

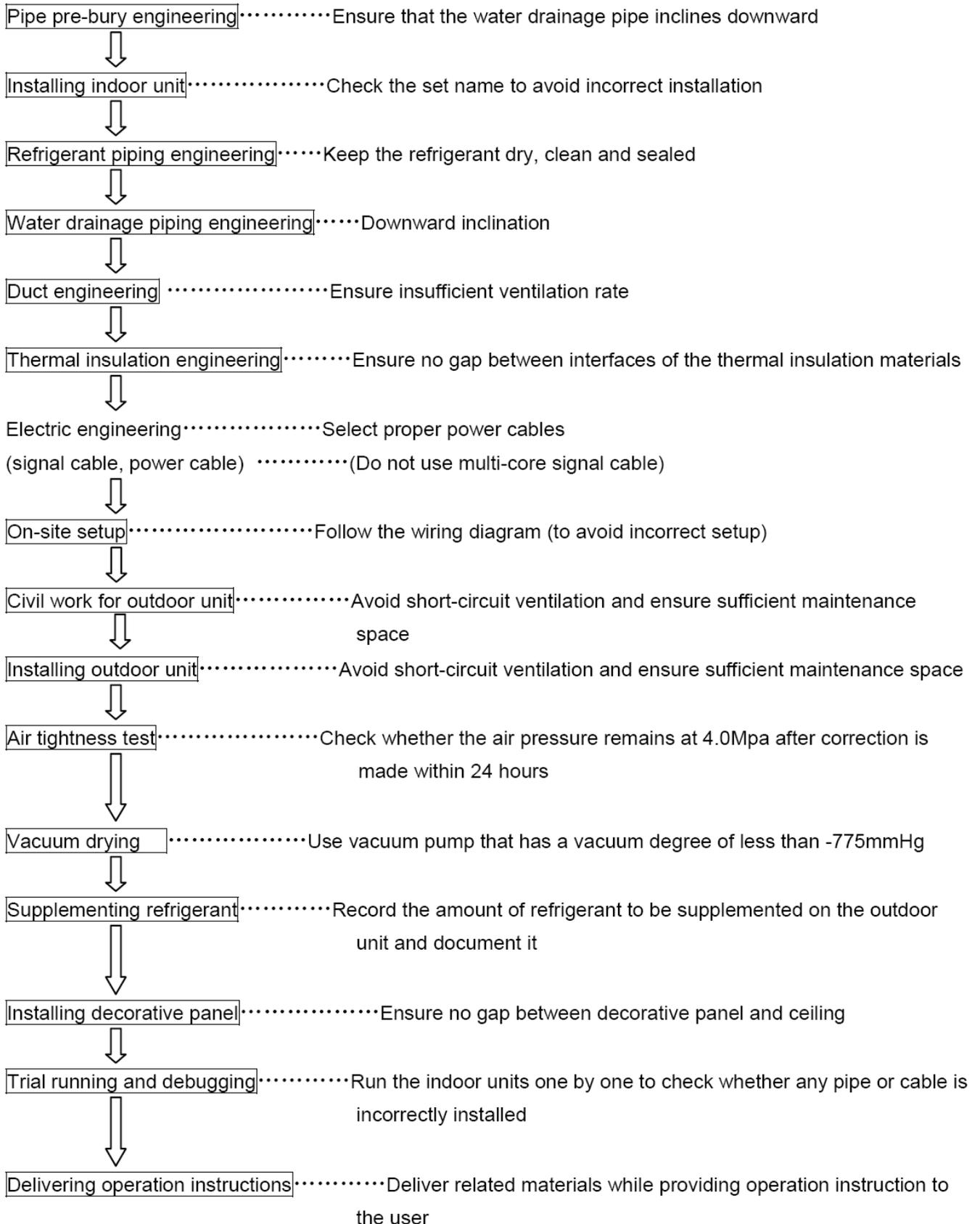
# Part 4

## Installation

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# 1. Summarize of Installation

## 1.1 Installation Procedure



## 1.2 Construction checkpoint

### Installation

- Check the model and name to avoid mistaken installation.

### Refrigerant pipe

- Check the model and name to avoid mistaken installation.
- An additionally purchased refrigerant distributor (manifold adapter and manifold pipe) must be used for installing the refrigerant pipes.
- 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 2.94MPa(30kgf/cm<sup>2</sup>) 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-condition is generally thicker than the power cable of the motor.
- In order to prevent misoperation of the air-condition, do not interleave or entwine the power cable (380-415V 3N~) with the connection wires (weak current 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.

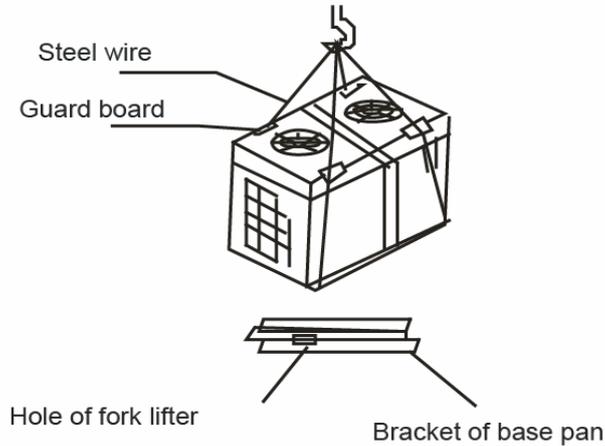
### Trial run

- 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 12 hours.

## 2. Installation of Outdoor Unit

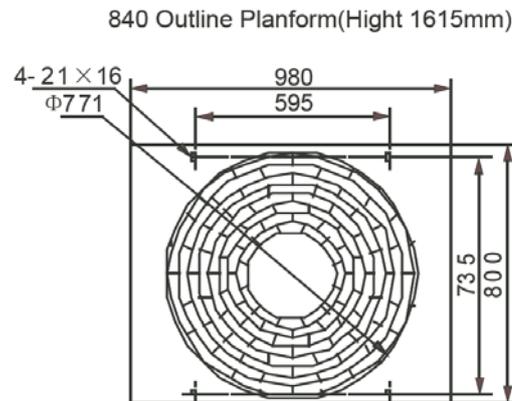
### 2.1 Hanging and Transportation

- (1) Steel wire can be used for hanging.
- (2) Use 4 steel wires with above  $\Phi 6\text{mm}$  to hang the outdoor unit. Pay attention to the gravity center and prevent outdoor unit sliding and tip-over.
- (3) In order to prevent outdoor unit scratch and deformity, use a guard board to the surface of contact between the steel wire and the unit.
- (4) Remove the cushion for use in the transport after finishing the transport.
- (5) Lifter can be used for hanging.

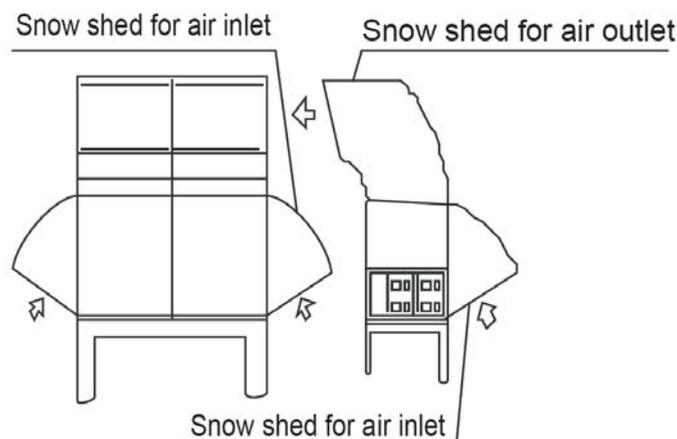


### 2.2 Required Installation Place and Installation Dimension

Distance between ground bolt is shown below: (Note: outdoor units in the same system should be located in the same level)



In snowy areas, facilities should be installed to prevent snow.(see the chart below )(defective facilities may cause malfunction.) Please lift the bracket higher and install snow shed at the air inlet and air outlet.



