

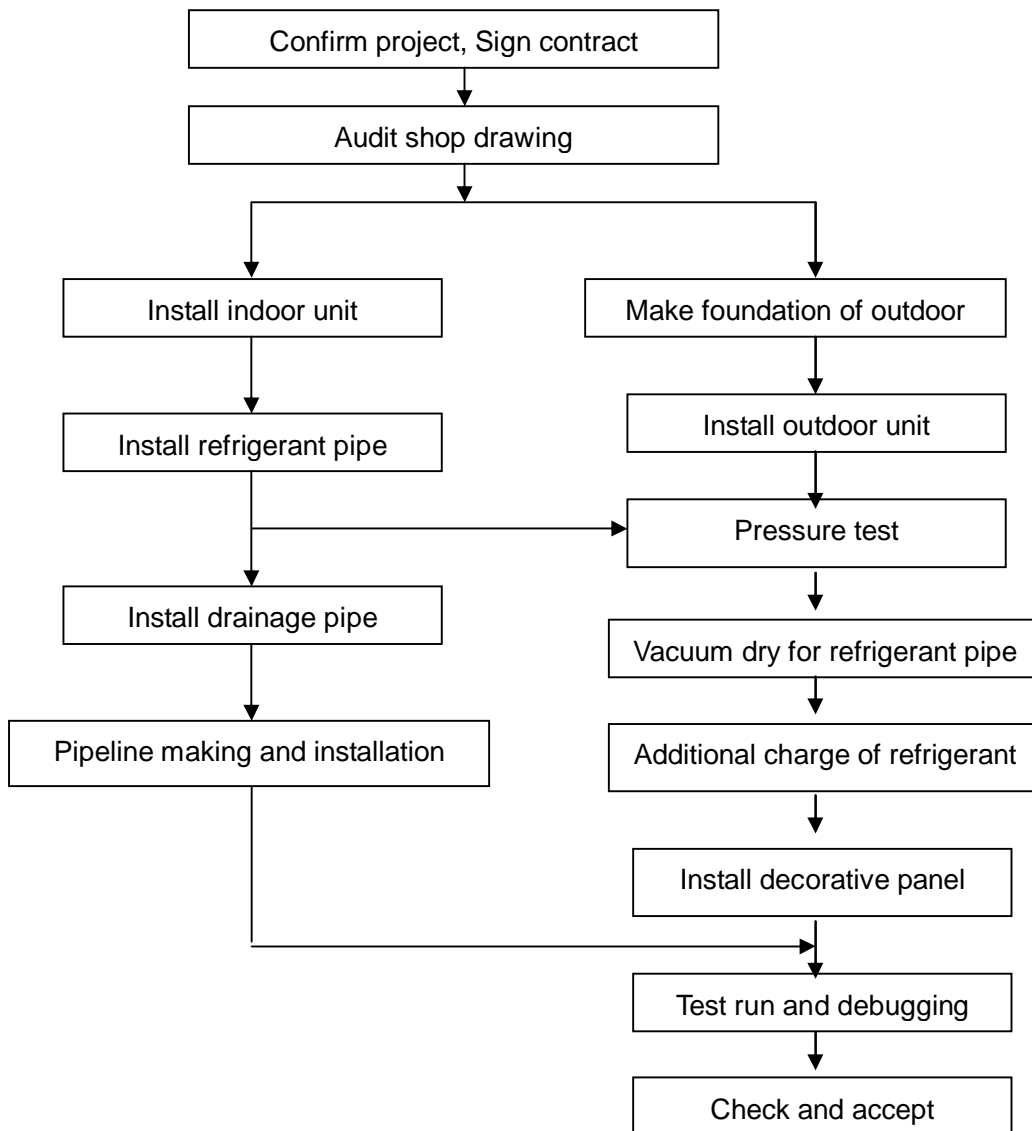
Part4

Installation

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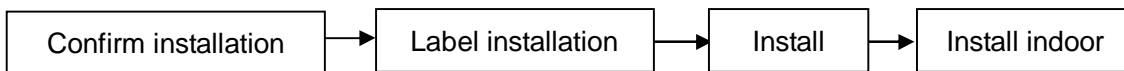
1. Summarize of Installation

1.1 Installation Procedure



1.2 Install indoor units

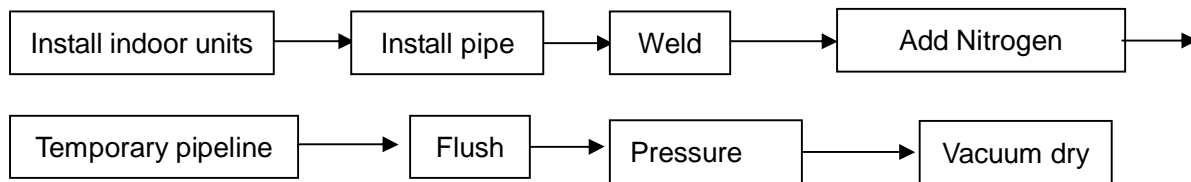
Procedure:



- Note:**
- 1.The hook must strong enough to sustain the weight of indoor unit.
 - 2.Check the models of indoor units before installation.
 - 3.Pay attention to the main devices, such as the pipeline.
 - 4.Hold enough places for maintenance.
 - 5.Hold service port (400x400).

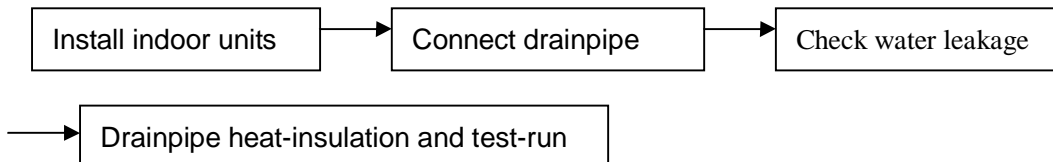
1.3 Refrigerant pipe

Procedure:



1.4 Drainage pipe

Procedure:



Note: It is no need to insulate the drainpipe if you choose the plastic pipe as drainpipe.

1.5 Electric wiring

1.5.1 Please select power supply for indoor unit and outdoor unit separately. Both indoor units and outdoor units should be grounded well.

1.5.2 The power supply should have specified branch circuit with leakage protector and manual switch.

1.5.3 Please put the connective wiring system between indoor unit and outdoor unit with refrigerant piping system together.

1.5.4 Power wiring should be done by professional electrician and complied with relevant National Electric Standard.

1.5.5 The power supply, leakage protector and manual of all the indoor units connecting to the same outdoor unit should be universal. (Please set all the indoor unit power supply of one system into the same circuit.)

1.5.6 It is suggested to use 2-core shielded wire as signal wire between indoor and outdoor units, multi-core wire is unavailable. Pay attention to the consistency. When signal wire parallel to the power wire, please keep enough distance (about 300mm at least) to prevent interference.

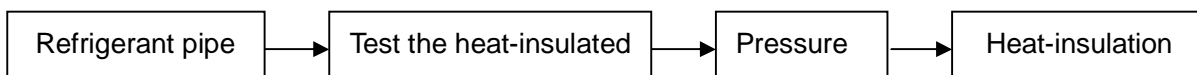
1.5.7 The power wire and signal wire can't be enlaced together.

1.6 Lay the indoor pipeline

Note: Collocate the air-outlet reasonably to prevent airflow short-circuit. Check the static pressure whether in the allowable range. The air filters should be easy to unpick and wash. Do pressure test on pipeline.

1.7 Heat-insulation

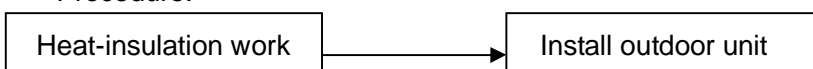
Procedure:



Note: For welding part, flare part and branch pipe, heat-insulation work must be done after finished the pressure test.

1.8 Install outdoor unit

Procedure:



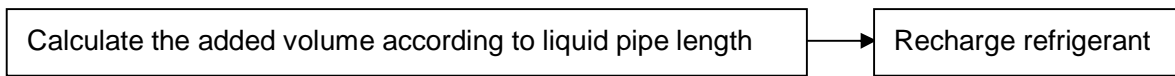
Note: 1. Gutter must be set around the foundation to drain the condensation water.

2. When installing outdoor units at the housetop, please check the strength of the housetop and pay attention not to

destroy the waterproof of the housetop.

1.9 Recharge refrigerant

Procedure:



Note: Please calculate the additional amount of refrigerant according to the formula that we supply to you, and the calculation result must be correct

1.10 Main points of test running and debugging

Please check the following issues before turning on the power:

1. Vacuum dry:

Make sure the vacuum degree accord with our requirement about 10^{-5} .

2. Wiring:

Includes the power wiring and communication wiring; Recheck the connection according to our corresponding wire diagrams. Especially, please remember our communication wire is polar; it means you must connect the communication wire correspondingly to the terminal block.

3. Additional charge of refrigerant:

Recheck the calculation formula and recalculate the total recharge volume according to our supplied formula.

4. Open the stop-valve of gas and liquid pipe with Allen key; Check leakage of stop-valve with soap water.

Please confirm whether the outdoor unit has been connected to the power for 12hr before start test running.

Test running:

Turn on all of the indoor units with cooling mode and set the temperature in 17degree with high fan speed first, after the system operated, test following operation parameters of the system, including indoor units and outdoor units parameters.

Indoor units parameter:

1. Air-inlet and air-outlet temperature of indoor units: generally, the temperature difference between them should be 10 degree according to and depended on the outdoor ambient temperature, we think it is normal.

2. Fan speed of air-outlet of indoor units: Generally, for the duct type indoor units, the fan speed of air-outlet should be 3m/s roughly.

3. Noise level: for the indoor units should be 40dB roughly.

Outdoor units parameter:

Ambient temperature; Air-outlet of units; Discharge temperature of compressor; voltage; current; discharge pressure; air-inlet pressure; air-inlet pipe temperature and compressor current.

After tested all of the cooling parameters, transfer the cooling mode to heating mode, then repeat the above process.

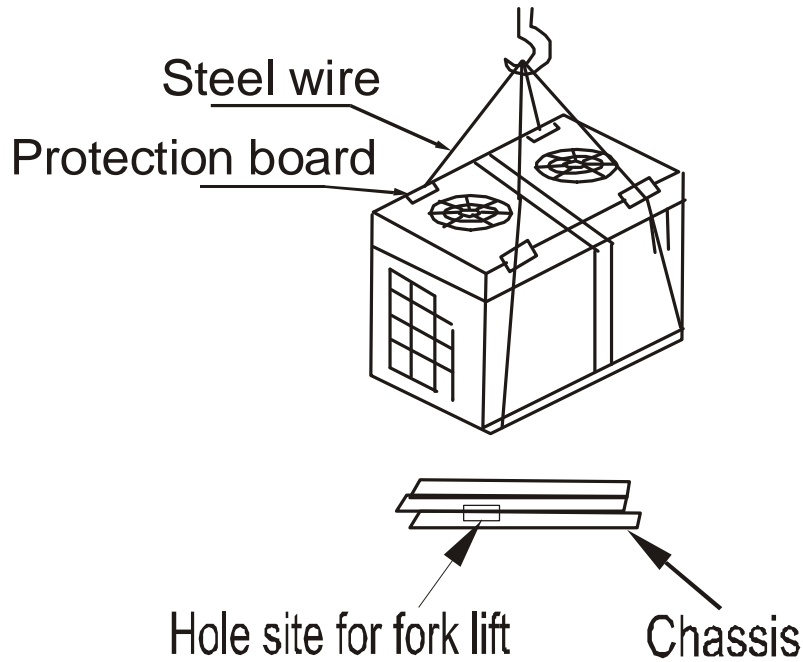
Note: Do not make forced running, otherwise the protection device will not work, which is very dangerous.

2. Installation of Outdoor unit

2.1 Hanging and Transportation

2.1.1 Sling the outdoor unit and carry it in with 4 steel wire (φ6mm or more)

2.1.2 Use soft board to protect the unit surface from scratch and distortion where contact the steel wire.



2.2 Required Installation Place and Installation Dimension

Please refer to the Outdoor Units.

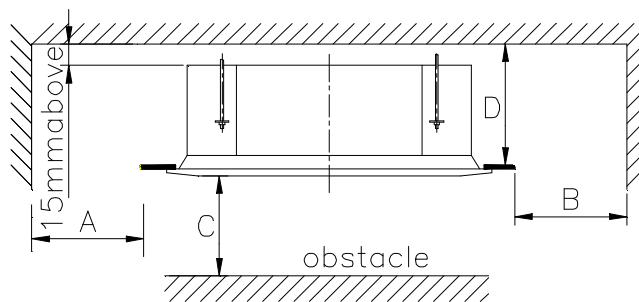
3. Installation of Indoor unit

3.1 Hanging and Transportation

Please refer to Installation Manual of Indoor unit.

