KELON

TECHNICAL SERVICE MANUAL

SPLIT TYPE

ROOM AIR CONDITIONER

VA PANEL (R410A)

INTERNATIONAL MARKETING DEPT.
ONG KELON ELECTRICAL HOLDINGS CO., LTD.
AODONG ROAD, RONGGUI, SHUNDE, GUANGDONG, PRC.
7-28361733
7-28361060

PRODUCTS

R410A split type room air conditioner

No.	Model	No.	Model
1	AS-09HR4SWHVA		
2	AS12HR4SWHVA		

CHAPTER 1 FEATURES

MODE	*DESCRIPTION*
COOLING	Cools, dehumidifies and filters the room air. Maintains desired room temperature.
HEATING	Heats and filters the room air. Maintains desired room temperature.
SMART	Operates the appliance at COOLING, HEATING or DRY mode, maintaining desired temperature dependent upon the room temperature.
DRY	Dehumidifies and softly cools the room air. This mode is advisable to be used when the room temperature is rather cool but the humidity is rather high.
FAN ONLY	Re-circulates and filters the room air. Maintains constant air movement in the room.
SLEEP	The SLEEP mode will be canceled after being set for 8 hours. The set temperature will be increased 0.5□ per hour during the first two hours in COOLING or DRY and decreased 1□ per hour in the first three hours in HEATING.
AUTO FAN	The appliance automatically selects the indoor fan speed in accordance to the room temperature. At the start, the appliance operates at high fan speed. As the room temperature gets closer to the set temperature, the fan switches to a lower speed for quieter operation.
FAN SPEED HIGH MEDIUM LOW	1. The appliance can set at different indoor fan motor speed by pressing the FAN SPEED button on the remote controller. 2. When this symbol is being displayed on the LCD of the remote controller, the signal is transmitting from the remote controller to the air conditioner.
TEMP. SET UP DOWN	Press DOWN button once, the set temperature is decreased by 1□. Press UP button once, the set temperature is increased by 1□.
TIMER	Automatically switches the appliance ON at preset time intervals, ensuring a comfortable environment before you return home, or switches OFF the appliance automatically when you sleep without wasting electricity.
Auto -restart	When the power supply restores after its failure, the machine will start to work automatically with the previous setting parameters.
SUPER	Strong cooling when you just come into your room and want to cool the room as soon as possible.

CHAPTER 2 OPERATING RANGE

1. TEMPERATURE RANGE FOR T1 CLIMATE AIR CONDITIONER

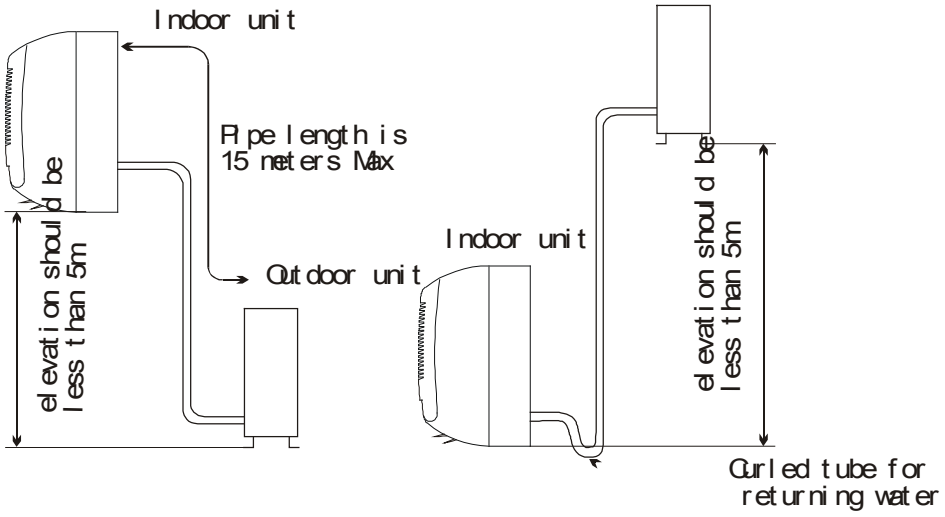
- The preset temperature of the appliance ranges from 18□ to 32□.
- The ambient temperature of the cooling only air conditioner ranges from 18□to 43□.
- The ambient temperature of the heat pump ranges from –7□ to 43□.
- The rated **cooling** operation test condition is as following.

  Indoor DB/WB temperature: 27□/19□

  outdoor DB/WB temperature: 35□/24□
- The rated **heating** operation test condition is as following.
- indoor DB/WB temperature: 20□/Max.15□
- outdoor DB/WB temperature: 7□/6□

2. REFRIGERANT PIPING

- The maximum length of the connecting refrigerant piping between indoor unit and outdoor unit is **15m** and the maximum elevation difference between indoor and outdoor units are **5m**.
- If the refrigerant piping is longer than **5m**,additional refrigerant charge **20g/m** for gas pipe is advisable.



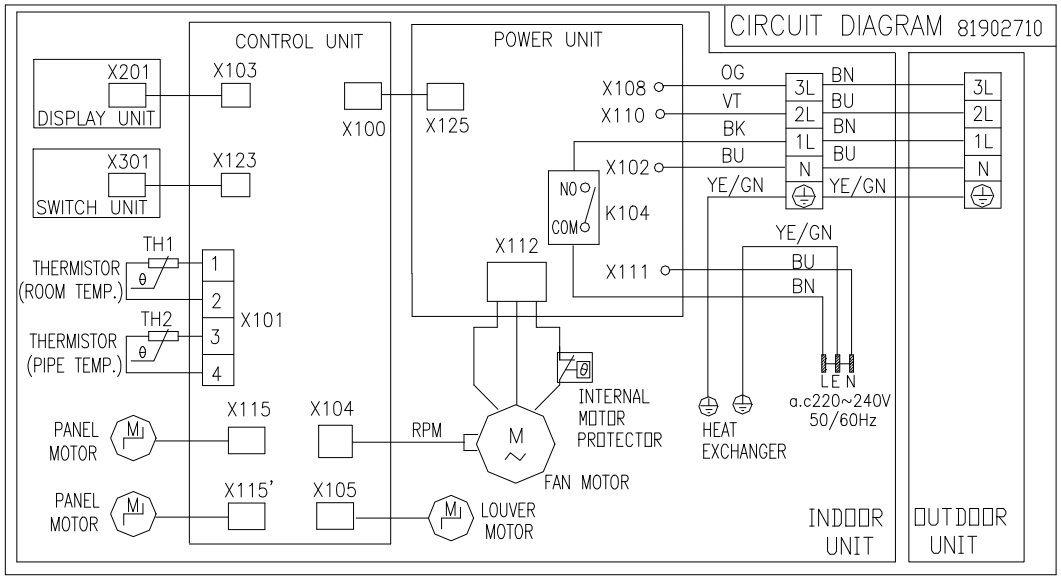
- Outside diameter of the refrigerant piping is as following.

Models	OD of liquid pipe (Small pipe)	OD of gas pipe (Large pipe)
9K	Φ6mm or 1/4 inch	Φ10mm or 3/8 inch
12K	Φ6mm or 1/4 inch	Φ12mm or 1/2 inch

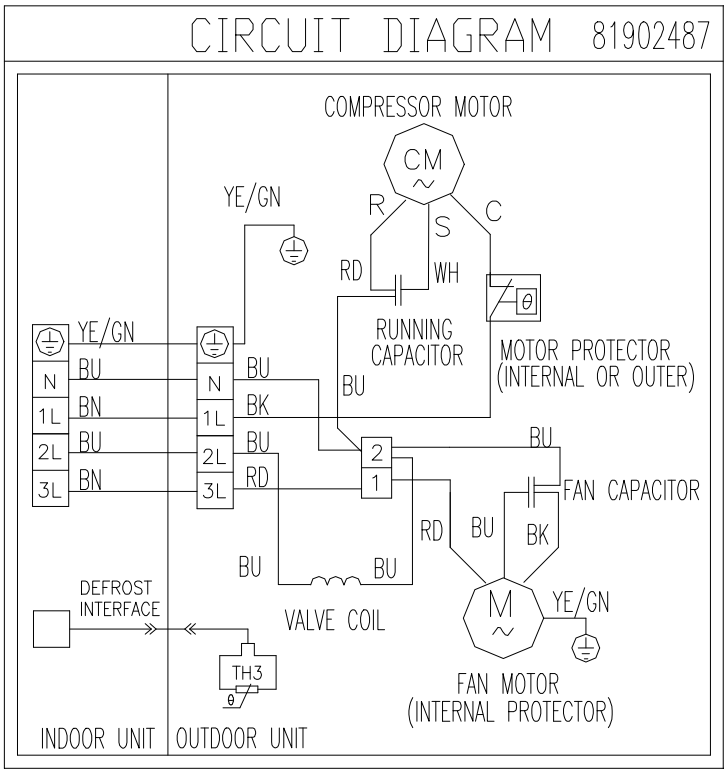
CHAPTER 3 WIRING DIAGRAMS

1. AS-09HR4SWHVA

- **Indoor unit**

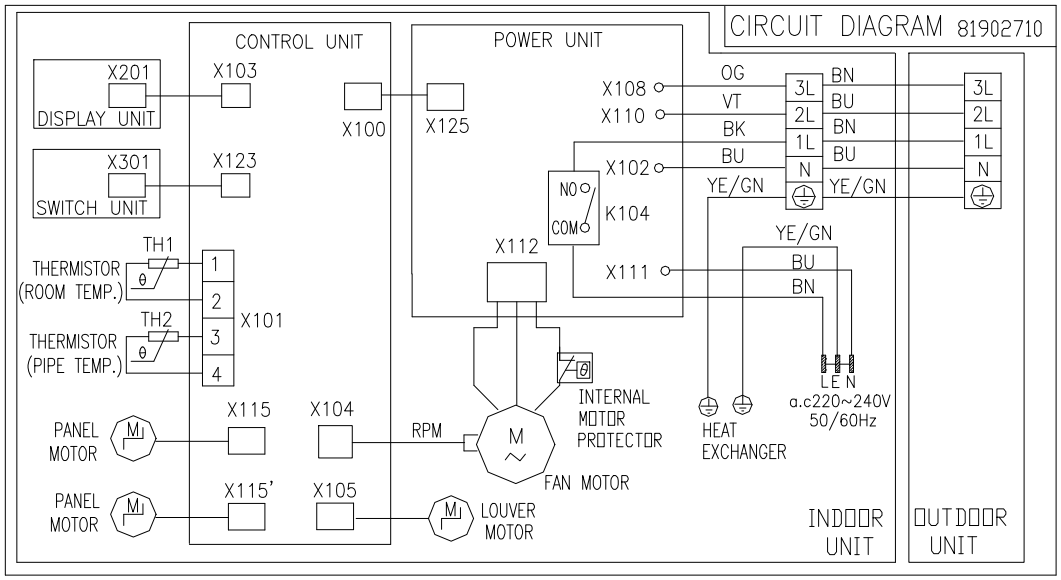


- **Outdoor unit**

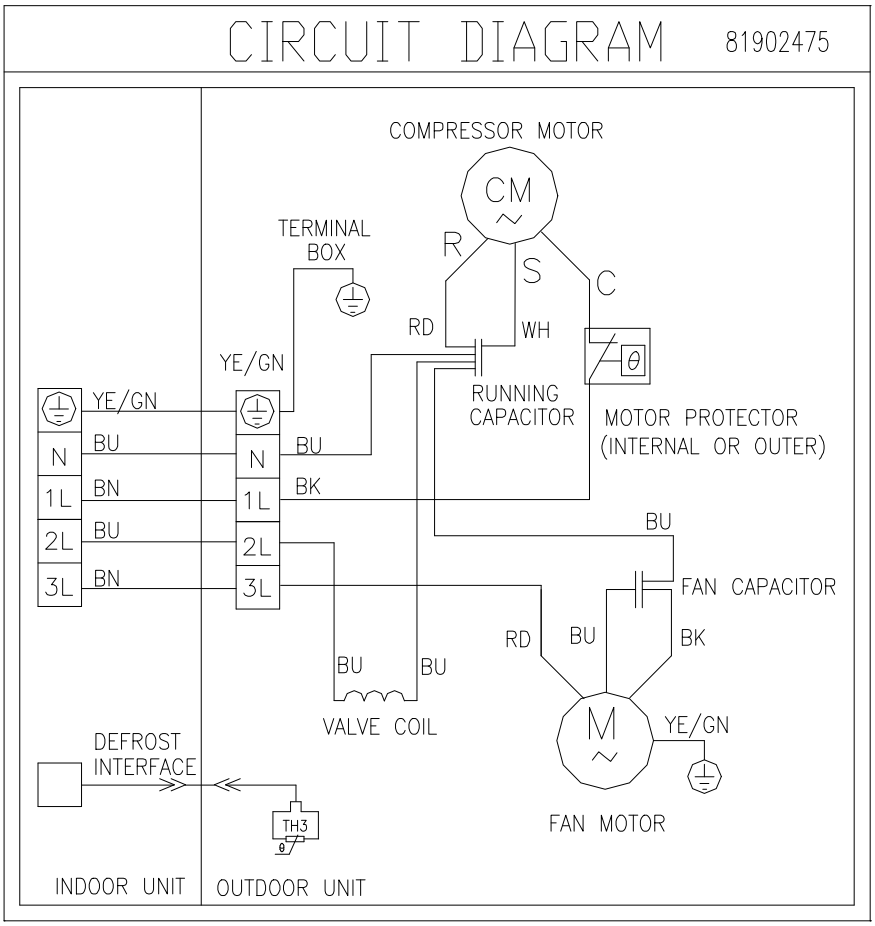


2. AS12HR4SWHVA

- **Indoor unit**



- **Outdoor unit**



CHAPTER 4 REMOTOE CONTROLLER

1. Remote controller (Part NO: 81401828-63)

The remote controller transmits signals to the system.

