VESTEL

WHITE GOODS

SERVICE MANUAL

SPLIT-TYPE ROOM AIR CONDITIONER
(Cool and Heat)

PRECAUTIONS

1. Warning : Prior to repair, disconnect the power cord cord from the circuit breaker.

2. Use proper parts : Use only exact replacement parts. (Also, we recommend replacing parts rather than repairing them.)

3. Use the proper tools : Use the proper tools and test equipment, and know how to use them. Using defective tools or test equipment may cause problems later-intermittent contract, for example.

4. Power Cord : Prior to repair, check the power cord and replace it if necessary.

5. Avoid using an extension cord, and avoid tapping into a power cord. This practice may result in malfunction or fire.

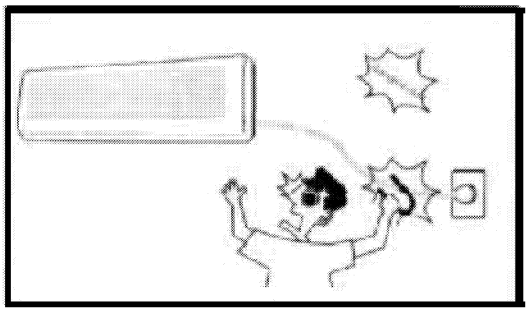
6. After completing repairs and reassembly, check the insulation resistance.
Procedure : Prior to applying power, measure the resistance between the power cord and the ground terminal. The resistance must be greater than 30 megaohms.

7. Make sure that the grounds are adequate.

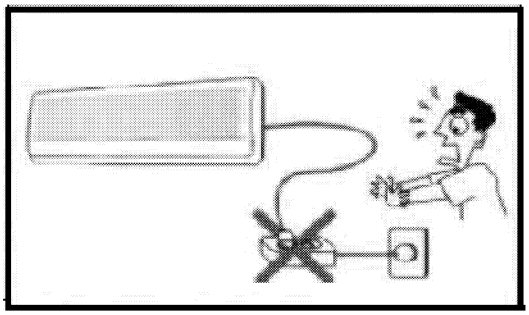
8. Make sure that the installation conditions are satisfactory. Relocate the unit if necessary.

9. Keep children away from the unit while it is being repaired.

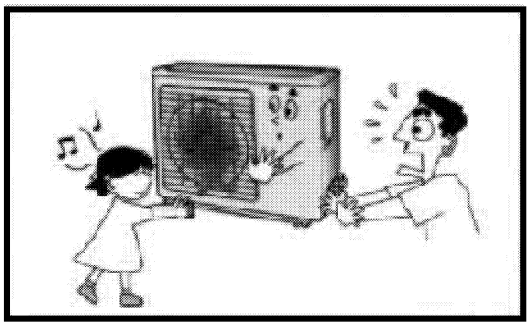
10. Be sure to clean the unit and its surrounding area.



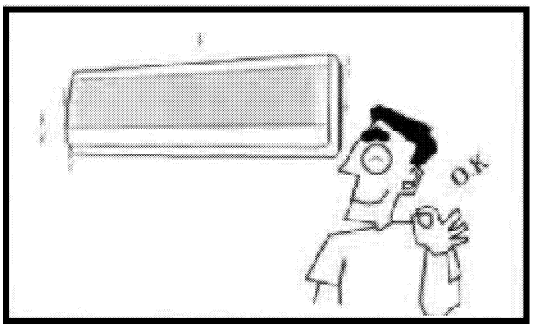
Avoid Dangerous Contact



No Trapping and No Extension Cords



No Kids Nearby !



Clean the Unit

TECHNICAL SPECIFICATIONS R407C

TECHNICAL SPECIFICATIONS

MODEL				DG-9	DG-12	DG-18	DG-24
Power Supply				220-240 V / 50 Hz		220-240 V / 50 Hz	
Refrigerant				R-407C	R-407C	R-407C	R-407C
Compressor Type				Rotary	Rotary	Rotary	Rotary
Performance	Capacity	Cooling	Btu/hr	8.500	11.500	18.000	23.000
			Watt	2.493	3.372	5.279	6.745
			Kcal/hr	2.142	2.898	4.536	5.796
	Capacity	Heating	Btu/hr	9.000	12.500	20.000	24.000
			Watt	2.639	3.666	5.865	7.038
			Kcal/hr	2.520	3.276	5.040	6.048
	EER	Cooling	BTU/Watt .hr	9,6	9,6	9,5	9,5
		Heating	BTU/Watt .hr	10,1	9,5	10,1	9,1
	Dehumdifying Capacity		liter / hr	1,1	1,4	2,2	2,7
	Air Flow	(C / H)	m^3 / min	6.1 / 6.9	7.8 / 8.2	13.5 / 14.0	14.0 / 14.5
	Sound Level	(In / Out)	dB	35 / 45	38 / 49	45 / 55	47 / 59
	Operation Range	H / C	°C	-5 / +43	-5 / +43	0 / +43	0 / +43
Power	Running Current	Cooling	Amp.	4,0	5,2	8,3	10,7
		Heating	Amp.	4,1	5,9	8,7	11,8
	Power Input	Cooling	Watt	885	1.195	1.900	2.430
		Heating	Watt	895	1.315	1.980	2.650
Size	Net Weight	Indoor	kg	9,6	9,6	15,0	15,0
		Outdoor	kg	28,0	32,0	46,0	63,0
	Shipping Weight	Indoor	kg	11,3	11,3	18,0	18,0
		Outdoor	kg	34,0	41,5	55,0	66,5
	Net Dimensions	Indoor	mm	815x182x298	815x182x298	1080x204x275	1080x204x275
	(W x H x D)	Outdoor	mm	720x532x245	720x532x245	787x620x320	880x638x310
	Shipping Dimensions	Indoor	mm	870x248x393	870x248x393	1148x268x349	1148x268x349
	(W x H x D)	Outdoor	mm	876x588x398	876x588x398	909x692x444	1023x719x413
	Loading Qty	W/O Pipe	20 / 40	116/252	116/252	72/153	62/128
		W Pipe	20 / 40	113/243	113/243	67/141	58/122

Notes :
Capacities tested and rated in accordance with ISO 5151 Standard.

Test Conditions	Indoor	Outdoor
Cooling	27°C (81°F) DB / 19°C (66°F) WB	35°C (95°F) DB / 24°C (75°F) WB
Heating	20°C (68°F) DB / 15°C (59°F) WB	7°C (45°F) DB / 6°C (43°F) WB

TECHNICAL SPECIFICATIONS R22

TECHNICAL SPECIFICATIONS

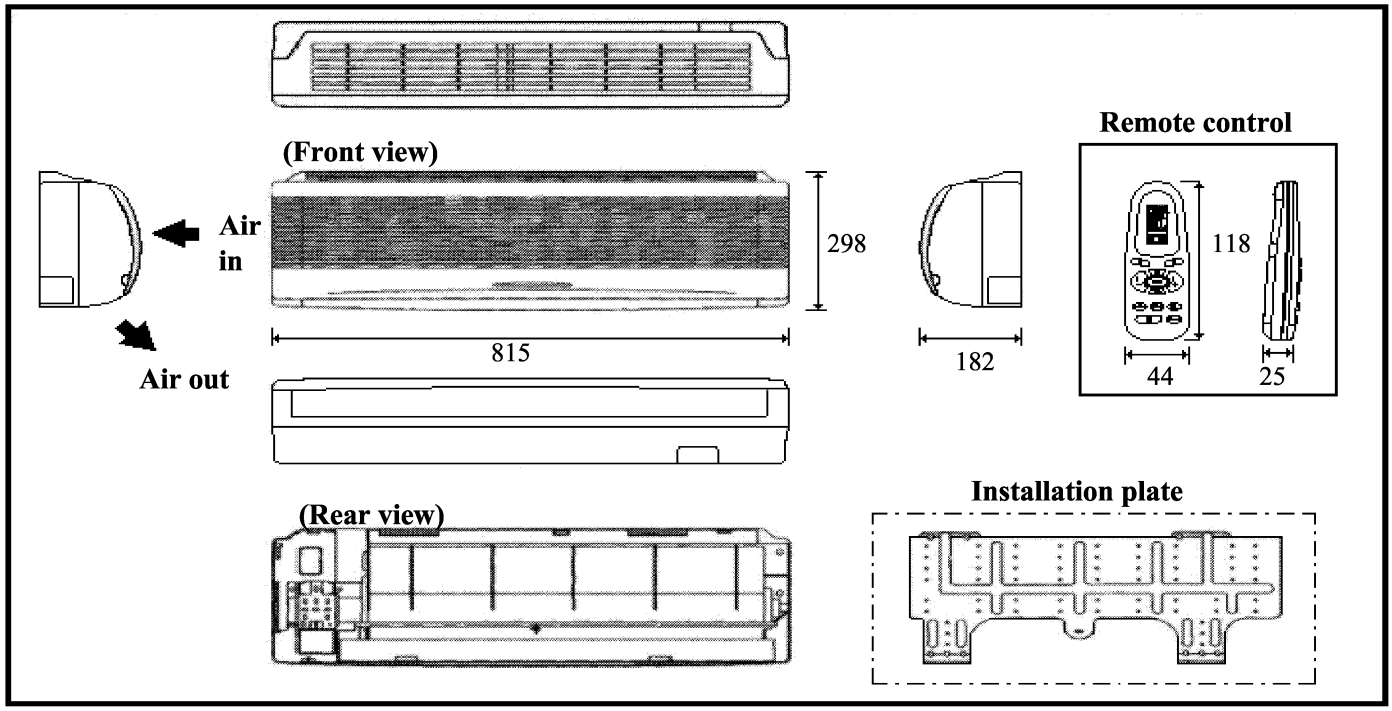
MODEL				D-9	D-9 ST	D-12	D-12 ST	D-18 ST	D-24 ST
Power Supply				220-240 V / 50 Hz					
Refrigerant				R-22	R-22	R-22	R-22	R-22	R-22
Compressor Type				Rotary	Rotary	Rotary	Rotary	Rotary	Rotary
Performance	Capacity	Cooling	Btu/hr	9.000	9.000	12.000	12.000	18.000	24.000
			Watt	2.639	2.639	3.519	3.519	5.279	7.038
			Kcal/hr	2.268	2.268	3.024	3.024	4.536	6.048
	Capacity	Heating	Btu/hr	10.000	10.000	13.000	13.000	20.000	25.000
			Watt	2.933	2.933	3.812	3.812	5.865	7.331
			Kcal/hr	2.520	2.520	3.276	3.276	5.040	6.300
	EER	Cooling	BTU/Watt .hr	9,8	9,9	10,0	10,8	10,7	10,3
		Heating	BTU/Watt .hr	10,9	11,2	10,8	11,7	11,4	9,3
	Dehumdifying Capacity		liter / hr	1,1	1,1	1,4	1,4	2,2	2,7
	Air Flow	(C / H)	m^3 / min	6.1 / 6.9	6.1 / 6.9	7.8 / 8.2	7.8 / 8.2	13.5 / 14.0	14.0 / 14.5
	Sound Level	(In / Out)	dB	35 / 45	35 / 45	38 / 49	38 / 49	45 / 55	47 / 59
	Operation Range		°C	-5 / +43	-5 / +52	-5 / +43	-5 / +52	0 / + 52	0 / +52
Power	Running Current	Cooling	Amp.	4,1	4,4	5,2	4,8	7,4	10,3
		Heating	Amp.	4,1	4,2	5,2	4,8	7,7	12,2
	Power Input	Cooling	Watt	920	910	1.200	1.110	1.690	2.330
		Heating	Watt	920	890	1.200	1.110	1.755	2.700
Size	Net Weight	Indoor	kg	9,6	9,6	9,6	9,6	15,0	15,0
		Outdoor	kg	29,0	31,0	37,0	38.5	51.5	62.5
	Shipping Weight	Indoor	kg	11,3	11,3	11,3	11,3	18,0	18,0
		Outdoor	kg	32,0	34,0	40,0	41.5	55,0	66.5
	Net Dimensions	Indoor	mm	815x182x298	815x182x298	815x182x298	815x182x298	1080x204x275	1080x204x275
	(W x H x D)	Outdoor	mm	720x532x245	720x532x245	720x532x245	720x532x245	787x620x320	880x638x310
	Shipping Dimensions	Indoor	mm	880x248x370	880x248x370	880x248x370	880x248x370	1148x268x349	1148x268x349
	(W x H x D)	Outdoor	mm	853x592x310	853x592x310	853x592x310	853x592x310	909x700x445	1023x719x413
	Loading Qty	W/O Pipe	20 / 40	116/252	116/252	116/252	116/252	72/153	62/128
		W Pipe	20 / 40	113/243	113/243	113/243	113/243	67/141	58/122

Notes :
Capacities tested and rated in accordance with ISO 5151 Standard.