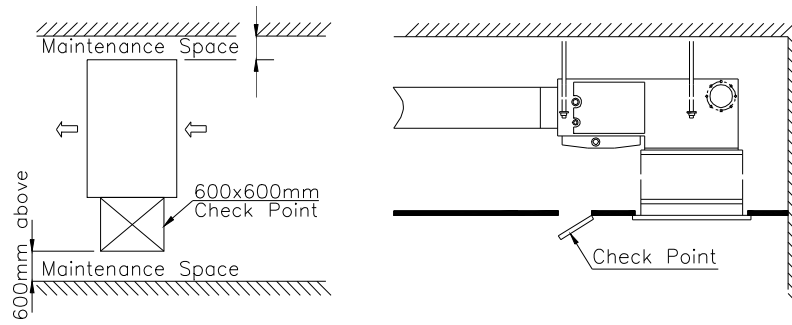
3.2 Required Installation Place

3.2.1 Cassette Type

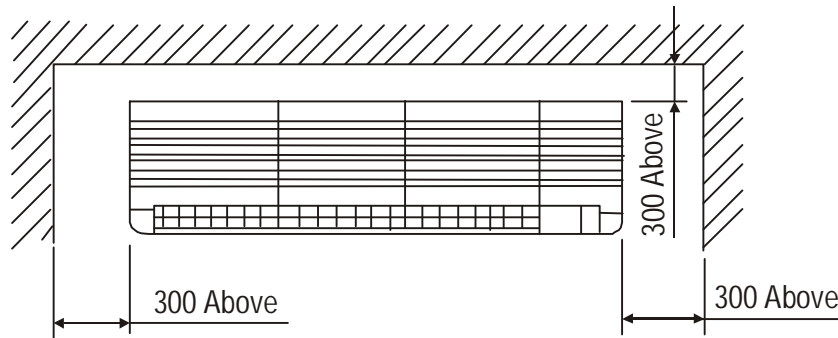


Dimension	A	B	C
model			
Four-way Cassette	1000mm above		2300mm above

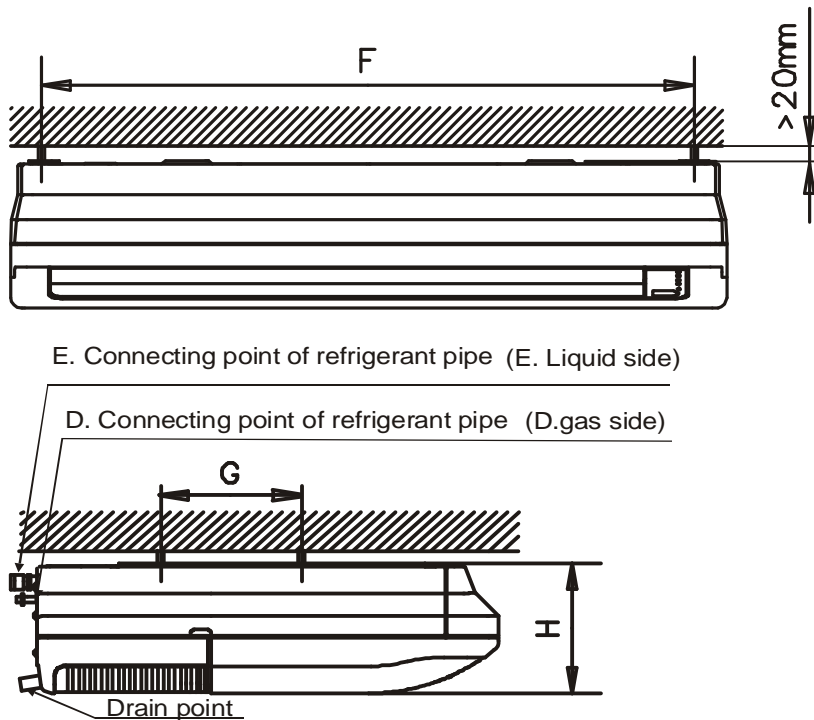
3.2.2 Duct Type



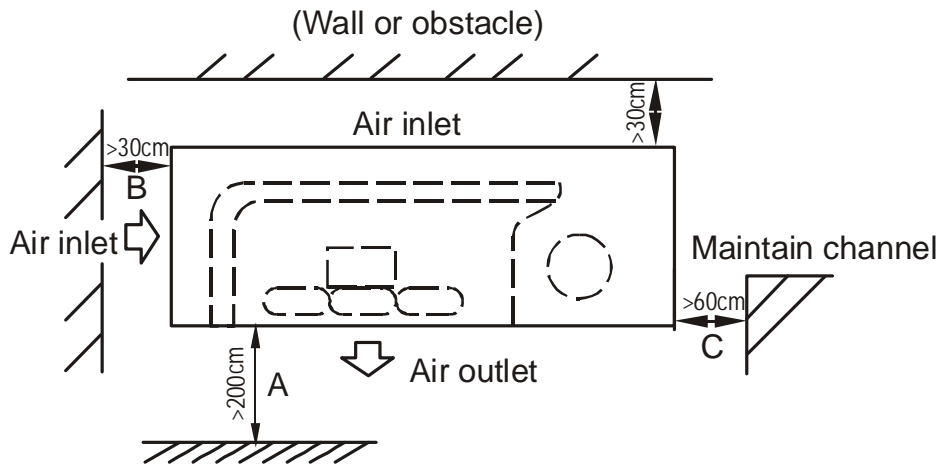
3.2.3 Wall Mounted Type



3.2.4 Ceiling and floor



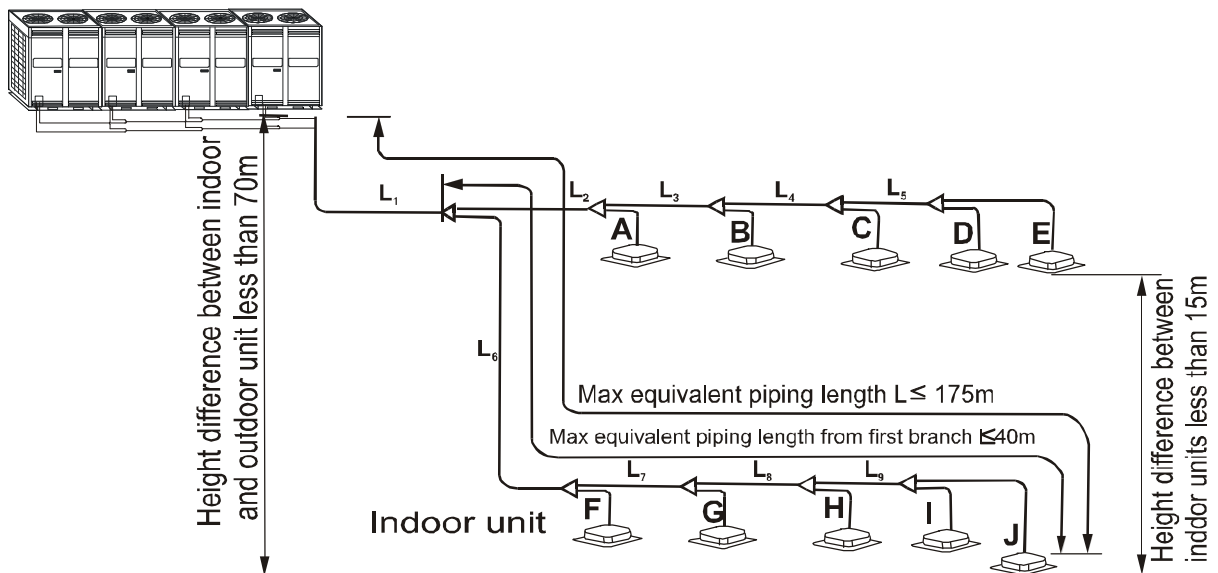
Capacity (KW)	A	B	C	D	E	F	G	H
2.2-8.0 KW	990	660	206	505	506	907	200	203
9.0-11.2 KW	1280	660	206	795	506	1195	200	203
14.0 KW	1670	680	224	1070	450	1542	200	240



4. Installation of Refrigerant Pipe

4.1 The permitted length and drop difference of refrigerant pipe

Outdoor unit (one or more units)



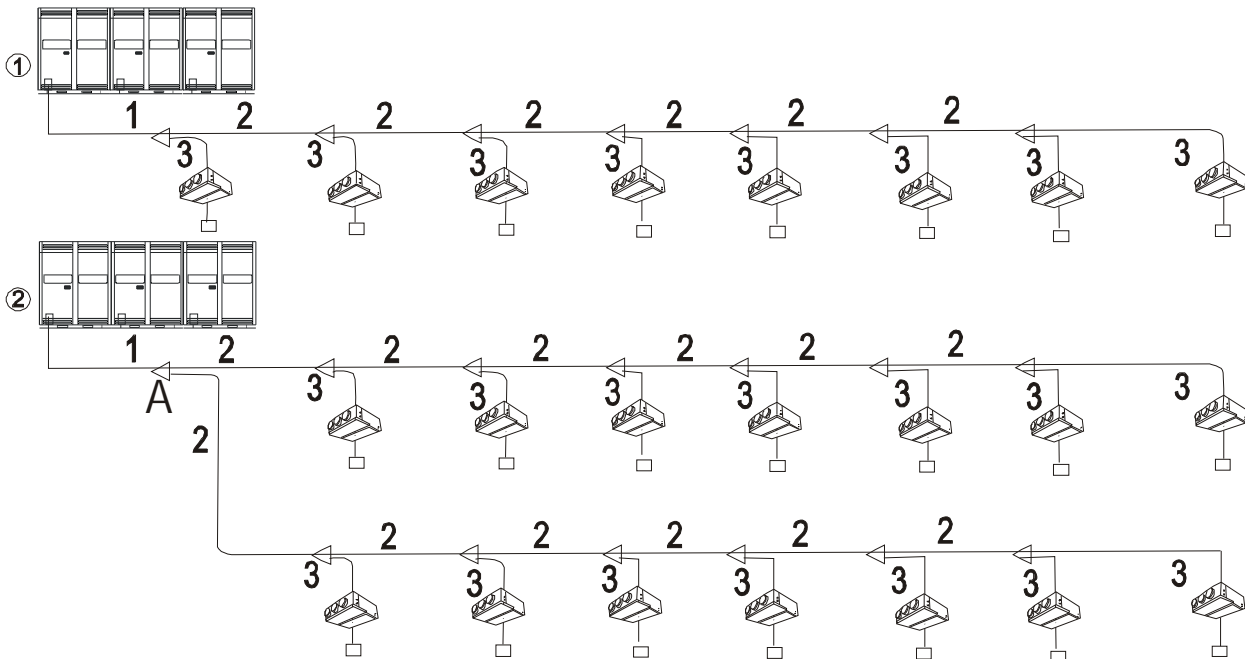
		Permitted length		Pipe
Pipe length	Pipe total length (actual length)	≤30HP	≤350 m	$L_1+L_2+L_3+\dots+L_8+L_9$
		> 30HP	≤500 m	$+A+B+C+\dots+H+J$
	Farthest pipe length (m)	Actual length	≤150m	$L_1+L_6+L_7+L_8+L_9+J$
	Equivalent length	≤175m		
	Equivalent length L of pipe from the first branch to the farthest one (m)		≤40m	$L_6+L_7+L_8+L_9+J$
Drop height	Drop height between indoor unit and outdoor unit	Outdoor unit up	≤70m	—
		Outdoor unit down	≤40m	—
	Drop height between indoor unit and indoor unit		≤15m	—

※ Conversion of the equivalent length: Convert into the direct pipe length

4.2 Pipe installation

4.2.1 Nomenclature of the refrigerant pipe

Type of the pipe	Connecting part	No.
Main pipe	Between outdoor unit and first branch joint	1, 2
	Between branch joints	
Branch pipe	Between branch joint and indoor unit	3



Remark: if using the second connection method, please make sure the capacity of the two side of the branch part A is nearly the same.

4.2.2 Select main pipe of outdoor side and first branch joint

according to the total capacity of outdoor units(see the table below).

Single Module: Dimension and connecting method of the main pipes of outdoor side and first branch joint to indoor unit.

Model	Main pipe		First branch joint
	Gas Side	Liquid Side	
MDV-D252W/CSN1	Φ25.4 Welding	Φ12.7 Flaring Nut	MDV-BY101N1
MDV-D280W/CSN1	Φ25.4 Welding	Φ12.7 Flaring Nut	MDV-BY101N1
MDV-D335W/CSN1	Φ25.4 Welding	Φ12.7 Flaring Nut	MDV-BY101N1
MDV-D400W/CSN1	Φ35.0 Welding	Φ15.9 Flaring Nut	MDV-BY102A
MDV-D450W/CSN1	Φ35.0 Welding	Φ15.9 Flaring Nut	MDV-BY102A

Several Modules: Dimension of the main pipes of outdoor side and first branch joint to indoor unit.

A: capacity of total outdoor units	Gas Side	Liquid Side	First branch joint
16<A≤ 28	Φ38.0	Φ19.0	MDV-BY102A
28<A≤ 32	Φ42.0	Φ22.0	MDV-BY103A
32<A≤ 48	Φ45.0	Φ22.0	MDV-BY104A
48<A≤ 64	Φ54.0	Φ25.4	MDV-BY104A

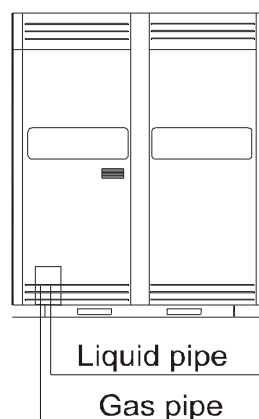
- Note:** 1. All the outdoor units in one combination must be in the same level.
2. Any other branch joints should not be bigger than the first branch joint.

4.2.3 Select the dimension of main pipe and the branch joint of indoor side according to the total capacity of indoor units following main pipe.

A: Total capacity (HP) of indoor units following main pipe of indoor side	Main pipe (Gas Side / Liquid Side)	Branch joint
$0 < A \leq 12$	$\Phi 22.0 / \Phi 9.53$	MDV-BY101N1
$12 < A \leq 16$	$\Phi 28.6 / \Phi 12.7$	MDV-BY101N1
$16 < A \leq 28$	$\Phi 35.0 / \Phi 15.9$	MDV-BY102A
$28 < A \leq 34$	$\Phi 38.0 / \Phi 19.0$	MDV-BY102A
$34 < A \leq 48$	$\Phi 42.0 / \Phi 22.0$	MDV-BY103A
$48 < A \leq 64$	$\Phi 45.0 / \Phi 22.0$	MDV-BY103A

4.2.4 Select the T-shape three-way pipes and Y-shape three-way pipes

4.2.4.1 Single module



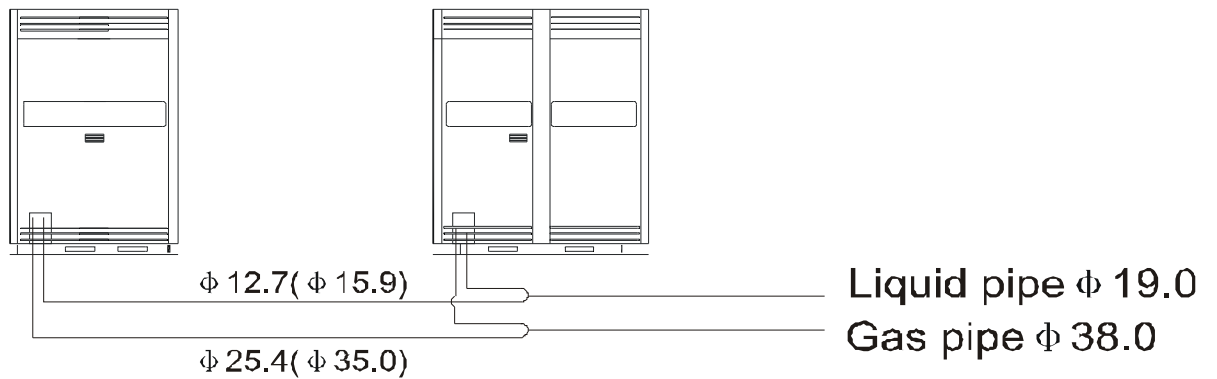
Note: it needn't gas balance pipe and the gas balance pipe must be sealed.

