



## **TECHNICAL & SERVICE MANUAL**

AWR507/508CL	-	AER507SC
AWR509CL	-	AER509SC
AWR512CL	-	AER512SC
AWR507/508CL	-	AER507SCL
AWR509CL	-	AER509SCL
AWR512CL	-	AER512SCL

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## **SPLIT SYSTEM AIR CONDITIONER**

## Important!

### Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so 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.



**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 sales/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

**WARNING**

#### When Wiring



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

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- 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 or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

### 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 aluminum 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 units weight. It may be necessary to construct a strong wood or metal frame to provide added support.

#### ...In a Room

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

#### ...In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

#### ...In an Area with High 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

- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

### When Servicing

- Turn the power off at the main power box (mains) 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 you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

### Others



**CAUTION**

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

# Table of Contents

	Page
<b>1. OPERATING RANGE</b>	1
<b>2. SPECIFICATIONS</b>	
2-1. Unit Specifications	2
2-2. Major Component Specifications	8
2-3. Other Component Specifications	17
<b>3. DIMENSIONAL DATA</b>	18
<b>4. REFRIGERANT FLOW DIAGRAM</b>	22
<b>5. PERFORMANCE DATA</b>	
5-1. Performance charts	24
5-2. Air Throw Distance Chart	26
5-3. Cooling Capacity	28
<b>6. ELECTRICAL DATA</b>	
6-1. Electrical Characteristics	31
6-2. Electric Wiring Diagrams	34
<b>7. FUNCTION</b>	
7-1. Room Temperature Control	38
7-2. Dry Operation	39
7-3. Freeze Prevention	40
7-4. Outdoor Fan Speed Control	41
<b>8. TROUBLESHOOTING</b>	
8-1. Check before and after troubleshooting	42
8-2. Air conditioner does not operate	43
8-3. Some part of air conditioner does not operate	47
8-4. Air conditioner operates, but abnormalities are observed	50
8-5. If a sensor is defective	51
<b>9. REFRIGERANT R407C: SPECIAL PRECAUTIONS WHEN SERVICING THE UNIT</b>	
9-1. Characteristics of new refrigerant R407C	52
9-2. Checklist before serving	52
9-3. Tools specifically for R407C	53
9-4. For tubing installation procedures	53
9-5. In case of compressor malfunction	54
9-6. In case refrigerant is leaking	56
9-7. Charging additional refrigerant	58
9-8. Retro-fitting existing systems	58
<b>10. CHECKING ELECTRICAL COMPONENTS</b>	
10-1. Measurement of Insulation Resistance	59
10-2. Checking Continuity of Fuse on PCB Ass'y	60
10-3. Checking Motor Capacitor	60



# 1. OPERATING RANGE

● For COOLING ONLY models : AERXXXSC

	Temperature	Indoor Air Intake Temp.	Outdoor Air Intake Temp.
Cooling	Maximum	32°C D.B. / 23°C W.B.	43°C D.B.
	Minimum	19°C D.B. / 14°C W.B.	19°C D.B.

● For LOW AMBIENT cooling models : AERXXXSCL

	Temperature	Indoor Air Intake Temp.	Outdoor Air Intake Temp.
Cooling	Maximum	32°C D.B. / 23°C W.B.	43°C D.B.
	Minimum	19°C D.B. / 14°C W.B.	−15°C D.B.

## 2. SPECIFICATIONS

### 2-1. Unit Specifications

Indoor Unit      **AWR507CL - AWR508CL**  
Outdoor Unit    **AER507SC**

Power Source		220-240V ~ 50Hz			
Voltage rating		220/230/240 V			
Performance		Cooling			
Capacity	kW	2.05	/	2.05	/ 2.10
	BTU/h	7,000	/	7,000	/ 7,200
Air circulation (High)		m³/h 430			
Moisture removal (High)		Liters/h 0.9			
Electrical Rating		Cooling			
Available voltage range		V 198 ~ 264			
Running amperes		3.0	/	3.0	/ 3.0
Power input		640	/	660	/ 680
Power factor		97	/	96	/ 94
C.O.P.		3.2	/	3.1	/ 3.1
Compressor locked rotor amperes		15	/	16	/ 16
Features					
Controls / Temperature control		Microprocessor / I.C. thermostat			
Control unit		Wireless remote control unit			
Timer		ON/OFF 24 hours & Daily program,1-hour OFF			
Fan speeds		Indoor / Outdoor 3 and Auto / 1(Hi)			
Airflow direction (Indoor)	Horizontal	Manual			
	Vertical	Auto			
Air filter		Washable, Anti-Mold			
Compressor		Rotary (Hermetic)			
Refrigerant / Amount charged at shipment		g R407C / 860			
Refrigerant control		Capillary tube			
Operation sound	Indoor : Hi / Me / Lo	dB-A 37 / 31 / 29			
	Outdoor : Hi	dB-A 43			
Refrigerant tubing connections		Flare type			
Max. allowable tubing length at shipment		m 7.5			
Refrigerant tube diameter	Narrow tube	mm (in.) 6.35(1/4)			
	Wide tube	mm (in.) 9.52(3/8)			
Refrigerant tube kit / Accessories		Optional / Air Clean Filter			
Dimensions & Weight		Indoor Unit		Outdoor Unit	
Unit dimensions	Height	mm	270	525	
	Width	mm	805	790	
	Depth	mm	177	220	
Package dimensions	Height	mm	243	585	
	Width	mm	855	865	
	Depth	mm	332	320	
Weight	Net	kg	8.0	28.5	
	Shipping	kg	10.0	31.0	
Shipping volume		m³	0.07	0.16	

**Remarks:**  
Rating conditions are:  
Cooling : Indoor air temperature 27°C D.B. / 19°C W.B.  
Outdoor air temperature 35°C D.B. / 24°C W.B.

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor Unit     **AWR509CL**  
 Outdoor Unit    **AER509SC**

Power Source			220–240V ~ 50Hz		
Voltage rating			220/230/240 V		
Performance			Cooling		
Capacity	kW		2.60	/	2.60 / 2.65
	BTU/h		8,900	/	8,900 / 9,000
Air circulation (High)		m³/h	400 470		
Moisture removal (High)		Liters/h	0.8 1.1		
Electrical Rating			Cooling		
Available voltage range		V	198 ~ 264		
Running amperes		A	4.2	/	4.1 / 4.0
Power input		W	910	/	920 / 940
Power factor		%	98	/	98 / 98
C.O.P.		W/W	2.9	/	2.8 / 2.8
Compressor locked rotor amperes		A	19	/	20 / 21
Features					
Controls / Temperature control			Microprocessor / I.C. thermostat		
Control unit			Wireless remote control unit		
Timer			ON/OFF 24 hours & Daily program,1-hour OFF		
Fan speeds		Indoor / Outdoor	3 and Auto / 1(Hi)		
Airflow direction (Indoor)	Horizontal		Manual		
	Vertical		Auto		
Air filter			Washable, Anti-Mold		
Compressor			Rotary (Hermetic)		
Refrigerant / Amount charged at shipment		g	R407C / 760		
Refrigerant control			Capillary tube		
Operation sound	Indoor : Hi / Me / Lo	dB-A	38 / 33 / 31		
	Outdoor : Hi	dB-A	46		
Refrigerant tubing connections			Flare type		
Max. allowable tubing length at shipment		m	7.5		
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35(1/4)		
	Wide tube	mm (in.)	9.52(3/8)		
Refrigerant tube kit / Accessories			Optional / Air Clean Filter		
Dimensions & Weight			Indoor Unit		Outdoor Unit
Unit dimensions	Height	mm	270		525
	Width	mm	805		790
	Depth	mm	177		220
Package dimensions	Height	mm	243		585
	Width	mm	855		865
	Depth	mm	332		320
Weight	Net	kg	8.0		33.0
	Shipping	kg	10.0		35.5
Shipping volume		m³	0.07		0.16

**Remarks:**  
 Rating conditions are:  
 Cooling :    Indoor air temperature 27°C D.B. / 19°C W.B.  
                  Outdoor air temperature 35°C D.B. / 24°C W.B.

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor Unit      **AWR512CL**  
 Outdoor Unit    **AER512SC**

Power Source			220–240V ~ 50Hz		
Voltage rating			220/230/240 V		
Performance			Cooling		
Capacity	kW		3.45	/	3.45 / 3.50
	BTU/h		11,800	/	11,800 / 11,900
Air circulation (High)		m³/h	420 490		
Moisture removal (High)		Liters/h	1.5		
Electrical Rating			Cooling		
Available voltage range		V	198 ~ 264		
Running amperes		A	6.2	/	6.2 / 6.2
Power input		W	1,320	/	1,330 / 1,370
Power factor		%	97	/	93 / 92
C.O.P.		W/W	2.6	/	2.6 / 2.6
Compressor locked rotor amperes		A	32	/	33 / 35
Features					
Controls / Temperature control			Microprocessor / I.C. thermostat		
Control unit			Wireless remote control unit		
Timer			ON/OFF 24 hours & Daily program,1-hour OFF		
Fan speeds		Indoor / Outdoor	3 and Auto / 1(Hi)		
Airflow direction (Indoor)	Horizontal		Manual		
	Vertical		Auto		
Air filter			Washable, Anti-Mold		
Compressor			Rotary (Hermetic)		
Refrigerant / Amount charged at shipment		g	R407C / 860		
Refrigerant control			Capillary tube		
Operation sound	Indoor : Hi / Me / Lo	dB-A	39 / 35 / 33		
	Outdoor : Hi	dB-A	48		
Refrigerant tubing connections			Flare type		
Max. allowable tubing length at shipment		m	7.5		
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35(1/4)		
	Wide tube	mm (in.)	12.7(1/2)		
Refrigerant tube kit / Accessories			Optional / Air Clean Filter		
Dimensions & Weight			Indoor Unit	Outdoor Unit	
Unit dimensions	Height	mm	270	530	
	Width	mm	805	750	
	Depth	mm	177	270	
Package dimensions	Height	mm	243	593	
	Width	mm	855	895	
	Depth	mm	332	348	
Weight	Net	kg	8.0	35.5	
	Shipping	kg	10.0	38.0	
Shipping volume		m³	0.07	0.18	

**Remarks:**  
 Rating conditions are:  
 Cooling :    Indoor air temperature 27°C D.B. / 19°C W.B.  
                  Outdoor air temperature 35°C D.B. / 24°C W.B.

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Indoor Unit      **AWR507CL - AWR508CL**  
 Outdoor Unit    **AER507SCL**

Power Source			220–240V ~ 50Hz		
Voltage rating			220/230/240 V		
Performance			Cooling		
Capacity	kW		2.05	/	2.05 / 2.10
	BTU/h		7,000	/	7,000 / 7,200
Air circulation (High)		m³/h	430		
Moisture removal (High)		Liters/h	0.9		
Electrical Rating			Cooling		
Available voltage range		V	198 ~ 264		
Running amperes		A	3.0	/	3.0 / 3.0
Power input		W	640	/	660 / 680
Power factor		%	97	/	96 / 94
C.O.P.		W/W	3.2	/	3.1 / 3.1
Compressor locked rotor amperes		A	15	/	16 / 16
Features					
Controls / Temperature control			Microprocessor / I.C. thermostat		
Control unit			Wireless remote control unit		
Timer			ON/OFF 24 hours & Daily program,1-hour OFF		
Fan speeds		Indoor / Outdoor	3 and Auto / Auto (Hi,Me,Lo)		
Airflow direction (Indoor)	Horizontal		Manual		
	Vertical		Auto		
Air filter			Washable, Anti-Mold		
Compressor			Rotary (Hermetic)		
Refrigerant / Amount charged at shipment		g	R407C / 760		
Refrigerant control			Capillary tube		
Operation sound	Indoor : Hi / Me / Lo	dB-A	37 / 31 / 29		
	Outdoor : Hi	dB-A	43		
Refrigerant tubing connections			Flare type		
Max. allowable tubing length at shipment		m	7.5		
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35(1/4)		
	Wide tube	mm (in.)	9.52(3/8)		
Refrigerant tube kit / Accessories			Optional / Air Clean Filter		
Dimensions & Weight			Indoor Unit	Outdoor Unit	
Unit dimensions	Height	mm	270	525	
	Width	mm	805	790	
	Depth	mm	177	220	
Package dimensions	Height	mm	243	585	
	Width	mm	855	865	
	Depth	mm	332	320	
Weight	Net	kg	8.0	28.5	
	Shipping	kg	10.0	31.0	
Shipping volume		m³	0.07	0.16	

**Remarks:**  
 Rating conditions are:  
 Cooling :    Indoor air temperature 27°C D.B. / 19°C W.B.  
                  Outdoor air temperature 35°C D.B. / 24°C W.B.

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Indoor Unit      **AWR509CL**  
 Outdoor Unit    **AER509SCL**

Power Source			220–240V ~ 50Hz		
Voltage rating			220/230/240 V		
Performance			Cooling		
Capacity	kW		2.60	/	2.60 / 2.65
	BTU/h		8,900	/	8,900 / 9,000
Air circulation (High)		m³/h	470		
Moisture removal (High)		Liters/h	1.1		
Electrical Rating			Cooling		
Available voltage range		V	198 ~ 264		
Running amperes		A	4.2	/	4.1 / 4.0
Power input		W	910	/	920 / 940
Power factor		%	98	/	98 / 98
C.O.P.		W/W	2.9	/	2.8 / 2.8
Compressor locked rotor amperes		A	19	/	20 / 21
Features					
Controls / Temperature control			Microprocessor / I.C. thermostat		
Control unit			Wireless remote control unit		
Timer			ON/OFF 24 hours & Daily program,1-hour OFF		
Fan speeds		Indoor / Outdoor	3 and Auto / Auto (Hi,Me,Lo)		
Airflow direction (Indoor)	Horizontal		Manual		
	Vertical		Auto		
Air filter			Washable, Anti-Mold		
Compressor			Rotary (Hermetic)		
Refrigerant / Amount charged at shipment		g	R407C / 760		
Refrigerant control			Capillary tube		
Operation sound	Indoor : Hi / Me / Lo	dB-A	38 / 33 / 31		
	Outdoor : Hi	dB-A	46		
Refrigerant tubing connections			Flare type		
Max. allowable tubing length at shipment		m	7.5		
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35(1/4)		
	Wide tube	mm (in.)	9.52(3/8)		
Refrigerant tube kit / Accessories			Optional / Air Clean Filter		
Dimensions & Weight			Indoor Unit		Outdoor Unit
Unit dimensions	Height	mm	270		525
	Width	mm	805		790
	Depth	mm	177		220
Package dimensions	Height	mm	243		585
	Width	mm	855		865
	Depth	mm	332		320
Weight	Net	kg	8.0		33.0
	Shipping	kg	10.0		35.5
Shipping volume		m³	0.07		0.16

**Remarks:**  
 Rating conditions are:  
 Cooling :    Indoor air temperature 27°C D.B. / 19°C W.B.  
                  Outdoor air temperature 35°C D.B. / 24°C W.B.

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Indoor Unit     **AWR512CL**  
Outdoor Unit   **AER512SCL**

Power Source			220–240V ~ 50Hz		
Voltage rating			220/230/240 V		
Performance			Cooling		
Capacity	kW		3.45	/	3.45 / 3.50
	BTU/h		11,800	/	11,800 / 11,900
Air circulation (High)		m³/h	490		
Moisture removal (High)		Liters/h	1.5		
Electrical Rating			Cooling		
Available voltage range		V	198 ~ 264		
Running amperes		A	6.2	/	6.2 / 6.2
Power input		W	1,320	/	1,330 / 1,370
Power factor		%	97	/	93 / 92
C.O.P.		W/W	2.6	/	2.6 / 2.6
Compressor locked rotor amperes		A	32	/	33 / 35
Features					
Controls / Temperature control			Microprocessor / I.C. thermostat		
Control unit			Wireless remote control unit		
Timer			ON/OFF 24 hours & Daily program,1-hour OFF		
Fan speeds		Indoor / Outdoor	3 and Auto / Auto (Hi,Me,Lo)		
Airflow direction (Indoor)	Horizontal		Manual		
	Vertical		Auto		
Air filter			Washable, Anti-Mold		
Compressor			Rotary (Hermetic)		
Refrigerant / Amount charged at shipment		g	R407C / 860		
Refrigerant control			Capillary tube		
Operation sound	Indoor : Hi / Me / Lo	dB-A	39 / 35 / 33		
	Outdoor : Hi	dB-A	48		
Refrigerant tubing connections			Flare type		
Max. allowable tubing length at shipment		m	7.5		
Refrigerant tube diameter	Narrow tube	mm (in.)	6.35(1/4)		
	Wide tube	mm (in.)	12.7(1/2)		
Refrigerant tube kit / Accessories			Optional / Air Clean Filter		
Dimensions & Weight			Indoor Unit	Outdoor Unit	
Unit dimensions	Height	mm	270	530	
	Width	mm	805	750	
	Depth	mm	177	270	
Package dimensions	Height	mm	243	593	
	Width	mm	855	895	
	Depth	mm	332	348	
Weight	Net	kg	8.0	35.5	
	Shipping	kg	10.0	38.0	
Shipping volume		m³	0.07	0.18	

**Remarks:**  
Rating conditions are:  
Cooling : Indoor air temperature 27°C D.B. / 19°C W.B.  
Outdoor air temperature 35°C D.B. / 24°C W.B.

