



OUTDOOR UNIT

Installation and
owner's manual

MAXI MVD D4+



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INSTALLATION MANUAL

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1. PRECAUTIONS

Precautions before reading the Installation manual.

- This Installation manual is for the outdoor unit.
- Refer to the indoor unit Installation manual for indoor parts installation.
- Please read the power source unit Installation manual to install the power source unit.
- Please refer to the refrigerant distributor Installation manual to install the refrigerant distributor.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.



WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.



CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it trained. Also, inform customers that they should store this Installation manual along with the owner's manual for future reference.



WARNING

- **Be sure only trained and qualified service personnel to install, repair or service the equipment.**
Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.
- **Install according to this installation instructions strictly.**
If installation is defective, it will cause water leakage, electrical shock fire.

- **When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage.**
Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.
- **Use the attached accessories parts and specified parts for installation.**
Otherwise, it will cause the set to fall, water leakage, electrical shock fire.
- **Install at a strong and firm location which is able to withstand the set's weight.**
If the strength is not enough or installation is not properly done, the set will drop to cause injury.
- **The appliance shall be installed in accordance with national wiring regulations**
- **The appliance shall not be installed in the laundry.**
- **Before obtaining access to terminals, all supply circuits must be disconnected.**
- **The appliance must be positioned so that the plug is accessible.**
- **The enclosure of the appliance shall be marked by word, or by symbols, with the direction of the fluid flow.**
- **For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used.**
If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock fire.
- **Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal.**
If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
- **Wiring routing must be properly arranged so that control board cover is fixed properly.**
If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
- **If the supply cord is damaged, it must be replaced by the manufacture or its service agent or similarly qualified person in order to avoid a hazard.**
- **An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD)with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule**
- **When carrying out piping connection, take care not to let air substances go into refrigeration cycle.**
Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.
- **Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances.**
Otherwise, it will cause fire or electrical shock.
- **Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.**
Improper installation work may result in the equipment falling and causing accidents.

- **The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.**
- **The power cord type designation is H07RN-F.**
Equipment complying with IEC 61000-3-12.
- **If the refrigerant leaks during installation, ventilate the area immediately.**
- **After completing the installation work, check that the refrigerant does not leak.**
Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.



CAUTION

- **This A/C is a kind of amenity unit. Don't install it at the place where for storing machine, precise instrument, food, plant, animal, artwork or any other special used occasion.**
- **Ground the air conditioner.**
Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Incomplete grounding may result in electric shocks.
- **Be sure to install an earth leakage breaker.**
Failure to install an earth leakage breaker may result in electric shocks.
- **Connect the outdoor unit wires , then connect the indoor unit wires.**
You are not allowed to connect the air conditioner with the power source until wiring and piping of the air conditioner are done.
- **While following the instructions in this Installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.**
Improper drain piping may result in water leakage and property damage.
- **Install the indoor and outdoor units, power supply wiring and connecting wires at least 1 meter away from televisions or radios in order to prevent image interference or noise.**
Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.
- **The appliance is not intended for use by young children or infirm persons without supervision.**
- **Young children should be supervised to ensure that they do not play with the appliance.**

- **Don't install the air conditioner in the following locations:**
 - There is petrolatum existing.
 - There is salty air surrounding (near the coast). (Except for the models with corrosion-resistant function)
 - There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
 - The Volt vibrates violently (in the factories).
 - In buses or cabinets.
 - In kitchen where it is full of oil gas.
 - There is strong electromagnetic wave existing.
 - There are inflammable materials or gas.
 - There is acid or alkaline liquid evaporating.
 - Other special conditions.
- **When the outdoor unit is under part load operation, there might be discontinuous sizzle from the inner system pipelines, and that's the sound of the flowing refrigerant.**
- **The insulation of the metal parts of the building and the air conditioner should comply with the regulation of National Electric Standard.**

2. CONSTRUCTION CHECKPOINTS

- Acceptance and Unpacking
 - After the machine arrives, check whether it is damaged during the shipment. If the surface or inner side of the machine is damaged, submit a written report to the shipping company.
 - Check whether the model, specification and quantity of the equipment conform to the contract.
 - After removing the outer package, please keep the operation instructions well and count the accessories.
- Refrigerant pipe
 - Check the model and name to avoid mistaken installation.
 - Only should be used refrigerant distributors supplied by Mundoclima.
 - The refrigerant pipes must have the specified diameter. Nitrogen of a certain pressure must be filled into the refrigerant pipe before welding.
 - The refrigerant pipe must undergo heat insulation treatment.
 - After the refrigerant pipe is installed completely, the indoor unit cannot be powered on before performing the airtight test and creating a vacuum. The air-side and liquid-side pipes must undergo the airtight test and vacuum extraction.
- Airtight test
The refrigerant pipe must undergo the airtight test [with 2.94 MPa(30kgf/cm²) nitrogen].
- Creating a vacuum
Be sure to use the vacuum pump to create a vacuum of the connective pipe at the air side and liquid side concurrently.

- Refrigerant replenishment
 - If the length is greater than the reference pipe, the refrigerant replenishment quantity for each system should be calculated through the formula obtained according to the actual length of pipe.
 - Record the refrigerant replenishment quantity, actual length of pipe and the height difference of the indoor & outdoor unit onto the operation confirmation table of the outdoor unit in advance for future reference.
- Electric wiring
 - Select the power supply capacity and wire size according to the design manual. The power cable of the air conditioner is generally thicker than the power cable of the motor.
 - In order to prevent misoperation of the air conditioner, do not interleave or entwine the power cable with the connection wires (low-voltage wires) of the indoor/outdoor unit.
 - Power on the indoor unit after performing the airtight test and making a vacuum.
 - For details of setting the address of the outdoor unit, see Outdoor unit address bits.
- Trial run
 - Before operation, remove the six pieces of PE foaming which are used at the rear of the unit for protecting the condenser. Be careful not to damage the fin. Otherwise, the heat exchange performance may be affected.
 - Perform the trial run only after the outdoor unit has been powered on for over 24 hours.

3. ACCESSORIES

Table.3-1

	All units	Outline	Function
Installation and owner's manual	1		Be sure to deliver it to the customer
Indoor unit owner's manual	1		Be sure to deliver it to the customer
Toggling flathead screw	1		For toggling of indoor and outdoor units
90° mouting elbow	1		For connecting pipes
Seal plug	8		For pipe Cleaning
Connective pipe accessory	2		Connect to the sides of liquid pipe and gas balance
Accessories bag	1		

4. OUTDOOR UNIT INSTALLATION

4.1 Outdoor unit combination

Table.4-1

HP	Mode	Max. indoor units nos.	HP	Mode	Max. indoor units nos.
8	8HP×1	13	22	10HP+12HP	36
10	10HP×1	16	24	10HP+14HP	39
12	12HP×1	20	26	10HP+16HP	43
14	14HP×1	23	28	14HP×2	46
16	16HP×1	26	30	14HP+16HP	50
18	8HP+10HP	29	32	16HP+16HP	53
20	10HP+10HP	33	34	10HP×2+14HP	56

Table.4-2

HP	Mode	Max. indoor units nos.	HP	Mode	Max. indoor units nos.
36	10HP×2+16HP	59	52	10HP×2+16HP×2	64
38	10HP+12HP+16HP	63	54	10HP+12HP+16HP×2	64
40	10HP+14HP+16HP	64	56	10HP+14HP+16HP×2	64
42	14HP×3	64	58	14HP×3+16HP	64
44	14HP×2+16HP	64	60	14HP×2+16HP×2	64
46	14HP+16HP×2	64	62	14HP+16HP×3	64
48	16HP×3	64	64	16HP×4	64
50	8HP+10HP+16HP×2	64			

4.2 Dimension of outdoor unit

(Unit:mm)

- 8,10,12 HP

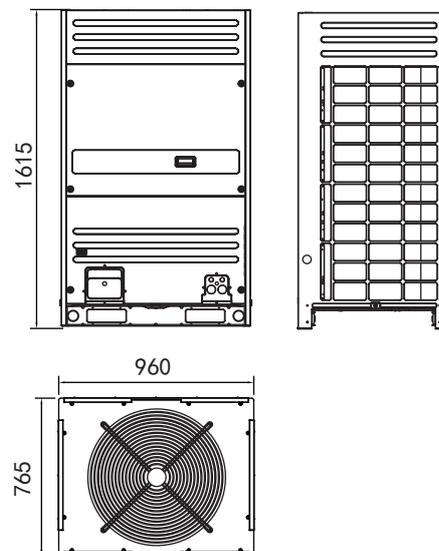


Fig.4-1

■ 14,16 HP

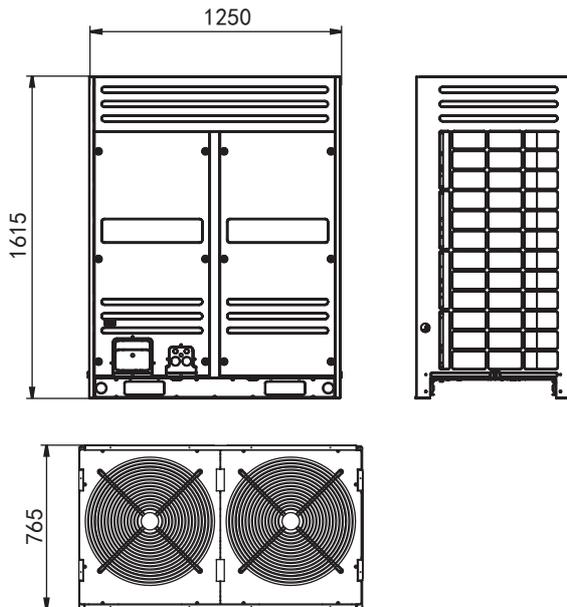


Fig.4-2

4.3 Selecting installation position

- Ensure that the outdoor unit is installed in a dry, well-ventilated place.
- Ensure that the noise and exhaust ventilation of the outdoor unit do not affect the neighbors of the property owner or the surrounding ventilation.
- Ensure that the outdoor unit is installed in a well-ventilated place that is possibly closest to the indoor unit.
- Ensure that the outdoor unit is installed in a cool place without direct sunshine exposure or direct radiation of high-temp heat source.
- Do not install the outdoor unit in a dirty or severely polluted place, so as to avoid blockage of the heat exchanger in the outdoor unit.
- Do not install the outdoor unit in a place with oil pollution or full of harmful gases such as sulfurous gas.
- Do not install the outdoor unit in a place surrounded by salty air. (Except for the models with corrosion-resistant function.)

4.4 Base for outdoor unit

- A solid, correct base can:
 - Avoid the outdoor unit from sinking.
 - Avoid the abnormal noise generated due to base.
- Base types
 - Steel structure base
 - Concrete base (see the figure below for the general making method)

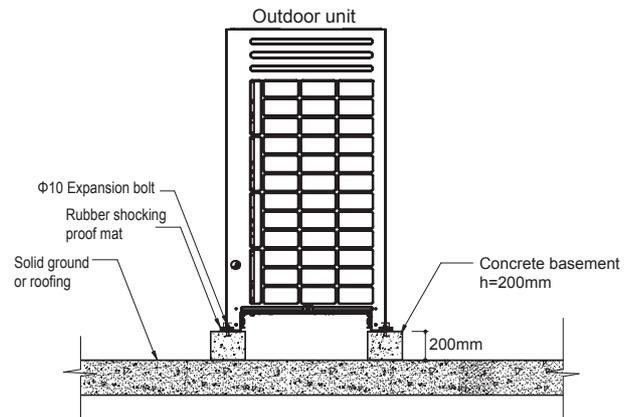


Fig.4-3



CAUTION

- The key points to make basement:
 - The master unit's basement must be made on the solid concrete ground . Refer to the structure diagram to make concrete basement in detail, or make after field measurements.
 - In order to ensure every point can contact equality, the basement should be on completely level.
 - If the basement is placed on the roofing, the detritus layer isn't needed, but the concrete surface must be flat. The standard concrete mixture ratio is cement 1/ sand 2/ carpolite 4, and add Φ10 strenthen reinforcing steel bar, the surface of the cement and sand plasm must be flat, border of the the basement must be chamfer angle.
 - Before construct the unit base, please ensure the base is directly supporting the rear and front folding edges of the bottom panel vertically, for the reason of these edges are the actual supported sites to the unit.
 - In order to drain off the seeper around the equipment, a discharge ditch must be setup around the basement.
 - Please check the affordability of the roofing to ensure the load capacity.
 - When piping from the bottom of the unit, the base height should no less than 200mm.