Capacity	Gas pipe	Liquid pipe
8HP、10HP、12HP	$\phi 25.4\text{mm}$	$\phi 12.7\text{mm}$
14HP、16HP	$\phi 35.0\text{mm}$	$\phi 15.9\text{mm}$

4.2.4.2 Two modules combination

4.2.4.2.1 The dimension pipe of liquid side and gas side

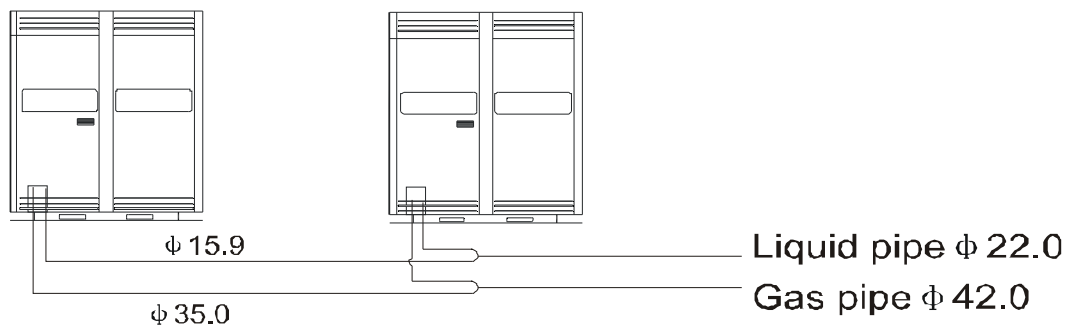
18Hp ≤ capacity ≤ 28Hp



Note:

The gas pipes and liquid pipes of the two outdoor units are connected with each other by Y shape three-way pipe, and the Y shape three-way pipe is MDV-BY102A

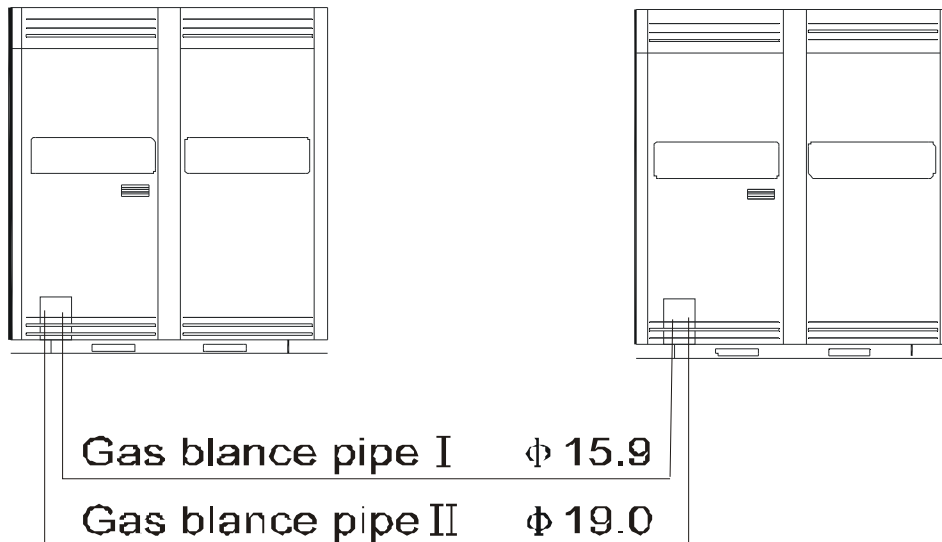
28Hp < capacity ≤ 32Hp



Note:

The gas pipes and liquid pipes of the two outdoor units are connected with each other by Y shape three-way pipe, and the Y shape three-way pipe is MDV-BY103A

4.2.4.2.2 The dimension of gas balance pipe

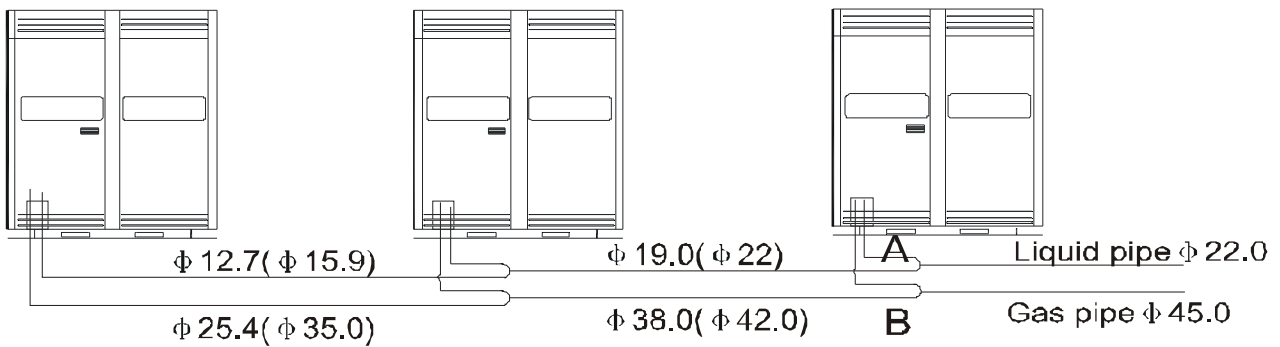


Please use wet cloth to prevent the valve from breaking when welding.

4.2.4.3 Three modules combination

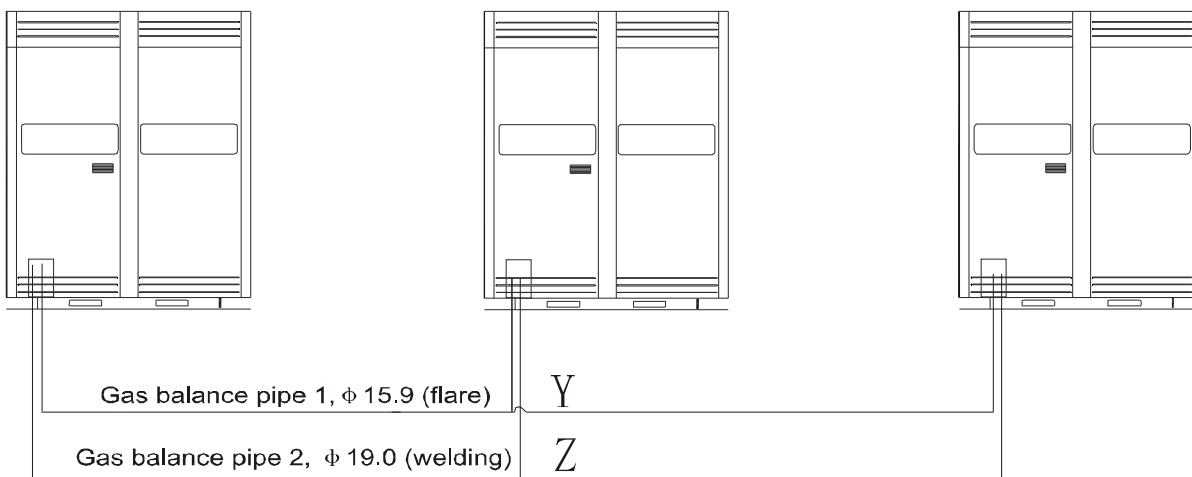
32HP < capacity \leq 48HP

4.2.4.3.1 The pipe dimension of liquid side and gas side



Note: the Y-shape three-way pipe A and B are MDV-DY01.

4.2.4.3.2 The dimension of gas balance pipe

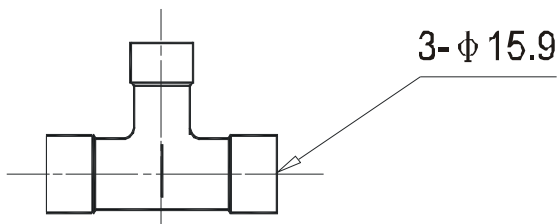


Note:

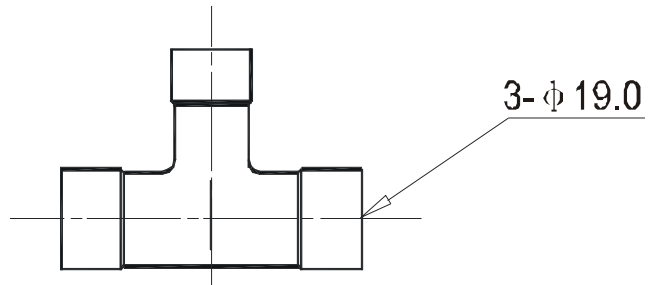
Y: T-shape three-way pipe of the gas balance pipe 1.

Z: T-shape three-way pipe of the gas balance pipe 2.

The dimension of the T-shape three-way pipe X、Y and Z.



Y: TXST-01V

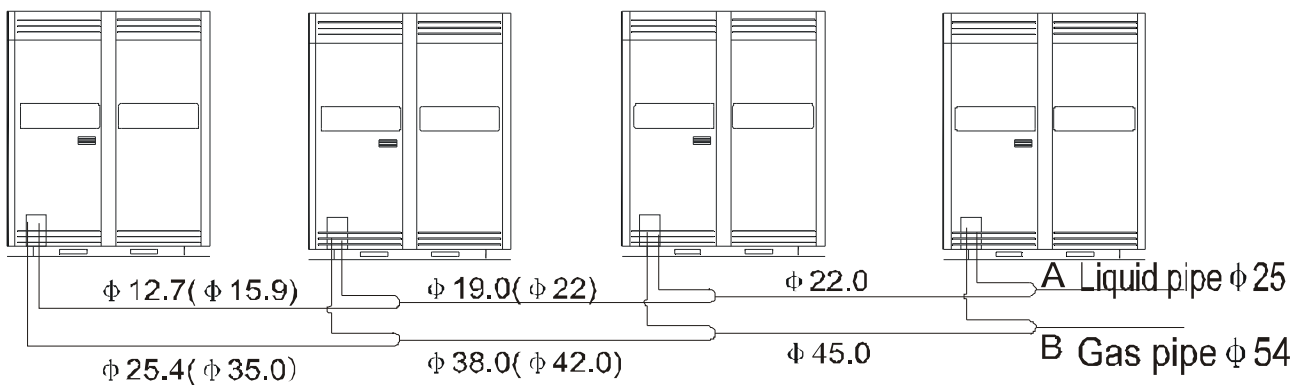


Z: TXST-28

4.2.4.4 Four modules combination

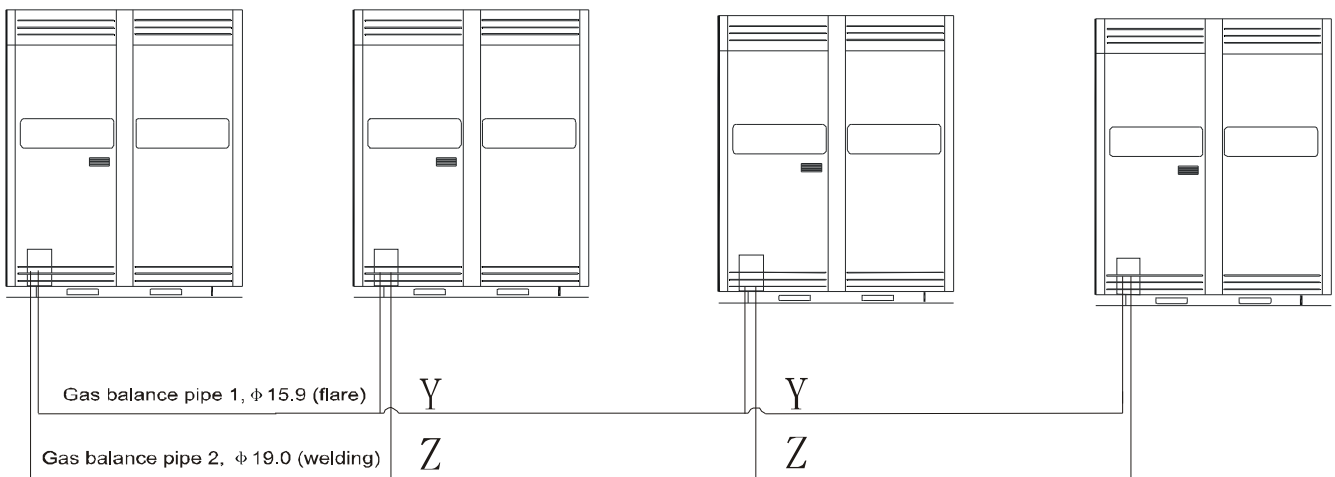
48HP < capacity ≤ 64HP

4.2.4.4.1 The pipe dimension of liquid side and gas side



Note: the Y-shape three-way pipe A and B are MDV-DY01

4.2.4.4.2 The dimension of gas balance pipe



Note: the T-shape three-way pipes Y and Z are same as that of three modules combination.

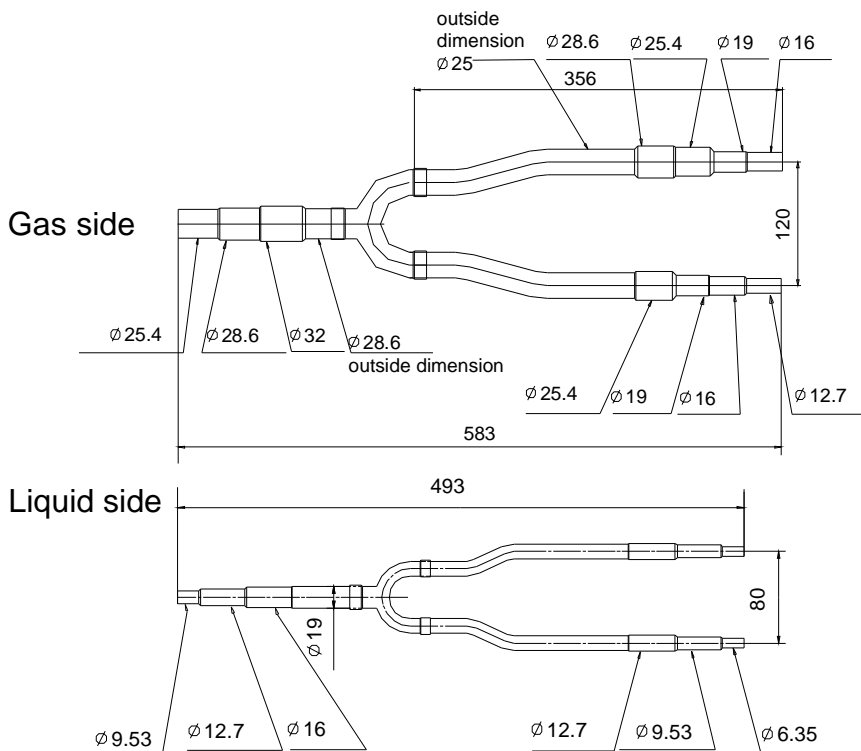
4.2.5 Connecting method

	Gas side	Liquid side
≤16 HP Outdoor unit	Welding	Flaring nut
>16 HP Outdoor unit	Welding	Welding
Indoor unit	Flaring nut	Flaring nut
Branch part	Welding	Welding

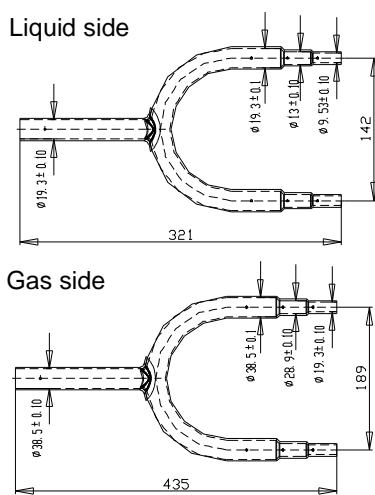
4.2.6 The dimension of branch joint

Please note: if no other note, the dimension marked in the picture is the inner dimension.