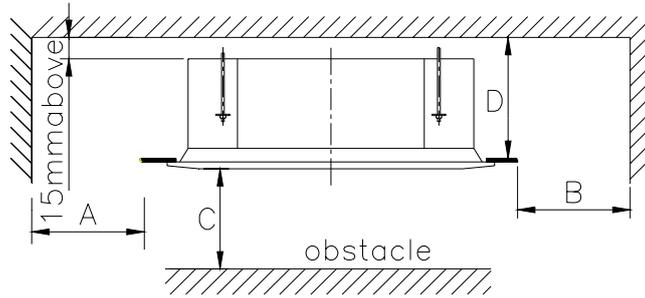
### 3. Installation of Indoor Unit

#### 3.1 Hanging and Transportation

Please refer to Installation manual of Indoor unit.

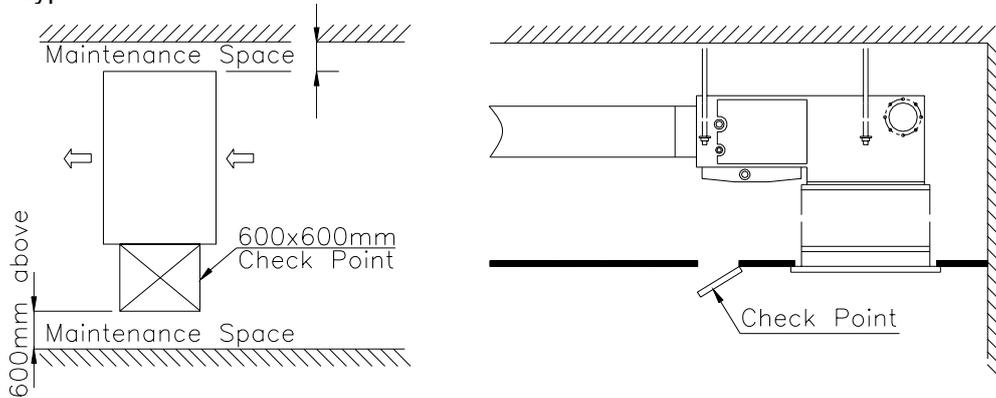
#### 3.2 Required Installation Place

##### 3.2.1 Cassette Type

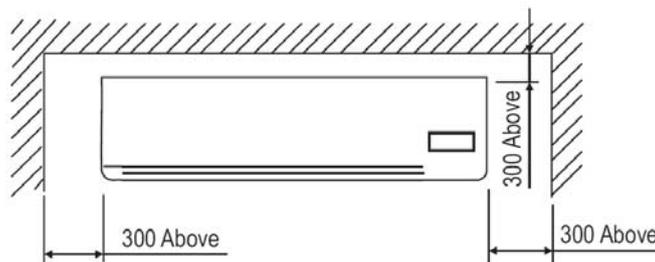


model	Dimension	A	B	C
Four-way Cassette		1000mm above		2300mm above

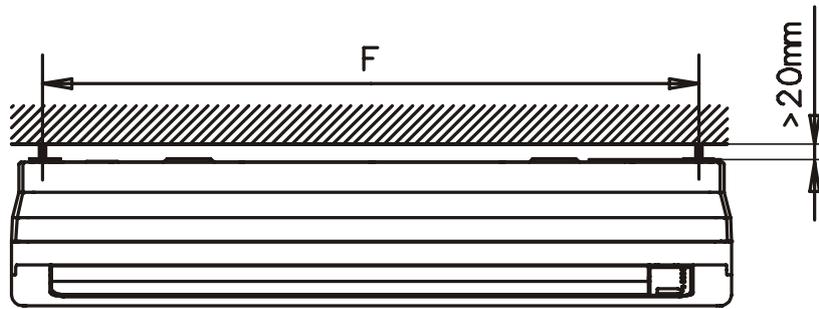
##### 3.2.2 Duct Type



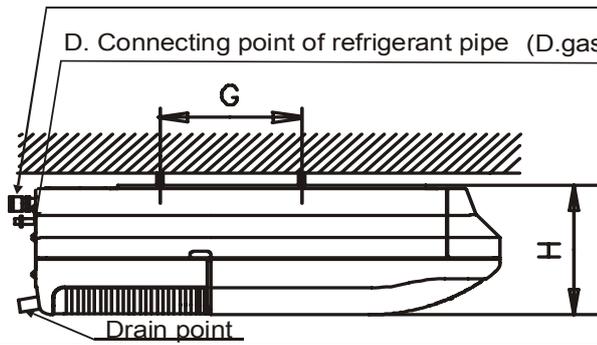
##### 3.2.3 Wall Mounted Type



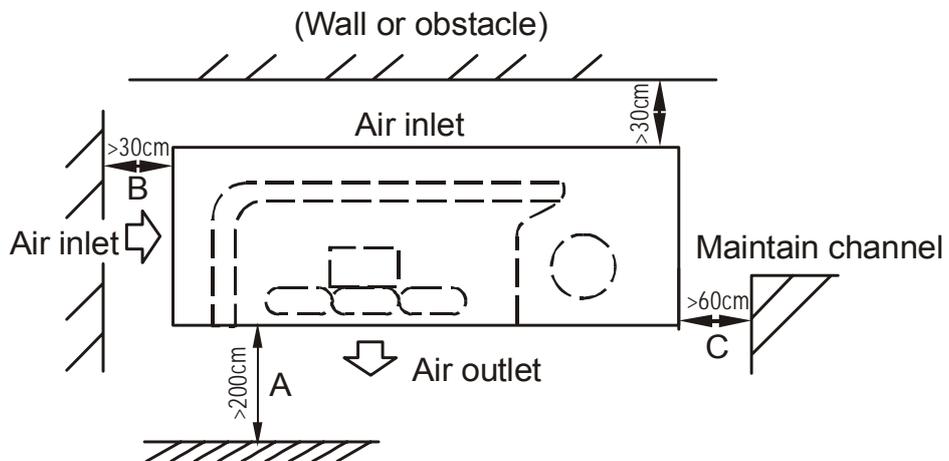
3.2.4 Ceiling and floor



E. Connecting point of refrigerant pipe (E. Liquid side)



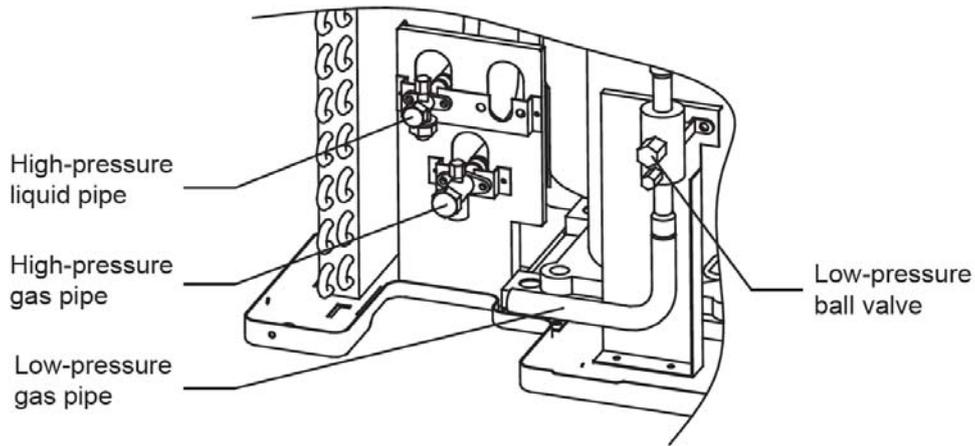
Capacity (KW)	A	B	C	D	E	F	G	H
2.2-8.0 KW	990	660	206	505	506	907	200	203
9.0-11.2 KW	1280	660	206	795	506	1195	200	203
14.0 KW	1670	680	224	1070	450	1542	200	240



## 4. Installation of Refrigerant Pipe

**Note:**

- (1) The refrigerant pipe adapter is located inside the outdoor unit. So remove the lower front board first.
- (2) The pipe can be connected from the front left lower side or the bottom notch of the outdoor unit.
- (3) In case the pipe is connected from the front side, lead out the pipe through the wiring panel of the pipes, and then install the refrigerant manifold pipe leftward or rightward.
- (4) In case the pipe is connected from the bottom notch, install the refrigerant manifold pipe leftward, rightward or backward after connecting it out.
- (5) In case of leading from the front side, remove the guard board at the corresponding notch location on the panel in advance, and then lead the pipe out.