■ Position illustration of screw bolt (Unit: mm)

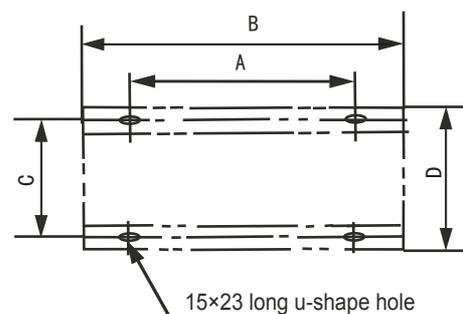


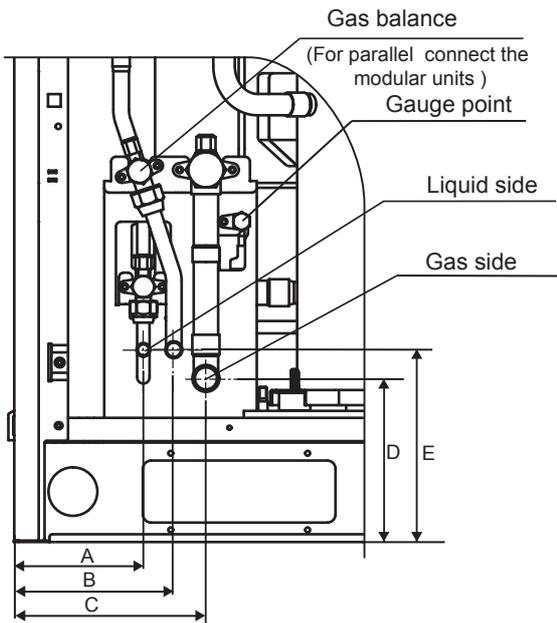
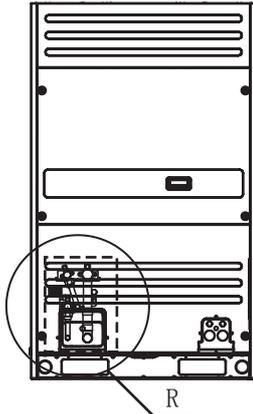
Fig.4-4

Table.4-3

Unit: mm

HP SIZE	8,10,12	14, 16
A	830	1120
B	960	1250
C	736	736
D	765	765

- Centering position illustration of each connective pipe (Unit: mm)



R amplification

Fig.4-5

Table.4-4

Unit: mm

HP SIZE	8,10,12	14, 16
A	130	165
B	160	195
C	195	230
D	170	170
E	200	200

4.5 Outdoor units' placement sequence & master and slave units' settings

A system, which provide with more than two outdoor units, will be set as the followings method: The outdoor units in this system should place sequentially from the large to the small capacity; the largest capacity outdoor unit must be mounted at the first branching site; and set the largest capacity outdoor unit address as the master Unit, while the other setting as the Slave Unit. Take 40HP (composed by 10HP, 14HP and 16HP) as an example:

- Place the 16HP at a side of the first branching site.
- Place the unit from the large capacity to the small (See the detail placement illustration)
- Set 16HP as the master unit, while the 14HP and the 10HP as the aux. unit.

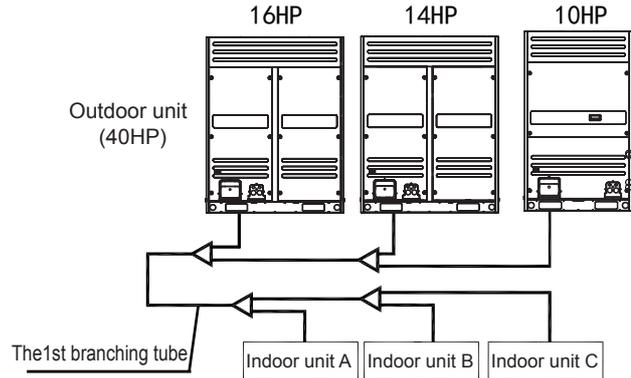
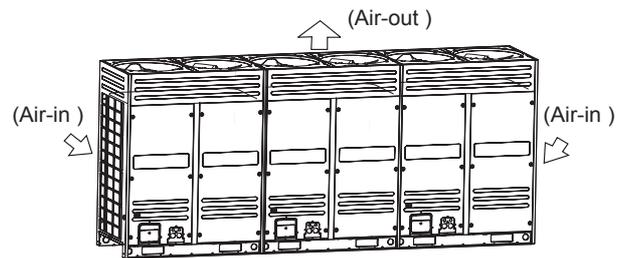


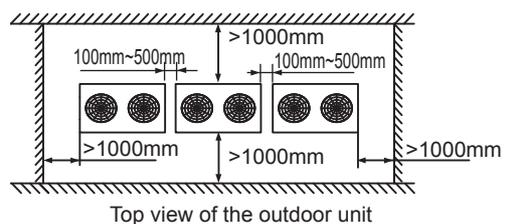
Fig.4-7

4.6 Installation space for outdoor unit

- Ensure enough space for maintenance. The modules in the same system must be on the same height.(see the Fig.4-8)
- When installing the unit, leave a space for maintenance shown in Fig.4-9. Install the power supply at the side of the outdoor unit. For installation procedure, see the power supply device Installation manual.
- In case any obstacles exist above the outdoor unit, refer to Fig.4-14.



Installation and maintenance surface Fig.4-8



Top view of the outdoor unit

Fig.4-9

4.7 Layout

■ When the outdoor unit is higher than the surrounding obstacle

- One row

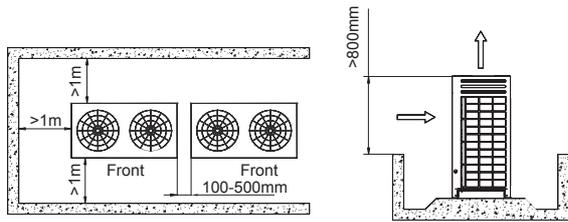


Fig. 4-10

- Two rows

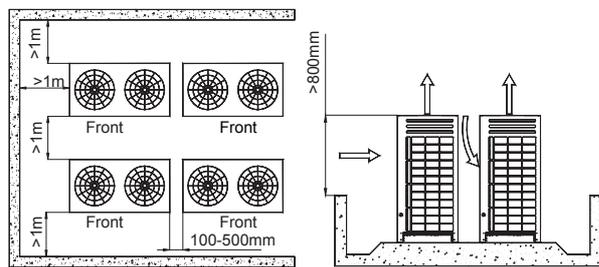


Fig. 4-11

- More than two rows

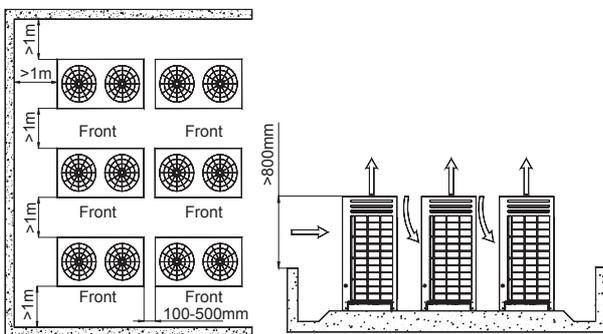


Fig. 4-12

■ When the outdoor unit is lower than the surrounding obstacle, refer to the layout used when the outdoor unit is higher than the surrounding obstacle. However, to avoid cross connection of the outdoor hot air from affecting the heat exchange effect, please add an air director onto the exhaust hood of the outdoor unit to facilitate heat dissipation. See the figure below. The height of the air director is HD (namely H-h). Please make the air director on site.

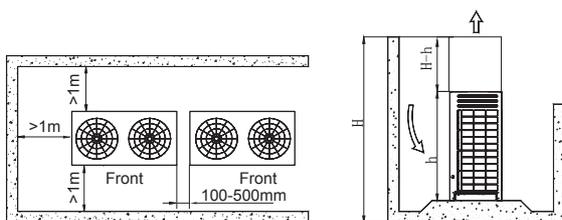
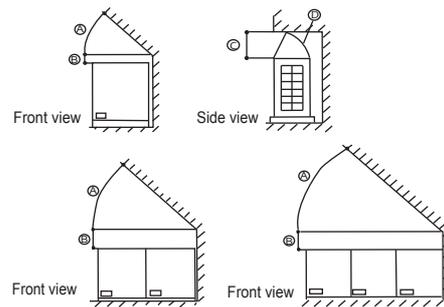


Fig. 4-13

■ If miscellaneous articles are piled around the outdoor unit, such articles must be 800mm below the top of the outdoor unit. Otherwise, a mechanic exhaust device must be added.



- (A) >45°
- (B) >300mm
- (C) >1000mm
- (D) Airflow deflector

Fig. 4-14

4.8 Set the snow-proof facility

■ Installation in a snowfall area

1. Install the outdoor unit on a higher foundation than the snowfall or set up a stand to install the unit so that snowfall will not affect the unit.
 - Set up a stand higher than the snowfall.
 - Apply an angled structure to the stand so that drainage will not be prevented. (Avoid using a stand with a flat surface.)
2. Mount a snowfall-hood onto the air inlet and the air outlet.
 - Leave enough space for the snowfall-hood so that it will not be an obstacle for the air inlet and the air outlet.

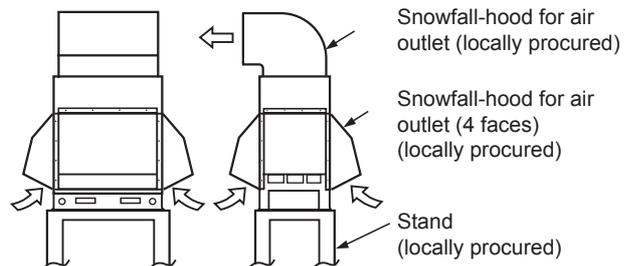


Fig. 4-15

4.9 Explanation of valve

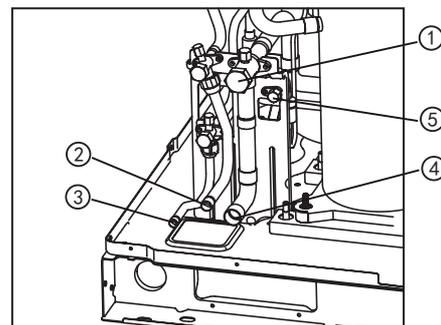


Fig. 4-16

Table.4-4

①	Low pressure valve
②	Gas balancer
③	Connect the liquid pipe (accessory, field installation)
④	Connect the gas pipe
⑤	Gauge point (For refrigerant replenishment, except the cooling only type)

4.10 Mount the air deflector

(The default static pressure of outdoor unit is between 0Pa to 20Pa. If it is between 20Pa to 40Pa, the unit need be customized.)

■ 8HP, 10HP, 12HP Installation illustration

Example A

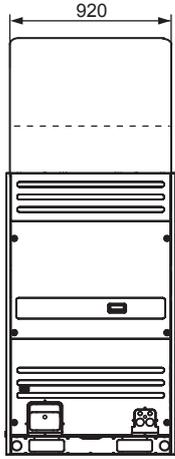


Fig. 4-17

Table.4-5 Unit: mm

A	$A \geq 300$
B	$B \geq 250$
C	$C \leq 3000$
D	$600 \leq D \leq 760$
θ	$\theta \leq 15^\circ$