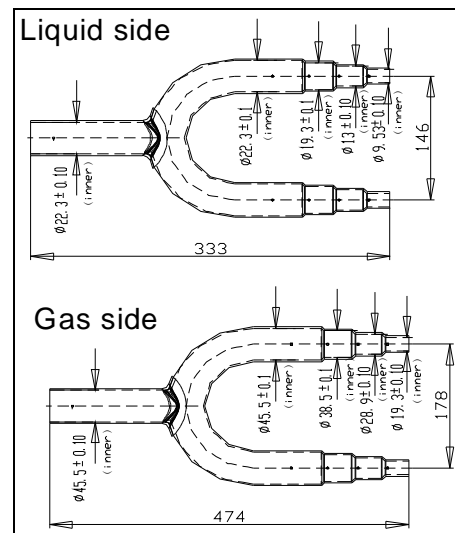
(1) BY101N1



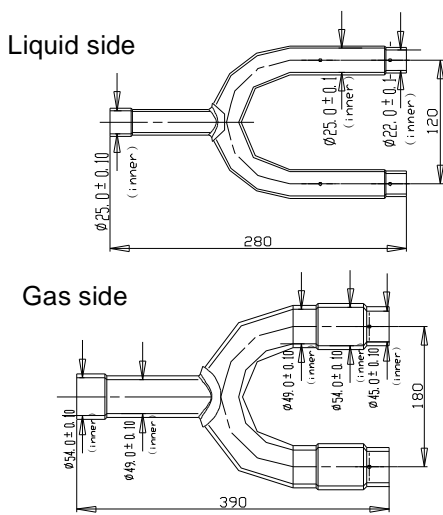
(2) BY102A



(3) BY103A

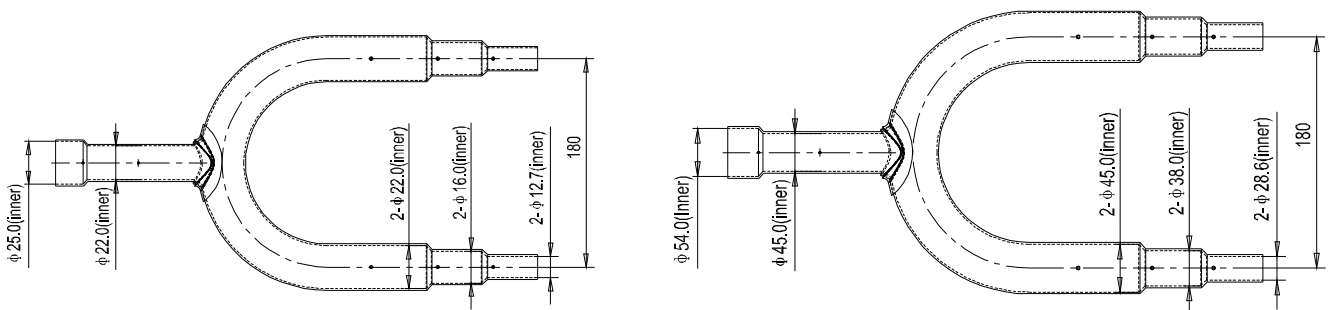


(4) BY104

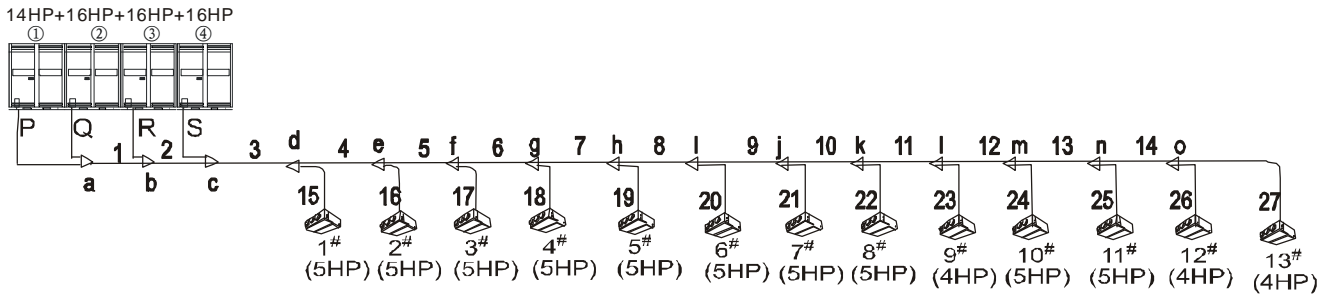


The dimension of Y-shape three-way pipe.

1) MDV-DY01



4.2.7 Sample installation: the combination of 14+16+16+16=62HP



4.2.7.1 Selection the refrigerant pipe

Type of pipe	Connecting part	No.
Main pipe	Between Y-shape three-way pipes or between Y-shape three-way pipe and first branch joint	1、2、3
	Between branch joints	4 to 14
Branch pipe	Between branch joint and indoor unit	15 to 27
Branch joint		“d” to “o”
Y-shape three-way pipe		“a” to “c”

4.2.7.2 The dimension of “P、Q、R、S” decided by the capacity of outdoor units.

Model	Gas Side	Liquid Side
MDV-D252W/CSN1-830	Φ25.0 (Welding)	Φ12.7 (Flaring Nut)
MDV-D280W/CSN1-830	Φ25.0 (Welding)	Φ12.7 (Flaring Nut)
MDV-D335W/CSN1-830	Φ25.0 (Welding)	Φ12.7 (Flaring Nut)
MDV-D400W/CSN1-830	Φ35.0 (Welding)	Φ15.9 (Flaring Nut)
MDV-D450W/CSN1-830	Φ35.0 (Welding)	Φ15.9 (Flaring Nut)

4.2.7.3 Select the Y-shape three-way pipes (a,b,c) for outdoor unit connection

According to the total capacity of outdoor units connected with Y-shape three-way pipe

NO.	Total capacity	Model of Y-shape three-way pipe	According to
a	28Hp ≤ 14+16 ≤ 34Hp	BY103A	4.2.2.2
b	34HP ≤ 14+16+16 ≤ 48HP	MDV-DY01	4.2.2.3
c	48HP ≤ 14+16+16+16 ≤ 64HP	MDV-DY01	4.2.2.4

4.2.7.4 Select the main pipe of outdoor side

According to the total capacity of outdoor units below main pipe

NO.	Outdoor units below main pipe	Total capacity	Pipe dimension (Gas/Liquid)	According to
“1”	①,②	28Hp ≤ 14+16 ≤ 32Hp	Φ42.0/Φ22.0	4.2.2.2
“2”	①,②,③	32HP ≤ 14+16+16 ≤ 48HP	Φ45.0/Φ22.0	4.2.2.3
“3”	①②③④	48HP ≤ 14+16+16+16 ≤ 64HP	Φ54.0/Φ25.0	4.2.2.4

4.2.7.5 Select the first branch joint “d”.

The first branch joint should be selected according to the total capacity of outdoor units, all the other branch joint must be smaller than the first branch joint.

A: capacity of total outdoor units(HP)	Range	First branch part
14+16+16+16=62HP	48 < A ≤ 64	MDV-BY104A

4.2.7.6 Select the main pipes and branch joints of indoor side.

According to the total capacity of indoor units below main pipe

No.: Main pipe/ branch joint	Indoor units below main pipe	A: Total capacity (HP) of indoor units below main pipe	Range	Pipe dimension (Gas/Liquid)	Branch joint
"14" / "o"	12# and 13#	4+4=8 HP	0<A≤ 12	Φ22.0/Φ9.53	MDV-BY101N1
"13" / "n"	11# to 13#	5+4+4=13 HP	12<A≤ 16	Φ28.6/Φ12.7	MDV-BY101N1
"12" / "m"	10# to 13#	5+5+4+4=18 HP	16<A≤ 28	Φ35.0/Φ15.9	MDV-BY102A
"11" / "l"	9# to 13#	4+5+5+4+4=22 HP	16<A≤ 28	Φ35.0/Φ15.9	MDV-BY102A
"10" / "k"	8# to 13#	5+4+5+5+4+4=27 HP	16<A≤ 28	Φ35.0/Φ15.9	MDV-BY102A
"9" / "j"	7# to 13#	5+5+4+5+5+4+4=32 HP	28<A≤ 34	Φ38.0/Φ19.0	MDV-BY102A
"8" / "i"	6# to 13#	5+5+5+4+5+5+4+4=37 HP	34<A≤ 48	Φ42.0/Φ22.0	MDV-BY103A
"7" / "h"	5# to 13#	5+5+5+5+4+5+5+4+4=42 HP	34<A≤ 48	Φ42.0/Φ22.0	MDV-BY103A
"6" / "g"	4# to 13#	5+5+5+5+5+4+5+5+4+4=47 HP	34<A≤ 48	Φ42.0/Φ22.0	MDV-BY103A
"5" / "f"	3# to 13#	5+5+5+5+5+5+4+5+5+4+4=52 HP	48<A≤ 64	Φ45.0/Φ22.0	MDV-BY103A
"4" / "e"	2# to 13#	5+5+5+5+5+5+5+4+5+5+4+4=57 HP	48<A≤ 64	Φ45.0/Φ22.0	MDV-BY103A

4.2.7.7 Select the pipe connected to indoor units.

According the dimensions of indoor unit's pipes to select the pipes which connected to indoor units.

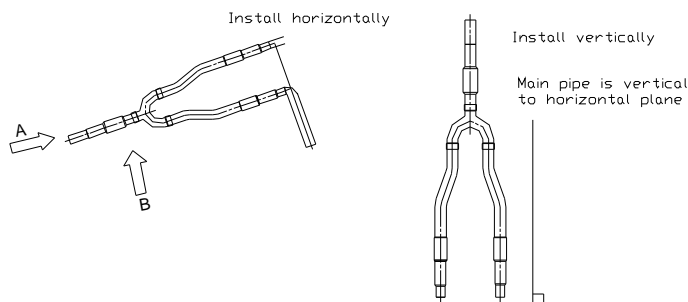
Please see the dimensions of indoor unit's pipes in the following table.

Refrigerant	Type (KW)	Gas side	Liquid side
R410A	Wall mounted 2.2~5.6 KW	φ12.7(Flaring nut)	φ6.35(Flaring nut)
	Ceiling and floor 3.6KW	φ12.7(Flaring nut)	φ6.35(Flaring nut)
	Ceiling and floor 4.5~14 KW	φ16.0 (Flaring nut)	φ9.53(Flaring nut)
	Four way cassette compact type 2.8~4.5 KW	φ12.7(Flaring nut)	φ6.35(Flaring nut)
	Four way cassette type 5.6~11.2 KW	φ16.0 (Flaring nut)	φ9.53(Flaring nut)
	Duct type 2.2~3.6 KW	φ12.7 (Flaring nut)	φ6.35(Flaring nut)
	Duct type 4.5~14 KW	φ16.0 (Flaring nut)	φ9.53(Flaring nut)

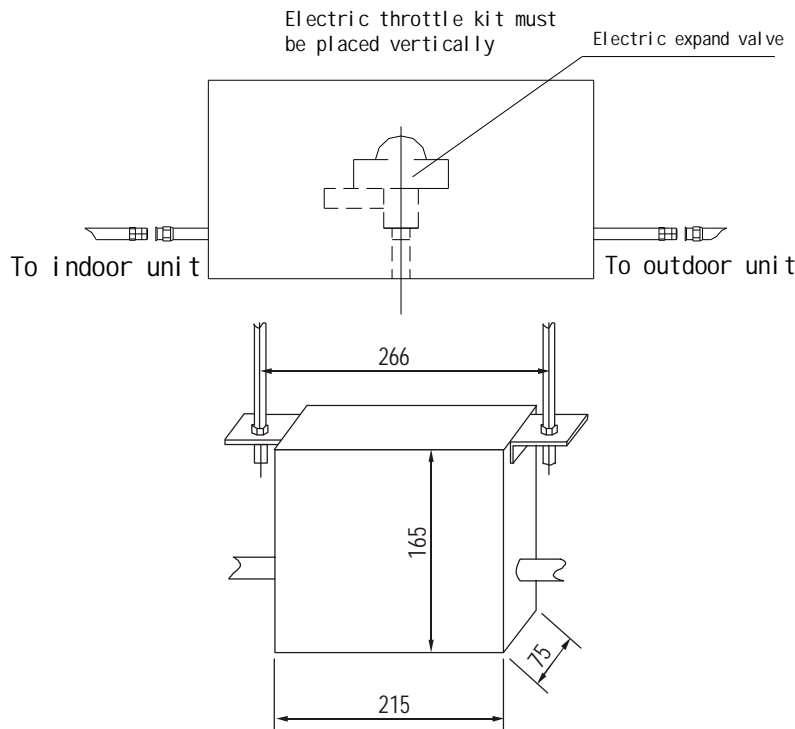
4.3 Precautions:

4.3.1 Refrigerant pipe must use the pipe with specified diameter.

4.3.2 Branch joint should be installed in horizontal mode or vertical mode.



4.3.3 Electronic throttle kit must be installed vertically



Note: Electronic throttle kit (ETK) must be installed vertically, slope and inversion are Forbidden.