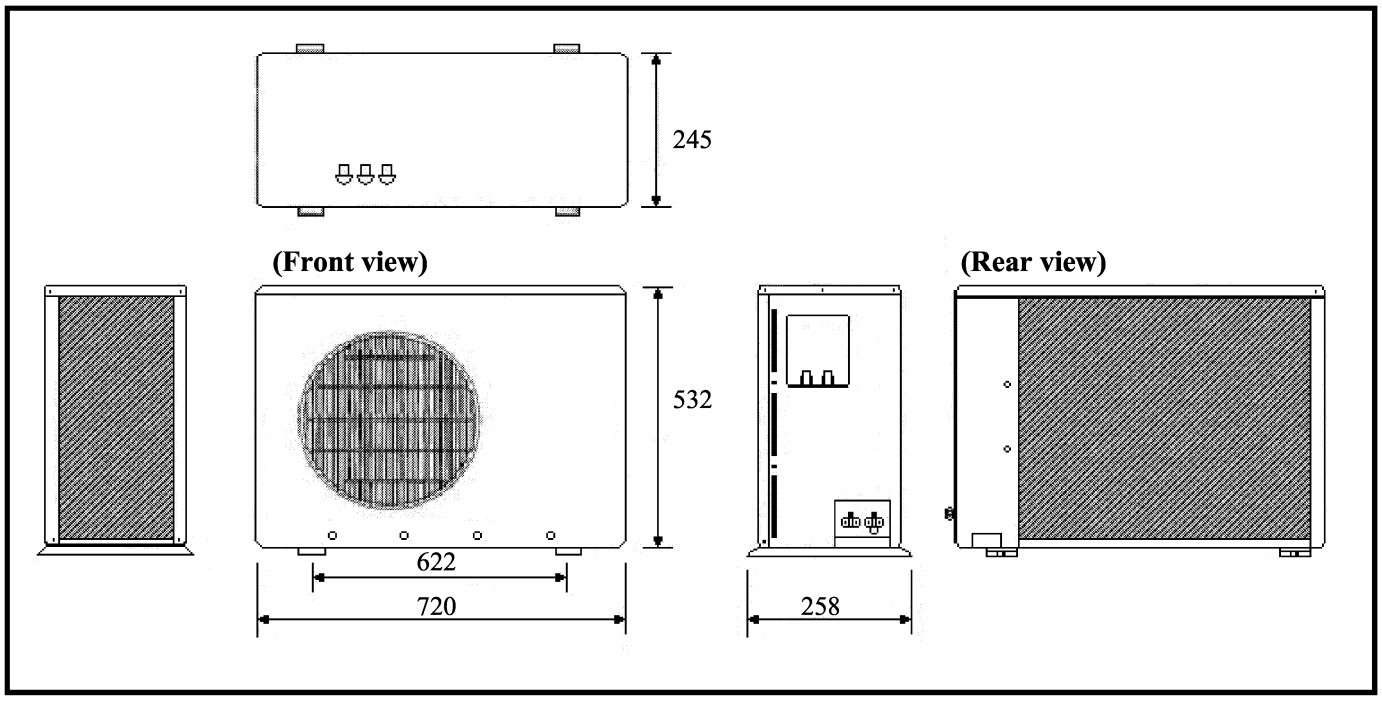
Test Conditions	Indoor	Outdoor
Cooling	27°C (81°F) DB / 19°C (66°F) WB	35°C (95°F) DB / 24°C (75°F) WB
Heating	20°C (68°F) DB / 15°C (59°F) WB	7°C (45°F) DB / 6°C (43°F) WB

DIMENSIONS

Indoor Unit 9/12 K :

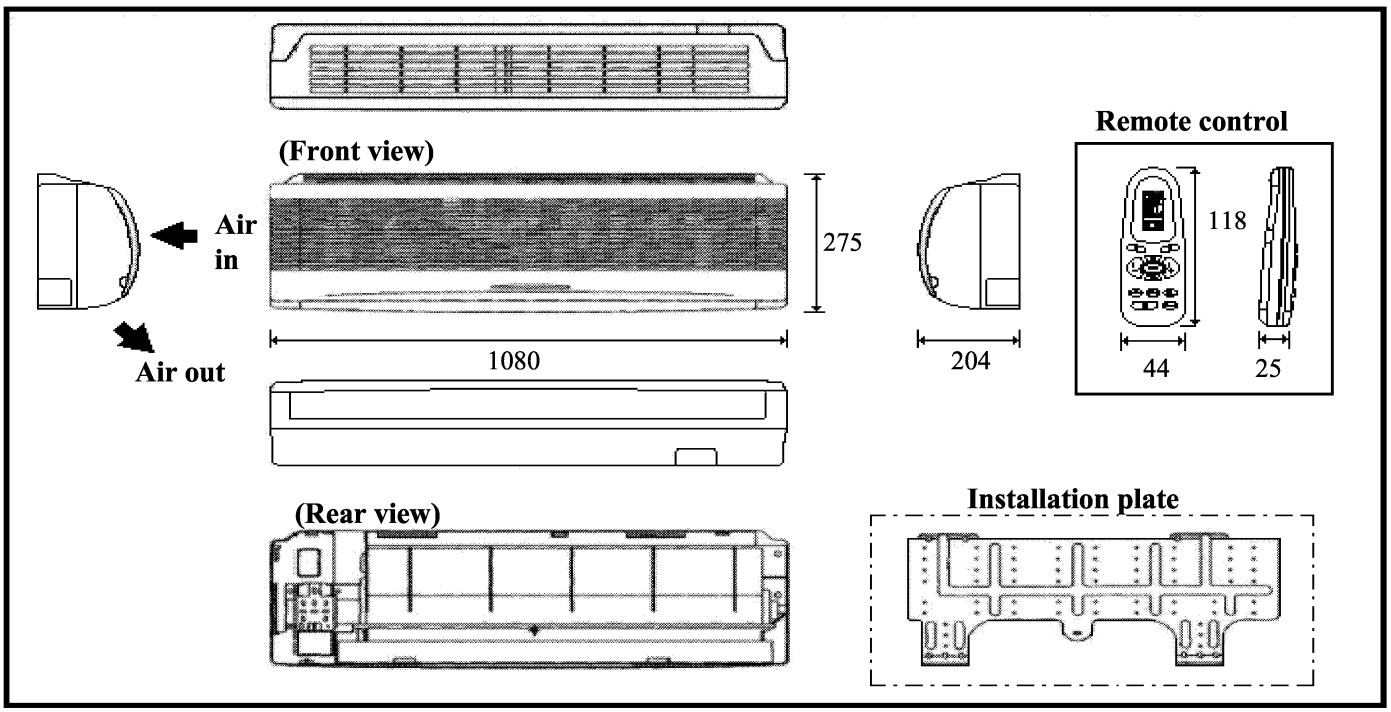


Outdoor Unit 9/12 K :

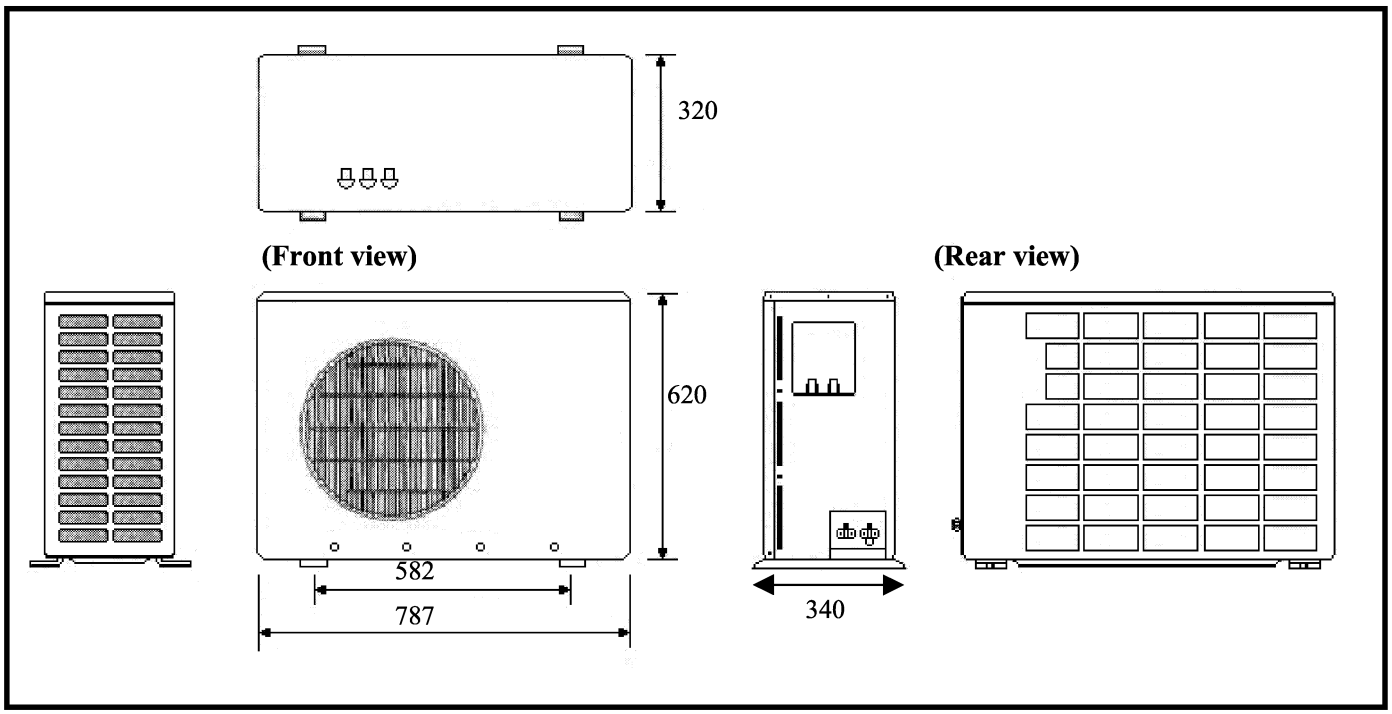


DIMENSIONS

Indoor Unit 18 K :

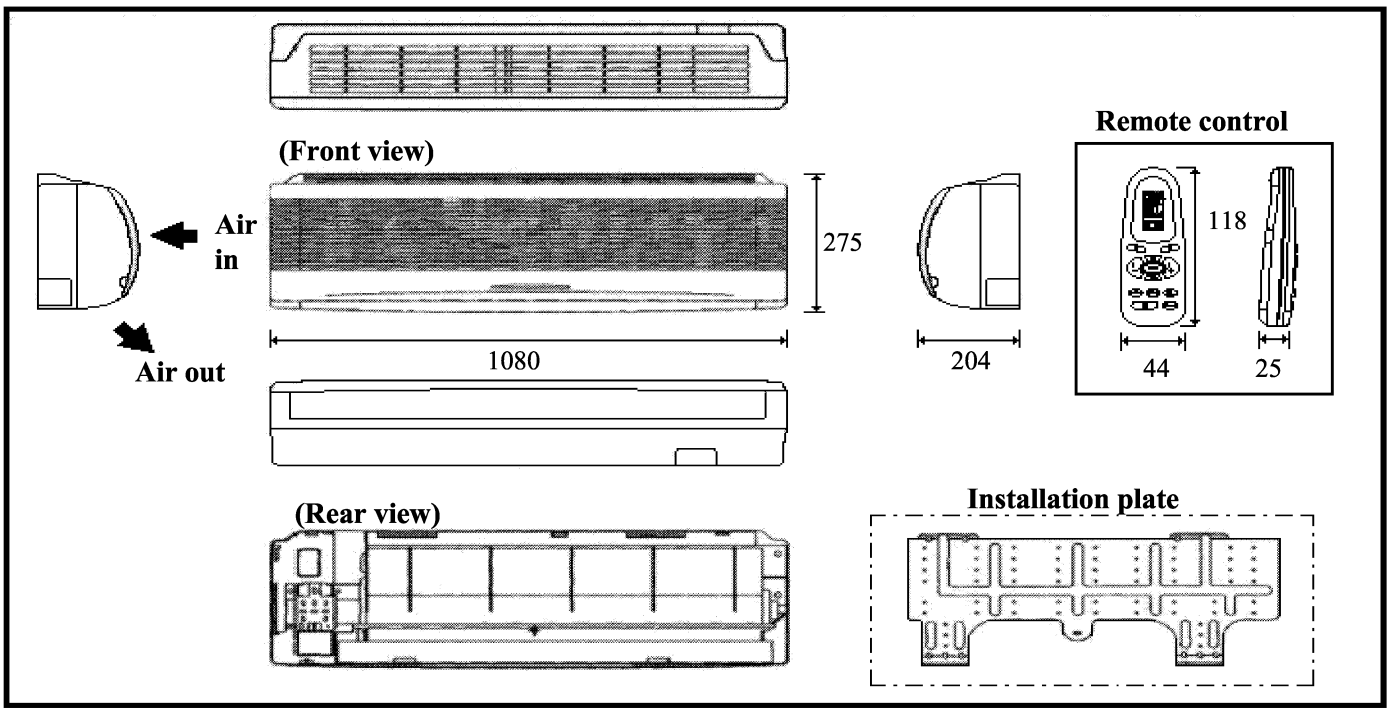


Outdoor Unit 18K :

