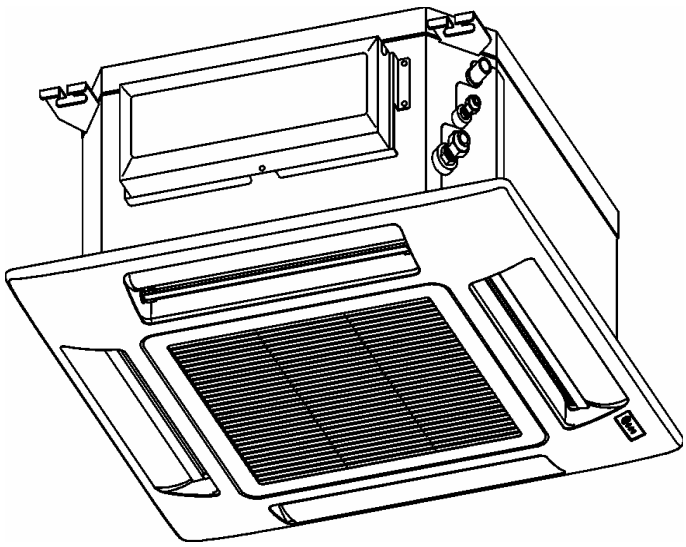
TECHNICAL DATA
& SERVICE MANUAL

INDOOR UNIT: CAF184MR5IA-

SPLIT SYSTEM AIR CONDITIONER

Model No.	Product Code No.
CAF184MR5IA-	387106971



0.8180.393.1 09/2006

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 orden when removing the units.

WARNING **When wiring**

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A 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 or wall
Make sure the ceiling/wall 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 testng 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

1. SPECIFICATIONS

1-1 Unit Specifications

CAF184MR5IA-

Power source	220 - 240 V ~ 50 Hz

Voltage rating	230 V

Performance				
	Capacity			See catalogue with the requested matching
	Air circulation	High/Med./Low	m³/h	790/660/580

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		Vertical	Auto
	Air Filter			Washable, Anti-Mold
	Power noise level	High/Med./Low	dB-A	54/49/46
	Refrigerant tubing connections			Flare type
	Refrigerant	Narrow tube	mm(in.)	6,35 (1/4)
	tube diameter	Wide tube	mm(in.)	9,52 (3/8)
	Refrigerant			R410A
	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	Unit	Height	mm	380
			Width	mm	744
			Depth	mm	650
			Volume	m3	0,18
		Ceiling panel	Height	mm	110
			Width	mm	800
			Depth	mm	800
			Volume	m3	0,07
	Weight	Unit	Net	kg	18,2
			Shipping	kg	22,7
		Ceiling panel	Net	kg	2,50
			Shipping	kg	4,70

1-2 Major Component Specifications

CAF184MR5IA-

Controller PCB		
Part No.		CB-XMRV183EH
Controls		Microprocessor
Control circuit fuse		250 V - 3,15 A

Remote Control Unit	RCS-3MVHPS4E

Fan & Fan Motor				
Type				Centrifugal fan
Q'ty ……. Dia. and lenght			mm	1…. Ø 280 / L 166
Fan motor model…Q'ty				K35407 M01972 …1
No. of poles…rpm (230 V, High / 2nd / 3rd / Low)				4… 880 / 740 / 660 / 290
Running Amps			A	0,27
Power input			W	61
Coil resistance (Ambient temp. 20 °C)			Ω	BLU-BRN: 33,9÷39,1 BLU-BLK: 325÷374 BLK-GRY: 78,7÷90,5 GRY-RED: 49,7÷57,2
				RED-WHT/YEL: 155÷178
Safety devices	Type			Internal thermal protector
	Operating temp.	Open	°C	150 ± 10
		Close		Automatic
Run capacitor			µF	2
			VAC	400

Flap Motor		
Type		Stepping motor
Model		MP24GA2
Rating		DC 12 V
Coil resistance (Ambient temp. 25 °C)	Ω	400±7%

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 CAF184MR5IA-

Trasformer (TR)		ATR-I55
Rating	Primary	AC 230 V, 50/60 Hz
	Secondary	13.7 V - 0.4 A
	Capacity	5.48 VA
Coil resistance	Ω (at 25°C)	Primary (WHT-WHT): 307 ± 10% Secondary (BRN-BRN): 1.8 ± 10%
Thermal cut-off temp.		150°C

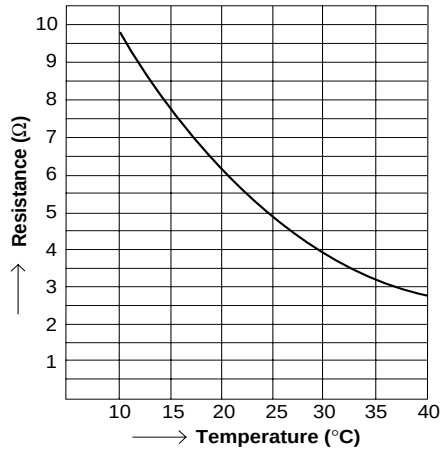
Thermistor (Coil sensor TH1)		DTN-C583G3U-TKS121B
Resistance	kΩ	0 °C: 188,0 ± 4%

Thermistor (Room sensor TH2)		DTN-C502H3T-TKS128B
Resistance	kΩ	25 °C: 5,0 ± 3%

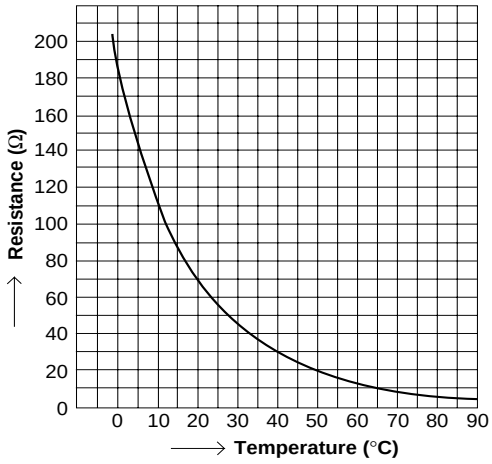
Drain pump		
Model		PC 309564003
Rating	Voltage	220-240 V - 50 Hz
	Input	14 W
Total head capacity		0,4 l/min

