outdoor unit. This prevents damage and abnormal vibrations.

... In area with strong winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

... In a snowy area (for heat pump-type systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When connecting refrigerant tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion, the refrigerant tubing for your particular model is specified as narrow tube for liquid, wide tube for gas.

When servicing

- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testing the refrigeration system; make sure that, after the installation, no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

Table of Contents

	Page
1. SPECIFICATIONS	4
1-1 Unit specifications	4
1-2 Major Component specifications	6
1-3 Other Component specifications	8
2. DIMENSIONAL DATA	9
3. ELECTRICAL DATA	10
3-1 Electric Wiring Diagrams	10
4. FUNCTION	11
4-1 Room Temperature Control	11
4-2 Dry Operation (Dehumidification)	12
4-3 Freeze Prevention (Cooling and Dry)	12
4-4 Drain Pump and Float Switch	13
5. TROUBLESHOOTING	14
5-1 Check before and after troubleshooting	14
5-2 Air conditioner does not operate	14
5-3 Some part of air conditioner does not operate	18
5-4 Air conditioner operates, but abnormalities are observed	20
5-5 If a sensor is defective	21
6. CHECKING ELECTRICAL COMPONENTS	22
6-1 Measurement of Insulation Resistance	22
6-2 Checking Continuity of Fuse on PCB Ass'y	23
6-3 Checking Motor Capacitor	23
7. MAINTENANCE	24
7-1 Changing Address of Remote Control Unit in Indoor Unit	24

1. SPECIFICATIONS

1-1 Unit Specifications

ASR609CL

Power source	220 - 240V ~ 50Hz
---------------------	-------------------

Voltage rating	230V
-----------------------	------

Performance		
Capacity		See catalogue with the requested matching
Air circulation (High/Med/Low)	m ³ /h	500/450/400

Features				
Controls/Temperature controls			Microprocessor/ I.C. thermostat	
Control unit			Wireless remote control unit	
Timer			ON/OFF 24 hours & Daily program, 1-hour OFF	
Fan speed			3 and Auto /1(Hi)	
Airflow direction			Auto	
Air Filter			Washable, Anti-Mold	
Power noise level	Hi/Me/Lo	dB-A	45/42/38	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube	mm(in.)	6,35 (1/4)	
	Wide tube	mm(in.)	9,52 (3/8)	
Refrigerant			R407C	
Refrigerant tube kit / Air clean filter			Optional / -----	

Dimensions & Weight					
Dimensions	Unit	Height	mm	273	
		Width	mm	575	
		Depth	mm	575	
	Ceiling panel	Height	mm	64	
		Width	mm	730	
		Depth	mm	730	
	Package dimensions	Height	mm	380	
		Width	mm	744	
		Depth	mm	650	
		Volume	m ³	0,18	
Ceiling panel	Unit	Height	mm	110	
		Width	mm	800	
		Depth	mm	800	
		Volume	m ³	0,07	
	Ceiling panel	Net	kg	16,5	
		Shipping	kg	21	
		Net	kg	2,50	
		Shipping	kg	4,70	

DATA SUBJECT TO CHANGE WITHOUT NOTICE

ASR612CL

Power source	220 - 240V ~ 50Hz
---------------------	-------------------

Voltage rating	230V
-----------------------	------

Performance		
Capacity		See catalogue with the requested matching
Air circulation (High/Med/Low)	m ³ /h	500/450/400

Features				
Controls/Temperature controls			Microprocessor/ I.C. thermostat	
Control unit			Wireless remote control unit	
Timer			ON/OFF 24 hours & Daily program, 1-hour OFF	
Fan speed			3 and Auto /1(Hi)	
Airflow direction			Auto	
Air Filter			Washable, Anti-Mold	
Power noise level	Hi/Me/Lo	dB-A	45/42/38	
Refrigerant tubing connections			Flare type	
Refrigerant tube diameter	Narrow tube	mm(in.)	6,35 (1/4)	
	Wide tube	mm(in.)	12,7 (1/2)	
Refrigerant			R407C	
Refrigerant tube kit / Air clean filter			Optional / -----	

Dimensions & Weight					
Dimensions	Unit	Height	mm	273	
		Width	mm	575	
		Depth	mm	575	
	Ceiling panel	Height	mm	64	
		Width	mm	730	
		Depth	mm	730	
	Package dimensions	Height	mm	380	
		Width	mm	744	
		Depth	mm	650	
		Volume	m ³	0,18	
Ceiling panel	Unit	Height	mm	110	
		Width	mm	800	
		Depth	mm	800	
		Volume	m ³	0,07	
	Ceiling panel	Net	kg	16,5	
		Shipping	kg	21	
		Net	kg	2,50	
Weight	Ceiling panel	Shipping	kg	4,70	

DATA SUBJECT TO CHANGE WITHOUT NOTICE

1-2 Major Component Specifications

ASR609CL

Controller PCB		
Part No.		XR99/129E
Controls		Microprocessor
Control circuit fuse		250 V - 3,15 A

Remote Control Unit	RCS-6PN4E-G
---------------------	-------------

Fan & Fan Motor				
Type				Centrifugal fan
Q'ty Dia. and lenght	mm			1.... Ø 280 / L 175
Fan motor model...Q'ty				R4E280-AK43-13 ...1
No. Of poles...rpm (230 V)				4... 620/560/490/240
Running Amps	A			0,18
Power input	W			41
Coil resistance (Ambient temp. 20 °C)	Ω			BLU-BLK: 463,5 BLK-GRY: 33,5 GRY-RED: 38,5 RED-WHT: 143,5 WHT-BLU: 80,0
Safety devices	Type			Internal thermal protector
	Operating temp.	Open	°C	160 ± 10K
		Close	°C	130 ± 15K
Run capacitor			μF	1,5
			VAC	450

Flap Motor				
Type				Synchro motor
Model				M2LJ24ZE31
Rating				AC 208/230V 50/60Hz
No of poles ...rpm				8 2,5/3,0
Nominal output	W			3/2,5
Coil resistance (Ambient temp. 20 °C)	kΩ			16,45 ± 15%

Heat Exch. Coil				
Coil				Aluminium plate fin / Copper tube
Rows				1
Fin pitch	mm			1,3
face area	m2			0,258

DATA SUBJECT TO CHANGE WITHOUT NOTICE

ASR612CL

Controller PCB		
Part No.		XR99/129E
Controls		Microprocessor
Control circuit fuse		250 V - 3,15 A

Remote Control Unit	RCS-6PN4E-G
---------------------	-------------

Fan & Fan Motor				
Type				Centrifugal fan
Q'ty Dia. and lenght	mm			1.... Ø 280 / L 175
Fan motor model...Q'ty				R4E280-AK43-13 ... 1
No. Of poles...rpm (230 V, Cool-Heat)				4... 620/560/490/240
Running Amps	A			0,18
Power input	W			41
Coil resistance (Ambient temp. 20 °C)	Ω			BLU-BLK: 463,5 BLK-GRY: 33,5 GRY-RED: 38,5 RED-WHT: 143,5 WHT-BLU: 80,0
Safety devices	Type			Internal thermal protector
	Operating temp. Open	°C		160 ± 10K
	Close	°C		130 ± 15K
Run capacitor	μF			1,5
	VAC			450

Flap Motor				
Type				Synchro motor
Model				M2LJ24ZE31
Rating				AC 208/230V 50/60Hz
No of poles ...rpm				8 2,5/3,0
Nominal output	W			3/2,5
Coil resistance (Ambient temp. 20 °C)	kΩ			16,45 ± 15%

Heat Exch. Coil				
Coil				Aluminium plate fin / Copper tube
Rows				1
Fin pitch	mm			1,3
face area	m2			0,258

DATA SUBJECT TO CHANGE WITHOUT NOTICE

1-3 Other Component Specifications

ASR609CL

ASR612CL

Trasformer			ATR-J105
Rating	Primary		AC 230V, 50/60Hz
	Secondary		19V - 0.526A
	Capacity		10 VA
Coil resistance	Ω (at 21°C)		Primary (WHT-WHT): 205 \pm 10% Secondary (BRN-BRN): 2,0 \pm 10%
Thermal cut-off temp.			150°C