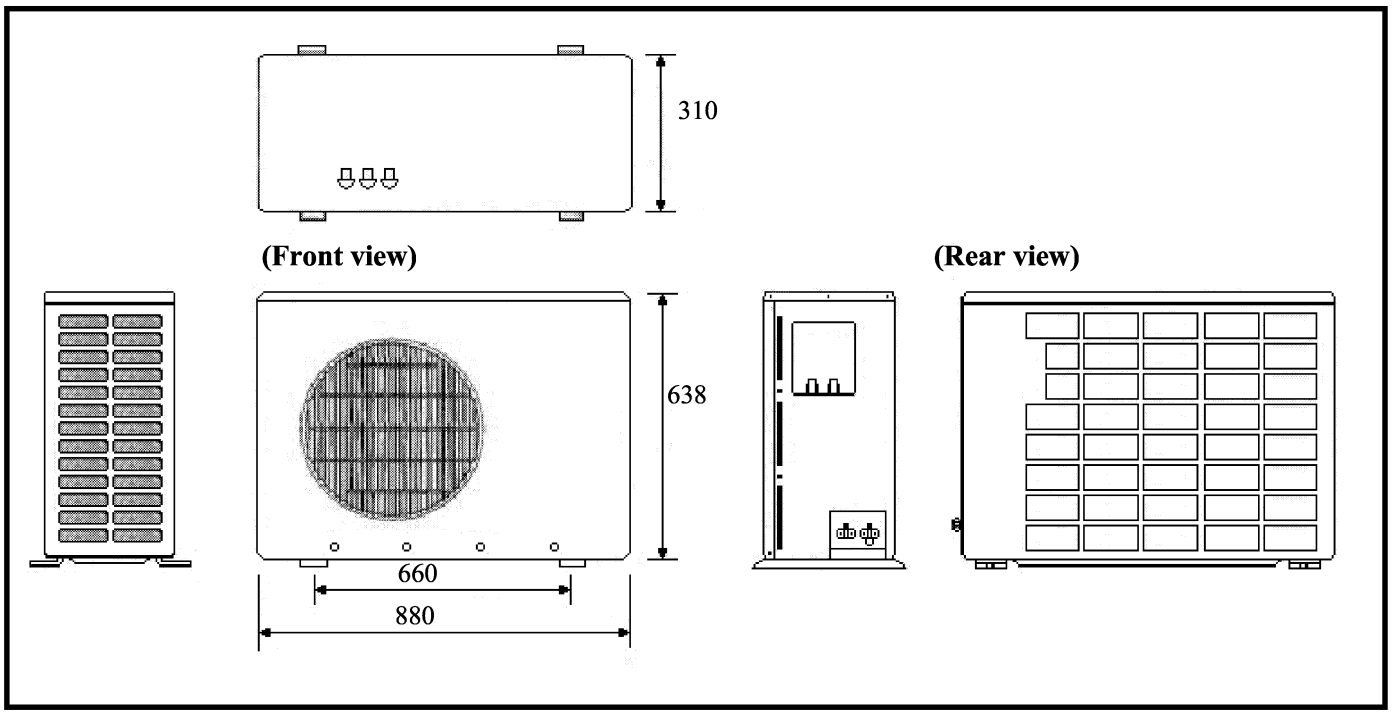


DIMENSIONS

Indoor Unit 24K :

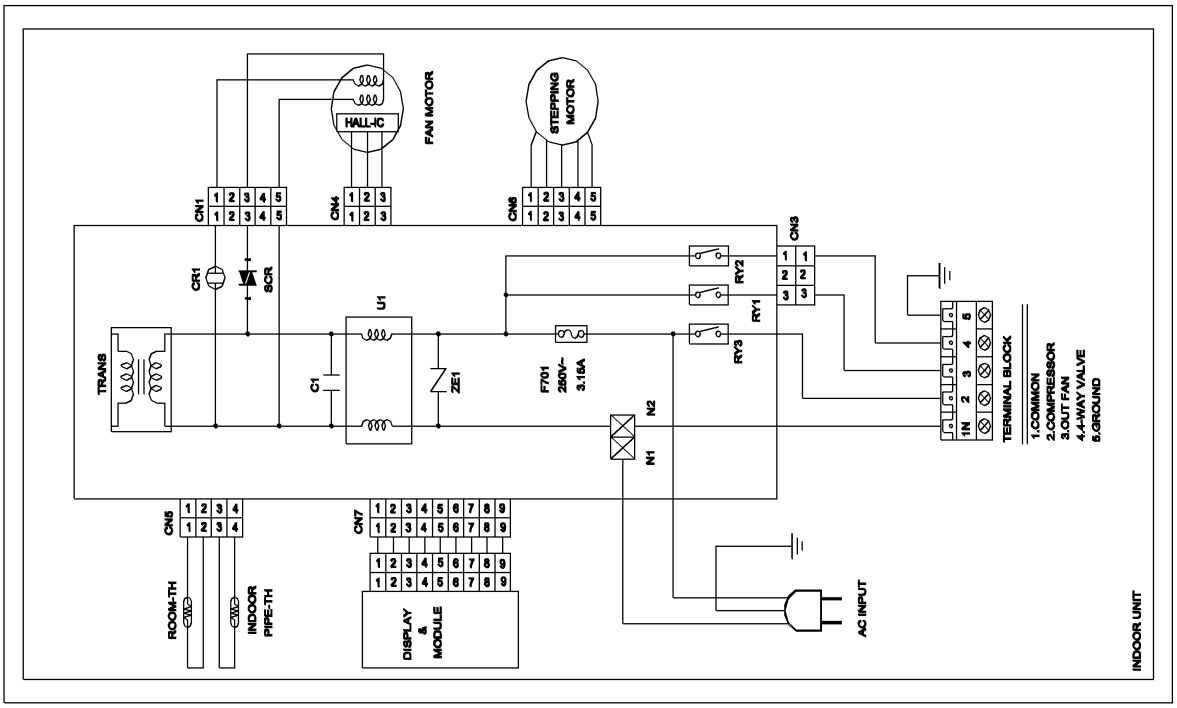


Outdoor Unit 24K :

