



INSTALLATION MANUAL

MODELS

QCOHD181
QCOHD241

Foreword

This instruction Manual is the universal-purpose version for the models of separate wall-mounted air conditioners manufactured by our Co. The appearance of the units that you purchase might be slightly different from the ones described in the Manual, but it does not affect your proper operations and usage.

Please read carefully the sections corresponding to the specific model you choose, and keep the Manual properly so as to facilitate your reference at later time.

IMPORTANT!

Please Read Before Starting

This air conditioning system meets strict safety and operating standards.

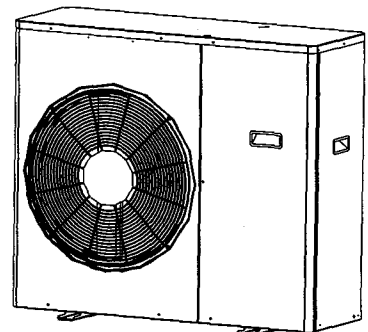
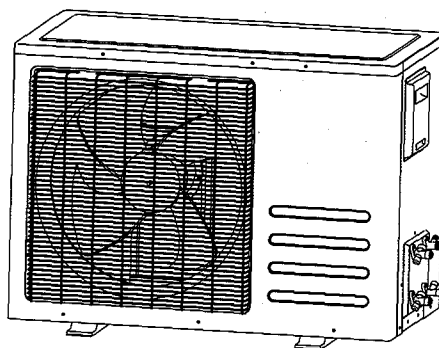
As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

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

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all danger, warning, and caution notices given in this manual.

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

CAUTION: This symbol refers to a hazard or unsafe practice which can result in personal injury and the potential for product or property damage.



CONTENTS

LOCATION OF OUTDOOR UNIT	1
ELECTRICAL CONNECTION BETWEEN INDOOR AND OUTDOOR UNIT	3
INSTALLATION/SERVICE TOOLS (ONLY FOR R410A PRODUCT)	7
REFRIGERANT TUBING	9
FINAL TASKS	11

NOTE: This manual is for Multi split applications only.

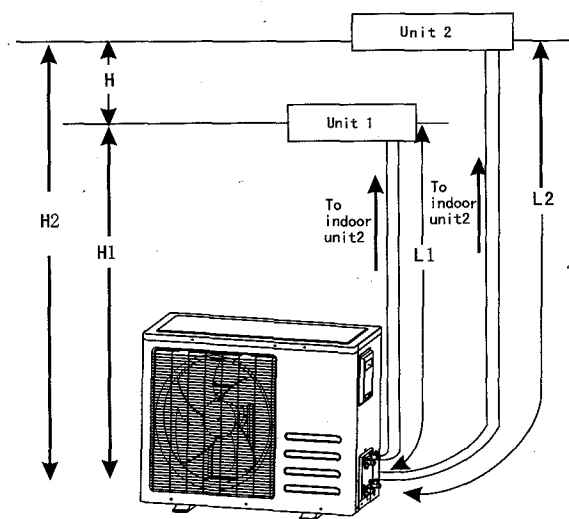
For indoor units installation please refer to the installation manual supplied within the indoor unit package.

1 LOCATION OF OUTDOOR UNIT

Select the location considering the following:

OUTDOOR UNIT

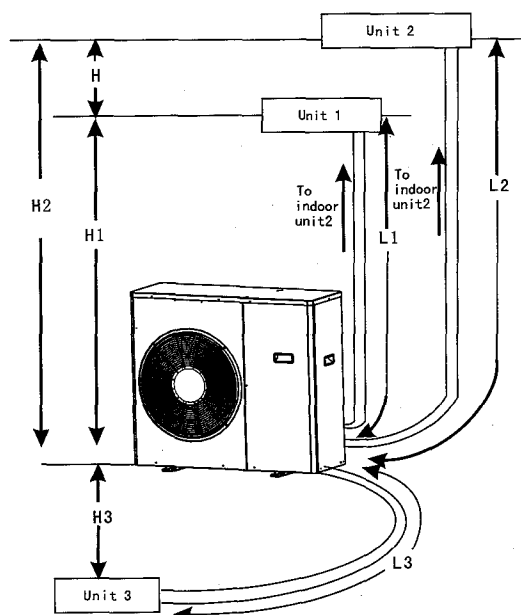
1. The location must allow easy servicing and provide good air circulation as shown in fig2.
2. The unit may be suspended from a wall by a bracket (Optional) or located in a free standing position on the floor (preferably slightly elevated).
3. If the unit is suspended, ensure that the bracket is firmly connected and the wall is strong enough to withstand vibrations.
4. Unit location should not disturb neighbours with noise or exhaust air stream.
5. Place the mounting pads under the unit legs.
6. Refer to figure 2 for allowed installation distances.