1.ON/OFF BUTTON

- The appliance will be started when it is energized or will be stopped when it is in operation, if you press this button.

2. MODE BUTTON

- Press this button to select the operation mode.

3. FAN SPEED BUTTON

- Used to select the indoor fan motor speed.

  Automatic fan speed

  High fan speed

  Medium fan speed

Low fan speed

4,5. ROOM TEMPERATURE SETTING BUTTONS

- Used to select the room temperature.
- Used to set time in TIMER and CLOCK mode.

6. SMART BUTTON

- Used to enter fuzzy logic operation directly, regardless of the unit is on or off.

7. SWING BUTTON

- Used to stop or start vertical adjustment louver swinging and set the desired up/down airflow direction.

8. SLEEP BUTTON

- Used to set or cancel Sleep Mode operation

9. LOCK BUTTON

- When you press this button, all the buttons on are not available.

10. CLOCK BUTTON

- Used to set the current time.

11,12. TIMER ON/OFF BUTTON

- **Used to set or cancel the timer operation.**

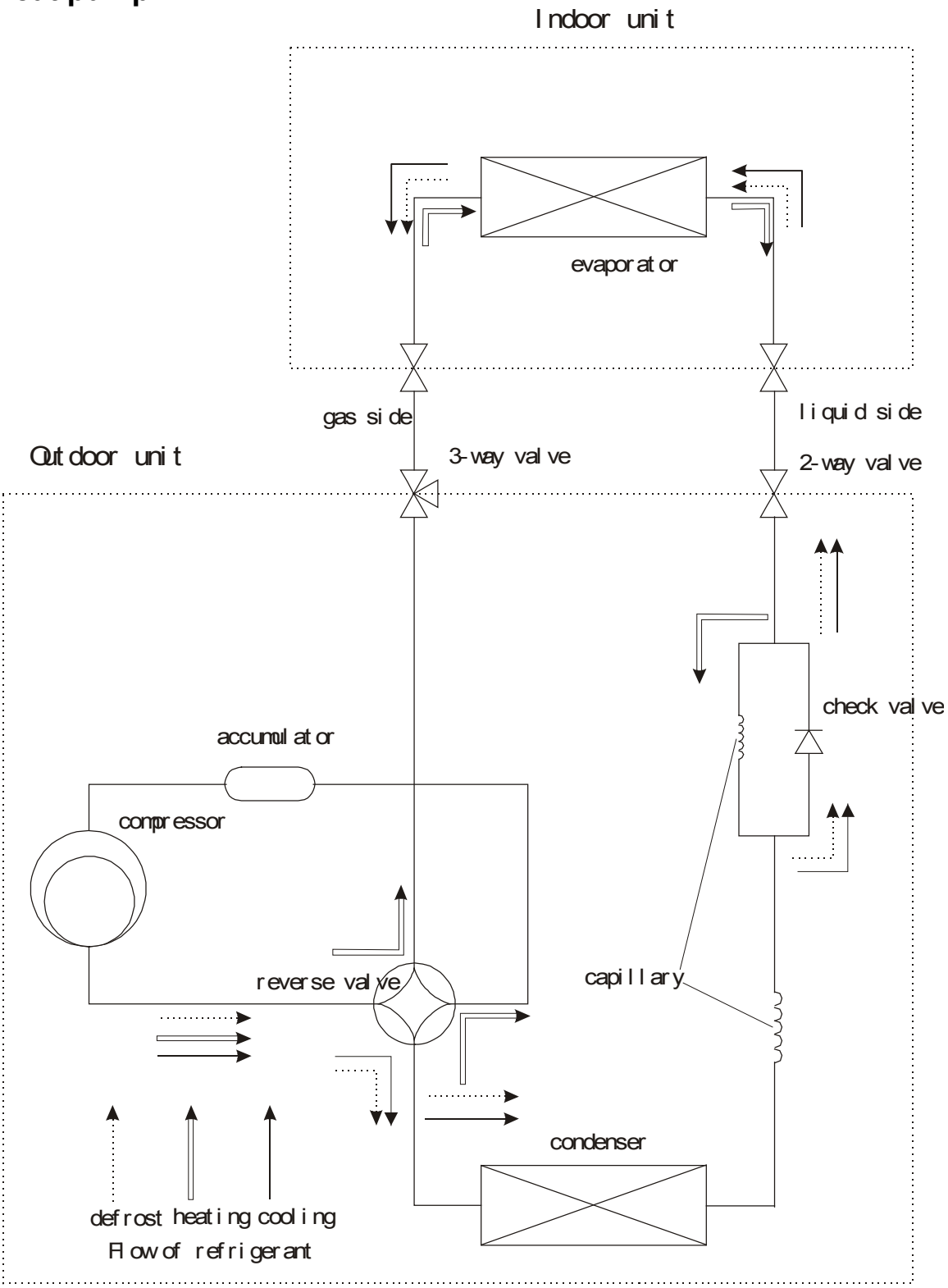
The indication symbols on LCD:

Cooling indicator	Auto fan speed	6th indicator	Signal transmit.
Dry indicator	High fan speed	Sleep indicator	ON OFF 88:88 Display set timer / Display clock
Fan only indicator	Medium fan speed	I FEEL indicator	
Heating indicator	Low fan speed	JET indicator	88 ℃ Display set temperature

Note: Each mode and relevant function will be further specified in following pages.

CHAPTER 5 REFRIGERATION CYCLE

1. Heat pump



CHAPTER 6 OPERATION DETAILS

1. SAFETY CONTROL

- **3 minutes delay for compressor**

The compressor is ceased for **3** minutes to balance the pressure in the refrigeration cycle in order to protect the compressor.

- **59 seconds delay for reversing valve**

The 4-way reversing valve delay for **59** seconds to prevent the refrigerant abnormal noise when the HEATING operation is OFF or switched to other operation modes.

- **Over-current control**

The compressor will be switched **OFF** when it is over-current for **5** seconds, and when the current is normal and the compressor has been stopped for **3** minutes, the compressor will be turned **ON**.

- **Freeze preventive control**

When the indoor pipe temperature falls below **–1**□ during COOLING or DRY operation for 3 minutes, the compressor and outdoor fan motor turn **OFF** with buzzer 3 beeps . When the indoor pipe temperature recovers to **5**□and the compressor has been stopped for **3** minutes, the compressor and outdoor fan motor will be turned **ON**.

- **Overheating protection system**

When overloading occurs during the heating operation, this system controls the outdoor fan motor and compressor according to the indoor pipe temperature to prevent the overloading of the compressor and restrain the rise in high pressure. When the indoor pipe temperature exceeds **53**□, the outdoor fan motor will be turned **OFF**, and when the indoor pipe temperature falls below **49**□, the outdoor fan motor recovers to **ON**. When the indoor pipe temperature exceeds **63**□, the appliance will be turned **OFF** with 4 beeps of buzzer, error code “E2” display and cannot recover automatically.

2. AIR FLOW DIRECTION CONTROL

- This function is to swing the louver up and down automatically and to set it at a desired position.
- The procedure is as following.

☞ Press the ON/OFF button to operate the appliance. The louver will swing automatically to the default position.

☞ Press the SWING button to swing the louver up and down automatically.

☞ Repress the SWING button to stop the louver at a desired position.

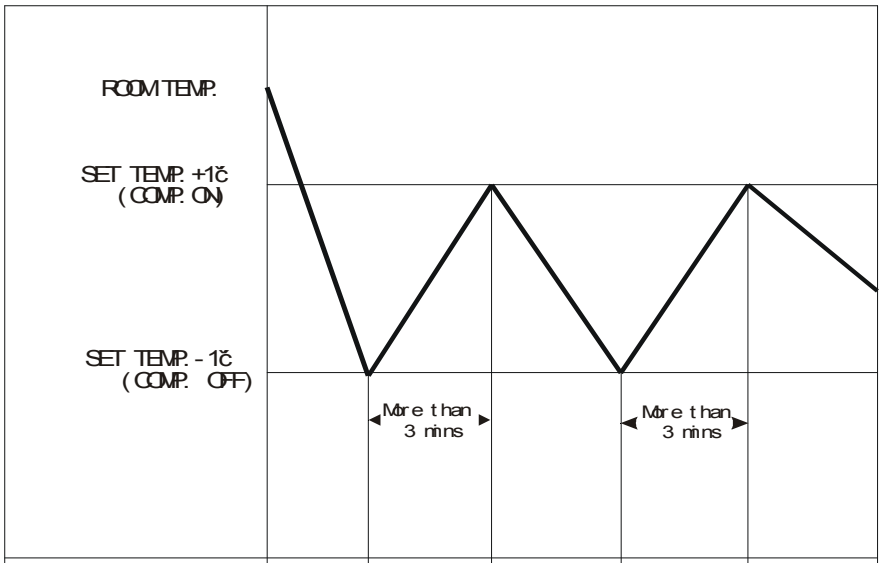
- A step motor controls the louver. The different default position of different modes is as following:

☞ The louver can swing from 0° to 98°.

☞ The louver closes at 0°.

3. COOLING MODE OPERATION

- When the COOLING mode operation is selected without setting temperature, the appliance will set the preset temperature at 26□ automatically with the AUTO FAN speed.
- When selecting the COOLING mode operation, the appliance will operate according to the setting by the remote controller and the operation diagram is as following:



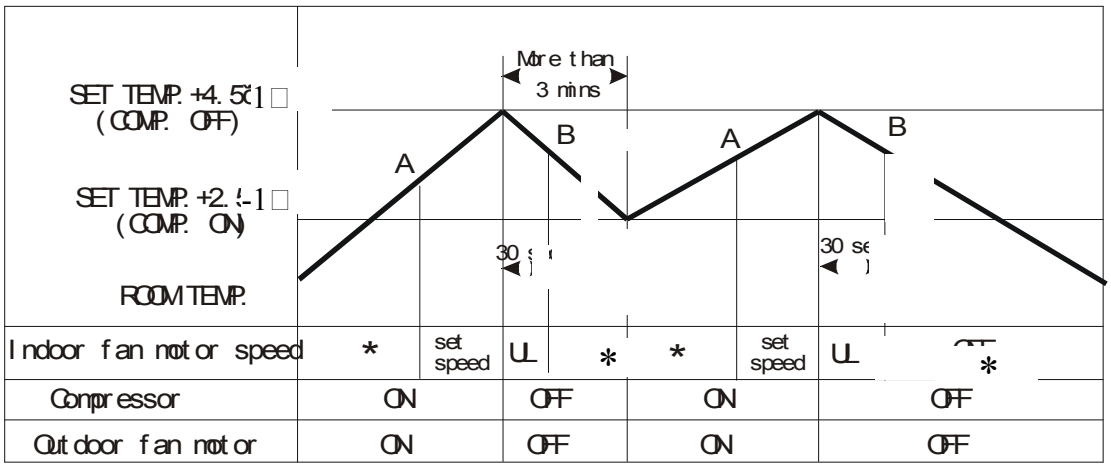
Indoor fan motor speed	set speed	set speed	set speed	set speed	set speed
Compressor	ON	OFF	ON	OFF	ON
Outdoor fan motor	ON	OFF	ON	OFF	ON

4. DRY MODE OPERATION

- The appliance starts as COOLING operation. If **3** minutes elapses after starting, the appliance will sense the intake air temperature and minus 1.5□ as the setting temperature.
- During DRY operation, the compressor **ON** when temperature is the setting temperature **plus 1**□.The compressor **OFF** when temperature is the setting temperature **minus 1**□. The setting temperature can only be adjusted by 2□ up and down.
- When the appliance operates at DRY mode, the indoor motor speed is **LOW.**

5.HEATING MODE OPERATION (ONLY AVAILABLE FOR HEAT PUMP)

- The appliance will operate at the setting by the remote controller and the operation diagram is shown as following.