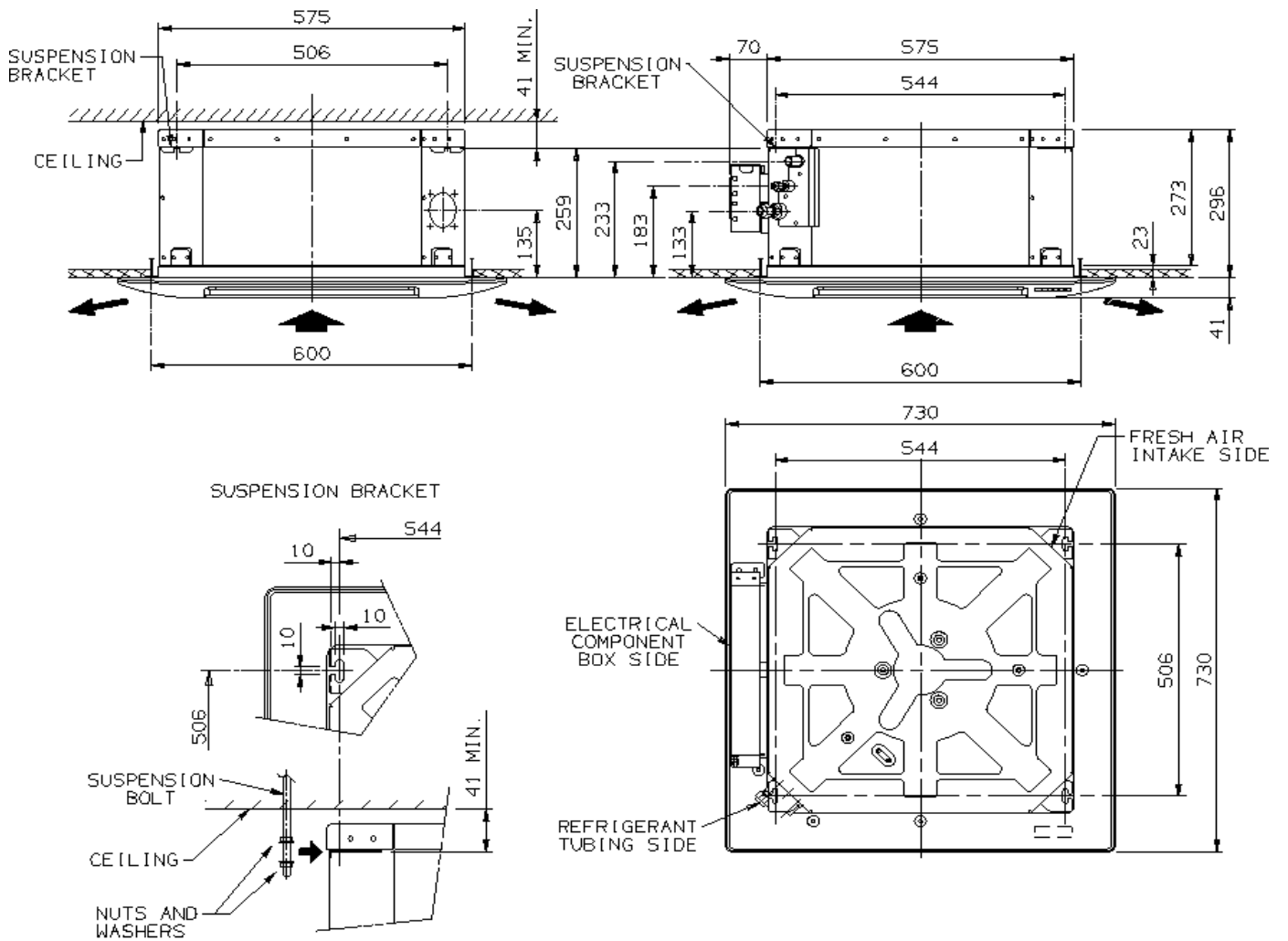
Thermistor (Coil sensor TH1)			PBC-41E-S14
Resistance		K Ω	0 °C 15,3 \pm 5%

Thermistor (Room sensor TH2)			DTN-TKS134B
Resistance		K Ω	25 °C 5,0 \pm 3%

Drain pump			
Model			PC 309564003
Rating	Voltage		220/240V - 50Hz
	Input		14W
Total head capacity			0,4 l/min

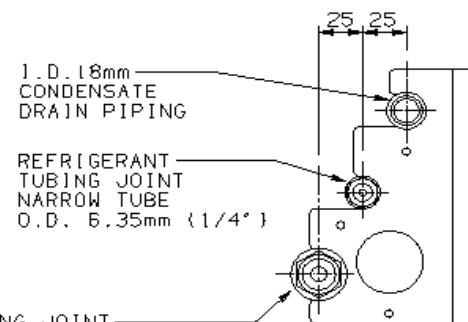
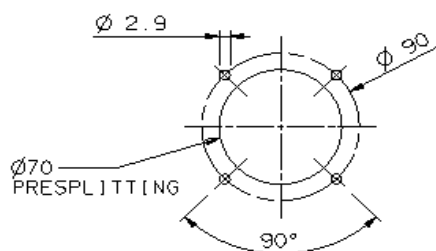
Safety float switch			
Model			BI 1300 2725
Contact rating			230V AC/DC - 0,5A