$$L_1, L_2 \leq 25\text{m}$$

$$L_1 + L_2 \leq 30\text{m}$$

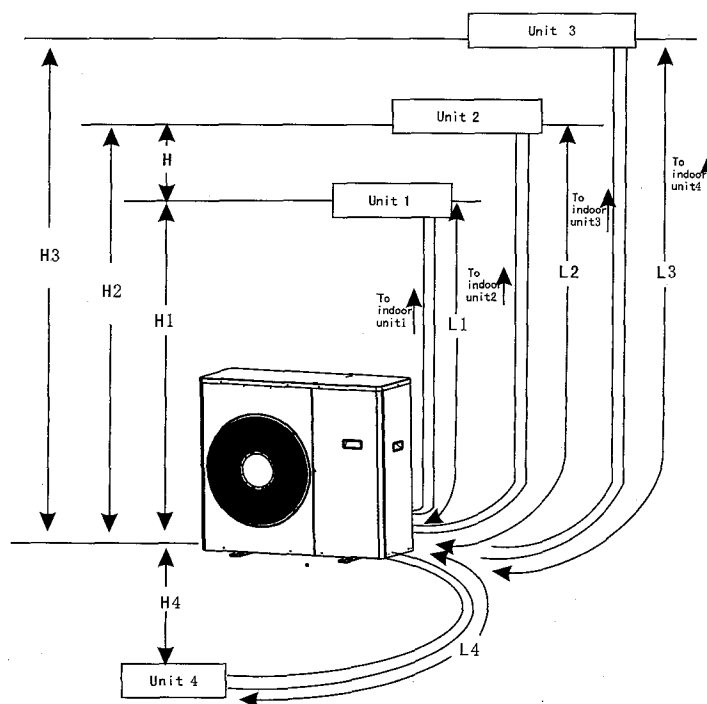
$$H_1, H_2 \leq 10\text{m}$$



$$L_1, L_2, L_3 \leq 25\text{m}$$

$$L_1 + L_2 + L_3 \leq 50\text{m}$$

$$H_1, H_2, H_3 \leq 10\text{m}$$



$$L_1, L_2 \leq 25\text{m}$$

$$L_1 + L_2 + L_3 + L_4 \leq 70\text{m}$$

$$H_1, H_2, H_3, H_4 \leq 10\text{m}$$

Fig 1

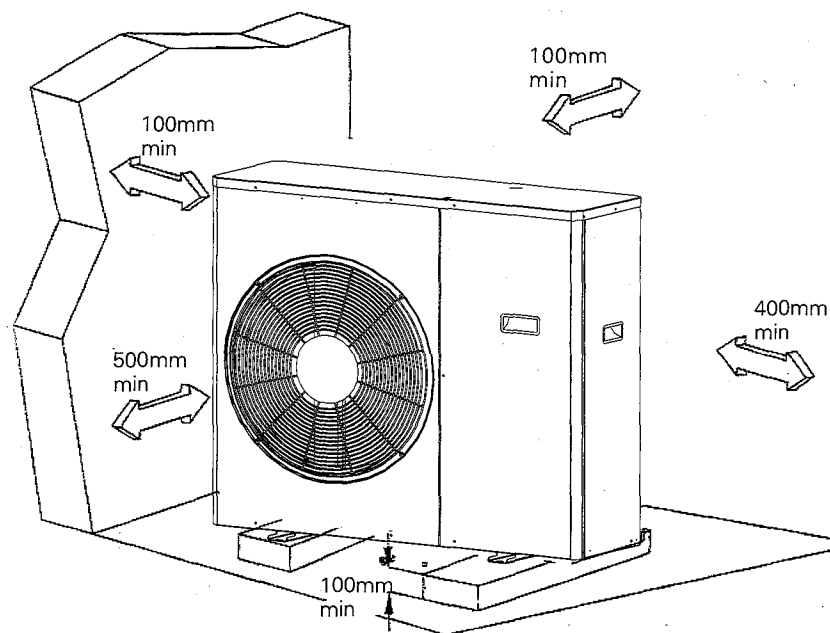


Fig 2

2 ELECTRICAL CONNECTION BETWEEN OUTDOOR AND INDOOR UNIT

ELECTRICAL REQUIREMENTS

Electrical wiring and connections should be made by qualified electricians and in accordance with local electrical codes and regulation. The air conditioner units must be grounded.

The air conditioner units must be connected to an adequate power outlet from a separate branch circuit protected by a time delay circuit breaker, as specified on unit's nameplate. Voltage should not vary beyond $\pm 10\%$ of the rated voltage.

1. Remove the power supply cable that is connected to the indoor unit!

2. To connect the indoor units to the outdoor units, use the following electrical cables.

Electrical connections:

Power input cable: 1 group 3 wires $\times 2.5\text{mm}^2$

cable between indoor and

outdoor units: 1 group 4 wires $\times 1.0\text{mm}^2$ (some models are 2 group 2 wires $\times 1.0\text{mm}^2$)

see Fig 6.7.8.9.10 for detail .

3. Prepare the cable ends for the power input and for the cables between outdoor and indoor units as shown in figure 3a and 3b respectively.

4. Connect the cable ends to the terminals of the indoor and outdoor units , as show in fig4, fig5.

Please select corresponding connection according to the different indoor units.