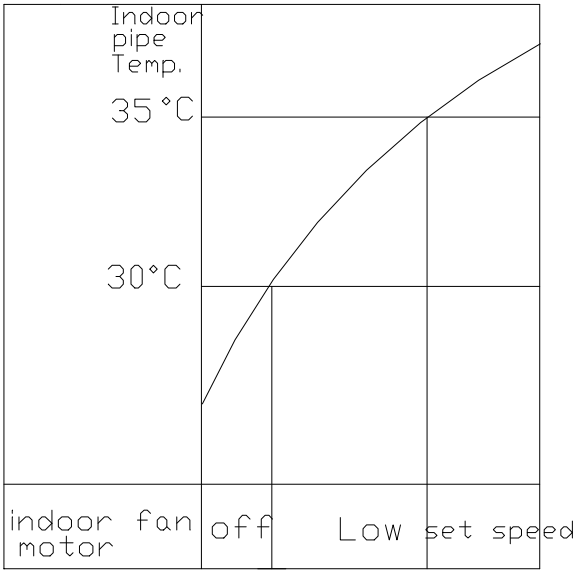


* The indoor fan motor is controlled by Cold Air Preventive System.

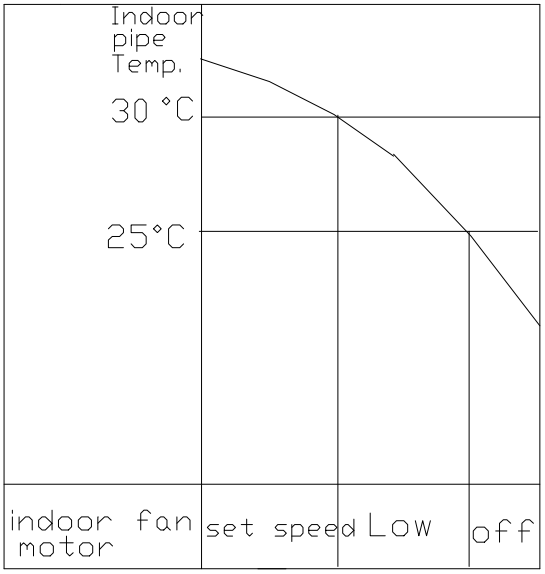
- The indoor fan motor is controlled by **Cold Air Preventive System**.

6. COLD AIR PREVENTIVE SYSTEM (ONLY AVAILABLE FOR HEAT PUMP)

- This system is intended to prevent cold air from being discharged during HEATING operation.
- The indoor fan motor speed will be controlled as following.



Indoor pipe temp. rises



Indoor pipe temp. falls

7. SMART MODE OPERATION

- **When SMART air conditioning is selected, the operation mode and preset temperature are set automatically according to the room temperature at starting operation.**
- The operation procedure of **heat pump** is as following.

Intake air temperature at operation start	Over 26□	21□ ~ 26□	Below 21□
Preset temperature	26□	Intake air temperature at operation start	22□
Operation mode	COOLING	DRY	HEATING

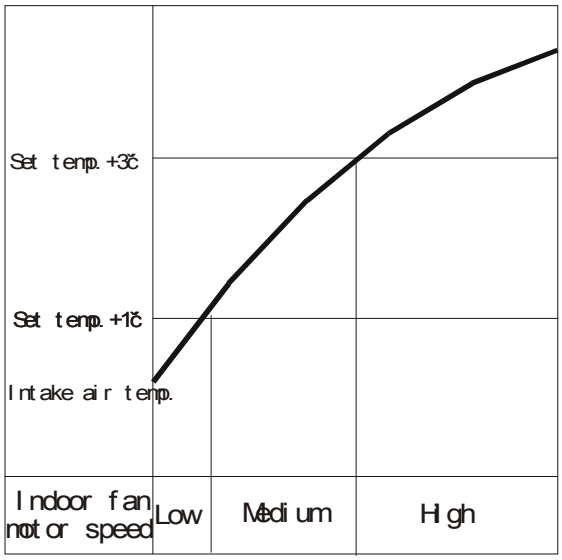
The initial mode will be continued and independent upon the room temperature changing.

- If initial mode is selected, that mode is continued, independent upon the temperature changing.
- The indoor fan motor speed is automatically determined by **Auto Fan Speed**. If you are not satisfied with the auto fan speed, you can adjust the fan speed by pressing the FAN BUTTON.

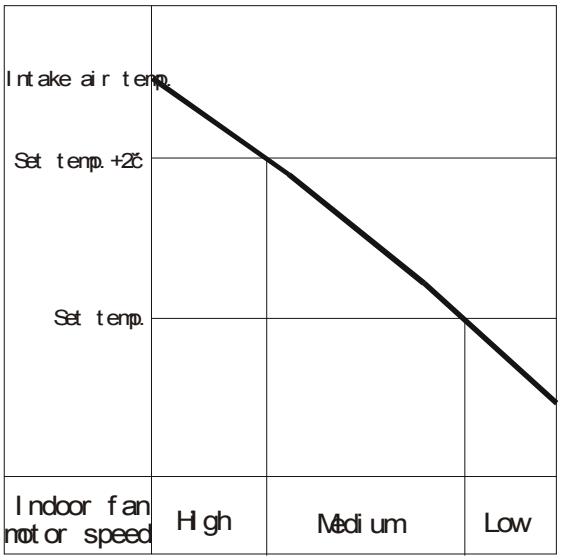
8.AUTO FAN SPEED

- When the Auto Fan Speed is selected in COOLING or HEATING operation, the indoor fan motor speed is automatically controlled by the intake air temperature and the preset temperature.

- The operation procedure of COOLING is as following.

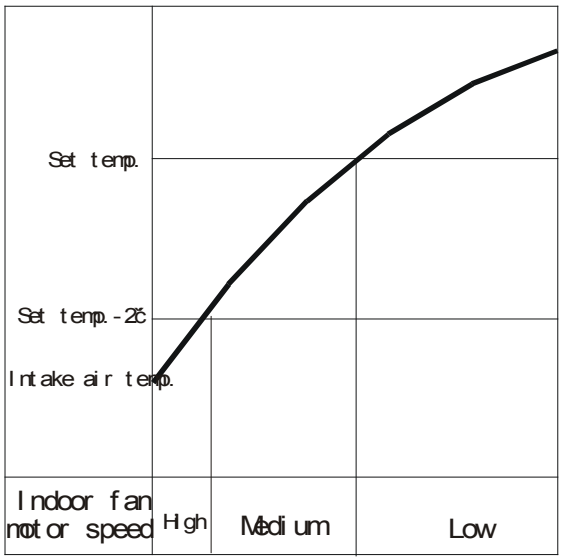


Indoor pipe temperature rises

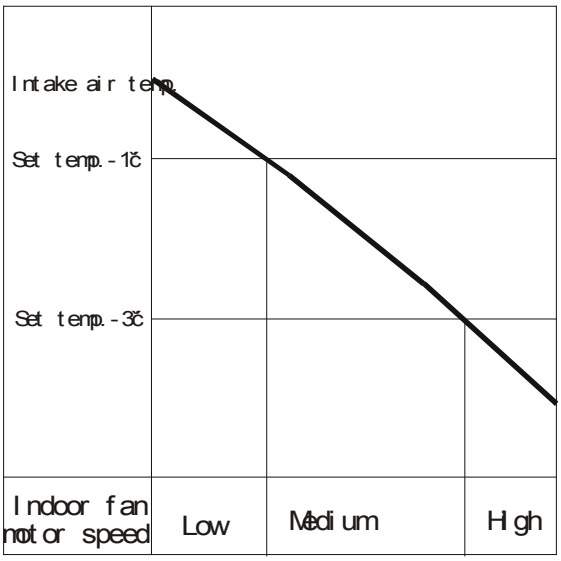


Indoor pipe temperature falls

- The operation procedure of HEATING is as following.



Indoor pipe temperature rises



Indoor pipe temperature falls

9.INDOOR FAN SPEED CONTROL

- Auto Fan Speed control

When set to **Auto Fan Speed**, the indoor fan motor speed is controlled by the difference between the intake air temperature and the preset temperature. The more the difference, the higher the indoor fan motor speed. Auto Fan Speed is only available for COOLING and HEATING modes.

- Manual fan speed control

Basic fan motor speed adjustment (3 setting, LOW, MEDIUM and HIGH) can be conducted by using the **Fan Speed Selection** button on the remote controller.

- The indoor fan speed in different modes is shown as following.

Fan Speed		High(H)	Medium(M)	Low(L)	Stop
COOLING	Manual	OK	OK	OK	N/A
	Automatic	OK	OK	OK	N/A
HEATING	Manual	OK	OK	OK	N/A
	Automatic	OK	OK	OK	N/A
	Cold Air Preventive	OK	OK	OK	OK
DRY		N/A	N/A	OK	N/A
FAN ONLY		OK	OK	OK	N/A

10.EMERGENT START

- If you lose the remote controller or it is out of work, you can also operate the appliance by pressing the EMERGENT BUTTON on the indoor unit for an emergent start.
- The operation mode is **SMART** if an emergent start is presented when the appliance is connected to the power at first time. If the appliance is in stand by, the operation mode will restore the last time setting when you press the EMERGENT BUTTON.

11. AUTORESTART FUNCTION

When the unit is connected to power, pressing the EMERGENT BOTTON for over 1.5 seconds;

if the unit without auto restart function, it will be of the function of auto restart after the buzzer 2 beeps;

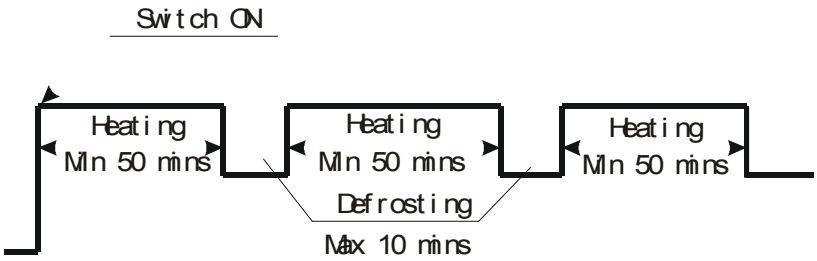
if the unit with auto restart function, it will discharge the auto restart function after the buzzer 1 beeps.

12. DEFROST

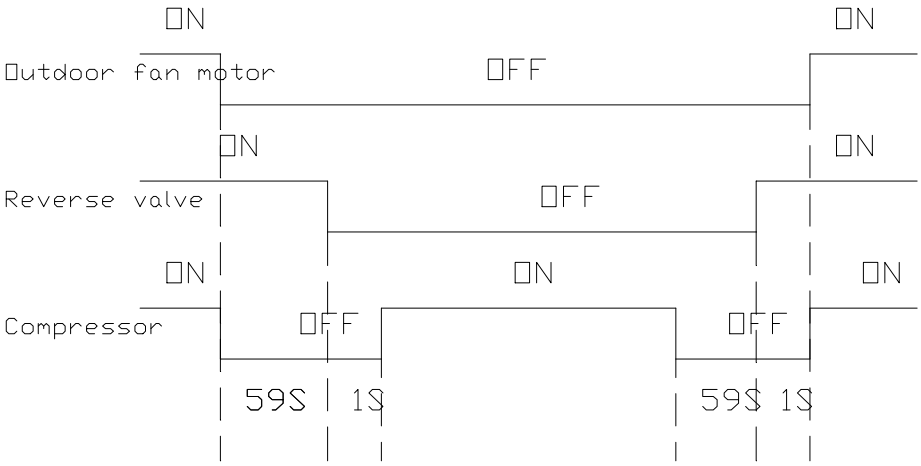
- The defrost timer (integrating the operation time of compressor)counts time by microprocessor during HEATING operation.
- **50** minutes later after starting HEATING operation or after defrost,

when the outdoor pipe temperature falls to **–8** □, the defrosting is started. When the outdoor pipe temperature exceeds **8** □ or the defrosting time reaches **10** minutes, the defrosting is ended.

- During the defrosting operation, the red LED indicator on the indoor unit of the appliance flickers.
- In the defrost operation, firstly the compressor and the outdoor fan motor are turned **OFF**. **59 seconds** later the reversing valve is turned **OFF**. **60 seconds** later the compressor is turned **ON**.
- The maximum defrost time is 10 minutes.
- In the end of defrosting, the compressor is turned **OFF**, **59 seconds** later the reversing valve is turned **ON**. **60 seconds** later the compressor and outdoor fan motor are turned **ON** and starting HEATING operation.
- During the defrost operation, the indoor fan motor is controlled by **Cold Air Preventive System.**
- The HEATING and defrosting operation is alternated as following.



- The defrosting procedure is shown as following.



13. TIMER MODE OPERATION

13.1.Remote controller 1(Part NO:1401394-63)

- The setting time ranges from 0.5 hour to 24 hours.
- **OFF-TIMER** can be set when the appliance is **in operation**, and it will be switched **OFF** when the preset time is achieved.
- **ON-TIMER** can be set when the appliance is **in suspension**, and it will be switched **ON** when the preset time is achieved.
- Pressing TIMER button once, the last setting time display on the LCD of remote controller. You can adjust the setting time by pressing the TEMPERATURE SETTING BUTTON. Pressing the TIMER button again, the timer mode is selected and the yellow LED indicator on the indoor unit lights up.
- The TIMER mode can be cancelled by pressing the TIMER button again on the remote controller.