**Caution:** When welding the refrigerant pipe, in order to prevent internal oxidation of the pipe, nitrogen must be filled in. Otherwise, the oxidized chips may block pipes.

### 4.1 Pipe combination for indoor/outdoor units

Table.4-1

Outdoor unit	Quantity of indoor units
8HP	10
10HP	12

### 4.2 Choice of refrigerant pipe size

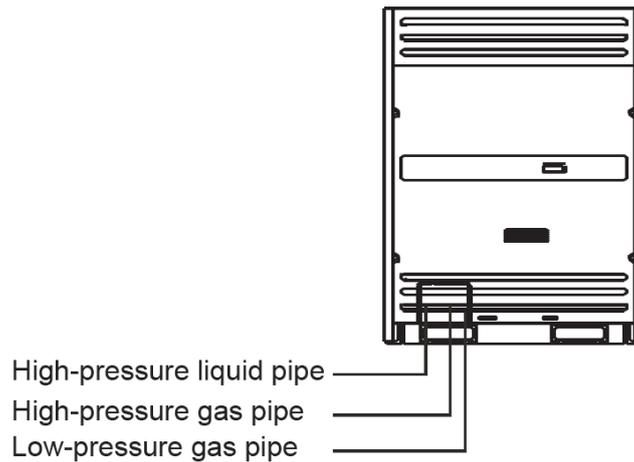
#### 4.2.1 Choice of refrigerant pipe size

- (1) Pipe between outdoor unit and main pipe(outdoor unit interface pipe), refer to Table 4-3
- (2) Pipe between main pipes. Refer to Table 4-3
- (3) Pipe between branches(main tubing).Refer to Table 4-4
- (4) Pipe between indoor unit and branch(tubing). Refer to Table 4-5

#### 4.2.2 Size of branch joint for indoor unit.

The selection is according to the capacity of indoor units. When the capacity of indoor units is different from the outdoors', select the branch joint according to the maximum capacity of the indoor units and outdoor units.

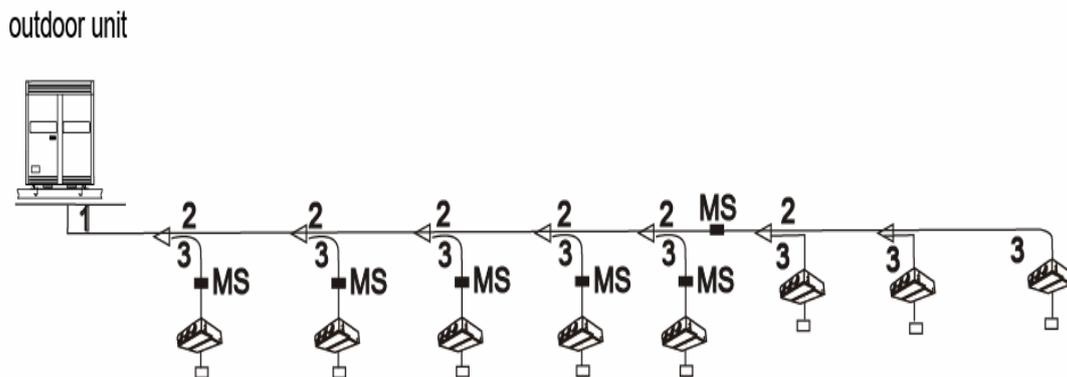
### 4.3 Installation chart



### 4.4 Pipe size and connection

Table.4-2

Name	Connect position	No.
Tubing	Pipe straight connect with indoor unit	3
Main tubing	Pipe not straight connect with indoor unit	2
Main pipe	Pipe between outdoor unit and the first branch for indoor unit	1



### Pipe size and connecting for outdoor unit

Table.4-3

Model	Pipe size of outdoor unit. Low-pressure gas pipe is jointing, high-pressure gas pipe and high-pressure liquid pipe are flaring nut		The Max. equivalent length of tubing < 90m			The Max. equivalent length of tubing ≥ 90m			
			Size of main pipe	The first branch for indoor unit	A transfer connector is needed to used between outdoor unit tubing and main pipe or not	Size of main pipe	The first branch for indoor unit	A transfer connector is needed to used between outdoor unit tubing and main pipe or not	
8HP	High-pressure liquid size	Φ12.7	Φ9.5	FQZH-02S	yes	Φ12.7	FQZH-02S	no	
	High-pressure gas size	Φ19.1	Φ19.1		no			Φ19.1	no
	Low-pressure gas size	Φ25.4	Φ22.2		yes			Φ25.4	no
10HP	High-pressure liquid size	Φ12.7	Φ9.5	FQZH-02S	yes	Φ12.7	FQZH-02S	no	
	High-pressure gas size	Φ19.1	Φ19.1		no			Φ19.1	no

Low-pressure size	gas	Φ25.4	Φ22.2		yes	Φ25.4		no
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**Caution:** If the size of tubing for connecting outdoor unit is different from main pipe, a transfer connector should be mounted.

**Size of main tubing between indoor unit and MS**

A: The total capacity of subordinate indoor units of tubing (The indoor unit from this tubing to the end)

Table.4-4

A (× 100W)	Gas side	Liquid side	Branch joint
A < 56	Φ12.7	Φ6.4	FQZHN-01
56 ≤ A < 168	Φ15.9	Φ9.5	FQZHN-01
168 ≤ A < 224	Φ15.9	Φ9.5	FQZHN-01
224 ≤ A	Φ22.2	Φ9.5	FQZHN-02

**Size of main tubing between outdoor unit and MS**

Table.4-5

A (× 100W)	Low-pressure gas pipe	High-pressure liquid pipe	High-pressure gas pipe	Branch joint
A < 56	Φ12.7	Φ6.4	Φ9.5	FQZHN-01S
56 ≤ A < 168	Φ15.9	Φ9.5	Φ12.7	FQZHN-01S
168 ≤ A < 224	Φ19.1	Φ9.5	Φ15.9	FQZHN-01S
224 ≤ A	Φ22.2	Φ9.5	Φ19.1	FQZHN-02S

**Choice of MS:**

Table.4-6

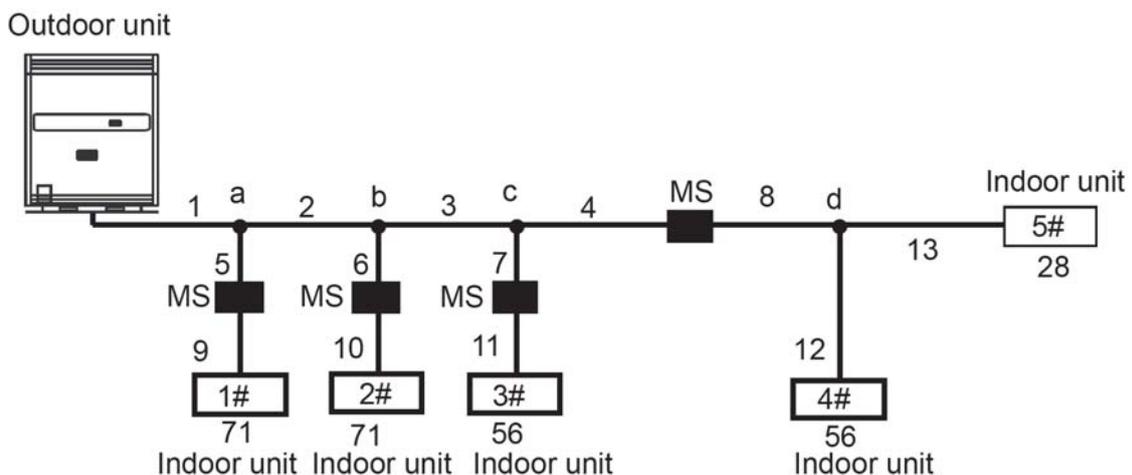
A (× 100W)	MS
A < 56	MDV-MS02/N1
A ≥ 56	MDV-MS04/N1