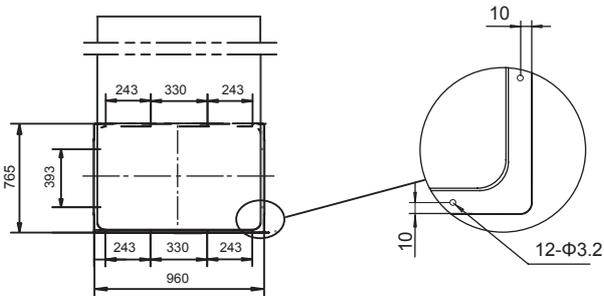


Fig. 4-18

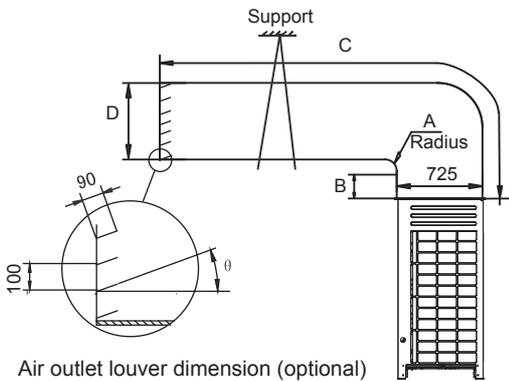


Fig. 4-19

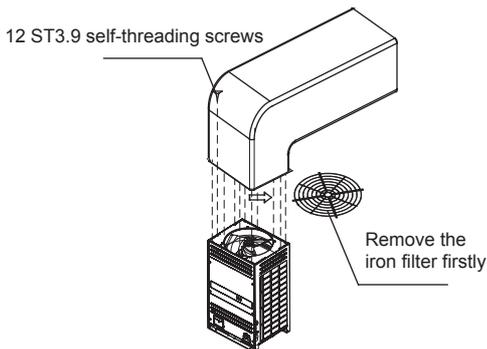


Fig. 4-20

Example B

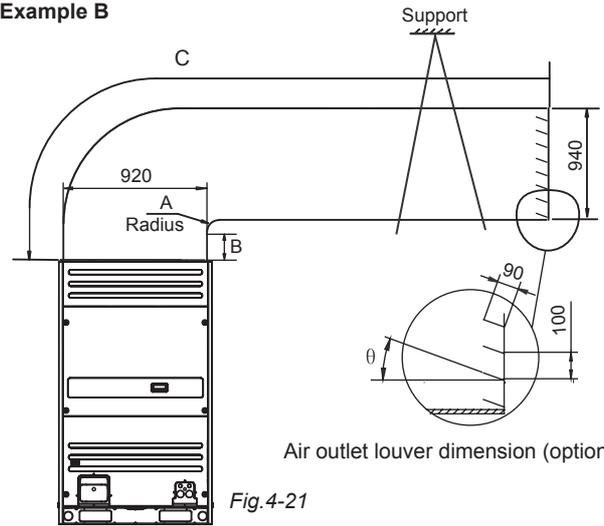


Fig. 4-21

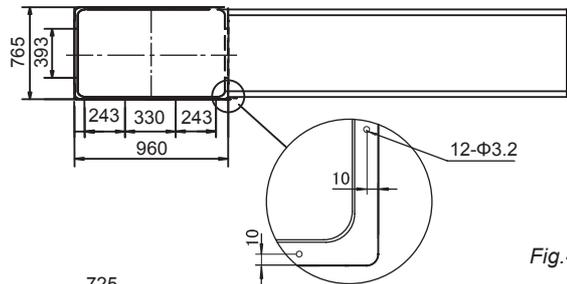


Fig. 4-22

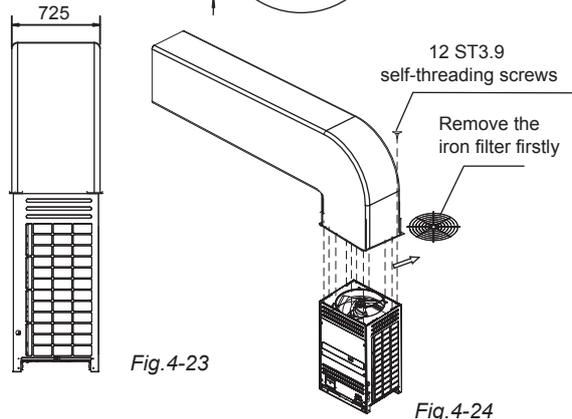


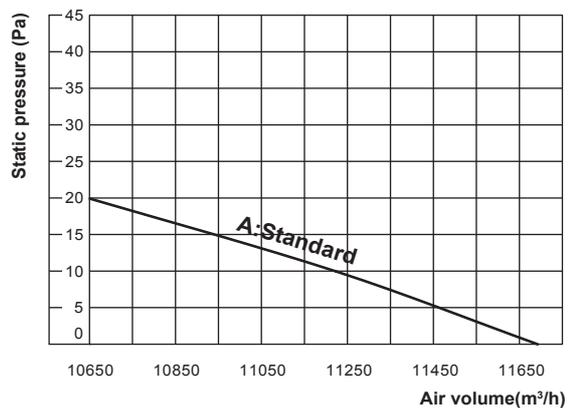
Fig. 4-23

Fig. 4-24

Table.4-6 Unit: mm

A	$A \geq 300$
B	$B \geq 250$
C	$C \leq 3000$
θ	$\theta \leq 15^\circ$

■ Curve diagram of static pressure, air flow volumn.



■ 14HP, 16HP Installation illustration

Example A

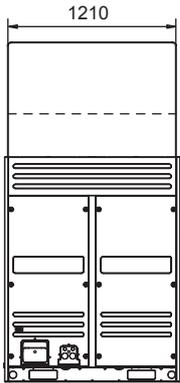


Fig. 4-25

Table.4-7 Unit: mm

A	$A \geq 300$
B	$B \geq 250$
C	$C \leq 3000$
D	$600 \leq D \leq 760$
θ	$\theta \leq 15^\circ$

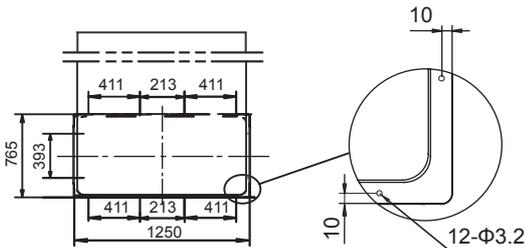


Fig. 4-26

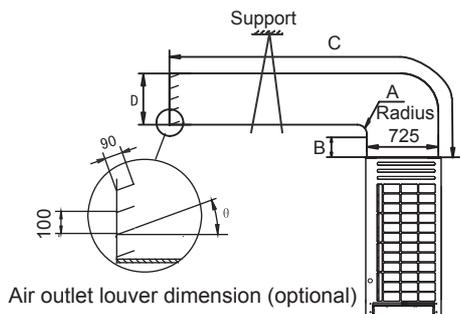


Fig. 4-27

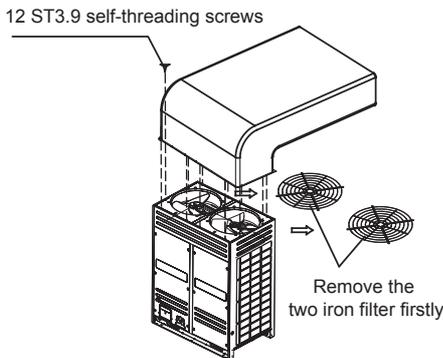


Fig. 4-28

Example B

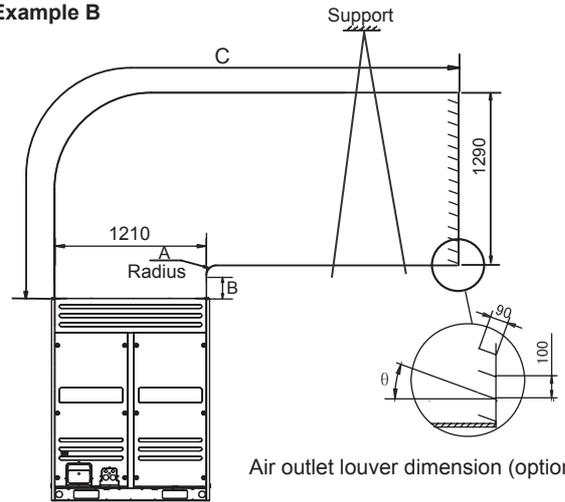


Fig. 4-29

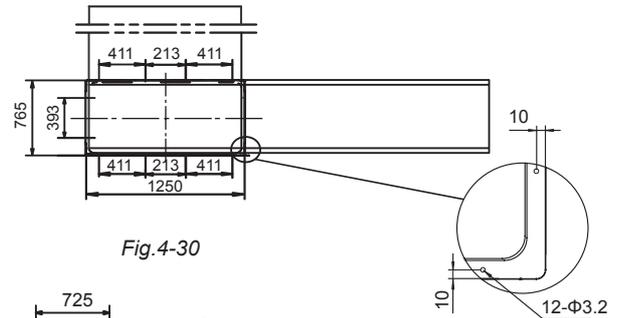


Fig. 4-30

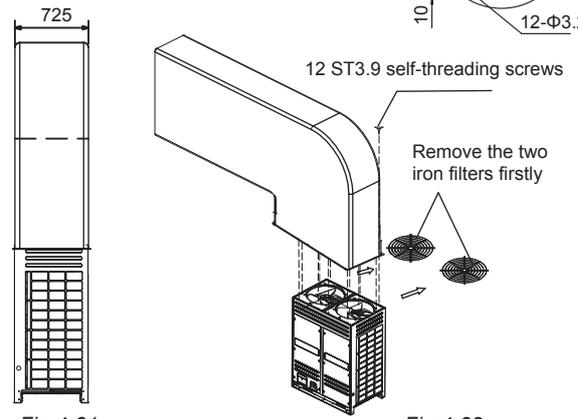


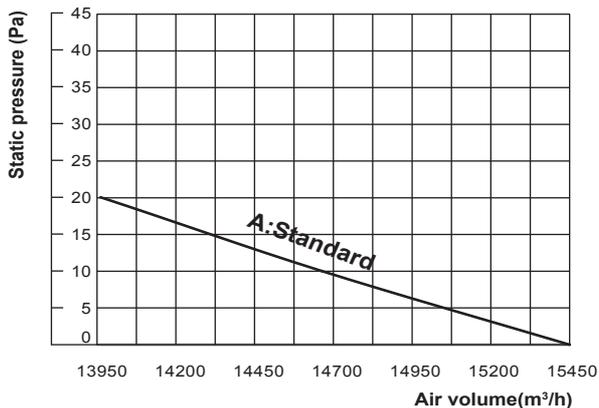
Fig. 4-31

Fig. 4-32

Table.4-8 Unit: mm

A	$A \geq 300$
B	$B \geq 250$
C	$C \leq 3000$
θ	$\theta \leq 15^\circ$

■ Curve diagram of static pressure, air flow volumn.



NOTE

- Before install the air deflector, please ensuring the mesh enclosure has been took off, otherwise the air supply efficiency would be block down.
- Once mounting the shutter to the unit, air volume, cooling (heating) capacity and efficiency would be block down, this affection enhance along with the angle of the shutter. Thus, we are not recommend you to mount the shutter, if necessary in use, please adjust the angle of shutter no larger than 15°.
- Only one bending site to be allowed in the air duct (see as above figure), otherwise, misoperation may led out.

5. REFRIGERANT PIPE

5.1 Length and drop height permitted of the refrigerant piping

Note: Reduced length of the branching tube is the 0.5m of the equivalent length of the pipe.

Table.5-1

		Permitted value	Piping
Pipe length	Total pipe length (Total extended length)	1000m (Please refer to the caution 5 of conditions 2)	$L1+(L2+L3+L4+L5+L6+L7+L8+L9) \times 2+a+b+c+d+e+f+g+h+i+j$
	Maximum piping (L)	Actual length	175m
		Equivalent length	200m(Please refer to caution 1)
	Pipe (between the farthest indoor unit and first branch joint) length		40m/90m(Please refer to caution 5)
Drop height	Indoor unit-outdoor unit drop height	Outdoor unit up	70m (Please refer to caution 3)
		Outdoor unit down	110m (Please refer to caution 4)
	Indoor unit to indoor unit drop height	30m	—

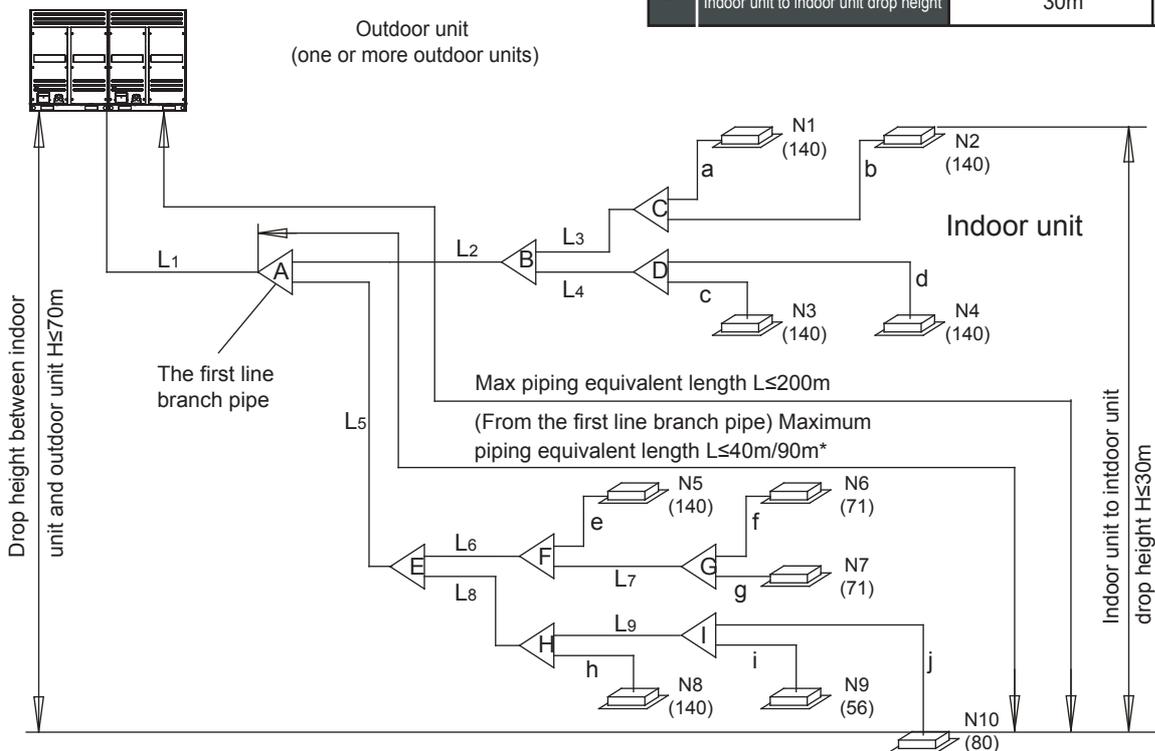


Fig.5-1

*1.Level difference above 70m are not supported by default but are available on request for customized.(if the outdoor unit is above the indoor unit.)