2. DIMENSIONAL DATA



FRESH AIR INTAKE PORT

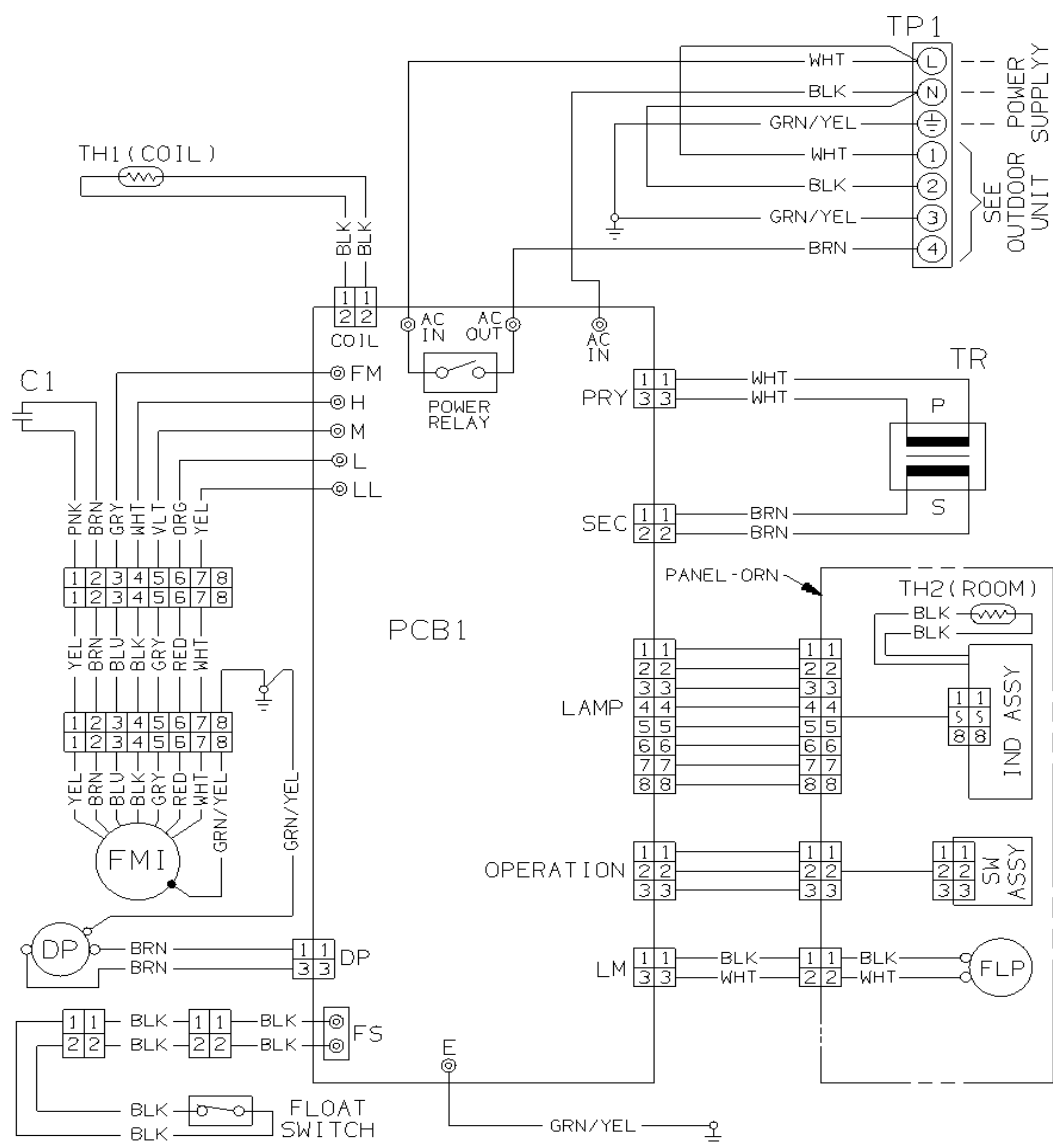
REFRIGERANT TUBING SIDE



REFRIGERANT TUBING JOINT WIDE TUBE:
 O.D. 9.52mm (3/8") 9000Btu/h
 O.D. 12.7mm (1/2") 12-18000Btu/h

3. ELECTRICAL DATA

3-1 Electric Wiring Diagrams

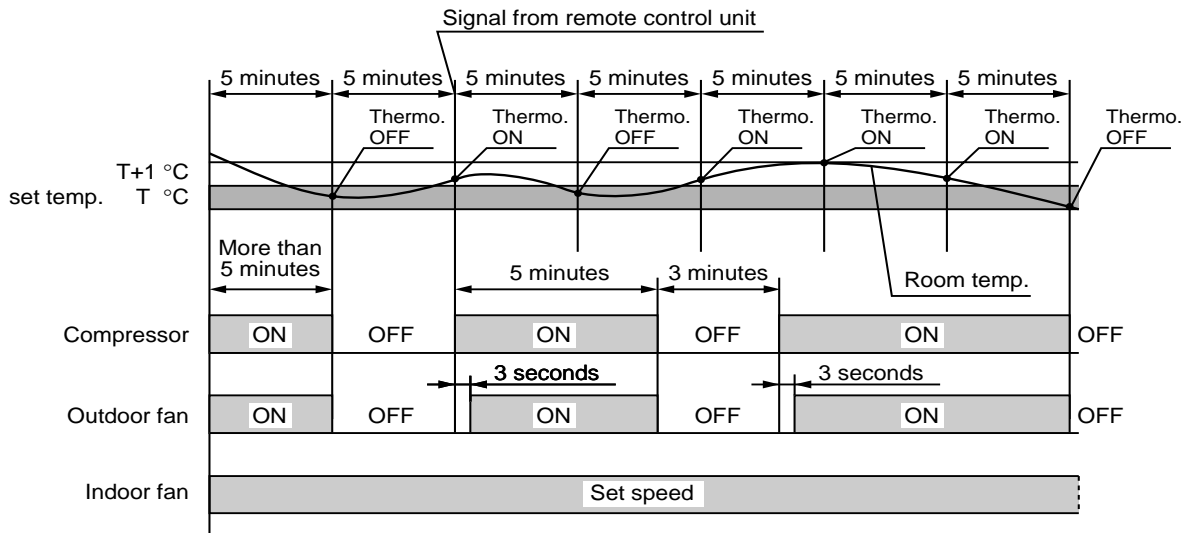


4. FUNCTION

4-1. Room Temperature Control

■ Cooling

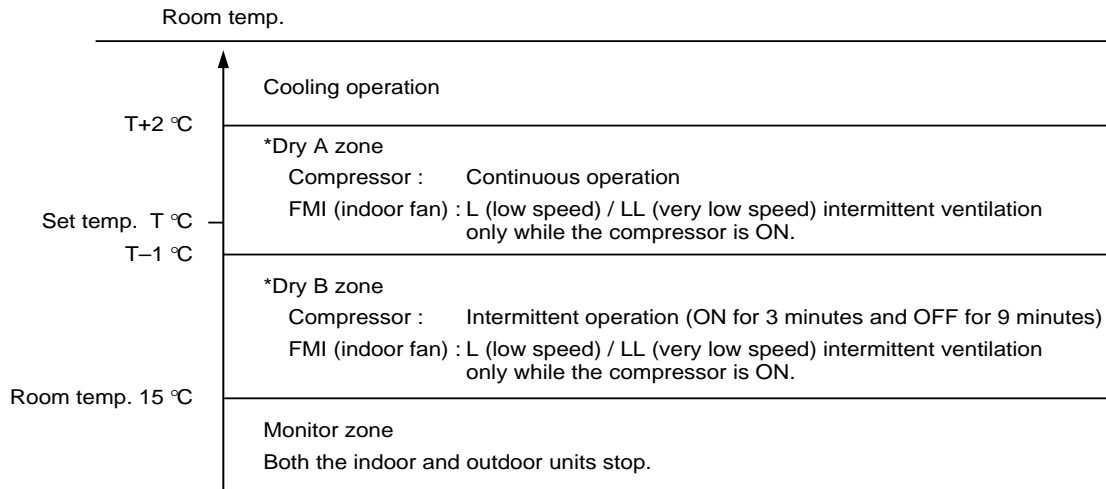
- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 5 minutes by the remote control unit to the controller in the indoor unit.



- The control circuit will not attempt to turn the compressor ON until the compressor has been OFF for at least 3 minutes. To protect the compressor from stalling out when trying to start against the high side refrigerant pressure, the control circuit has a built-in automatic time delay to allow the internal pressure to equalize.
- As a protective measure, the control circuit switches the compressor OFF not before than 5 minutes of compressor operation.
- Thermo. ON : When the room temperature is above $T + 1^{\circ}\text{C}$ ($T^{\circ}\text{C}$ is set temperature).
Compressor \rightarrow ON
- Thermo. OFF : When the room temperature is equal to or below set temperature $T^{\circ}\text{C}$.
Compressor \rightarrow OFF

4-2. Dry Operation (Dehumidification)

- Dry operation uses the ability of the cooling cycle to remove moisture from the air, but by running at low level to dehumidify without greatly reducing the room temperature. The air conditioner repeats the ON/OFF cycle automatically as shown in the chart below according to the room temperature.