**Size of indoor unit tubing and connection**

Table.4-7

Capacity of indoor units (× 100W)	Gas side	Liquid side
≥ 56	Φ15.9 (Flaring nut)	Φ9.5(Flaring nut)
≤ 45	Φ12.7 (Flaring nut)	Φ6.4(Flaring nut)

Take 10HP and Max. equivalent length of tubing < 90m as example:



Choice of tubing size:

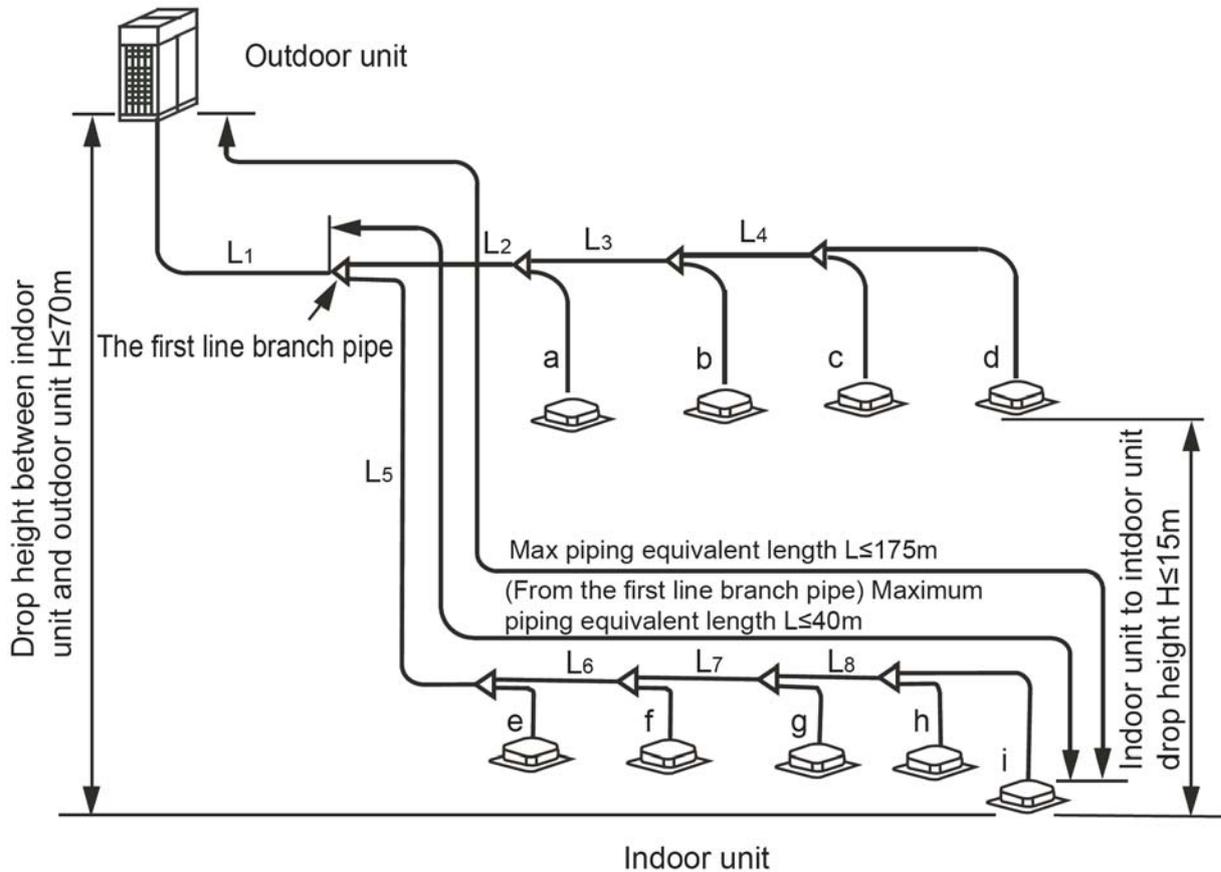
- 1). Refer to table.4-7, tubing 9/10/11/12/13, the size of 13 is Φ6.4/Φ12.7, the others are Φ9.5/Φ15.9;
- 2). Refer to table.4-5, tubing 4/5/6/7, the size of all is Φ9.5/Φ12.7/Φ15.9;
- 3). Refer to table.4-6, model of all MS is CE-MDVMS04/N1;
- 4). Refer to table.4-4, subordinate indoor units of pipe 8 are 4# and 5#, total horsepower is 28+56=84 < 168, pipe 8 size is Φ9.5/Φ15.9, model of branch joint d is FQZHN-01;

5).Refer to table.4-5, subordinate indoor units of pipe 3 are 3#,4# and 5#, total horsepower is  $28+56+56=140 < 168$ , pipe 3 size is  $\Phi 9.5/\Phi 12.7/\Phi 15.9$ ,model of branch joint c is FQZHN-01S;  
 6).Refer to table.4-5, subordinate indoor units of pipe 2 are 2#,3#,4# and 5#, total horsepower is  $28+56+56+71=211 < 224$ , pipe 2 size is  $\Phi 9.5/\Phi 15.9/\Phi 19.1$ , model of branch joint b is FQZHN-01S;  
 Pipe 1 is the main pipe, subordinate indoor units of pipe 1 are 1#,2#,3#,4# and 5#, total horsepower is  $28+56+56+71+71=282 > 224$ , refer to table. 4-5, pipe 1 size is  $\Phi 9.5/\Phi 19.1/\Phi 22.2$ , model of branch joint a:FQZHN-02S; Refer to table.4-3,model of branch joint a:FQZHN-02S, pipe 1 size is  $\Phi 9.5/\Phi 19.1/\Phi 22.2$ .So according to the principle of maximum, pipe 1 size is  $\Phi 9.5/\Phi 19.1/\Phi 22.2$ .

### 4.5 Length and height drop permitted of the refrigerant piping

Table.4-8

		Permitted value	Piping
Piping length	Total pipe length(Actual)	350m	$L1+L2+L3+L4+L5$
	Maximum piping(L)	Actual length	$L1+L5+L6+L7+L8+i$
		Equivalent length	$+i$
	Piping (farthest from the first line pipe branch) equivalent length	40m	$L5+L6+L7+L8+i$
Drop height	Indoor unit-outdoor unit drop height	Outdoor unit up	/
		Outdoor unit down	/
	Indoor unit to indoor unit drop height	15m	/



**Note:** The figure elide MS device that between indoor unit and outdoor unit.

### 4.6 Remove dirt or water in the piping

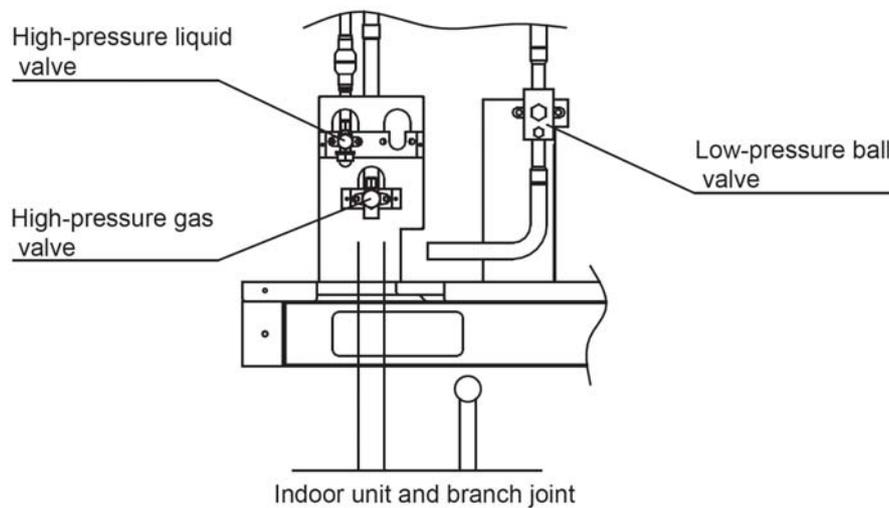
- (1) Make sure there is no any dirt or water before connecting the piping to the outdoor units.
- (2) Wash the piping with high pressure nitrogen, never use refrigerant of the outdoor unit.