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

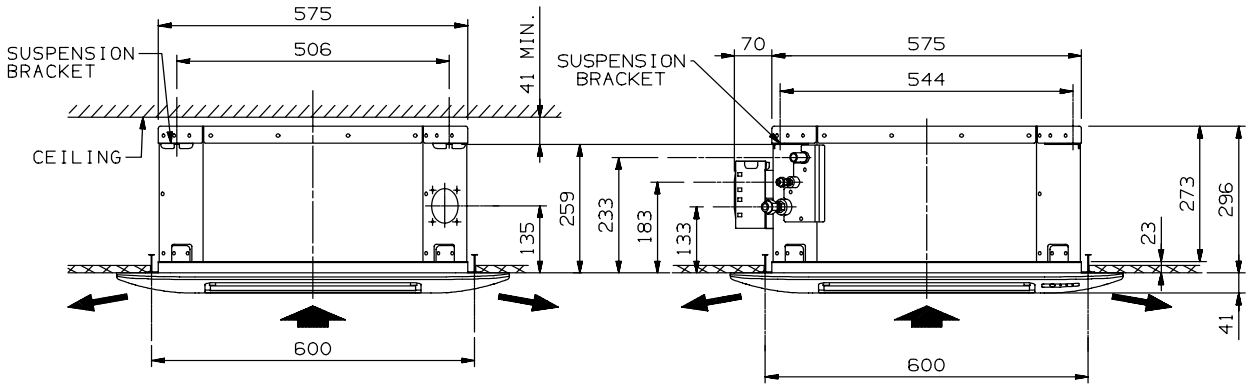
• Indoor air temp sensor

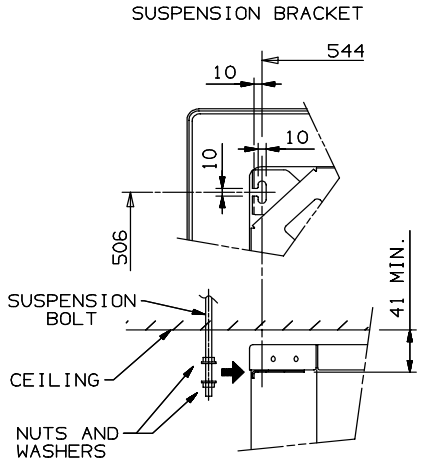


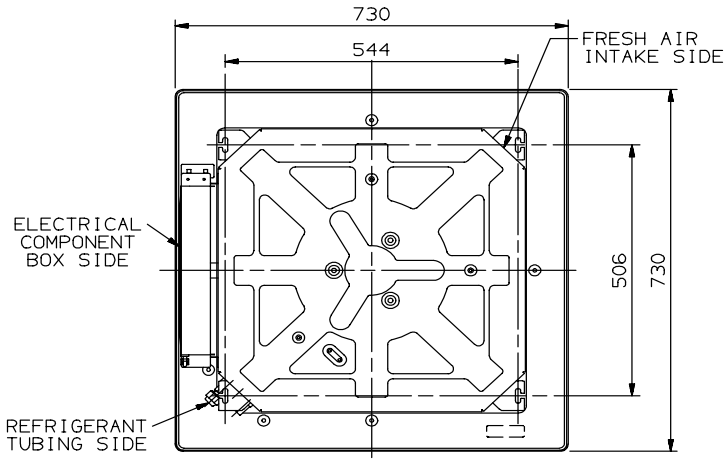
• Indoor heat exchanger sensor



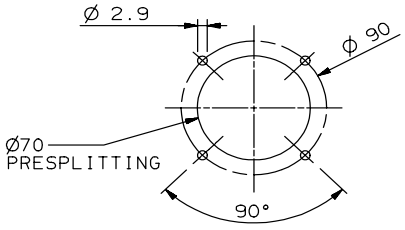
2. DIMENSIONAL DATA



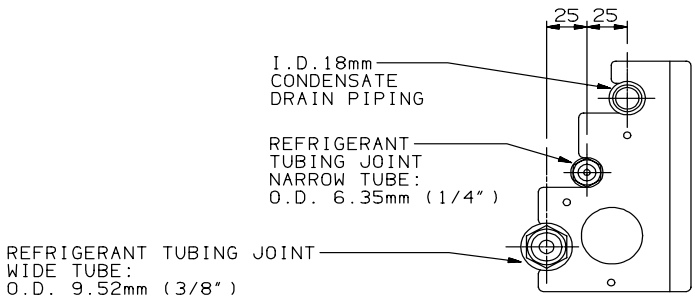




FRESH AIR INTAKE PORT

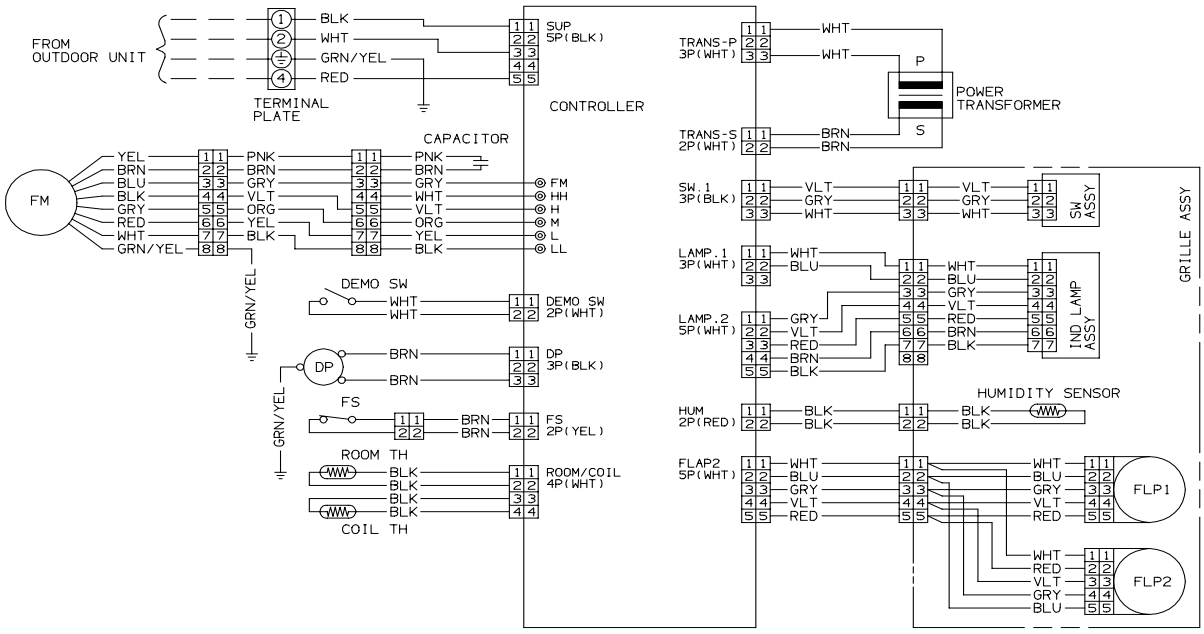


REFRIGERANT TUBING SIDE



3. ELECTRICAL DATA

3-1 Electric Wiring Diagrams



4. FUNCTIONS

4-1. Operation Functions

■ Functions of the main unit controller

① **OFF (Self-diagnostics)** : • Used to stop the unit when the remote controller is unavailable.
• Used when service inspection is performed.

② **ON** : • During normal operation: Starts operation from the remote controller.
• Emergency operation: When the remote controller is unavailable, moving this switch from the OFF position to the ON position starts automatic operation.

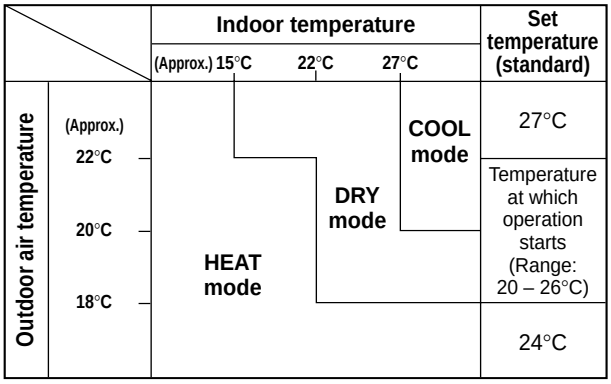
③ **TEST** : • Used when operating performance are checked.
• Used when pump-down is carried out. (Operates at the rated frequency. At this time, the main unit lamp flashes, and the remote controller signal cannot be received.)

④ **DEMO** : • This function is for shop displays. Ordinarily it is not used.
• Used during servicing.

■ Automatic operation

● **Operating mode selection**

When automatic operation is selected, the indoor and outdoor temperature sensors function, and either HEAT, DRY, or COOL mode operation is selected automatically.



• When multiple indoor units are connected and this unit is started while another indoor unit is operating, the operating mode is as shown in the table below.