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## 2-2. Major Component Specifications

### 2-2-1. Indoor Unit

Indoor Unit      **AWR507CL - AWR508CL**

<b>Controller PCB</b>			
Part No.		POW-K8E(A), POW-K8E(B)	
Controls		Microprocessor	
Control circuit fuse		250 V 3.15 A	
<b>Remote Control Unit</b>		RCS-8PS3E	
<b>Fan &amp; Fan Motor</b>			
Type		Cross-flow	
Q'ty ... Dia. and length	mm	1 ... ø95 / L617	
Fan motor model ... Q'ty		KFB4Q-11H5P-S ... 1	
No. of poles ... rpm (230 V, High)		4 ... 1,130	
Nominal output	W	10	
Coil resistance (Ambient temp. 20°C)	Ω	BRN-WHT : 561.8 VLT-WHT : 197.4 VLT-ORG : 63.4 YEL-ORG : 155.7 YEL-PNK : 115.9	
Safety devices	Type	Internal fuse	
	Operating temp.	Open	°C
		Close	
Run capacitor	μF	0.6	
	VAC	440	
<b>Flap Motor</b>			
Type		Stepping motor	
Model		MP24GA1	
Rating		DC 12 V	
Coil resistance (Ambient temp. 25°C)	W	WHT – BLU (respectively 4 wires) : 380 ± 7%	
<b>Heat Exch. Coil</b>			
Coil		Aluminum plate fin / Copper tube	
Rows		2	
Fin pitch	mm	1.4	
Face area	m²	0.130	

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Indoor Unit      **AWR509CL**

<b>Controller PCB</b>			
Part No.		POW-K8E(A), POW-K8E(B)	
Controls		Microprocessor	
Control circuit fuse		250 V 3.15 A	
<b>Remote Control Unit</b>		RCS-8PS3E	
<b>Fan &amp; Fan Motor</b>			
Type		Cross-flow	
Q'ty ... Dia. and length	mm	1 ... ø95 / L617	
Fan motor model ... Q'ty		KFB4Q-11H5P-S ... 1	
No. of poles ... rpm (230 V, High)		4 ... 1,190	
Nominal output	W	10	
Coil resistance (Ambient temp. 20°C)	Ω	BRN-WHT : 561.8 VLT-WHT : 197.4 VLT-ORG : 63.4 YEL-ORG : 155.7 YEL-PNK : 115.9	
Safety devices	Type	Internal fuse	
	Operating temp.	Open	°C
		Close	
Run capacitor	μF	0.8	
	VAC	440	
<b>Flap Motor</b>			
Type		Stepping motor	
Model		MP24GA1	
Rating		DC 12 V	
Coil resistance (Ambient temp. 25°C)	W	WHT – BLU (respectively 4 wires) : 380 ± 7%	
<b>Heat Exch. Coil</b>			
Coil		Aluminum plate fin / Copper tube	
Rows		2	
Fin pitch	mm	1.4	
Face area	m²	0.130	

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Indoor Unit      **AWR512CL**

<b>Controller PCB</b>			
Part No.		POW-K8E(A), POW-K8E(B)	
Controls		Microprocessor	
Control circuit fuse		250 V 3.15 A	
<b>Remote Control Unit</b>		RCS-8PS3E	
<b>Fan &amp; Fan Motor</b>			
Type		Cross-flow	
Q'ty ... Dia. and length	mm	1 ... ø95 / L617	
Fan motor model ... Q'ty		KFB4Q-11H5P-S ... 1	
No. of poles ... rpm (230 V, High)		4 ... 1,230	
Nominal output	W	10	
Coil resistance (Ambient temp. 20°C)	Ω	BRN-WHT : 561.8 VLT-WHT : 197.4 VLT-ORG : 63.4 YEL-ORG : 155.7 YEL-PNK : 115.9	
Safety devices	Type	Internal fuse	
	Operating temp.	Open	°C
		Close	
Run capacitor	μF	1.0	
	VAC	440	
<b>Flap Motor</b>			
Type		Stepping motor	
Model		MP24GA1	
Rating		DC 12 V	
Coil resistance (Ambient temp. 25°C)	W	WHT – BLU (respectively 4 wires) : 380 ± 7%	
<b>Heat Exch. Coil</b>			
Coil		Aluminum plate fin / Copper tube	
Rows		2	
Fin pitch	mm	1.4	
Face area	m²	0.130	

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2-2-2. Outdoor Unit

Outdoor Unit     **AER507SC**

Compressor					
Type				Rotary (Hermetic)	
Compressor model				C-1RN60H5H 80206045	
Nominal output		W	600		
Compressor oil ... Amount		cc	FV68S ... 370		
Coil resistance (Ambient temp. 25°C)		Ω	C-R : 4.66		
			C-S : 8.89		
Safety devices	Type		External(OLR A)		External(OLR T)
	Overload relay		MRA99059-9201		CS-7C115
	Operating temp.	Open	°C	145±5	115±3
		Close	°C	69±11	95±5
	Operating amp.(Ambient temp. 25°C)		Trip in 6 to 16 sec. at 13A		—
Run capacitor		μF	17.5		
		VAC	400		
Crank case heater				—	

Fan & Fan Motor					
Type				Propeller	
Q'ty ... Dia.				1 ... ø400	
Fan motor model ... Q'ty				K35610-M01388 ... 1	
No. of poles ... rpm (230 V, High)				6 ... 680	
Nominal output		W	20		
Coil resistance (Ambient temp. 20°C)		Ω	BRN-WHT : 358±7%		
			PNK-WHT : 510±7%		
			— —		
Safety devices	Type		Internal protector		
	Operating temp.	Open	°C	150±10	
		Close	°C	Automatic reclosing	
Run capacitor		μF	1.5		
		VAC	440		

Heat Exch. Coil			
Coil		Aluminum plate fin / Copper tube	
Rows		1	
Fin pitch		mm	1.3
Face area		m²	0.377

External Finish		Acrylic baked-on enamel finish	
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DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit     **AER509SC**

Compressor											
Type						Rotary (Hermetic)					
Compressor model						C-RN80H5B 80228235					
Nominal output						W		800			
Compressor oil ... Amount						cc		FV68S ... 500			
Coil resistance (Ambient temp. 25°C)						Ω		C-R : 3.38			
								C-S : 7.49			
Safety devices	Type					External(OLR A)			External(OLR T)		
	Overload relay					MRA99109-9201			CS-7C115		
	Operating temp.		Open		°C	150±5			115±3		
			Close		°C	69±11			95±5		
	Operating amp.(Ambient temp. 25°C)					Trip in 6 to 16 sec. at 16A			—		
Run capacitor						μF		22.5			
						VAC		400			
Crank case heater						—					
Fan & Fan Motor											
Type						Propeller					
Q'ty ... Dia.						1 ... ø400					
Fan motor model ... Q'ty						K35610-M01388 ... 1					
No. of poles ... rpm (230 V, High)						6 ... 680					
Nominal output						W		20			
Coil resistance (Ambient temp. 20°C)						Ω		BRN-WHT : 358±7%			
								PNK-WHT : 510±7%			
						— —					
Safety devices	Type					Internal protector					
	Operating temp.		Open		°C	150±10					
			Close		°C	Automatic reclosing					
Run capacitor						μF		1.5			
						VAC		440			
Heat Exch. Coil											
Coil						Aluminum plate fin / Copper tube					
Rows						1					
Fin pitch						mm		1.3			
Face area						m²		0.377			
External Finish						Acrylic baked-on enamel finish					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit     **AER512SC**

Compressor					
Type				Rotary (Hermetic)	
Compressor model				C-RN110H5B 80235645	
Nominal output			W	1,100	
Compressor oil ... Amount			cc	FV68S ... 550	
Coil resistance (Ambient temp. 25°C)			Ω	C–R : 1.962	
				C–S : 5.38	
Safety devices	Type			External(OLR A)	External(OLR T)
	Overload relay			MRA98596-9201	CS-7C115
	Operating temp.	Open	°C	145±5	115±3
		Close	°C	69±11	95±5
	Operating amp.(Ambient temp. 25°C)			Trip in 6 to 16 sec. at 21A	
Run capacitor			μF	25.0	
			VAC	400	
Crank case heater				—	

Fan & Fan Motor					
Type				Propeller	
Q'ty ... Dia.				1 ... ø400	
Fan motor model ... Q'ty				K35610-M01402 ... 1	
No. of poles ... rpm (230 V, High)				6 ... 760	
Nominal output			W	20	
Coil resistance (Ambient temp. 20°C)			Ω	BRN-WHT : 256±7%	
				YEL-WHT : 227±7%	
				PNK-YEL : 103±7%	
Safety devices	Type			Internal protector	
	Operating temp.	Open	°C	150±10	
		Close	°C	Automatic reclosing	
Run capacitor			μF	2.0	
			VAC	440	

Heat Exch. Coil			
Coil		Aluminum plate fin / Copper tube	
Rows		1	
Fin pitch		mm	1.3
Face area		m²	0.379

External Finish		Acrylic baked-on enamel finish	
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DATA SUBJECT TO CHANGE WITHOUT NOTICE.



Outdoor Unit    **AER507SCL**

<b>Controller PCB</b>			
Part No.		POW-CL128E	
Control circuit fuse		250 V 3.15 A	
<b>Compressor</b>			
Type		Rotary (Hermetic)	
Compressor model		C-1RN60H5H 80206045	
Nominal output	W	600	
Compressor oil ... Amount	cc	FV68S ... 370	
Coil resistance (Ambient temp. 25°C)	Ω	C-R : 4.66 C-S : 8.89	
Safety devices	Type	External(OLR A)	External(OLR T)
	Overload relay	MRA99059-9201	CS-7C115
	Operating temp.	Open °C	115±3
		Close °C	95±5
	Operating amp.(Ambient temp. 25°C)	Trip in 6 to 16 sec. at 13A	
Run capacitor	μF	17.5	
	VAC	400	
Crank case heater		—	
<b>Fan &amp; Fan Motor</b>			
Type		Propeller	
Q'ty ... Dia.		1 ... ø400	
Fan motor model ... Q'ty		UE6T-21D5PA-S ... 1	
No. of poles ... rpm (230 V, High)		6 ... 650	
Nominal output	W	20	
Coil resistance (Ambient temp. 20°C)	Ω	BRN-WHT : 381.2 WHT-VLT : 268.1 VLT-YEL : 49.71 YEL-PNK : 84.6	
Safety devices	Type	Internal fuse	
	Operating temp.	Open °C	165±3
		Close °C	—
Run capacitor	μF	1.5	
	VAC	440	
<b>Heat Exch. Coil</b>			
Coil		Aluminum plate fin / Copper tube	
Rows		1	
Fin pitch	mm	1.3	
Face area	m²	0.377	
<b>External Finish</b>		Acrylic baked-on enamel finish	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit     **AER509SCL**

<b>Controller PCB</b>			
Part No.		POW-CL128E	
Control circuit fuse		250 V 3.15 A	
<b>Compressor</b>			
Type		Rotary (Hermetic)	
Compressor model		C-RN80H5B 80228235	
Nominal output	W	800	
Compressor oil ... Amount	cc	FV68S ... 500	
Coil resistance (Ambient temp. 25°C)	Ω	C-R : 3.38 C-S : 7.49	
Safety devices	Type	External(OLR A)	External(OLR T)
	Overload relay	MRA99109-9201	CS-7C115
	Operating temp.	Open °C	115±3
		Close °C	95±5
	Operating amp.(Ambient temp. 25°C)	Trip in 6 to 16 sec. at 16A	
Run capacitor	μF	22.5	
	VAC	400	
Crank case heater		—	
<b>Fan &amp; Fan Motor</b>			
Type		Propeller	
Q'ty ... Dia.		1 ... ø400	
Fan motor model ... Q'ty		UE6T-21D5PA-S ... 1	
No. of poles ... rpm (230 V, High)		6 ... 650	
Nominal output	W	20	
Coil resistance (Ambient temp. 20°C)	Ω	BRN-WHT : 381.2 WHT-VLT : 268.1 VLT-YEL : 49.71 YEL-PNK : 84.6	
Safety devices	Type	Internal fuse	
	Operating temp.	Open °C	165±3
		Close °C	—
Run capacitor	μF	1.5	
	VAC	440	
<b>Heat Exch. Coil</b>			
Coil		Aluminum plate fin / Copper tube	
Rows		1	
Fin pitch	mm	1.3	
Face area	m²	0.377	
<b>External Finish</b>		Acrylic baked-on enamel finish	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit     **AER512SCL**

<b>Controller PCB</b>			
Part No.		POW-CL128E	
Control circuit fuse		250 V 3.15 A	
<b>Compressor</b>			
Type		Rotary (Hermetic)	
Compressor model		C-RN110H5B 80235645	
Nominal output	W	1,100	
Compressor oil ... Amount	cc	FV68S ... 550	
Coil resistance (Ambient temp. 25°C)	$\Omega$	C-R : 1.962	
		C-S : 5.38	
Safety devices	Type	External(OLR A)	External(OLR T)
	Overload relay	MRA98596-9201	CS-7C115
	Operating temp.	Open °C	145±5
		Close °C	115±3
	Operating amp.(Ambient temp. 25°C)	Trip in 6 to 16 sec. at 21A	
Run capacitor	$\mu$ F	25.0	
	VAC	400	
Crank case heater		240 V 20 W	
<b>Fan &amp; Fan Motor</b>			
Type		Propeller	
Q'ty ... Dia.		1 ... ø400	
Fan motor model ... Q'ty		UE6T-21H5P-S ... 1	
No. of poles ... rpm (230 V, High)		6 ... 770	
Nominal output	W	20	
Coil resistance (Ambient temp. 20°C)	$\Omega$	WHT-BRN : 264.5	
		WHT-VLT : 227.9	
		VLT-YEL : 22.53	
		YEL-PNK : 42.37	
Safety devices	Type	Internal fuse	
	Operating temp.	Open °C	145±2
		Close °C	—
Run capacitor	$\mu$ F	2.0	
	VAC	440	
<b>Heat Exch. Coil</b>			
Coil		Aluminum plate fin / Copper tube	
Rows		1	
Fin pitch	mm	1.3	
Face area	m <sup>2</sup>	0.379	
<b>External Finish</b>		Acrylic baked-on enamel finish	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-3. Other Component Specifications

Indoor Unit      **AWR507CL - AWR508CL - AWR509CL - AWR512CL**

Transformer (TR)		ATR-J105	
Rating	Primary	AC 230V, 50/60Hz	
	Secondary	19V, 0.526A	
	Capacity	10VA	
Coil resistance	Ω (at 21°C)	Primary (WHT – WHT):	205 ± 10%
		Secondary (BRN – BRN):	2.0 ± 10%
Thermal cut-off temp.		150°C	

Thermistor (Coil sensor)		DTN-TKS131B	
Resistance	kΩ	0°C	15.0 ± 2%

Thermistor (Room sensor)		DTN-TKS134B	
Resistance	kΩ	25°C	5.0 ± 3%

Outdoor Unit      **AER507SC - AER509SC - AER512SC**

Power Relay (PR)		G7L-2A-TUB	
Coil rating		AC 200–240V, 50/60Hz	
Coil resistance	Ω (at 23°C)	21 ± 15%	
Contact rating		AC 220V, 25A	

Outdoor Unit      **AER507SCL - AER509SCL - AER512SCL**

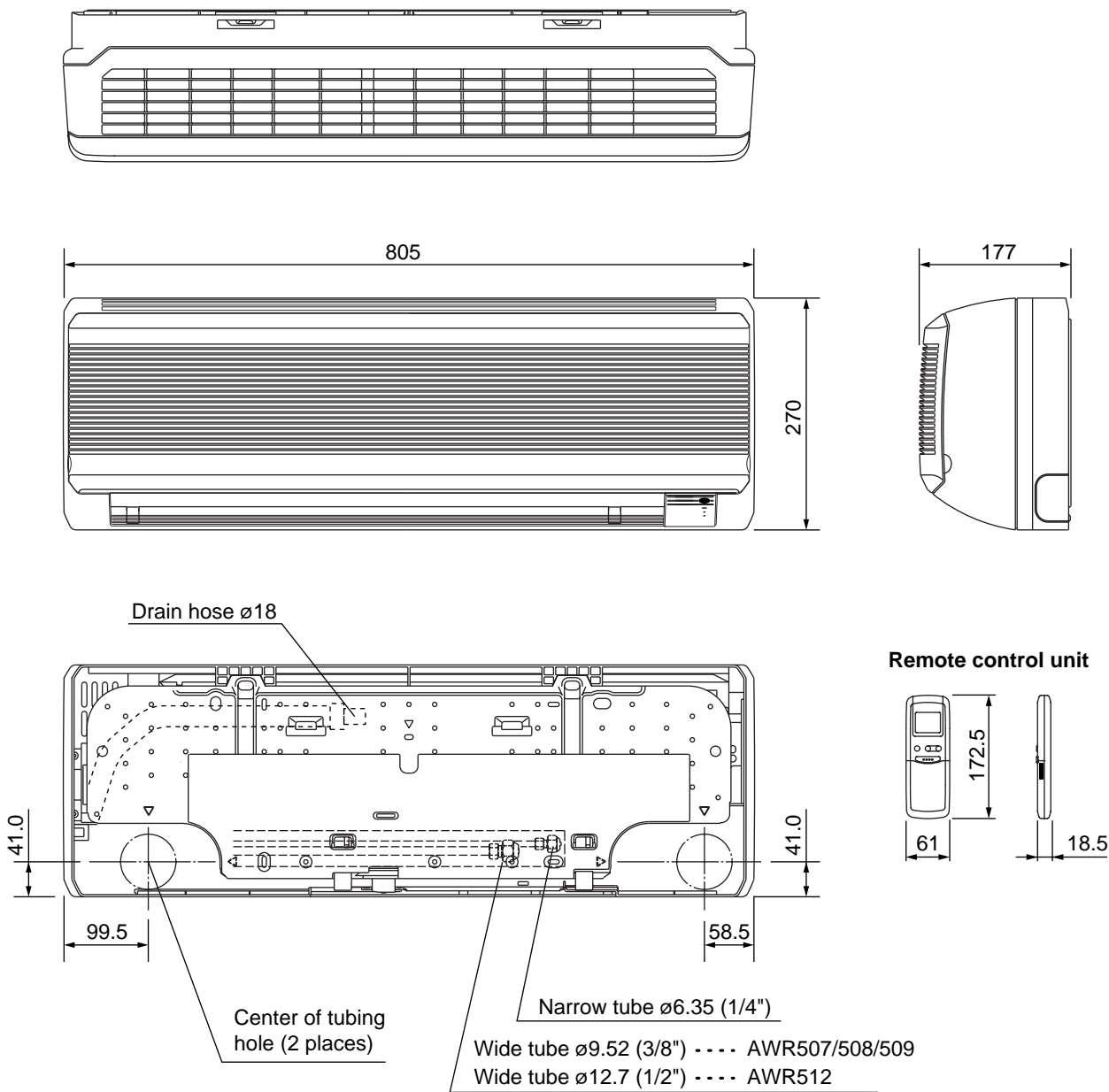
Transformer (TR2)		ATR-J65	
Rating	Primary	AC 230V, 50Hz	
	Secondary	19V, 0.315A	
	Capacity	6VA	
Coil resistance	Ω (at 22°C)	Primary (WHT – WHT):	455 ± 10%
		Secondary (BRN – BRN):	2.85 ± 10%
Thermal cut-off temp.		145°C	

Power Relay (PR)		G7L-2A-TUB	
Coil rating		AC 200–240V, 50/60Hz	
Coil resistance	Ω (at 23°C)	21 ± 15%	
Contact rating		AC 220V, 25A	

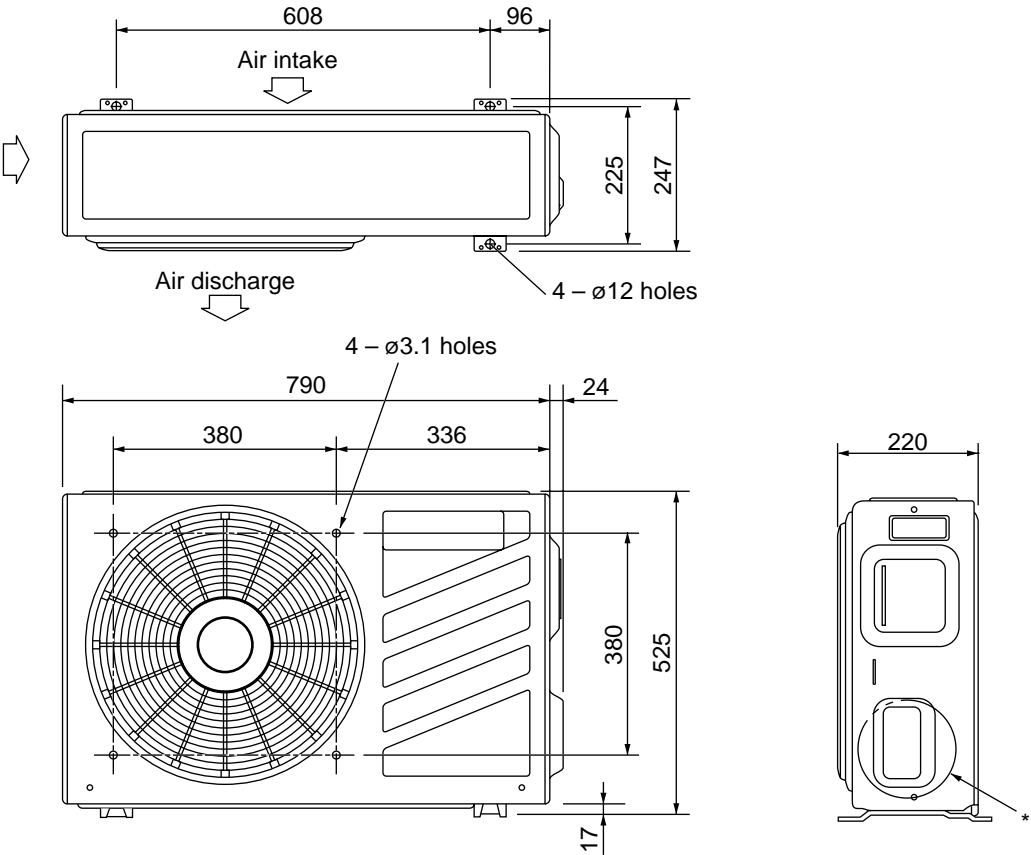
Thermistor (Coil sensor TH1)		PCB-41E-S14 or PBC-41E-S4			
Resistance	kΩ	–20°C	40.1± 5%	20°C	6.5± 5%
		–10°C	24.4± 5%	30°C	4.4± 5%
		0°C	15.3± 5%	40°C	3.0± 5%
		10°C	9.9± 5%	50°C	2.1± 5%

### 3. DIMENSIONAL DATA

Indoor Unit     **AWR507CL AWR508CL AWR509CL**  
                     **AWR512CL**

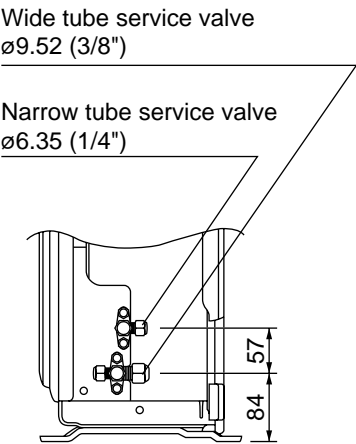


Unit : mm



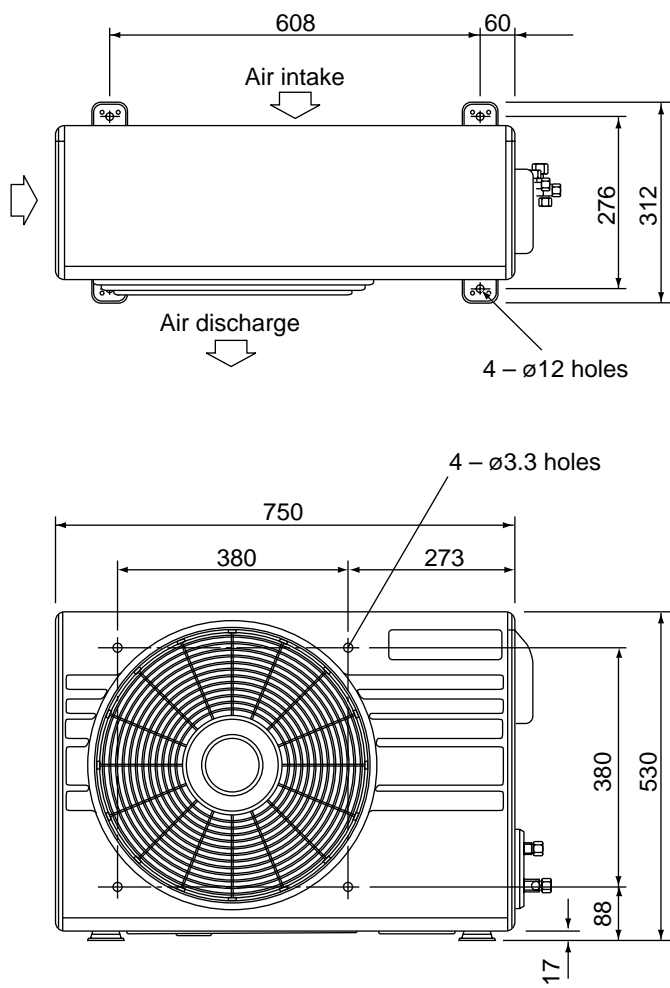
**NOTE**

<Location of Service Valve>  
Service valves are located behind the side panel.  
See the illustration below (\*).