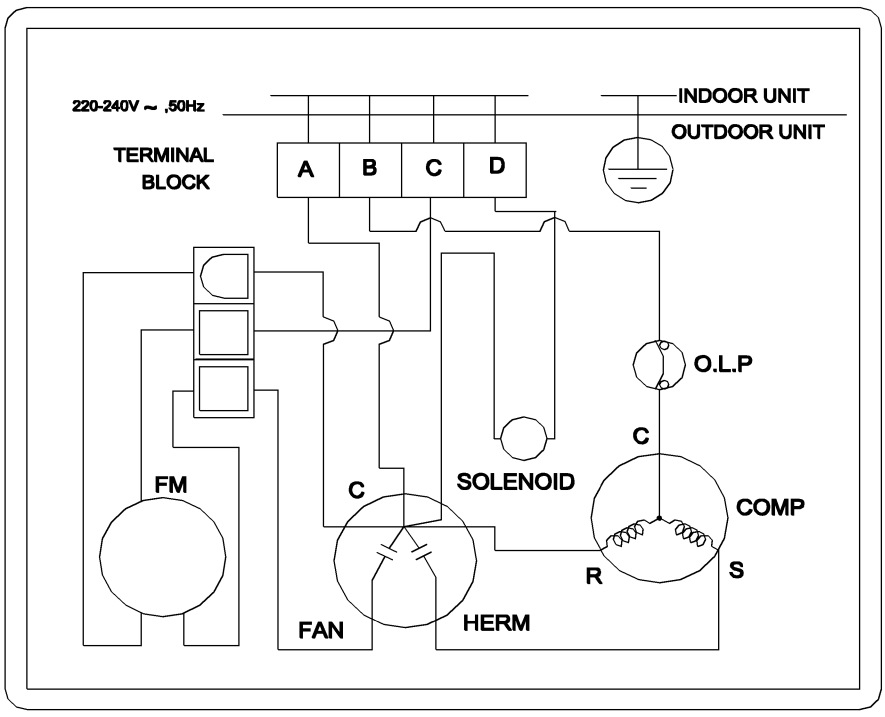


CIRCUIT DIAGRAM 9/12K

Indoor Unit

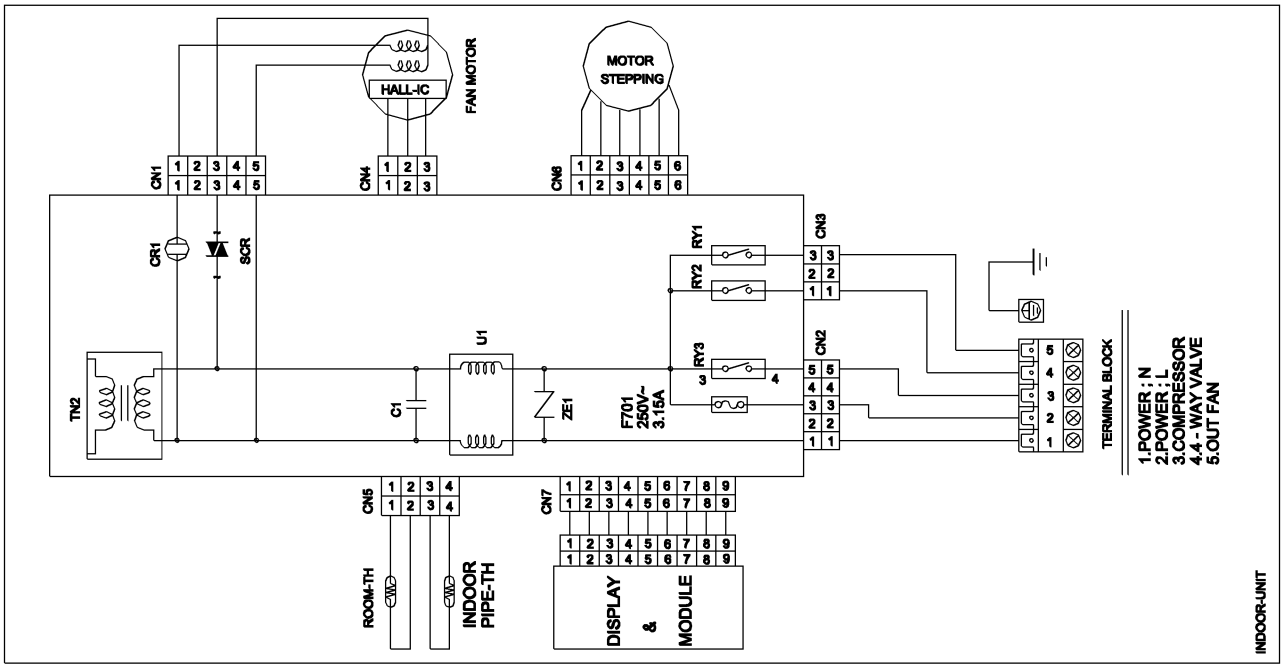


Outdoor Unit

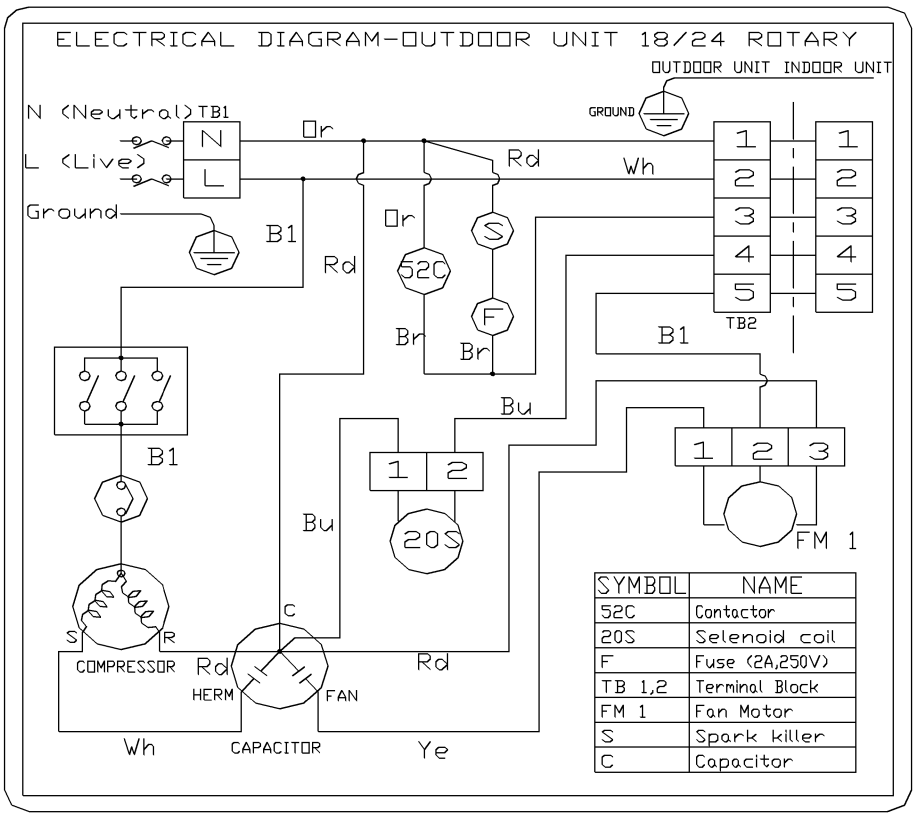


CIRCUIT DIAGRAM 18/24K

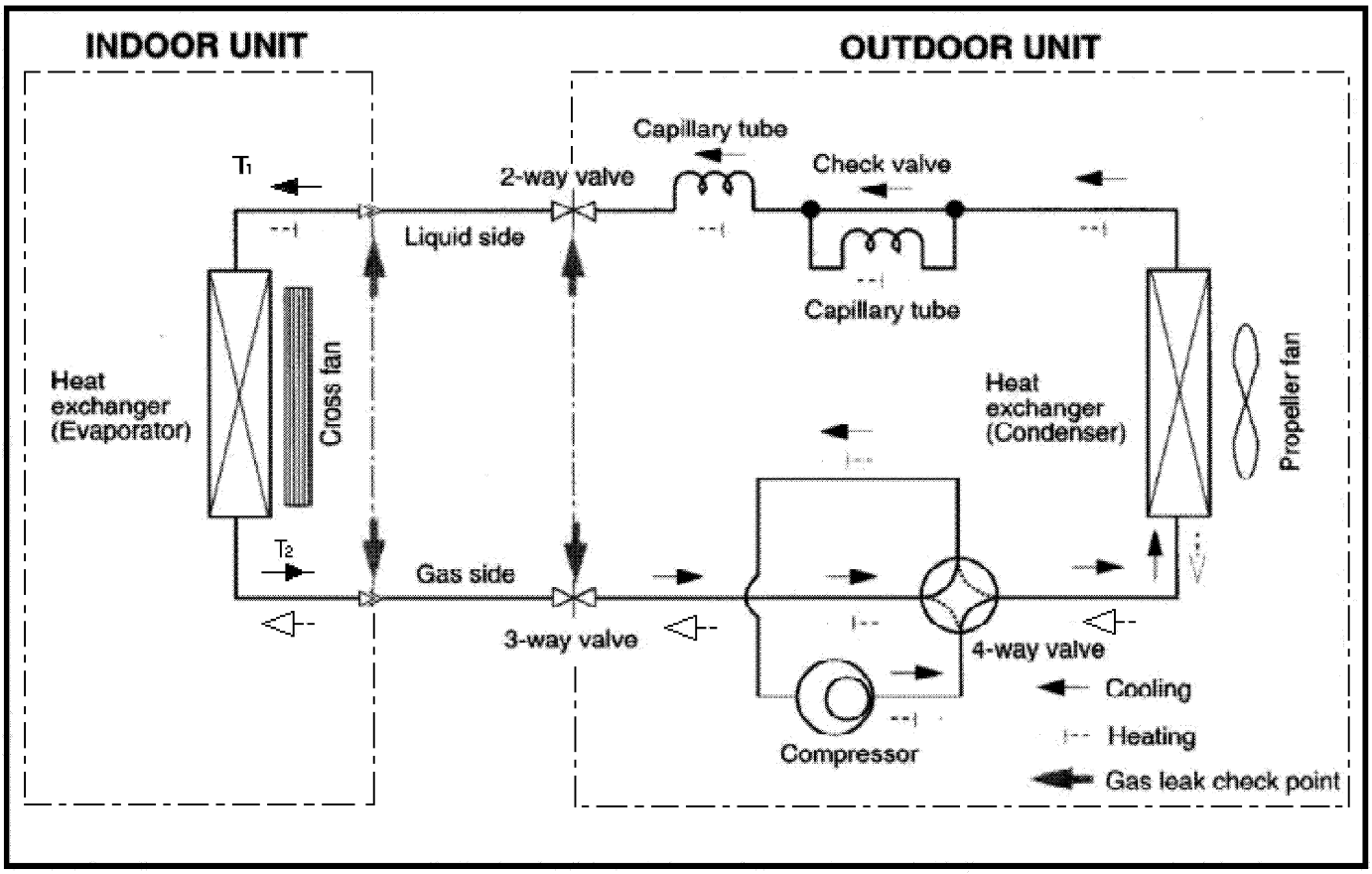
Indoor Unit



Outdoor Unit

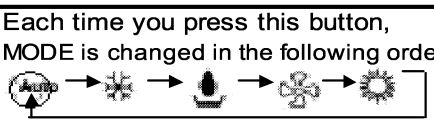


REFRIGERATING CYCLE BLOCK DIAGRAM



OPERATING INSTRUCTIONS

Name & Function of Key in remote controller

NO		NAMED OF KEY		FUNCTION OF KEY
1	COVER	⏻		On / Off Button.Use this button to start and stop air conditioner.
2		▲ (UP)		Temp. Up Button. If the ▲ button is pressed once, the setting temperature is increased by 1^0C
		▼ (DOWN)		Temp. Down Button. If the ▼ button is pressed once, the setting temperature is increased by 1^0C
3		MODE		Each time you press this button, MODE is changed in the following order.  : Auto Mode : Cool Mode : Dry Mode : Fan Only : Heat Mode
4		TURBO		Use this button to provide heavy duty cooling & Heating for 30 minutes.
5		OFF		Setup the reserve or cancel the timer on and timer off quickly
6				Use this button for sleep operation. (The SLEEP mode can be selected at COOL and HEAT mode.)
7				Adjusts air flow vertically.
8				Each time you press this button, FAN SPEED is changed in the following order. 
9		TIMER	ON TIMER	Setup the time that operation start.
10			OFF TIMER	Setup the time that operation stop.
11			SET	Use this button to reserve the time on.
12			CANCEL	Use this button to reserve or cancel the timer on and timer off.
13			(UP)	If the button is pressed once, the time increase bye one minute during the time set mode ,and ten minutes during the timer set mode.
14			(DOWN)	If the button is pressed once, the time decrease by one minute during the time set mode ,and ten minutes during the timer set mode.
15			TIME	Without regard to ON / OFF condition in remote controller, use this button to set current time. Adjust the current time using button. (Data can be transmitted after setting up the time)

OPERATING INSTRUCTIONS

Name & Function of Key in remote controller :

1. AUTO MODE : In this mode, operation mode (COOL, HEAT, DRY) is selected automatically by the room temperature of initial operation.

Room Temp	OperationType
Tr≥ 21^0C + ΔT	Cool Operation (Set Temp : AUTO SETTING)
21^0C + ΔT > Tr	Heat Operation (Set Temp : 22^0C + ΔT)

ΔT = -1^0C, -2^0C, 0^0C, $+1^0$C, $+2^0$C

ΔT is controlled by setting temperature up / down key of remote controller.

2. COOL MODE : The unit operates according to the difference between the setting and room temperature. (18^0C - 30^0C)

3. HEAT MODE : THE unit operates according to the differences between the setting and room temperature. (16^0C - 30^0C)

- **Prevention against cold wind :** For about 3-5 minutes after initial operation, thermo control or "de-ice", the indoor fan will either not operate or operate very slowly, then switch to the selected fan speed. This period is to allow the indoor unit's heat exchanger to prewarm before emitting warm air.
- **High temperature release function :** The outdoor unit for and compressor ON / OFF control for safety operation, when the over-heat is heat exchanger of indoor unit.
- **De-ice :** Deicing operation is controller by indoor unit's heat exchanger temperature and accumulating time of compressor's operation.

De-ice end by sensing of the processing time by de-ice Condition.

4. DRY MODE : Has 3 states, each determined by room temperature.The unit operates in DRY mode.

- Compressor ON / OFF Time is controlled compulsorily (can not set up the fan speed, always breeze).
- Protective function : Low temperature release. (Prevention against freeze)

5. TURBO MODE : This mode is available in AUTO, COOL, HEAT, DRY, FAN MODE .When this button is pressed at first , the air conditioner is operated "powerful" state for 30 minutes regardless of the set temperature, room temperature. When this button is pressed again, or when the operation time is 30 minutes, turbo operation mode is canceled and returned to the previous mode.

- But, if you press the TURBO button in DRY or FAN mode that is chanced with AUTO mode automatically.

6. SLEEP MODE : Sleep mode is available only in COOL or HEAT mode. The operation will stop after 6 hours.

- **In COOL mode :** The setting temperature is automatically raised by 1^0C each 1 hour. When the temperature has been raised by total of 2^0C, that temperature is maintained.
- **In HEAT mode :** The setting temperature is automatically dropped by 1^0C each 1 hour. When the temperature has been dropped by total of 2^0C, that temperature is maintained.

7. FAN SPEED : Manual (3 step). Auto (4 step) Fan speed automatically varies depending on both the difference between setting and the room temperature.

8. COMPULSORY OPERATION : For operating the air conditioner without the remote controller.

- **AUTO :** The operating is the same function that AUTO MODE in the remote controller.

OPERATING INSTRUCTIONS

9. SWING : BLADE-H is rotated vertically by the stepping motor.

- **Memory louver :** When ON / OFF button is pressed at stop state, the BLADE-H returns to its original location which is operating state before stop.
- **Swing Set :** Press the button under the remote control is displayed on LCD the and the blades move up and down, about 43^0. If the one more time press the button, blades location is stop.

10. Quick OFF TIMER : OFF timer (quick timer) allows reservation or cancel the timer on timer off quickly. When OFF timer button is pressed at operating state, LCD displays the polling state sequentially. The LCD also displays the time remaining.

11. 24-Hour ON/OFF Real Setting Timer : The air conditioner is turned ON at a specified time using :

ON TIMER

OFF TIMER : The air Conditioner is turned OFF at a specified time using **OFF TIMER**

- **ON TIMER :** Only timer LED lights on.
- **OFF TIMER :** Both timer and operating LED lights on.
- 3 minutes delay timer.

12. SELF Diagnosis :

DISPLAY				REMARKS
OPERATION	TIMER	FAN	TURBO	
●	X	X	X	POWER FAILURE
X	●	X	X	INDOOR ROOM TEMP. SENSOR MALFUNCTION
●	●	X	X	TEMP.PIPE. SENSOR MALFUNCTION
X	X	●	X	INDOOR FAN MOTOR MALFUNCTION
●	X	●	X	GAS LEAKAGE IN THE SYSTEM
●	X	X	●	SUPLY VOLTAGE TOO LOW/HIGH (18/24K)
●	●	●	●	OPTION ERROR (OPTION WAS NOT SET UP OR OPTION DATA ERROR)

● BLINKING

X OFF

13. BUZZER SOUND : Whenever the ON / OFF button is pressed or whenever change occurs to the condition which is set up or select, the compulsory operation mode, buzzer is sounded “beep”.

INSTALLATION

Deciding on Where to Install the Air Conditioner

When deciding on the location of the air conditioner with the owner, the following restrictions must be taken into account.

General

Do NOT install the air conditioner in a location where it will come into contact with the following elements:

- Combustible gases
- Saline air
- Machine oil
- Sulphide gas
- Special environmental conditions

If you must install the unit in such conditions, first consult your dealer.

Indoor Unit

- There must be no obstacles near the air inlet and outlet.
- Install the indoor unit on a surface that can support its weight.
- Choose a position that enables the piping and cables to be easily connected to the outdoor unit and the recommended length of 5 metres to be respected (“L” metres maximum).

- Maintain sufficient clearance around the indoor unit, as indicated in the diagram on the page opposite.
- Make sure that the water dripping from the drain hose runs away correctly and safely.