CAUTION

1. The reduced length of the branch joint is the 0.5m of the equivalent length.
2. The inner units should as equal as possible to be installed in the both sides of the U-shape branch joint.
3. When the outdoor unit is on the top position and the difference of level is over 20m, it is recommended that set a oil return bend every 10m in the air pipe of the main pipe, the specification of the oil return bend refers to Fig.5-2.
4. When the outdoor unit is on the low position, $H \geq 40m$, the liquid pipe of the main pipe need to increase one size.
5. The allowable length of the fist branch joint which connected to the indoor unit should be equal to or shorter than 40m. But when the following conditions are all meeted, the allowable length can extended to 90m.

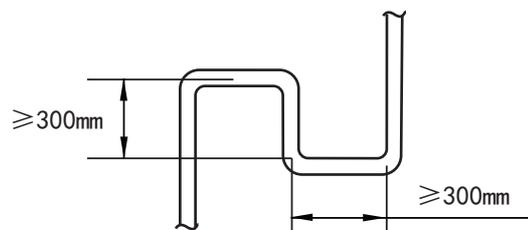


Fig.5-2

Conditions
1. It is needed to increase all the pipe diameters of the the main distribution pipe which between the first and the last branch joint assembly. (Please change the pipe diameter at field) If the pipe diameter of the main slave pipe is the same as the main pipe, then it is not needed to be increased.
Examples
<ul style="list-style-type: none"> ■ N10 $L5+L8+L9+j \leq 90m$ L2, L3, L4, L5, L6, L7, L8, L9 Need to increase the pipe diameter of the distribution pipe ■ Increasing size as the following $\phi 9.5 \rightarrow \phi 12.7$ $\phi 12.7 \rightarrow \phi 15.9$ $\phi 15.9 \rightarrow \phi 19.1$ $\phi 19.1 \rightarrow \phi 22.2$ $\phi 22.2 \rightarrow \phi 25.4$ $\phi 25.4 \rightarrow \phi 28.6$ $\phi 28.6 \rightarrow \phi 31.8$ $\phi 31.8 \rightarrow \phi 38.1$ $\phi 38.1 \rightarrow \phi 41.3$ $\phi 41.3 \rightarrow \phi 44.5$ $\phi 44.5 \rightarrow \phi 54.0$
Conditions
2. When counting the total extended length, the actual length of above distribution pipes must be doubled.(Expect the main pipe and the distribution pipes which no need to be increased.) $L1 + (L2+L3+L4+L5+L6+L7+L8+L9) \times 2 + a+b+c+d+e+f+g+h+i+j \leq 1000m$

Examples
Reference Figure .5-1
Conditions
3. The length from the indoor unit to the nearest branch joint assembly $\leq 40m$ $a, b, c, \dots j \leq 40m$ (Pipe diameter requirements, please refers to table .5-9)
Examples
Reference Figure .5-1
Conditions
4. The distance difference between [the outdoor unit to the farthest indoor unit] and [the outdoor unit to the nearest indoor unit] is $\leq 40m$. The farthest indoor unit N10 The nearest indoor unit N1 $(L1+L5+L8+L9+j) - (L1+L2+L3+a) \leq 40m$
Examples
Reference Figure .5-1

5.2 Select the refrigerant piping type

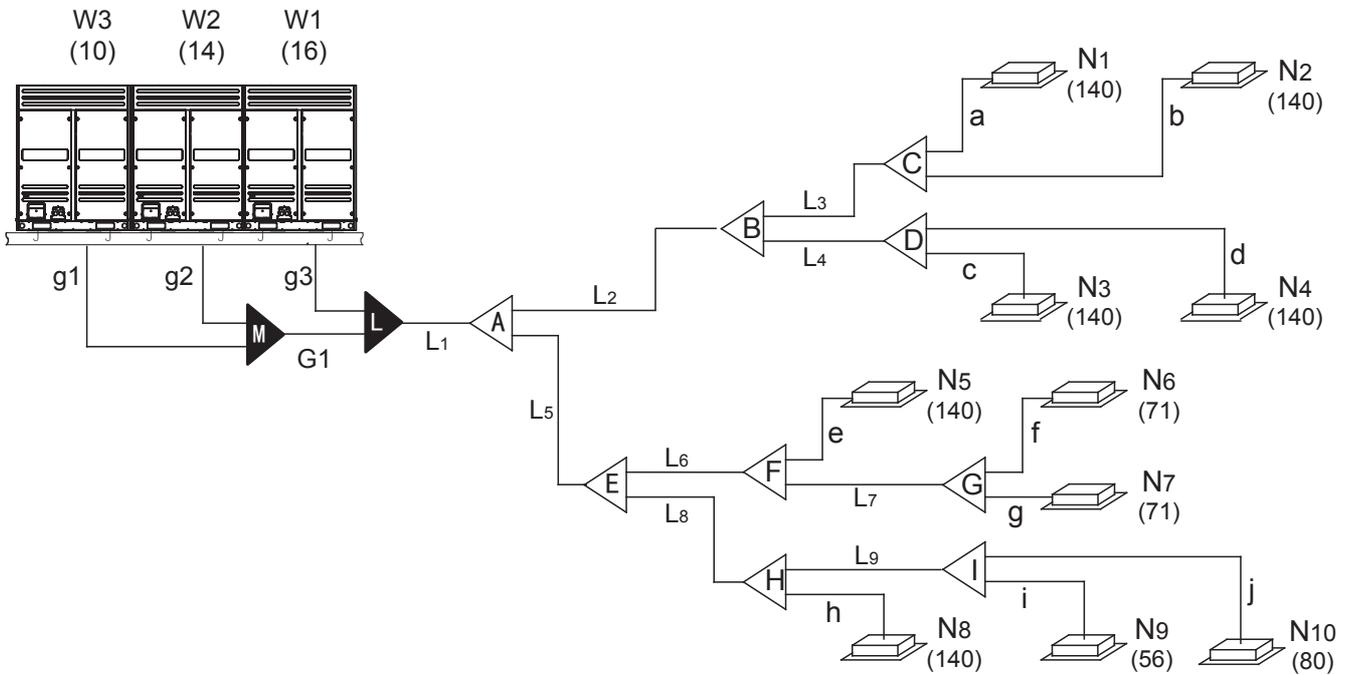


Fig.5-3

Table.5-2

Pipe name	Code (As per the Fig. 5-3)
Main pipe	L1
Indoor unit main pipe	L2~L9
Indoor unit aux. pipe	a, b, c, d, e, f, g, h, i, j
Indoor unit branching pipe assembly	A, B, C, D, E, F, G, H, I
Outdoor unit branching pipe assembly	L, M
Outdoor unit connective pipe	g1, g2, g3, G1, G2

5.3 Size of joint pipes for indoor unit

Table.5-3 Size of joint pipes for 410A indoor unit (L2 ~ L9) and (B ~ I)

Capacity of indoor unit (A)	Size of main pipe(mm)		
	Gas side	Liquid side	Available branching pipe
A<166	Φ15.9	Φ9.5	FQZHN-01D
166≤A<230	Φ19.1	Φ9.5	FQZHN-01D
230≤A<330	Φ22.2	Φ9.5	FQZHN-02D
330≤A<460	Φ28.6	Φ12.7	FQZHN-03D
460≤A<660	Φ28.6	Φ15.9	FQZHN-03D
660≤A<920	Φ31.8	Φ19.1	FQZHN-03D
920≤A<1350	Φ38.1	Φ19.1	FQZHN-04D
1350≤A<1800	Φ41.3	Φ22.2	FQZHN-05D
1800≤A	Φ44.5	Φ25.4	FQZHN-06D

e.x.1: Refer to Fig.5-3, the capacity of downstream units to L2 is 140×4=560, i.e. the gas pipe for L2 is Φ28.6, liquid pipe is Φ15.9.

5.4 Size of joint pipes for outdoor unit

Base on the following tables, select the diameters of the outdoor unit connective pipes. In case of the main accessory pipe large than the main pipe, take the large one for the selection.

Example: parallel connect with the three outdoor units 16+16+14 (the total capacity is 46HP), all indoor units total capacity is 1360, provided that the equivalent length of all pipes are ≥90m, according to the Table 5-5 the main pipe diameter are Φ38.1/Φ22.2; in according to all indoor unit capacity 1360, we could find out the master unit diameter is Φ41.3/Φ22.2 base on Table 5-3. Take the large one for the selection, we final confirm the main pipe diameter is Φ41.3/Φ22.2.

Table.5-4 Size of joint pipes for 410A outdoor unit (L1) and (A)

Model	When the equivalent length of all liquid pipes < 90m, the size of main pipe(mm)		
	Gas side	Liquid side	The 1st branching pipe
8HP	Φ22.2	Φ9.53	FQZHN-02D
10HP	Φ22.2	Φ9.53	FQZHN-02D
12~14HP	Φ25.4	Φ12.7	FQZHN-03D
16HP	Φ28.6	Φ12.7	FQZHN-03D
18~22HP	Φ28.6	Φ15.9	FQZHN-03D
24HP	Φ28.6	Φ15.9	FQZHN-03D
26~32HP	Φ31.8	Φ19.1	FQZHN-03D
34~48HP	Φ38.1	Φ19.1	FQZHN-04D
50~64HP	Φ41.3	Φ22.2	FQZHN-05D

Table.5-5 Size of joint pipes for 410A outdoor unit (L1) and (A)

Model	When the equivalent length of all liquid pipes ≥ 90m, the size of main pipe(mm)		
	Gas side	Liquid side	The 1st branching pipe
8HP	Φ22.2	Φ12.7	FQZHN-02D
10HP	Φ25.4	Φ12.7	FQZHN-02D
12~14HP	Φ28.6	Φ15.9	FQZHN-03D
16HP	Φ31.8	Φ15.9	FQZHN-03D
18~22HP	Φ31.8	Φ19.1	FQZHN-03D
24HP	Φ31.8	Φ19.1	FQZHN-03D
26~32HP	Φ38.1	Φ22.2	FQZHN-04D
34~48HP	Φ38.1	Φ22.2	FQZHN-04D
50~64HP	Φ44.5	Φ25.4	FQZHN-05D

5.5 Branch pipes for outdoor unit

Table.5-6 Outdoor pipes (g1, g2, g3, g4, G1, G2)

Model	Outdoor unit pipe connective opening dimension(mm)	
	Gas side	Liquid side
8HP, 10HP	Φ25.4	Φ12.7
12HP, 14HP, 16HP	Φ31.8	Φ15.9

5.6 Branch pipes for outdoor unit

Base on Table 5-7 and Table 5-8 select the multi connecting pipes of outdoor unit. Before installation, please read the Outdoor Unit Branching Pipe Installation Manual carefully.

Table.5-7 Outdoor unit multi-connective pipe assembly (Illustration)

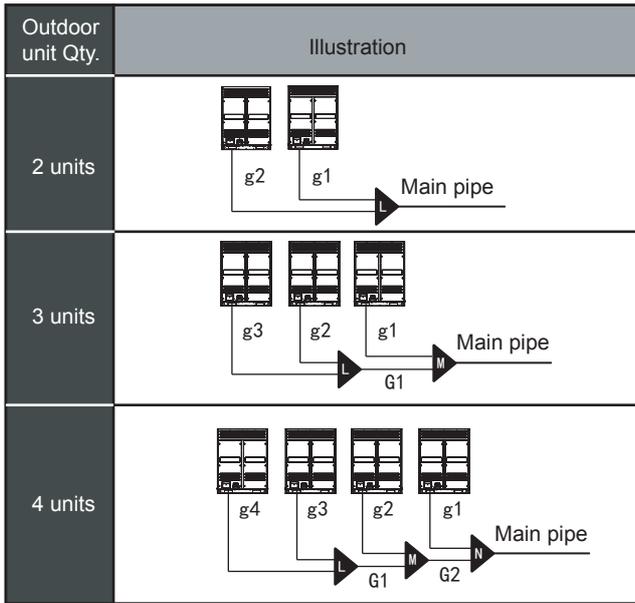


Table.5-8 Outdoor unit multi-connective pipe assembly (L, M, N)

Outdoor unit Qty.	Outdoor unit connective pipe diameter	Parallel connect with the branching pipes	Main pipe
2 units	g1, g2: 8, 10HP: Φ25.4/Φ12.7; 12~16HP: Φ31.8/Φ15.9	L: FQZHW-02N1D	Refer to Table 5-4 or 5-5 for main pipe dimension
3 units	g1, g2, g3: 8, 10HP: Φ25.4/Φ12.7; 12~16HP: Φ31.8/Φ15.9; G1: Φ38.1/Φ19.1	L+M: FQZHW-03N1D	
4 units	g1, g2, g3, g4: 8, 10HP: Φ25.4/Φ12.7; 12~16HP: Φ31.8/Φ15.9; G1: Φ38.1/Φ19.1; G2: Φ38.1/Φ22.2	L+M+N: FQZHW-04N1D	

Note: The pipe assemblies in above table is special for this model, must be purchased separately.