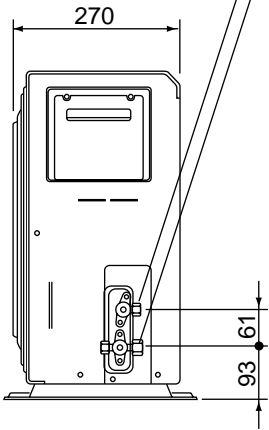
Unit : mm

Outdoor Unit    **AER512SC**



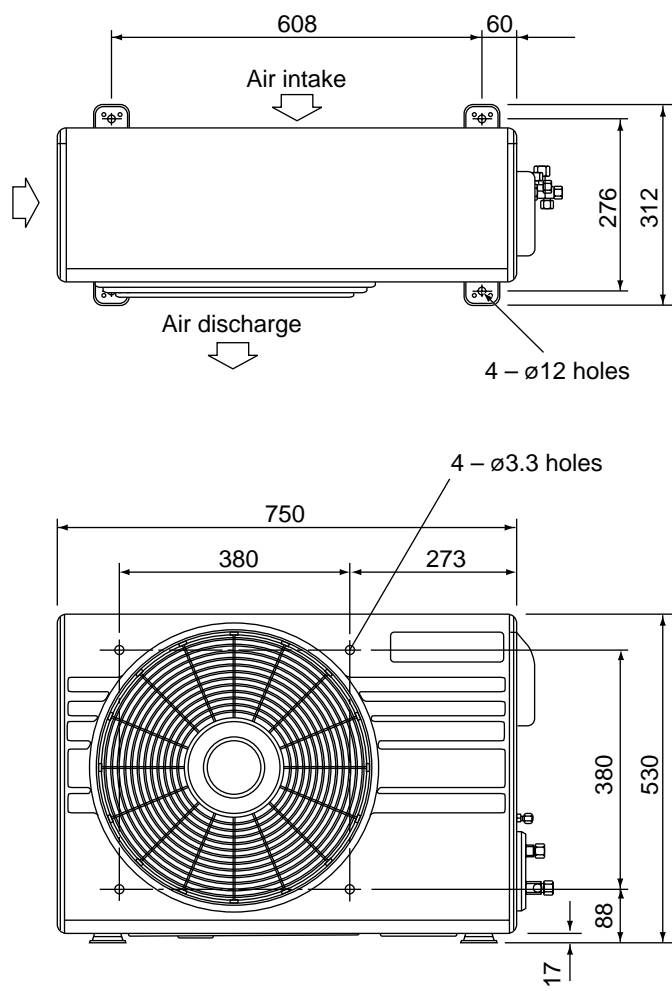
Wide tube service valve  
 $\phi 12.7$  (1/2")

Narrow tube service valve  
 $\phi 6.35$  (1/4")



Unit : mm

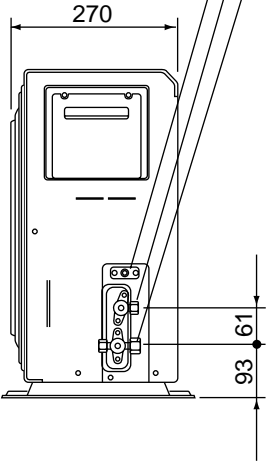
Outdoor Unit : AER512SCL



Wide tube service valve  
 $\phi 12.7$  (1/2")

Narrow tube service valve  
 $\phi 6.35$  (1/4")

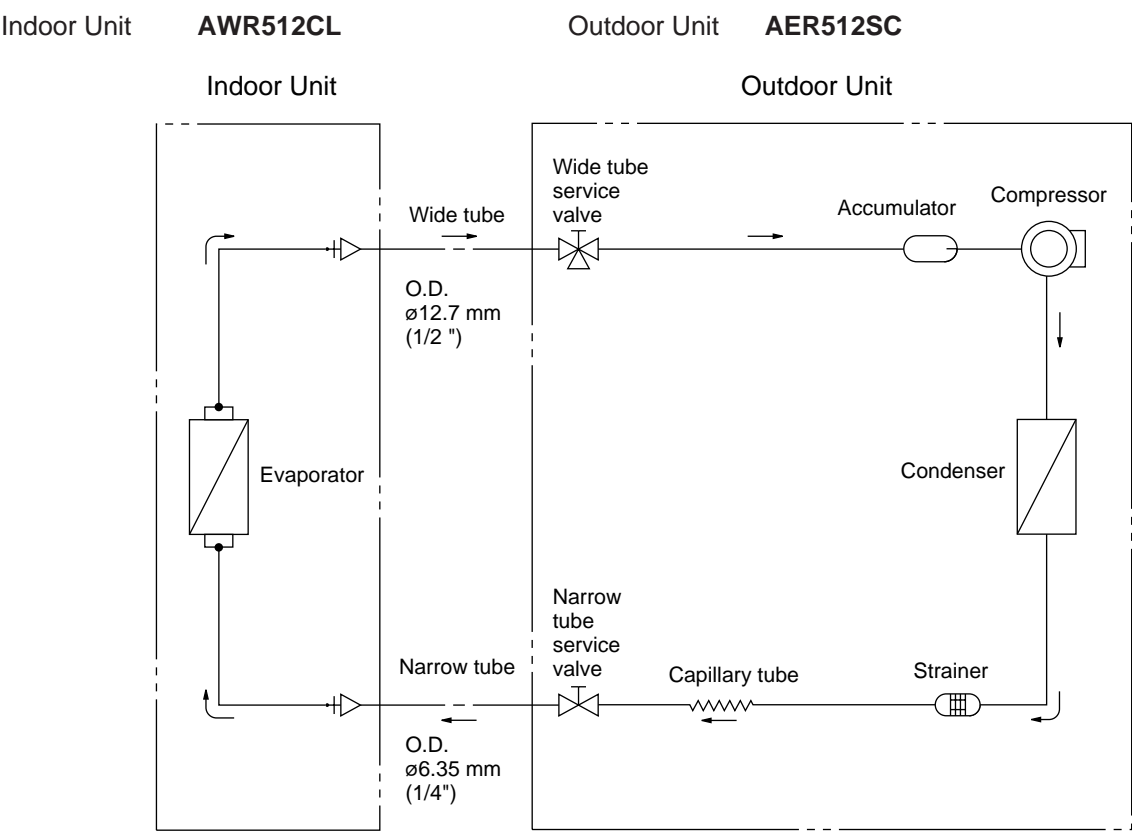
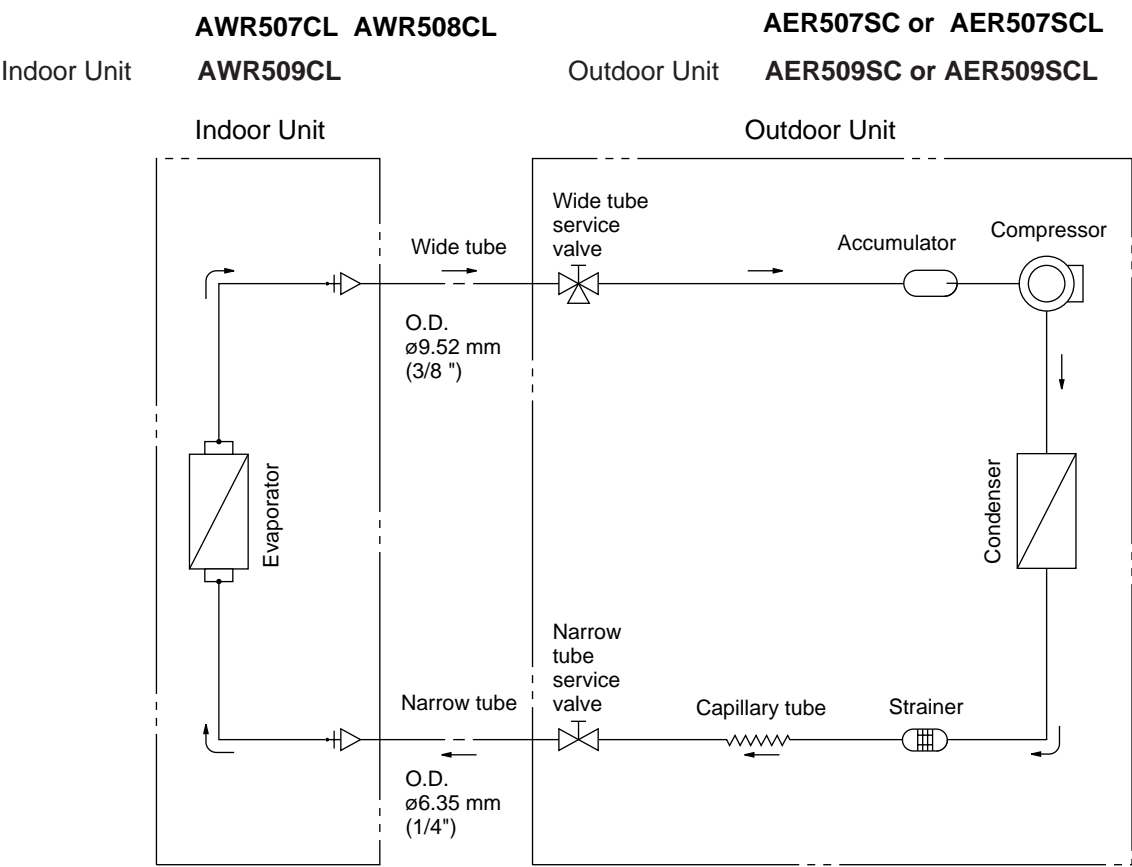
Check port  $\phi 6.35$  (1/4")



Unit : mm

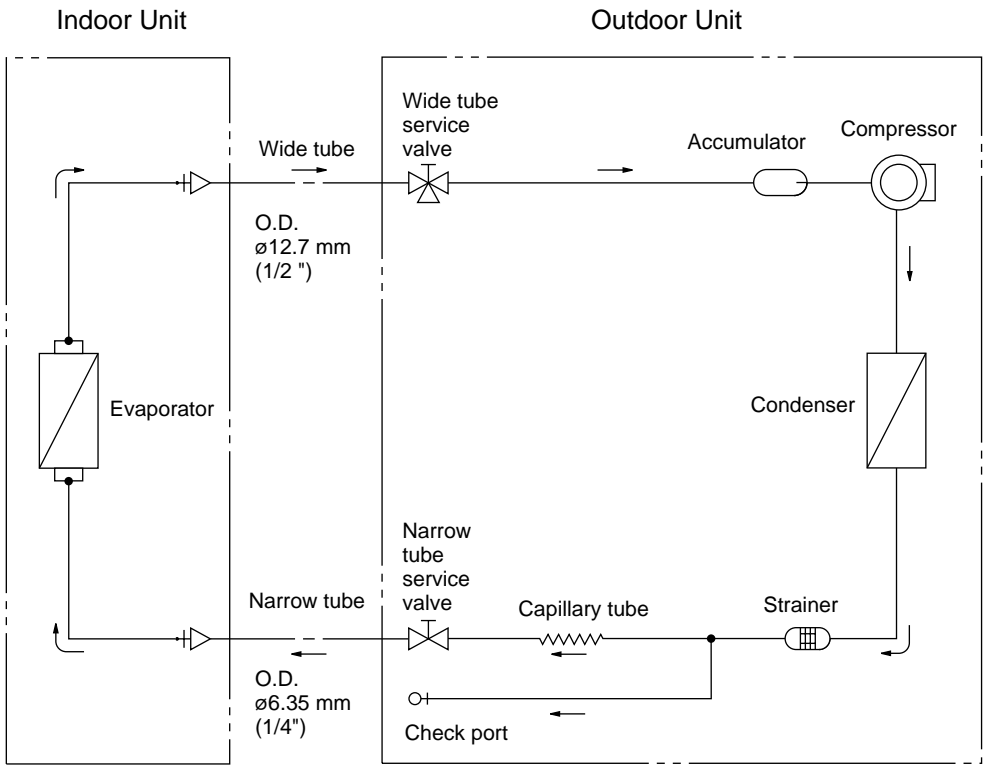


# 4. REFRIGERANT FLOW DIAGRAM



Indoor Unit      **AWR512CL**

Outdoor Unit      **AER512SCL**



## Insulation of Refrigerant Tubing

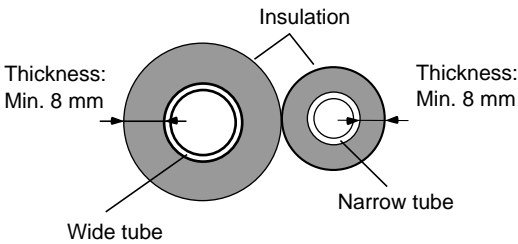
### IMPORTANT

Because capillary tubing is used in the outdoor unit, both the wide and narrow tubes of this air conditioner become cold. To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated** with a proper insulation material. The thickness of the insulation should be a min. 8 mm.



**CAUTION**

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

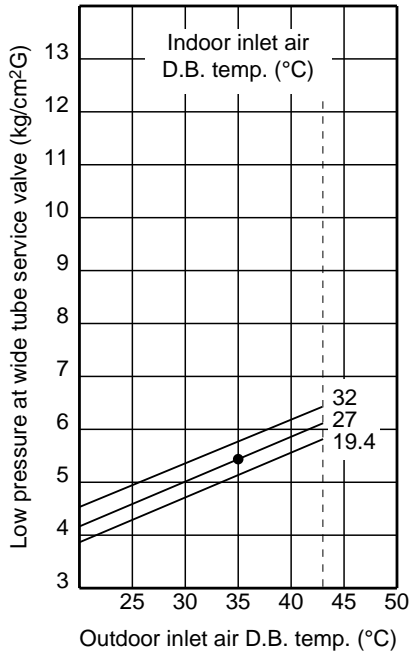
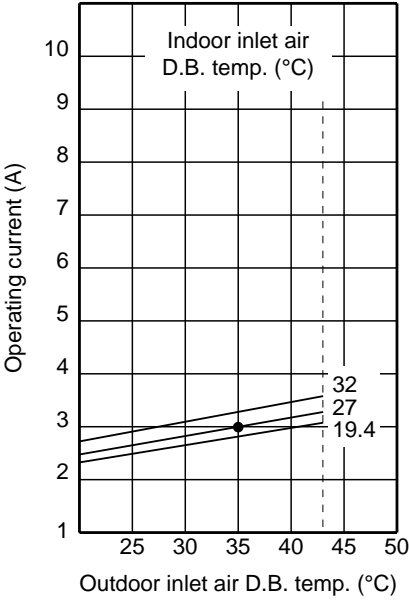


# 5. PERFORMANCE DATA

## 5-1. Performance charts

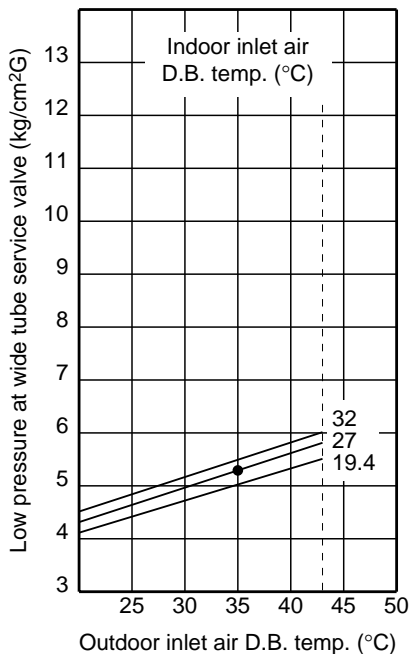
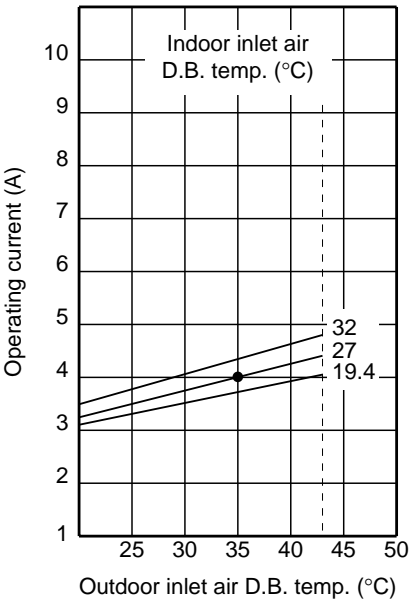
Indoor Unit     **AWR507/508C**  
Outdoor Unit   **AER507SC or AER507SCL**

Cooling Characteristics



Indoor Unit     **AWR509CL**  
Outdoor Unit   **AER509SC or AER509SCL**

Cooling Characteristics

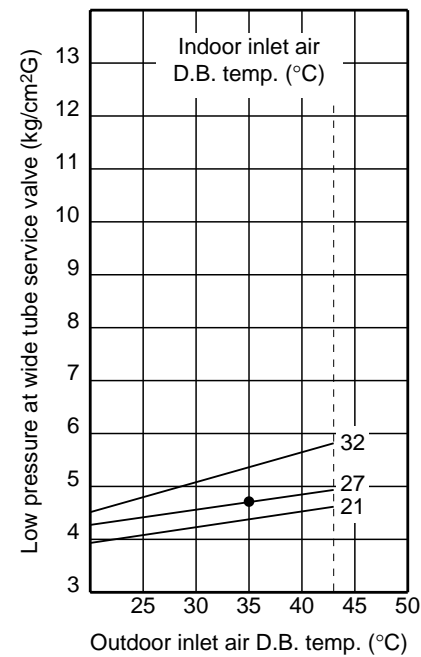
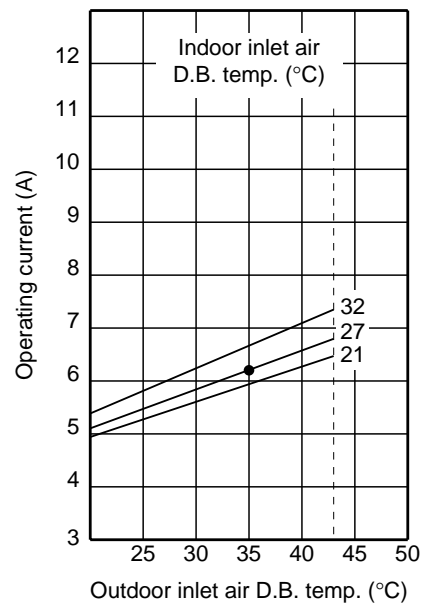


**NOTE**

● ..... Points of Rating condition  
Black dots in above charts indicate the following rating conditions.  
Cooling: Indoor air temperature 27°C D.B./19°C W.B.  
Outdoor air temperature 35°C D.B./24°C W.B.