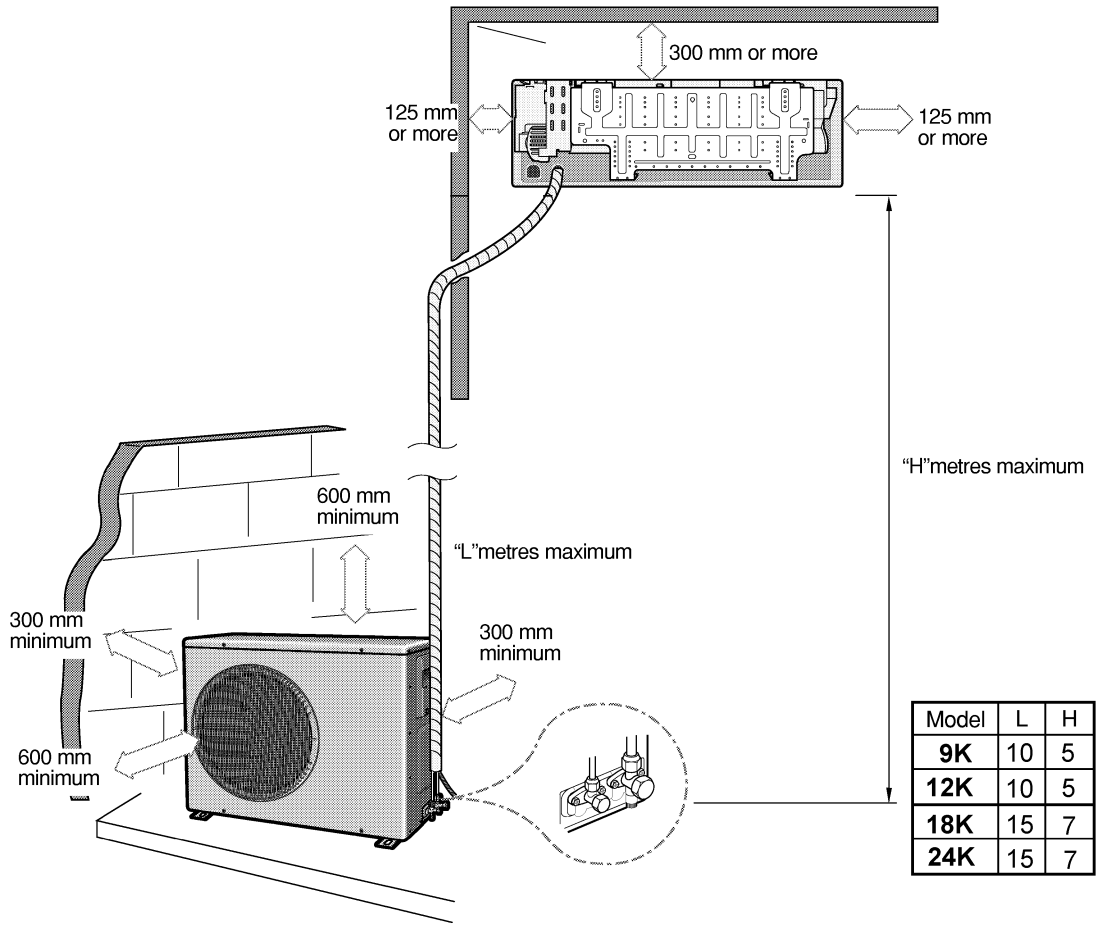
Outdoor Unit

- The outdoor unit must NEVER be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.
- Choose a location that is dry and sunny, but not exposed to direct sunlight or strong winds.
- Do not block any passageways or thoroughfares.
- Choose a location where the noise of the air conditioner when running and the discharged air do not disturb any neighbours.
- Choose a position that enables the piping and cables to be easily connected to the indoor unit and the recommended length of 5 metres to be respected (“L” metres maximum).
- Install the outdoor unit on a flat, stable surface that can support its weight and does not generate any unnecessary noise and vibration.
- Position the outdoor unit so that the air flow is directed towards the outside, as indicated by the arrows on the top of the unit.
- Maintain sufficient clearance around the outdoor unit, as indicated in the diagram on the page opposite.
- If the outdoor unit is installed at a height, ensure that its base is firmly fixed in position; the maximum height is “H”metres.
- Make sure that the water dripping from the drain hose runs away correctly and safely.

CAUTION

- ***You have just purchased a split-type room air conditioner and it has been installed by your installation specialist.***
- ***This device must be installed according to the national electrical rules.***
- ***Max input power & current is measured according to IEC standard and input power & current is measured according to ISO standard.***

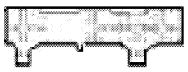
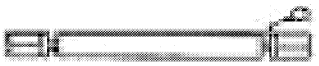
Respect the clearances and maximum lengths indicated in the diagram below when installing the unit.



Model	L	H
9K	10	5
12K	10	5
18K	15	7
24K	15	7

Air Conditioner and Accessories

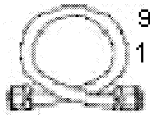
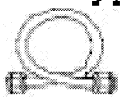
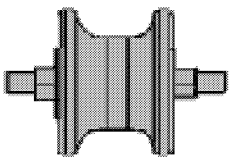
INSTALLATION PARTS :

NO	NAME OF PART	QTY	LOCATION
1	Installation-plate 	1	Indoor Unit
2	Screw-Tap  M4x12	2	
3	Remote control holder 	1	
4	Flare nut 6.35mm O.D pipe 	2	Outdoor Unit
5	Flare nut 16.07 16.08 12.7mm O.D pipe  2407 15.8mm O.D pipe	2	
6	Assy-cable  6p	1	
7	Power cable  3p	1	

Note :

4 and 5 are only included when supplied without the connection parts.

CONNECTION PARTS :

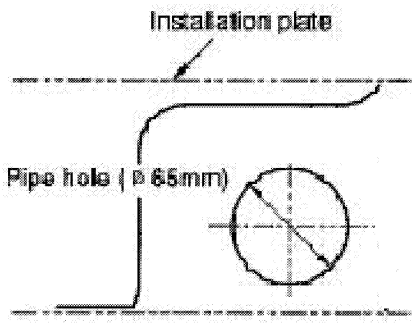
NO	NAME OF PART	QTY	LOCATION
1	Assembly piping  9.52x5m(9K) 12.7x5m(12/18K) 15.8x5m (24K)	1	Accessory Box
2	Assembly piping  6.35x5m	1	
3	Insulation tube  Foam PE T3	1	
4	Tape vinly  Width 50mm	1	
5	Clamper-tube, A 	3	
6	Clamper-tube, B 	3	
7	Putty-A  100g	1	
8	Screw-Tap  M4x16	10	
9	Drain-Hose  2m	1	
10	Drain plug 	1	
11	Bracket Rail 	4	

Note :

* The above connection parts are optional.

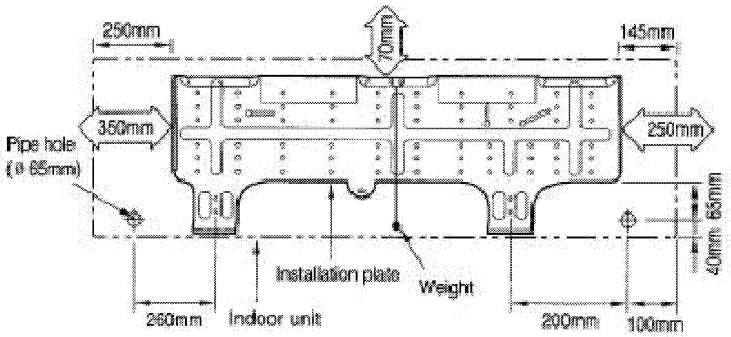
* When supplied without connection parts, we commend you to prepare the above parts for a proper installation.

Fixing the Installation Plate

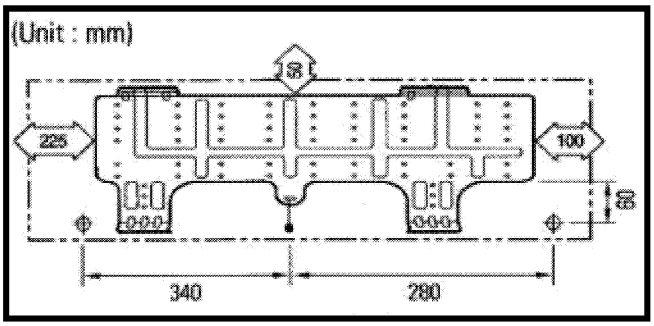


1. Determine the position of the pipe and drain hose hole using the right figure and drill the hole with an inner diameter of 65mm so that it slants slightly downwards.

2. If you are fixing the indoor unit to a...	**Then follow Steps...**
Wall	**3.**
Window frame	**4 to 6.**



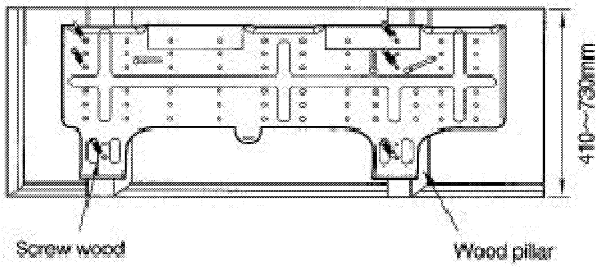
(18/24 K)



(9/12 K)

3. Fix the installation plate to the wall in a manner approprite to the weight of the indoor unit.

If you are mounting the plate on a concrete wall with anchor bolts, the anchor bolts must not project by more than 20mm.

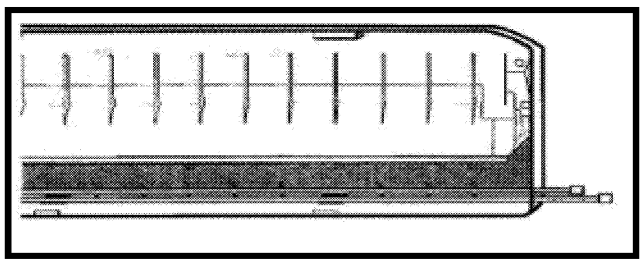


4. Determine the positions of the wooden uprights to be attached to the window frame.

5. Attach the wooden uprights to the window frame in a manner appropriate to the weight of the indoor unit.

6. Using tapped screws, attach the installation plate to the wooden uprights, as illustrated in the last figure opposite.

Purging the Unit



On delivery, the indoor unit is loaded with an inert gas. All this gas must therefore be purged before connecting the assembly piping. To purge the inert gas, proceed as follows.

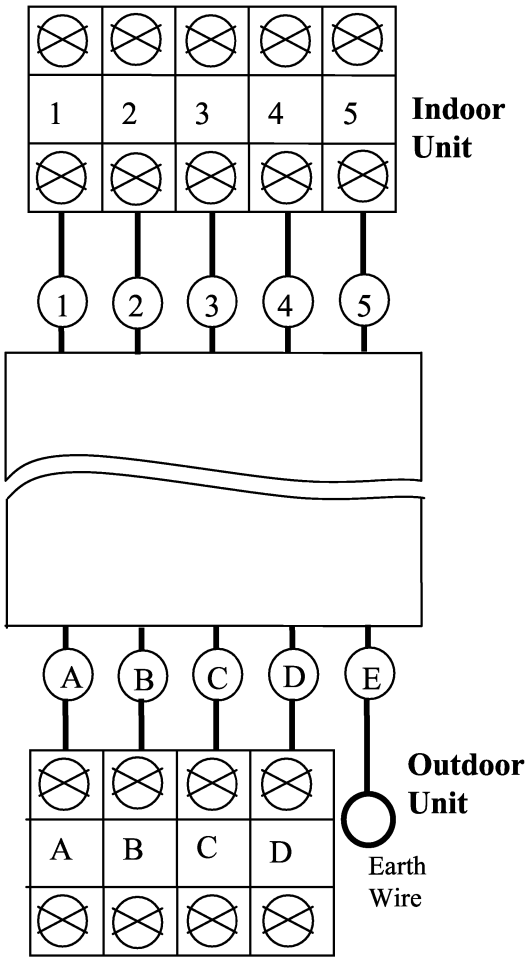
Unscrew the caps at the end of each pipe.

Result : All inert gas escapes from the indoor unit.

*** To prevent dirt or foreign objects from getting into the pipes during installation, do NOT remove the caps completely until you are ready to connect the piping.**

Connecting the Assembly Cable

9/12 K



The outdoor unit is powered from the indoor unit via the assembly cable. If the outdoor unit is more than five metres away from the indoor unit, the cable must first be extended to a maximum of ten metres.

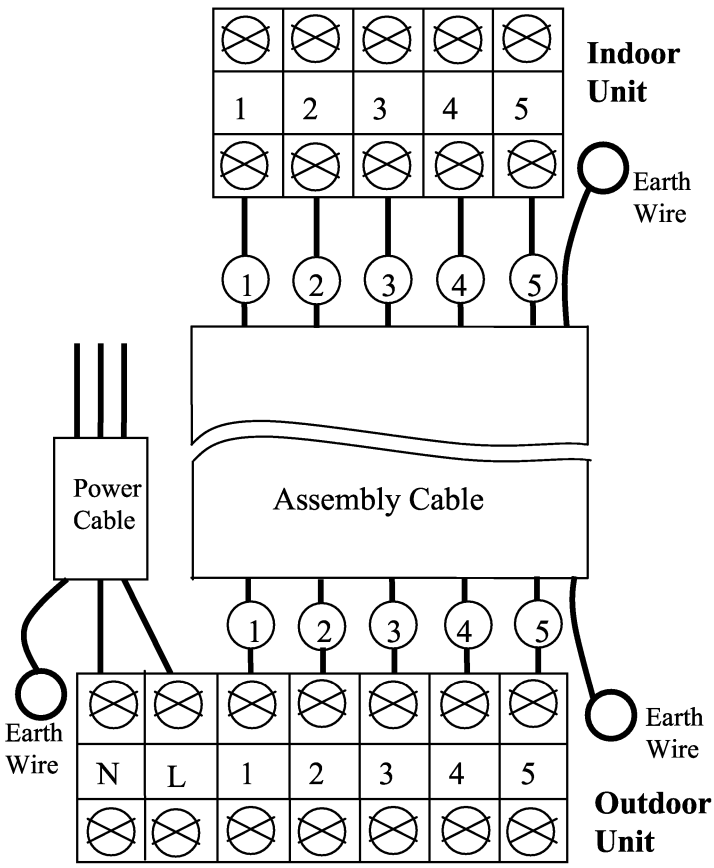
For the Indoor Unit

1. Extend the assembly cable if necessary.
2. Open the front grille by pulling on the tabs on the lower right and left sides of the indoor unit.
3. Remove the screw securing the connector cover.
4. Pass the assembly cable throughout the rear of the indoor unit and connector the assembly cable to terminals as shown in the figure.
* Each wire is labelled with the corresponding terminal number.
5. Firmly fix the ass'y cable with clamp wire holder.
6. Pass the other end of the cable through the 65mm hole in the wall
7. Replace the connector cover, carefully tightening the screw.
8. Close the front grille.

For the Outdoor Unit

1. Remove the terminal board cover on the side of the outdoor unit.
2. Firmly connect the cable connector in the terminal block.
3. Connect the earth wire to the earth terminal.
4. Firmly fix the ass'y cable with clamp wire holder.
5. Replace the terminal board cover, carefully tightening the screw.