### 4.7 Airtight test

- (1) Connect piping on hi-pressure side with hi-pressure valve.(For multi-modules parallel connection, please connect gas balance valves.)
- (2) Weld the piping on low-pressure side with gauge joint.
- (3) Charge nitrogen from hi-pressure valve core and gauge joint.
- (4) After airtight test, weld low-pressure ball valve and piping on low-pressure side.

**Caution:**

- (1) Pressured nitrogen [3.9MPa(39kg/cm<sup>2</sup>)] should be used in the airtight test.
- (2) Do not connect piping on low-pressure side and low-pressure ball valve before charging nitrogen.
- (3) The airtight test should never use any oxygen, flammable gas or poisonous gas.
- (4) Wrap low-pressure valve and balance valves with wet cloth while welding.



### 4.8 Vacuum with vacuum pump

- (1) Do vacuum with vacuum pump instead of refrigerant.
- (2) Vacuuming should be done from liquid and gas side simultaneously. The pressure should be lower than 30Pa.

### 4.9 Open all valves

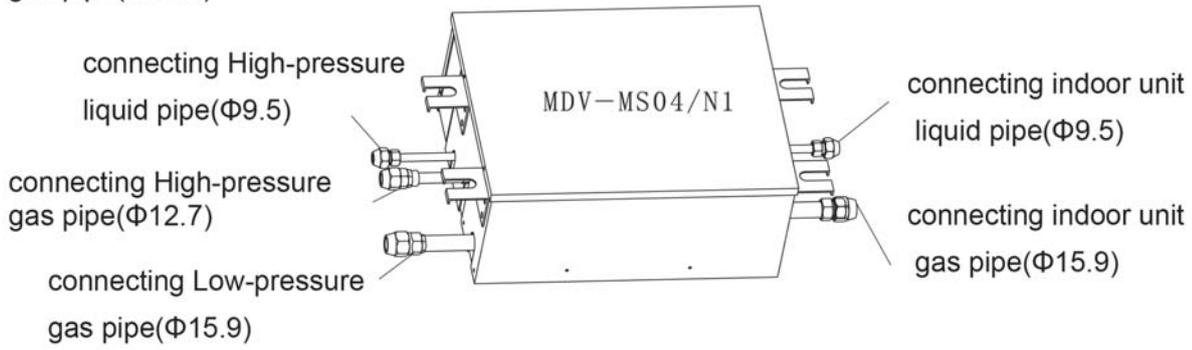
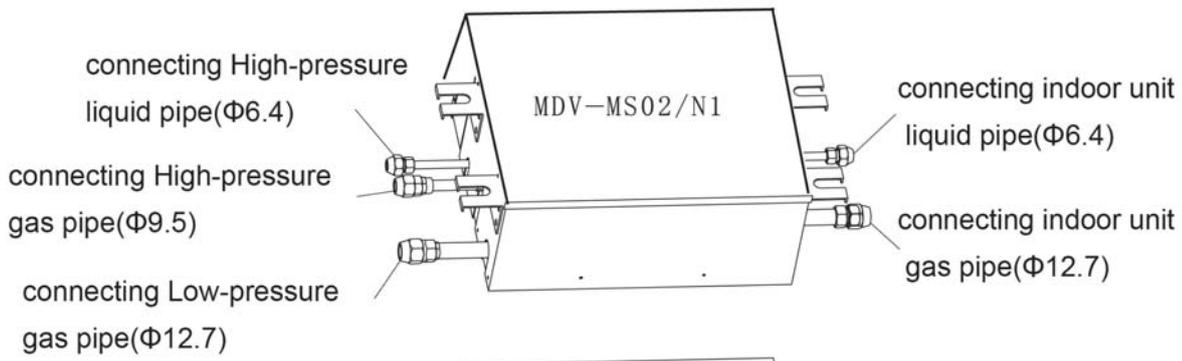
### 4.10 Refrigerant amount to be added

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.4-9

Pipe size on high-pressure liquid side	Refrigerant to be added per meter
Φ6.4	0.022 Kg
Φ9.5	0.060 Kg
Φ12.7	0.110 Kg

### 4.11 Connecting pipe of MS



## 5. Processing & Installation of Drainage Pipe

### 5.1 Gradients and Supporting

- 5.1.1 Keep the drainpipe sloping downwards at a gradient of at least 1/100. Keep the drainpipe as short as possible and eliminate the air bubble.
- 5.1.2 The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/100 and prevent bending. Refer to the following table for the specification of the prop stand.

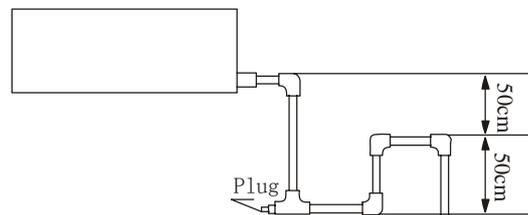
	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1.5~2m

#### 5.1.3 Precautions

- 5.1.3.1 The diameter of drainpipe should meet the drainage requirement at least.
- 5.1.3.2 The drainpipe should be heat-insulated to prevent atomization.
- 5.1.3.3 Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can act correctly.
- 5.1.3.4 All connection should be firm.
- 5.1.3.5 Wipe color on PVC pipe to note connection.
- 5.1.3.6 Climbing, horizontal and bending conditions are prohibited.
- 5.1.3.7 The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- 5.1.3.8 Heat-insulation should be done well to prevent condensation.
- 5.1.3.9 Indoor units with different drainage type can't share one convergent drainpipe.

### 5.2 Drainpipe Trap

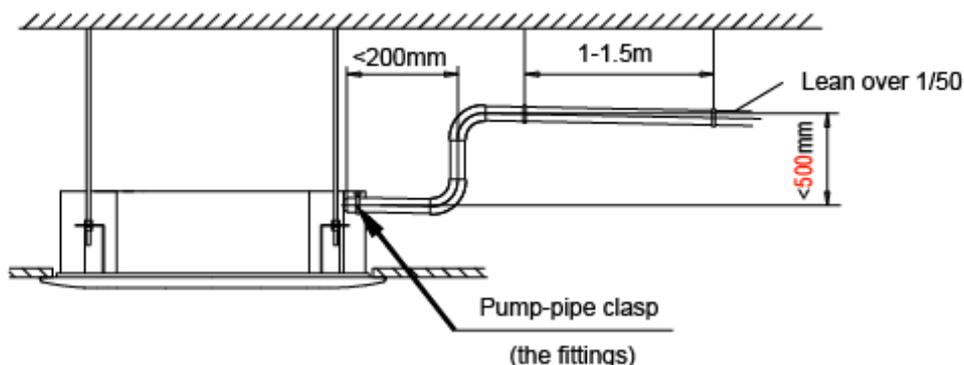
- 5.2.1 If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.
- 5.2.2 Every indoor unit needs one drainpipe trap.
- 5.2.3 A plug should be designed to do cleaning.