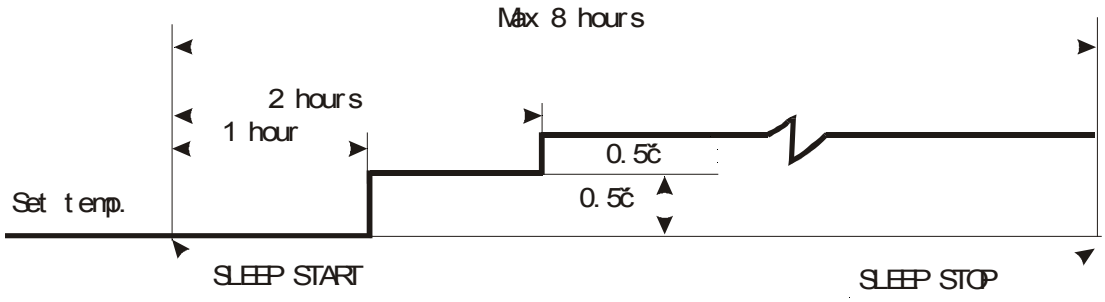
13.2.Remote controller 2(Part NO: 81401828-63)

- Any time of a day can be set as the time to ON or OFF.
- **TIMER ON** button can be used to set the timer programming as wished in order to switch on the appliance at your desired time.
- **TIMER OFF** button can be used to set the timer programming as wished in order to switch off the appliance at your desired time.
- Press the  button once to increase the time setting by 1 minute. Press the  button one and half seconds to increase the time setting by 10 minute. Press the  button for a longer time to increase the time by 1 hour.
- Press the  button once to decrease the time setting by 1 minute. Press the  button one and half seconds to decrease the time setting by 10 minute. Press the  button for a longer time to decrease the time by 1 hour.
- Press the TIMER ON button again to cancel the TIMER ON.
- Press the TIMER OFF button again to cancel the TIMER OFF.

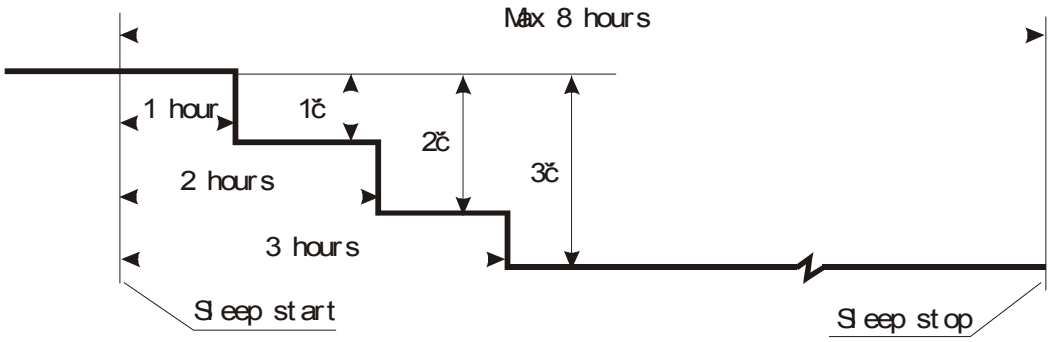
14. SLEEP MODE OPERATION

- The SLEEP mode can only be set during COOLING,DRY,SMART or HEATING operation.

- An energy conservation operation will be achieved if selecting SLEEP mode combined with OFF-TIMER. The operation will be turned OFF after the preset time. The maximum preset time of SLEEP mode is 8 hours(default time).
- When selecting the COOLING or DRY operation with SLEEP mode, the operation diagram is as following. The setting temperature will be raised by **0.5□ per hour in the first two hours** after the starting. The operation will stop after **8** hours.



- When selecting HEATING operation with SLEEP mode, the setting temperature will be decreased by **3□during successive 3 hours later**. The operation will stop in 8 hours. The operation diagram is as following.



CHAPTER 7 Installation

Notice: There is detailed information about installation in the OPERATING AND INSTALLATION INSTRUCTIONS MANUAL. The same information is not repeated in this TECHNICIAN SERVICE MANUAL.

1.SELECT THE BEST LOCATION

- Indoor unit

☞ There should not be any heat source or steam near the unit.

☞ There should not be any obstacles to prevent the air circulation.

☞ A place where air circulated in the room will be good.

☞ A place being drained can be easily obtained.

☞ A place where noise prevention is taken into consideration.

☞ Do not install the unit near the door way.

☞ Ensure the spaces from the wall, ceiling, fence or other obstacles.

- Outdoor unit

☞ If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.

☞ There should not be any animals or plants which could be affected by air discharged.

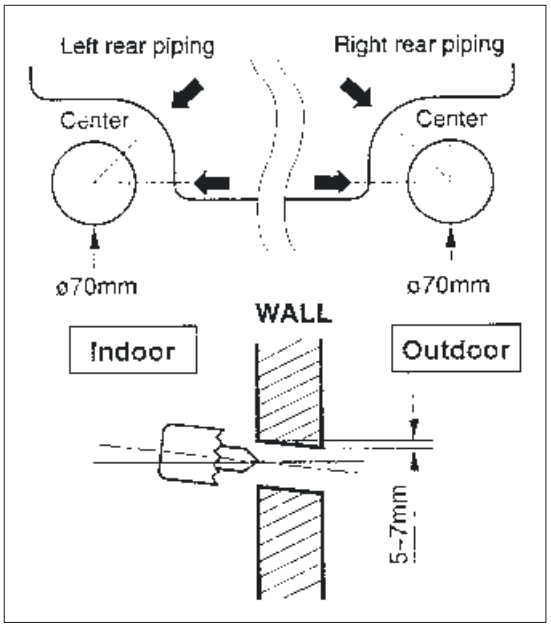
☞ Ensure the spaces from the wall, ceiling, fence or other obstacles.

☞ A place where noise does not annoy your neighbors.

2. DRILL THE PIPING HOLE WITH 70mm DIAMETER HOLE-CORE DRILL

- Line according to the arrows marked on the lower left and right side of the installation plate.

- The meeting point of the extended line is the center of the hole.
- Drill the piping hole at either the right or the left and the hole should be slightly slant to the outdoor side.



3.PIPING AND DRAINAGE OF INDOOR UNIT

- Preparation of piping

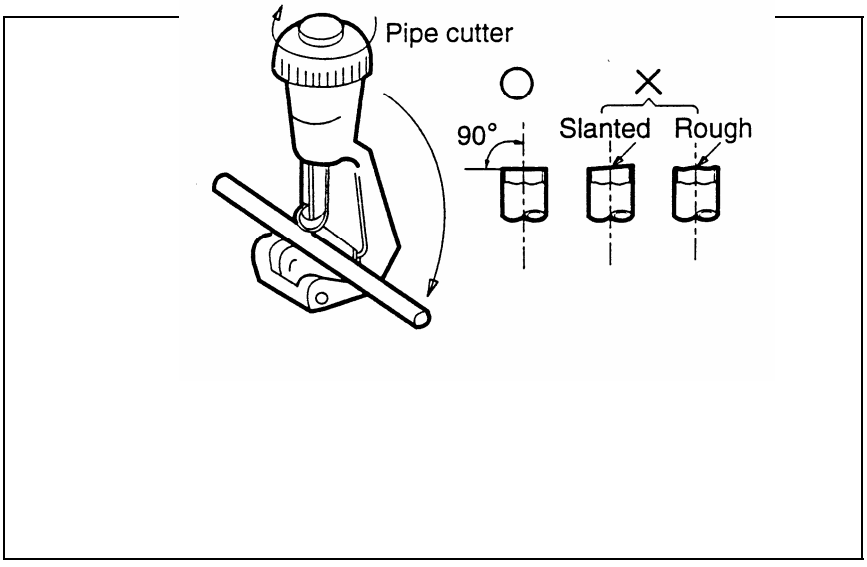
1) Cut the pipes and the cable

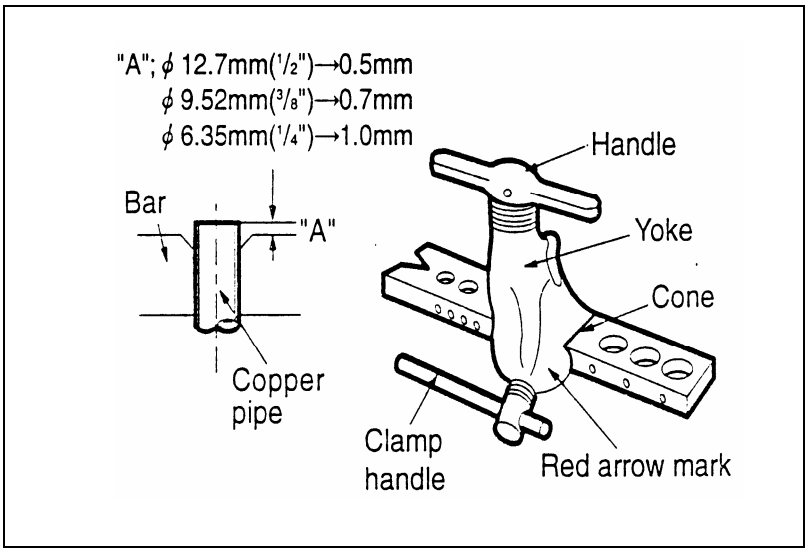
☞ Use the accessory piping kit or the pipes purchased locally.

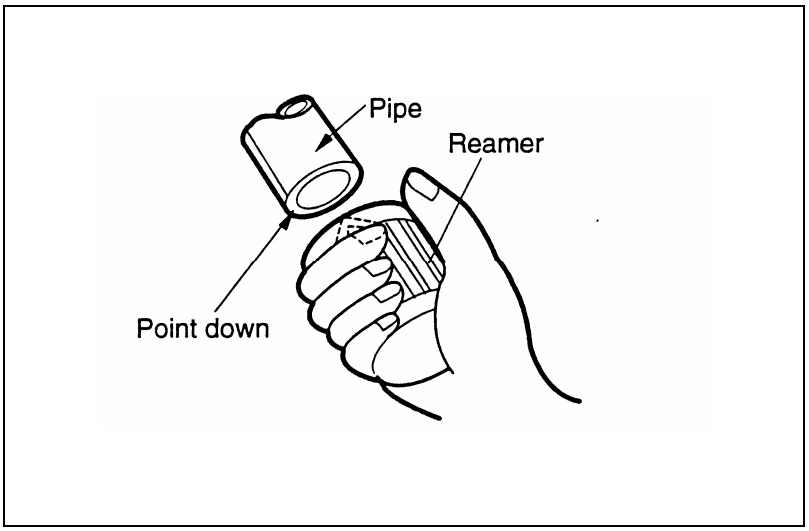
☞ Measure the distance between the indoor and the outdoor units.

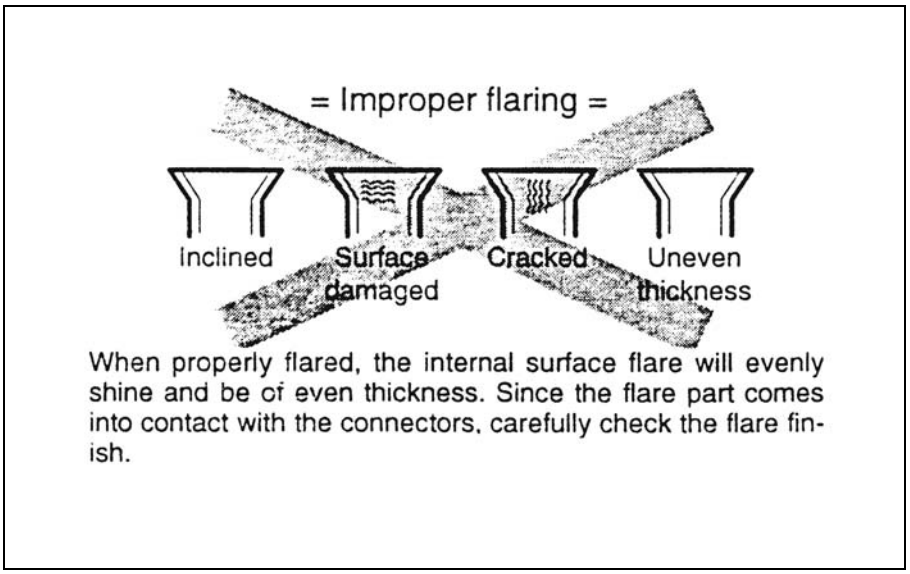
☞ Cut the pipes a little longer than measured distance.

☞ Cut the cable a 1.5m longer than the pipe length.









When properly flared, the internal surface flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connectors, carefully check the flare finish.

2) Remove burrs

☞ Remove burrs from cut edges of pipes.

☞ Turn the pipe end down to avoid the metal powder entering the pipe.

☞ **Caution**: If the burrs are not removed, they may cause a gas leakage.