Indoor Unit      **AWR512CL**  
Outdoor Unit    **AER512SC or AER512SCL**

Cooling Characteristics



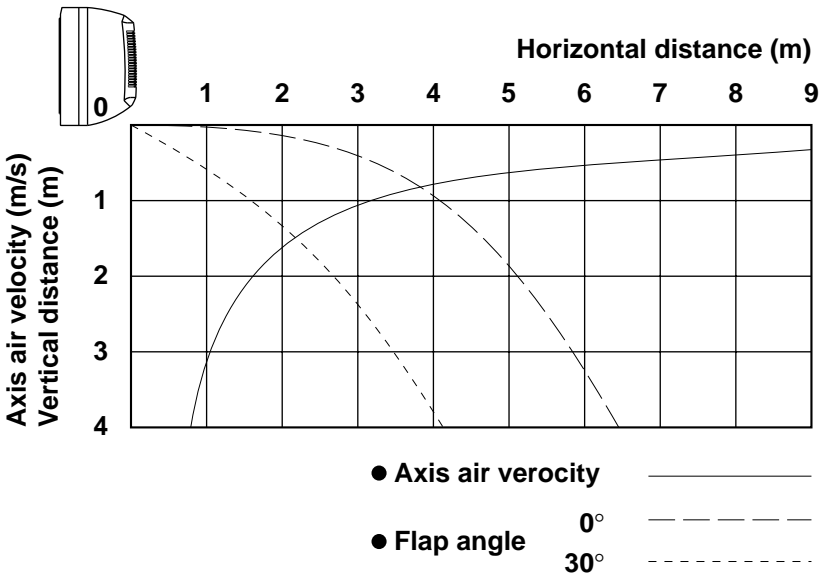
**NOTE**

● ..... Points of Rating condition  
Black dots in above charts indicate the following rating conditions.  
Cooling: Indoor air temperature 27°C D.B./19°C W.B.  
Outdoor air temperature 35°C D.B./24°C W.B.

5-2. Air Throw Distance Chart

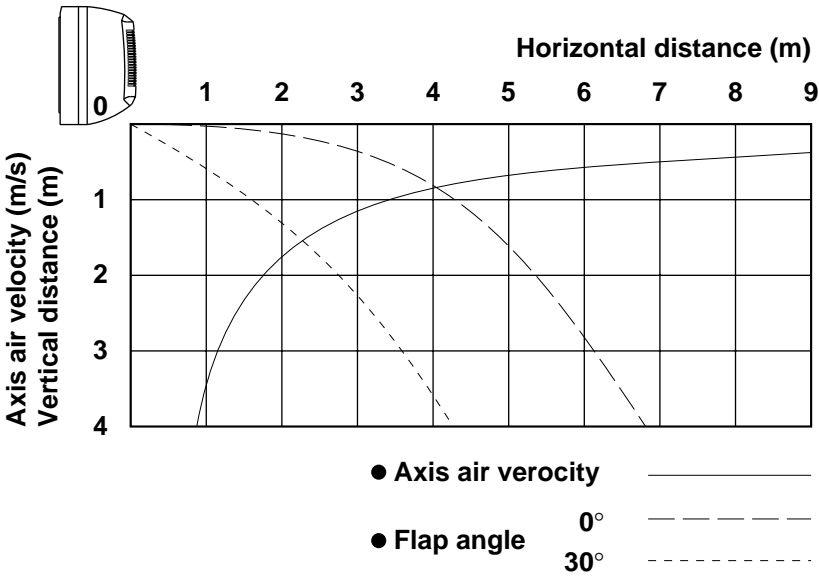
Indoor Unit      AWR507CL - AWR508CL

Room air temp. : 27°C  
Fan speed : High



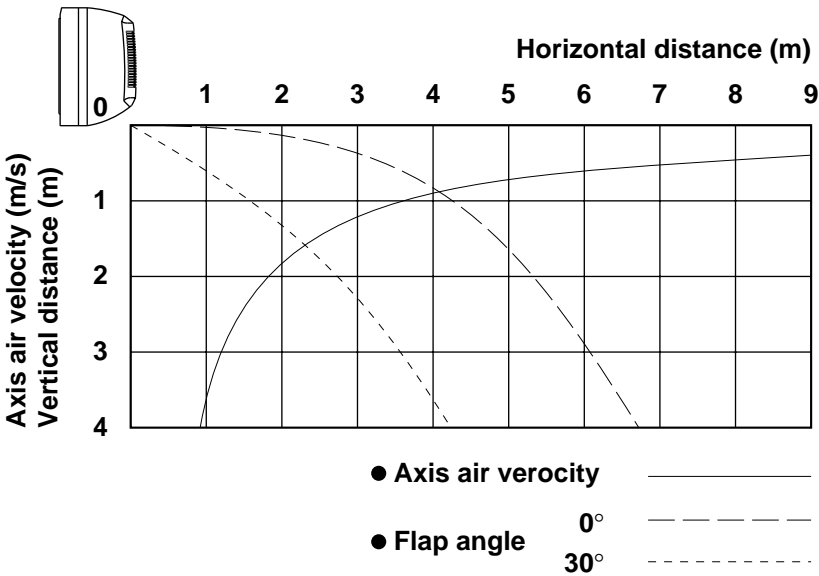
Indoor Unit      **AWR509CL**

Room air temp. : 27°C  
Fan speed : High



Indoor Unit      **AWR512CL**

Room air temp. : 27°C  
Fan speed : High



### 5-3. Cooling Capacity

Indoor Unit       **AWR507CL - AWR508CL**  
Outdoor Unit       **AER507SC or AER507SCL**

240V Single Phase 50Hz

RATING CAPACITY		2.10 kW						
AIR FLOW RATE		430 m³/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	45
15		TC	2.12	2.02	1.93	1.84	1.73	1.59
		CM	0.45	0.49	0.52	0.56	0.62	0.68
	21	SHC	1.53	1.48	1.44	1.40	1.34	1.28
	23	SHC	1.74	1.70	1.66	1.61	1.56	1.50
	25	SHC	1.96	1.92	1.87	1.83	1.73	1.59
	27	SHC	2.12	2.02	1.93	1.84	1.73	1.59
	29	SHC	2.12	2.02	1.93	1.84	1.73	1.59
	31	SHC	2.12	2.02	1.93	1.84	1.73	1.59
17		TC	2.27	2.17	2.07	1.97	1.86	1.71
		CM	0.46	0.50	0.53	0.57	0.63	0.69
	21	SHC	1.30	1.26	1.22	1.17	1.12	1.06
	23	SHC	1.52	1.48	1.43	1.39	1.34	1.28
	25	SHC	1.74	1.69	1.65	1.61	1.55	1.49
	27	SHC	1.95	1.91	1.87	1.82	1.77	1.71
	29	SHC	2.17	2.13	2.07	1.97	1.86	1.71
	31	SHC	2.27	2.17	2.07	1.97	1.86	1.71
19		TC	2.42	2.31	2.21	# 2.10	1.97	1.82
		CM	0.48	0.51	0.55	0.59	0.65	0.71
	21	SHC	1.07	1.03	0.99	0.94	0.89	0.83
	23	SHC	1.29	1.24	1.20	1.16	1.11	1.05
	25	SHC	1.51	1.46	1.42	1.38	1.33	1.26
	27	SHC	1.72	1.68	1.63	1.59	1.54	1.48
	29	SHC	1.94	1.89	1.85	1.81	1.76	1.70
	31	SHC	2.15	2.11	2.07	2.03	1.97	1.82
21		TC	2.56	2.45	2.34	2.23	2.09	1.93
		CM	0.49	0.53	0.57	0.61	0.67	0.73
	23	SHC	1.06	1.01	0.97	0.93	0.88	0.82
	25	SHC	1.27	1.23	1.19	1.14	1.10	1.03
	27	SHC	1.49	1.45	1.40	1.36	1.31	1.25
	29	SHC	1.71	1.66	1.62	1.58	1.53	1.47
23	31	SHC	1.92	1.88	1.84	1.79	1.75	1.68
		TC	2.72	2.60	2.48	2.34	2.19	2.03
		CM	0.50	0.54	0.58	0.62	0.69	0.75
	25	SHC	1.03	0.99	0.94	0.89	0.84	0.79
	27	SHC	1.24	1.20	1.16	1.11	1.06	1.01
	29	SHC	1.46	1.42	1.38	1.33	1.28	1.23
	31	SHC	1.68	1.64	1.59	1.54	1.49	1.44

TC : Total Cooling Capacity (kW)  
SHC : Sensible Heat Capacity (kW)  
CM : Compressor Input (kW)  
Rating conditions (#Mark) are  
Outdoor Ambient Temp. 35°C D.B.  
Indoor Unit Entering Air Temp. 27°C D.B. / 19°C W.B.

Indoor Unit     **AWR509CL**  
 Outdoor Unit   **AER509SC or AER509SCL**

240V Single Phase 50Hz

RATING CAPACITY		2.65 kW						
AIR FLOW RATE		470 m³/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	45
15		TC	2.67	2.55	2.44	2.32	2.18	2.01
		CM	0.64	0.70	0.75	0.80	0.85	0.91
	21	SHC	1.84	1.78	1.72	1.66	1.60	1.51
	23	SHC	2.07	2.01	1.95	1.90	1.83	1.75
	25	SHC	2.30	2.24	2.19	2.13	2.06	1.98
	27	SHC	2.53	2.48	2.42	2.32	2.18	2.01
	29	SHC	2.67	2.55	2.44	2.32	2.18	2.01
	31	SHC	2.67	2.55	2.44	2.32	2.18	2.01
17		TC	2.86	2.74	2.62	2.49	2.34	2.15
		CM	0.66	0.72	0.77	0.82	0.88	0.94
	21	SHC	1.60	1.54	1.48	1.42	1.36	1.27
	23	SHC	1.83	1.77	1.71	1.66	1.59	1.51
	25	SHC	2.06	2.00	1.95	1.89	1.82	1.74
	27	SHC	2.30	2.24	2.18	2.12	2.06	1.97
	29	SHC	2.53	2.47	2.41	2.36	2.29	2.15
	31	SHC	2.76	2.70	2.62	2.49	2.34	2.15
19		TC	3.05	2.92	2.78	# 2.65	2.49	2.29
		CM	0.68	0.74	0.79	0.85	0.91	0.96
	21	SHC	1.35	1.29	1.23	1.18	1.11	1.03
	23	SHC	1.58	1.52	1.46	1.41	1.34	1.26
	25	SHC	1.81	1.75	1.70	1.64	1.57	1.49
	27	SHC	2.05	1.99	1.93	1.87	1.81	1.73
	29	SHC	2.28	2.22	2.16	2.11	2.04	1.96
	31	SHC	2.51	2.45	2.40	2.34	2.27	2.19
21		TC	3.23	3.09	2.95	2.81	2.64	2.43
		CM	0.70	0.76	0.81	0.87	0.93	0.99
	23	SHC	1.33	1.27	1.21	1.16	1.09	1.01
	25	SHC	1.56	1.50	1.45	1.39	1.32	1.24
	27	SHC	1.79	1.73	1.68	1.62	1.56	1.48
	29	SHC	2.02	1.97	1.91	1.86	1.79	1.71
23	31	SHC	2.26	2.20	2.14	2.09	2.02	1.94
		TC	3.43	3.28	3.12	2.95	2.76	2.57
		CM	0.72	0.78	0.83	0.89	0.96	1.02
	25	SHC	1.29	1.24	1.18	1.11	1.05	0.98
	27	SHC	1.52	1.47	1.41	1.35	1.28	1.21
	29	SHC	1.76	1.70	1.64	1.58	1.51	1.45
	31	SHC	1.99	1.93	1.88	1.81	1.75	1.68

TC : Total Cooling Capacity (kW)  
 SHC : Sensible Heat Capacity (kW)  
 CM : Compressor Input (kW)  
 Rating conditions (#Mark) are  
     Outdoor Ambient Temp. 35°C D.B.  
     Indoor Unit Entering Air Temp. 27°C D.B. / 19°C W.B.



Indoor Unit      **AWR512CL**  
Outdoor Unit    **AER512SC or AER512SCL**

240V Single Phase 50Hz

RATING CAPACITY		3.50 kW						
AIR FLOW RATE		490 m³/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	45
15		TC	3.53	3.37	3.22	3.07	2.88	2.65
		CM	0.96	1.04	1.11	1.19	1.29	1.39
	21	SHC	2.31	2.22	2.14	2.06	1.96	1.84
	23	SHC	2.55	2.46	2.38	2.30	2.20	2.08
	25	SHC	2.79	2.70	2.62	2.54	2.44	2.32
	27	SHC	3.03	2.95	2.86	2.78	2.68	2.57
	29	SHC	3.27	3.19	3.10	3.02	2.88	2.65
	31	SHC	3.51	3.37	3.22	3.07	2.88	2.65
17		TC	3.78	3.62	3.45	3.29	3.09	2.85
		CM	0.98	1.06	1.14	1.22	1.32	1.43
	21	SHC	2.06	1.98	1.89	1.81	1.71	1.60
	23	SHC	2.31	2.22	2.13	2.05	1.95	1.84
	25	SHC	2.55	2.46	2.37	2.29	2.20	2.08
	27	SHC	2.79	2.70	2.62	2.53	2.44	2.32
	29	SHC	3.03	2.94	2.86	2.77	2.68	2.56
	31	SHC	3.27	3.18	3.10	3.01	2.92	2.80
19		TC	4.03	3.85	3.68	# 3.50	3.29	3.03
		CM	1.01	1.10	1.17	1.26	1.36	1.47
	21	SHC	1.80	1.72	1.63	1.55	1.45	1.34
	23	SHC	2.04	1.96	1.87	1.79	1.69	1.58
	25	SHC	2.28	2.20	2.11	2.03	1.94	1.82
	27	SHC	2.52	2.44	2.35	2.27	2.18	2.06
	29	SHC	2.77	2.68	2.60	2.51	2.42	2.30
	31	SHC	3.01	2.92	2.84	2.75	2.66	2.54
21		TC	4.27	4.08	3.90	3.71	3.49	3.21
		CM	1.04	1.13	1.21	1.30	1.40	1.51
	23	SHC	1.77	1.69	1.61	1.53	1.43	1.32
	25	SHC	2.01	1.93	1.85	1.77	1.67	1.56
	27	SHC	2.26	2.17	2.09	2.01	1.91	1.80
	29	SHC	2.50	2.41	2.33	2.25	2.15	2.04
23	31	SHC	2.74	2.65	2.57	2.49	2.39	2.28
		TC	4.53	4.33	4.13	3.90	3.65	3.39
		CM	1.06	1.16	1.24	1.33	1.44	1.55
	25	SHC	1.73	1.65	1.56	1.47	1.37	1.28
	27	SHC	1.97	1.89	1.80	1.71	1.61	1.52
	29	SHC	2.21	2.13	2.04	1.95	1.85	1.76
	31	SHC	2.45	2.37	2.29	2.19	2.10	2.00

TC : Total Cooling Capacity (kW)  
SHC : Sensible Heat Capacity (kW)  
CM : Compressor Input (kW)  
Rating conditions (#Mark) are  
Outdoor Ambient Temp. 35°C D.B.  
Indoor Unit Entering Air Temp. 27°C D.B. / 19°C W.B.

# 6. ELECTRICAL DATA

## 6-1. Electrical Characteristics

Indoor Unit      **AWR507CL - AWR508CL**  
Outdoor Unit    **AER507SC**

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220 – 240V ~ 50Hz			
Rating Conditions	Running Amps.	A	0.11 / 0.12	0.25 / 0.27	2.6 / 2.6	3.0 / 3.0
	Power Input	kW	0.023 / 0.027	0.054 / 0.063	0.56 / 0.59	0.64 / 0.68
Full Load Conditions	Running Amps.	A	0.11 / 0.12	0.25 / 0.27	3.3 / 3.2	3.7 / 3.6
	Power Input	kW	0.023 / 0.027	0.054 / 0.063	0.73 / 0.75	0.81 / 0.84

Rating Conditions    : Indoor Air Temperature 27°C D.B. / 19°C W.B.  
                                 Outdoor Air Temperature 35°C D.B.  
Full Load Conditions : Indoor Air Temperature 32°C D.B. / 23°C W.B.  
                                 Outdoor Air Temperature 43°C D.B.

Indoor Unit      **AWR507CL - AWR508CL**  
Outdoor Unit    **AER507SCL**

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220 – 240V ~ 50Hz			
Rating Conditions	Running Amps.	A	0.11 / 0.12	0.23 / 0.25	2.7 / 2.6	3.0 / 3.0
	Power Input	kW	0.023 / 0.027	0.051 / 0.059	0.57 / 0.59	0.64 / 0.68
Full Load Conditions	Running Amps.	A	0.11 / 0.12	0.23 / 0.25	3.3 / 3.2	3.6 / 3.5
	Power Input	kW	0.023 / 0.027	0.051 / 0.059	0.72 / 0.74	0.79 / 0.83

Rating Conditions    : Indoor Air Temperature 27°C D.B. / 19°C W.B.  
                                 Outdoor Air Temperature 35°C D.B.  
Full Load Conditions : Indoor Air Temperature 32°C D.B. / 23°C W.B.  
                                 Outdoor Air Temperature 43°C D.B.

Indoor Unit      **AWR509CL**  
 Outdoor Unit    **AER509SC**

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220 – 240V ~ 50Hz			
Rating Conditions	Running Amps.	A	0.11 / 0.12	0.25 / 0.27	3.8 / 3.6	4.2 / 4.0
	Power Input	kW	0.025 / 0.029	0.054 / 0.063	0.83 / 0.85	0.91 / 0.94
Full Load Conditions	Running Amps.	A	0.11 / 0.12	0.25 / 0.27	4.6 / 4.3	5.0 / 4.7
	Power Input	kW	0.025 / 0.029	0.054 / 0.063	1.01 / 1.02	1.09 / 1.11

Rating Conditions    : Indoor Air Temperature 27°C D.B. / 19°C W.B.  
                                  Outdoor Air Temperature 35°C D.B.  
 Full Load Conditions : Indoor Air Temperature 32°C D.B. / 23°C W.B.  
                                  Outdoor Air Temperature 43°C D.B.

Indoor Unit      **AWR512CL**  
 Outdoor Unit    **AER512SC**

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220 – 240V ~ 50Hz			
Rating Conditions	Running Amps.	A	0.13 / 0.14	0.30 / 0.32	5.8 / 5.7	6.2 / 6.2
	Power Input	kW	0.029 / 0.033	0.066 / 0.076	1.23 / 1.26	1.32 / 1.37
Full Load Conditions	Running Amps.	A	0.13 / 0.14	0.30 / 0.32	7.2 / 7.0	7.6 / 7.4
	Power Input	kW	0.029 / 0.033	0.066 / 0.076	1.51 / 1.55	1.61 / 1.66

Rating Conditions    : Indoor Air Temperature 27°C D.B. / 19°C W.B.  
                                  Outdoor Air Temperature 35°C D.B.  
 Full Load Conditions : Indoor Air Temperature 32°C D.B. / 23°C W.B.  
                                  Outdoor Air Temperature 43°C D.B.

Indoor Unit     **AWR509CL**  
Outdoor Unit   **AER509SCL**

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220 – 240V ~ 50Hz			
Rating Conditions	Running Amps.	A	0.11 / 0.12	0.23 / 0.25	3.9 / 3.6	4.2 / 4.0
	Power Input	kW	0.025 / 0.029	0.051 / 0.059	0.83 / 0.85	0.91 / 0.94
Full Load Conditions	Running Amps.	A	0.11 / 0.12	0.23 / 0.25	4.7 / 4.3	5.0 / 4.7
	Power Input	kW	0.025 / 0.029	0.051 / 0.059	1.01 / 1.02	1.09 / 1.11

Rating Conditions     : Indoor Air Temperature 27°C D.B. / 19°C W.B.  
                                  Outdoor Air Temperature 35°C D.B.  
Full Load Conditions : Indoor Air Temperature 32°C D.B. / 23°C W.B.  
                                  Outdoor Air Temperature 43°C D.B.