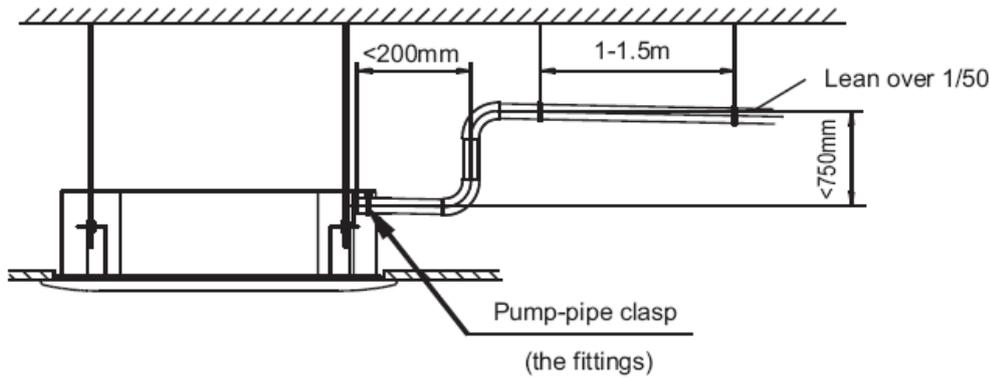
### 5.3 Upward drainage (drain pump)

To ensure the gradient 1/100, the drainpipe can be lifted to H:

**For Compact Four-way Cassette:**



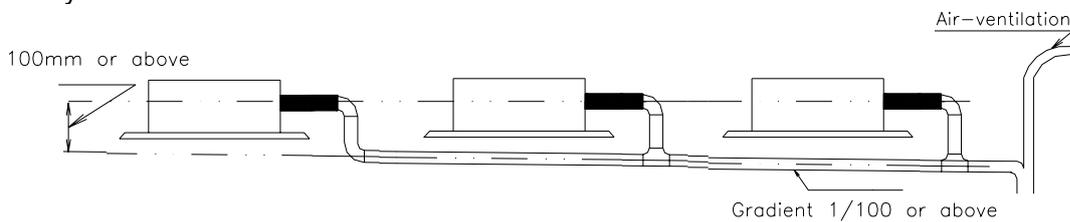
**For Four-way Cassette and One-way Cassette:**



**5.4 Convergent drainage**

5.4.1 The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.

5.4.2 Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



5.4.3 Selection the diameter

Number of connecting indoor units → Calculate drainage volume → Select the diameter  
 Calculate allowed volume = Total cooling capacity of indoor units (HP) × 2 (l/ hr)

Drain pipe	Allowed volume(lean 1/100) (l/ hr)	I.D. (mm)	Thick
Hard PVC	$\infty \leq 14$	$\Phi 25$	3.0
Hard PVC	$14 < \infty \leq 88$	$\Phi 30$	3.5
Hard PVC	$88 < \infty \leq 334$	$\Phi 40$	4.0
Hard PVC	$175 < \infty \leq 334$	$\Phi 50$	4.5
Hard PVC	$334 < \infty$	$\Phi 80$	6.0

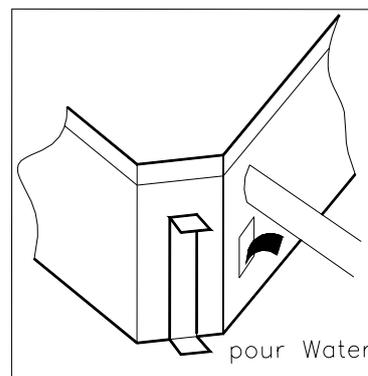
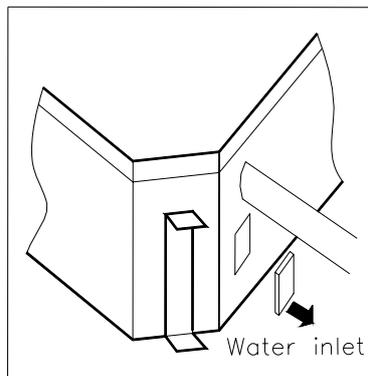
**5.5 Drainage test**

5.5.1 Drainage without drain pump

After finishing drainpipe installation, pour some water into the water plate to check if the water flows smoothly.

5.5.2 Drainage with drain pump

5.5.2.1 Poke the Water Level Switch, remove the cover, and use water pipe to pour 2000ml water into the water plate through the water inlet.



- 5.5.2.2 Turn on the power to cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.
- 5.5.2.3 Stop the air conditioner running, turn off the power, and put back the cover.
- Stop the air conditioner. After 3 minutes, check if it has abnormality. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even circumfluence from the water plate.
  - Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop (means this indoor unit stops, stand-by, but the outdoor unit still work if there is capacity requirement). Turn off the power and drain the remained water, then turn on the air conditioner.

**Note:** the drain stopper in the main water plate is for maintenance. Stuff up the drain stopper to prevent water leakage.

## 6. MDV Insulation Work

### 6.1 Insulation material and thickness

#### 6.1.1 Insulation material

Insulation material should adopt the material, which is able to endure the pipe's temperature: no less than 70°C in the high-pressure side, no less than 120°C in the low-pressure side (For the cooling type machine, no requirements at the low-pressure side.)

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120°C)

Cooling only type---- Polyethylene foam (withstand above 100°C)

#### 6.1.2 Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.0	15mm
	Φ38.0—Φ67.0	20mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

### 6.2 Refrigerant pipe insulation

#### 6.2.1 Work Procedure

6.2.1.1 Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

6.2.1.2 After the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

#### 6.2.2 Insulation for non-jointing parts and non-connection parts

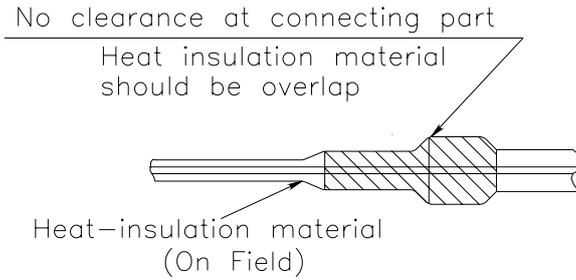
Wrong	Right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (Cooling only)	Insulate the gas pipe and the liquid pipe

For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two tips of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

#### 6.2.3 Insulate for the jointing area, expanding area and the flange area

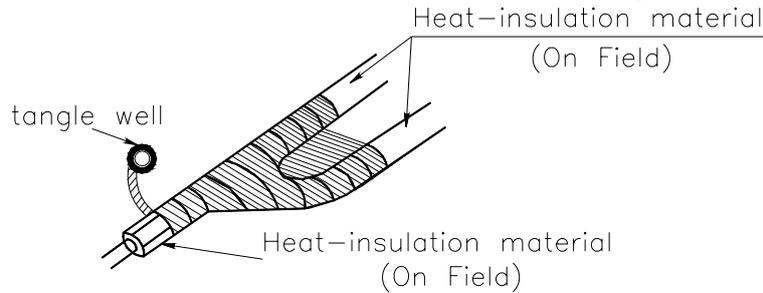
6.2.3.1 Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

6.2.3.2 Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



#### 6.2.4 Enswathe disposal

After insulation of the pipes, do the enswathe disposal with binding belt, make sure it's tight.



### 6.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

#### 6.4 Note

- 6.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test
- 6.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.
- 6.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut ) of the indoor unit.

## 7. Pipeline Installation

### 7.1 Pipeline facture

#### 7.1.1 The material of the pipeline

Standard: lubricity inside; small friction resistance; not absorbing moisture; incombustibility; erosion resistance; longevity; lightness; good sealing; no accumulation; easily cleaning. Normally, we can select galvanization steel, aluminum, and plastic. For short pipeline, we can also select aluminum foil board.

#### 7.1.2 The process of the piping

The process of the piping should meet the requirements of the design. The process can be done in subsection. And every subsection's length is about between 1.8m and 4m. In order to improve the pipeline's rigid, a rib often be added at the outer surface. The pipeline usually adopts the flange to connect and add the asbestos washer with thickness 3mm to prevent air leakage. At present, the sealant and adhesive tape are also used to seal.