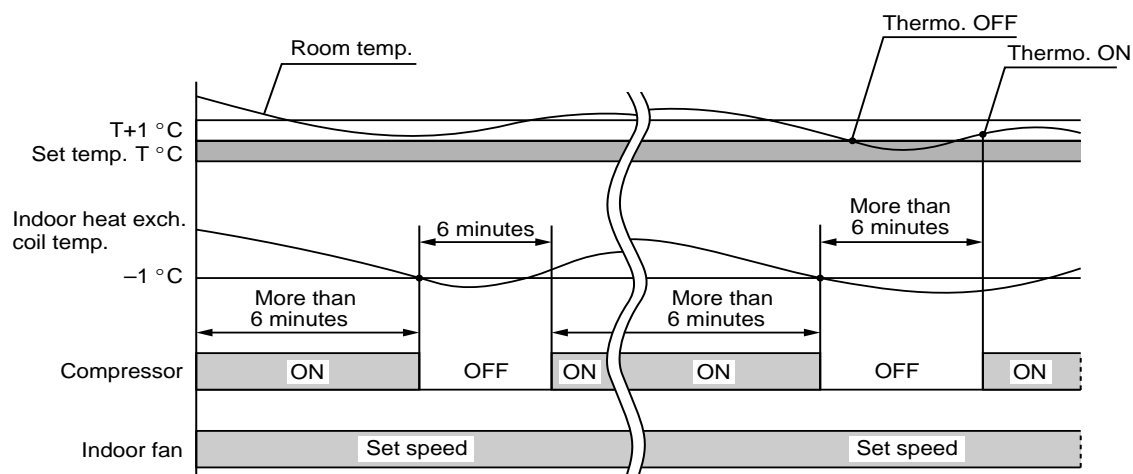


NOTE

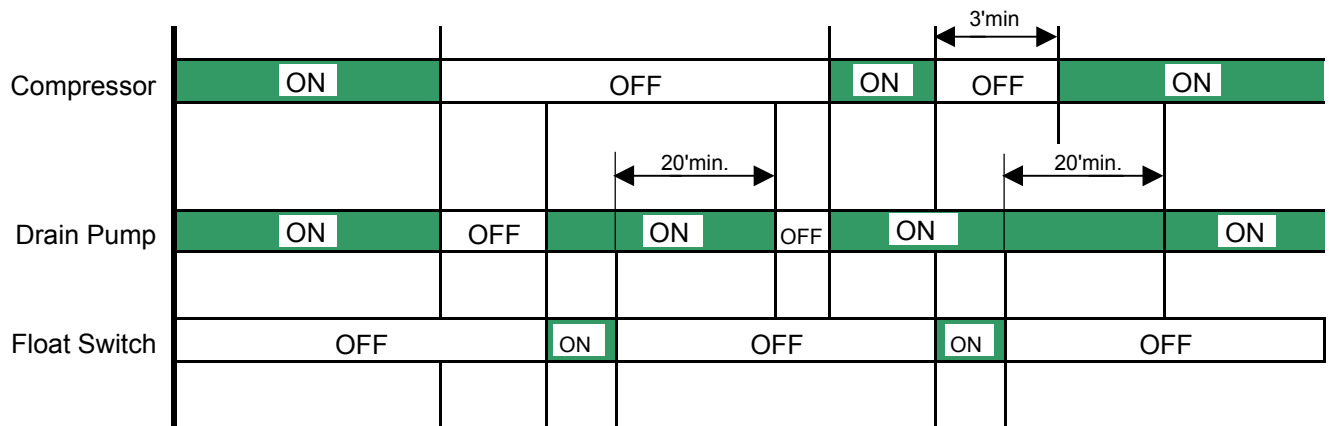
- Intermittent ventilation occurs by switching the indoor fan speed between L ↔ LL.
- Dry operation does not occur when the room temperature is under 15°C , which is the monitor zone.
- When the compressor stops, the indoor fan stops as well.

4-3. Freeze Prevention (Cooling and Dry)

- This function prevents freezing of the indoor heat exchange coil.
- When the compressor has been running for 6 minutes or more and the temperature of the indoor heat exchange coil falls below -1°C , the control circuit stops the compressor for at least 6 minutes. The compressor does not start again until the temperature rises above 8°C or 6 minutes has elapsed.



4-4 Drain Pump and Float Switch




NOTE:

Either in Heating or another mode or the unit is stopped, when the float switch is turned ON, the drain pump operates for 20 minutes minimum

5. TROUBLESHOOTING

5-1. Check before and after troubleshooting

**WARNING**

Hazardous voltage can cause **ELECTRIC SHOCK** or **DEATH**. Disconnect power or turn off circuit breaker before you start checking or servicing.

5-1-1. Check power supply wiring.

- Check that power supply wires are correctly connected to terminals **L** and **N** on the terminal plate in the indoor unit.

5-1-2. Check inter-unit wiring.

- Check that inter-unit wiring is correctly connected to the outdoor unit from the indoor unit.

5-1-3. Check power supply.

- Check that voltage is in specified range ($\pm 10\%$ of the rating).
- Check that power is being supplied.

5-1-4. Check lead wires and connectors in indoor and outdoor units.

- Check that coating of lead wires is not damaged.
- Check that lead wires and connectors are firmly connected.
- Check that wiring is correct.

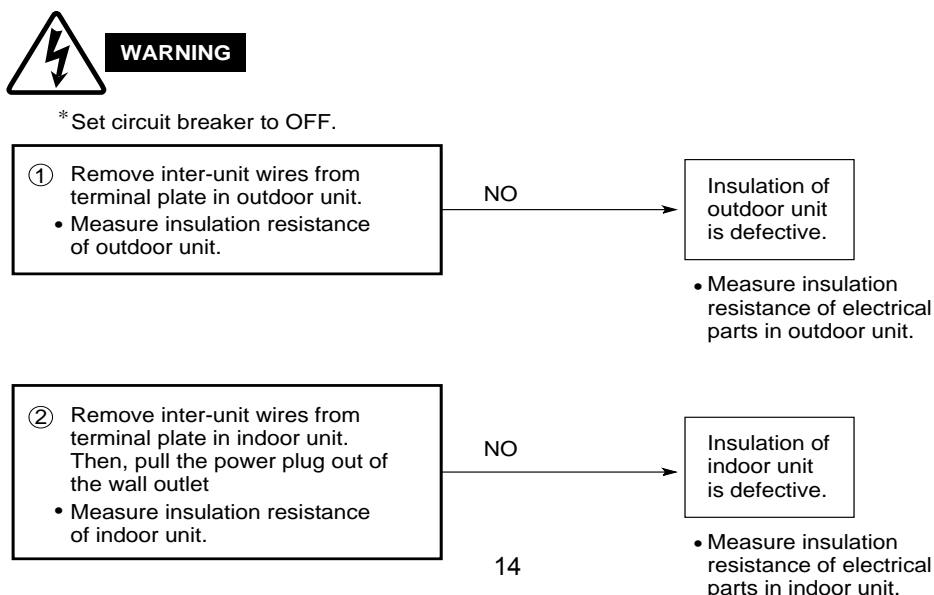
5-2. Air conditioner does not operate.

5-2-1. Circuit breaker trips (or fuse blows).

A. When the circuit breaker is set to ON, it trips immediately. (Resetting is not possible.)

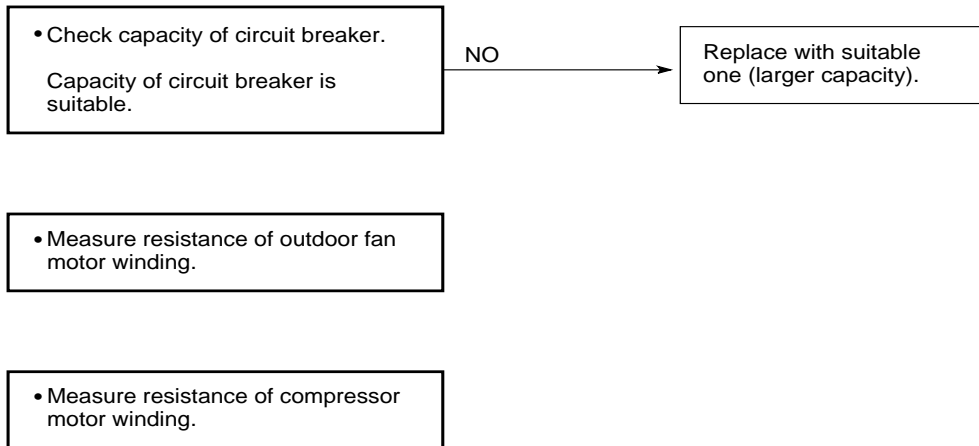
- There is a possibility of ground fault.
- Check insulation resistance.

If resistance value is $2M\Omega$ or less, insulation is defective ("NO").