Operating mode before change	Multi operating mode	Operating mode after change
HEAT	COOL	DRY
	DRY	DRY
COOL	HEAT	HEAT
DRY	HEAT	HEAT

• If the remote controller is used to start automatic operation, a differing-mode check is performed if the operating modes are not the same.

● **Desired-temperature memory**

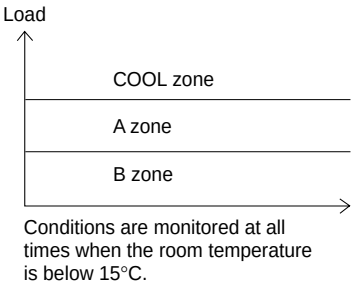
• The set temperature in the program can be changed as desired within the range of ±4°C. This temperature can then be stored. During automatic operation, press the temperature setting buttons to change the temperature.

■ SENSOR DRY

During automatic operation, the system adjusts the room temperature and fan speed according to the conditions in the room, in order to maintain a comfortable room environment.

SENSOR DRY operation

• DRY operation is as shown in the figure below.



DRY A

The compressor operation frequency varies depending on the relative humidity.
The indoor fan operates with 1/f fluctuation.

DRY B

The compressor operates at a low operating frequency.
The indoor fan operates with 1/f fluctuation.

Monitor

• Monitoring operation takes place when the room temperature is below 15°C.
• When the monitoring range is entered, the compressor stops, and the indoor fan operates at LL.

■ PAM-α control

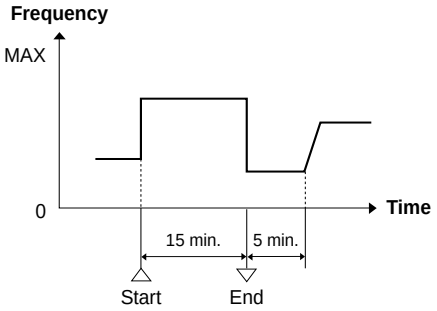
• In order to further improve inverter performance, control is switched between PWM control at low operation speeds, and PAM control at high operation speeds, making the most effective use of power.

■ HIGH POWER

Raises the power but remains in the same operating mode.
This function is set with the HIGH POWER button on the remote controller.
(It is set regardless of the temperature and fan speed settings.)