Indoor Unit     **AWR512CL**  
Outdoor Unit   **AER512SCL**

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220 – 240V ~ 50Hz			
Rating Conditions	Running Amps.	A	0.13 / 0.14	0.29 / 0.30	5.8 / 5.8	6.2 / 6.2
	Power Input	kW	0.029 / 0.033	0.064 / 0.073	1.23 / 1.26	1.32 / 1.37
Full Load Conditions	Running Amps.	A	0.13 / 0.14	0.29 / 0.30	7.2 / 7.0	7.6 / 7.4
	Power Input	kW	0.029 / 0.033	0.064 / 0.073	1.52 / 1.55	1.61 / 1.66

Rating Conditions     : Indoor Air Temperature 27°C D.B. / 19°C W.B.  
                                  Outdoor Air Temperature 35°C D.B.  
Full Load Conditions : Indoor Air Temperature 32°C D.B. / 23°C W.B.  
                                  Outdoor Air Temperature 43°C D.B.

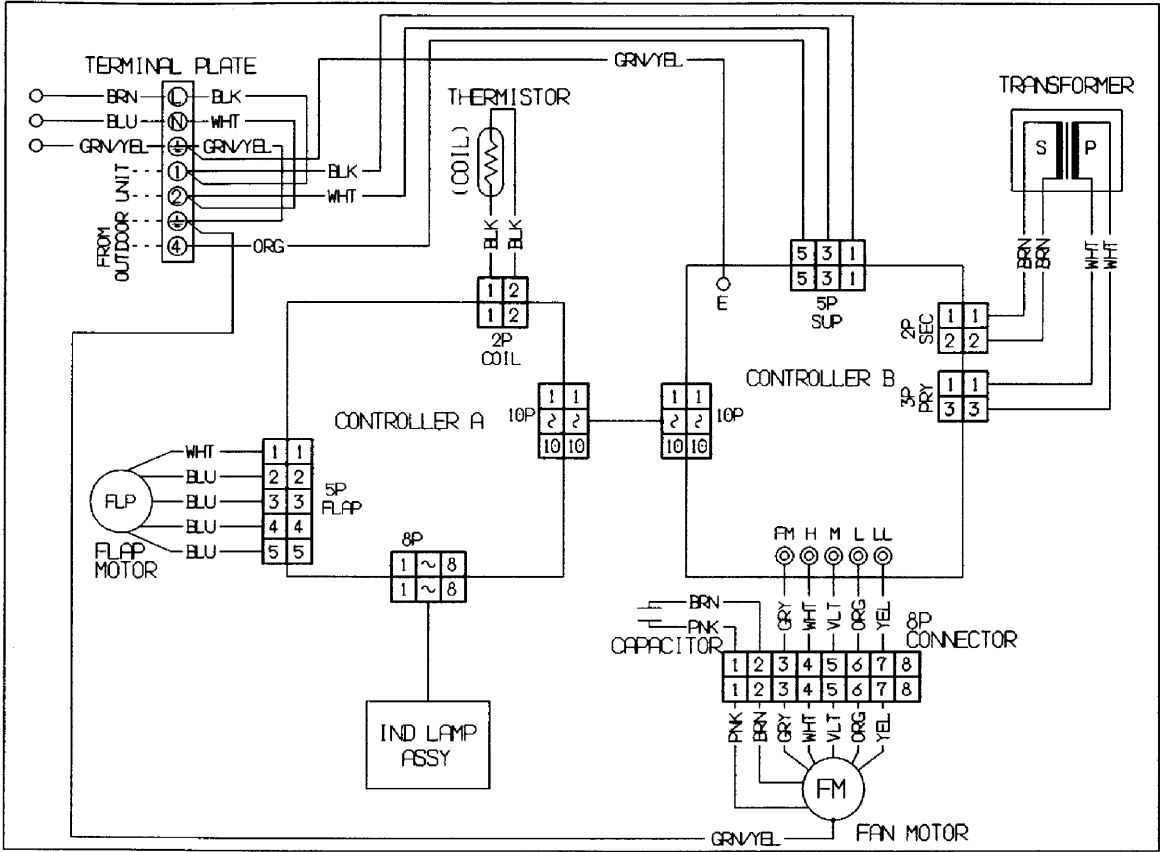
6-2. Electric Wiring Diagrams

Indoor Unit      AWR507/508CL - AWR509CL  
                         AWR512CL



**WARNING**

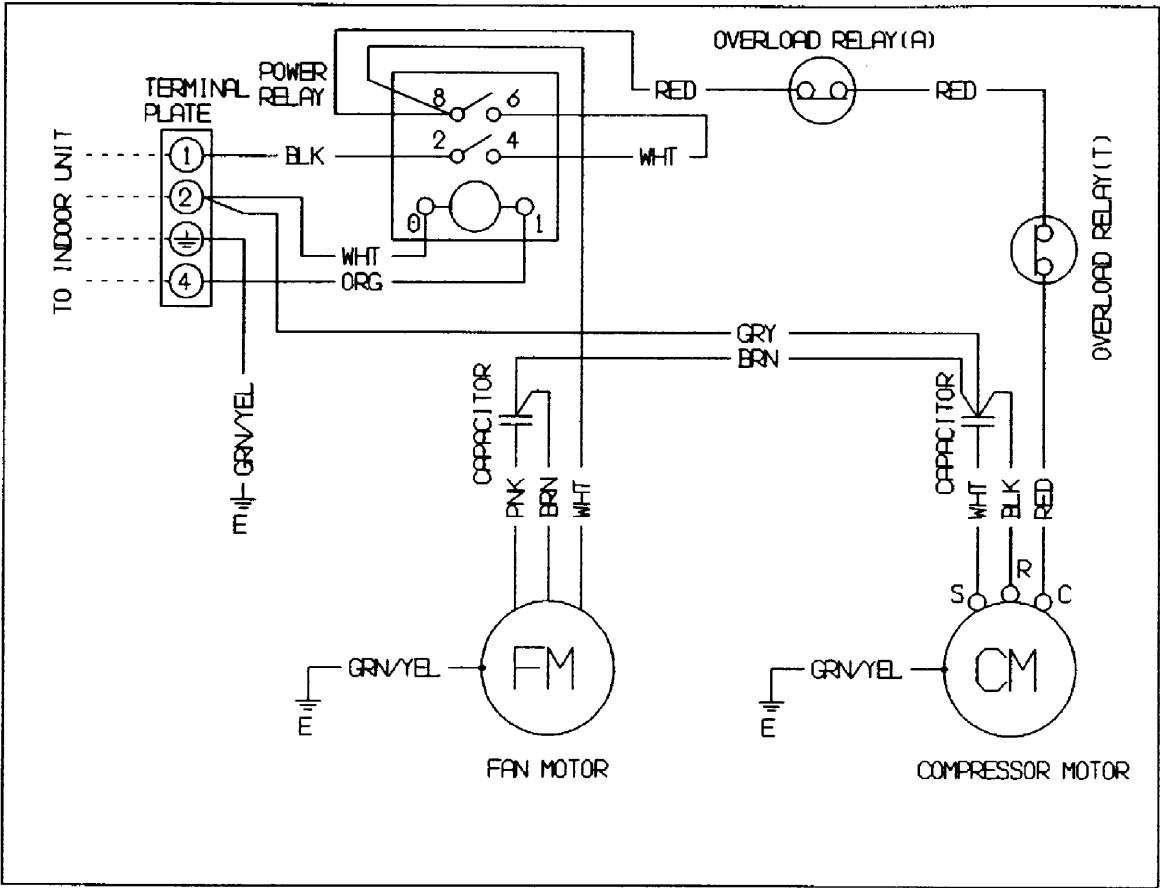
*To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.*





**WARNING**

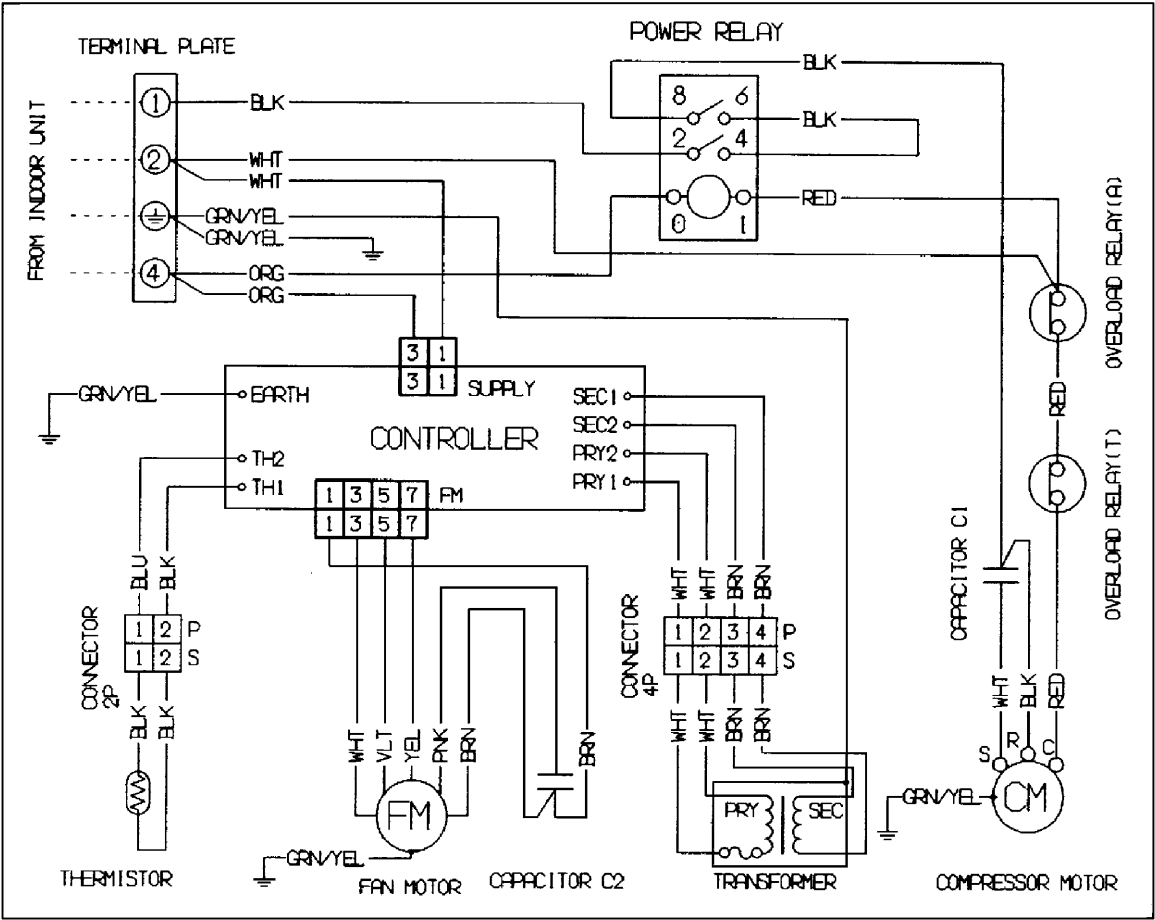
To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.





**WARNING**

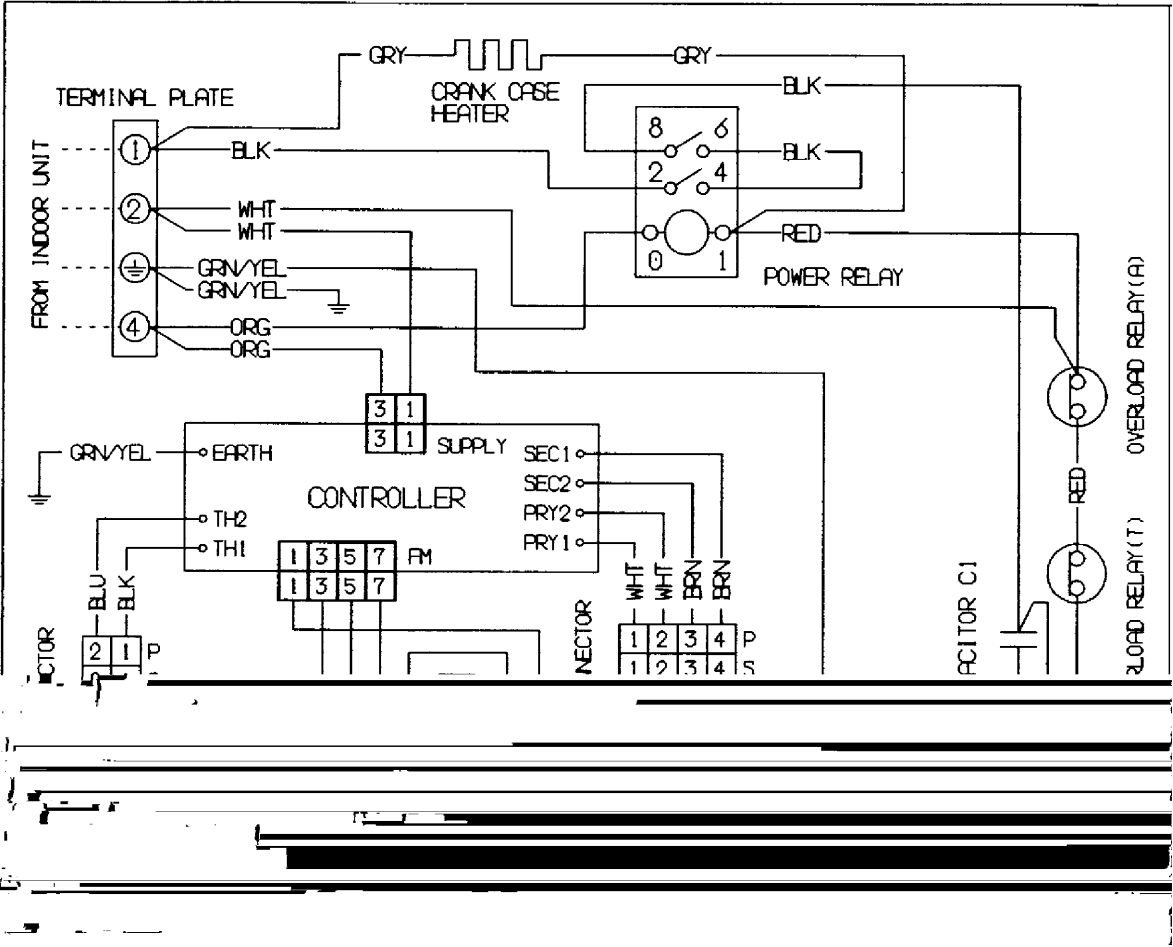
*To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.*





**WARNING**

*To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.*

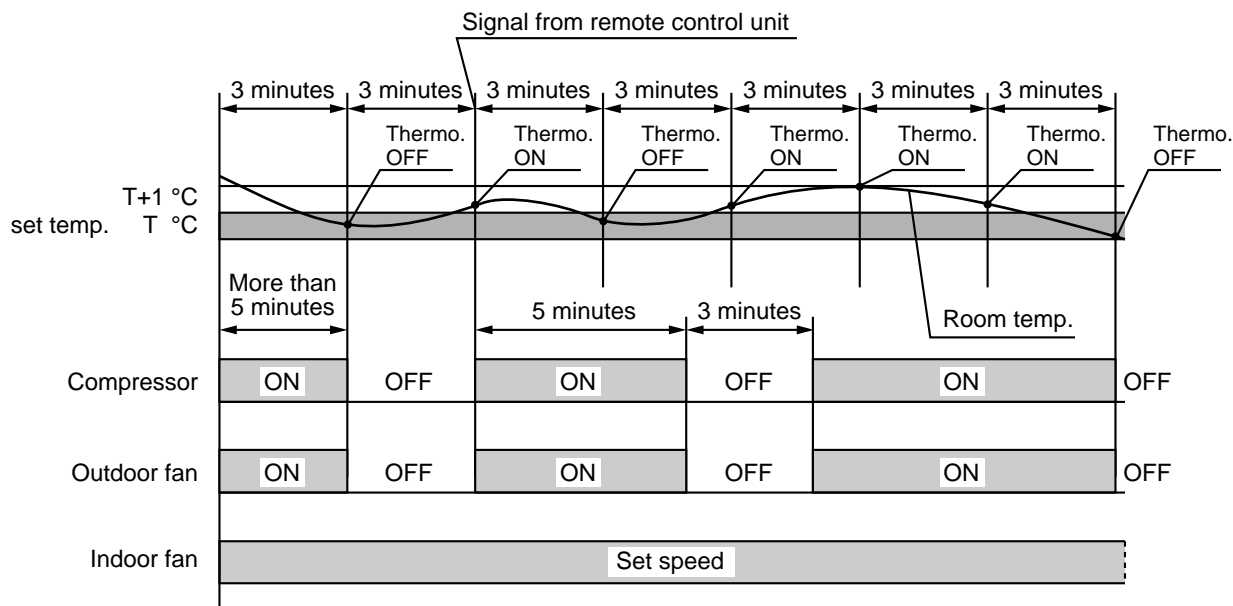




# 7. FUNCTION

## 7-1. Room Temperature Control

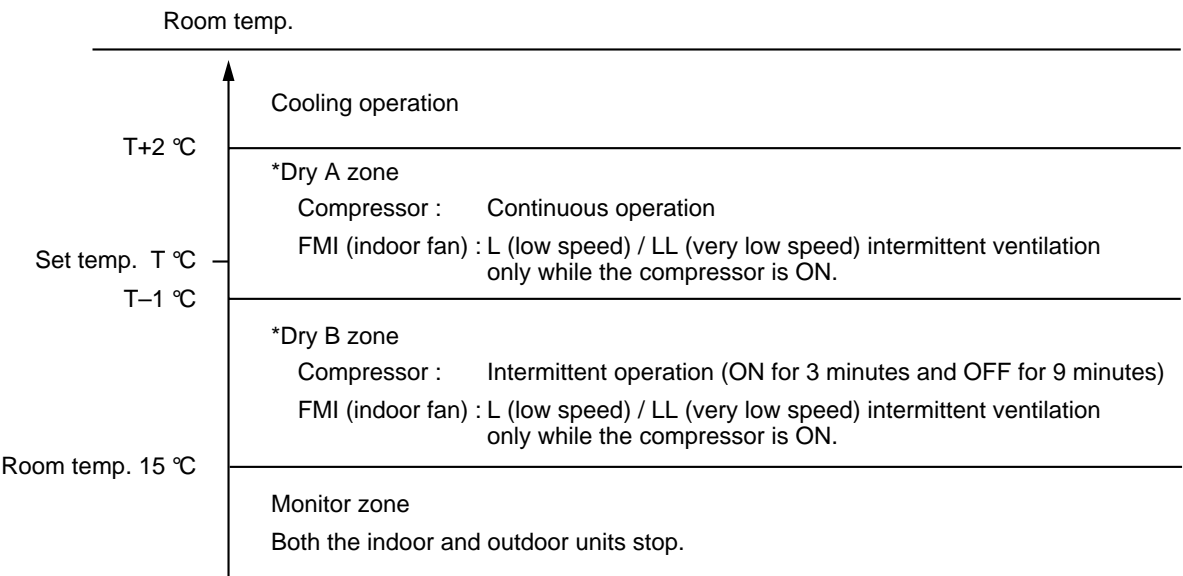
- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 3 minutes by the remote control unit to the controller in the indoor unit.



- 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 after 5 minutes or more of compressor operation.
- Thermo. ON : When the room temperature is above  $T + 1\text{ }^{\circ}\text{C}$  ( $T\text{ }^{\circ}\text{C}$  is set temperature).  
Compressor → ON
- Thermo. OFF : When the room temperature is equal to or below set temperature  $T\text{ }^{\circ}\text{C}$ .  
Compressor → OFF

## 7-2. 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 cycle of turning ON and OFF automatically as shown in the chart below according to the room temperature.