4.3.4 Refrigerant fastness, the Refrigerant fastness, the distance between the support of the cross direction tube (copper tube):

Nominal diameter	Below 16	16—25	Above 32
Max. Distance (m)	1.0	1.5	2.0

4.3.5 Calculation of the pipe length

4.3.5.1 Available length of pipe = pipe length + the amounts of branch × branch equivalent length + the amounts of elbow × elbow equivalent length.

4.3.5.2 Conversion of the branch equivalent length: convert into the direct pipe length

4.3.5.3 Conversion of elbow equivalent length.

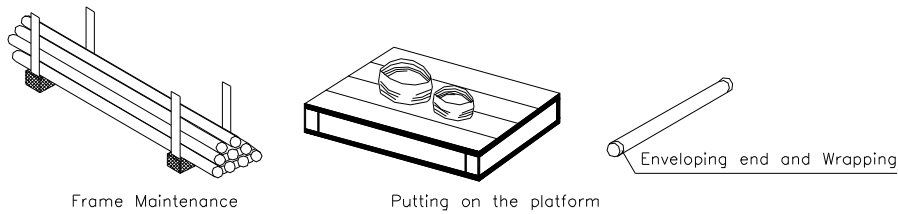
Liquid pipe dimension	Φ6.35	Φ9.53	Φ12.7	Φ15.9	Φ19.0	Φ22.0	Φ25.0	Φ28.6	Φ38.0	Φ45.0	Φ54.0	Φ67
Junction(90°elbow)	0.1	0.15	0.2	0.25	0.3	0.4	0.45	0.5	0.55	0.6	0.65	0.7

4.4 Installation work of Refrigerant pipe

4.4.1 Protection of Refrigerant pipe material

4.4.1.1 Transportation and storing of refrigerant pipe

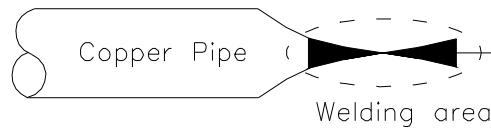
When transporting the pipes, please protect the pipes from wending and distortion. Please place a cap at the open end of the pipe in order to prevent water and mud entering, and store in the appointed site.



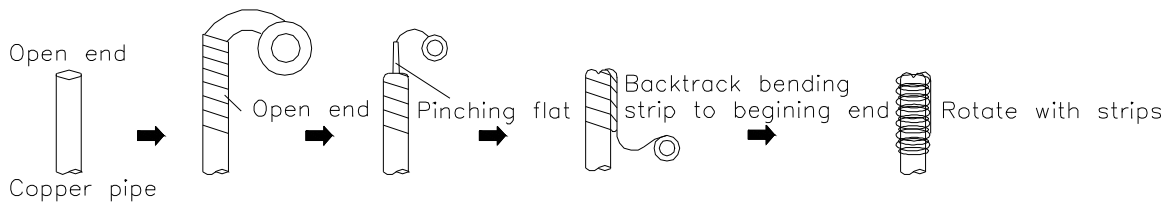
4.4.1.2 All the open tips of the pipes need to be protected. The best feasible means is Enveloping End, and you can select the easy means of Wrapping. Refer to the following table to select the means used in different sites.

Site	Period	Maintenance Means
Outdoor	Above three months	Envelop End
	Below three months	Envelop End or Wrapping
Indoor	No limit	Envelop End or Wrapping

(1) Envelop End: Welding the leak while clamping the end of the pipe.

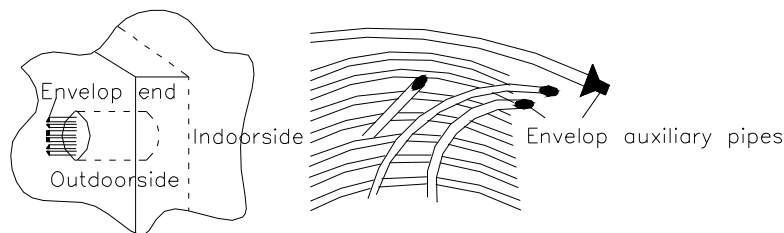


(2) Wrapping: Wrapping the pipe with polyethylene insulation tape.



(3) The following operation should be noted:

I When putting the pipe through the hole, filth can easily enter into the pipe.



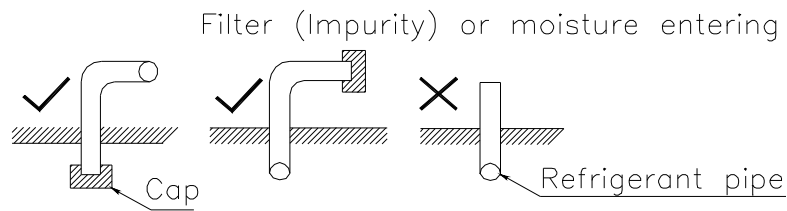
I When the pipe is outside, rainwater can easily enter into the pip, especially when the pipe is placed vertically.

4.4.1.3 Precautions:

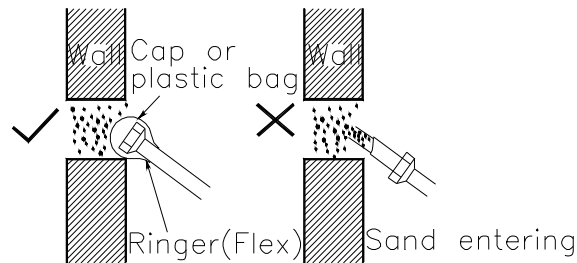
(1) Protect the open end of the pipe against moisture, dust and litter.

I Before finishing pipe connection, place a cap at the open end of the pipe.

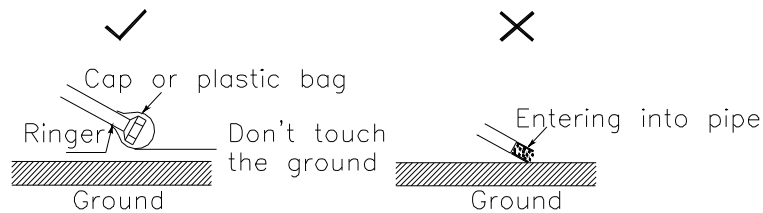
I Try to make the open end of the pipe thwart or downward.



(2) A cap must be placed on the end of the pipe when the pipe crosses the hole in the wall.

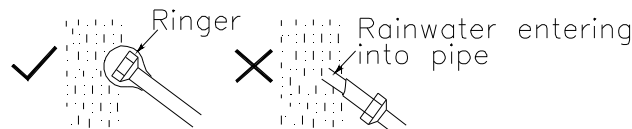


(3) Don't place the pipe on the ground directly or scratch with the ground.



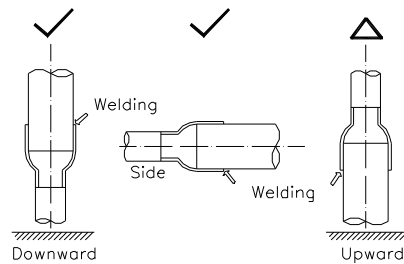
(4) Cut the pipe and remove burrs with the cut surface downward.

(5) Be sure to place a cap when raining.



4.4.2 Welding

4.4.2.1 Be sure to weld horizontally or downward, not upward.



4.4.2.2 Pay attention to the installation direction and angle to prevent oil-return or oil-accumulation..

4.4.2.3 It's necessary to charge nitrogen when welding.

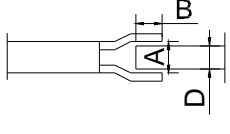
- (1) Be far away from fire and prepare fire extinguishers and water to prevent fire on field.
- (2) Be careful not to injure people.
- (3) Confirm the proper clearance between pipe and connector..
- (4) Check if the supporting structural members are strong enough.

I The traverse distances between supporting structural members are as follows:

Diameter (mm)	Below 20	25~40	50
Max. Distance (m)	1.0	1.5	2.9

I Min. inserting depth and clearance between connectors.

Unit: mm




Out .Diameter. (D)	Min. Inserting depth (B)	Clearance (A~D)
5<D<8	6	0.050~0.21
8<D<12	7	
11<D<16	8	0.050~0.27
16<D<25	10	
25<D<35	12	0.050~0.35
35<D<45	14	

4.4.3 Flare Connection

4.4.3.1 Before flaring, the auxiliary pipe must be annealed.

4.4.3.2 Use incision machine.

4.4.3.3 Dimension:



Shape	Diameter	O.D.	A
	3/8"	9.53	0.05—0.21
	1/2"	12.7	
	5/8"	15.88	0.05—0.27
	3/4"	19.05	

4.4.3.4 Smear oil at flaring part.

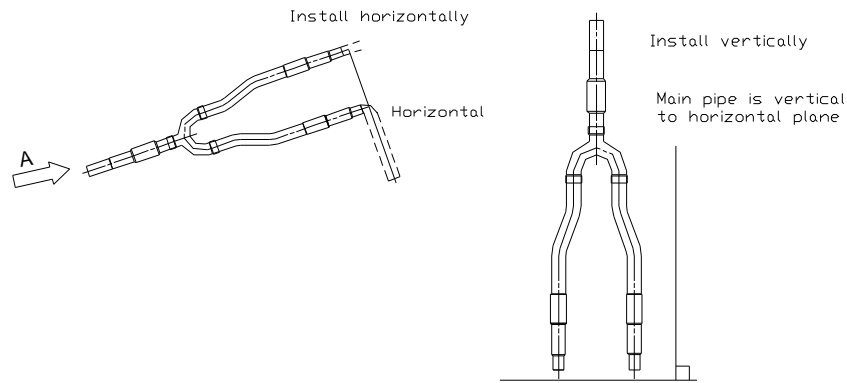
- (1) Be careful to get rid of burr.
- (2) Use two torques.
- (3) Use proper torque to fasten nut.

Dimension	Torque	
	(kgf ·m)	(N·cm)
1/4"(Φ6.4)	144—176	1440—1720
3/8"(Φ9.5)	133—407	3270—3990
1/2"(Φ12.7)	504—616	4950—6030
5/8"(Φ15.9)	630—770	6180—7540
3/4"(Φ19.0)	990—1210	9270—11860

4.4.4 Laying

4.4.4.1 Laying the refrigerant pipes

- (1) Mark the system clearly in every distance to prevent wrong connection.
- (2) The plane where the two branches locate should be parallel to the horizontal plane, or the main pipe of the branch part is vertical to the horizontal plane, which can avoid bad effect due to uneven distribution of gas and liquid.



4.4.4.2 Protection of outdoors refrigerant pipes

Sudden damndification also should be considered except heat-insulated layer. If the length of bare part is over 1m, a buckle-board must be added to the bare part.

4.4.4.3 Laying principle of MDV refrigerant pipes

- (1) Centralized laying, laying along the wall, and trying to make full of use of corridor.
- (2) After finishing laying, binding up the refrigerant pipes with white binding-strap. After finishing winding-up every pipe separately, please try to binding up all pipes together according to the diameters and the degree of tightness should be based on no feeling of flexible.
- (3) When installing the connection pipes and electric wires(power wire, control wire), they should be laid along the wall, turn the corner logically, flat and straight, parallel with each other and packed together. And try to avoid striding over and blocking the traffic.
- (4) The connection pipes and electric wires should be as short as possible.
- (5) Try to bind up all pipes and no bareness is allowed at the connecting part.

4.4.4.34 Precautions about laying refrigerant pipes

- (1) Pulling pipe: mark the system No. in the pipes to prevent wrong connection.
- (2) Make sure the support of the pipes is firm enough.

4.4.5 Refrigerant pipe Flushing

Refrigerant pipe flushing is a method to eliminate filter. It has three main functions:

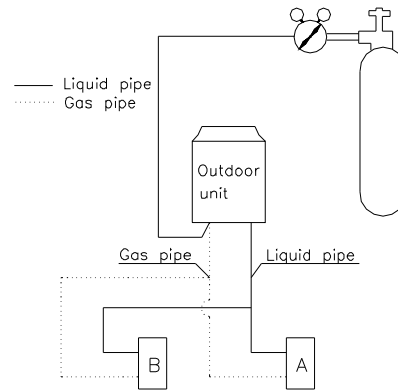
- I When nitrogen is insufficient, flushing can eliminate oxide air bubble.
- I When the end of the pipe can't seal well, flushing can eliminate filter and humidity.
- I Flushing can check the indoor/outdoor pipe connection.

Main procedure is as the following:

4.4.5.1 Install pressure modulation valve at the nitrogen cylinder. And the gas used must be nitrogen.

Carbon Dioxide will probably condense. And Oxygen will probably cause explosion.

4.4.5.2 Use charge pipe to connect pressure modulation valve and outdoor liquid pipe.



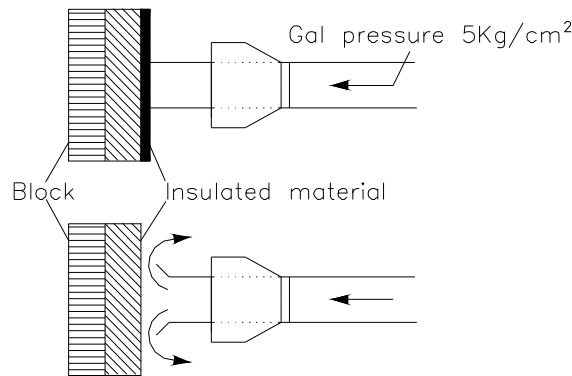
4.4.5.3 Jam well all the connection part in liquid side except indoor unit A.

4.4.5.4 Open the valve of nitrogen cylinder to 5kgf/cm².

4.4.5.5 Check if there is nitrogen in liquid pipe of indoor unit A.

4.4.5.6 Flushing

- (1) Use the insulating material in hand to resist the nozzle of gas main pipe of the indoor unit.
- (2) When the pressure can't be resisted, release the insulating material quickly (flushing for the first time), then use the insulating material to resist the nozzle again (flushing for the second time).



(3) The dunghill can be checked by putting a piece of cloth in the nozzle loosely. Occasionally, some dampness can be found, please dry the pipe thoroughly. Do as follows:

- I Scouring the inner part of the pipes with nitrogen until no dampness.
- I Do the vacuum drying procedure (see the MDV refrigerant pipes vacuum drying in detail)

4.4.5.7 Close the nitrogen main valve.

4.4.5.8 Repeat the above operations.

4.4.5.9 After finishing flushing the liquid pipes, then flushing the gas pipes.

4.4.6 Refrigerant pipe Pressure Test

4.4.6.1 Adding pressure operation

(1) During pressure test, the valves on gas side and liquid side should be full-closed.