3) Flaring the pipes

☞ Insert the flare nuts, mounted on the connection ports of both indoor and outdoor units, onto the copper pipes. Some refrigerant gas may leak, when the flare nuts are removed from the indoor unit, as some gas is charged to prevent the inside of the pipe from rusting.

☞ Fit the copper pipe end into the bar of flare tool about 0~0.5mm higher .

☞ Flare the pipe ends.

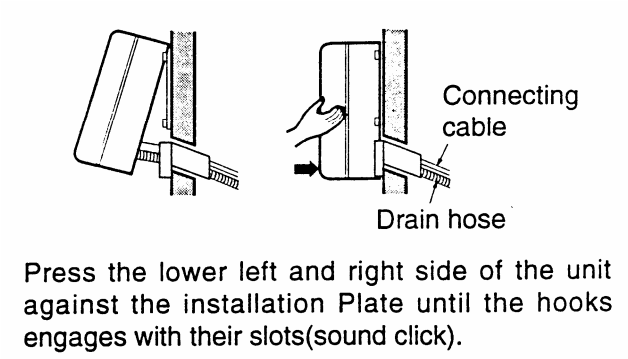
4) Tape the flaring portion to protect it from the dust or damages.

● Indoor unit installation

☞ Hook the indoor unit onto the upper portion of installation

plate.(Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.)

☞ Ensure the hooks are properly seated on the installation plate by moving it in left and right.



Press the lower left and right side of the unit against the installation Plate until the hooks engages with their slots(sound click).

- Connecti
  ng the piping to the indoor unit

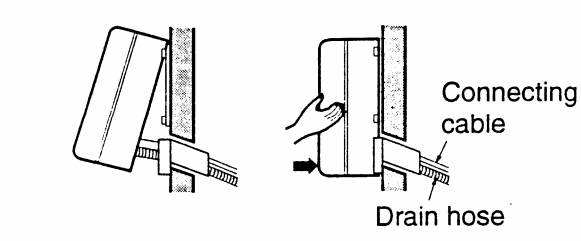
☞ Align the center of the piping and sufficiently tighten flare nut with fingers.

☞ Finally, tighten the flare nut with torque wrench until the wrench clicks.

☞ Wrench tightening the flare nut torque wrench, ensure the direction for tightening follows the arrows on the wrench.

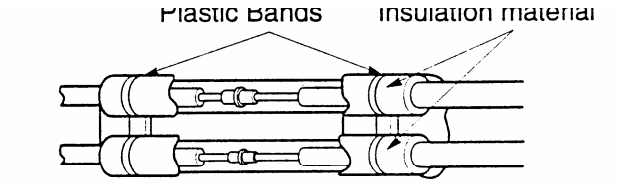
Pipe Size	Torque
Liquid Side(ϕ6 or 1/4 inch)	1.8 kg.m
Liquid Side (ϕ10 or 3/8 inch)	3.5 kg.m
Liquid Side(ϕ12 or 1/2 inch)	5.5 kg.m
Gas Side (ϕ10 or 3/8 inch)	3.5 kg.m
Gas Side(ϕ12 or 1/2 inch)	5.5 kg.m
Gas Side(ϕ16 or 5/8 inch)	7.5 kg.m

Gas Side(ϕ19 or 3/4 inch)	10.0 kg.m



Press the lower left and right side of the unit against the installation Plate until the hooks engages with their slots(sound click).

- Wrap the insulation material around the connecting portion.



Wrap the insulation material around the connecting portion.

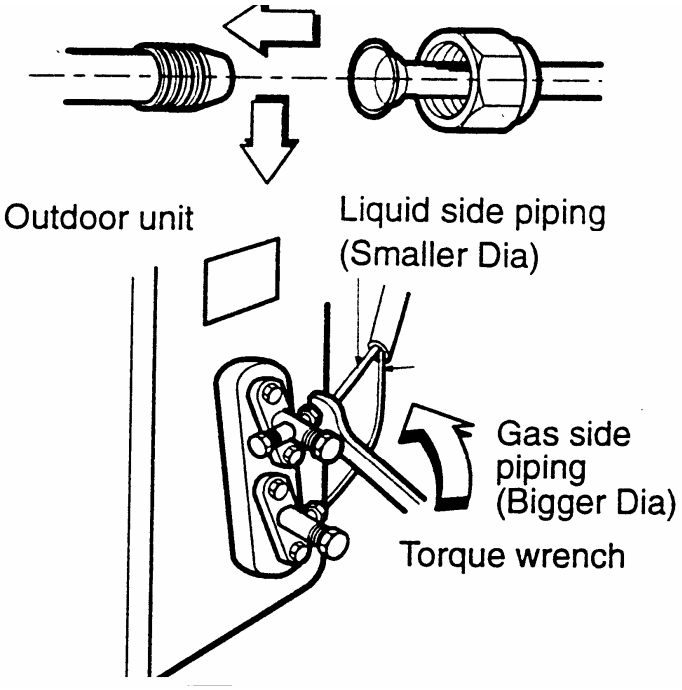
4. CONNECTING PIPINGS AND THE CABLE TO OUTDOOR UNIT

- Connecting the piping to outdoor unit

☞ Align the center of the piping and sufficiently tighten the flare nut with fingers.

☞ Finally, tighten the flare nut with torque wrench until the wrench clicks.

☞ When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrows on the wrench.



Pipe Size	Torque
Liquid Side(ϕ6 or 1/4 inch)	1.8 kg.m
Liquid Side (ϕ10 or 3/8 inch)	3.5 kg.m
Liquid Side(ϕ12 or 1/2 inch)	5.5 kg.m

Gas Side (ϕ10 or 3/8 inch)	3.5 kg.m
Gas Side(ϕ12 or 1/2 inch)	5.5 kg.m
Gas Side(ϕ16 or 5/8 inch)	7.5 kg.m
Gas Side(ϕ19 or 3/4 inch)	10.0 kg.m

- Connecting the cable to the outdoor unit as shown in OPERATING AND INSTALLATION INSTRUCTIONS MANUAL.

5. CHECKING THE DRAINAGE AND CONNECTING THE CABLE TO INDOOR UNIT

- Checking the drainage

☞ Pour glass of water on the evaporator.

☞ Ensure if water flows from drainage hose of indoor unit.

- Form the piping

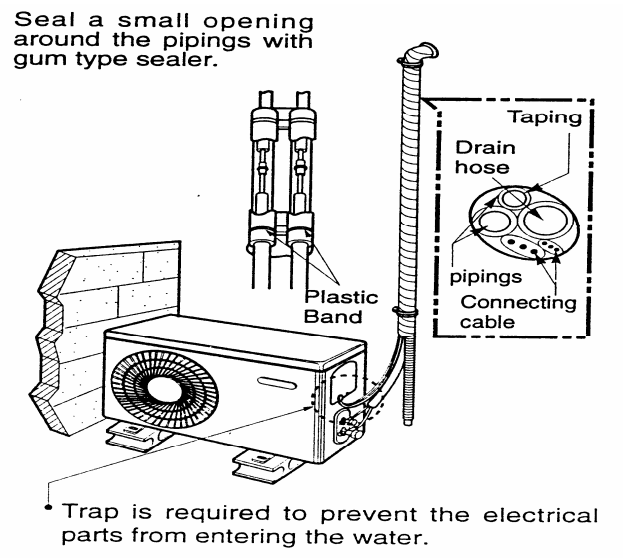
☞ Wrap the connecting portion of indoor unit with the insulation material and secure it with two plastic bands (for the right piping).

☞ If you may connect an additional drainage hose, the end of the drainage-outlet should keep distance from the ground.(Do not dip it into water, and fix it on the wall to avoid swinging in the wind.)

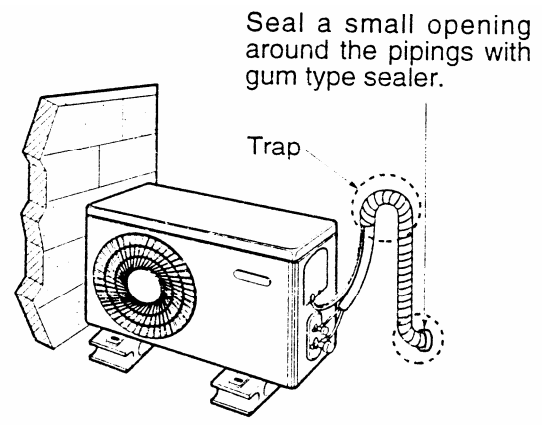
- In case of the outdoor unit is installed below position of the indoor unit

☞ Tape the piping, drainage hose and connecting cable from down to up.

☞ Form the piping gathered by taping along the exterior wall and fix it onto the wall by saddle or equivalent.



- In case of the outdoor unit is installed upper position of the



indoor unit

- ☞ Tape the piping and connecting cable from down to up.
- ☞ Form the piping gathered by taping along the exterior wall and the trap is required to prevent water from entering into the room.
- ☞ Fix the piping onto the wall by saddle or equivalent.
- Connecting the cable to the indoor unit as shown in the

6. AIR PURING OF THE PIPINGS AND INDOOR UNIT

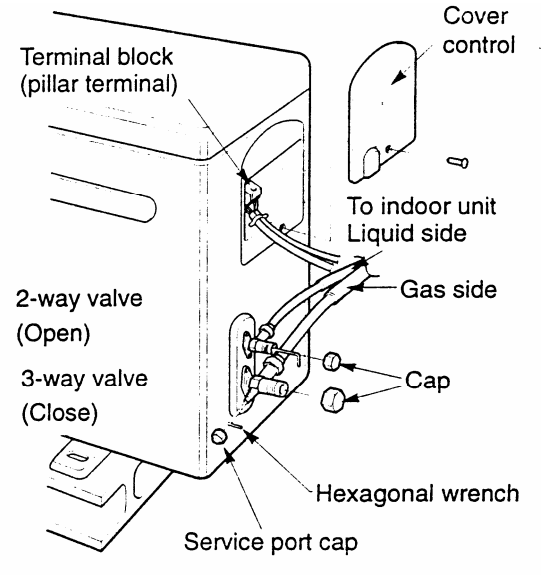
- Air purging preparation

☞ Remove the caps from the 2-way and 3-way valves.

☞ Remove the service-port cap from the 3-way valve.

☞ To open the valve, turn the valve spindle of 2-way valve counter-clockwise approximate **90°** and hold it there for **5 seconds**, then close it.

☞ **Caution**: Do not leak the gas in the air during air purging.

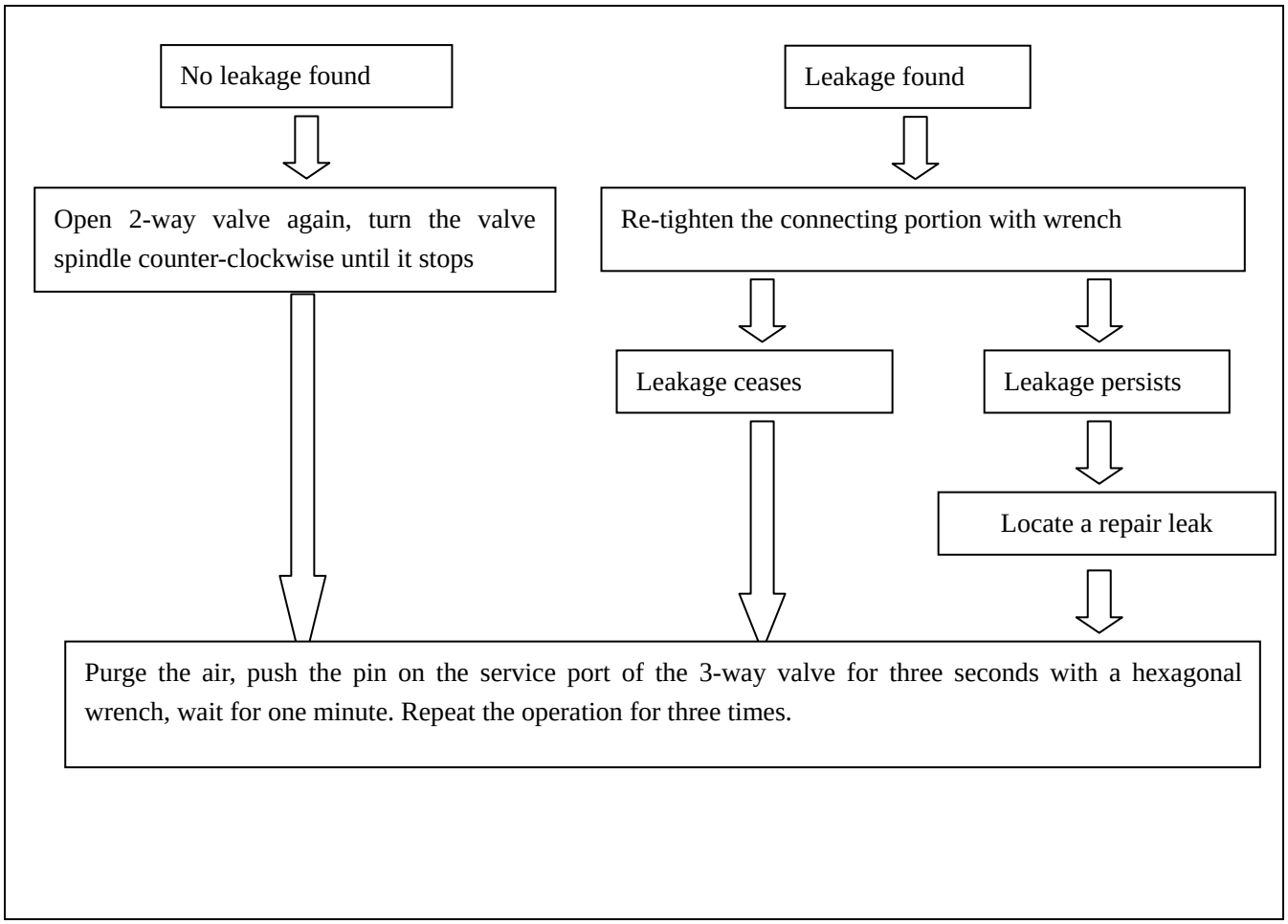


- Leakage checking

☞ Check a gas-leakage of the connection portion of the piping.