5. Secure the multiple wire power cable with the cable clamps.

●Power input cable

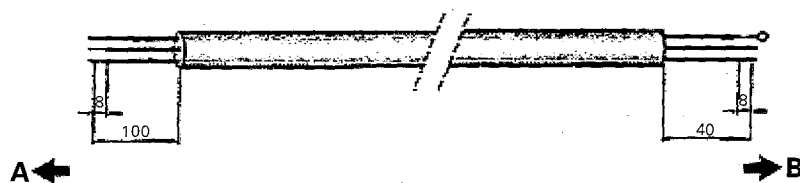


Fig 3

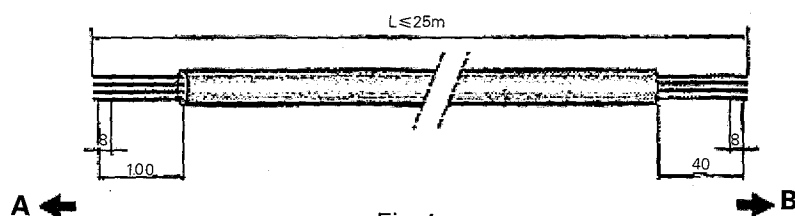


Fig 4

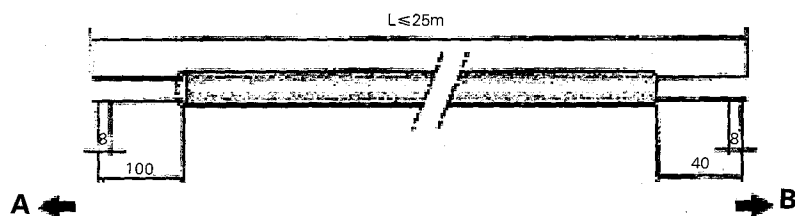
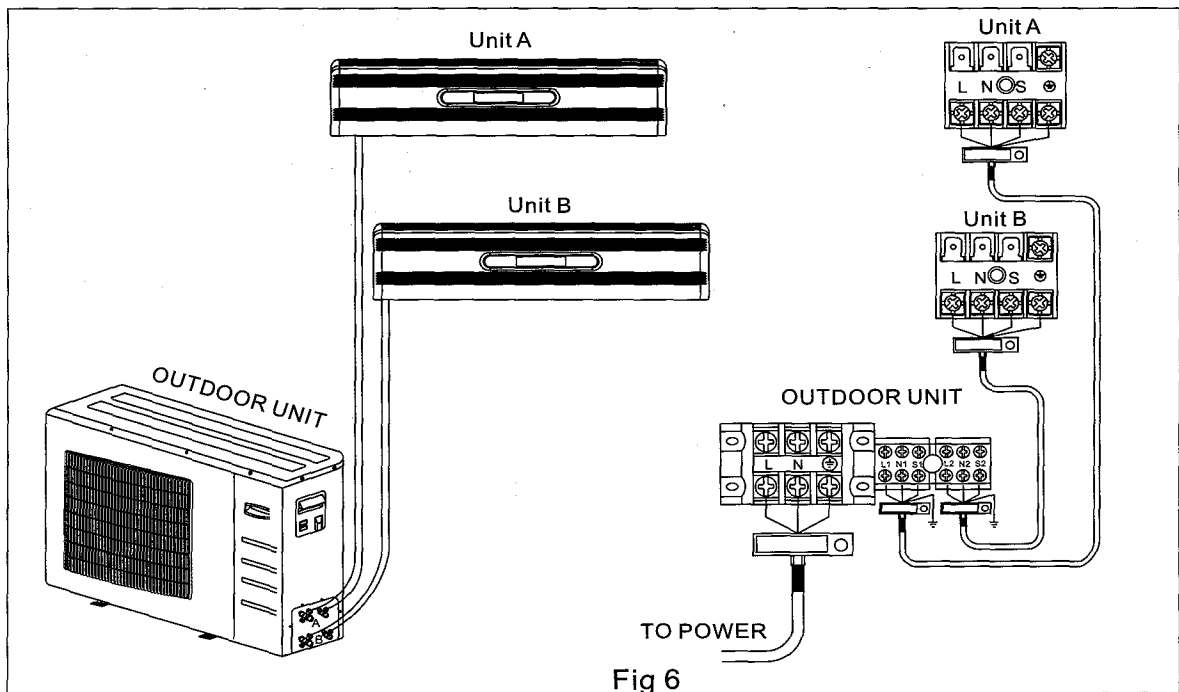