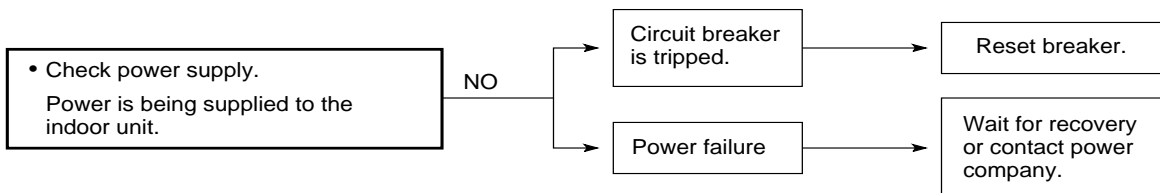
B. Circuit breaker trips in several minutes after turning the air conditioner on.

- There is a possibility of short circuit.

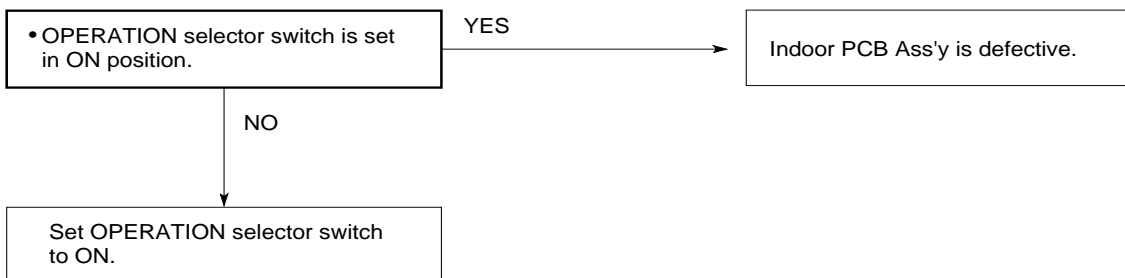


5-2-2. Neither indoor nor outdoor unit runs.

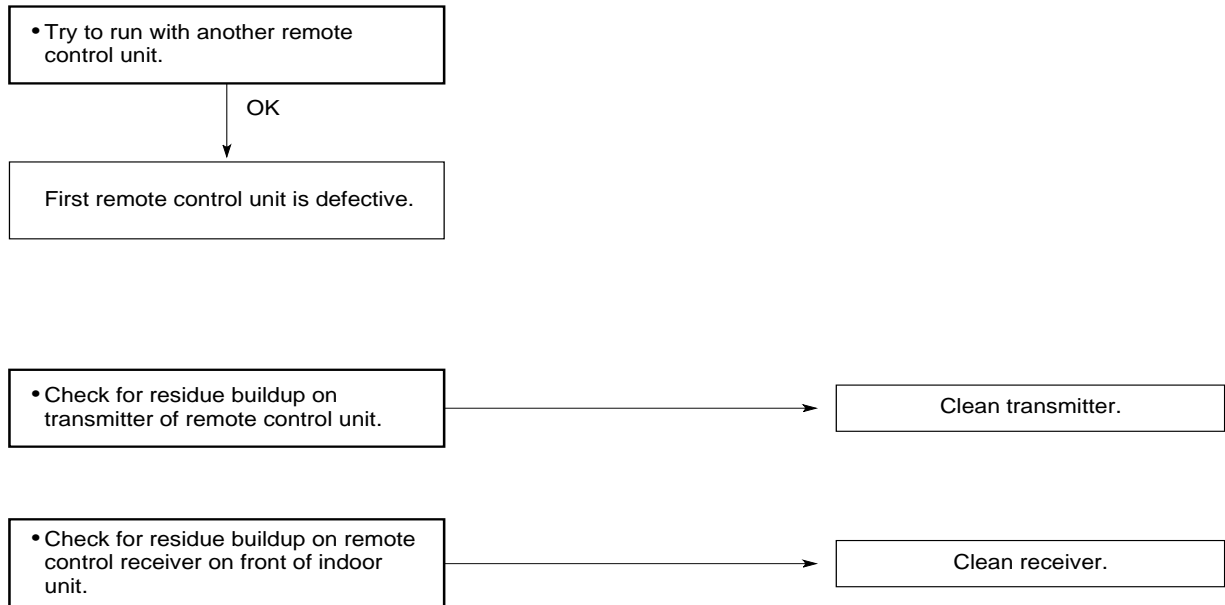
A. Power is not supplied.



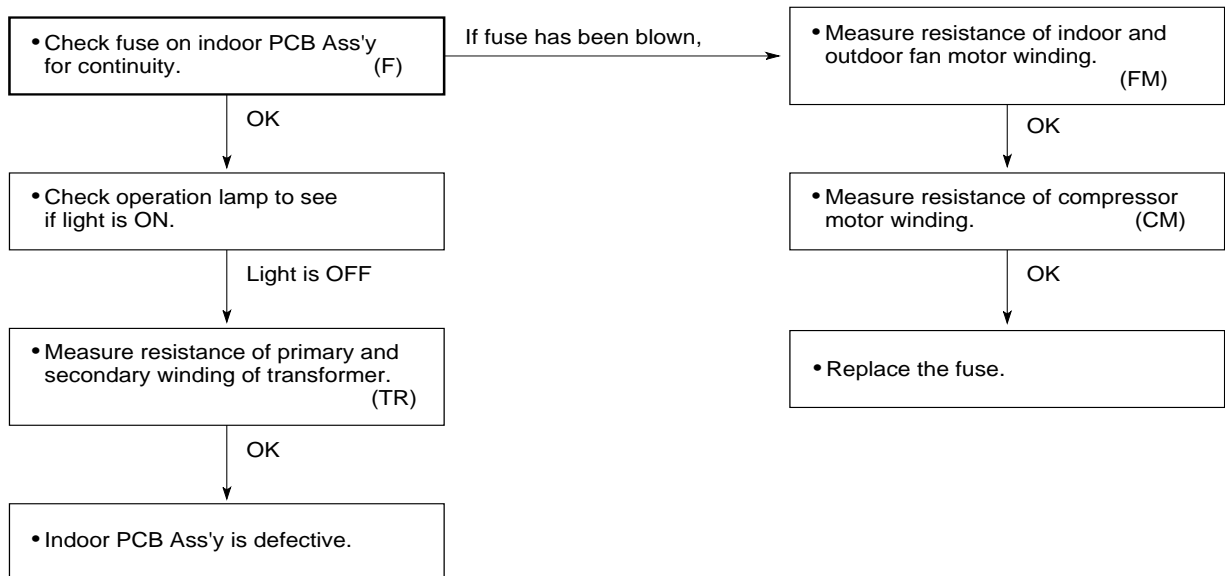
B. Check "OPERATION selector" switch in the indoor unit.



C. Check remote control unit.



D. Check fuse on the indoor PCB Ass'y.



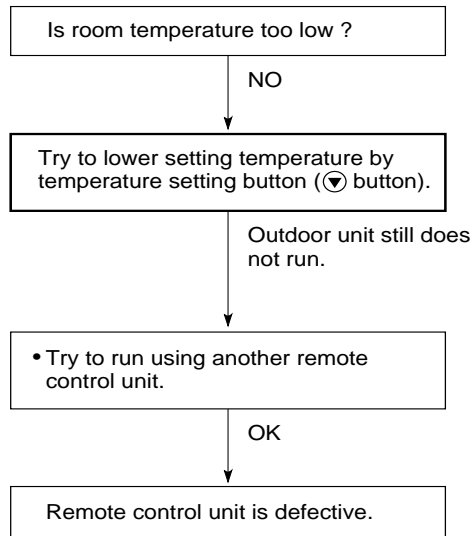
E. Check TIMER on the remote control unit.



5-2-3. Only outdoor unit does not run.