#### 7.1.3 The shape of the pipeline

##### 7.1.3.1 Type of the pipeline

The pipeline has ground and directs shape. The compare is as follows:

Ground pipeline	Square pipeline
less material, need large space, its' bending pipe and three-way pipe need long distance	need small space, can be equipped easily, adopt direct pipeline with the rate below 2.5 between length and width

##### 7.1.3.2 Specification of the pipeline

Ground pipeline should first adopt the basic series; the ratio of the long side and the short side of the direct pipeline should not be larger than 4:1. Pipeline should be outer diameter or outer border. Brick and concrete pipeline should be inner diameter or inner border.

Pipeline diameter					
Basic series	Accessorial series	Basic series	Accessorial series	Basic series	Accessorial series
100	80/90/100	300	300/320	900	850/900
120	110/120	360	340/360	1000	950/1000
140	130/140	400	380/400	1120	1060/1120
160	150/160	450	420/450	1250	1180/1250
180	170/180	500	480/500	1400	1320/1400
200	190/200	560	530/560	1600	1500/1600
220	210/220	630	600/630	1800	1700/1800
250	240/250	700	670/700	2000	1900/2000
280	260/280	800	750/800		

#### 7.1.4 The thickness of the pipeline

The following table takes steel pipeline as an example, the other thickness of the pipeline material can be looked up in the correlative standard of the book <<construction and accept criterion>>

Type Pipeline diameter (long border ) dimension	Ground pipeline	Square pipeline 600/630	
		Middle and low pressure system	High pressure system
80—320	0.5	0.5	0.8
340—450	0.6	0.6	
480—630	0.8	0.6	
670—1000	0.8	0.8	
1120—1250	1.0	1.0	1.0
1320—2000	1.2	1.0	1.2
2500—4000	1.2	1.2	1.2

### 7.2 Pipeline Installation

- 7.2.1 When the pipeline and its accessories pass through wall, board and roof, holes should be reserved in advance, and the dimension and location should meet the design demand.
- 7.2.2 The hanger can't be set at the air-outlet, valve, and examination-port and automatic control machine. And the suspender isn't suitable to be fixed at the flange.
- 7.2.31 The configure of the spot pipeline connection should not reduce its valid section.

	Horizontal installation	Vertical installation
Unconcealed Installation	$\delta \leq 3\text{mm/m}$ $\Delta \leq 20\text{mm}$	$\delta \leq 2\text{mm/m}$ $\Delta \leq 20\text{mm}$
Concealed Installation	Installation correct, no obvious tolerance	

$\delta$ —tolerance /meter  $\Delta$ —total tolerance

7.2.4 The hanger of insulated pipeline should set outside the insulation layer and can't injure the insulation layer.

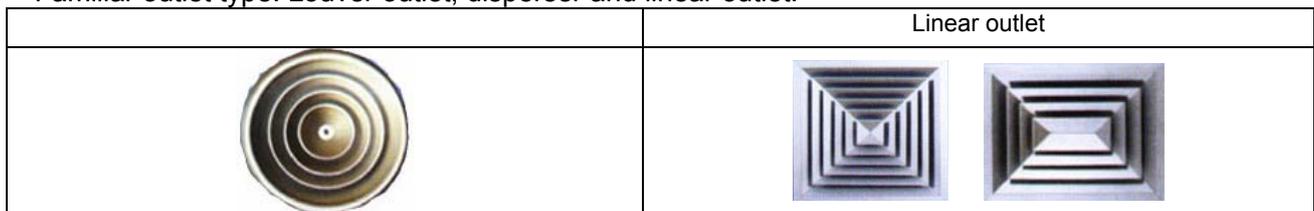
7.2.5 The distance between hangers:

	Diameter (long border) dimension < 400mm	Diameter (long border) dimension $\geq$ 400mm
Horizontal distance	$\leq 4\text{mm}$	$\leq 3\text{mm}$
Vertical distance	$\leq 4\text{mm}$ , the part for fixing of every vertical pipeline should not less than 2	

### 7.3 Posit the air-outlet

7.3.1 Type

Familiar outlet type: Louver outlet, disperser and linear outlet.



7.3.2 Specification

The specification of the air-outlet should be based on outer-diameter and outer-line.

7.3.2.1 Allowed tolerance of round air-outlet (mm)

Diameter	$\leq 250$	$> 250$
Allowed tolerance	0 ~ -2	0 ~ -3

7.3.2.2 Allowed tolerance of rectangle air-outlet (mm)

Diameter	$< 300$	300 ~ 800	$> 800$
Allowed tolerance	0 ~ -1	0 ~ -2	0 ~ -3
Diagonal length	$< 300$	300 ~ 500	$> 500$
Two diagonal length	$\leq 1$	$\leq 2$	$\leq 3$

7.3.3 Posit the outlet

**Air-outlet:**

In the design and construction, no matter cooling and heating, cooling and heating are sent to places through air-outlet, so it's important to select the right air-outlet.

**Many factors limit the selection of air-outlet, for example:**

- Indoor fitment
- Airflow in the room
- Installation and connection type of the air-outlet

The following issues should be noted:

- Try to assure the equality of the indoor parameters (especially the temperature)
- Prevent short-circuit of the air-inlet and air-outlet
- Prevent bolding cold air directly to people in summer

**Air-inlet:**

- The air-inlet shouldn't be set at places where people stays long to prevent short-circuit and open-circuit. If adopting side-sending, it is suitable to set at the same side of the air-outlet.
- For side air-inlet, normally, it is set under the same side. If adopting parallel air-sending, the air-inlet also is set underside mostly. In order to avoid dust and filter, the height from the underline of the air-inlet to the ground should at least keep 0.15m. For high big workshops, it is suitable to add air-inlet or discharge air-let to discharge surplus-heat.
- The distance from the air-inlet of the scatter setting to the wall should not less than half of the space between scatter settings.

**Fresh air-let:**

- Fresh air-let should be set at clean places and far away from discharge air-let.
- Fresh air-let should be set upside the discharge air-let.
- Fresh air-let should be set in the shade and avoid roof and west-wall. The distance from the ground is at least 2m and 1m in case of green ground. And shutter is needed under the air-let.

7.3.4 Façture and installation

- 7.3.4.1 Please use Midea's brand inlet panel.
- 7.3.4.2 Set a static-pressure box in the outlet to eliminate some noise
- 7.3.4.3 Pay attention to the insulation of pipeline and the condensing water in the outlet.
- 7.3.4.4 The appearance of the air-outlet hasn't obvious impress, nick and spot. The color should be consistent and welding points should be lubricous.
- 7.3.4.5 The match between inner sphere and outer sphere of sphericity air-outlet should rotate freely and isn't flexible after orientation.
- 7.3.4.6 The diffusing loop and modulation loop of the scatter setting should be at the same axis and space distributing in radial direction should be even.

## 8. Electric Installation

### 8.1 Brief Introduction

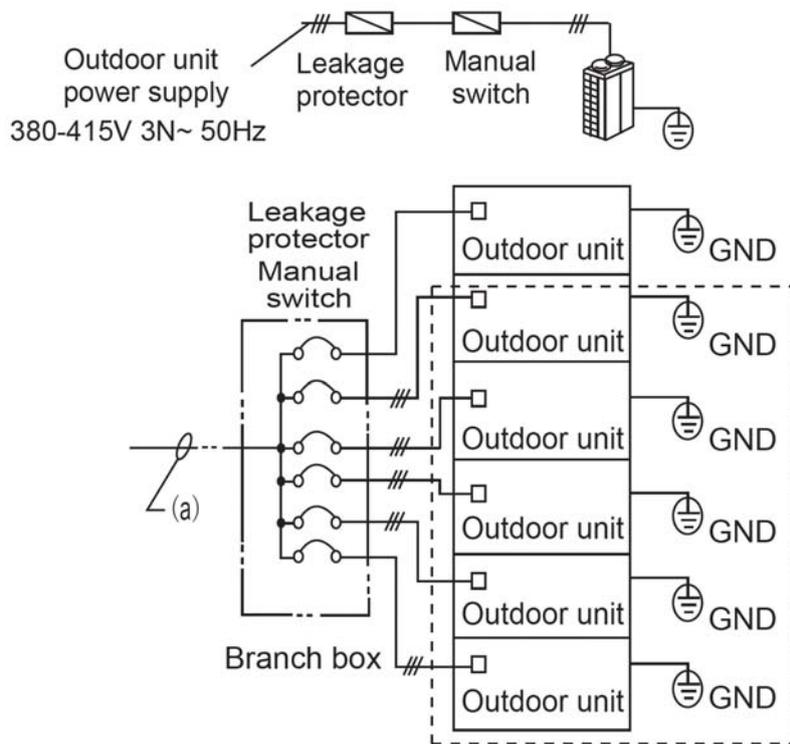
- 8.1.1 All wires, parts and material must conform to concerning national standards.
- 8.1.2 All wiring work must be done by qualified person.
- 8.1.3 Grounded well.
- 8.1.4 This chapter is just for reference.