☞ If there is no leakage found, open 2-way again, turn the valve spindle counter-clockwise until it stops.

☞ If there is leakage found, re-tighten the connecting portion with wrench. If the leakage persists, locate a leakage and repair it until leakage ceases.



- Air purging

☞ To purge the air, push the pin on the service port of 3-way valve for three seconds with a hexagonal wrench, wait for **one** minute.

☞ Repeat the operation **three times**.

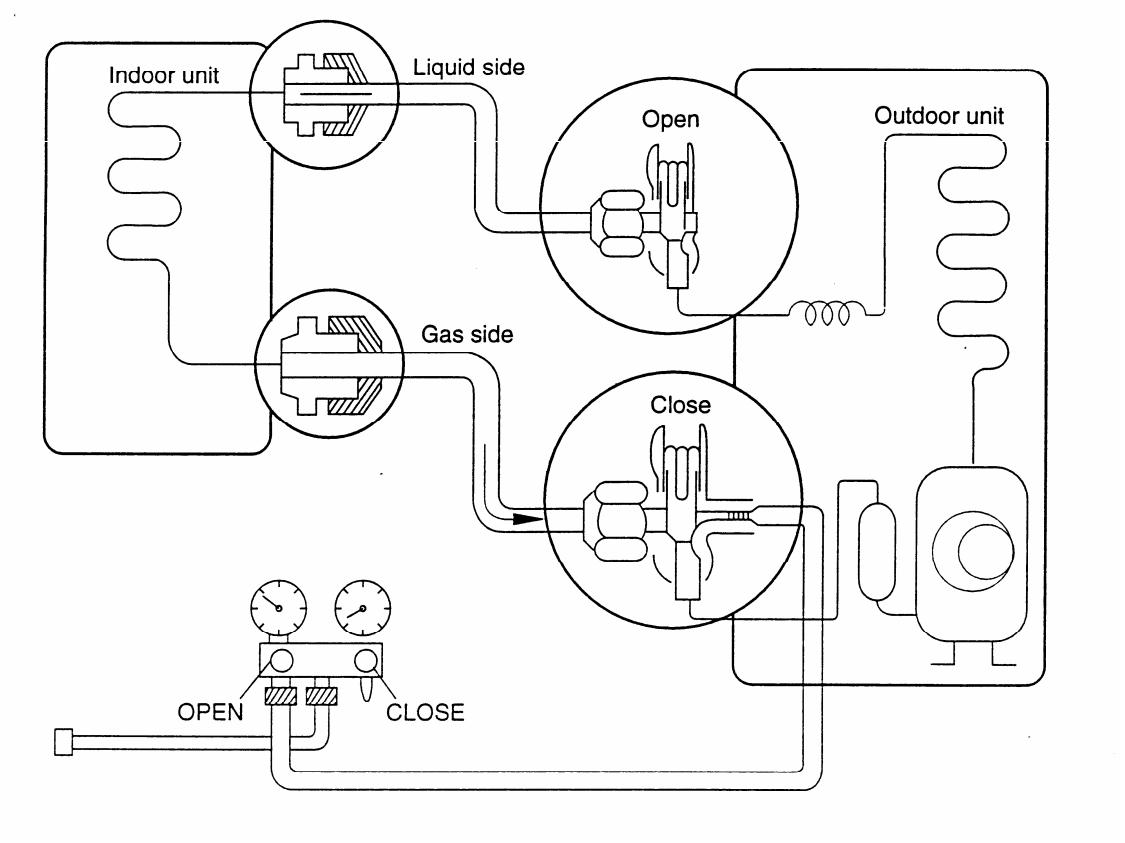
- Set the both 2-way and 3-way valves to open position with the hexagonal wrench for the unit operation.
- Checking a gas leakage for the left piping

☞ connect the manifold gauge to the service port of 3-way valve. Measure the pressure.

☞ Keep it for **5~10 minutes**. Ensure if the pressure indicated on the gauge is as same as that of measured at the first time.

- Follow the result of right side piping.

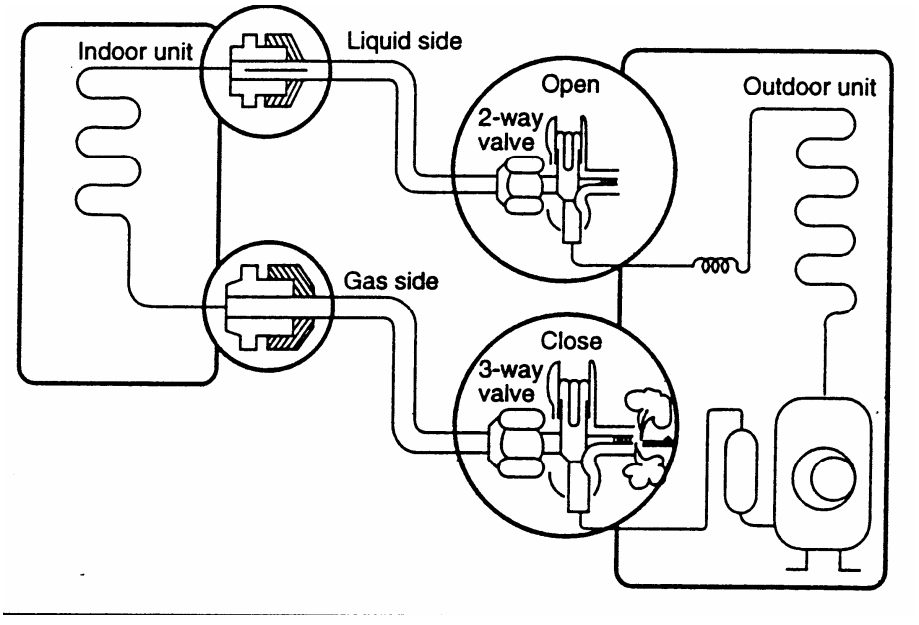
- The additional gas for air purging has been charged in the outdoor unit. However, if the flare connections have not been done correctly and gas leaks a gas cylinder and the charge set will be needed.



CHAPTER 11 service

1. AIR PURGING (INSTALLATION)

- Required tools: hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints ,and gas leak detector.
- The additional gas for air purging has been charged in the outdoor unit. However, if the flare connections have not been done correctly and gas leaks, a gas cylinder and the charge set will be needed.
- The air in the indoor unit and in the piping must be purged. If air remains in the refrigerant pipes, it will affect the compressor, reduce the cooling and heating capacity, and could lead to a malfunction.



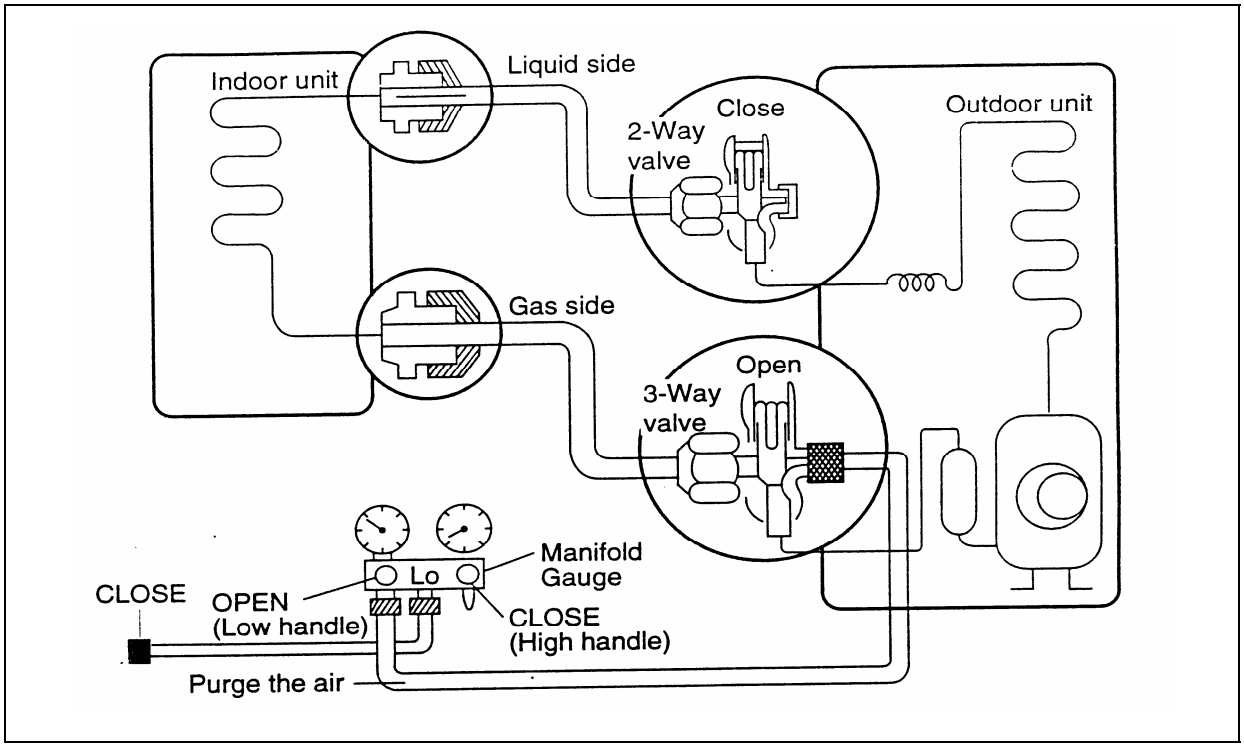
- Be sure to use a torque wrench to tighten the service port cap (after using the service port),so that it prevents the gas leakage from the refrigeration cycle.
- **Caution**: Do not leak the gas in the air during air purging.
- Air purging procedure

- ☞ Recheck the piping connections.
- ☞ Open the valve spindle of the 2-way valve counter-clockwise proximately **90°**,wait **10 seconds**, and then set it to closed position. **Be sure to use a hexagonal wrench to operate the spindle**.
- ☞ Check the flare connections for refrigerant gas leakage.
- ☞ Purge the air from the system. Set the 2-way valve to the open position and remove the cap from the 3-way valve's service port. Using the hexagonal wrench to press the valve core pin, discharge for **three seconds** and then wait for **one minute**. Repeat this **three** times.
- ☞ Use torque wrench to tighten the service port cap to a torque of 1.8kg.cm.
- ☞ Set the 3-way valve to the back seat.
- ☞ Mount the valve caps to the 2-way and 3-way valves.
- ☞ Check for gas leakage. At this time, especially check for gas leakage from the 2-way and 3-way valve's caps, and from the service port cap.

- **Caution**: If gas leakage is discovered, take the following measures.

- ☞ If the gas leakage stops when the piping connections are tightened further ,continue working.
- ☞ If the gas leakage does not stop when the piping connections are tightened, repair the location of the leakage, discharge all of the gas through the service port, and then recharge with the specified amount of gas from a gas cylinder.

2.PUMPING DOWN (BEFORE RE-INSTALLATION)



- Confirm that both the 2-way and 3-way valves are set to the **open** position.
- ☞ Remove the valve caps and confirm that the valve spindles are in the **open** position.
- ☞ Be sure to use a hexagonal wrench to operate the valve spindle.
- Operate the unit for **10~15 minutes**.
- Stop operation and wait for **3** minutes, then connect the charge set to the service port of the3-way valve.
- ☞ Connect the charge hose with the push pin to the service port.
- Air purging of the charge hose
- ☞ Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
- Set the 2-way valve to the closed position.
- Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1kg/cm^2.g.

- Immediately set the 3-way valve to the closed position.

☞ Do this quickly so that the gauge ends up indicating 3 to 5kg/cm^2.g.

- Disconnect the charge set, and amount the 2-way and 3-way valve's caps and the service port cap.

☞ Use torque wrench to tighten the service port cap to a torque of 1.8 kg.m.