A. Check setting temperature.

COOL

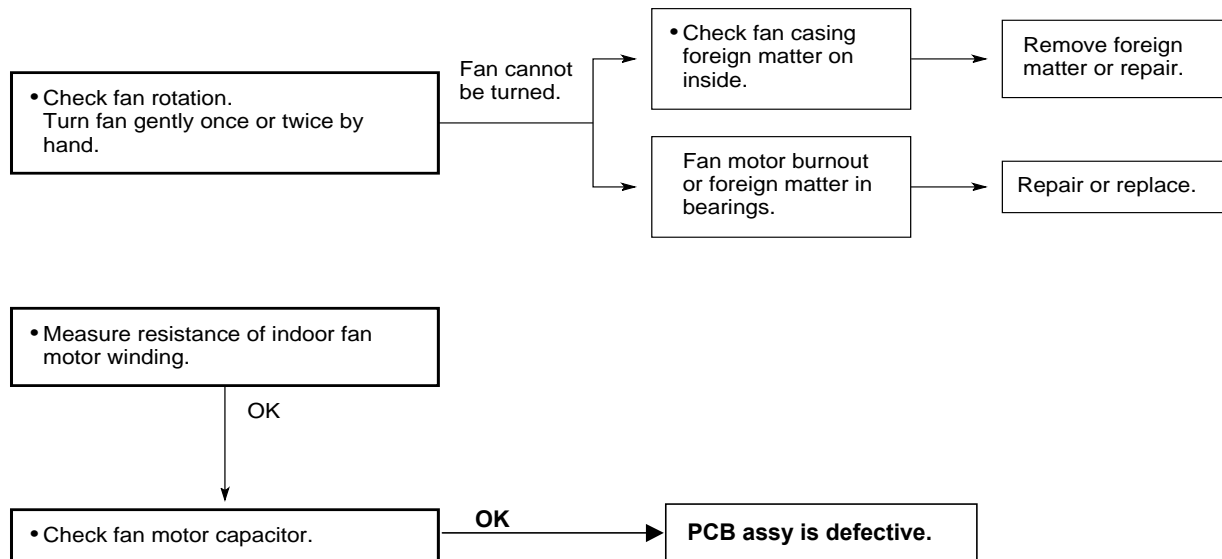


5-2-4. Only Indoor unit does not run.

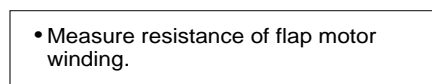
• Indoor PCB Ass'y is defective.

5-3. Some part of air conditioner does not operate.

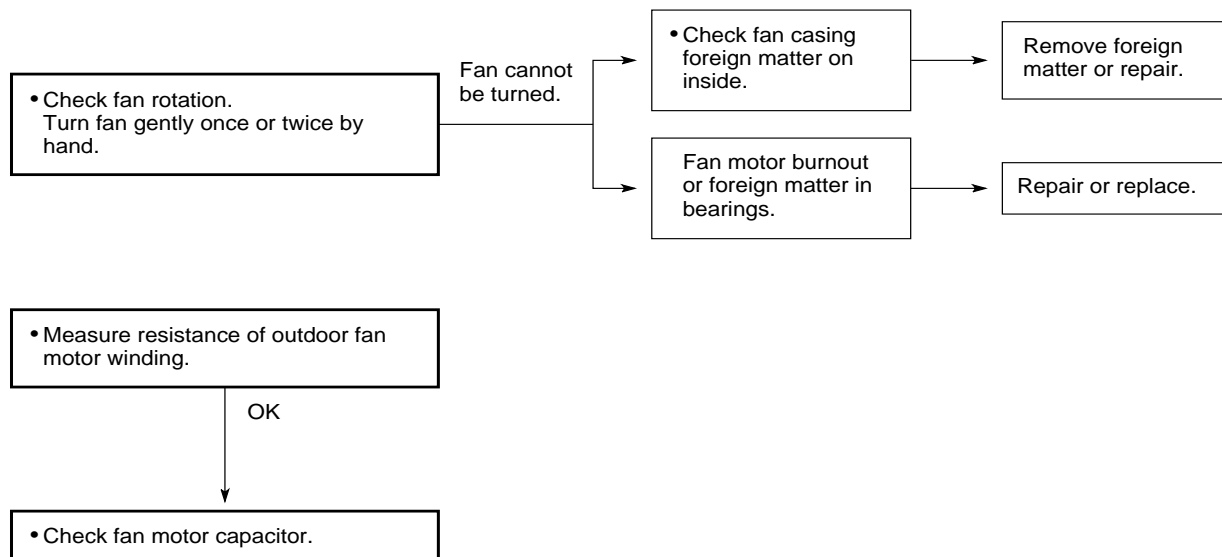
5-3-1. Only indoor fan does not run.



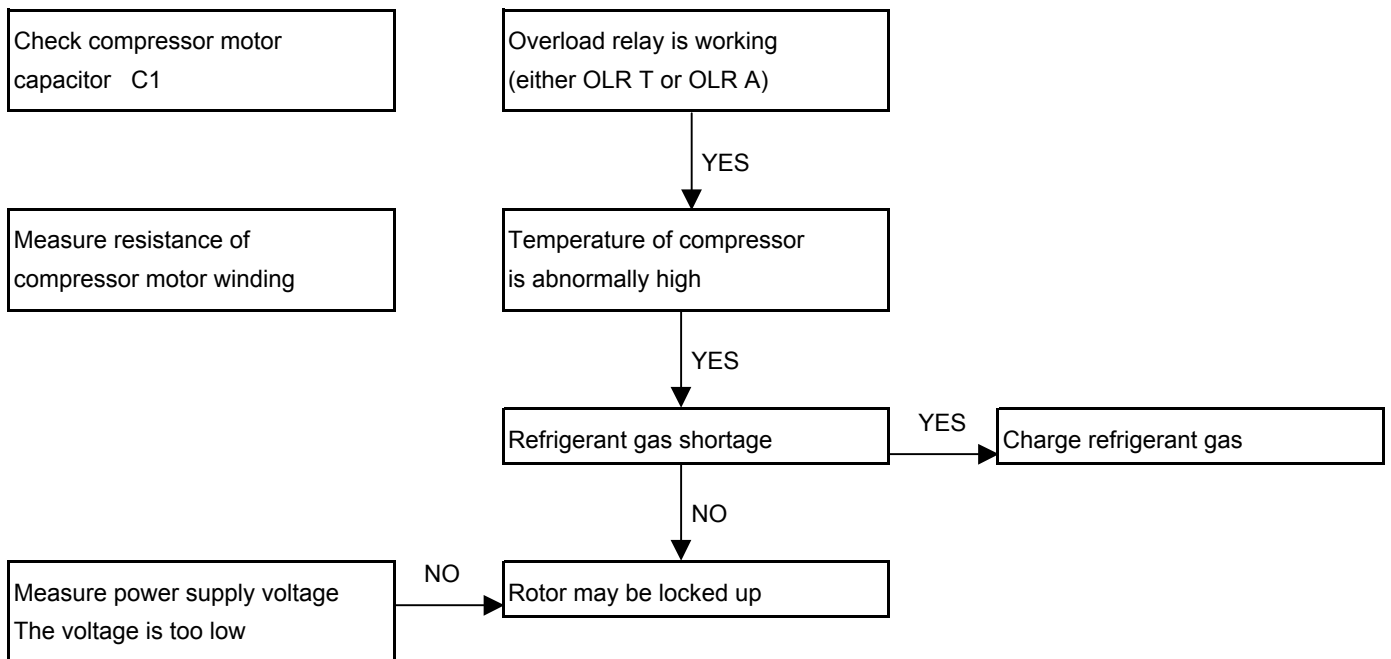
5-3-2. Only flap motor does not run.