● **HIGH POWER operation from the remote controller**

The unit operates at maximum output for 15 minutes, regardless of the desired temperature.
The fan speed is 1 step above “High.”



NOTE

- When HIGH POWER operation ends, the unit operates at low Hz for 5 minutes, regardless of the thermostat OFF conditions.
- When in DRY mode, operation is in the cooling zone.
- When in HEAT mode, defrosting does not occur during HIGH POWER operation.
- If HIGH POWER is set while defrosting is in progress, HIGH POWER operation begins after defrosting ends.
- HIGH POWER operation cannot be set from the remote controller when the unit is stopped.
- HIGH POWER operation and ECONOMY operation cannot be used at the same time. The function set last takes priority.

■ ECONOMY

- When ECONOMY operation is set, the temperature and fan speed settings will be adjusted automatically to allow comfortable sleep.
- When ECONOMY operation is set, “ mark” appears on the remote controller.

● **COOL and DRY modes**

- The indoor unit fan speed is automatically lowered for quiet operation.
- The temperature setting is raised by 1°C one hour after ECONOMY operation is set.

● **HEAT mode**

- The indoor unit and outdoor unit fan speeds are automatically lowered for quiet operation.
- The temperature setting is lowered by 3°C one hour after ECONOMY operation is set.
  In addition, the temperature setting is lowered by 4°C after two hours have passed.

■ Lamp colors

Operation lamp

HEAT operation : Red
DRY operation : Orange
COOL operation : Green
TIMER lamp : Green

■ ON timer operation

- Operation starts when the time set for the ON timer is reached. When a time is set, the TIMER lamp illuminates.
- The below comfort timer programming is performed.
  A comfort time is calculated from the set temperature and the room temperature, either 60 minutes prior or 30 minutes prior to the set ON timer time, and operation is started in advance of the set ON time. (The indoor fan speed is “Medium.”)

  [COOL]
  Indoor temperature – Set temperature = Temperature difference

  [HEAT]
  Set temperature – Indoor temperature = Temperature difference

Temperature difference (°C)	Advance start time (min.)
12 < Temperature difference	60
6 < Temperature difference	30

NOTE

This function does not operate if the ON timer standby time is less than 30 minutes.

■ OFF timer operation

- Operation stops when the time set for the OFF timer is reached.
  When a time is set, the TIMER lamp illuminates.

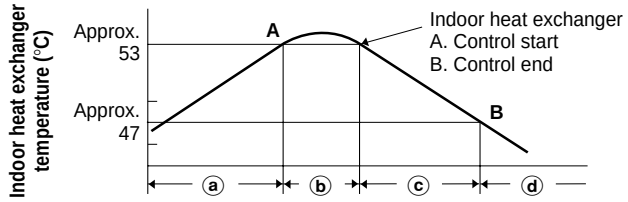
■ Timer backup

- If the indoor unit is unable to receive the timer time-end signal when the ON or OFF time is reached, then timer time-end occurs according to the indoor unit backup timer within approximately 26 minutes.
- Operation stops if there are no operator controls for 25 hours or longer after unit operation switched from OFF to ON by use of ON timer operation.

4-2. Protective Functions

■ Overload prevention during heating

During HEAT operation, the temperature of the indoor heat exchanger is used to control the frequency and lessen the load on the compressor before the protective device is activated.



ⓐ area: Automatic capacity control

ⓑ When Point A has been exceeded, the operation frequency is reduced by a certain proportion.

ⓒ area: Frequency increase is prohibited.

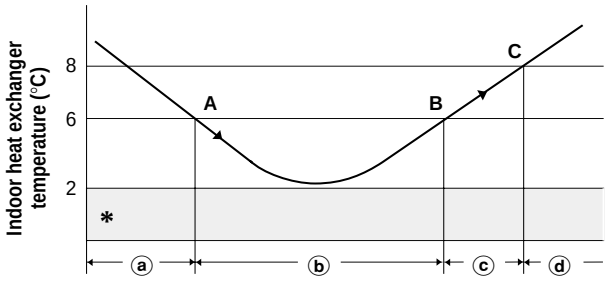
ⓓ At Point B and below, overload prevention is ended and control is the same as in the (a) area.

■ Freeze prevention

During COOL or DRY operation, freezing is detected and operation is stopped when the temperature of the indoor heat exchanger matches the conditions below.

① Freeze-prevention operation is engaged when the temperature of the indoor heat exchanger is below 6°C.

② Restart after freeze-prevention operation occurs when the temperature of the indoor heat exchanger reaches 8°C or above.



ⓐ area: Automatic capacity control

ⓑ When the temperature drops below Point A, the operation frequency is reduced by a certain proportion.

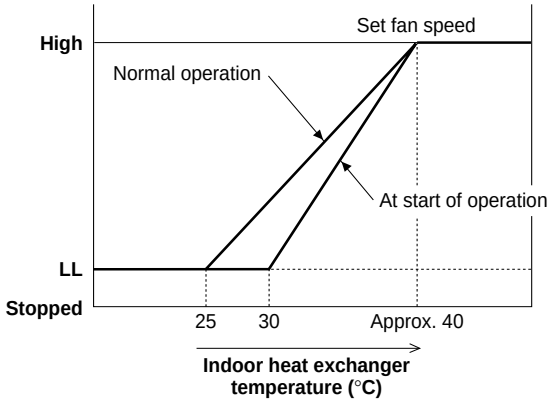
ⓒ area: Frequency increase is prohibited.

ⓓ When the temperature reaches Point C or above, freezing prevention is ended and control is the same as in the ⓐ area.

* When the temperature drops to below 2°C (continuously for 2 minutes or longer), the compressor stops.
Once the freeze condition is detected, the air conditioner will work less than the maximum frequency until it is turned off.