Fig 5

For European Model: Fig 6.7.8

WIRE AND PIPE CONNECTIONS FOR DUAL INVERT



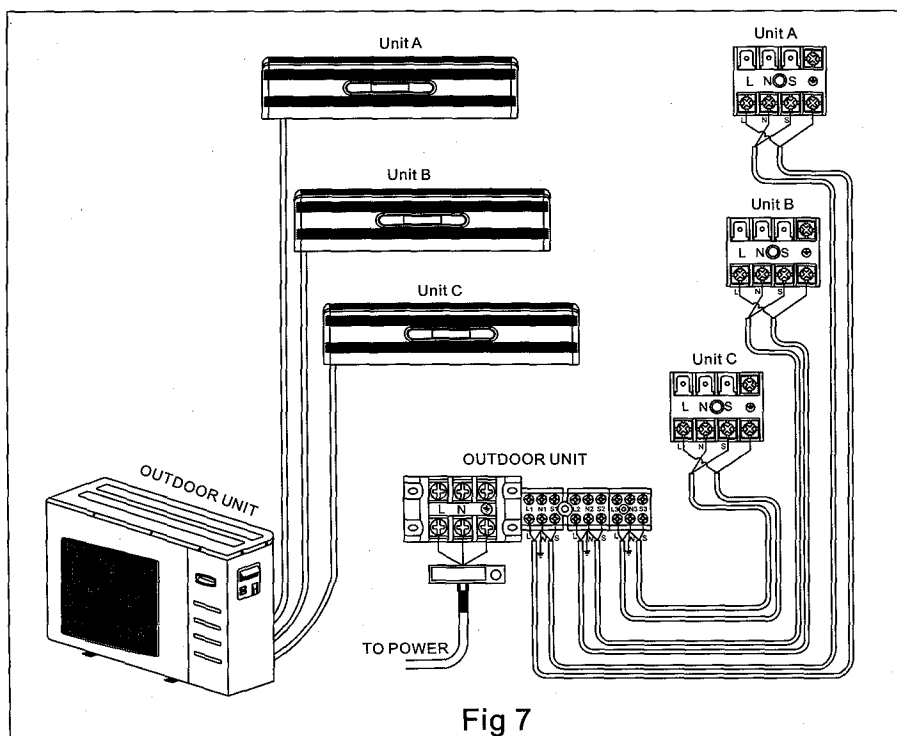
Electrical connections:

Power input cable: 1 group 3 wires $\times 2.5\text{mm}^2$

cable between indoor and outdoor units: 1 group 3 wires $\times 2.5\text{mm}^2$

This figure adapt to CMV-50V3A-E2(2.5kw+2.5kw and 2.5kw+3.5kw)

WIRE AND PIPE CONNECTIONS FOR TRIPLE INVERT



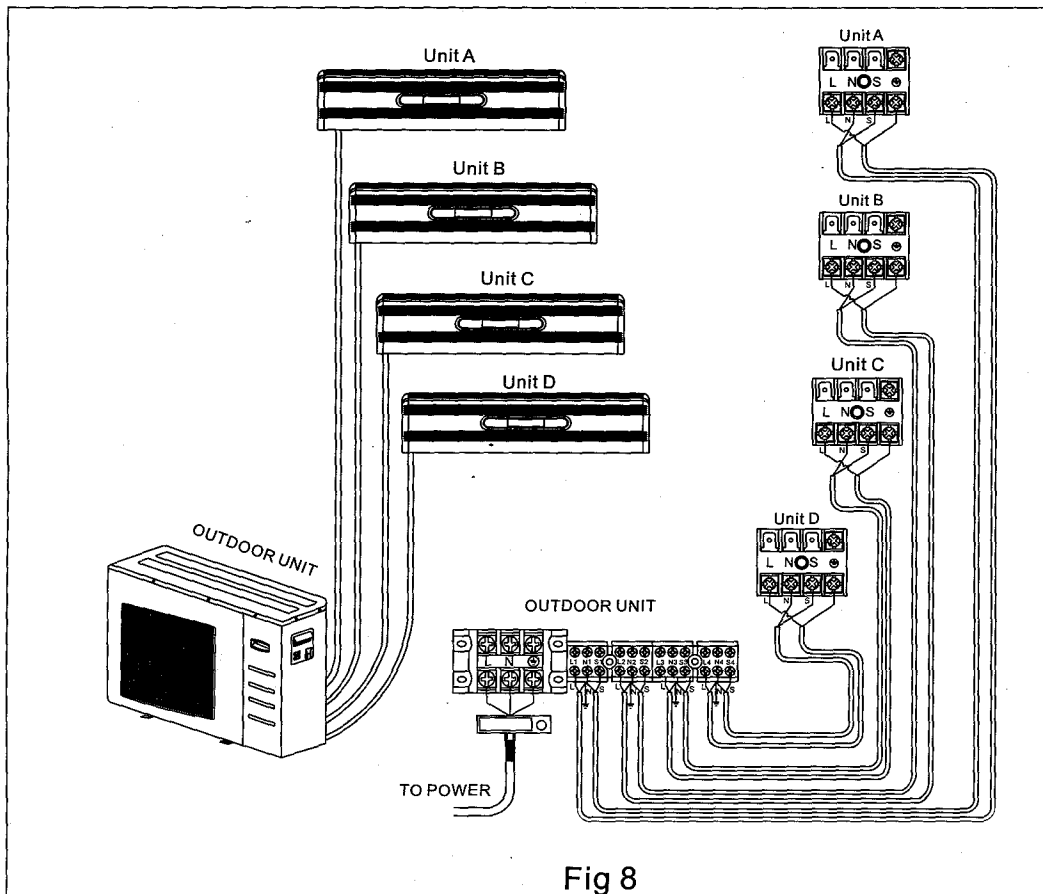
Electrical connections:

Power input cable: 1 group 3 wires $\times 2.5\text{mm}^2$

cable between indoor and outdoor units: 2 group 2 wires $\times 1.0\text{mm}^2$

This figure adapt to CMV-71V3A-T(2.5kw+2.5kw+2.5kw, 2.5kw+2.5kw+3.5kw and 2.5kw+5.0kw)

WIRE AND PIPE CONNECTIONS FOR TRIPLE INVERT



Electrical connections:

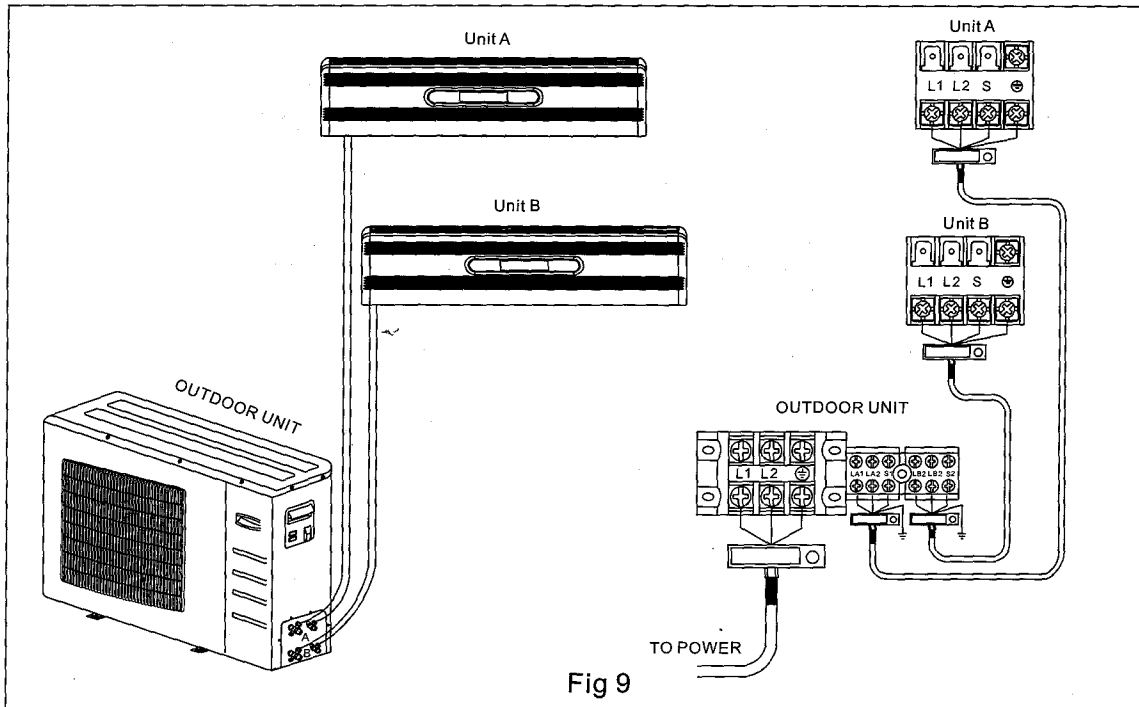
Power input cable: 1 group 3 wires $\times 2.5\text{mm}^2$

cable between indoor and outdoor units: 2 group 2 wires $\times 1.0\text{mm}^2$

This figure adapt to CMV-81V3A-T(2.5kw+2.5kw+2.5kw+2.5kw and 2.5kw+2.5kw+2.5kw+3.5kw)