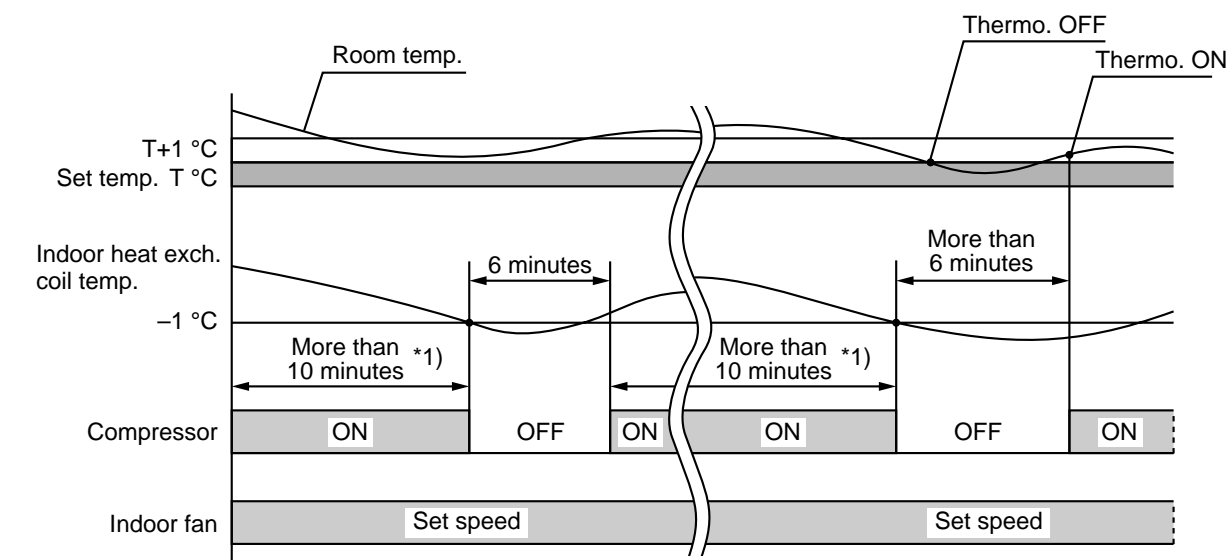


### NOTE

- 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.

### 7-3. Freeze Prevention

- This function prevents freezing of the indoor heat exchange coil.
- When the compressor has been running for 10 minutes<sup>\*1)</sup> or more and the temperature of the indoor heat exchange coil falls below  $-1^{\circ}\text{C}$ , the control circuit stops the compressor for at least 6 minutes. The compressor does not start again until the temperature rises above  $8^{\circ}\text{C}$  or 6 minutes has elapsed.



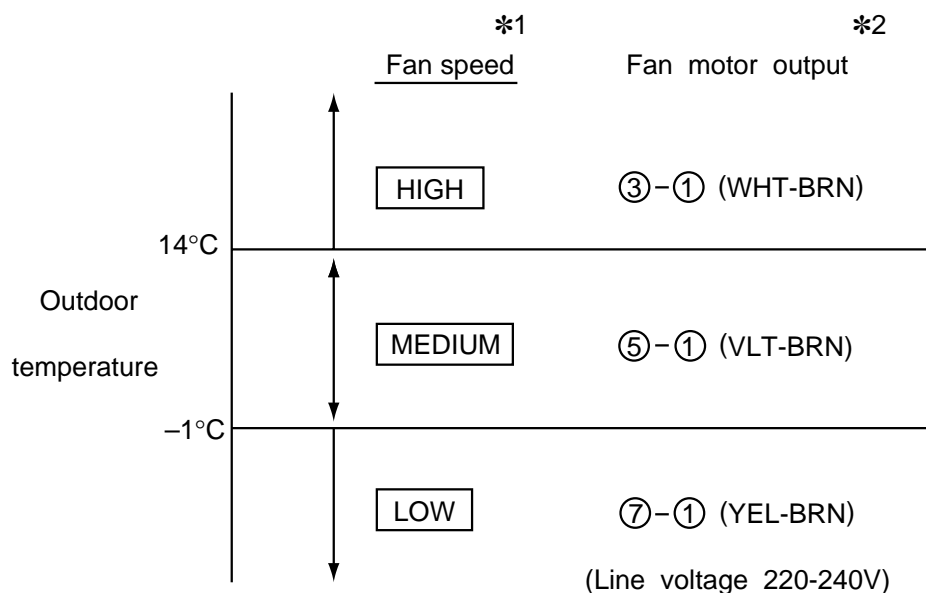
**NOTE**

\*1) Functionally, compressor running period, or time are of two types, 10 minutes and 6 minutes depending upon production date.

#### 7-4. Outdoor Fan Speed Control (AERXXXSCL models only)

## Low ambient fan speed control

- This function protects the compressor from being damaged due to flowback of the liquid refrigerant to the compressor when the outdoor temperature is very low.
- When the air temp. thermistor (TH) on the outdoor unit detects a change in temperature, the controller (POW-CL128E) on the electrical component box activates to control the fan speed automatically.
- If the outdoor temperature falls below 14°C, the fan speed switches to MED.
- If the outdoor temperature falls below -1°C, the fan speed switches to LOW.




## NOTE

- \*1. Regardless of outdoor temperature, outdoor fan motor operates at first at HIGH speed for  $23 \pm 5$  seconds to give the motor an initial boost.
- \*2. When the fan speed switches, the controller terminal's location where line voltage comes out (  $\bigcirc - \bigcirc$  ) shifts accordingly.

# 8. TROUBLESHOOTING

## 8-1. Check before and after troubleshooting

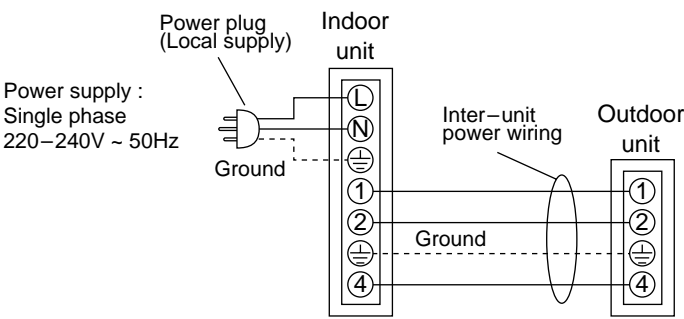


**WARNING**

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

### 8-1-1. 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.



### 8-1-2. Check inter-unit wiring.

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

### 8-1-3. Check power supply.

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

### 8-1-4. 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.

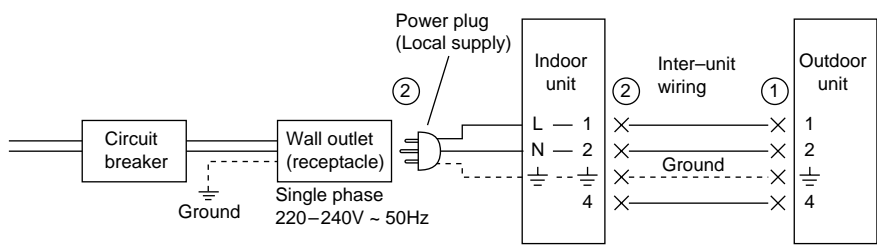
8-2. Air conditioner does not operate.

8-2-1. Circuit breaker trips (or fuse blows).

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

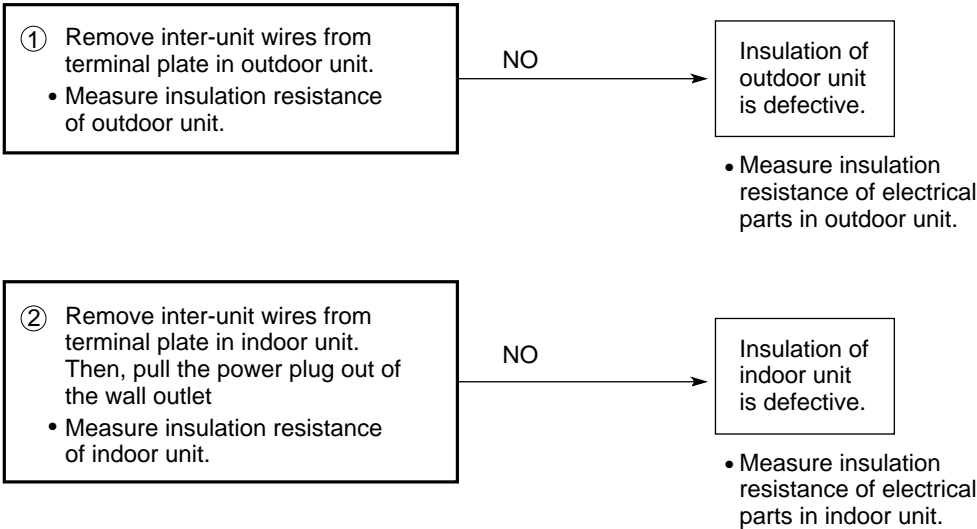
- There is a possibility of ground fault.
- Check insulation resistance.

If resistance value is 2MΩ or less, insulation is defective (“NO”).



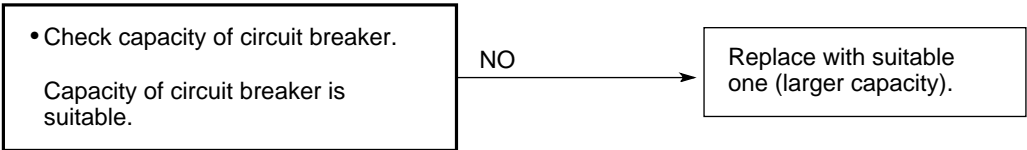
**WARNING**

\* Set circuit breaker to OFF.

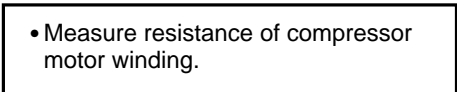
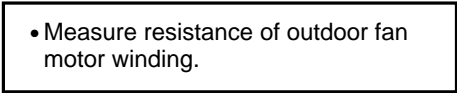


**B. Circuit breaker trips in several minutes after turning the air conditioner on.**

- There is a possibility of short circuit.

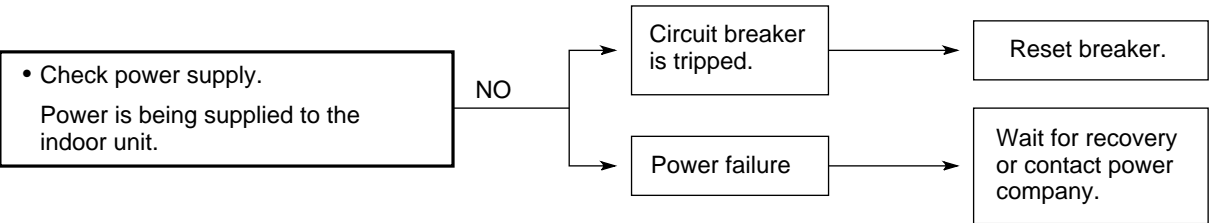


(Except for models AERXXXSCL)

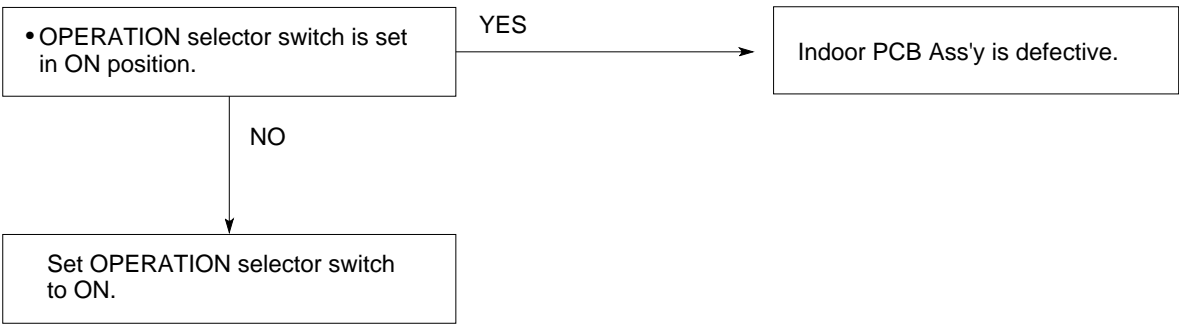


**8-2-2. Neither indoor nor outdoor unit runs.**

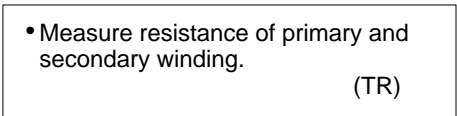
**A. Power is not supplied.**



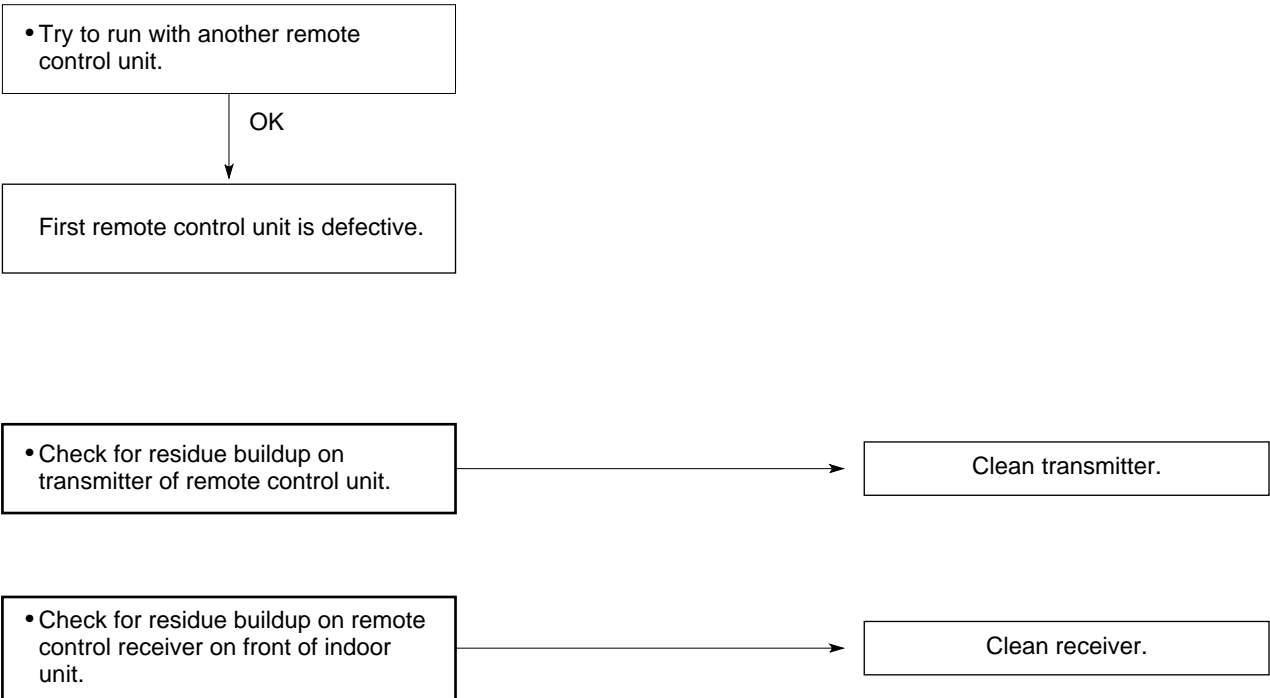
**B. Check "OPERATION selector" switch in the indoor unit.**



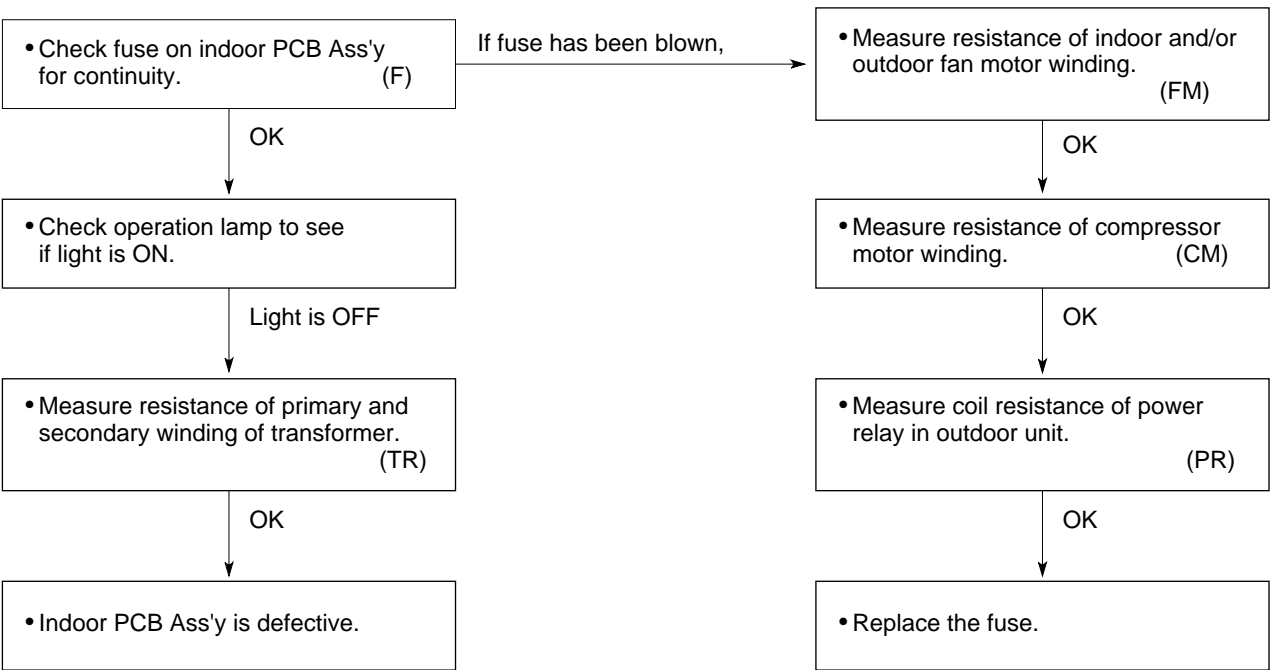
**C. Check transformer in indoor unit.**



D. Check remote control unit.



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



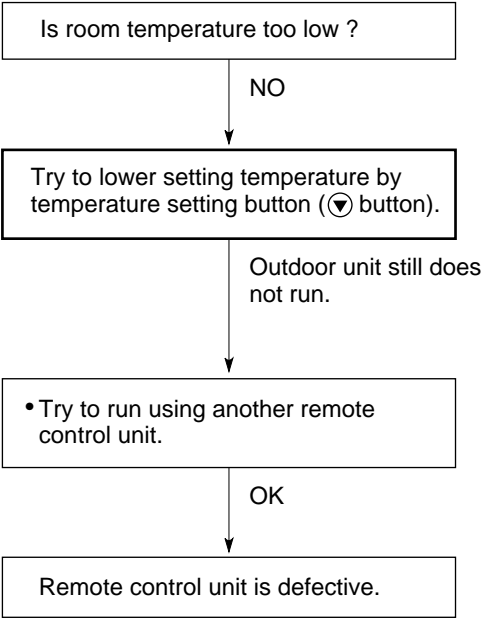
F. Check TIMER on the remote control unit.



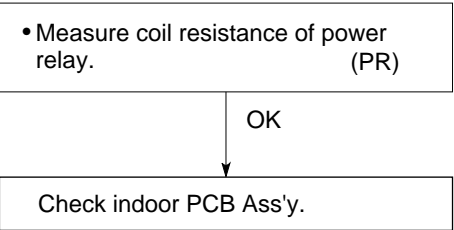


8-2-3. Only outdoor unit does not run.