5.7 Example

- 1) Take (16+14+10) HP that composed by three modules as an example to clarify the pipe selection.
- 2) Take Fig.5-3 as an example. Provided that the equivalent length of all pipes in this system is larger than 90m.

Table.5-9

Unit: mm

Indoor unit capacity A(×100W)	When branching pipe's length ≤10m		When branching pipe's length >10m	
	Gas side	Liquid side	Gas side	Liquid side
A≤45	Φ12.7	Φ6.4	Φ15.9	Φ9.5
A≥56	Φ15.9	Φ9.5	Φ19.1	Φ12.7

- A The branching pipe at the inside of the unit (a-j). There are a-j branching pipes at the inside of the unit, the branching pipe diameter should be select as per Table 5-9.
- B Main pipe (L2 ~ L9) at the inside the unit (Refer to Table 5-3)
 - 1) The main pipe L3 with N1, N2 downstream indoor units that total capacity is 140×2=280, the pipe L3 diameter is Φ22.2/Φ9.5, thus select FQZHN-02D for the branching pipe C.
 - 2) The main pipe L4 with N3, N4 downstream indoor units that total capacity is 140×2=280, the pipe L4 diameter is F22.2/F9.5, thus select FQZHN-02D for the branching pipe D.
 - 3) The main pipe L2 with N1~N4 downstream indoor units that total capacity is 140×4=560, the pipe L2 diameter isΦ28.6/Φ15.9, thus select FQZHN-03D for the branching pipe B.
 - 4) The main pipe L7 with N6, N7 downstream indoor units that total capacity is 71×2=142, the pipe L7 diameter isΦ15.9/Φ9.5, thus select FQZHN-01D for the branching pipe G.
 - 5) The main pipe L6 with N5~N7 downstream indoor units that total capacity is 140+71×2=282, the pipe L6 diameter isΦ22.2/Φ9.5, thus select FQZHN-02D for the branching pipe F.
 - 6) The main pipe L9 with N9, N10 downstream indoor units that total capacity is 56+80=136, the pipe L9 diameter isΦ15.9/Φ9.5, thus select FQZHN-01D for the branching pipe I.
 - 7) The main pipe L8 with N8~N10 downstream indoor units that total capacity is 140+56+80=276 the pipe L8 diameter isΦ22.2/Φ9.5, thus select FQZHN-02D for the branching pipe H.
 - 8) The main pipe L5 with N5~N10 downstream indoor units that total capacity is 140×2+56+71×2+80=558, the pipe L5 diameter isΦ28.6/Φ15.9, thus select FQZHN-03D for the branching pipe E.
 - 9) The main pipe A with N1~N10 downstream indoor units that total capacity is 140×6+56+71×2+80=1118, thus select FQZHN-05D for the branching pipe A.
- C Main pipe (Refer to Table 5-3, Table 5-5): Main pipe L1 in the Fig.5-2, which upstream outdoor units total capacity is 10+14+16=40, base on table 5-5, the gas/liquid pipe diameter areΦ38.1/Φ22.2, total capacity of the downstream indoor unit is 140×6+56+71×2+80=1118, base on table 5-3, the gas/liquid pipe diameter areΦ38.1/Φ19.1, take the large one for your selection, final confirm the main pipe diameter is: gas/liquid pipeΦ38.1/Φ22.2.
- D Parallel connect the outdoor units
 - 1) The outdoor unit linked by Pipe g1 is 10HP, parallel connects with outdoor unit. the connective pipe diameter to be selected according to its connector size isΦ25.4/Φ12.7; The outdoor unit linked by Pipe g2 is 14HP, parallel connects with outdoor unit. the connective pipe diameter to be selected according to its connector size isΦ31.8/Φ15.9; The outdoor unit linked by Pipe g3 is 16HP, parallel connects with outdoor unit. the connective pipe diameter to be selected according to its connector size isΦ31.8/Φ15.9.
 - 2) The upstream of G1 is the two parallel connected outdoor units, refer to Table 5-8 select the three parallel connected outdoor unit, the pipe diameter isΦ38.1/Φ19.1.
 - 3) Parallel connect the three outdoor units, refer to Table 5-8 should select FQZHW-03N1D for outdoor unit connective pipes (L+M).

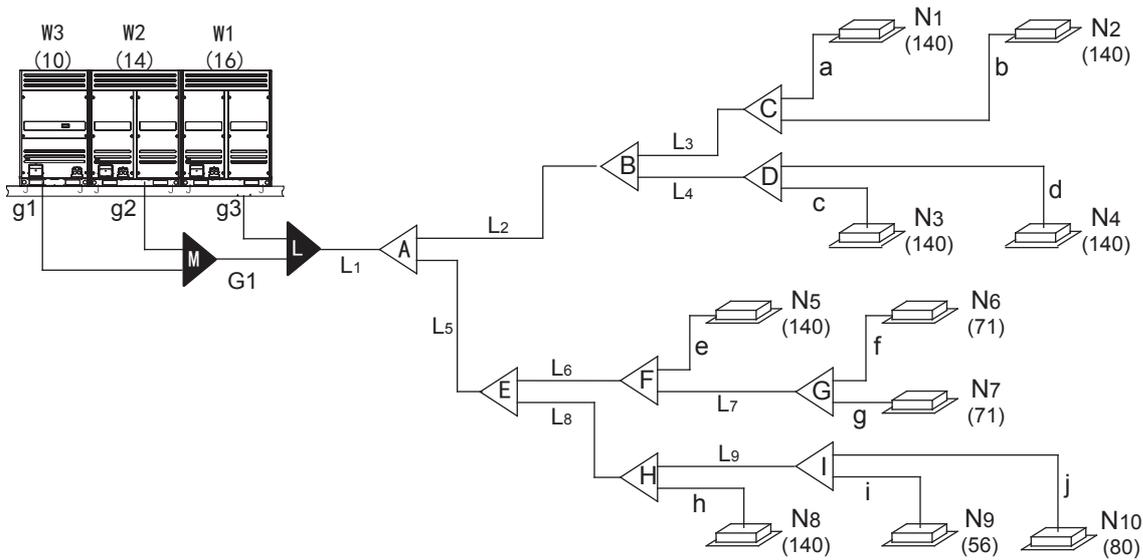


Fig.5-4

5.8 Remove dirt or water in the piping

- Make sure there is no any dirt or water before connecting the piping to the outdoor units.
- Wash the piping with high pressure nitrogen, never use refrigerant of the outdoor unit.

5.9 Gas tight test

- 1) Upon set up the indoor unit pipeline, please connect the Hi-pressure pipe with shut-off valve firstly.
- 2) Weld the pipe at the low pressure side to the meter connector.
- 3) Use the vacuum pump discharging air inside the liquid side shut-off valve and meter connector, until to the -1kgf/cm^2 .
- 4) Close the vacuum pump, charge 40kgf/cm^2 nitrogen gas from the piston of shut-off valve and from the meter connector. Pressure inside should be maintained at there no less than 24 hrs.
- 5) Upon the airtightness test, do a good welding between float valve and pipe at the low pressure side.

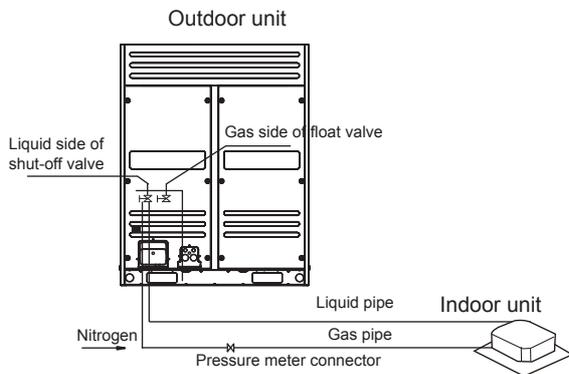


Fig.5-5



CAUTION

- Pressurized nitrogen (3.9MPa ; 40kgf/cm^2) is used for airtightness test.
- It is not allow to use oxygen, combustible gas or toxic gas to conduct the airtightness test.
- When welding, please use wet cloth insulating the low pressure valve for protection.
- For avoid the equipment be damaged, the pressure maintainedtime should not last too long.

5.10 Vacuum with vacuum pump

- 1) Use the vacuum pump which vacuum level lower than -0.1MPa and the air discharge capacity above 40L/min .
- 2) The outdoor unit is not necessary to vacuum, don't open the outdoor unit gas and liquid pipe shut-off valves.
- 3) Make sure the vacuum pump could result as -0.1MPa or below after 2 hrs or above operation. If the pump operated 3 hrs or above could not achieve to -0.1MPa or below, please check whether water mix or gas leak inside of the pipe.

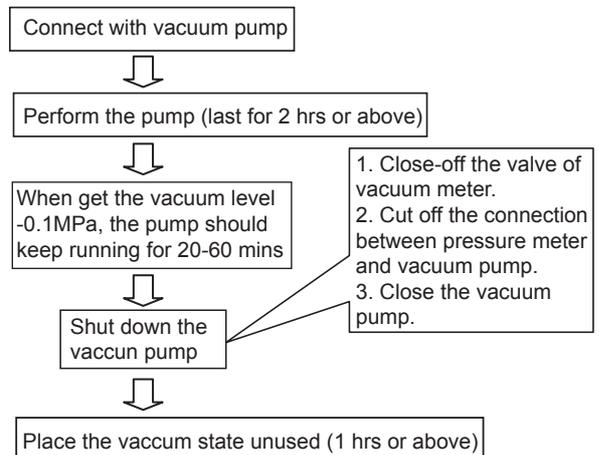


Fig.5-6



CAUTION

- Don't mix up the different refrigerants or abuse the tools and measurements which directly contact with refrigerants.
- Don't adopt refrigerant gas for air vacuuming.
- If vacuum level could not get to -0.1MPa, please check whether resulted by leakage and confirm the leakage site.If no leakage, please operate the vacuum pump again 1 or 2 hrs.

5.11 Refrigerant amount to be added

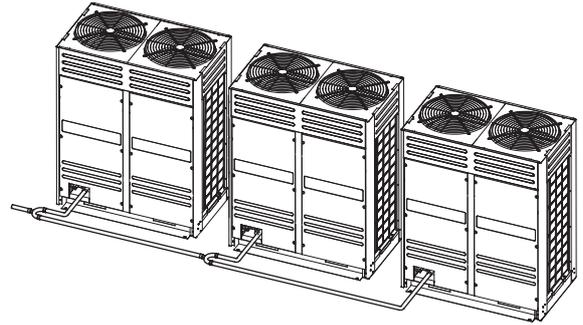
Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor/indoor unit connection. The refrigerant is R410A.

Table.5-10

Pipe size on liquid side	Refrigerant to be Added per meter
Φ6.4	0.022kg
Φ9.5	0.057kg
Φ12.7	0.110kg
Φ15.9	0.170kg
Φ19.1	0.260kg
Φ22.2	0.360kg
Φ25.4	0.520kg
Φ28.6	0.680kg

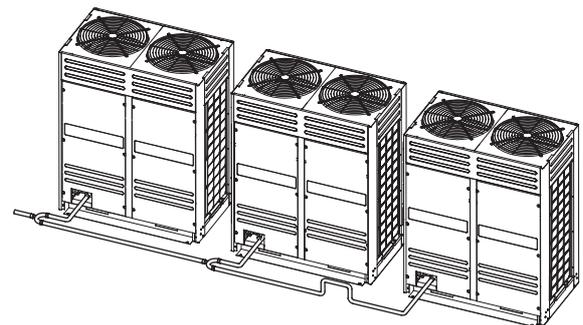
5.12 The Installation key points of connective pipes between outdoor units

- 1) Connect the pipes between outdoor units, the pipes should place horizontally (Fig.5-7, Fig.5.8), it is not allow the concave at junction site(Refer to Fig.5-9).
- 2) All connective pipes between the outdoor units are not allowed to over than the height of every outlets of the pipes(Refer to Fig.5-10).



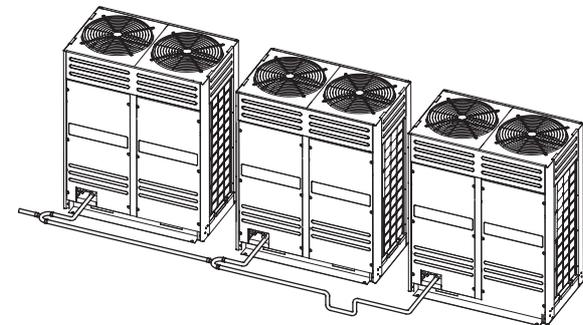
√ Correct way

Fig.5-7



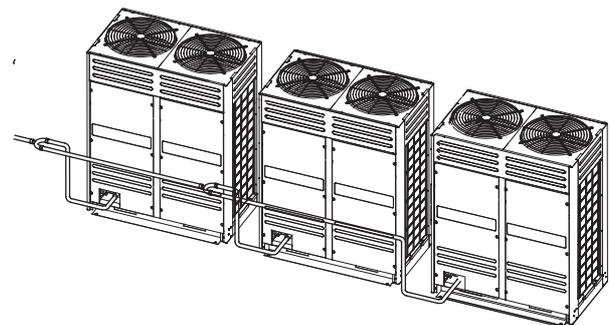
√ Correct way

Fig.5-8



× Wrong way

Fig.5-9



× Wrong way

Fig.5-10

- 3) The branching pipe must be installed horizontally, error angle of it should not large than 10°. Otherwise, malfunction will be caused.