18/24 K



For the Indoor Unit

1. Extend the assembly and the power cable if necessary
2. Open the front grille by pulling on the tabs on the lower right and left sides of the indoor unit.
3. Remove the screw securing the connector cover.
4. Pass the assembly and the power cable throughout the rear of the indoor unit and connector the assembly and the power cable to terminals as shown in the figure.
* Each wire is labelled with the corresponding terminal number.
5. Firmly fix the ass'y and the power cable with clamp wire holders.
6. Pass the other end of the cable through the 65mm hole in the wall.
7. Replace the connector cover, carefully tightening the screw.
8. Close the front grille.

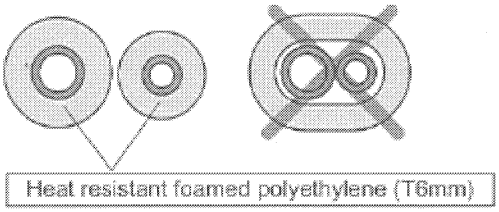
For the Outdoor Unit

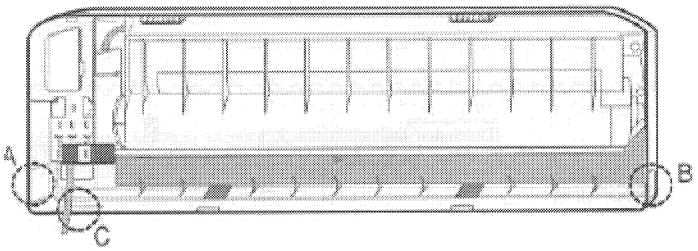
1. Remove the terminal board cover on the side of the outdoor unit.
2. Firmly connect the cable connector in the terminal block.
3. Connect the earth wires to the earth terminals.
4. Firmly fix the ass'y cable with clamp wire holder.

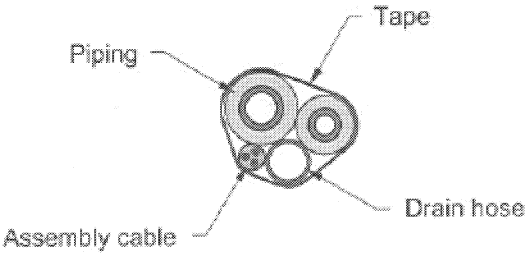
Installing and Connecting the Indoor Unit Assembly Piping

PIPING AND DRAIN HOSE INSTALLATION

1. Fix the drain hose under the refrigerant piping.
2. Be careful not to allow slack of the drain hose.
3. Do not allow the piping to jut out from the back of indoor unit.
4. Insulate both of the refrigerant pipes so that dewing and other problems do not occur.
5. Be careful in bending the pipes.
The bending radius must be 100mm or larger.

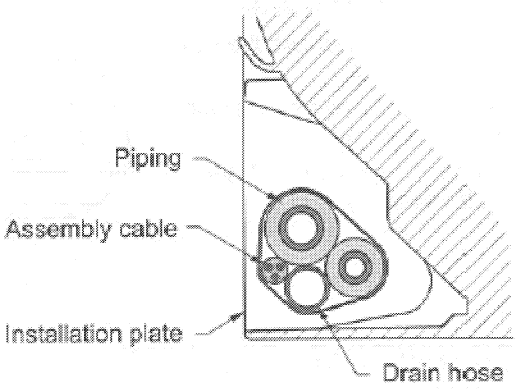






(A) Right-hand connection with piping

1. Cut out the knock-out piece from the rightside of the rear body with a knife, etc.
Smooth the cut edges.
2. Cut out the Holder-pipe slit part.
3. Support the above section to be bent with your hand and bend the pipes there.



(B) Left-hand connection with piping

1. Cut out the knock-out piece from the leftside of the rear body with a knife, etc.
Smooth the cut edges.

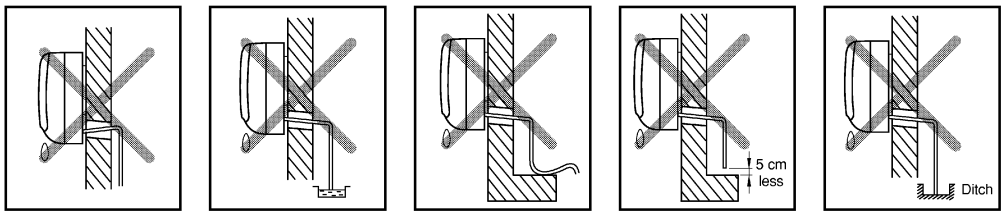
(C) Under-side connection with piping

1. Cut out the knock-out piece from the underside of the rear body with a knife, etc.
Smooth the cut edges.
2. Cut out the Holder-pipe slit part.

Set the drain hose in the inner part of the indoor unit and the assembly cable in lower part of it. Wind tape round them.

INSTALLING AND CONNECTING THE INDOOR UNIT DRAIN HOSE:

1. Run the drain hose sloped downward.
2. Do not install the drain hose as illustrated below.



The hose must NOT slope upwards.

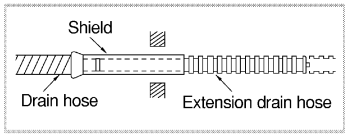
The end of the drain hose must NOT be placed in water.

Do NOT bend the hose in different directions.

Keep a clearance of at least 5 cm between the end of the hose and the ground.

Do NOT place the end of the drain hose in a hollow.

3. Put water in the drain pan and make sure that the water is drained outdoor.
4. When connecting extension drain hose, insulate the inside part of extension drain hose with shield.



Cutting/Extending the Piping

Five metres of piping is supplied with the air conditioner(Optional). This length can if necessary be:

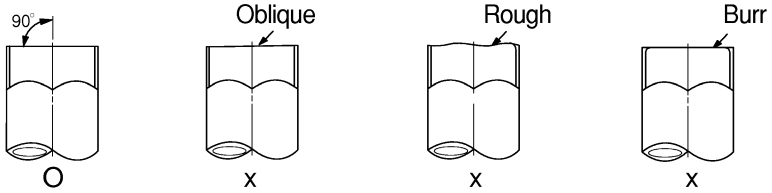
- ***Extended to a maximum of "L" metres, refer to page 2.***
- ***Shortened as required***

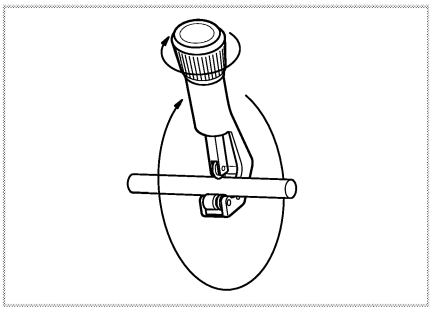
☞ ***If more than five metres of piping is required:***

- ***The assembly cable must also be extended***
- ***Refrigerant must be added to the circuit by an approved installer; otherwise, the indoor unit may freeze***

1 Make sure that you have the required tools available (pipe cutter, reamer, flaring tool and pipe holder).

2 If you wish to shorten the piping, cut it using a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe, and referring to the illustrations below for examples of edges cut correctly and incorrectly.

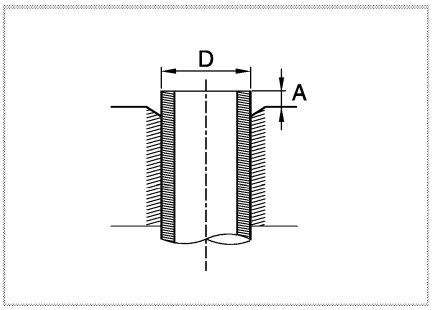




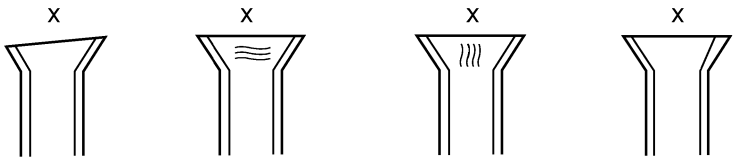
3 To prevent any gas from leaking out, remove all burrs at the cut end of the pipe, using a reamer.

4 Slide a flare nut on to the pipe and modify the flare.

Outer Diameter (D)	Depth (A)
6.35 mm	1.3 mm
9.52 mm	1.6 mm
12.70 mm	2.0 mm
15.88 mm	2.2 mm

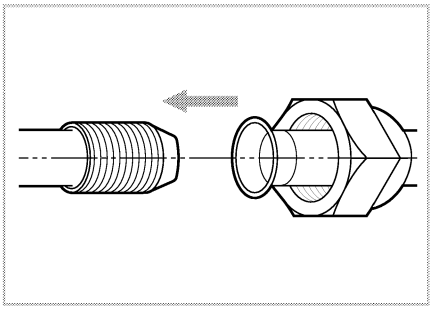


5 Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



6 Align the pipes to be connected and tighten the flare nuts first manually and then with a wrench, applying the following torque.

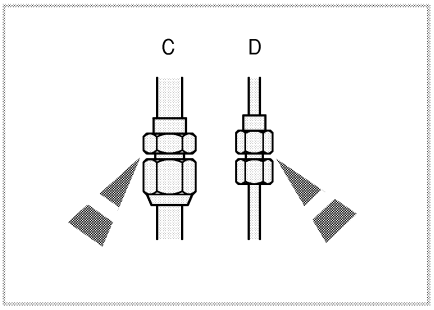
Outer Diameter	Torque (kg•cm)
6.35 mm	144~176
9.52 mm	300~400
12.70 mm	504~616
15.88 mm	630~770

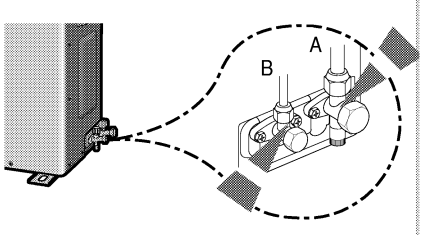


Performing Leak Tests

Before completing the installation (insulation of the cables, hose and piping and fixing of the indoor unit to the installation plate), you must check that there are no gas leaks.

To check for gas leaks on the...	Then, using a leak detector, check the...
Indoor unit	Flare nuts at the end of sections C and D.
Outdoor unit	Valves on sections A and B.





❊ The designs and shape are subject to change according to the model.

Placing the Indoor Unit in Position

Once you have checked that there are no leaks in the system, you can insulate the piping, hose and cables and place the indoor unit on the installation plate.

1 To avoid condensation problems, place heat-resistant polyethylene foam separately around each refrigerant pipe in the lower part of the indoor unit.

2 Wrap the refrigerant pipes and the drain hose located at the rear of the indoor unit up in the absorbent pad.

➢ Triply wind the pipes and hose to the end of the indoor unit with the absorbent pad (make intervals of 20mm).

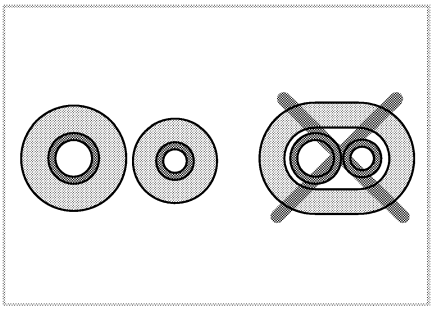
3 Wind insulating tape around the pipes, assembly cable and drain hose.

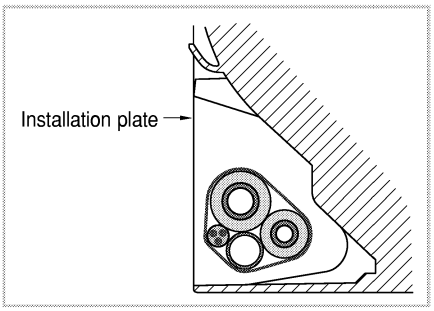
4 Place the resulting bundle carefully in the lower part of the indoor unit, making sure that it does not jut out from the rear of the indoor unit.

5 Hook the indoor unit on to the installation plate and move the unit to the right and left until you are sure that it is securely in place.

6 Finish wrapping vinyl tape around the rest of the piping leading to the outdoor unit.

7 Using clamps (optionally supplied), attach the piping to the wall wherever possible.





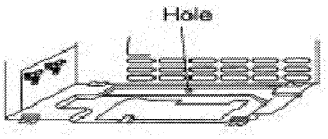
Fixing the Outdoor Unit in Position

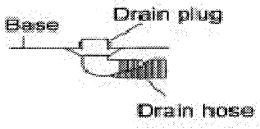
Installation of Drain Line

In heating and deice operation, condensed water may be generated.
Install drain line as following procedure.

1. Insert the drain plug into base hole.

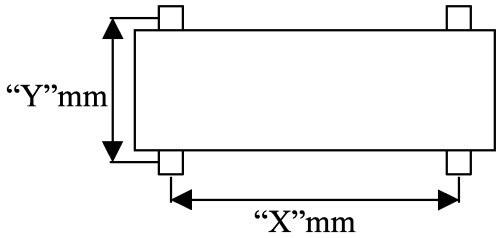
2. And then connect drain hose to drain plug.





Anchor Bolt Arrangement of Outdoor Unit (unit : mm)

* Fix the outdoor unit with the anchor bolts where the unit is likely to be exposed to a strong wind.



Model	X	Y
9/12 K	622	258
18 K	582	320
24 K	660	310

Purging the Circuit

1. Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.