■ Cold-air prevention during heating

During heating, the fan speed is set to “LL” (very low) or stopped. As the temperature of the indoor heat exchanger rises, the fan speed is changed to the set speed.



NOTE

- The fan speed is forcibly changed to “LL” beginning 30 seconds after the thermostat turns OFF.
- Normal operation refers to operation when the room temperature has approached the set temperature.
- When HEAT operation starts, the indoor fan is stopped until the temperature of the indoor heat exchanger reaches 20°C or higher, or until the room temperature reaches 15°C or higher.

■ Changing the remote controller address

- This prevents remote controller signal interference when two air conditioners are installed next to each other.
  Ordinarily, the address is set to A. If it is necessary to change the address, follow the procedure below. If 3 or more (up to 4) units are installed, use remote controllers that are intended for servicing use.

① Switch the address setting to “B” by removing the tab marked “A” on the remote controller.

② Insert dry-cell batteries into the remote controller and press the ACL button. Then attach the cover.

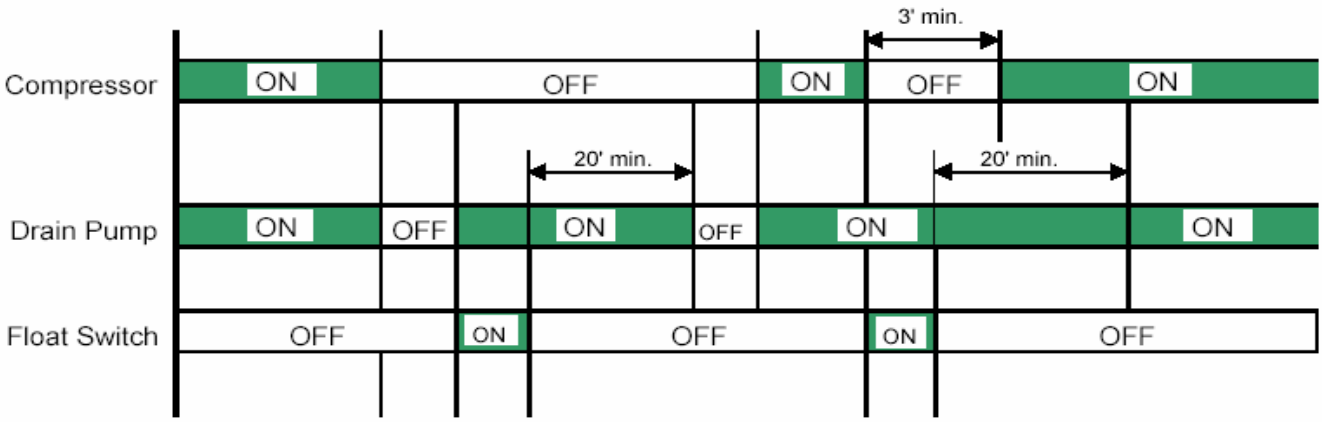
③ Open the air intake grille on the indoor unit, and move the operation switch to the DEMO position.

④ Press the ON/OFF operation button on the remote controller. Check that the “beep” signal-received sound is heard from the indoor unit.

⑤ Move the operation switch to the ON position, and close the intake grille.

⑥ Operate the remote controller. Check that the “beep” signal-received sound is heard from the indoor unit.

4-3. 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

■ Precautions before performing inspection or repair

- After checking the self-diagnostics monitor, turn the power OFF before starting inspection or repair.
- High-capacity electrolytic capacitors are used inside the outdoor unit controller (inverter). They retain an electrical charge (charging voltage DC 280 V) even after the power is turned OFF, and some time is required for the charge to dissipate. Be careful not to touch any electrified parts before the controller LED (red) turns OFF.

  If the outdoor controller is normal, approximately 30 seconds will be required for the charge to dissipate. However, allow at least 5 minutes for the charge to dissipate if there is thought to be any trouble with the outdoor controller.

  After inspection or repair is completed, be sure to move the operation switch to the DEMO position, turn the power ON, and erase the diagnostics contents.

■ Method of self-diagnostics

If the indoor unit operation lamp is flashing every 0.5 seconds, follow the procedure below to perform detailed trouble diagnostics.

NOTE

1: If the operation lamp flashes every 0.5 seconds immediately when the power is turned ON, there is an external ROM (OTP data) failure on the indoor circuit board or a board insertion problem, or the board has not been installed.

2: The failure mode is stored in memory even when the power is not ON. Follow the procedure below to perform diagnostics.

PROCEDURE

① Turn the power switch ON.

② Move the operation selector on the remote control receiver to OFF (self-diagnostics).

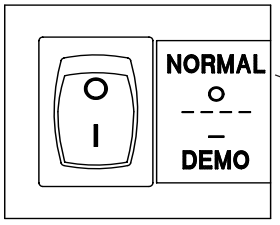
③ If there is a sensor failure or a protective function has activated, self-diagnostics lamps 1, 2, and 3 will illuminate in the following pattern: 5 seconds flashing (illuminated) + 2 seconds OFF. (Buzzer sounds once while lamps are OFF.)

Note: If there is no trouble, then self-diagnostics lamps 1, 2, and 3 do not illuminate, and the buzzer does not sound.

④ Diagnostics is completed when the buzzer sounds 3 beeps.

⑤ After inspection or repair is completed, be sure to move the operation switch on the indoor unit main body to the DEMO position, turn the power ON, and erase the diagnostics contents. Then move the operation selector on the remote control receiver to the OFF position and check that the diagnostics contents have been erased before using the unit.

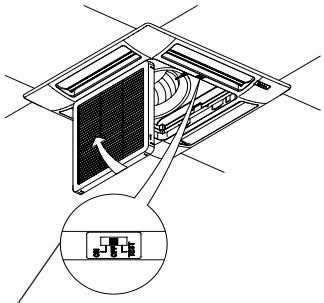
<Indoor unit main body>



Operation switch

Ordinarily, be sure this is always set to NORMAL.