For North America Model: Fig 9.10

WIRE AND PIPE CONNECTIONS FOR DUAL INVERT



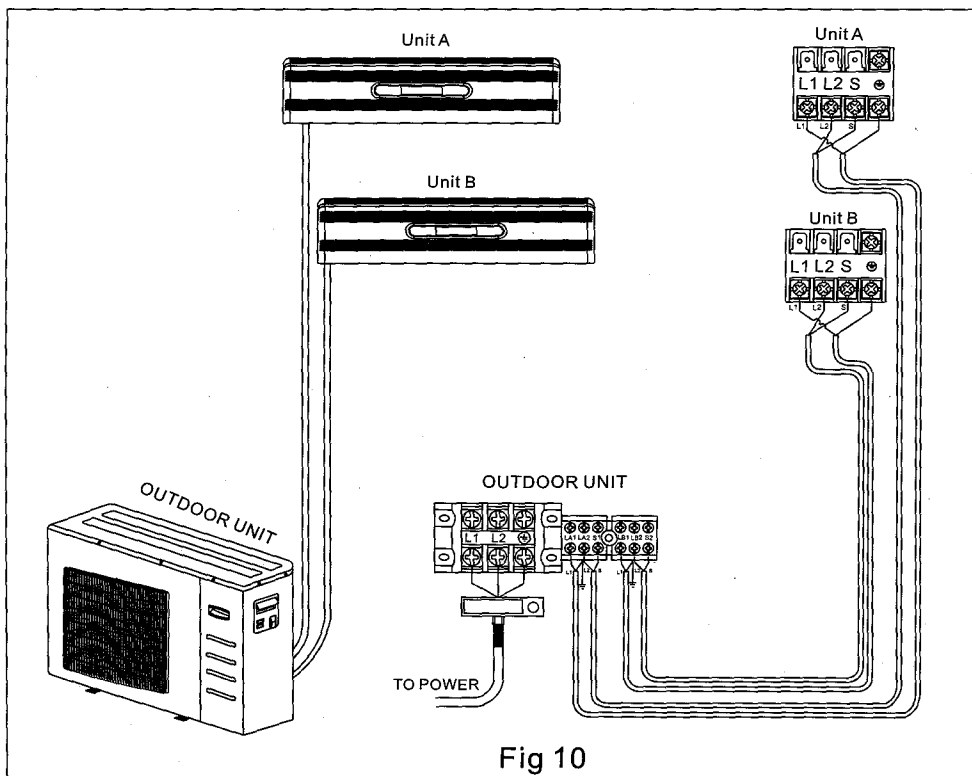
Electrical connections:

Power input cable: 1group 3 wires $\times$ 2.5mm²

cable between indoor and outdoor units: 1 group 4 wires $\times$ 1.0mm²

This figure adapt to CMV-50V9A-S(9000btu+9000btu)

WIRE AND PIPE CONNECTIONS FOR TRIPLE INVERT



Electrical connections:

Power input cable: 1 group 3 wires $\times 2.5\text{mm}^2$

cable between indoor and outdoor units: 2 group 2 wires $\times 1.0\text{mm}^2$

This figure adapt to CMV-V64WC9A(9000btu+12000btu and 12000btu+12000btu)

3 INSTALLATION/SERVICE TOOLS(ONLY FOR R410A PRODUCT)

CAUTION

New Refrigerant Air Conditioner Installation

This air conditioner adopts the new HFC refrigerant (R410A) which does not destroy ozone layer. R410A refrigerant is approx. 1.6 times of refrigerant R22. Accompanied with the adoption of the new refrigerant, the refrigeration machine oil has also been changed.

Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigeration machine oil does not enter into the new type refrigerant R410A air conditioner circuit. The system must not be left open to the atmosphere for any reason for any period of time as the systems oil quickly absorbs moisture and will contaminate and damage the system.

A refrigerant liquid line drier is recommended.

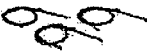
To prevent mixing of refrigerant or refrigerating machine oil, the sizes of connecting sections of charging port on main unit and installation tools are different from those used for the conventional refrigerant units. Accordingly, special tools are required for the new refrigerant (R410A) units. For connecting pipes use new and clean piping materials with high pressure fitting made for R410A only, so that water and/or dust does not enter. Moreover, do not use the existing piping because there are some problems with pressure fittings and possible impurities in existing piping.

Changes in the product and components

In air conditioners using R410A, in order to prevent any other refrigerant from being accidentally charged, the service port diameter size of the outdoor unit control valve (3 way valve) has been changed. (1/2 UNF 20 threads per inch)

- In order to increase the pressure resisting strength of the refrigerant piping, flare processing diameter and opposing flare nuts sizes have been changed. (for copper pipes with dimensions 1/2 and 5/8)

New tools for R410A

Nes tools for R410A	Applicable to R22 model	Chages
Gauge manifold	×	 As the working pressure is high ,it is impossible to measure the working pressure using conventional gauges . In order to prevent any other refrigerant from being charged , the port diameters have been changed.
Charge hose	×	 In order to increase pessure resisting strength, hose materials and port sizes have been changed(to 1/2 UNF 20 threads per inch). When puchasing a charge hose,be sure to confirm the port size.
Electronic balance for refrigerant charging	○	 As working pressure is high and gasification speed is fatt ,it is diffiuit to read the indicated value by means of charging cylinder ,as air bubbles occur.
Torque wrench (nominal dia.1/2,5/8)	×	 The size of opposing flare nuts have been increased ,incidentally,a common wrench is used for nominal diameters 1/4 and 3/8.
Flare tool (clutch type)	○	 By incressing the clamp bar'receiving hole size , strength of spring in the tool has been improved.
Gauge for projection adjustment	—	Used when flare is made by using conventional flare tool.
Vacuum pump adapter	○	 Connected to conventional vacuum pump,it is necessary to use an adapter to prevent vacuum pump oil from flowing back into the charge hose , The charge hose connecting part has two ports—one for conventional refrigerant (7/16 UNF 20 theads per inch)and one for R410A ,if the vacuum pump oil (mineral)mixes with R410A a sludge may occur and damage the equipment.
Gas leakage detector	×	 Exclusive for HFC refrigerant

- Incidentally,the "refrigerant cylinder"comes with the refrigerant designation(R410A)and protector coating in the U.S's ARI specified rose color (Ari color code; PMS 507).
- Also the "charge port and packing for refrigerant cylinder"requires 1/2 UNF 20 theads per inch corresponding to the charge p0se's port size.