↓

2. Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port (3/8",1/2" or 5/8") as shown at the figure.

↓

3. Open the valve of the low pressure side of manifold gauge counter-clockwise.

↓

4. Purge the air from the system using vacuum pump for about 10 minutes.
* Close the valve of the low pressure side of manifold gauge clockside.
* Remove the hose of the low pressure side of manifold gauge.

↓

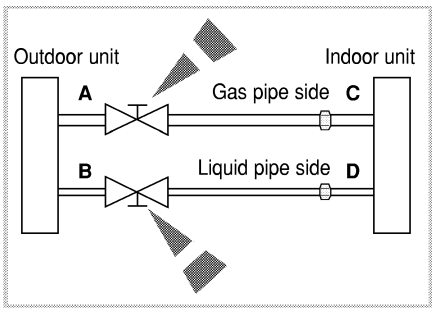
5. Set valve cork of both liquid side and gas side of packed valve to the open position.

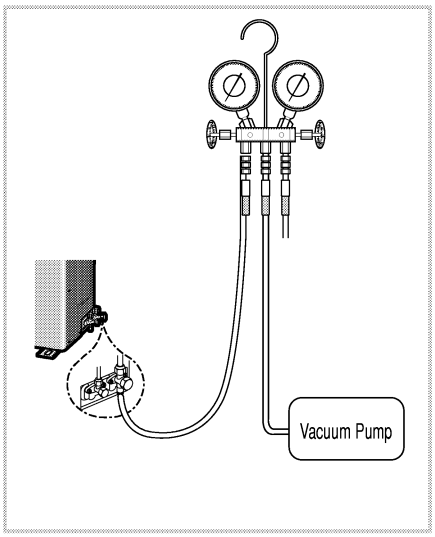
↓

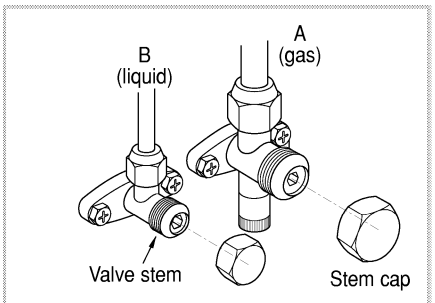
6. Mount the valve stem nuts to the 2-way and 3-way valve. And mount the service port cap to 3-way valve.

↓

7. Check for gas leakage.
* At this time, especially check for gas leakage from the 3-way valve's stem nuts, and from the service port cap.







Refrigerant Refill

* Refill an air-conditioner with refrigerant when refrigerant has been leaked at installing or using

1. Purge air. (for new installation only)

↓

2. Turn the 3-way valve clockwise to close, connect the pressure gauge (low pressure side) to the service valve, and open the 3-way valve again.

↓

3. Connect the tank to refill with Refrigerant.

↓

4. Set the unit to cool operation mode.

↓

5. Check the pressure indicated by the pressure gauge. (low pressure side)
* Standard pressure should be 4.5-5.5 kg/cm^2 in a regular, high operation mode.

↓

6. Open the refrigerant tank and fill with refrigerant until the rated pressure is reached.
* It is recommended not to pour the refrigerant in too quickly, but gradually while operating a pressure valve.

↓

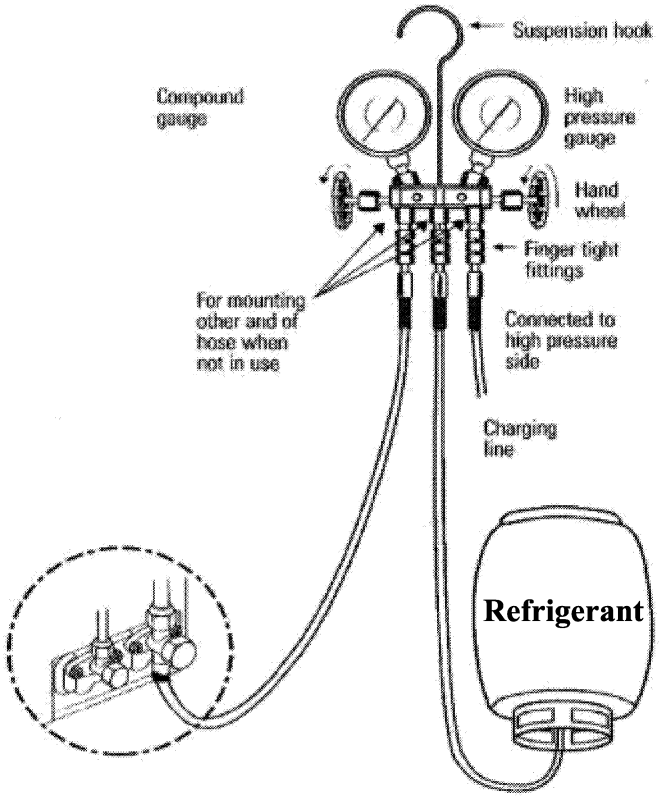
7. Stop operating of the air conditioner.

↓

8. Close the 3-way valve, disconnect the pressure gauge, and open the 3-way valve again.

↓

9. Close the cap of each valve.



REFRIGERANT ADJUSTMENT 9/12K

Class	At Installation		At service	
Connection Pipe Length	Air-Purge Method	Refrigerant Adjustment	Air-Purge Method	Refrigerant Quantity
5m Max.	Refer to the detailed Air-Purge Procedure	Unnecessary	Purge air using a vacuum pump or an additional refrigerant cylinder.	Refer to specification sheet
5-10m		Add 10g of refrigerant for every 1m.		Add 10g of refrigerant for every 1m.

FLARE UNT FIXING TORQUE 9/12K

Outer diameter	Torque (kg-cm)	
	Fixing Torque	Final Torque
Ø 6.35 (9.000Btu, 12.000Btu) (Liquid Side)	160	200
Ø 9.52 (9.000Btu) (Gas Side)	300	350
Ø 12.7 (12.000Btu) (Gas Side)	500	550

REFRIGERANT ADJUSTMENT 18/24K

Class	**At Installation**		**At service**	
Connection Pipe Length	Air-Purge Method	Refrigerant Adjustment	Air-Purge Method	Refrigerant Quantity
7m Max.	Refer to the detailed Air-Purge Procedure	Unnecessary	Purge air using a vacuum pump or an additional refrigerant cylinder.	Refer to specification sheet
7-15m (for 18/24 K)		Add (18K:20g, 24K:30g) of refrigerant for every 1m.		Add (18K:20g, 24K:30g) of refrigerant for every 1m.

FLARE UNT FIXING TORQUE 18/24K

Outer diameter	Torque (kg-cm)	
	Fixing Torque	Final Torque
Ø 6.35 (Liquid Side)	160	200
Ø 9.52 (Gas Side)	300	350
Ø 12.7 (Gas Side)	500	550
Ø 15.8 (Gas Side)	700	750

PUMP DOWN PROCEDURE

* Pump down will be carried out when an evaporator is replaced or when the unit is relocated in another area.

1. Remove the caps from the 2-way valve and the 3-way valve.

↓

2. Turn the 3-way valve clockwise to close and connect a pressure gauge (low pressure side) to the service valve, and open the 3-way valve again.

↓

3. Set the unit to cool operation mode.
(Check if the compresor is operating)

↓

4. Turn the 2-way valve clockwise to close.

↓

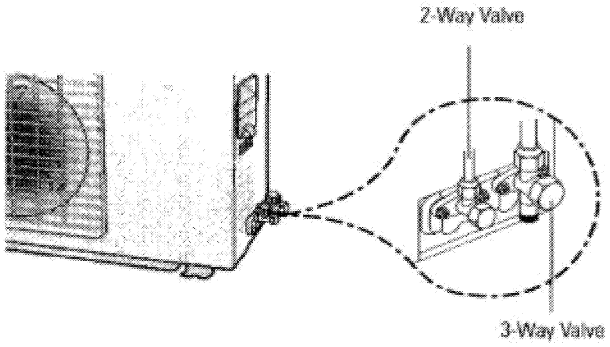
5. When the pressure gauge indicates "0" turn the 3-way valve clockwise to close.

↓

6. Stop operation of the air conditioner.

↓

7. Close the cap of each valve.



Relocation of the air conditioner

* Refer to this procedure when the unit is relocated.

1. Carry out the pump down procedure (refer to the datails of "pump down")

2. Remove the power cord.

3. Disconnect the assembly cable from the indoor and outdoor units.

4. Remove the flare nut connecting the indoor unit and the pipe. At this time, cover the pipe of the indoor unit and the other pipe using a cap or vinyl plug to avoid foreign metarial entering.

5. Disconnect the pipe connected to the outdoor unit. At this time, cover the valve of the outdoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.

6. Make sure you do not bend the connection pipes in the middle and store together with the cables.

7. Move the indoor and outdoor units to a new location.

8. Remove the mounting plate for the indoor unit and move it to a new location.

Explaining Operations to the Owner

Before leaving the premises on which you have installed the air conditioner, you should explain the following operations to the owner, making reference to the appropriate pages in the owner's instruction booklet.

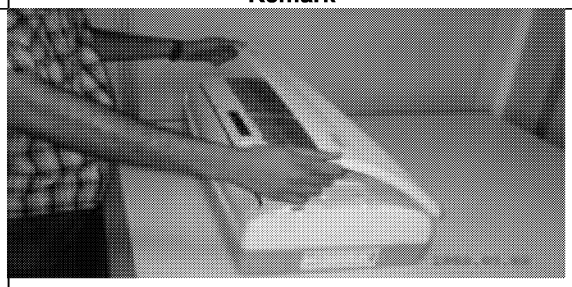
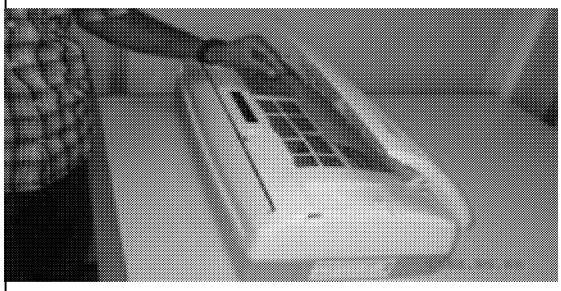
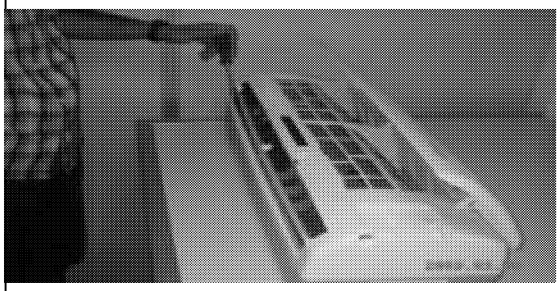
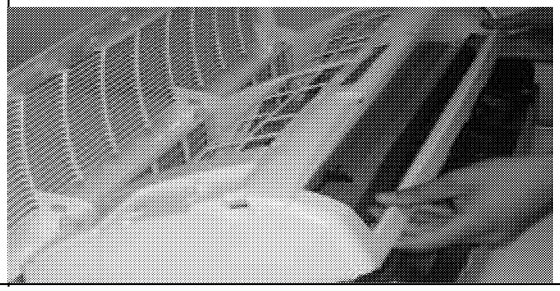
1	How to start and stop the air conditioner.
2	How to select the operating mode and adjust the temperature and fan settings.
3	How to adjust the air flow direction.
4	How to set the timers.
5	How to remove and clean the filters.

Once the owner is happy with the basic operations, hand over the owner's instruction booklet and this installation manual for storage in a handy and safe place.