The DEMO position is used for inspections and similar maintenance.



Operation selector

Ordinarily, be sure this is always set to ON.

The OFF and TEST positions are used for inspections and similar maintenance.

Details of Self-Diagnostics

When the operation selector on the grille assy is moved from the ON or TEST position to the OFF (Self-diagnostics) position, the indicator lamps will flash (or remain ON) for 5 seconds and then turn OFF for 2 seconds (buzzer sounds once) to indicate the presence of a sensor failure or the activation of a protective function. Self-diagnostics is completed when the buzzer sounds 3 beeps. If there is no trouble, the lamps do not flash. Also note that the corresponding parts listed below may not be present in some models.

INDICATION ON IND.U.				×....OFF ☼....FLASHING ☼....ON	
OPR	TMR	SRV	CODE	DIAGNOSTICS ITEM	DIAGNOSTICS CONTENTS
☼	×	×	S01	ROOM TEMPERATURE SENSOR FAILURE	1 SENSOR OPEN CIRCUIT OR SHORT CIRCUIT 2 CONTACT FAILURE AT CONNECTOR OR OPEN CIRCUIT AT TERMINAL CRIMPING LOCATION (SHORT-CIRCUIT DETECTION ONLY FOR THE HUMIDITY SENSOR) 3 INDOOR/OUTDOOR CIRCUIT BOARD FAILURE
×	☼	×	S02	INDOOR HEAT EXCHANGER SENSOR FAILURE	
☼	☼	×	S03	HUMIDITY SENSOR FAILURE	
×	×	☼	S04	-COMPRESSOR TEMPERATURE SENSOR FAILURE -SH SENSOR FAILURE	1 SENSOR OPEN CIRCUIT OR SHORT CIRCUIT 2 CONTACT FAILURE AT CONNECTOR OR OPEN CIRCUIT AT TERMINAL CRIMPING LOCATION 3 OUTDOOR CIRCUIT BOARD FAILURE
☼	×	☼	S05	-OUTDOOR HEAT EXCHANGER SENSOR FAILURE -OUTDOOR NARROW TUBING SENSOR FAILURE	
×	☼	☼	S06	-OUTDOOR AIR SENSOR TEMPERATURE FAILURE -OUTDOOR WIDE TUBING SENSOR FAILURE	
☼	☼	☼	S07	OUTDOOR ELECTRICAL CURRENT SENSOR FAILURE	OUTDOOR CIRCUIT BOARD FAILURE
* ☼	×	×	E01	INDOOR/OUTDOOR COMMUNICATIONS FAILURE (SERIAL COMMUNICATIONS)	1 MISWIRING, 2 AC POWER FAILURE, 3 BLOWN FUSE, 4 POWER RELAY FAILURE, 5 INDOOR OR OUTDOOR CIRCUIT BOARD FAILURE
×	☼	×	E02	-HIC CIRCUIT FAILURE -POWER TR CIRCUIT FAILURE	1 HIC OR POWER TR FAILURE, 2 OUTDOOR FAN DOES NOT TURN, 3 INSTANTANEOUS POWER OUTAGE, 4 SERVICE VALVE NOT OPENED, 5 OUTDOOR FAN BLOCKED, 6 CONTINUOUS OVERLOAD OPERATION, 7 COMPRESSOR FAILURE, 8 OUTDOOR CIRCUIT BOARD FAILURE
☼	☼	×	E03	OUTDOOR UNIT EXTERNAL ROM FAILURE	1 EXTERNAL ROM DATA FAILURE, 2 OUTDOOR CIRCUIT BOARD FAILURE
×	×	☼	E04	PEAK CURRENT CUT-OFF	1 INSTANTANEOUS POWER OUTAGE, 2 HIC OR POWER TR FAILURE, 3 OUTDOOR CIRCUIT BOARD FAILURE
☼	×	☼	E05	-PAM CIRCUIT FAILURE -ACTIVE CIRCUIT FAILURE	1 OUTDOOR CIRCUIT BOARD FAILURE, 2 OUTDOOR POWER SUPPLY VOLTAGE FAILURE
×	☼	☼	E06	COMPRESSOR DISCHARGE OVERHEAT PREVENTION	1 ELECTRIC EXPANSION VALVE FAILURE, 2 CAPILLARIES BLOCKED, 3 NO GAS, 4 CONTINUOUS OVERLOAD OPERATION, 5 OUTDOOR FAN DOES NOT TURN, 6 OUTDOOR CIRCUIT BOARD FAILURE
☼	☼	☼	E07	INDOOR FAN OPERATING FAILURE	1 FAN MOTOR FAILURE, 2 CONTACT FAILURE AT CONNECTOR, 3 INDOOR CIRCUIT BOARD FAILURE
☼	☼	☼	E08	-4 WAY VALVE SWITCHING FAILURE -INDOOR ZERO-CROSS FAILURE	1 4 WAY VALVE FAILURE, 2 OUTDOOR CIRCUIT BOARD FAILURE
☼	☼	☼	E09	NO REFRIGERANT PROTECTION	1 SERVICE VALVE NOT OPENED, 2 NO REFRIGERANT
☼	☼	☼	E10	DC COMPRESSOR DRIVE CIRCUIT FAILURE	1 OPEN PHASE, 2 OUTDOOR CIRCUIT BOARD FAILURE
☼	☼	☼	E11	OUTDOOR AC FAN OPERATING FAILURE	1 FAN MOTOR FAILURE, 2 CONTACT FAILURE AT CONNECTOR, 3 OUTDOOR CIRCUIT BOARD FAILURE
☼	☼	☼	E12	-OUTDOOR SYSTEM COMMUNICATIONS FAILURE -OUTDOOR HI-PRESSURE SW, OLR OPERATION -OUTDOOR POWER SUPPLY OPEN PHASE, OUTDOOR COIL FREEZING	1 MISWIRING, 2 BLOWN FUSE, 3 POWER RELAY FAILURE, OPEN PHASE, 5 OUTDOOR CIRCUIT BOARD FAILURE, 6 COMPRESSOR FAILURE
☼	☼	☼	E13	FREEZE-PREVENTION OPERATION	1 INDOOR FAN SYSTEM FAILURE, 2 NO REFRIGERANT, 3 LOW-TEMPERATURE OPERATION

Other : Timer lamp flashes (3-second intervals): I/D float switch activated.