A. Check setting temperature.

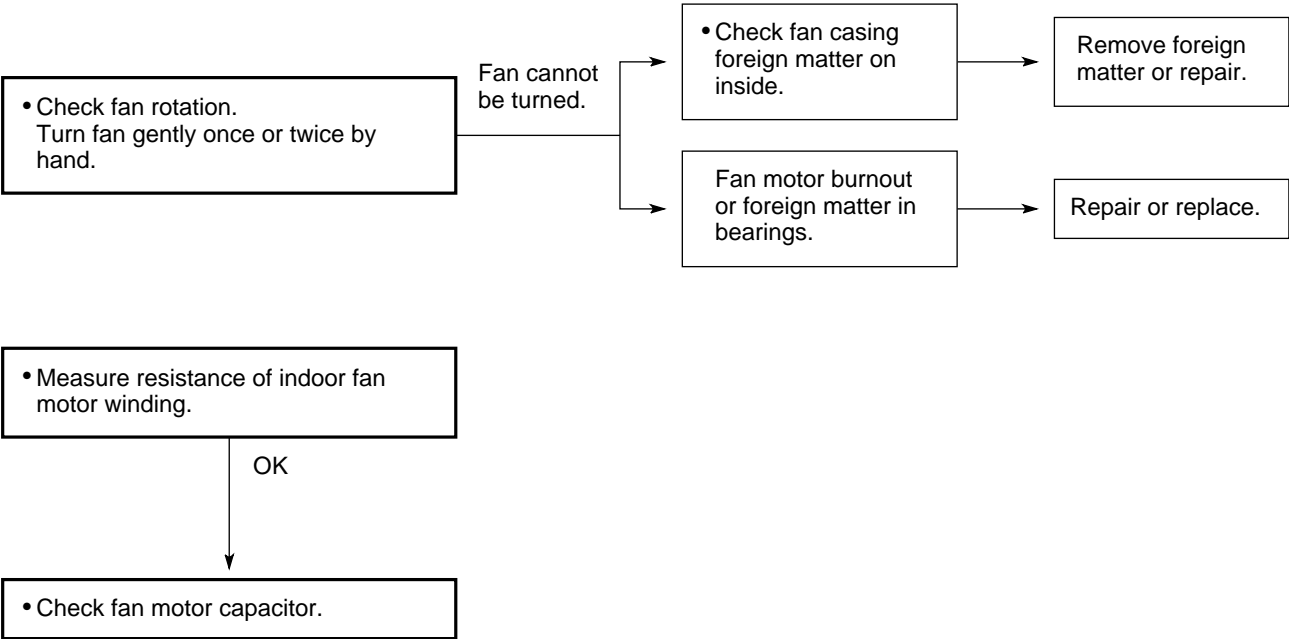


B. Check power relay in outdoor unit. (For AERXXXSC)

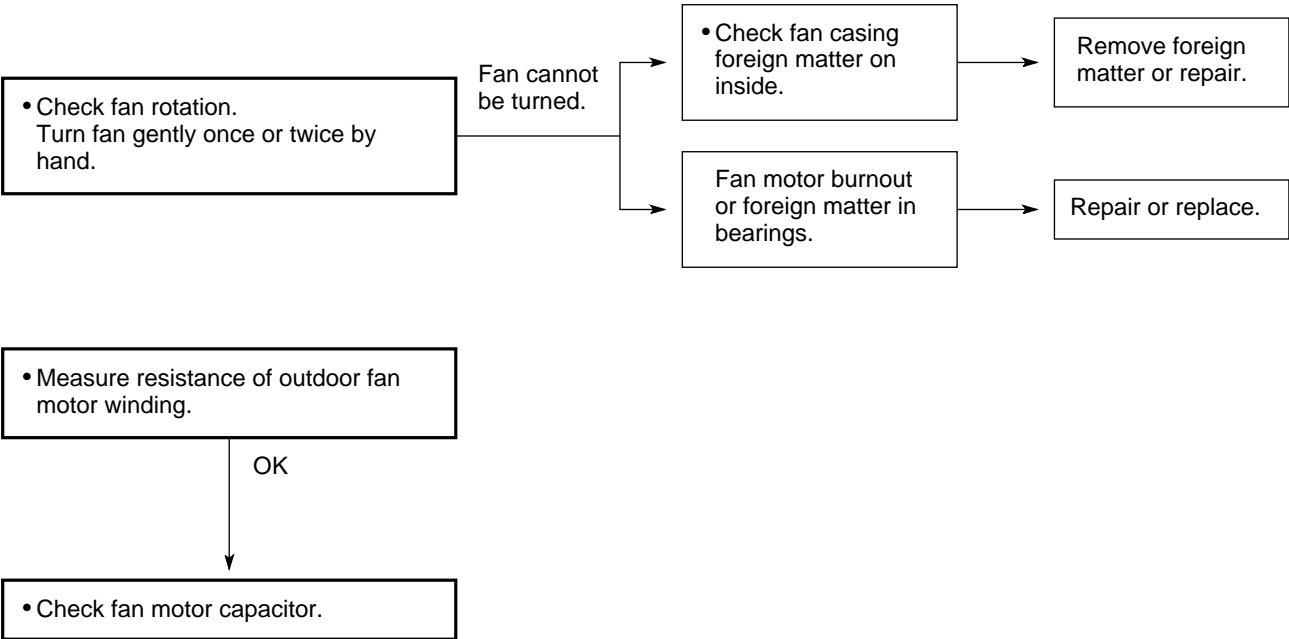


8-3. Some part of air conditioner does not operate.

8-3-1. Only indoor fan does not run.



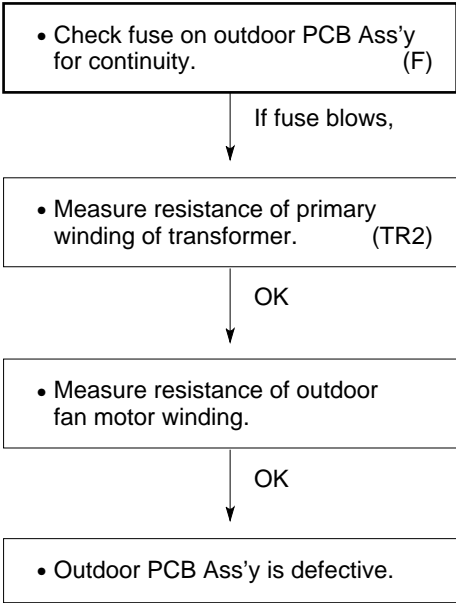
8-3-2. Only outdoor fan does not run.



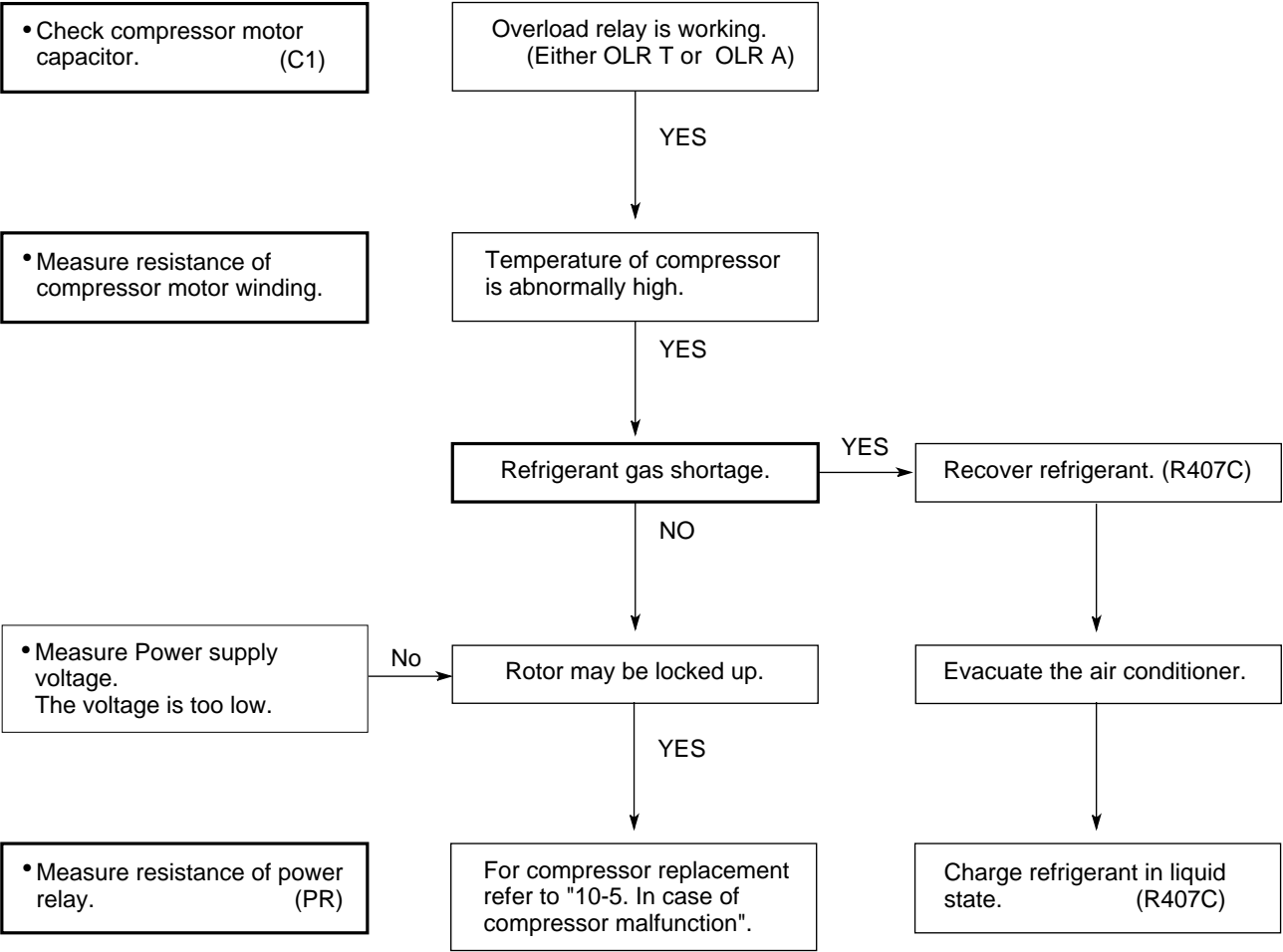
● **Check transformer in outdoor unit.** (AERXXXSCL Only)

• Measure resistance of primary and secondary winding.  
(TR2)

● **Check fuse on outdoor PCB Ass'y.** (AERXXXSCL Only)



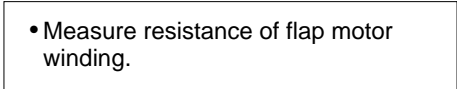
8-3-3. Only compressor does not run.



CAUTION

In case of leakage, do not add refrigerant. The unit must be vacuumed and recharged. This is because composition of refrigerant in the unit has been changed due to leakage. See "10-6. In case refrigerant is leaking".

8-3-4. Only flap motor does not run.



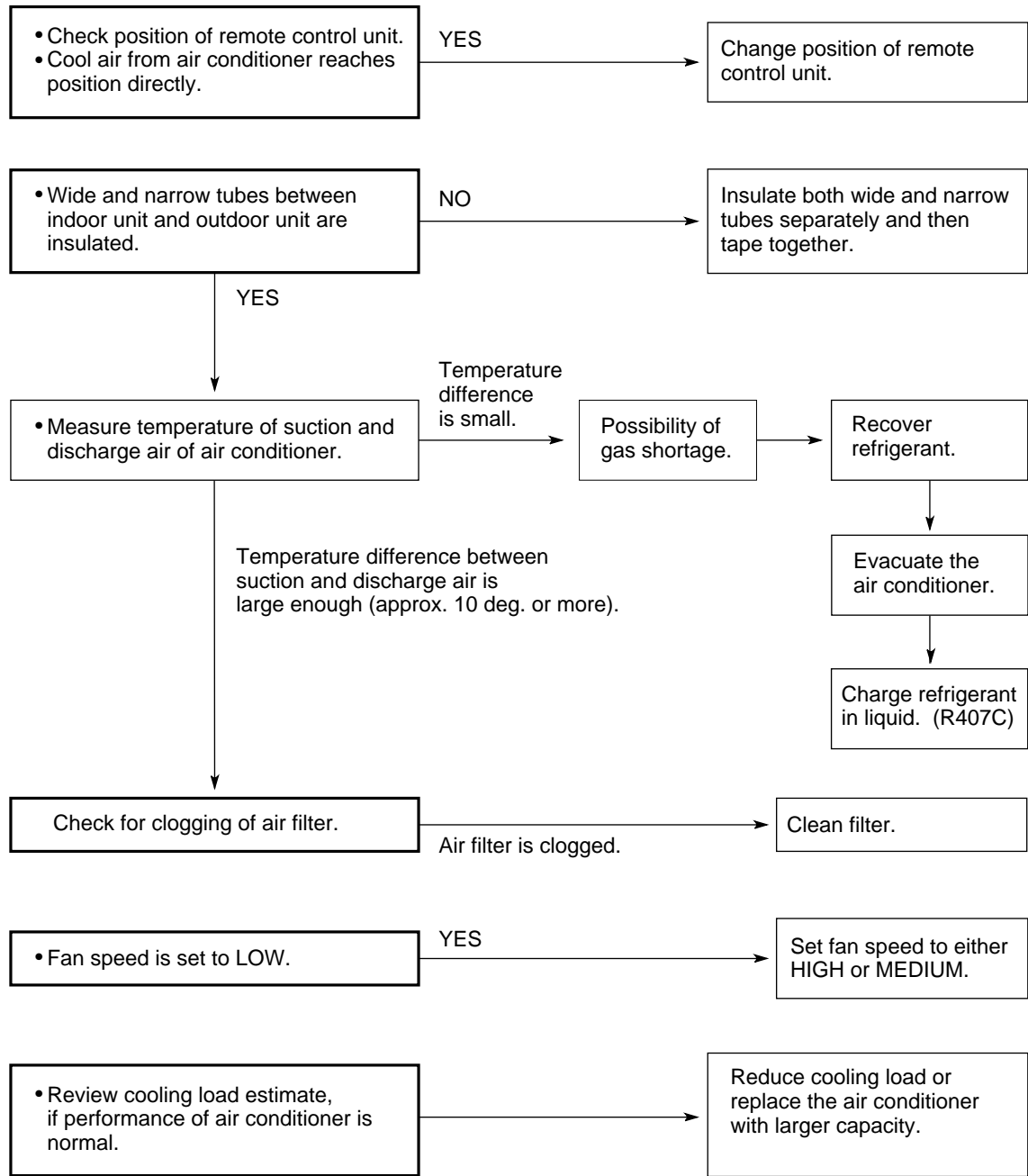
8-3-5. Function of outdoor fan speed control does not work properly. (AERXXXSCL Only)



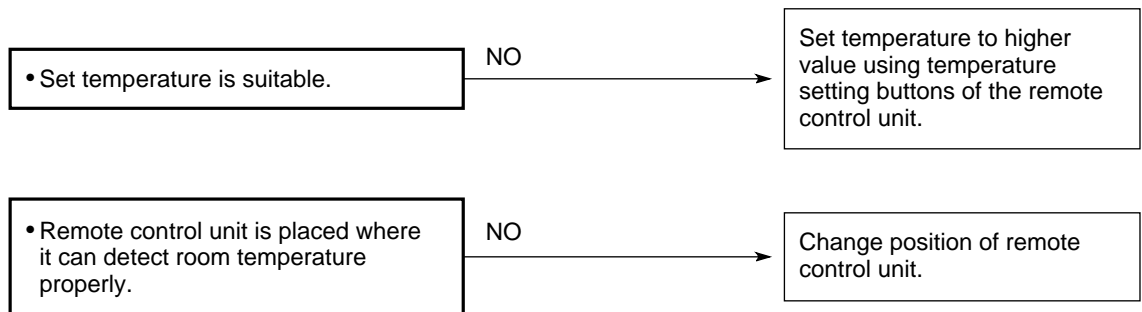
Refer to 8-4 "Outdoor Fan Speed Control."

8-4. Air conditioner operates, but abnormalities are observed.

8-4-1. Poor cooling.

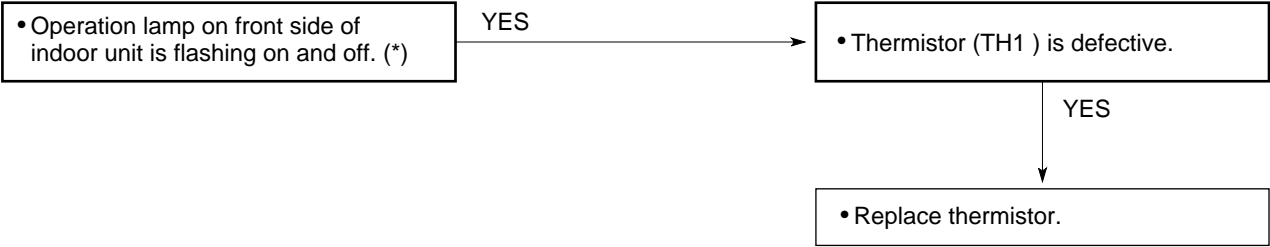


8-4-2. Excessive cooling.



8-5. If a sensor is defective.

8-5-1. Indoor coil temp. thermistor (TH1) is defective.



**NOTE** Alarm Signal (\*)

Operation lamp on the front side of the indoor unit will flash on and off when the indoor coil thermistor is defective. At the same time the outdoor unit will stop. Indoor unit will operate only for ventilation.

8-5-2. Room temp. thermistor (TH2) is defective.

A. Open

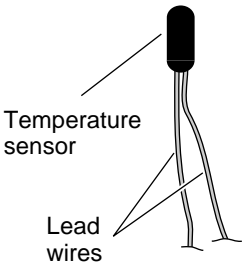
When thermistor opens, the air conditioner will be in the following conditions as the controller tries to detect extremely low room temperature.

In Cooling mode: The air conditioner soon stops and will not start again. (Thermo.OFF) Neither outdoor fan nor compressor runs.

B. Short

When thermistor is short, the air conditioner will be in the following conditions as the controller tries to detect extremely high room temperature.

In Cooling mode: The air conditioner continues to operate (Thermo.ON). Both the outdoor fan and compressor do not stop. As a result, the room becomes too cold.



**NOTE**

Definition of Open or Short Circuit of Sensor (Thermistor)

Thermistor Structure

Open ... A lead wire is broken or disconnected or the circuit inside the temperature sensor is open .

Short ... The protective cover of a lead wire has been damaged, and the exposed wire is touching another metal part, or both lead wires have become exposed and are touching each other. Alternatively, the circuit inside the temperature sensor is closed.

## 9. REFRIGERANT R407C : SPECIAL PRECAUTIONS WHEN SERVICING UNIT

### 9-1. Characteristics of new refrigerant R407C

#### 9-1-1. What is new refrigerant R407C

R407C is a new refrigerant that contains three types of non-azeotropy-type mixed refrigerant which does not adversely affect the Earth's ozone layer. Its refrigeration capacity and energy efficiency are about the same level as the conventional refrigerant R22

#### 9-1-2. Components (mixing proportions)

HFC32 (23%) / HFC125 (25%) / HFC134a (52%)

#### 9-1-3. Characteristics

- Less toxic, more chemically stable refrigerant.
- Composition of refrigerant R407C changes whether it is in gaseous phase or liquid phase. Thus, when there is a refrigerant leak the basic performance of the air conditioner may be degraded because of a change in composition of the remaining refrigerant. **Therefore, do not add new refrigerant.** Instead, recover the remaining refrigerant with the refrigerant recovery unit. Then, after evacuation, totally recharge the specified amount of refrigerant with the new refrigerant at its normal mixed composition state (liquid phase).
- When refrigerant R407C is used, the composition will differ depending on whether it is in gaseous or liquid phase, and the basic performance of the air conditioner will be degraded if it is charged while the refrigerant is in gaseous state. **Thus, always charge the refrigerant while it is in the liquid phase.**



CAUTION

- Ether-type oil is used for the compressor oil for R407C-type units, which is different from the mineral oil used for R22. Thus more attention to moisture prevention and faster replacement work compared with conventional models are required.

### 9-2. Checklist before servicing

#### ● Tubing precautions

Refrigerant R407C is more easily affected by dust or moisture compared with R22, thus be sure to temporarily cover the ends of the tubing with caps or tape prior to installation.

#### ● No addition of compressor oil for R407C

No additional charge of compressor oil is permitted.

#### ● No use of refrigerant other than R407C

Never use a refrigerant other than R407C.

#### ● If refrigerant R407C is exposed to fire

Through welding, etc., toxic gas may be released when R407C refrigerant is exposed to fire. Therefore, be sure to provide ample ventilation during installation work.

#### ● Caution in case of R407C leak

Check for possible leak points with the special leak detector for R407C. If a leak occurs inside the room, immediately provide thorough ventilation.