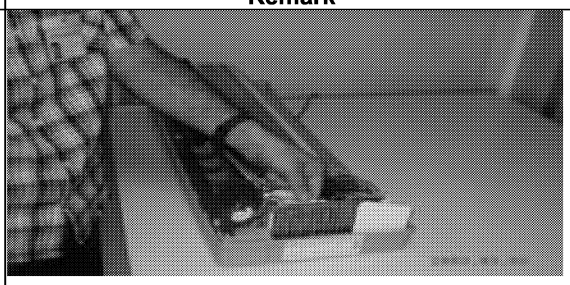
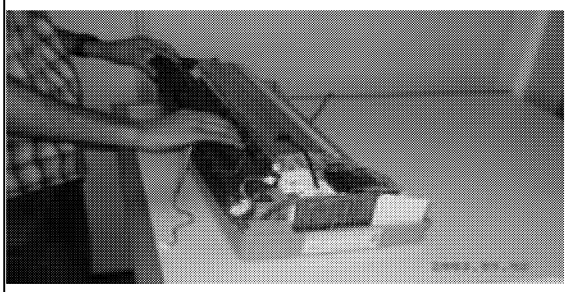
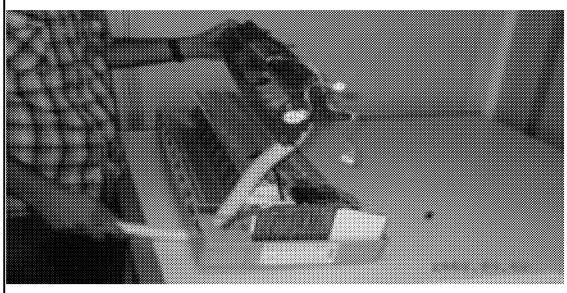
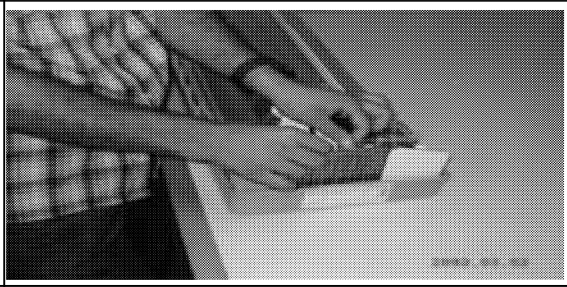
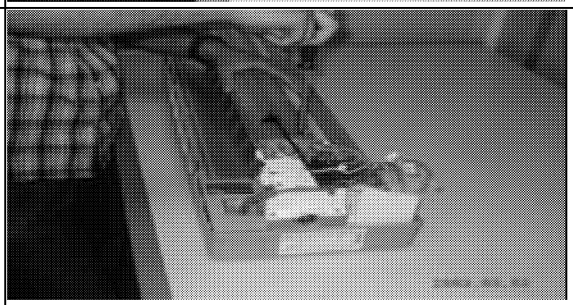
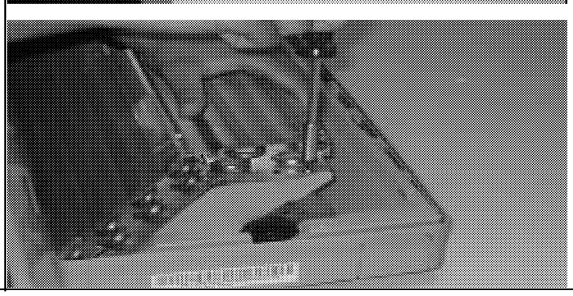
Technical Specifications

Model Indoor unit	Power Supply
	220-240V~, 50Hz

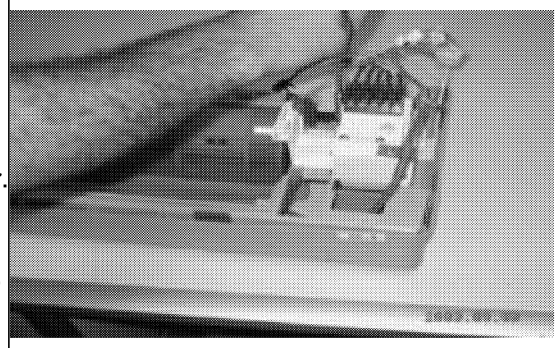
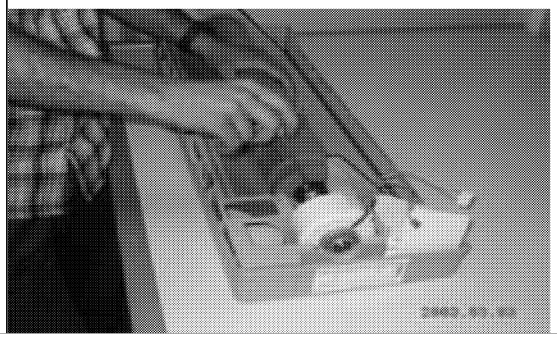
ASSEMBLY&DISASSEMBLY

No	Parts	Procedure	Remark
1	Front Grille	1) Stop the air conditioner operation and block the main power. 2) Contract the second finger to the left and right handle and pull to open the inlet grille.	
		3) Take the left and right filter out.	
		4) Loosen the fixing screws of front grille	
		5) Take out the horizontal blade softly.	
		6) Pull the upper left and right of discharge softly for the outside cover to be pulled out.	
		7) Pull softly the lower part of discharge and push it up. Caution: Assemble the front panel and fix the hooks of left and right.	

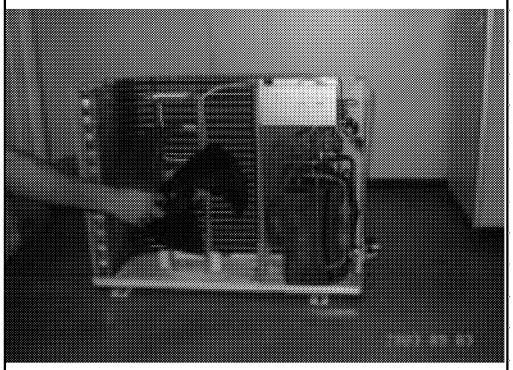
ASSEMBLY&DISASSEMBLY

No	Parts	Procedure	Remark
2	Ass'y Tray Drain	1) Do "1" above. 2) Take the display PCB out. (Center of indoor unit) 3) Loosen fixing screws of tray drain. (9/12K) 4) Pull tray drain out from the back body.	  
3	Electrical Parts (Main PCB)	1) Do "1", "2" above. 2) Take all the connector of PCB upper side out. 3) Seperate the outdoor unit connection wire from the terminal block. 4) In order to take Main PCB out, it has to be pulled up. (The TRANS hook has to be seperated before taking the Ma	
4	Heat Exchanger	1) Do "1", "2", "3" above. 2) Loosen fixing earth screws of right side. 3) Seperate the connection pipe. 4) Seperate the bush body at the upper side and holder at the rear side. 5) Loosen the fixing screws of left side. 6) Lifting the heat exchanger	 

ASSEMBLY&DISASSEMBLY

No	Parts	Procedure	Remark
5	Fan Motor and Cross Fan	1) Do "1", "2", "3", "4" above. 2) Loosen the fixing three screws and seperate the motor holder. 3) Loosen the fixing screw of fan motor. (By use of M3 wrench) 4) Seperate the fan motor from the fan. 5) Seperate the fan from the left holder bearing.	 

Outdoor Unit

No	Parts	Procedure	Remark
1	Cabinet	1) Turn off the unit and remove the power cable. 2) Remove the top cover. 3) Remove the control box cover. 4) Unplug the ass'y cable. 5) Remove the cabi-side. 6) Remove the cabi-front.	
2	Fan Motor and Propeller Fan	1) Do Procedure 1 above. 2) Remove the nut flange. (Turn to the right to remove as it is a left turned screw.) 3) Disaaemble the propeller fan.	

TROUBLE SHOOTING

Items to be checked first

1. The input voltage should be rating voltage ± 10% range.
The airconditioner may not operate properly if the voltage is out of this range.

2. Is the link cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 5 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.

3. When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

NO	Operating of air conditioner	Explanation
1	The COOL operation indication LED (Green) blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the IN DOOR FAN should operate. In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted fan is adjusted automatically with reference to a temperature of the air
3	Fan speed setting is not allowed in AUTO or DRY mode. 	The speed of the indoor fan is set to LL in DRY mode. Fan speed is 5 steps is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY mode. 	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Compressor of the outdoor unit is operating although it is turned off in HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes (maximum) until the deice is completed.
6	Timer LED only of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
7	The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
8	Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation.
9	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

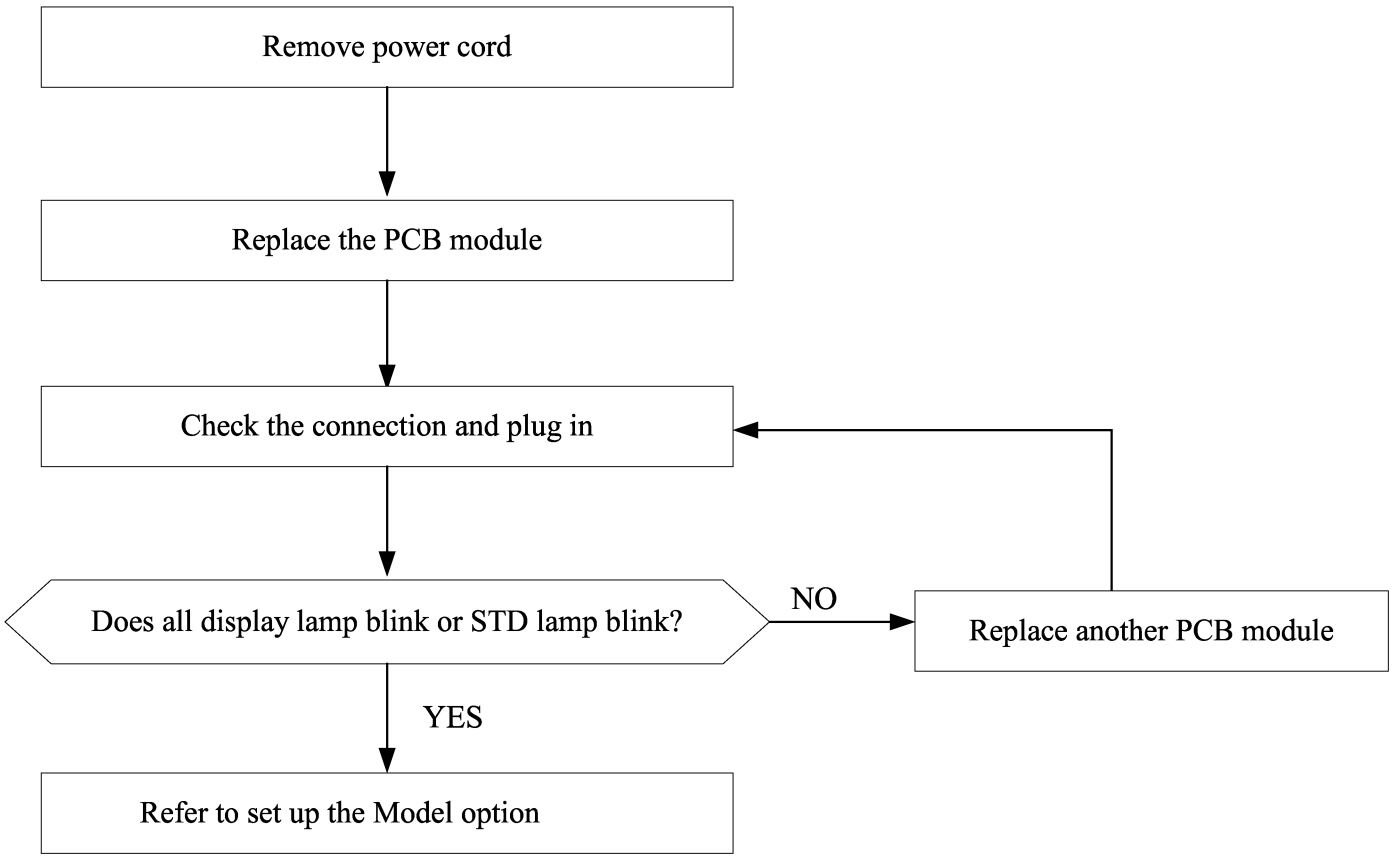
TROUBLE SHOOTING

DISPLAY				REMARKS
OPERATION	TIMER	FAN	TURBO	
●	X	X	X	POWER FAILURE
X	●	X	X	INDOOR ROOM TEMP. SENSOR MALFUNCTION
●	●	X	X	TEMP.PIPE. SENSOR MALFUNCTION
X	X	●	X	INDOOR FAN MOTOR MALFUNCTION
●	X	●	X	GAS LEAKAGE IN THE SYSTEM
●	X	X	●	SUPLY VOLTAGE TOO LOW/HIGH (18/24K)
●	●	●	●	OPTION ERROR (OPTION WAS NOT SET UP OR OPTION DATA ERROR)

● BLINKING

X OFF

Replace PCB module



TROUBLE SHOOTING

Cautions for Part Replacement

1. The human body carries much static electricity. Before touching a part for repair replacement or the similar porpuse, be sure to touch a grounded metallic portion by hand to let the static electricity go through the metallic portion to the earth. Espectially when handing any micro computer or IC, carrefully remove such static electricity before touching them.

2. When repairing any part on a work bench, be sure to place an insulative sheet on the bench and always keep the sheet surface neat without any metal fragments. If any such fragment touches a part, a secondary trouble will possibly be caused in the part.

3. Before replacing any parts, be sure to turn off the power supply. If such replacement is done with the power supply kept on, an electric shock, short circuit or destruction of a part may result.

4. During replacement or repair of a part, carefully handle it : The printed circuit board has fine lead wires (jumper wires) and glass-made parts (diode) on its substrate. So if circuit board is roughly handled, such lead wires and parts will be easily broken or damaged by bending or shock.

5. When soldering the lead wires ony and new part, be sure to polish them using an emery paper or the like before solding them. Since the lead wires of any new part are covered with an oxide film, solder cannot adhere to the lead wires if not polished.

6. When soldering any part, care should be exercised not to apply any high-wattage soldering iron to the part for a long time. Some parts are of so low a heat resistance that they may be broken or have the properties changed if a soldering iron is so applied (Otherwise, the pattern may possibly be separated and raised)

7. The heat of the soldering iron should be transfered to the entire object to be soldered. If the solder pieces are not well fused due to insufficient transfer of the heat from the soldering iron, no satisfactory electrical continu,ty can be assured even if the soldered objects appear well connected to each other.

8. The solder used should be limited to a minimum. If excessive solder is used, it will caused inter-pattern contact, which may caused inter-pattern contact, which may caused malfunction of the circuit.

Procedure

The parts should be replaced in the following procedure.