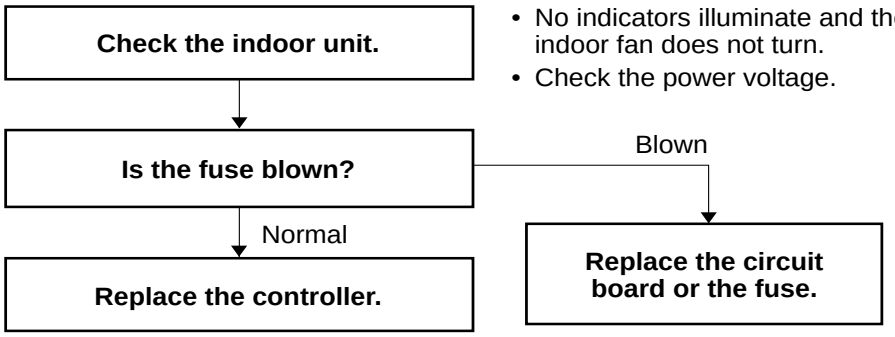
NOTE : If the operation lamp continues to flash (orange) even when the operation switch has been moved to the OFF position, an indoor unit external ROM failure has occurred. (E14) After inspection or repair is completed, be sure to move the operation switch (on the electrical box) to the DEMO position, turn the power OFF and ON and erase the diagnostics contents.

Control 1 Control 2

* **Initial self-diagnostics**	**Short-circuit terminals 2 and 4 on the indoor unit terminal plate**	**Short-circuit terminals 2 and 3 on the outdoor unit terminal plate**	**Probable location of malfunction**
Only operation lamp illuminates	No change	-	Indoor unit circuit board failure
	Change: Operation lamp and Service lamp illuminate, and Timer lamp flashes	Change: Operation lamp and Service lamp illuminate, and Timer lamp flashes	Outdoor unit circuit board failure
	Change: Operation lamp and Service lamp illuminate, and Timer lamp flashes	Change: only operation lamp illuminates	Failure (open circuit, contact failure, etc.) in the inter-unit cable

- Turn the power OFF before performing short circuiting work.
- During the self-diagnostics check, the check results are the first indication when the operation switch is moved to OFF while the indicators are flashing after power ON →DEMO (5 seconds) →ON.
- Before performing the above checks, perform DEMO operation, and check that AC 220 V is output toterminals 1 and 2. If it is not output, there is a failure related to the indoor unit power.

■ If the self-diagnostics function fails to operate



<Checking the indoor and outdoor units>

■ Checking the indoor unit

No.	Control	Check items (unit operation)
1	Set operation selector of indoor unit main body to DEMO and start operation using the remote controller.	• The rated voltage must be present between inter-unit cables 1 and 2. • Connect a 5 kΩ resistor between inter-unit cables 2 and 3. When the voltage at both ends is measured, approximately 12–15 V DC must be output and the needle must fluctuate once every 8 seconds. In addition, insert an LED jig and check that the LED flickers once every 8 seconds.

● If there are no problems with the above, then check the outdoor unit.

■ Checking the outdoor unit

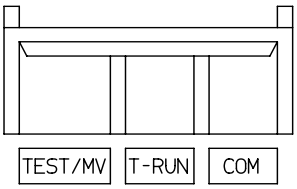
No.	Control	Check items (unit operation)
1	Apply the rated voltage between outdoor unit terminals 1 and 2.	• The control panel LED (red) must illuminate.
2	Short-circuit the outdoor unit COM terminal to the T-RUN terminal.	• The compressor and fan motor must turn ON.

● If there are no problems with the above, then check the indoor unit.

● Using the TEST/T-RUN terminals

T-RUN : Test run (compressor and fan motor turn ON.)
TEST/MV : Compresses time to 1/60th (accelerates operation by 60 times faster than normal). Fully opens the electric expansion valve.

TEST/T-RUN terminals



<Noise malfunction and electromagnetic interference>

An inverter A/C operates using pulse signal control and high frequencies. Therefore, it is susceptible to the effects of external noise, and is likely to cause electromagnetic interference with nearby wireless devices.

A noise filter is installed for ordinary use, preventing these problems. However, depending on the installation conditions, these effects may still occur. Please pay attention to the points listed below.

■ Noise malfunction

This refers to the application of high-frequency noise to the signal wires, resulting in abnormal signal pulses and malfunction.

Locations most susceptible to noise	Trouble	Correction
1. Locations near broadcast stations where there are strong electromagnetic waves 2. Locations near amateur radio (short wave) stations 3. Locations near electronic sewing machines and arc-welding machines	Either of the following trouble may occur. 1. The unit may stop suddenly during operation. 2. Indicator lamps may flicker.	(The fundamental concept is to make the system less susceptible to noise.) — Insulate for noise or distance from the noise source. — 1. Use shielded wires. 2. Move unit away from the noise source.

■ Electromagnetic interference

This refers to the noise generated by high-speed switching of the microcomputer and compressor. This noise radiates through space and returns to electric wiring, affecting any wireless devices (televisions, radios, etc.) located nearby.