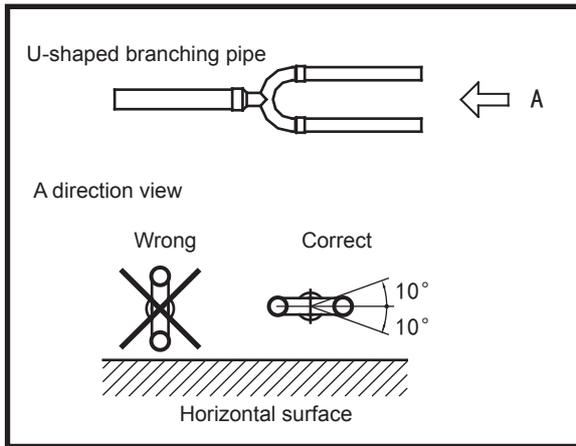


Fig.5-11

- 4) For avoid oil accumulate at the outdoor unit, please install the branching pipes properly.

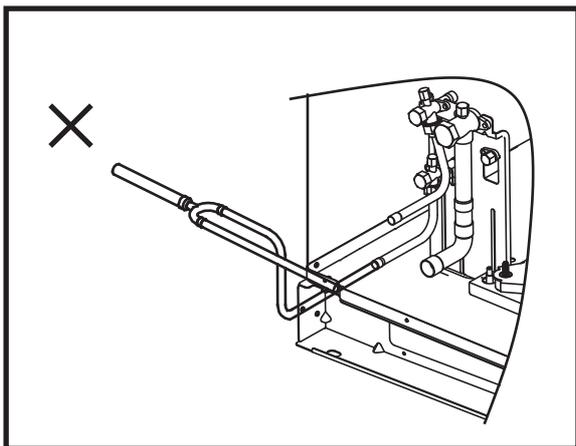


Fig.5-12

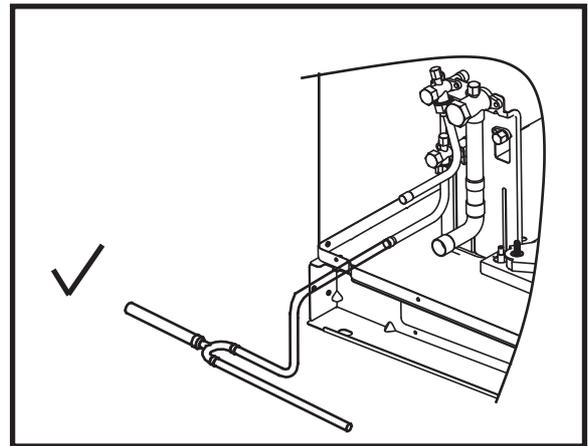


Fig.5-14

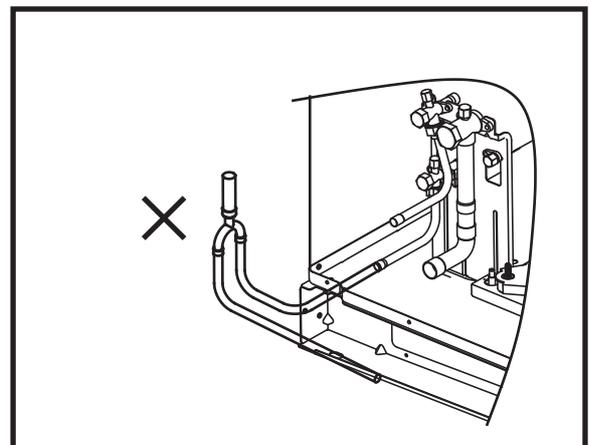


Fig.5-15

6. ELECTRIC WIRING

6.1 SW2 query instructions

Use application of the SW2 spot check

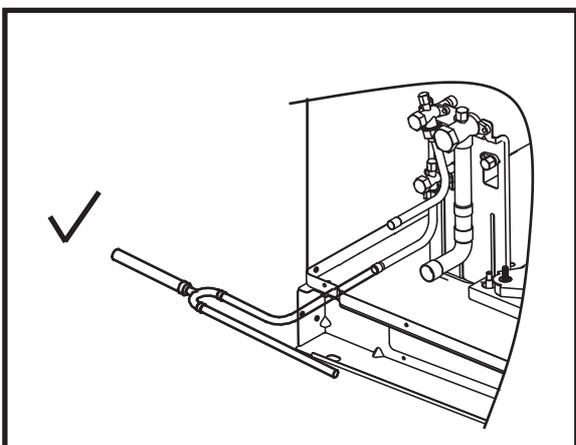


Fig.5-13

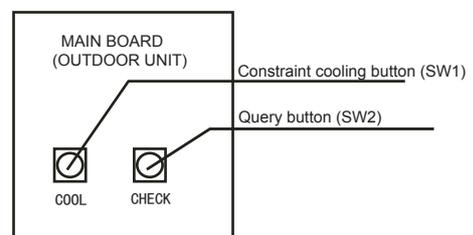


Fig.6-1

Table.6-1

Serial Num	Normal display	Display content	Note
1	0 --	ADDR of outdoor unit	0, 1, 2, 3
2	1 --	Cap. of outdoor unit	8, 10, 12, 14, 16
3	2 --	Modular outdoor unit Qty	Effective to main unit
4	3 --	Outdoor unit setting Qty	Effective to main unit
5	4 --	Total cap. of outdoor units	Capacity requirement
6	5 --	Cap. REQT. of indoor units	Effective to main unit
7	6 --	Cap. REQT. of main unit (after correction)	Effective to main unit
8	7 --	Performance mode	0,2,3,4
9	8 --	Actual running cap. of outdoor unit	Capacity requirement
10	9 --	Fan speed	0, 1,,12, 13
11	0 --	T2/T2B average temp	Actual value
12	1 --	T3 pipe temp	Actual value
13	2 --	T4 ambient temp	Actual value
14	3 --	Discharge temp, Digital Scroll compressor	Actual value
15	4 --	Discharge temp, No.1 fixed compressor	Actual value
16	5 --	Discharge temp, No.2 fixed compressor	Actual value
17	6 --	Current, Digital Scroll compressor	Actual value
18	7 --	Current, No.1 fixed compressor	Actual value
19	8 --	Current, No.2 fixed compressor	Actual value
20	9 --	Opening degree, EXV A	
21	0 --	Opening degree, EXV B	
22	1 --	Discharge pressure	Display value ×0.1 MPa
23	2 --	Qty. of indoor unit	Actual value
24	3 --	Qty. of running indoor unit	
25	4 --	Running mode	0, 1, 2, 3, 4
26	5 --	Noise control mode	S3:3,0,1,2
27	6 --	Static pressure mode	0, 1, 2, 3
28	7 --	The last error or protection code	Without protection or error displays as 00
29	8 --	-- --	Check end

The display contents as follows:

- 1) Normal display: Display qty. of indoor units which could communicate with outdoor unit on standby mode. In case of capacity requirement, display running frequency of the inverter compressor.
- 2) Performance mode: 0--OFF/FAN, 2--COOL, 3--HEAT, 4--Constraint cool.
- 3) Fan Speed: 0-fan stop, 1~13 speed increase sequentially, 13 is the max. fan speed.
- 4) Running Mode: 0:Heating Priority, 1:Cooling priority, 2:First priority, running mode of 63#;Second priority, running mode of larger quantity, 3:Only respond the heating mode, 4:Only respond the cooling mode.
- 5) Noise control mode:3: None priority, 0: Night noise control, 1: Noise control, 2: Super noise control.
- 6) EXV(A/B) opening angle: pulse count=display value×8;
- 7) ENC1:outdoor unit address setting switch .
- 8) ENC2:outdoor unit capacity setting switch.
- 9) S12 & ENC3:indoor unit Qty. setting switch.
- 10)ENC4: network ADDR setting switch.
- 11)SW1: constraint cool button.
SW2: query button.

6.2 Terminal base function

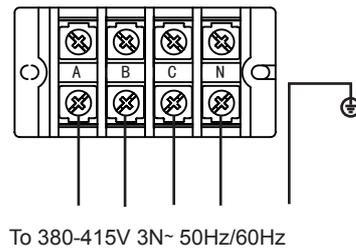


Fig.6-2

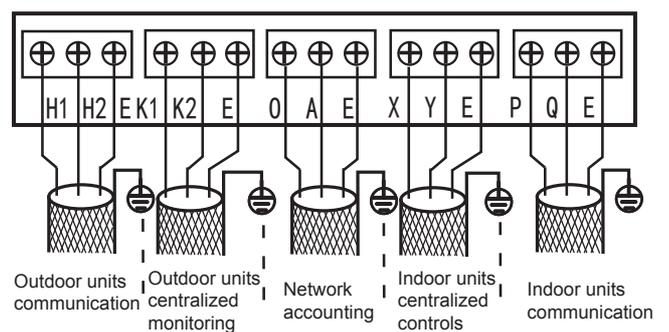


Fig.6-3

6.3 Electric parameter form of outdoor unit

Table.6-2 (Frequency 50 Hz)

System	Outdoor Unit				Power Current			Compressor		OFM	
	Voltage	Hz	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA
8HP	380~415	50	342	440	22.1	28.0	30	82.4/74.0	12.7+10.7	0.424	4.4
10HP	380~415	50	342	440	23.4	28.0	30	82.4/74.0	12.7+10.7	0.424	4.4
12HP	380~415	50	342	440	24.4	28.0	35	82.4/74.0	12.7+11.8	0.424	4.4
14HP	380~415	50	342	440	34.9	42.0	50	82.4/74.0/74.0	12.7+11.8*2	0.42+0.38	4.2+2.9
16HP	380~415	50	342	440	37.4	42.0	50	82.4/74.0/74.0	12.7+11.8*2	0.42+0.38	4.2+2.9

Notes:

1. The current value of combination unit is the total value of each basic model (refer to Table.6-2)

Caution: In a modular system, each module requires a separate circuit breaker.

For example: 46HP=14HP+16HP*2

Power current: MCA=34.9+37.4*2=109.7

TOCA=42+42*2=126

MFA=50+50*2=150

Compressor: RLA=(12.7+11.8*2)*3=108.9

OFM: FLA=(4.2+2.9)*3=21.3

2. RLA is based on the following conditions, Indoor temp. 27°C DB/19°C WB, Outdoor temp. 35°C DB

3. TOCA means the total value of each OC set.

4. MSC means the Max. current during the starting of compressor.

5. Voltage range units are suitable for use on electrical systems where voltage supplied to unit terminals

is not below or above listed range limits.

6. Maximum allowable voltage variation between phase is 2%

7. Selection wire size based on the larger value of MCA or TOCA

8. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

Remark:

MCA: Min. Current Amps. (A)

MFA: Max. Fuse Amps. (A)

RLA: Rated Locked Amps. (A)

FLA: Full Load Amps. (A)

TOCA: Total Over-current Amps. (A)

MSC: Max. Starting Amps. (A)

OFM: Outdoor Fan Motor.

KW: Rated Motor Output (KW)

Table.6-3 (Frequency 60 Hz)

System	Outdoor Unit				Power Current			Compressor		OFM	
	Voltage	Hz	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA
8HP	380~415	60	342	440	29.5	30.0	35	64/94	12.1+10.1	0.42	4.4
10HP	380~415	60	342	440	29.5	30.0	35	64/94	12.1+10.1	0.42	4.4
12HP	380~415	60	342	440	27.5	30.0	35	64/94	12.1+10.1	0.49	5
14HP	380~415	60	342	440	29.4	45.0	50	64/94/94	12.1+10.1*2	0.74	5.6
16HP	380~415	60	342	440	40.9	45.0	50	64/94/94	12.1+10.1*2	0.74	5.6

Notes:

1. The current value of combination unit is the total value of each basic model (refer to Table.6-3)

Caution: In a modular system, each module requires a separate circuit breaker.

For example: 46HP=14HP+16HP*2

Power current: MCA=29.4+40.9*2=111.2

TOCA=45+45*2=135

MFA=50+50*2=150

Compressor: RLA=(12.1+10.1*2)*3=96.9

OFM: FLA=5.6*3=16.8

2. RLA is based on the following conditions, Indoor temp. 27°C DB/19°C WB, Outdoor temp. 35°C DB

3. TOCA means the total value of each OC set.

4. MSC means the Max. current during the starting of compressor.

5. Voltage range units are suitable for use on electrical systems where voltage supplied to unit terminals

is not below or above listed range limits.

6. Maximum allowable voltage variation between phase is 2%

7. Selection wire size based on the larger value of MCA or TOCA

8. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

Remark:

MCA: Min. Current Amps. (A)

MFA: Max. Fuse Amps. (A)

RLA: Rated Locked Amps. (A)

FLA: Full Load Amps. (A)

TOCA: Total Over-current Amps. (A)

MSC: Max. Starting Amps. (A)

OFM: Outdoor Fan Motor.