### 9-3. Tools specifically for R407C

● For servicing, use the following tools for R407C

Tool Distinction	Tool Name
Tools specifically for R407C	<ul style="list-style-type: none"><li>• Gauge manifold</li><li>• Charging hose</li><li>• Gas leak detector</li><li>• Refrigerant cylinder</li><li>• Charging cylinder</li><li>• Refrigerant recovery unit</li><li>• Vacuum pump with anti-reverse flow (*1) (Solenoid valve-installed type, which prevents oil from flowing back into the unit when the power is off, is recommended.)</li><li>• Vacuum pump (*2) ..... can be used if the following adapter is attached.</li><li>• Vacuum pump adapter (reverse-flow prevention adapter) (*3). (Solenoid valve-installed adapter attached to a conventional vacuum pump.)</li><li>• Electronic scale for charging refrigerant</li><li>• Flare tool</li></ul>
Tools which can be commonly used for R22 and R407C	<ul style="list-style-type: none"><li>• Bender</li><li>• Torque wrench</li><li>• Cutter, Reamer</li><li>• Welding machine, nitrogen gas cylinder</li></ul>



- The above tools specifically for R407C must not be used for R22. Doing so will cause malfunction of the unit.
- For the above vacuum pump (\*1, \*2) and vacuum pump adapter (\*3) , those for R22-type units can be used for R407C-type. However, they must be used exclusively for R407C and never alternately with R22.

### 9-4. For tubing installation procedures

- When the tubes are connected, *always apply HAB oil on the flare portions to improve the sealing of tubing.*

The following is the **HAB oil** generally used:  
Esso: ZERICE S32

**NOTE** For details on tubing installation procedures, refer to the installation manuals attached to the indoor unit and outdoor unit.



9-5. In case of compressor malfunction



- Should the compressor malfunction, be sure to replace compressor as quickly as possible.
- Use only the tools indicated exclusively for R407C. → See "10-3. Tools specifically for R407C".

9-5-1.Procedure for replacing compressor

(1) Recovering refrigerant

- Any remaining refrigerant inside the unit should not be released to the atmosphere, but recovered using the refrigerant recovery unit for R407C.
- Do not reuse the recovered refrigerant, since will contain impurities.

(2) Replacing compressor

- Soon after removing pinched pipes of both discharge and suction tubes of the new compressor, replace it quickly.

(3) Checking for sealing

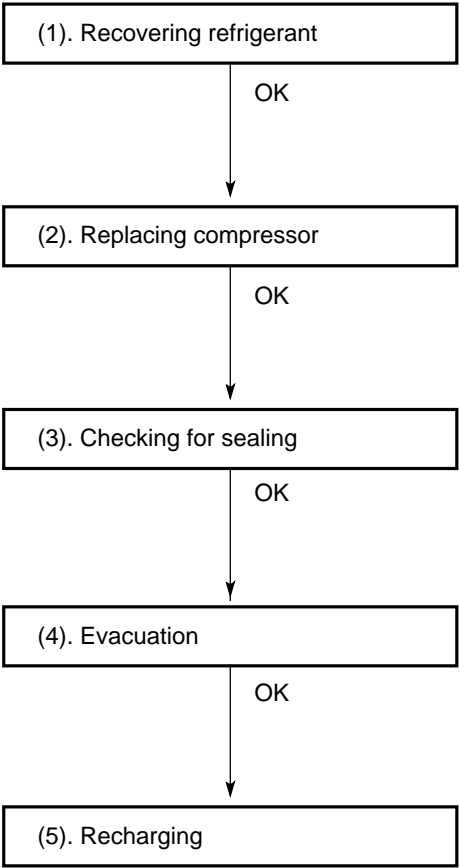
- Use nitrogen gas for the pressurized gas, and never use a refrigerant other than R407C. Also do not use oxygen or any flammable gas.

(4) Evacuation

- **Use a solenoid valve-installed vacuum pump** so that even if power is cut off in the middle of evacuation of air due to a power interruption, the valve will prevent the pump oil from flowing back.
- The equipment may be damaged if moisture remains in the tubing, thus carry out the evacuation thoroughly.
- When using a vacuum pump with exhaust air volume more than 25L/min. and ultimate vacuum pressure rate of 0.05Torr:

Standard time of evacuation

Length of tubing	Less than 10 m	More than 10 m
Time	More than 10 min.	More than 15 min.



(5) Recharging

- **Be sure to charge the specified amount of refrigerant in liquid state** using the service port of wide tube service valve. The proper amount is listed on the unit's nameplate.

When the entire amount cannot be charged all at once, charge gradually while operating the unit in Cooling Operation.



CAUTION

- **Never charge a large amount of liquid refrigerant at once to the unit. This may cause damage to the compressor.**

- When charged with a refrigerant cylinder, use the electronic scale for charging refrigerant. In this case, if the volume of refrigerant in the cylinder becomes less than 20% of the fully-charged amount, the composition of the refrigerant starts to change. Thus, **do not use the refrigerant if the amount in the refrigerant cylinder is less than 20%.**

Also, charge the minimum necessary amount to the cylinder before using it for charging the air conditioning unit.

**Example:**

In case of charging refrigerant to a unit requiring 0.76Kg using a capacity of 10Kg-cylinder, the minimum necessary amount for the cylinder is:

$$0.76 + 10 \times 0.20 = 2.76\text{Kg}$$

**For the remaining refrigerant, refer to the instructions of the refrigerant manufacturer.**

- If using a charging cylinder, transfer the specified amount of liquid refrigerant from the refrigerant cylinder to the charging cylinder.

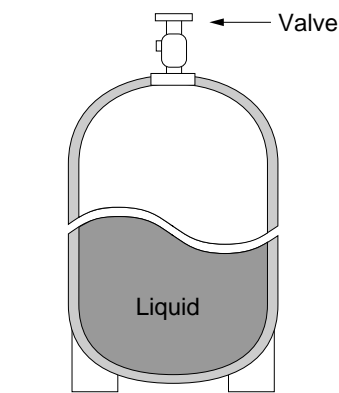
Prepare an evacuated charging cylinder beforehand.



CAUTION

- **To prevent the composition of R407C from changing, never bleed the refrigerant gas into the atmosphere while transferring the refrigerant. (Fig. 3)**

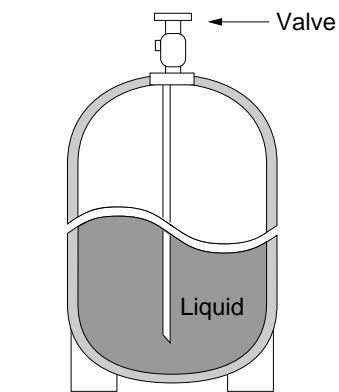
**Do not use the refrigerant if the amount in the charging cylinder is less than 20%.**



**Single valve**

Charge the liquid refrigerant with the cylinder in the up-side-down position.

Fig. 1



**Single valve (with siphon tube)**

Charge with the cylinder in the normal position.

Fig. 2

**Configurations and characteristics of cylinders**

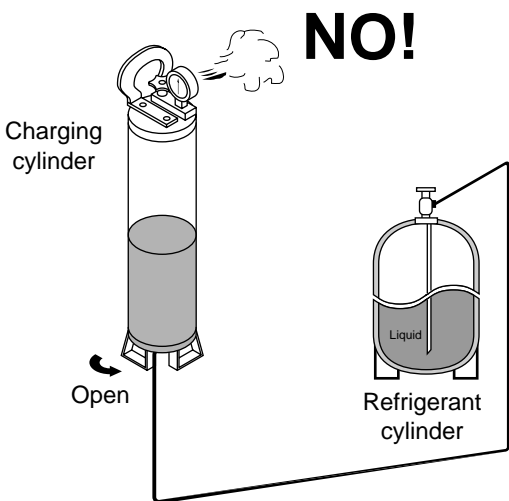


Fig.3

9-6. In case refrigerant is leaking



- Never attempt to charge additional refrigerant when refrigerant has been leaking from the unit. Follow the procedure described below to locate points of leaks and carry out repairs, then recharge the refrigerant.

(1) Detecting Leaks

- Use the detector for R407C to locate refrigerant leak points.

(2) Recovering refrigerant

- Never release the gas to the atmosphere, recover residual refrigerant using the refrigerant recovery unit for R407C, instead.
- Do not reuse the recovered refrigerant because its composition will have been altered.

(3) Welding leaking points

- Confirm again that no residual refrigerant exists in the unit before starting welding.
- Weld securely using flux and wax for R407C.
- Prevent oxide film from forming inside the tubes utilizing substitution with nitrogen (N2) in the refrigerant circuit of the unit. Leave ends of tubes open during welding.

(4) Checking for sealing

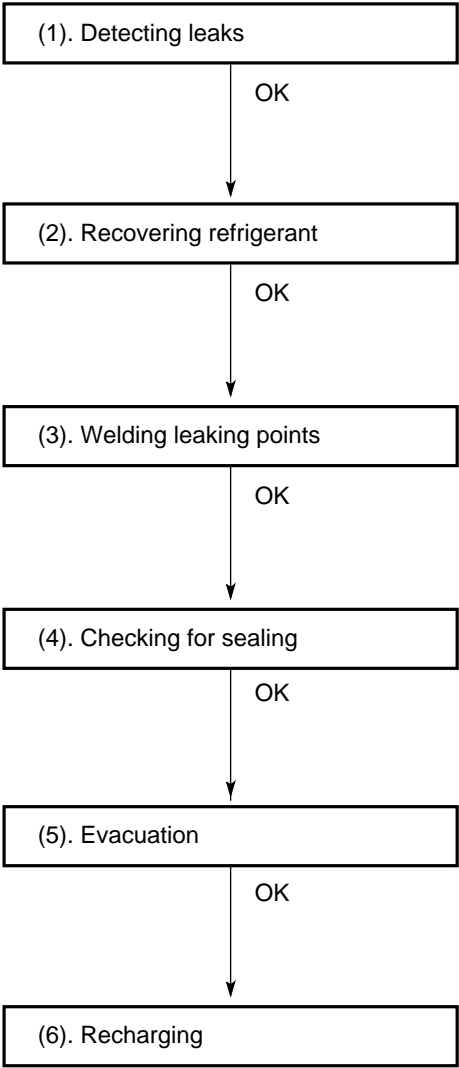
- Use nitrogen gas for the pressurized gas, and never use a refrigerant other than R407C. Also do not use oxygen or any flammable gas.

(5) Evacuation

- **Use a solenoid valve-installed vacuum pump** so that even if power is cut off in the middle of evacuation of air due to a power interruption, the valve will prevent the pump oil from flowing back.
- The equipment may be damaged if moisture remains in the tubing, thus carry out the evacuation thoroughly.
- When using a vacuum pump with exhaust air volume more than 25L/min. and ultimate vacuum pressure rate of 0.05Torr:

Standard time of evacuation

Length of tubing	Less than 10 m	More than 10 m
Time	More than 10 min.	More than 15 min.



(6) Recharging

- **Be sure to charge the specified amount of refrigerant in liquid state** using the service port of wide tube service valve. The proper amount is listed on the unit's nameplate.

When the entire amount cannot be charged all at once, charge gradually while operating the unit in Cooling Operation.



CAUTION

- **Never charge a large amount of liquid refrigerant at once to the unit. This may cause damage to the compressor.**

- When charged with a refrigerant cylinder, use the electronic scale for charging refrigerant. In this case, if the volume of refrigerant in the cylinder becomes less than 20% of the fully-charged amount, the composition of the refrigerant starts to change. Thus, **do not use the refrigerant if the amount in the refrigerant cylinder is less than 20%.**

Also, charge the minimum necessary amount to the cylinder before using it for charging the air conditioning unit.

**Example:**

In case of charging refrigerant to a unit requiring 0.76Kg using a capacity of 10Kg-cylinder, the minimum necessary amount for the cylinder is:

$$0.76 + 10 \times 0.20 = 2.76\text{Kg}$$

For the remaining refrigerant, refer to the instructions of the refrigerant manufacturer.

- If using a charging cylinder, transfer the specified amount of liquid refrigerant from the refrigerant cylinder to the charging cylinder.

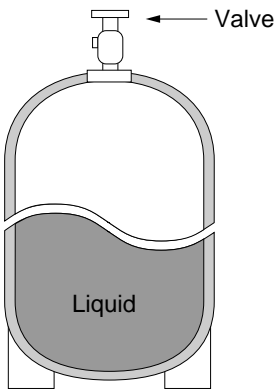
Prepare an evacuated charging cylinder beforehand.



CAUTION

- **To prevent the composition of R407C from changing, never bleed the refrigerant gas into the atmosphere while transferring the refrigerant. (Fig. 6)**

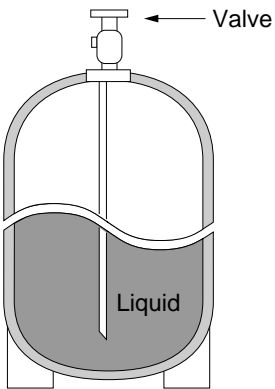
**Do not use the refrigerant if the amount in the charging cylinder is less than 20%.**



**Single valve**

Charge the liquid refrigerant with the cylinder in the up-side-down position.

Fig. 4



**Single valve (with siphon tube)**

Charge with the cylinder in the normal position.

Fig. 5

**Configurations and characteristics of cylinders**

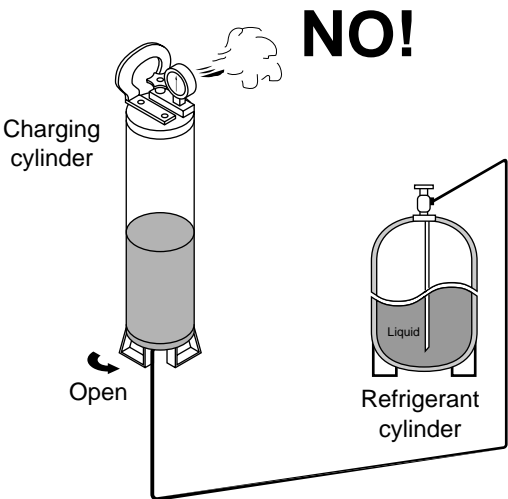


Fig. 6

## 9-7. Charging additional refrigerant

### 9-7-1. When tubes are extended

- Observe the proper amount of refrigerant as stated in this service manual or the installation manual that came with the indoor unit. ***Charge additional refrigerant in liquid state.***



CAUTION

- Never charge additional refrigerant if refrigerant is leaking from the unit. Follow instructions given in "10-6. In case refrigerant is leaking" and completely carry out repairs. Only then should you recharge the refrigerant.

## 9-8. Retro-fitting existing systems

### 9-8-1 Use of existing units

- ***Never use new refrigerant R407C for existing units which use R22.*** This will cause the air conditioner to operate improperly and may result in a hazardous condition.

### 9-8-2 Use of existing tubing

- If replacing an older unit that used refrigerant R22 with a R407C unit, ***do not use its existing tubing.*** Instead, completely new tubing must be used.

# 10. CHECKING ELECTRICAL COMPONENTS

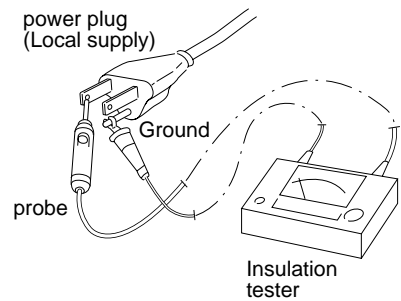
## 10-1. Measurement of Insulation Resistance

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

### 10-1-1. 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 either of 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

### 10-1-2. Indoor 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 where power supply lines are connected on the terminal plate. (Fig. 2)

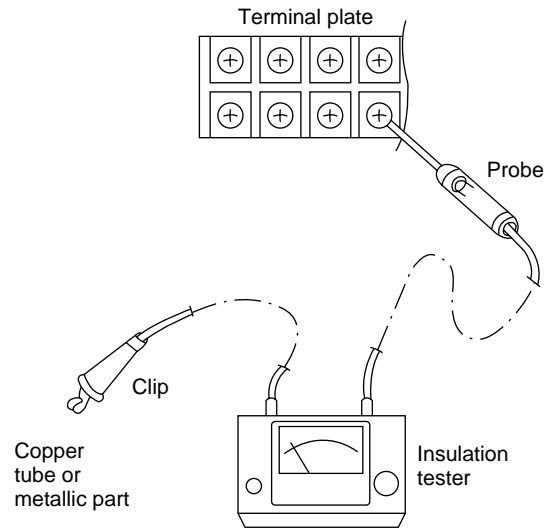


Fig. 2

### 10-1-3. 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.

### 10-1-4. 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.

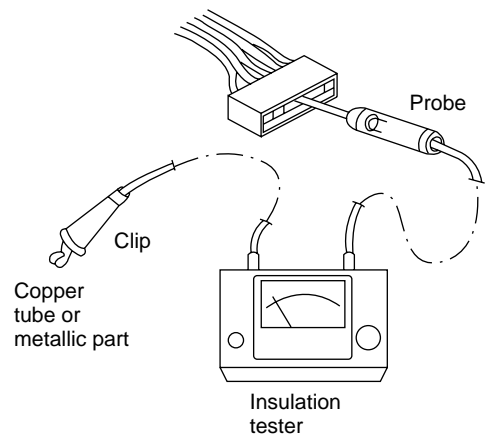


Fig. 3

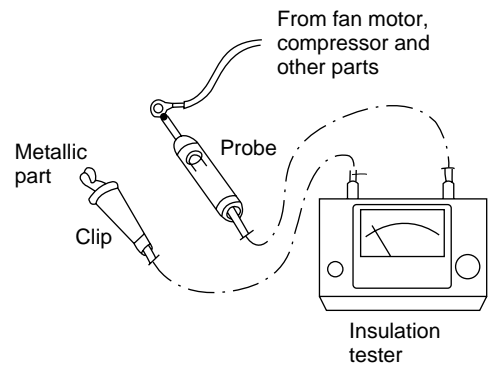


Fig. 4

## 10-2. 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.

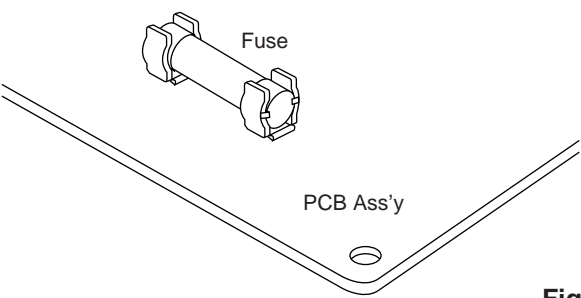


Fig. 5

## 10-3. 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.

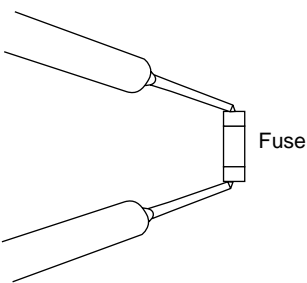


Fig. 6

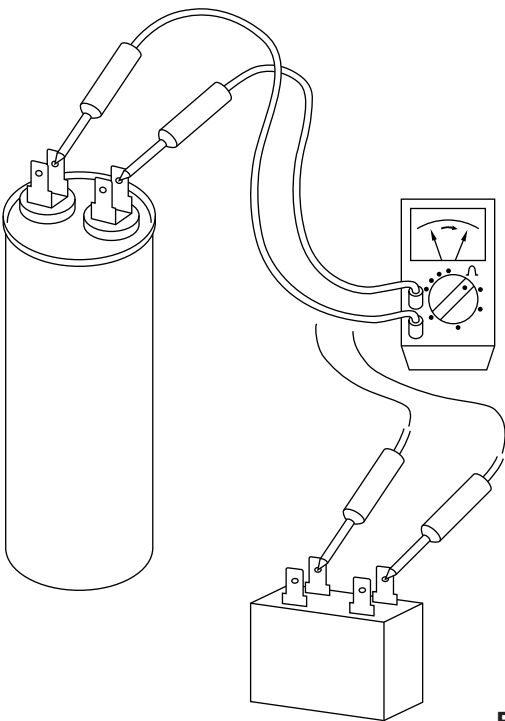


Fig. 7

**argo**

**FILIBERTI**  
S.P.A.

**21040 Oggiona con S. Stefano (VA) - Via Per Solbiate, 49 - Italy**

Direzione e Uffici: Via Varese, 90 - 21013 GALLARATE (VA)

Tel. 0331/755.111 - Telex. 331060 ARGO I - FAX 0331/776.240