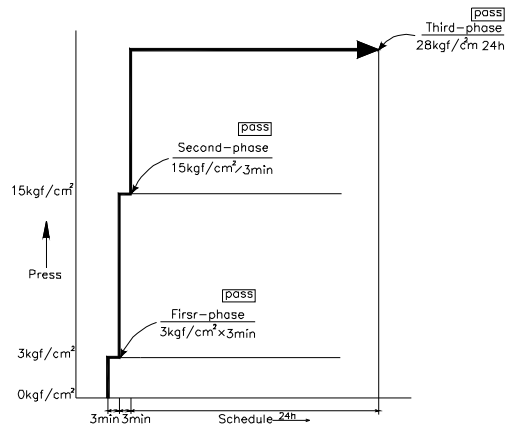
Because nitrogen may enter into the outdoor circulation system, strengthening the valves before adding pressure operation.

(2) For every refrigerant system, add pressure slowly and orderly from gas and liquid side.

(3) And the gas used must be nitrogen. Carbon Dioxide will probably condense. And Oxygen will probably cause explosion.

(4) The time must be over 24h in the third-phase of adding pressure.

(5) Sketch map of adding pressure.



4.4.6.2 Control diagram for adding pressure by stages

No.	Phase (add pressure by stages)	Standard
1	Add pressure 3.0kgf/cm ² G for more than 3 minutes to check big leakage.	No pressure falling
2	Add pressure 15.0kgf/cm ² G for more than 3 minutes to check big leakage.	
3	Add pressure 38.0kgf/cm ² G for more than 24 hours to check small leakage.	

4.4.6.3 Observe the pressure

(1) Add and keep pressure **38.0kgf/cm²** for more than 24 hours, pass if there's no pressure drop. If the pressure falls, it should be corrected. After that, if the pressure is still lower than that when adding pressure, the leakage should be checked out and corrected.

(2) Correcting method

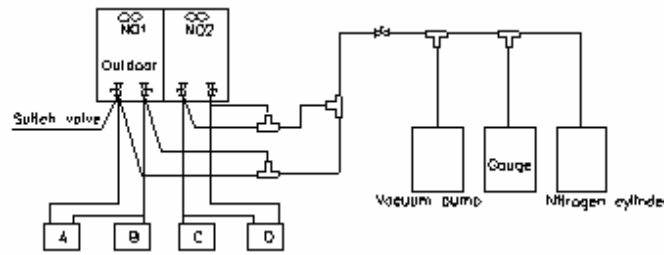
If there's 1°C difference in temperature, there will be 0.1kgf/cm² difference in pressure.

Correcting formula: actual value = pressure in the stage of adding pressure + (temperature in the stage of adding pressure – observed temperature) x 0.1 kgf/cm²

Compare the correcting value and adding pressure value to see whether the pressure falls.

(3) Look up the leakage point in three phases when the pressure falls.

- I Check the leakage by ears---can hear loud noise of the leakage.
- I Check the leakage by hands---put the hands in the pipe connection to check the leakage.
- I Check the leakage by suds---the leakage point will emit air bubble.
- I Check the leakage by halogen detector.
- I Use halogen detector when finding the tiny leakage point or pressure falls but no leakage point can be found during the adding pressure test.
- I Place the nitrogen under 3.0 kgf/cm².
- I Add fluorine to the point 5.0 kgf/cm² (mixed state of fluorine and nitrogen).
- I Check by halogen detector, alkyl detector, electric detector and so on.
- I If no leakage can be found, continue to add pressure to 28.0 kgf/cm² , then check again.

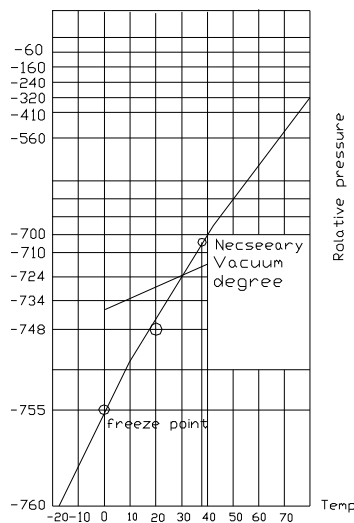


4.4.6.4 Precautions

- (1) The maximum pressure in gas proof test should not exceed 28.0 kgf/cm².
- (2) If the pipe is too long, check by sections.
 - I Indoor side
 - I Indoor side + Vertical pipe
 - I Indoor side+ Vertical pipe +Outdoor side

4.4.7 Vacuum Dry for Refrigerant pipe

4.4.7.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water (steam temperature) is 100°C. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.



4.4.7.2 Selection of vacuum pump

- (1) Select the vacuum pump. (Normally the anticipative demand achieves -755mmHg)
- (2) Big discharge volume (over 40l/min). Check the vacuum calculator before operation to make sure its measure range achieve below -755mmHg.

Boiling point of water (°C)	Gas pressure (mmHg)	Vacuum degree (mmHg)
40	55	-705
30	36	-724
26.7	25	-735
24.4	23	-737
22.2	20	-740
20.6	18	-742

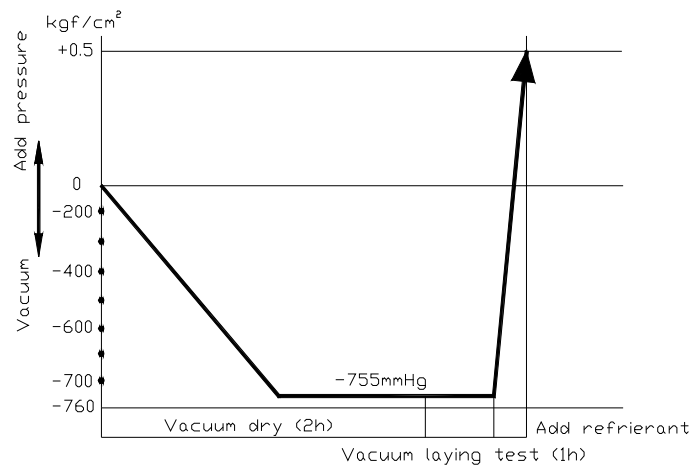
17.8	15	-745
15.0	13	-747
11.7	10	-750
7.2	8	-752
0	5	-755

4.4.7.3 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

(1) Common vacuum dry procedure

- I Vacuum dry (for the first time)---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- I If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- I If the pump can't achieve -755mmHg after pumping 3 hours, please check if there's some leakage points.
- I Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- I Vacuuming from liquid pipe and gas pipe at the same time.
- I Sketch map of common vacuum dry procedure.



(2) Special vacuum dry procedure

I This vacuum dry method is used in the following conditions:

- u There's moisture when flushing the refrigerant pipe.
- u Rainwater may enter into the pipe.

I Vacuum dry for the first time 2h pumping

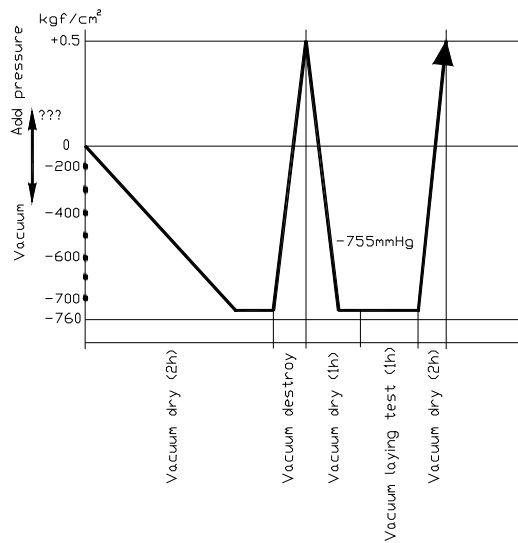
(3) Vacuum destroy for the second time Fill nitrogen to 0.5Kgf/cm2

Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

(4) Vacuum dry for the second time.....1h pumping

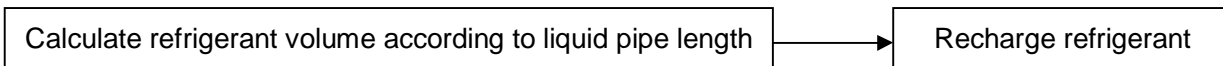
Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure ③ and ④.

- (5) Vacuum placing test 1h
- (6) Sketch map of special vacuum dry procedure



4.5 Additional Charge of Refrigerant

Procedure



- (1)The refrigerant needed by the pipes installed on fields is not filled in the factory.
After finishing installation, add refrigerant when the length of liquid pipe on field is over 0 m.

(2)Calculation

	Pipe type	Formula	Value
Liquid pipe	P1=Total real length of Φ6.35 liquid pipe (m)	V1=P1×0.022 kg/m	V1
	P2=Total real length of Φ9.53 liquid pipe (m)	V2=P2×0.060 kg/m	V2
	P3=Total real length of Φ12.7 liquid pipe (m)	V3=P3×0.110 kg/m	V3
	P4=Total real length of Φ15.9 liquid pipe (m)	V4=P4×0.170kg/m	V4
	P5=Total real length of Φ19.0 liquid pipe (m)	V5=P5×0.250kg/m	V5
	P6=Total real length of Φ22.0 liquid pipe (m)	V6=P6×0.350kg/m	V6
	P7=Total real length of Φ25.0 liquid pipe (m)	V7=P7×0.520kg/m	V7
	P8=Total real length of Φ28.6 liquid pipe (m)	V8=P8×0.680kg/m	V8
Branch joint	B1=quantity of branch part of BY101N1	V9=B1×0.100 kg	V9
	B2=quantity of branch part of BY102A	V10=B2×0.145 kg	V10
	B3=quantity of branch part of BY103A	V11=B3×0.190 kg	V11
	B4=quantity of branch part of BY104A	V12=B4×0.205 kg	V12
Y-shape Three-way pipe	Y1= quantity of branch part of MDV-DY01	V13=Y1×0.230 kg/m	V13
Total refill volume (kg)		V=V1+V2.....V12+V13	V

- I Write the added volume in the outdoor nameplate.
- I The added volume must be measured with electron scale.
- I The total real length includes two parts: one is total pipe length; the other is the equivalent length of curves or elbows.

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

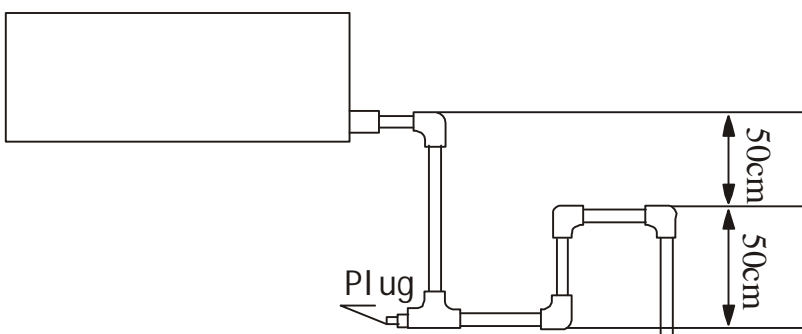
- (1) The diameter of drainpipe should meet the drainage requirement at least.
- (2) the drainpipe should be heat-insulated to prevent atomization.
- (3) Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can act correctly.
- (4) All connection should be firm.
- (5) Wipe color on PVC pipe to note connection.
- (6) Climbing, horizontal and bending conditions are prohibited.
- (7) The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- (8) Heat-insulation should be done well to prevent condensation.
- (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.

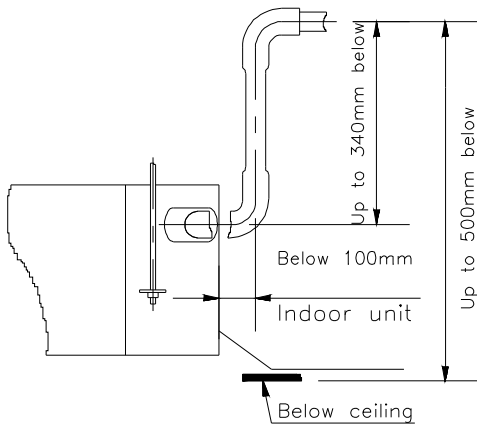
5.2.2 Every indoor unit needs one drainpipe trap.

5.2.3 A plug should be designed to do cleaning.



5.3 Upward drainage (drain pump)

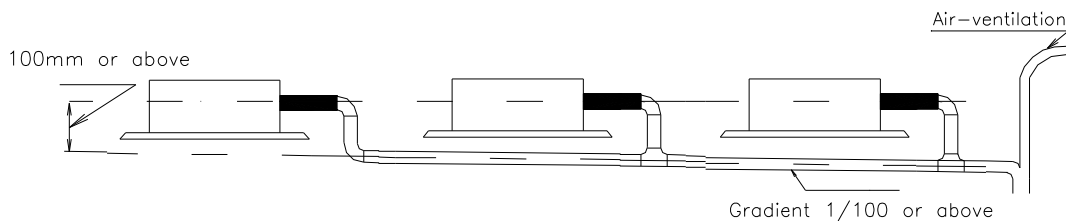
5.3.1 To ensure the gradient 1/100, the drainpipe can be lifted to 340mm. After upwards, place downwards, or it will cause malfunction to drain pump.



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)

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

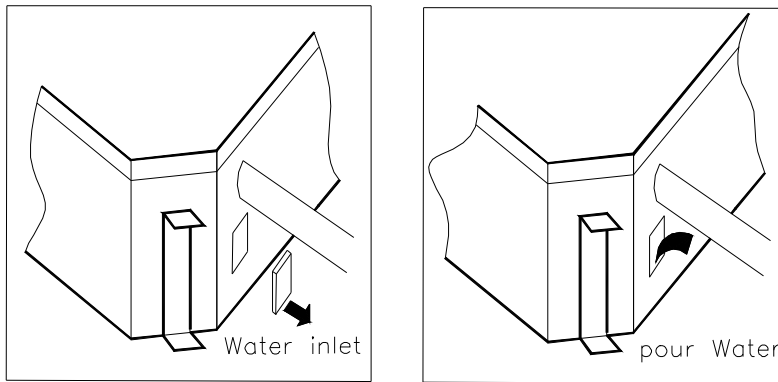
5.5 Drainage test

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

(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.



- (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.
 - (3) Stop the air conditioner running, turn off the power, and put back the cover.
 - I 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.
 - I 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

- (1) Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.
- (2) After the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

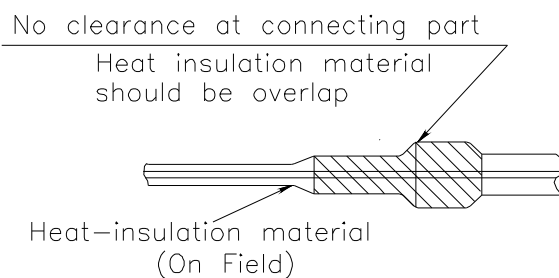
6.2.2 Insulation for non-jointing parts and non-connection parts.