KW: Rated Motor Output (KW)

6.4 Electric wiring of indoor/outdoor units

■ Outdoor power supply

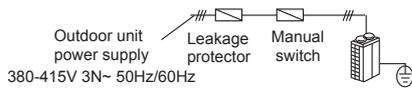


Fig.6-4

■ Indoor power supply

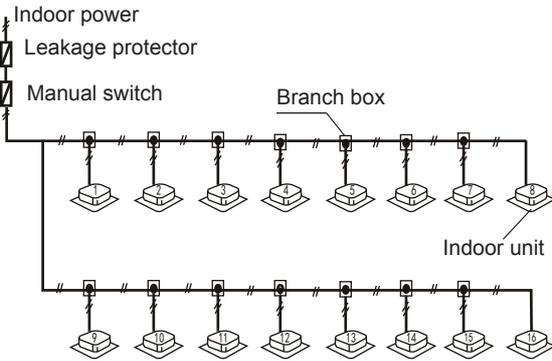


Fig.6-5

6.5 Signal wire of indoor/outdoor units

- Signal wire of indoor/outdoor unit adopts 3-core shielded wire ($\geq 0.75\text{mm}^2$) which has polarity, please connect it correctly.

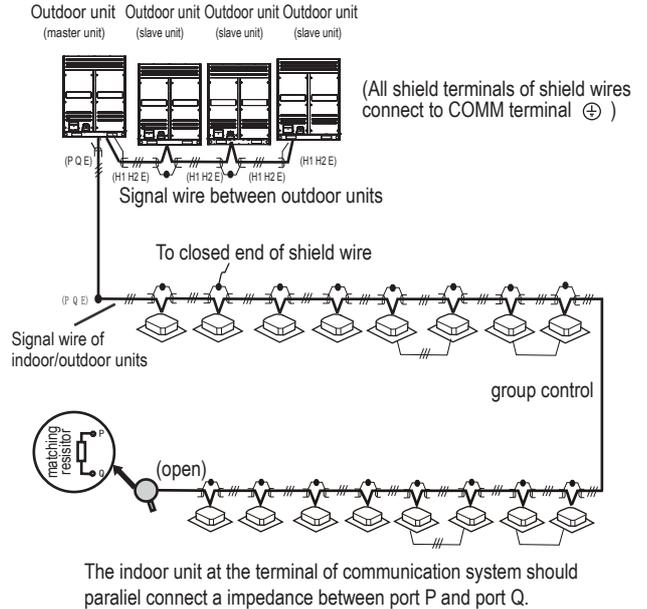


Fig.6-6

CAUTION

- Set refrigerant piping system, signal wires between indoor-indoor unit, and that between outdoor-outdoor unit into one system.
- Power must unified supply to all indoor units in the same system.
- Please do not put the signal wire and power wire in the same wire tube; keep distance between the two tubes. (Current capacity of power supply: less than 10A--300mm, less than 50A--500mm.)
- Make sure to set address of outdoor unit in case of parallel multi-outdoor units.

6.6 Example for power wire connection

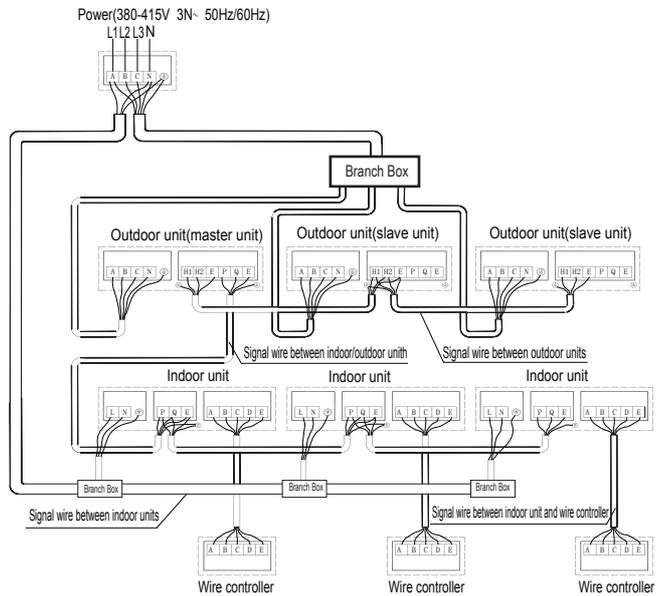


Fig.6-7

7. TRIAL RUN

7.1 Inspection and confirmation before commissioning

- Check and confirm that refrigeration pipe line and communication wire with indoor and outdoor unit have been connected to the same refrigeration system. Otherwise, operation troubles shall happen.
- Power voltage is within $\pm 10\%$ of rated voltage.
- Check and confirm that the power wire and control wire are correctly connected.
- Check whether wire controller is properly connected.
- Before powering on, confirm there is no short circuit to each line.
- Check whether all units have passed nitrogen pressure-keeping test for 24 hours: 40kg/cm² (for R410A) .
- Confirm whether the system to debugging has been carried out vacuum drying and packed with refrigeration as required.

7.2 Preparation before debugging

- Calculating the additional refrigerant quantity for each set of unit according to the actual length of liquid pipe.
- Perform additional refrigerant charging according to the calculated amount.
- Keep system plan, system piping diagram and control wiring diagram ready.
- Record the setting address code on the system plan.
- Turn on power switches outdoor unit in advance, and keep connected for above 24 hours so that heater heating up refrigerant oil in compressor.
- Turn on air pipe stop valve, liquid pipe stop valve, oil balance valve and air balance valve totally. If the above valves do not be turned on totally, the unit should be damaged.
- Check whether the power phase sequence of outdoor unit is correct.
- All dial switch to indoor and outdoor unit have been set according to the Technical Requirement of Product.

7.3 Fill the name of connected system

To clearly identify the connected systems between two or more indoor units and outdoor unit, select names for every system and record them on the nameplate on the outdoor electric control box cover.

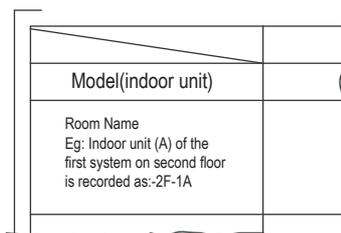


Fig.7-1

7.4 Caution on refrigerant leakage

- This air conditioner adopts R410A as refrigerant, which is safe and noncombustible.
- The room for air conditioner should be big enough that refrigerant leakage can not reach the critical thickness. Besides this, you can take some action on time.
- Critical thickness-----the max thickness of Freon without any harm to person. R410A critical thickness:0.3 [kg/m³]

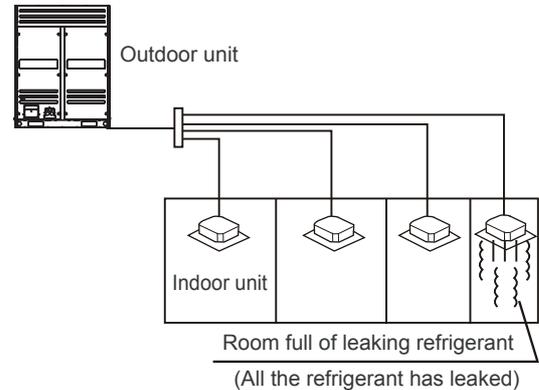


Fig.7-2

- Calculate the critical thickness through following steps, and take necessary actions.
 - Calculate the sum of the charge volume (A[kg])
Total refrigerant volume=refrigerant volume when delivered(nameplate)+superaddition
 - Calculate the indoor cubage (B[m³]) (as the minimum cubage)
 - Calculate the refrigerant thickness.

$$\frac{A \text{ [kg]}}{B \text{ [m}^3\text{]}} \leq \text{Critical thickness: } 0.3 \text{ [kg/m}^3\text{]}$$

- Countermeasure against overhigh thickness
 - Install mechanical ventilator to reduce the refrigerant thickness under critical level. (ventilate regularly)
 - Install leakage detector alarming device related to mechanical ventilator if you can not regularly ventilate.

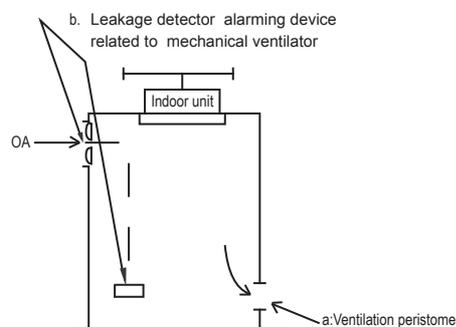


Fig.7-3

OWNER'S MANUAL

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1. IMPORTANT SAFETY INFORMATION

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.



WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.



CAUTION

Failure to observe a caution may result in injury or damage to the equipment.



WARNING

- **Never touch the air outlet or the horizontal blades while the swing flap is in operation.**
Fingers may become caught or the unit may break down.
- **The appliance shall be installed in accordance with national wiring regulations**
- **Never inspect or service the unit by yourself.**
Ask a qualified service person to perform this work.
- **Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.**
- **Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.**
Contact you local government for information regarding the connection systems available.
- **If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.**
- **Keep far away from high-frequency equipment.**
- **Keep away from the following places:**
a place where it is full of oil gas; a place where salty air surrounding or near the coast (except for the models with corrosion-resistant function); a place where is caustic gas(the sulfide in hot spring). Location in the following places may cause malfunction or shorten the life span of the machine.
- **In the case of extremely strong wind, please prevent the air from flowing backwards into the outdoor unit.**
- **Snow canopy is necessary in snowfall places on the outdoor unit. Please consult the local dealer for details.**
- **In the frequent thunderstruck place, lightningproof actions should be taken.**
- **To prevent refrigerant leak, contact your dealer.**
When the system is installed and runs in a small room, it is required to keep the concentration of the refrigerant, if by any chance coming out, below the limit. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
- **The refrigerant in the air conditioner is safe and normally does not leak.**
If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.
- **Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.**
Do not use the air conditioner until a service person confirms that the portion where the refrigerant leaks is repaired.
- **Ask your dealer for installation of the air conditioner.**
Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.
- **Ask your dealer for improvement, repair, and maintenance.**
Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.
- **In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off the power supply and call your dealer for instructions.**
- **Never replace a fuse with that of wrong rated current or other wires when a fuse blows out.**
Use of wire or copper wire may cause the unit to break down or cause a fire.
- **Do not insert fingers, rods or other objects into the air inlet or outlet.**
When the fan is rotating at high speed, it will cause injury.
- **Never use a flammable spray such as hair spray, lacquers paint near the unit.**
It may cause a fire.





CAUTION

- **Do not use the air conditioner for other purposes.**
In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.
- **Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.**
Otherwise, an electric shock and injury may result.
- **In order to avoid electric shock or fire, make sure that an earth leak detector is installed.**
- **Be sure the air conditioner is grounded.**
In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to gas or water pipe, lightning conductor or telephone earth wire.
- **In order to avoid injury, do not remove the fan guard of the outdoor unit.**
- **Do not operate the air conditioner with a wet hand.**
An electric shock may happen.
- **Do not touch the heat exchanger fins.**
These fins are sharp and could result in cutting injuries.
- **After a long use, check the unit stand and fitting for damage.**
If damaged, the unit may fall and result in injury.
- **To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.**
- **Arrange the drain hose to ensure smooth drainage.**
Incomplete drainage may cause wetting of the building, furniture etc.
- **Never expose little children, plants or animals directly to the air flow.**
Adverse influence to little children, animals and plants may result.
- **Notice to avoid places where operation noise may easily be spread away or be enhanced.**
- **Noise can be amplified by anything blocking the air outlet of outdoor unit.**
- **Choose a proper place that the noise and hot or cold wind blown out of the outdoor unit will not bring inconvenience to your neighbors and not affect the growth or animal or plant.**
- **Do not allow a child to mount on the outdoor unit or avoid placing any object on it.**
Falling or tumbling may result in injury.
- **Do not operate the air conditioner when using a room fumigation - type insecticide.**
Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.
- **Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit.**
It may cause incomplete combustion or deformation of the unit due to the heat.

- **Do not install the air conditioner at any place where flammable gas may leak out.**
If the gas leaks out and stays around the air conditioner, a fire may break out.
- **The appliance is not intended for use by young children or infirm persons without supervision.**
- **Young children should be supervised to ensure that they do not play with the appliance.**

2. PARTS NAMES

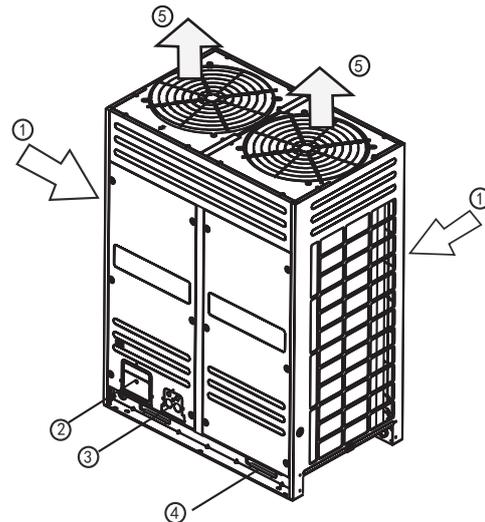


Fig.2-1

1	Air inlet (Both in Left and right sides, as well as in rear side.)
2	Refrigerant pipe connective opening
3	Wires outlet (Some types have not wires outlet)
4	Fixed foot
5	Air outlet (Heat air to be blows out in the cooling operation, vice versa while the heating.)