Locations most susceptible to noise	Trouble	Correction
1. A television or radio is located near the A/C and A/C wiring. 2. The antenna cable for a television or radio is located close to the A/C and A/C wiring. 3. Locations where television and radio signals are weak.	1. Noise appears in the television picture, or the picture is distorted. 2. Static occurs in the radio sound.	1. Select a separate power source. 2. Keep the A/C and A/C wiring at least 1 meter away from wireless devices and antenna cables. 3. Change the wireless device's antenna to a high-sensitivity antenna. 4. Change the antenna cable to a BS coaxial cable. 5. Use a noise filter (for the wireless device). 6. Use a signal booster.

6. CHECKING ELECTRICAL COMPONENTS

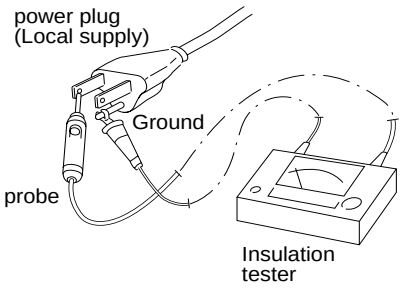
6-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds 2MΩ.

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)

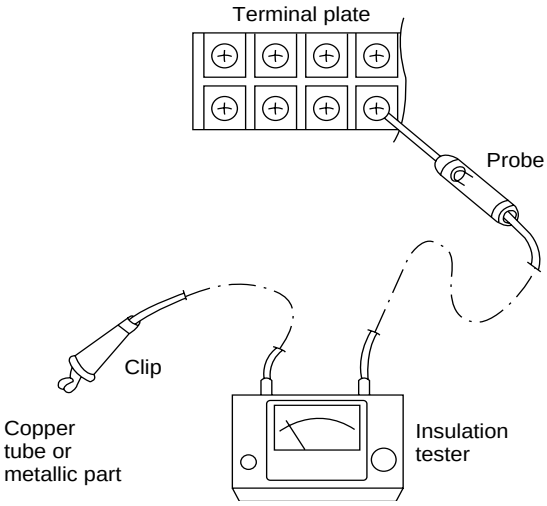


Fig. 2

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.

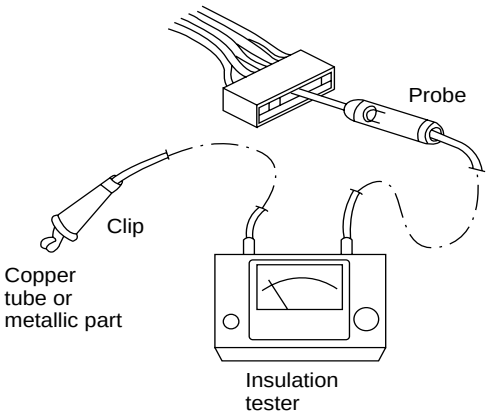


Fig. 3

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.

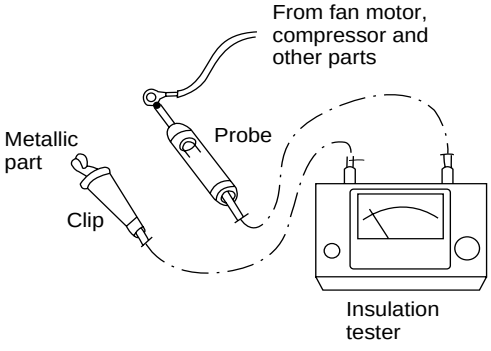


Fig. 4

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.

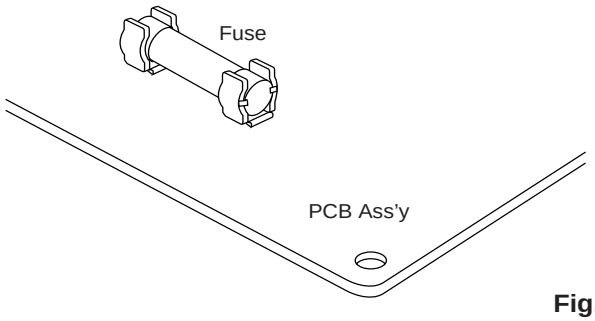


Fig. 5

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.

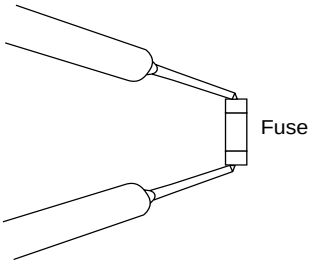


Fig. 6

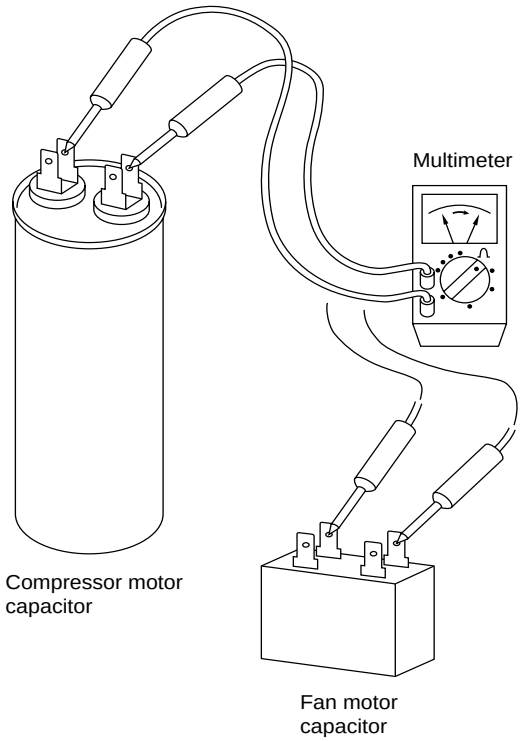


Fig. 7

Technibel Climatisation

R.D. 28 Reyrieux BP 131 - 01601 Trévoux CEDEX France
Tél. 04.74.00.92.92 - Fax 04.74.00.42.00