4 REFRIGERANT TUBING

CONNECT THE INDOOR TO THE OUTDOOR UNIT

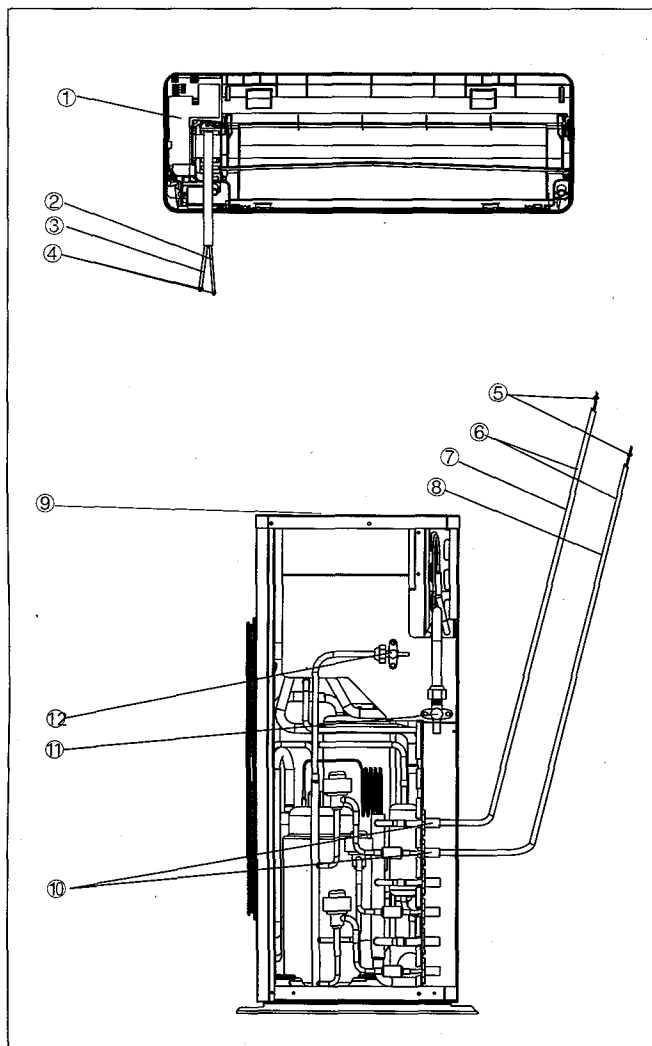
The indoor unit contains a small quantity of nitrogen. Do not unscrew the nuts from the unit until you are ready to

connect the tubing. The outdoor unit is supplied with sufficient refrigerant charge (R410A). Refer to outdoor unit nameplate.

To prevent crushing, bend tubes using a bending tool.

NOTE: Use refrigeration R410A type copper tubing only.

1. Open the valve cover.
2. Use tubing diameter that corresponds to the tubing diameter of the indoor and outdoor units.
Note that the liquid and suction tubes have different diameters. (See tube size, torque tightening table.)
3. Place flare nuts on tube ends before preparing them with a flaring tool. Use the flare nuts that are mounted on the supplied outdoor and indoor units.
4. Connect the all ends of the tubing to the indoor and outdoor units. Notice the sign. All ends should correspond one by one.
5. Insulate each tube separately, and their unions, with at least 6mm thick of insulation. Wrap the refrigerant tubing, drain hose and electric cables together with a vinyl tape (UV protected).



Caution!

When unscrewing the valve caps, do not stand in front of them or the spindles at any time, as the system is under pressure.

Fig 11

1. INDOOR UNIT
2. Liquid tube (small dia.)
3. Suction tube (large dia.)
4. Plugs
5. Flare nuts
6. Tubing between units
7. Suction tube
8. Liquid tube
9. OUTDOOR UNIT
10. Flare nuts
11. Suction valve (larger)
12. Liquid valve (small)

- NOTE:**
1. For unit use connections A, B and D
 2. For large indoor unit of 5.0KW Use the lower connection (unit D) and use the 3/8" - 1/2" transition (supplied)
 3. The electric control channel must match the tube channel.

**Tightening
torques of unions
and valve caops:**

TUBE SIZE	TORQUE
Liquid line 1/4"	15–20 N.M.
Suction line 3/8"	30–35 N.M.
Suction line 1/2"	50–54 N.M.
Suction line 5/8"	75–78 N.M.