NOTE

- All the pictures in this manual are for explanation purpose only, There may be slightly different from the air conditioner you purchased (depend on model). The actual shape shall prevail.
- To avoid danger, never put sticks or other objects into it.
- Please preheat the air conditioner for at least 24 hours before operation. Do not switchoff the power if you need to stop the unit for 24h or shorter time. (This is to heat the crank case heater to avoid the compulsive start of compressor.)
- Make sure the air inlet and outlet are not blocked, or it may degrade the performance of air conditioner or start up protector which will stop the unit from running.

3. OPERATION AND PERFORMANCE

■ **Cooling and heating operation of inverter central A/C**

- The indoor unit of this air conditioner can be controlled solely, and the indoor unit in the same system can not run cooling and heating at the same time.
- When the Cooling and Heating operation confront with each other, please determine the problem according to the settings of outdoor unit Mode dial code SW5.
 1. When set as the Heating Priority Mode, the indoor unit on Cooling Mode would stop and there will be Standby or No Priority displayed on the control panel. Those indoor units which are running on Heating Mode will run continuously.
 2. When the Cooling Priority Mode has been set, the indoor unit on Heating Mode would stop and there will be Standby or No Priority displayed on the control panel. Those indoor units which are running on Cooling Mode will run continuously;
 3. When the Priority Mode has been set, the first indoor unit will work in Heating Mode that is Heating Priority, please refer to the ITEM 1 for the control logic. If the first indoor unit is work in Cooling Mode, that is the Cooling Priority Mode, please refer to the ITEM 2 for the control logic;
 4. In terms of the settings only respond the Heating Mode, the indoor unit will run in Heating Mode normally, if unit be run in the Cooling Mode or air Supply Mode, the indoor unit will display Mode Conflicting;
 5. In terms of the settings only respond the Cooling Mode, the indoor unit will run in Cooling Mode or air supply mode normally, if unit be run in the Heating Mode, the indoor unit will display Mode Conflicting.

■ **Features of heating operation**

- Warm air will not be blown out immediately at the beginning of the heating operation, after 3~5minutes (depends on the indoor and outdoor temperature), until the indoor heat exchanger become hot, then blows out warm air.
- During operation, the fan motor in the outdoor unit may stop running under high temperature.
- During Fan operation, if other indoor Units are running on heating mode, the fan may stop in order to prevent sending heat wind.

■ **Defrost in the heating operation**

- During heating operation, outdoor unit sometimes will frost. To increase efficiency, the unit will start defrosting automatically (about 2~10 minutes), and then water will be drained out from outdoor unit.
- During defrosting, both the fan motors in the outdoor unit and indoor unit will stop running.

■ **Operation conditions**

For proper performance, run the air conditioner under the following temperature conditions:

Table.3-1

Temperature Mode	Outdoor temperature	Indoor temperature	Room relative humidity
Cooling mode	-15°C ~ 54°C	17°C ~ 32°C	below 80%
Heating mode	-15°C ~ 24°C	≤27°C	

 **NOTE**
Protective device may start if running the unit outside the above condition, which will prevent the unit from operation.

■ **Protection Device**

This protection device will stop the unit automatically in case the air conditioner is on forced running mode. When protection device is activated, running indicator light is lightened and query light flashes. Protection device may start under the following circumstances:

■ **cooling operation:**

- The air inlet or air outlet of outdoor unit is blocked.
- Strong wind is continuously blowing to the air outlet of the outdoor unit.

■ **heating operation:**

- Too much dust and rubbish adhere to the dust filter in the indoor unit

■ **Power cut**

- If power is cut during operation, stop all the operation immediately.
- Power comes again. The operation indicator on the wire controller flashes.
- Push the ON/OFF button again if you want to restart the unit.

■ **Mishandling in operation**

In case of mishandling caused by lighting or mobile wireless, please switch off the manual power off the manual power. Push ON/OFF again when restarting.

■ **Heating capacity**

- The heating process is :absorb heat from outdoor, while expel heat to indoor by hot pump. Once the outdoor temperature drop down, heating capacity is degraded correspondingly.
- It is command to equip with other warming facility, when outdoor temperature is low.
- It is better to equip with additional purchase indoor auxiliary heating device in paramos area where is in particularly low outdoor temperature.(See Indoor Unit Operation Manual for detail information)

 **NOTE**
Please switch off the power when protection device starts. Do not restart until the problems are solved.

4. TROUBLES AND CAUSES

 **CAUTION**

- In case the following malfunctions, please switch off the power and contact the local dealer. Incorrect ON/OFF operation
- Fuse or leakage protector is frequently broken.
- Foreign matter or water falls in the unit.

Please read the following illustration(before apply for servicing)

Table.4-1

	Troubles	Causes
Not malfunction	Outdoor unit <ul style="list-style-type: none"> • White mist or water • The sound of "hiss" 	<ul style="list-style-type: none"> • FAN function stop automatically to defrost. It is the start and stop sound of the solenoid valve • At the beginning and the end of the running process, sounds like water flow in valve occurs, which will be amplified in 3~15 minutes, this is caused by dehumidifying process of refrigerant current. • Slight hiss is caused by heat exchanger as temperature changes. • Pieces of the wall, carpet, furniture, cloth, cigarette, cosmetics are adhere to the unit. • Switch on the power after the power cut. • Other equipment preheating process stops cooling operation. • The operator sets an opposite mode against the fixed cooling and heating mode. • FAN mode stops to avoid cold air blown out. • The master unit with slave units for different purposes, when abnormal accident happen,the director will illustrate.
	Indoor unit <ul style="list-style-type: none"> • Bad odor • Operation lamp flashes • No priority of Standby on panel is lightened 	
Check it again	<ul style="list-style-type: none"> • Start or stop operation automatically 	<ul style="list-style-type: none"> • Wrong operation on timer.
	<ul style="list-style-type: none"> • No operation 	<ul style="list-style-type: none"> • Whether the power is cut. • Whether manual power switch is turned on. • Whether the fuse is melted. • Whether the protection device works. (operation lamp is lightened) • Whether it is the time set.
	<ul style="list-style-type: none"> • Insufficient cooling • Insufficient heating 	<ul style="list-style-type: none"> • Whether the inlet and outlet of outdoor unit is blocked. • Whether the door and window are open. • Whether the air filter is blocked by dust. • Whether the air deflector is in the right place • Whether fan speed is slight or whether it is in FAN mode. • Whether the temperature is set properly. • Whether setting COOL and HEAT simultaneously. (Indicator light Standby or No Priority on panel is lightened)



NOTE

In case of following malfunctions, please switch off the power and contact the local dealer.

1. Incorrect ON/OFF operation.
2. Fuse or leakage protector is frequently broken.
3. Foreign matter or water falls in the unit.

5. MALFUNCTION

Malfunction display of outdoor display

Table.5-1

No.	Error code	Error or protection type	Note
1	E0	Outdoor unit communication error	Only display on slave unit
2	E1	Phase protection	
3	E2	Communication error with indoor unit	
4	E4	T4 outdoor ambient temp sensor error	
5	E5	Power voltage error	
6	E7	Discharge temp sensor error	Operate the unit for 10 minutes and then stay the status with the air discharging temperature less than 15°C and the air discharging pressure higher than 3.5 MPa for 2 minutes
7	E8	Outdoor unit address error	
8	H0	Mode conflict error	Only display on main unit
9	H1	Communication error between chips	
10	H2	Qty.of outdoor unit decrease	Only display on main unit
11	H3	Qty.of outdoor unit increase	Only display on main unit
12	H5	3 times of P2 protection in 30 minutes	Cannot be recoverable until re-power on
13	H6	3 times of P4 protection in 100 minutes	Cannot be recoverable until re-power on
14	H7	Qty.of indoor unit decrease	Indoor unit disconnected over 3 minutes; Cannot be recoverable, until recover the unit quantity
15	H8	Pressure sensor error	Air discharging pressure $P_c \leq 0.3 \text{ MPa}$
16	H9	3 times of P9 protection in 30 minutes	Cannot be recoverable until re-power on
17	Hd	Slave unit error	Only display on main unit
18	P1	High pressure protection	
19	P2	Low pressure protection	
20	P3	Digital compressor current protection	
21	P4	Compressor discharge temp protection	
22	P5	High outdoor condenser temp protection	T3 temperature over-heat
23	P7	Current protection of fixed compressor 1	
24	P8	Current protection of fixed compressor 2	
25	P9	DC fan protection	

If the problem still existing, please contact the sales distributor or the service center, tell us your model No. and the detail of the error.

6. CONSTRAINT COOLING AND QUERY

■ Constraint Cooling

Once pressing the constraint cooling button(see the chart on the right), all the indoor unit will be on forced cooling mode and the wind speed is HIGH.

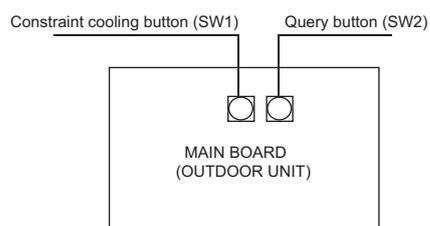


Fig.6-1

■ Query

Table.6-1

Serial Num	Normal display	Display content	Note
1	0 --	ADDR of outdoor unit	0, 1, 2, 3
2	1 --	Cap. of outdoor unit	8, 10, 12, 14, 16
3	2 --	Modular outdoor unit Qty	Effective to main unit
4	3 --	Indoor unit setting Qty	Effective to main unit
5	4 --	Total cap. of outdoor units	Capacity requirement
6	5 --	Cap. REQT. of indoor units	Effective to main unit
7	6 --	Cap. REQT. of main unit (after correction)	Effective to main unit
8	7 --	Performance mode	0,2,3,4
9	8 --	Actual running cap. of outdoor unit	Capacity requirement
10	9 --	Fan speed	0, 1,,12, 13
11	0 --	T2/T2B average temp	Actual value
12	1 --	T3 pipe temp	Actual value
13	2 --	T4 ambient temp	Actual value
14	3 --	Discharge temp, Digital Scroll compressor	Actual value
15	4 --	Discharge temp, No.1 fixed compressor	Actual value
16	5 --	Discharge temp, No.2 fixed compressor	Actual value
17	6 --	Current, Digital Scroll compressor	Actual value
18	7 --	Current, No.1 fixed compressor	Actual value
19	8 --	Current, No.2 fixed compressor	Actual value
20	9 --	Opening degree, EXV A	
21	0 --	Opening degree, EXV B	
22	1 --	Discharge pressure	Display value ×0.1 MPa
23	2 --	Qty. of indoor unit	Actual value
24	3 --	Qty. of running indoor unit	
25	4 --	Running mode	0, 1,2, 3, 4
26	5 --	Noise control mode	S3:3,0,1,2
27	6 --	Static pressure mode	0, 1,2, 3
28	7 --	The last error or protection code	Without protection or error displays as 00
29	8 --	--	Check end

The display contents as follows:

- 1) Normal display: Display qty. of indoor units which could communicate with outdoor unit on standby mode. In case of capacity requirement, display running frequency of the inverter compressor.
- 2) Performance mode: 0--OFF/FAN, 2--COOL, 3--HEAT, 4--Constraint cool.
- 3) Fan Speed: 0-fan stop. 1~13 speed increase sequentially, 13 is the max. fan speed.
- 4) Running Mode: 0:Heating Priority, 1:Cooling priority, 2:First priority, running mode of 63#,Second priority, running mode of larger quantity, 3:Only respond the heating mode, 4:Only respond the cooling mode.
- 5) Noise control mode:3: None priority, 0: Night noise control, 1: Noise control, 2: Super noise control.
- 6) EXV(A/B) opening angle: pulse count=display value×8;
- 7) ENC1:outdoor unit address setting switch .
- 8) ENC2:outdoor unit capacity setting switch.
- 9) S12 & ENC3:indoor unit Qty. setting switch.
- 10)ENC4: network ADDR setting switch.
- 11)SW1: constraint cool button.
SW2: query button.

7. AFTERSALE SERVICE

If the air conditioner was operate abnormally, please plug off the power supply firstly, and contact with After-sales Center or Special Distributor. For detail please refer to the attached accessory Consumer Service Instruction.



MUNDO  CLIMA[®]

ASK FOR MORE INFORMATION:

Phone: 93 446 27 80 - Fax: 93 456 90 32

eMail: mundoclima@salvadorescoda.com

TECHNICAL ASSISTANCE:

Phone: 93 652 53 57 - Fax: 93 635 45 08