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.

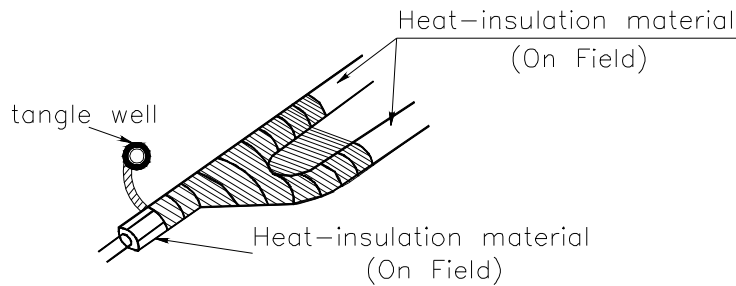
6.2.3 Insulate for the jointing area, expanding area and the flange area

- (1) Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes
- (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

6.3.1 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

7.1.1The 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

(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

(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	
		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 configure of the spot pipeline connection should not reduce its valid section.

7.2.3 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.

7.2.4 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	

δ —tolerance /meter Δ —total tolerance

7.2.5The hanger of insulated pipeline should set outside the insulation layer and can't injure the insulation layer.

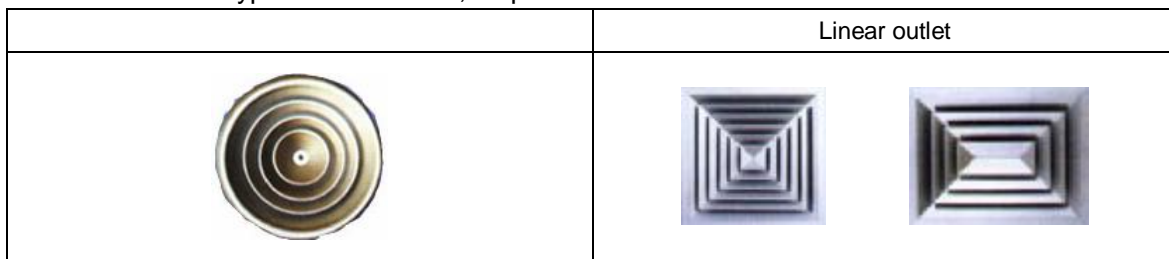
7.2.6The distance between hangers:

	Diameter (long border) dimension< 400mm	Diameter (long border) dimension≥ 400mm
Horizontal distance	≤4mm	≤3mm
Vertical distance	≤4mm, the part for fixing of every vertical pipeline should not less than 2	

7.3 Posit the air-outlet

7.3.1Type

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.

(1)allowed tolerance of round air-outlet (mm)

Diameter	≤250	>250
Allowed tolerance	0 ~ -2	0 ~ -3

(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	≤1	≤2	≤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:

- (1) Indoor fitment
- (2) Airflow in the room
- (3) Installation and connection type of the air-outlet

The following issues should be noted:

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

Air-inlet:

- (1)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.
- (2)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.
- (3)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:

- (1)Fresh air-let should be set at clean places and far away from discharge air-let.
- (2)Fresh air-let should be set upside the discharge air-let.
- (3)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

- (1)Please use Midea's brand inlet panel.
- (2)Set a static-pressure box in the outlet to eliminate some noise
- (3)Pay attention to the insulation of pipeline and the condensing water in the outlet.
- (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.
- (5)The match between inner sphere and outer sphere of sphericity air-outlet should rotate freely and isn't flexible after orientation.
- (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

※ Electric installation must be carried out according to National Standard.

※ This chapter is just for reference.

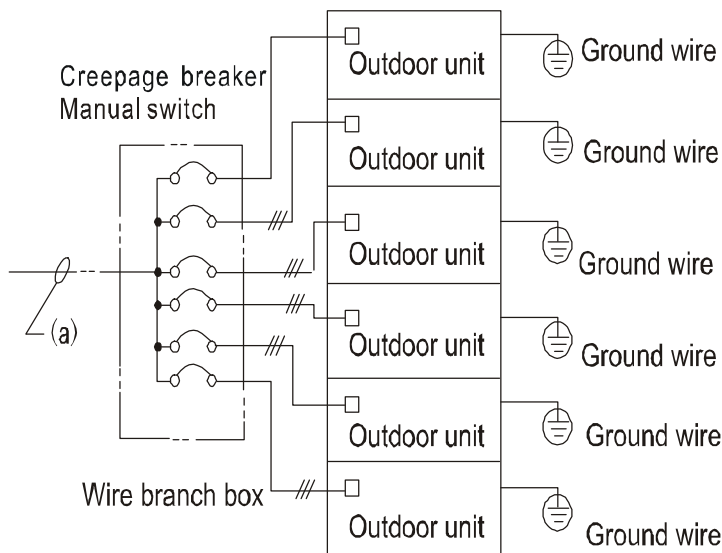
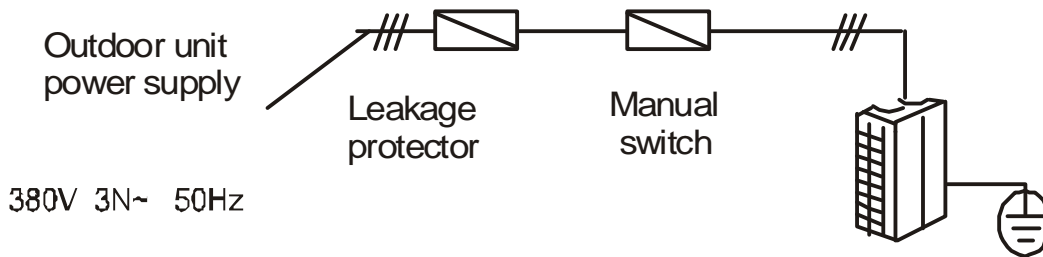
8.1 Brief Introduction

- (1) All wires, parts and material must conform to concerning national standards.
- (2) All wiring work must be done by qualified person.
- (3) Grounded well.

8.2 Power circuitry installation

8.2.1 Outdoors power supply wiring (assure supply power with outdoor at the same time)

8.2.1.1 Single power supply (no power supply device)

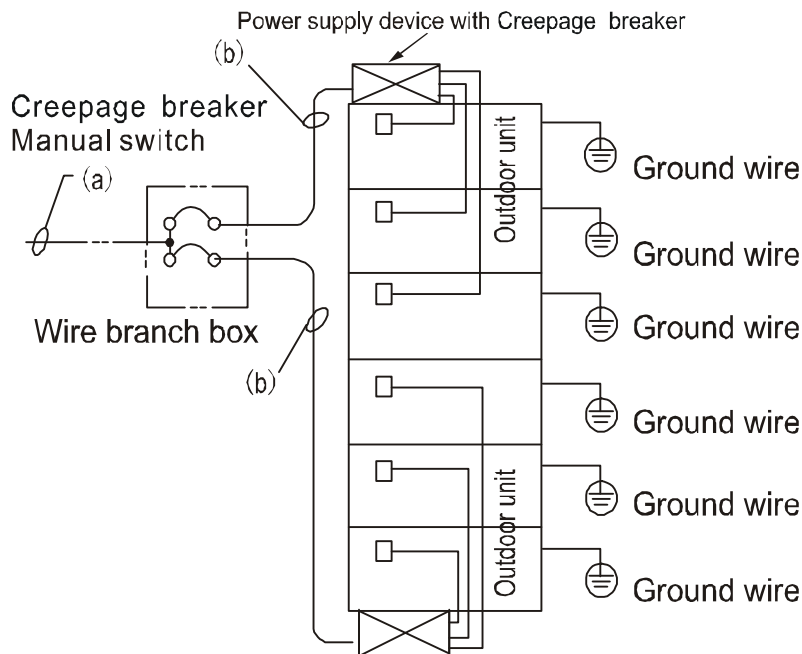


Item Model	Power supply	Minimum thickness mm ² (wiring s of metal and synthetic resin pipe)		manual switch (A)		Creepage breaker
		Diameter (mm ²) / uninterrupted length(m)	Ground wire	Capacity	Fuse	
MDV-252W/CSN1	380V-415V 3N-50Hz	16 / (29)	25 / (46) 35 / (78)	16	60	50
MDV-280W/CSN1						
MDV-335W/CSN1						
MDV-400W/CSN1	380V-415V 3N-50Hz	16 / (29)	25 / (46) 35 / (78)	16	80	70
MDV-450W/CSN1						

Note: because of separate power supply for each unit, allocate power wires for MDV-252W/CSN1、MDV-280W/CSN1、MDV-335W/CSN1、MDV-400W/CSN1、MDV-450W/CSN1 according to certain standards.

Note: the data in the above table is under the condition that the voltage decreases is no more than 2%. If the length of wiring is more than the data in the diagram, please select wires according to certain standards.

8.2.1.2 With power supply device



8.2.1.3 Selection the dimension of the wiring.

Power wiring includes 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.

(1) Diameter of main wire (a) Depends on the total horsepower of outdoor unit and following table.

E.g In system:(5Hp×1unit+8Hp×1unit+10Hp×1unit) Total Hp=23Hp; Find the diameter of the wire in the table below: size of wire =70mm (within 50m)

(2) Wiring(b) between branch box and power equipment Depends on the number of combined outdoor unit. If fewer than 5, the diameter is the same as that of main wire (a); if more than6, there will be 2 electric control boxes, and thediameter of wiring depends on the total horsepower of outdoor units connecting to each electric control box and following table.

Select wire diameter (≥) (table) (unit :mm)

Total capacity (HP)	Mini. diameter of wiring (mm ²)		Total capacity	Mini. diameter of wiring (mm ²)	
	Below 20 m	20 to 50 m		Below 20 m	20 to 50 m
8	10	25	38	70	95
10	10	25	40	70	95
12	16	25	42	70	95
14	25	35	44	70	95
16	25	35	46	70	95
18	25	35	48	70	95
20	25	35	50	95	120
22	35	70	52	95	120
24	35	70	54	95	120
26	35	70	56	95	120
28	35	70	58	95	120
30	50	70	60	95	120
32	50	70	62	95	120
34	50	70	64	95	120
36	50	70			

Note: the data in the above table is under the condition that the voltage decreases no more than 2%. If the length of wiring is more than the data in the diagram, please select wires according to certain standards.

8.2.1.4 Select the fuse and manual switch of wire branch box.

Total capacity of outdoor units	Manual switch (A)	Fuse (A)	Total capacity of outdoor units	Manual switch (A)	Fuse (A)
10~14(HP)	100	75	37~47(HP)	300	250
15~18(HP)	100	100	48~50(HP)	300	300
19~28(HP)	150	150	52~64(HP)	400	400
29~36(HP)	200	200			

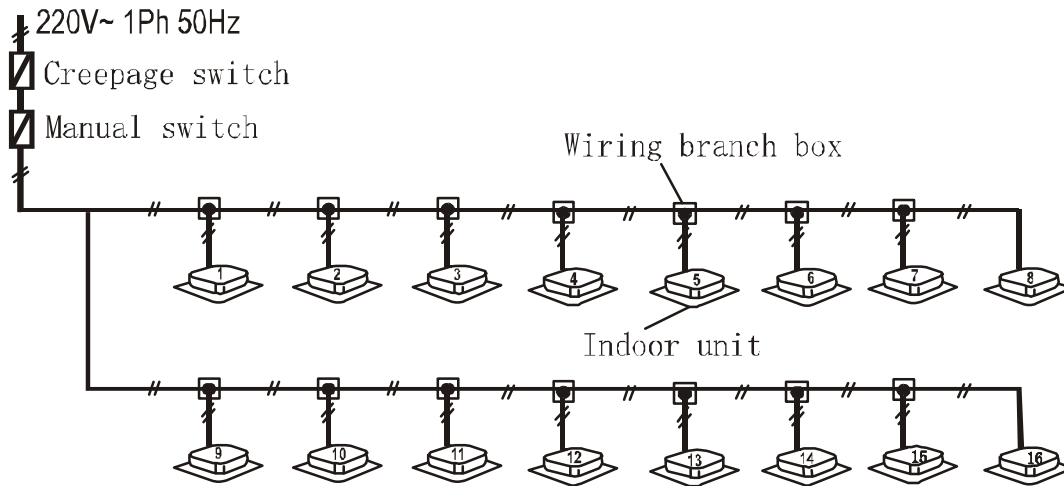
8.2.2 Indoor power supply wiring

The dimension of indoor power supply wiring

Item Model	Power supply	The minimal diameter of wiring (mm ²)			manual switch (A)		Creepage breaker 20mA ~30mA under 0.1sec
		Diameter (uninterrupted wiring length)		Ground wire	Capacity	Fuse	
All indoor units	220V 1N-50Hz	2.5 (30m)	3.5 (50m)	φ1.6mm	30	15	

Note: the “uninterrupted wiring length” in the above table means the wiring from indoor unit to the Wiring Branch Box in the following drawing, and the voltage decreases no more than 2%. If the “uninterrupted wiring length” is more than the data in the above table, please select the wires according to certain standards.

Indoor power supply



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.)

8.2.3 Selection wiring specification

The following wiring specification just aim at Fluorin resinoid insulating wire, if use others, please Refer to the concerning national standard.