### 8.2 Outdoor unit power wiring

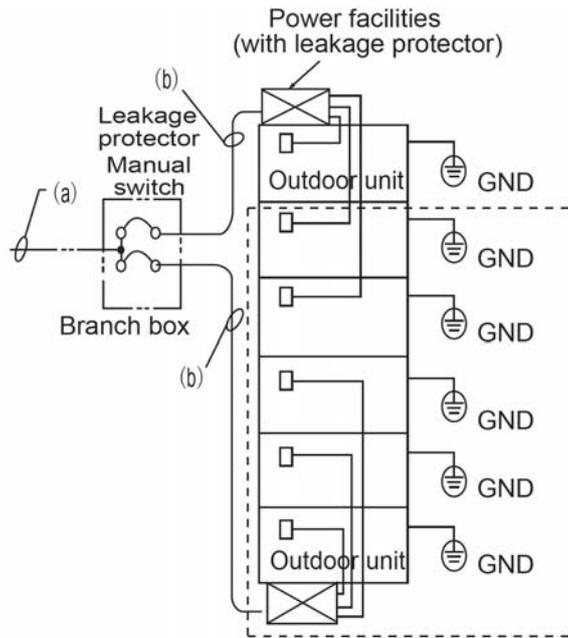
Separate power supply(without power facility)(see Table below)

Item Model	Power supply	Min. Power wire diameter(mm <sup>2</sup> ) Wiring of mental and synthetic resin		Manual switch(A)		Leakage protector
		Length of wire ≤20m(≤50m)	Grounding wire	Capacity	Fuse	
8HP	380-415V 3N~50Hz	16(29)	16	60	50	100mA 0.1sec or less
10HP		25(46) 35(78)				

Note: The wiring diameter and the length in the table indicate the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.



With power facilities



Select the wire diameter

Power wiring refer to the main wire (a) connecting to branch box and the wiring (b) between branch box and power facilities. Please select the wire diameter according to the following requirement.

Select wire diameter ( $\geq$ )(unit:mm<sup>2</sup>)

Total HP	< 20m	< 50m
8	10	25
10	10	25

Select the capacity of manual switch and fuse of the branch box.

See following table when without power facilities, depends on the outdoor unit it's connecting to.

See table below when there is power facility, depends on the total horsepower.

Total horsepower, capacity of manual switch and fuse

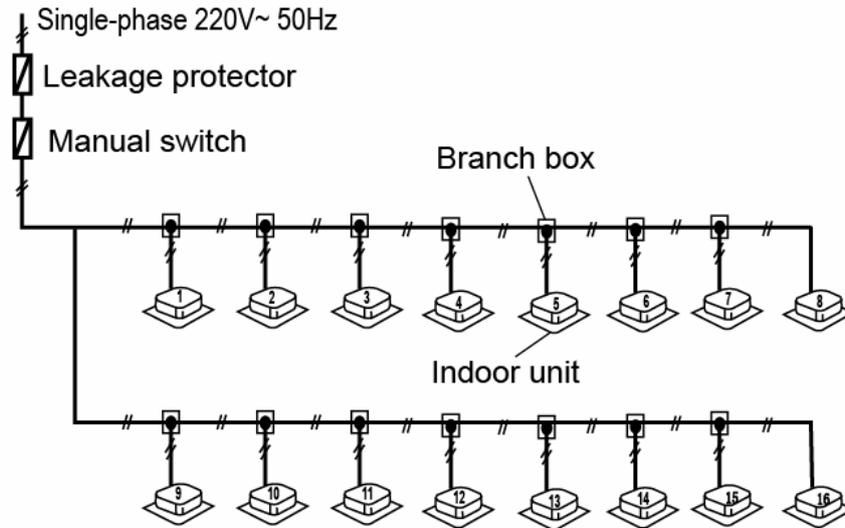
Total HP	Manual switch(A)	Fuse(A)
8~10	100	75

**8.3 Indoor Unit**

Model \ Item	Power supply	Min. Power wire diameter(mm)		Grounding wire	Manual switch(A)		Leakage protector
		Length of wire			Capacity	Fuse	
All models	Single-phase 220V~50Hz	2.5(30m)	3.5(50m)	$\Phi$ 2.5mm	30	15	20A 30mA 0.1Sec or less

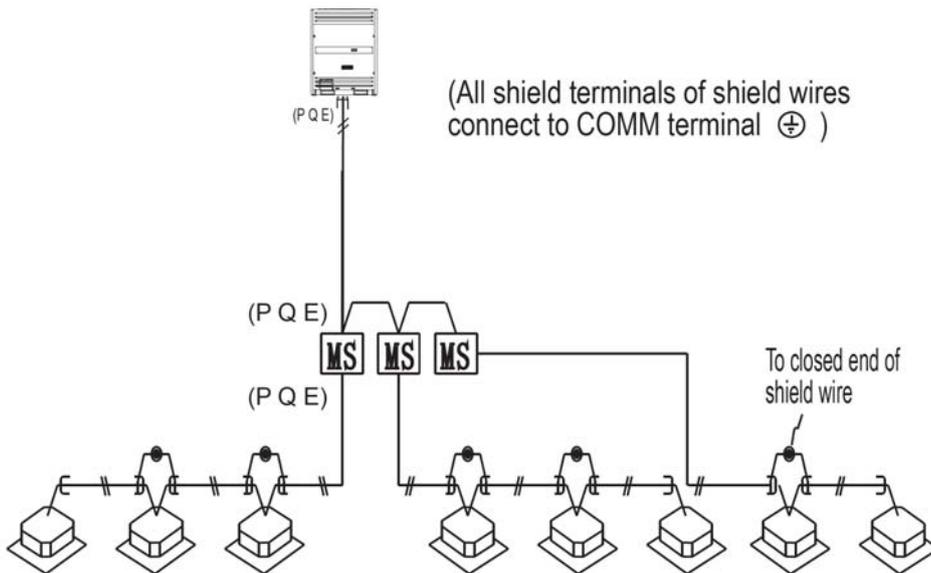
Note: The length in the table equals the value of power cord connecting parallel indoor units, indicating the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.

Indoor power supply:



- ① All the indoor units must be applied with a same supply.
- ② Please do not put the signal wire and power wire in the same wire tube; keep distance between the two tubes. (between power wire and signal wire: less than 10A--300mm, less than 50A--500mm.)
- ③ Signal wire of indoor/outdoor unit adopts 3-core shielded wire ( $\geq 1.0\text{mm}^2$ ) which has polarity, please connect it correctly.

### 8.4 Signal wire of indoor/outdoor units



Name	Type	Size
Signal wire of indoor/outdoor unit	3-core	$1.0\text{mm}^2 \leq 500\text{m RVVP-1.0mm}2 \times 3$

### 8.5 Test running

- ① Please follow the “gist for test running” on electric control box cover.
- ② Do not start test running until the outdoor unit has been connected to the power for 12hrs.
- ③ Make sure to open all valves before test running.
- ④ Do not make forced running. (or the protection device will not work, which is very dangerous.)