☞ Be sure to check for gas leakage.

3.RE-AIR PURGING FOR RE-INSTALLATION

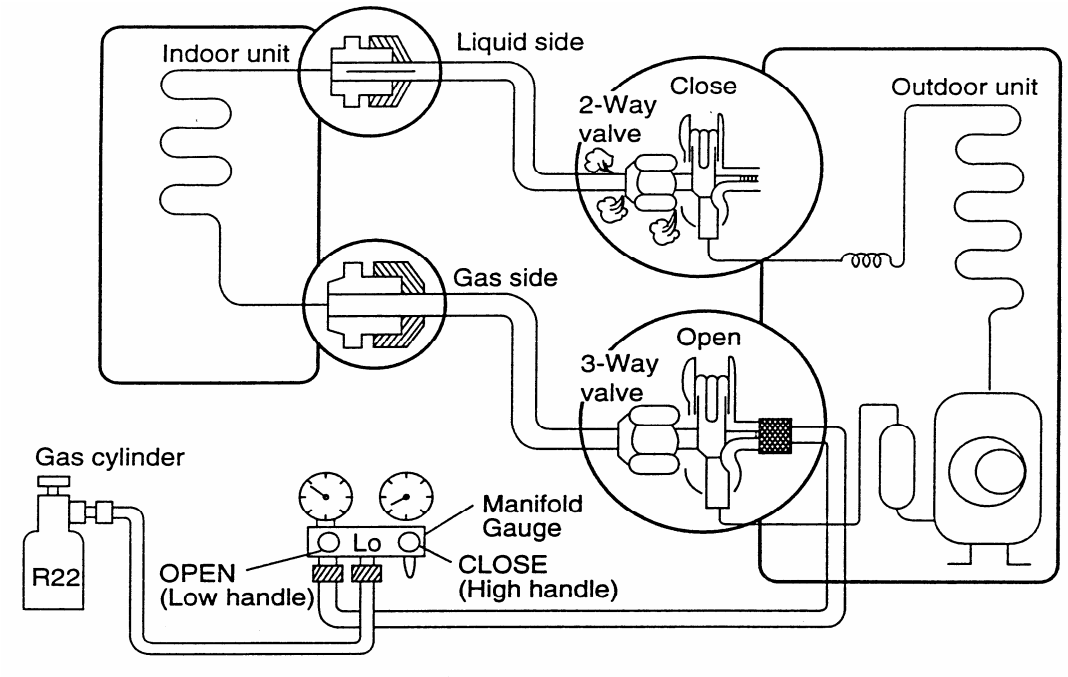
- Confirm that both the 2-way valve and the 3-way valve are set to the closed position.
- Connect the charge set and a gas cylinder to the service port of the 3-way valve.

☞ Leave the valve on the gas cylinder closed.

- Air purging

☞ Open the valves on the gas cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately **45°**for **3 seconds**, then closing it for **1 minute**. Repeat **3** times.

☞ After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.



- Check the flare connections for gas leakage.
- Disconnect the charge set and the gas cylinder, and set the 2-way and 3-way valves to the open position.

☞ Be sure to use a hexagonal wrench to operate the valve spindles.

- Mount the valve caps and the service port cap.

☞ Use torque wrench to tighten the service port cap to a torque of 1.8kg.m.

☞ Be sure to check for gas leakage.

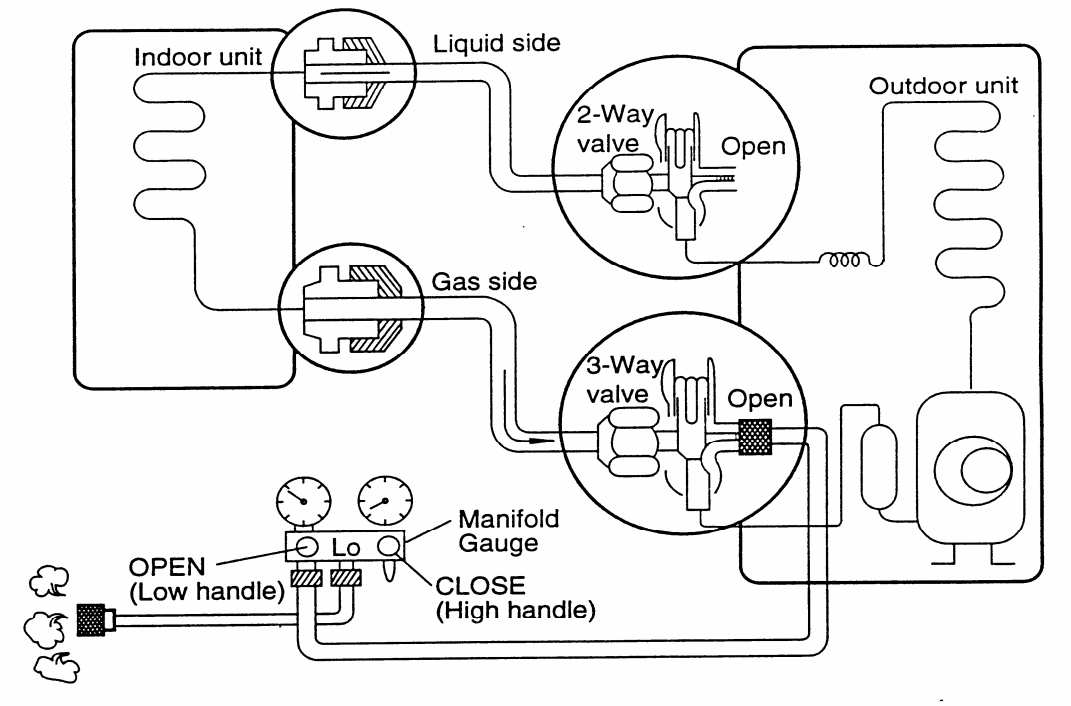
- **Caution**: Do not leak the gas in the air during air purging.

4.BALANCE REFRIGERANT OF THE 2-WAY, 3-WAY VALVES (GAS LEAKED)

- Confirm that both the 2-way and 3-way valves are set to the back seat.
- Connect the charge set to the 3-way valve's service port.

☞ Leave the valve on the charge set closed.

☞ Connect the charge hose with the push pin to the service port.



- Open the valve (Low side)on the charge set and discharged the refrigerant until the gauge indicates 0kg/cm^2.g.

☞ If there is no air in the refrigerant cycle (the pressure when the air conditioner is not running is higher than 1 kg/cm^2.g),discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm^2.g.If this is the case, it will not be necessary to apply an evacuation.

☞ Discharge the refrigerant gradually. If it is discharged too suddenly, the refrigeration oil will also be discharged.

5.EVACUATION (ALL AMOUNT OF REFRIGERANT LEAKED)

- Connect the vacuum pump to the charge set's center hose.
- Evacuating for approximately one hour.

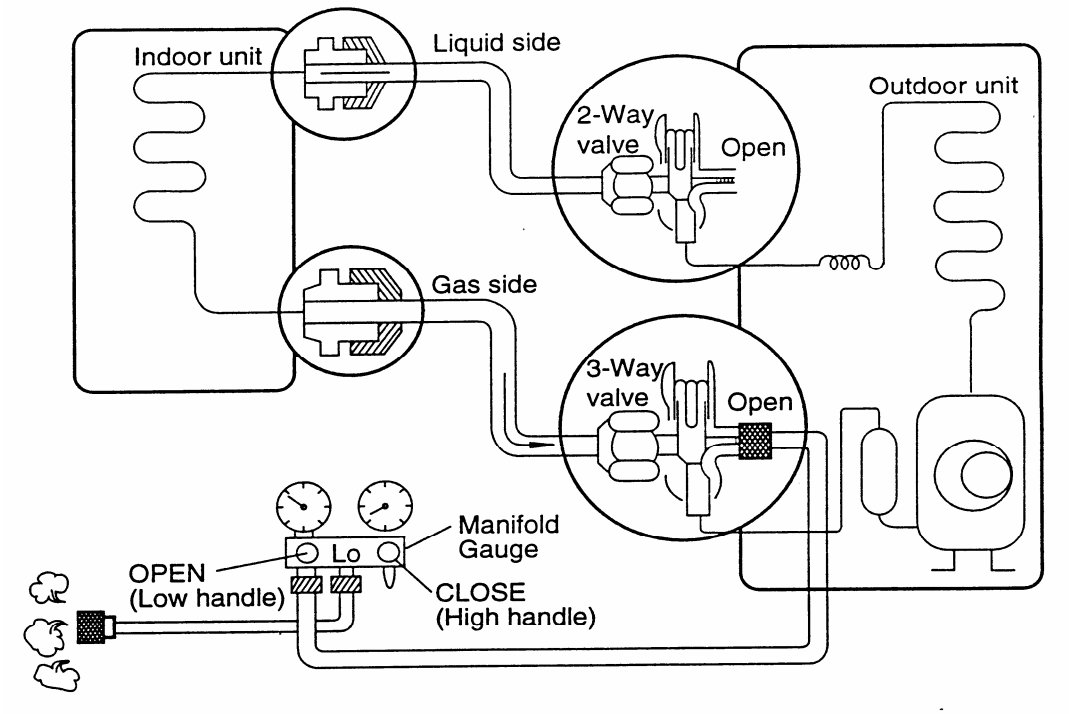
☞ Confirm that the gauge needle has moved toward -76cmHg (vacuum of 4 mmHg or less)

- Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not

move (approximately 5 minutes after turning off the vacuum pump).

- Disconnect the charge hose from the vacuum pump.

☞ If the vacuum pump oil becomes dirty or depleted, replenish as needed.



6.GAS CHARGING (AFTER EVACUATION)

- Connect the charge hose to the charging cylinder.

☞ Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

☞ If you are using a gas cylinder ,also use a scale and level the cylinder so that the system can be charged with liquid.

- Purge the air from the charge hose.

☞ Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air.(Be careful of the liquid refrigerant).The procedure is the same if using a gas cylinder.

- Open the valve (Low side on the charge set) and charge the system with liquid refrigerant.

☞ If the system can not be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150g each time) while operating the air conditioner in the cooling cycle. However, one time is not sufficient, wait approximately 1 minute and then repeat the procedure (pumping down pin).

☞ This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do not attempt to charge with larger amounts of liquid refrigerant while operating the air conditioner.

- Immediately disconnect the charge hose from the 3-way valve's service port.

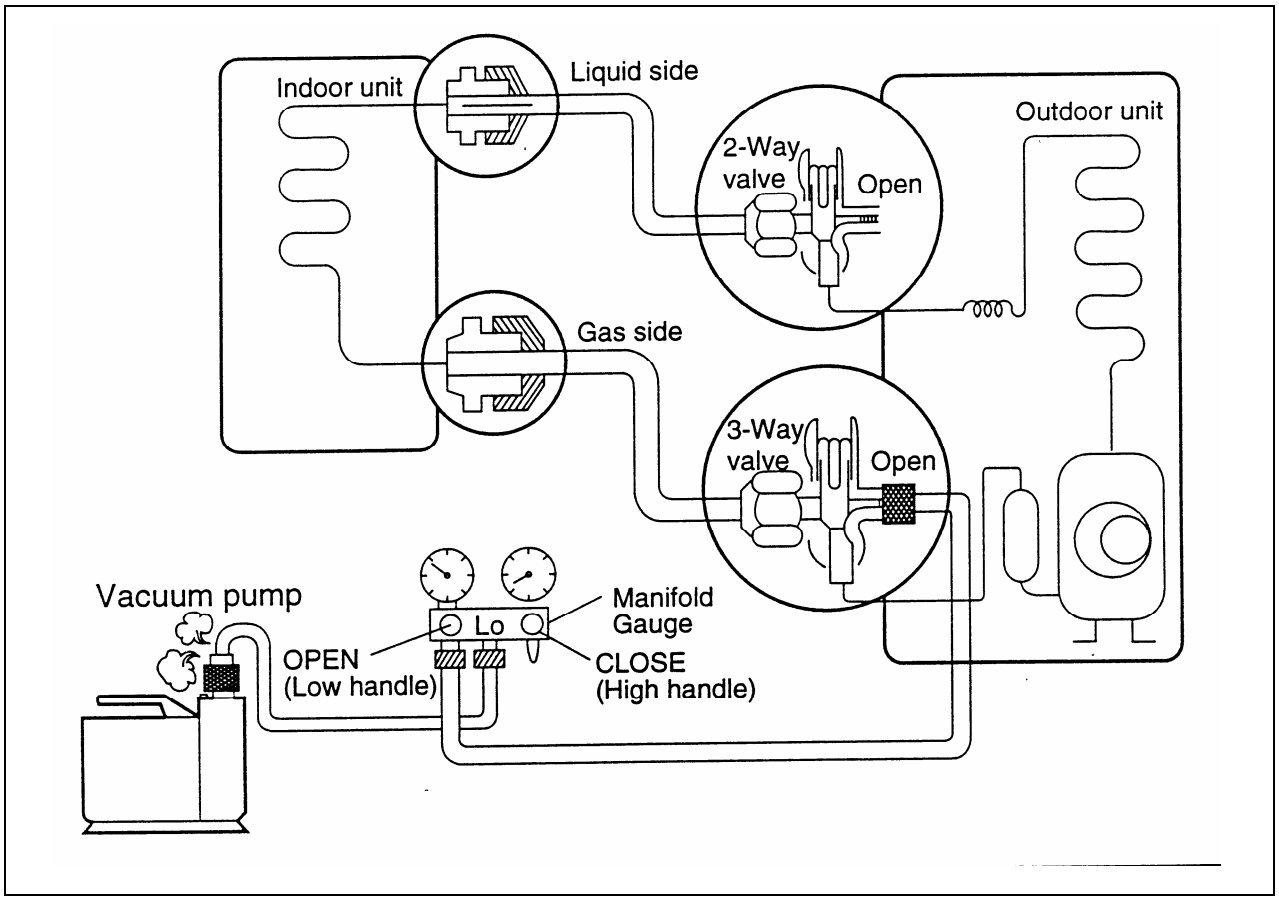
☞ Stopping partway will allow the gas to be discharged.