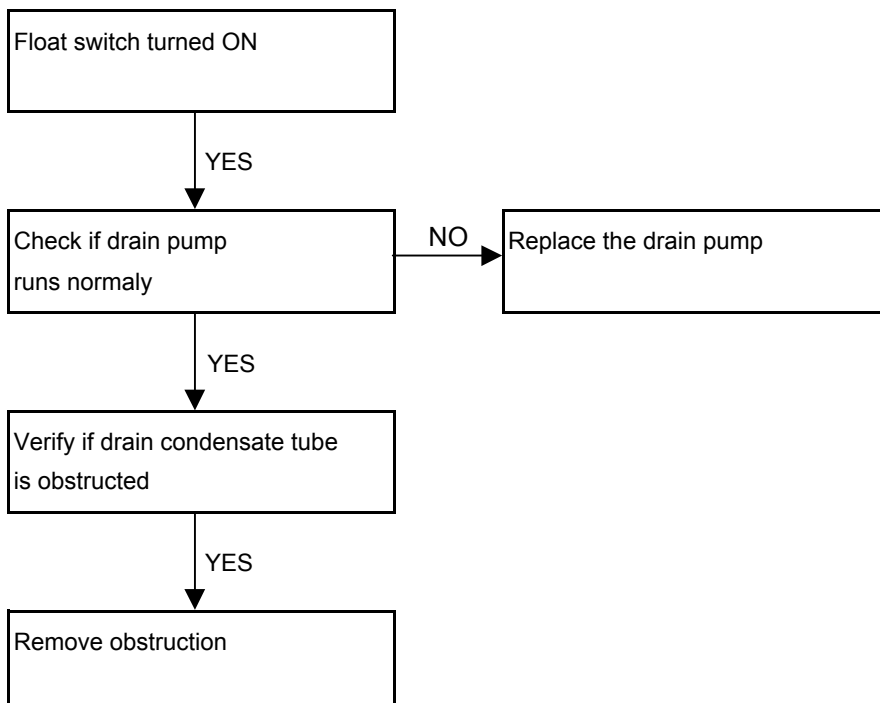
5-3-3. Only outdoor fan does not run.



5-3-4. Only compressor does not run

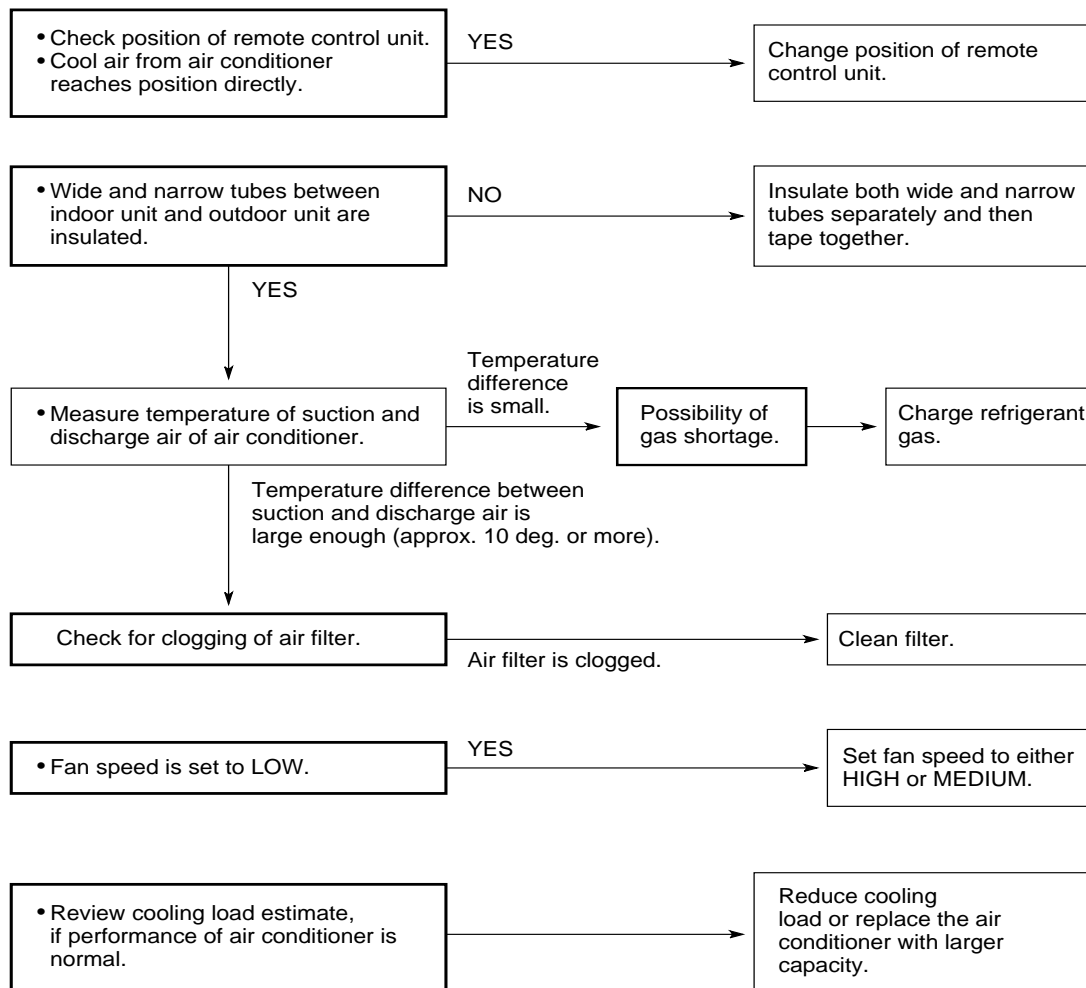


5-3-5. Compressor and outdoor fan do not run

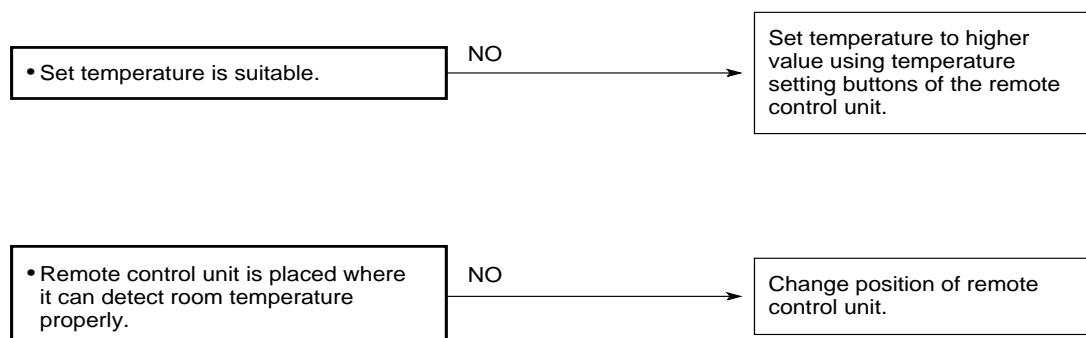


5-4. Air conditioner operates, but abnormalities are observed.

5-4-1. Poor cooling.

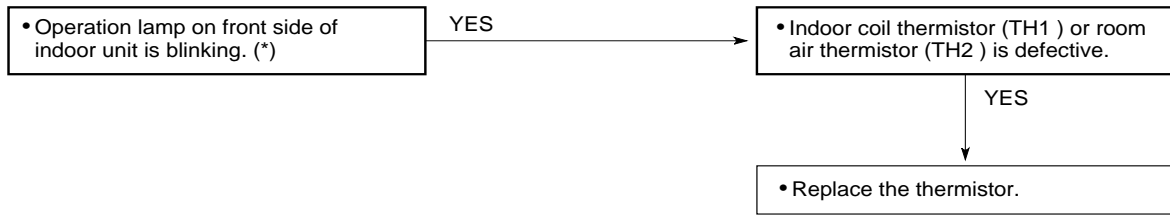


5-4-2. Excessive cooling.



5-5. If a sensor is defective.

5-5-1. Thermistor (TH1 or TH2) is defective.



NOTE Alarm Signal (*)

Operation lamp on the front side of the indoor unit will blink when either indoor coil thermistor or room air thermistor is defective. At the same time the outdoor unit will stop. Indoor unit will operate only for ventilation.

6. CHECKING ELECTRICAL COMPONENTS

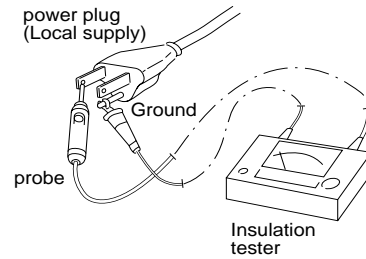
6-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds $2M\Omega$.