Fig 12

1. Wrench
2. Torque wrench
3. Union

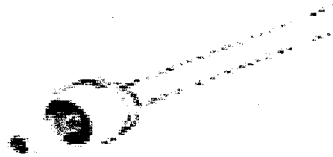


Fig 13

To prevent refrigerant leakage, coat the flared surface with refrigeration oil

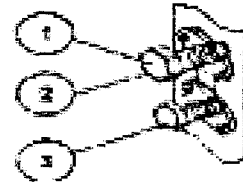


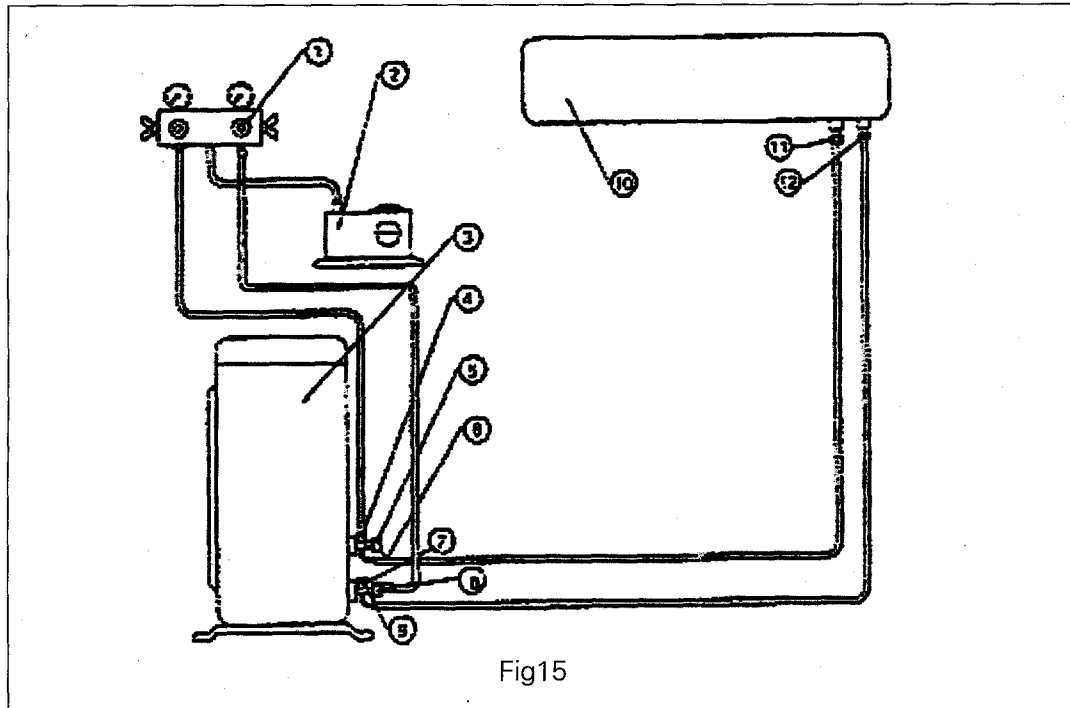
Fig 14

1. Suction valve
2. Service port
3. Liquid valve

EVACUATION OF THE REFRIGERATION TUBES AND THE INDOOR UNIT

After connecting the unions of the indoor and outdoor units, evacuate the air from the tubes and indoor unit as follows:

1. Connect the charging hoses with a push pin to the low and high sides of the charging set and the service ports of the suction and liquid valves.
Be sure to connect the end of the charging hose with the push pin to the service ports.
2. Connect the center hose of the charging set to a vacuum pump.
3. Open Fully the low and high pressure sides of the manifold gauge valves.
4. Turn on the vacuum pump. Perform evacuating for at least 30 minutes and than confirm that the needle in the gauge moves from 0 MPa(0cm Hg) to -0.1 MPa(-76cm Hg).
5. Close the valves of the low and high sides of the charging set and turn off the vacuum pump.
After few minutes, if the gauge needle has moved, there is a leak which must be found and repaired before moving to the next stage.
6. Disconnect the charging hose from the vacuum pump and from the service ports of the suction and liquid valves.
7. Tighten the service port caps of suction and liquid valves.
8. Remove the valve caps from all valves, and open them using a hexagonal Allen wrench,
9. Securely tighten the caps onto all of the valves.
10. Check for gas leaks from all the connecting position. Test with electronic leak detector or with a sponge immersed in soapy water for bubbles.



- | | | |
|-----------------|-----------------|-----------------------------|
| 1.Charging set | 5.Cap | 9.Liquid valve |
| 2.Vacuum pump | 6.Suction valve | 10.INDOOR UNIT |
| 3.OUTDOOR UNIT | 7.Service valve | 11.Suction flare connection |
| 4.Service valve | 8.Cap | 12.Liquid flare connection |

5 FINAL TASKS

- 1.Check all valve caps and ensure that they had tightened properly.Close the valve cover.
- 2.Fill gaps on the wall between hole sides and tubing with sealer.
- 3.Attach wiring and tubing to the wall with clamps where necessary.
- 4.Operate the unit for no less than 5 minutes at heating or cooling mode.
- 5.Explain filter removal,cleaning and installation.
- 6.Operate the air conditioner together with the customer and explain all functions.
- 7.Give the operating and installation manuals to the customer.