(1) Normal Fluorin resinoid insulating wire

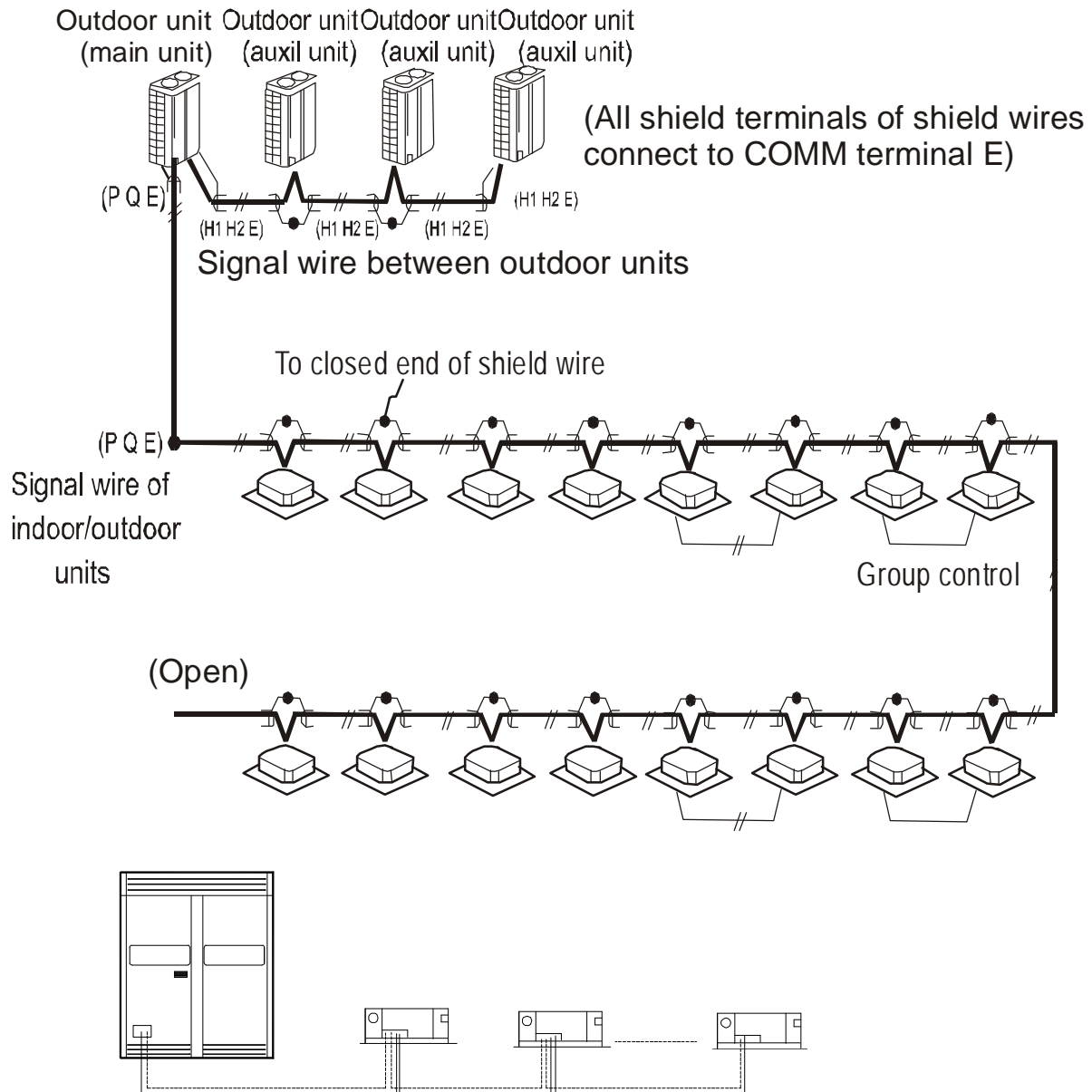
Model	Name
BV	Fluorin resinoid insulating wire, copper-core
BLV	Fluorin resinoid insulating wire, aluminum-core
BVR	Fluorin resinoid insulating soft wire, copper-core
BVV	Fluorin resinoid insulating wire, copper-core, round-type
BLVV	Fluorin resinoid insulating wire, aluminum-core, round-type
BVVB	Fluorin resinoid insulating wire, copper-core, flat-type
BLVVB	Fluorin resinoid insulating wire, aluminum-core, flat-type
BV-105	Fluorin resinoid insulating wire, copper-core, heat-endurance 105°C

Model	Name
RV	Fluorin resinoid insulating connecting soft wire, copper-core
RVB	Fluorin resinoid insulating connecting wire, copper-core, flat-type
RVS	Fluorin resinoid insulating connecting wire, copper-core, twist-type
RVV	Fluorin resinoid insulating connecting soft wire, copper-core, round-type
RVVB	Fluorin resinoid insulating connecting soft wire, copper-core, flat-type
RV-105	Fluorin resinoid insulating connecting soft wire, copper-core, heat-endurance 105°C

8.3 Communication Wiring Connection Method

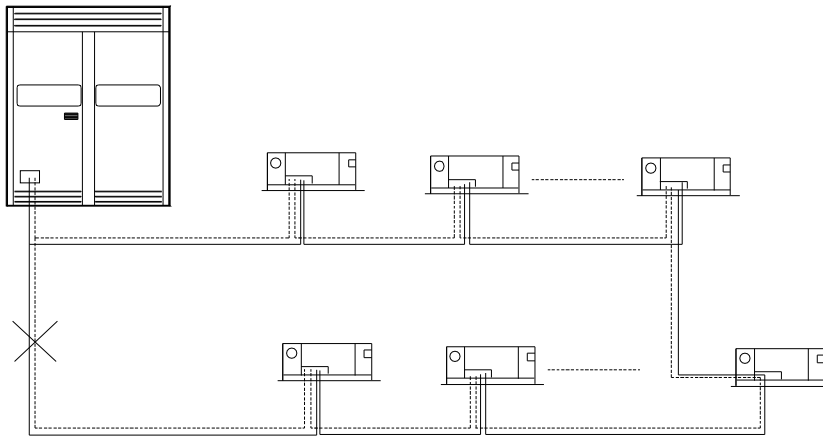
8.3.1 Communication Wiring Connection

(1) Correct Connection

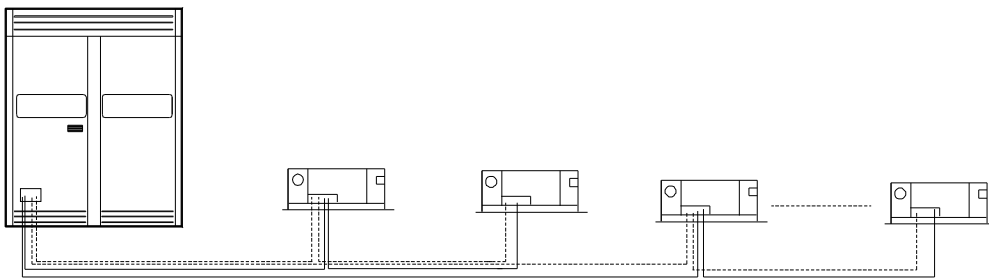


(2) Typical Wiring Mistake

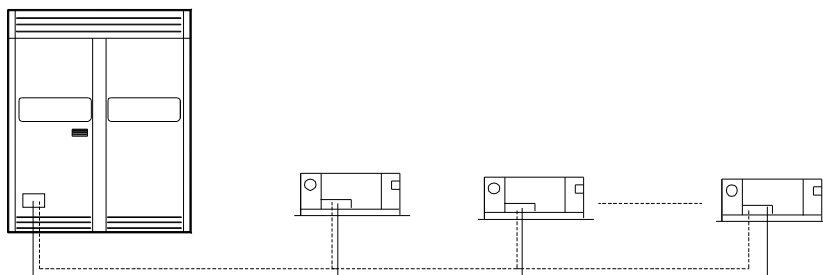
- I Part of Control wiring of Indoor units are connected at ring-type by mistake



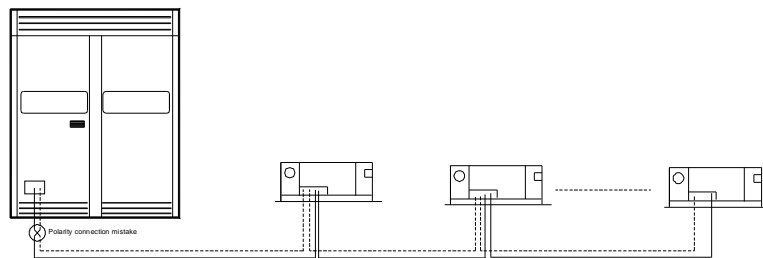
I Art of Control wiring of Indoor units are connected at star-type by mistake



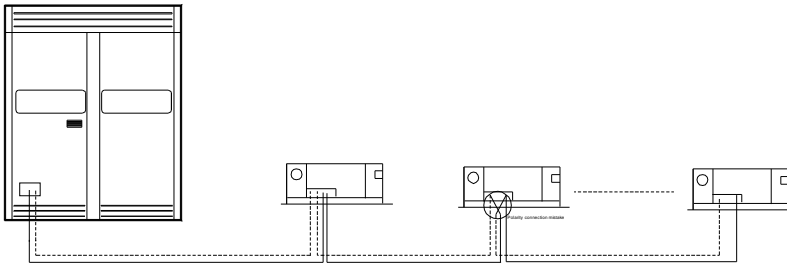
I Control wiring of all indoor units are connected at star-type by mistake



I Polarity connection mistake for control wiring between outdoor/indoor units



I Polarity connection mistake for control wiring between indoor units

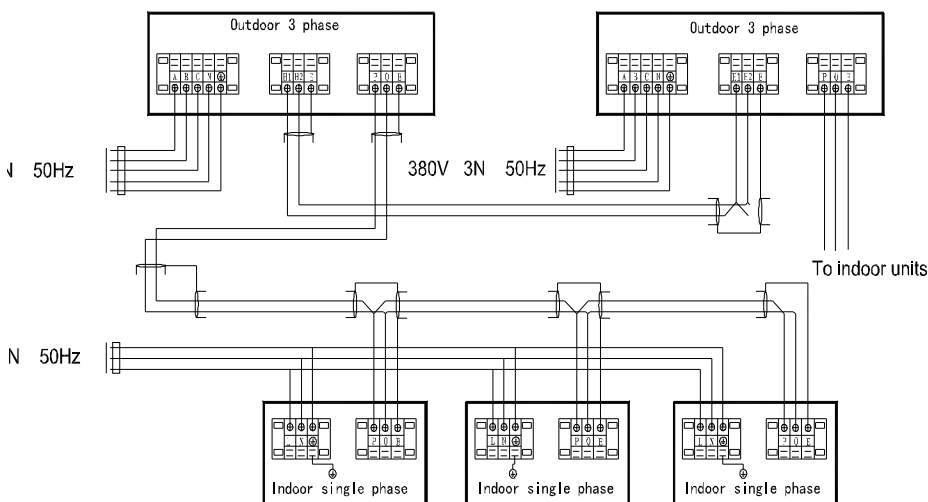


8.3.2 Specification of Control Wiring

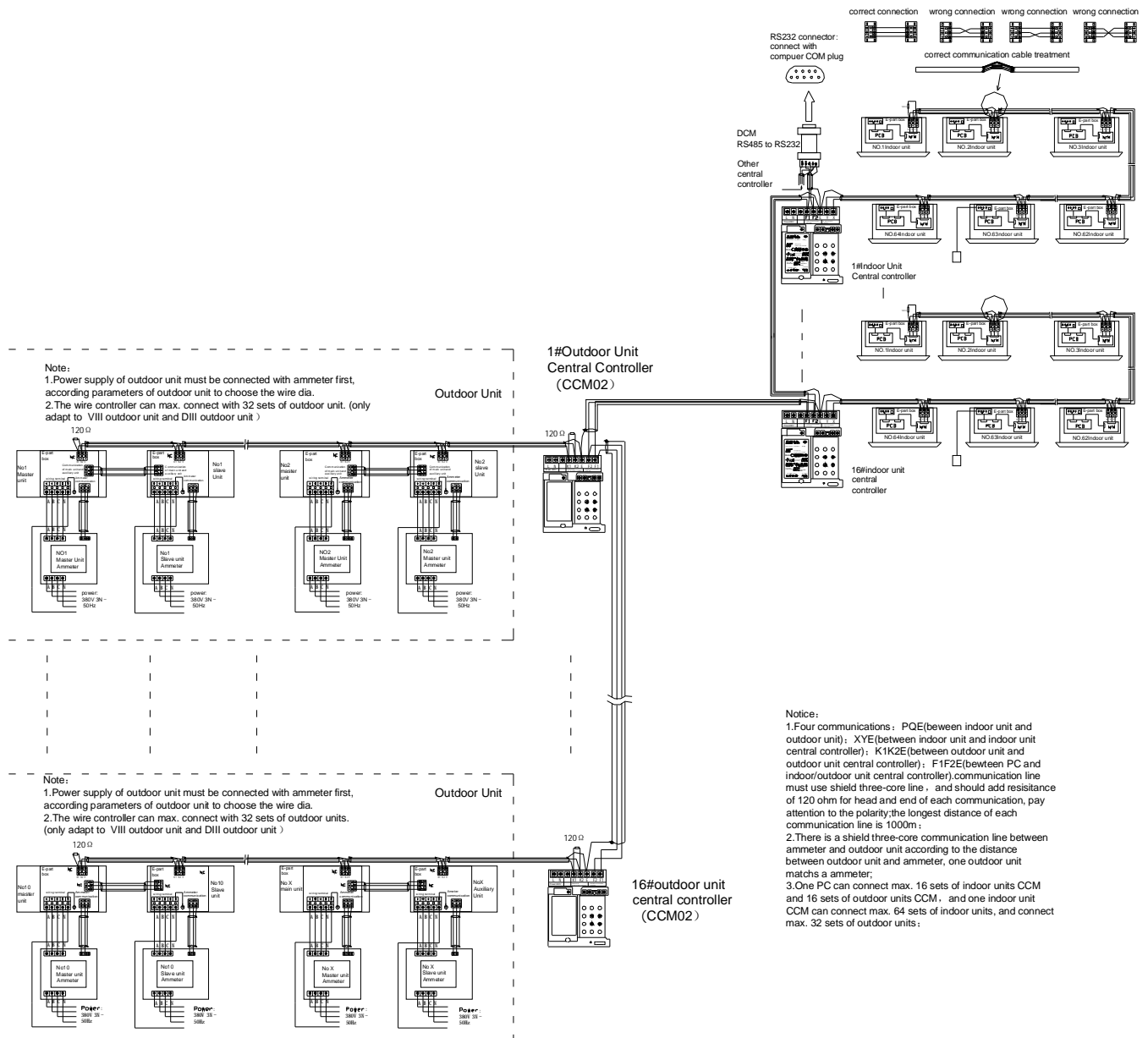
Normal shield wires is as following:

Model	Item
AVP	Fluorin resinoid insulating shield wire, copper-core
AVP-105	Fluorin resinoid insulating shield wire, copper-core, heat-endurance 105°C
RVP	Fluorin resinoid insulating shield wire, copper-core
RVP-105	Fluorin resinoid insulating shield wire, copper-core, heat-endurance 105°C
RVVP	Fluorin resinoid insulating shield soft wire, copper-core
RVVP1	Fluorin resinoid insulating twist shield soft wire, copper-core

8.4 Wiring Diagram (Indoor/Outdoor)



8.5 Wiring Diagram



Note: The 120 ohm resistance can be cancelled because we have strengthened the anti-interference capacity in the program.