6-1-1. Power Supply Wires

Clamp the grounding terminal of the power plug with a lead clip of the insulation resistance tester and measure the resistance by placing a probe on both the two power terminals. (Fig. 1)

Then, also measure the resistance between the grounding and other power terminals. (Fig. 1)



NOTE

The shape of the power plug may differ from that of the air conditioner which you are servicing.

Fig. 1

6-1-2. Indoor Unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

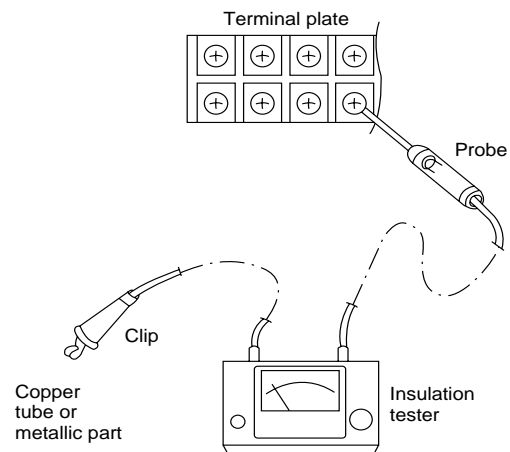


Fig. 2

6-1-3. Outdoor Unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw on the terminal plate. (Fig. 2)

Note that the ground line terminal should be skipped for the check.

6-1-4. Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate, capacitor, etc. Similarly disconnect the connector. Then measure the insulation resistance. (Figs. 3 and 4)

NOTE

Refer to Electric Wiring Diagram.

If the probe cannot enter the poles because the hole is too narrow then use a probe with a thinner pin.

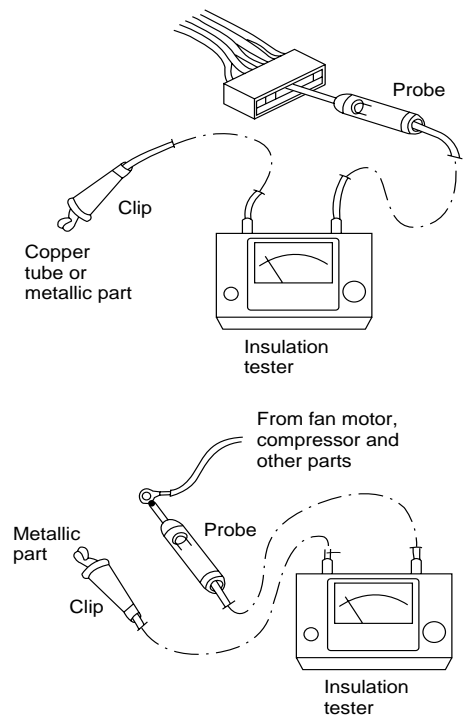


Fig. 3

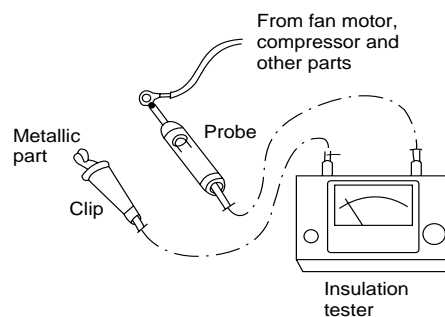


Fig. 4

6-2. Checking Continuity of Fuse on PCB Ass'y

- Remove the PCB Ass'y from the electrical component box. Then pull out the fuse from the PCB Ass'y. (Fig. 5)
- Check for continuity using a multimeter as shown in Fig. 6.

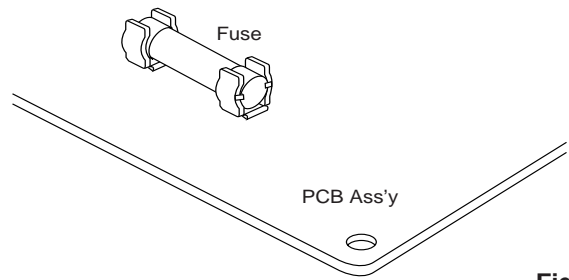


Fig. 5

6-3. Checking Motor Capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer, setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is “good” if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capacitor.

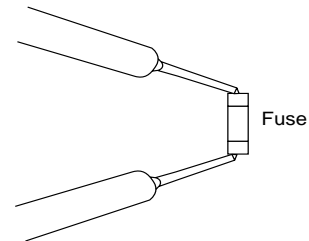


Fig. 6

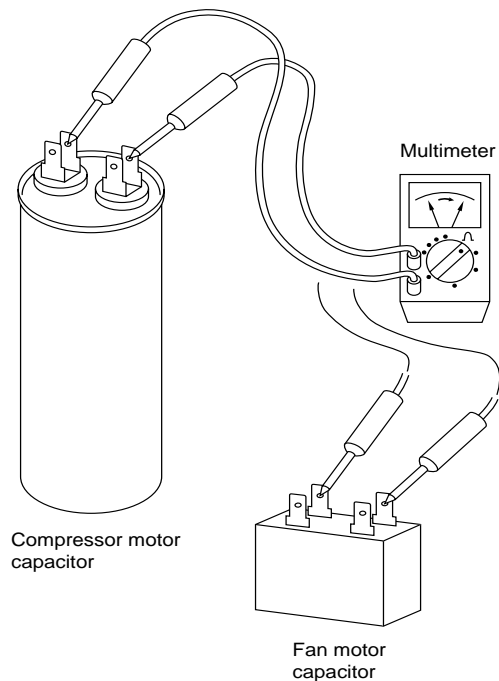


Fig. 7

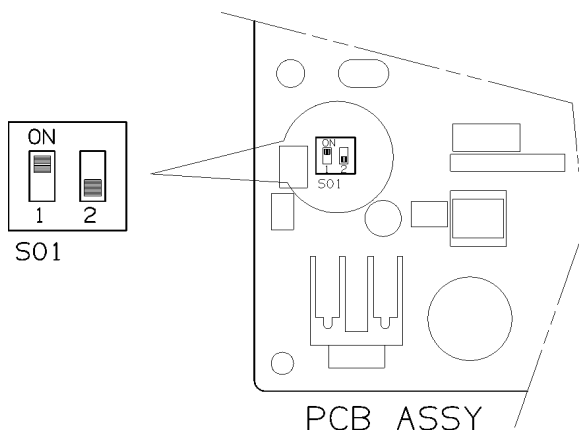
7. MAINTENANCE

7-1 Changing Address of Remote Control Unit in Indoor Unit

If you are installing more than 1 indoor unit (up to 2) in the same room, it is necessary for you to assign each unit its own address, so each can be operated by its own separate remote control unit. You assign the addresses by matching the remocon address on the PCB of each indoor unit with the switch positions of its remote control unit.

To change address on PCB

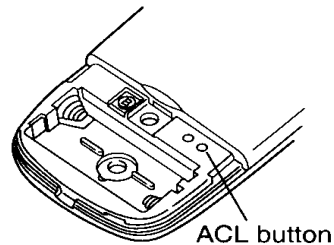
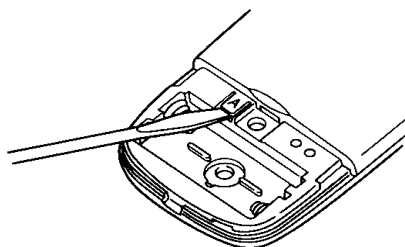
- (1) Set the switch n.2 to "off" position on the address dip switch (S01)
(see detail on figure)



To change address on Remote Control Unit

NB.: Once changed, you cannot restore the original address

- (1) Remove the batteries before changing the address
- (2) Remove tab marked A to change the address of the remote control unit
(when is removed, the address is automatically set to B)
- (3) After inserting the batteries, press ACL button



argoclima s.p.A.

Via Varese, 90 - 21013 Gallarate - Va - Italy
Tel. +39 0331 755111 - Fax +39 0331 776240
www.argoclima.it