☞ If the system has been charged with liquid refrigerant while operating the air conditioner before disconnecting the hose.

- Mount the valve caps and service port cap.

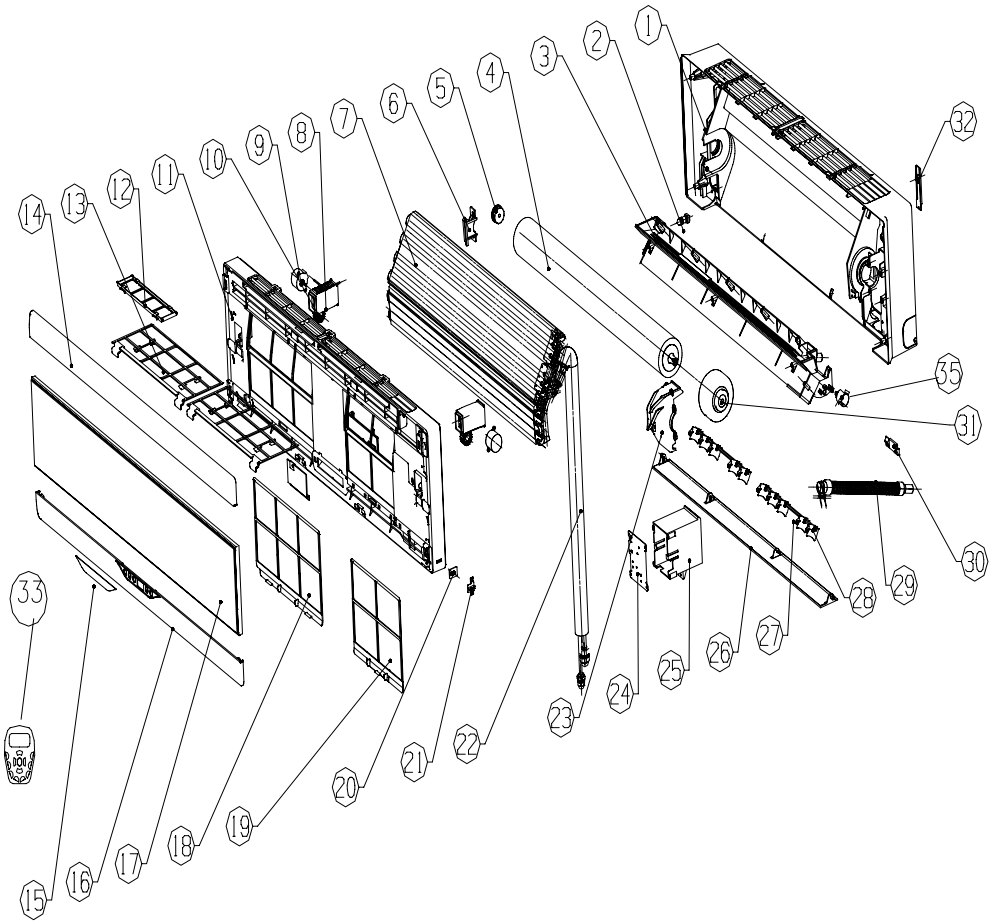
☞ Use torque wrench to tighten the service port cap to a torque of 1.8kg.m.

☞ Be sure to check for gas leakage.

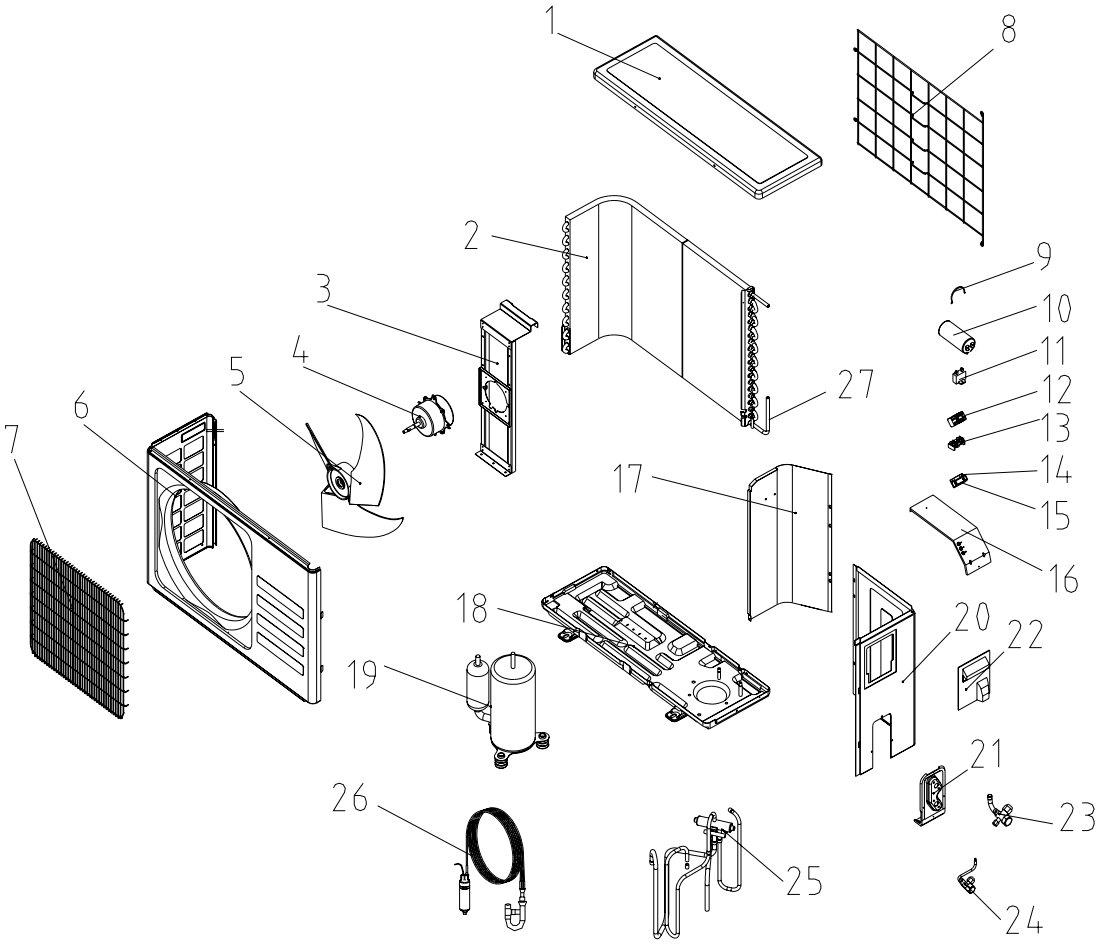


CHARPTER 07 EXPLODED DRAWINGS

1.Exploded view of indoor unit for model: AS-09HR4SWHVA AS12HR4SWHVA



2.Exploded view of outdoor unit for model: AS-09HR4SWHVA AS12HR4SWHVA



1. INDOOR UNIT PARTS LIST OF AS-09HR4SWHVA		
No.	DESCRIPTION	Part No.
1	Installation Plate	8110156
2	Chassis	81002424
3	Draining pan cork	N/A
4	Draining pan	8110676
5	Indoor Fan	81011172
6	Bearing	120268
7	Moter fixing ring A	8120341
8	Evaporator Assembly	81301373
9	Panel moter	+81402121
10	Connecting Rod	81204111
11	Splint Pin	81203105
12	Axis	8120226
13	Driving Lever	81204110
14	Cabinet	81004399
15	Filter Rack	N/A
16	filter	81105104
17	Up fancy panel	8180255
18	Front cover	810061263
19	Down fancy panel	8180256
20	Display panel	810061610
21	filter	81105103
22	Display PCB cover	82102213
23	Display PCB	+81409757
24	filter	81105105
25	Safty cover	+82102212
26	Emergency switch pcb	+81409758
27	Emergency switch	8141052
28	Pipe assembly	+813037109
29	Moter fixing ring B	8120342
30	Clamp fixing panel	8210952
31	Control PCB	81409759
32	Power PCB	81409760
33	Electric box	82102211
34	Horizontal louver	81201128
35	Vertical Deflector	81201129
36	Fixing link	8120444

37	Indoor fan moter	+81402122
38	Pipe Clamp B	8121022
39	Draining house	821094
40	Pipe Clamp A	8121021
OUTDOOR UNIT PARTS LIST OF AS-09HR4SVGUG		
No.	DESCRIPTION	Part No.
1	Top Cover	8101366
2	Condenser	8130238
3	Motor Stay Bracket	811022
4	Outdoor Fan Motor	814028
5	Outdoor Fan	1402181
6	Cabinet	810069
7	Fan Guard	821072
8	Back Lattice Plate	810093
9	Capacitor Fixing Ring	812031
10	Compressor Capacitor	+141155
11	Fan motor Capacitor	+141116
12	Terminal Board 5PU	150262
13	Terminal Board 2U	+150217
14	Power Supply Cord Clamp 1	+110963
15	Power Supply Cord Clamp 2	+1109147
16	Electrical Assembly Plate	8210213
17	Bulkhead	811093
18	Chassis	+81002270
19	Compressor	1304556
20	Right Side Plate	810032
21	Valve Fixing Plate	811092
22	Terminal Cover	821021
23	3 Way Valve Assembly	8130993
24	2 Way Valve Assembly	8130991
25	4 Way Valve	8130992
25a	4 Way Valve Coil	8130994
26	Capillary Assembly	813037851
2. INDOOR UNIT PARTS LIST OF AS12HR4SWHVA		
No.	DESCRIPTION	Part No.
1	Installation Plate	8110156
2	Chassis	81002424
3	Draining pan cork	N/A

4	Draining pan	8110676
5	Indoor Fan	81011172
6	Bearing	120268
7	Moter fixing ring A	8120341
8	Evaporator Assembly	81301373
9	Panel moter	+81402121
10	Connecting Rod	81204111
11	Splint Pin	81203105
12	Axis	8120226
13	Driving Lever	81204110
14	Cabinet	81004399
15	Filter Rack	N/A
16	filter	81105104
17	Up fancy panel	8180255
18	Front cover	810061263
19	Down fancy panel	8180256
20	Display panel	810061610
21	filter	81105103
22	Display PCB cover	82102213
23	Display PCB	+81409757
24	filter	81105105
25	Safty cover	+82102212
26	Emergency switch pcb	+81409758
27	Emergency switch	8141052
28	Pipe assembly	+813037109
29	Moter fixing ring B	8120342
30	Clamp fixing panel	8210952
31	Control PCB	81409759
32	Power PCB	81409760
33	Electric box	82102211
34	Horizontal louver	81201128
35	Vertical Deflector	81201129
36	Fixing link	8120444
37	Indoor fan moter	+81402122
38	Pipe Clamp B	8121022
39	Draining house	821094
40	Pipe Clamp A	8121021
OUTDOOR UNIT PARTS LIST OF AS12HR4SWHVA		

No.	DESCRIPTION	Part No.
1	Top Cover	8101366
2	Condenser	81302650
3	Motor Stay Bracket	811022
4	Outdoor Fan Motor	+814028
5	Outdoor Fan	1402181
6	Cabinet	810069
7	Fan Guard	821072
8	Back Lattice Plate	810093
9	Capacitor Fixing Ring	812031
10	Compressor Capacitor	+141155
11	Fan motor Capacitor	141116
12	Terminal Board 5PU	150262
13	Terminal Board 2U	+150217
14	Power Supply Cord Clamp 1	110963
15	Power Supply Cord Clamp 2	1109147
16	Electrical Assembly Plate	8210213
17	Bulkhead	811093
18	Chassis	81002234
19	Compressor	1304557
20	Right Side Plate	810032
21	Valve Fixing Plate	811092
22	Terminal Cover	821021
23	3 Way Valve Assembly	8130996
24	2 Way Valve Assembly	8130991
25	4 Way Valve	8130995
25a	4 Way Valve Coil	8130994
26	Capillary Assembly	813037704